PANCANADIAN PETROLEUM LIMITED
REVISED CRESTOMERE WATER WELL SURVEY 89/11/01

Field Verification Only

Ref. No. 34

Legal Location of Water Well: NE 15 43 28 W4M

Elevation: 887 metres AMSL

Name of Owner: PanC WTH No. 2-89

Address: n/a

Drilling Contractor: McAllister

Date of Well Completion: 89/03/30

Completed Depth of Well: 105.5 metres

Depth to Water: 30.43 m (Measured 89/04/18)

Well Use: Industrial - WTH

- - - - - - - - - - - Driller's Litholog - - - - - - - - - - -

Depth in metres (BGL)	(AMSL)	Lithologic Description
0.0 - 14.9	872.1	Till
14.9 - 17.1	869.9	Sh
17.1 - 47.5	839.5	Ss
47.5 - 55.5	831.5	Sh
55.5 - 58.8	828.2	Ss & sltst
58.8 - 66.4	820.6	Sh & ss
66.4 - 77.4	809.6	Ss
77.4 - 80.5	806.5	Sh
80.5 - 92.7	794.3	Ss & sltst
92.7 - 105.5	781.5	Sh

Completion Details

Depth casing set: 68.6 m Casing diameter: 141 mm

.....continued.....

PANCANADIAN PETROLEUM LIMITED
REVISED CRESTOMERE WATER WELL SURVEY 89/11/01

Field Verification Only

Ref. No. 34
(concluded)

Testing Details

Aquifer Transmissivity - 81.0 square metres per day

- - - - - - - - - - - - - Chemistry - - - - - - - - - - - - -

Constituent	Concentration (mg/l)
Total Filtrable Residue	519
Sodium + Potassium	208
Calcium	1
Magnesium	1
Total Hardness	3
Carbonate	37
Bicarbonate	445
Total Alkalinity	426
Sulfate	5
Chloride	17
Iron	0.33
Fluoride	3.44
Nitrate + Nitrite N	0.20
pH(1)	9.0
Conductivity(2)	750

Analysis date: 89/03/30

(1) measured in pH units
(2) measured in micromhos/cm

PANCANADIAN PETROLEUM LIMITED
REVISED CRESTOMERE WATER WELL SURVEY 89/11/01

Field Verification Only

Ref. No. 43

Legal Location of Water Well: SE 23 43 28 W4M

Elevation: 945 metres AMSL

Name of Owner: PanC WTH No. 1-89

Address: n/a

Drilling Contractor: McAllister

Date of Well Completion: 89/04/01

Completed Depth of Well: 139.6 metres

Depth to Water: 85.52 m (Measured 89/04/19)

Well Use: Industrial - WTH

- - - - - - - - - - - Driller's Litholog - - - - - - - - - - -

Depth in metres (BGL)	(AMSL)	Lithologic Description
0.0 - 5.5	939.8	Till
5.5 - 23.8	921.5	Sh & sltst
23.8 - 74.7	870.6	Sh
74.7 - 79.0	866.3	Ss & sltst
79.0 - 83.8	861.5	Sh
83.8 - 94.2	851.1	Ss & sltst
94.2 - 100.6	844.7	Sh
100.6 - 110.1	835.2	Sh/ss/slts
110.1 - 119.5	825.8	Sh
119.5 - 139.6	805.7	Ss & sltst
139.6 - 152.4	792.9	Sh & sltst

Completion Details

Depth casing set: 105.6 m Casing diameter: n/a

.....continued.....

PANCANADIAN PETROLEUM LIMITED
REVISED CRESTOMERE WATER WELL SURVEY 89/11/01

Field Verification Only

Ref. No. 43
(concluded)

Testing Details

Transmissivity - 120.0 square metres per day

- - - - - - - - - - - - - Chemistry - - - - - - - - - - - - -

Constituent	Concentration (mg/l)
Total Filtrable Residue	565
Sodium + Potassium	222
Calcium	1
Magnesium	1
Total Hardness	3
Carbonate	42
Bicarbonate	420
Total Alkalinity	415
Sulfate	55
Chloride	10
Iron	5.10
Fluoride	2.52
Nitrate + Nitrite N	0.20
pH(1)	8.9
Conductivity(2)	825

Analysis date: 89/04/01

(1) measured in pH units
(2) measured in micromhos/cm

Owner: PanCanadian Petroleum Ltd.
150 - 9th Avenue S.W. (Box 2850), Calgary, AB T2P 2S5

Contractor: McAllister Holdings Ltd.
Well Name: Observation Water Well No. 3-89

Field Survey: Mar 16, 2005 - Confirmed - Physically

METRIC REPORT

Easting (m): 70,844.44 ** 75/81
Northing (m): 5,838,661.88 **
Elevation (m): 946 ***

SE 23-043-28 W4M

M35377.087533

107409-123443-1

Work Type: New Well
Drilling Method: Rotary
Proposed Use: Observation
Completion Type: Casing/Perforated Liner

Date Started: Mar 31, 1989
Date Completed: Apr 01, 1989
Well Status: Observation

Elog Taken: Yes
Gamma Taken: No
Stick Up (m): 0.6
Flowing: No

General Details

Depth Completed (m): 103.9
Depth Drilled (m): 103.9
Completion Interval (m): 77.4 — 103.9 *
Completion Aquifer: Dalehurst Member - Top: 76.8

Completion Details

Surface Casing: Steel — 141.2 mm (O.D.) x 4.78 mm (thick) x 77.42 m (bottom)
Liner: Steel — 114.3 mm (O.D.) x 3.96 mm (thick)

Intervals

(Liner: 73.4 m - 103.9 m)

-- Completion Interval(s) --

Slotted: 73.5 to 103.9 m - 0.125 x 12 - Method: Torch

Lithology Details

Elevation (AMSL)	Depth (BGL)	Lithology Descriptions (30)
937.5	8.5	Brown Till
923.1	22.9	Grey Shale
922.8	23.2	Grey Siltstone
895.7	50.3	Grey Shale
891.4	54.6	Sandy Grey Shale
890.8	55.2	Grey Shale
885.4	60.7	Sandy Grey Shale
884.1	61.9	Grey Sandstone
883.8	62.2	Grey Siltstone
881.1	64.9	Sandy Grey Shale
880.5	65.5	Grey Shale
873.8	72.2	Sandy Grey Shale
871.6	74.4	Grey Sandstone
871.0	75.0	Grey Siltstone
869.2	76.8	Grey Shale
866.2	79.8	Grey Sandstone
865.2	80.8	Grey Siltstone
861.6	84.4	Gray Sandstone
860.7	85.3	Grey Shale
853.0	92.1	Grey Sandstone
853.7	92.3	Grey Siltstone
853.0	93.0	Grey Sandstone
852.4	93.6	Grey Shale
851.2	94.8	Grey Sandstone
846.6	99.4	Sandy Grey Shale
844.8	101.2	Grey Sandstone
844.2	101.8	Grey Siltstone
842.0	103.0	Grey Sandstone
842.4	103.6	Grey Siltstone
842.1	103.9	[unknown]

Chemistry Summary Details (mg/L)

(most recent first)

Sampling Details: Apr 01, 1989 (77.4 to 103.9 m)
Analysis Details: Apr 06, 1989 - Western Industrial Laboratories Limited (296-1714; 89-875)

Constituent	Result	Constituent	Result	Constituent	Result
Conductivity (µS/cm)	950	Nitrate as N		Colour	
TDS (Calculated)	646	Nitrite as N		Turbidity	
Hardness (as CaCO3)	5	pH (pH Unit)	8.9	Fluoride	3.04**
T-Alkalinity (as CaCO3)	451	Oil & Grease		Carbonate	37
P-Alkalinity (as CaCO3)		Total Coliforms		Bicarbonate	475
Nitrate + Nitrite as N	< 0.2	Fecal Coliforms		Hydroxide	
Total Suspended Solids		Escherichia coli		Total Iron	
Sulfate Reducing Bacteria*		Ion Balance (%)		Total Mn	
Iron Related Bacteria				Temperature (°C)	

Constituent	Extractable	Dissolved	Constituent	Extractable	Dissolved
Calcium	2		Mercury		
Chloride	1		Molybdenum		
Iron	2.38		Magnesium	< 1	
Manganese			Sodium	254	
Aluminum			Potassium		
Arsenic			Vanadium		
Barium			Strontium		
Beryllium			Nickel		
Cadmium			Zinc		
Chromium			Copper		
Cobalt			Lead		
Sulfate	101				

Extractable - unfiltered
Dissolved - filtered

(1 / 1)

* MPN/mL

Comments: There was some sediment present in the bottom of the bottle and although the water was allowed to settle the upper layer of water was still quite turbid. /// Sulfate assumed to be Extractable (unfiltered).

**exceeded the maximum acceptable concentration, as stated in the Summary of Guidelines for Canadian Drinking Water Quality (Federal-Provincial-Territorial Committee on Drinking Water, March 2006)

107409

General Comments / Observations

Seal Type listed as 'Bentonite Chips/Tablets' but no interval defined

Most Recent Water Level (m): 67.56 m — Mar 16, 2005
Oil Present: No
Gas Present: No

Aquifer Tests

No.	Date	Testing Method	Duration (minutes) Pumping	Duration (minutes) Recovery	Avg. Rate (lpm)	NPWL (metre)	Drawdown (metre)	Level-End (metre)	Pump (metre)	Q20 (m³/day)* Apparent	Q20 (m³/day)* Effective	Transmissivity (m²/day)* Apparent	Transmissivity (m²/day)* Aquifer	Transmissivity (m²/day)* Effective
1	01 Apr 1989 08:00	Pump	60.0	60.0	20.0	62.00	—	—	—					0.5

Alternative IDs

AENV - GIC (WELLID): 0155207

* TGWC calculated or determined value.
** 75 - MT GPS — 10TM NAD83
*** 81 - MT Field — (Ground, AMSL)

Owner: *PanCanadian Petroleum Ltd.*
150 - 9th Avenue S.W. (Box 2850), Calgary, AB T2P 2S5

Contractor: *McAllister Holdings Ltd.*
Well Name: *Observation Water Well No. 3-89*

Field Survey: *Mar 16, 2005 - Confirmed - Physically*

IMPERIAL REPORT

SE 23-043-28 W4M

M35377.087533

107409-123443-1

Easting (m): *70,844.44 *** *75/81*
Northing (m): *5,838,661.88 ***
Elevation (ft): *3,104 ****

Work Type: *New Well*
Drilling Method: *Rotary*
Proposed Use: *Observation*
Completion Type: *Casing/Perforated Liner*

Date Started: *Mar 31, 1989*
Date Completed: *Apr 01, 1989*
Well Status: *Observation*

Elog Taken: *Yes*
Gamma Taken: *No*
Stick Up (ft): *1.8*
Flowing: *No*

General Details

Depth Completed (ft): *341.0*
Depth Drilled (ft): *341.0*
Completion Interval (m): *254.0 — 341.0 **
Completion Aquifer: *Dalehurst Member - Top: 252*

Completion Details

Surface Casing: *Steel — 5.6 inch (O.D.) x 0.19 inch (thick) x 254.02 ft (bottom)*
Liner: *Steel — 4.5 inch (O.D.) x 0.16 inch (thick)*

Intervals

(Liner: 241.0 ft - 341.0 ft)

-- Completion Interval(s) --

Slotted: *241.0 to 341.0 ft - 0.125 x 12 - Method: Torch*

Lithology Details

Elevation (AMSL)	Depth (BGL)	Lithology Descriptions (30)
3,075.8	28.0	Brown Till
3,028.8	75.0	Grey Shale
3,027.8	76.0	Grey Siltstone
2,938.8	165.0	Grey Shale
2,924.8	179.0	Sandy Grey Shale
2,922.8	181.0	Grey Shale
2,904.8	199.0	Sandy Grey Shale
2,900.8	203.0	Grey Sandstone
2,899.8	204.0	Grey Siltstone
2,890.8	213.0	Sandy Grey Shale
2,888.8	215.0	Grey Shale
2,866.8	237.0	Sandy Grey Shale
2,859.8	244.0	Grey Sandstone
2,857.8	246.0	Grey Siltstone
2,851.8	252.0	Grey Shale
2,841.8	262.0	Grey Sandstone
2,838.8	265.0	Grey Siltstone
2,826.8	277.0	Grey Sandstone
2,823.8	280.0	Grey Shale
2,801.8	302.0	Grey Sandstone
2,800.8	303.0	Grey Siltstone
2,798.8	305.0	Grey Sandstone
2,796.8	307.0	Grey Shale
2,792.8	311.0	Grey Sandstone
2,777.8	326.0	Sandy Grey Shale
2,771.8	332.0	Grey Sandstone
2,769.8	334.0	Grey Siltstone
2,765.8	338.0	Grey Sandstone
2,763.8	340.0	Grey Siltstone
2,762.8	341.0	[unknown]

Chemistry Summary Details (mg/L)

(most recent first)

Sampling Details: *Apr 01, 1989 (253.9 to 340.9 ft)*
Analysis Details: *Apr 06, 1989 - Western Industrial Laboratories Limited (296-1714; 89-875)*

Constituent	Result	Constituent	Result	Constituent	Result
Conductivity (µS/cm)	950	Nitrate as N:		Colour:	
TDS (Calculated)	646	Nitrite as N:		Turbidity:	
Hardness (as CaCO3)	5	pH (pH Unit)	8.9	Fluoride	3.04**
T-Alkalinity (as CaCO3)	451	Oil & Grease:		Carbonate	37
P-Alkalinity (as CaCO3):		Total Coliforms:		Bicarbonate	475
Nitrate + Nitrite as N	< 0.2	Fecal Coliforms:		Hydroxide:	
Total Suspended Solids:		Escherichia coli:		Total Iron:	
Sulfate Reducing Bacteria*:		Ion Balance (%):		Total Mn:	
Iron Related Bacteria:				Temperature (°C):	

Constituent	Extractable	Dissolved	Constituent	Extractable	Dissolved
Calcium:	2		Mercury:		
Chloride:	1		Molybdenum:		
Iron:	2.38		Magnesium:	< 1	
Manganese:			Sodium:	254	
Aluminum:			Potassium:		
Arsenic:			Vanadium:		
Barium:			Strontium:		
Beryllium:			Nickel:		
Cadmium:			Zinc:		
Chromium:			Copper:		
Cobalt:			Lead:		
Sulfate:	101				

Extractable - unfiltered
Dissolved - filtered

(1 / 1)

* MPN/mL

Comments: *There was some sediment present in the bottom of the bottle and although the water was allowed to settle the upper layer of water was still quite turbid. /// Sulfate assumed to be Extractable (unfiltered).*

***exceeded the maximum acceptable concentration, as stated in the Summary of Guidelines for Canadian Drinking Water Quality (Federal–Provincial–Territorial Committee on Drinking Water, March 2006)*

107409

General Comments / Observations

Seal Type listed as 'Bentonite Chips/Tablets' but no interval defined.

Most Recent Water Level (ft): *221.66 ft — Mar 16, 2005*
Oil Present: *No*
Gas Present: *No*

Aquifer Tests

No.	Date	Testing Method	Duration (minutes) Pumping	Duration (minutes) Recovery	Avg. Rate (igpm)	NPWL (feet)	Drawdown (feet)	Level-End (feet)	Pump (feet)	Q20 (ig/min)* Apparent	Q20 (ig/min)* Effective	Transmissivity (ig/d/ft)* Apparent	Transmissivity (ig/d/ft)* Aquifer	Transmissivity (ig/d/ft)* Effective
1	01 Apr 1989 08:00	Pump	60.0	60.0	4.4	203.42	—	—	—					33.5

Alternative IDs

AENV - GIC (WELLID): *0155207*

** TGWC calculated or determined value.*
*** 75 - MT GPS — 10TM NAD83*
**** 81 - MT Field — {Ground ; AMSL}*
Imperial values derived from metric values.

Owner: *Penn West Petroleum Ltd.*
Suite 2200, 425 - 1st Street SW, Calgary, AB T2P 3L8
Contractor: *Midwest Water Well Ltd.*
Well Name: *Observation Water Well No. 5*

METRIC REPORT

Easting (m): *73,335.47 *** *75/80*
Northing (m): *5,835,615.75 ***
Elevation (m): *869 ****

03-07-043-27 W4M

M36056.977782

Work Type: *New Well*
Drilling Method: *Rotary*
Proposed Use: *Observation*
Completion Type: *Casing/Perforated Liner*

Date Started: *Jan 20, 1988*
Date Completed: *Jan 20, 1988*
Well Status: *Observation*

Elog Taken: *No*
Gamma Taken: *No*
Stick Up (m): *0.5*
Flowing: *No*

General Details

Depth Completed (m): *51.8*
Depth Drilled (m): *57.9*
Completion Aquifer: *Upper Lacombe Member **
Sand & Gravel Thickness (m): *7.6 (total) **

Top of Bedrock (m): *29.6 **
Completion Interval (m): *33.5 — 51.8 **

Field Survey: *20 May 2004; Confirmed - Physically*

Water Level (m): *12.38 m — 28 Feb 2006 08:17*

Completion Details

Surface Casing: *Steel — 141.2 mm (O.D.) x 4.78 mm (thick) x 32.31 m (bottom)*
Perforated Casing: *Plastic — 114.3 mm (O.D.) x 3.96 mm (thick)*

Intervals

(Liner Bottom at: 57.9 m)

-- Completion Interval(s) --

Liner: *33.5 to 51.8 m - 0.188 x 0.188 - Method: [unknown]*

-- Construction Interval(s) --

Driven: *0.0 to 32.3 m*

Lithology Details

Elevation (AMSL)	Depth (BGL)	Lithology Descriptions (6)
867.7	1.5	Clay & Rocks
860.1	9.1	Sand
839.7	29.5	Clay
835.7	33.5	Shale
816.6	52.4	Sandstone
811.4	57.9	Shale

Chemistry Summary Details (mg/L)

(most recent first)

Sampling Details: *Nov 17, 1990 @ 12:30 (33.5 to 51.8 m)*
Analysis Details: *Dec 17, 1990 - CHEMEX Labs Alberta (1984) Ltd. (PITE192-0501-02602)*

Constituent	Result	Constituent	Result	Constituent	Result
Conductivity (µS/cm):	1200	Nitrate as N:		Colour:	
TDS (Calculated):	717	Nitrite as N:		Turbidity:	
Temperature (°C):		pH (pH Unit):	8.69	Sulfate:	125
Hardness (as CaCO3):	7.5	Oil & Grease		Fluoride:	1.35
T-Alkalinity (as CaCO3):	507	Total Coliforms:		Carbonate:	25.4
P-Alkalinity (as CaCO3):	21.2	Fecal Coliforms:		Bicarbonate:	566.3
Nitrate + Nitrite as N:	0.008	Ion Balance (%):	95	Hydroxide:	

Constituent	Extractable	Dissolved	Constituent	Extractable	Dissolved
Calcium:		2	Mercury:		
Chloride:		4	Molybdenum:		
Iron:		0.2	Magnesium:		0.6
Manganese:		0.005	Sodium:		276
Aluminum:			Potassium:		0.39
Arsenic:			Vanadium:		
Barium:			Strontium:		
Beryllium:			Nickel:		
Cadmium:			Zinc:		
Chromium:			Copper:		
Cobalt:			Lead:		

Extractable - unfiltered
Dissolved - filtered

148008 - (1 / 1)

General Comments / Observations

Observation Water Well is located 20 metres North East of Water plant inside green dome
///

Oil Present: *No*
Gas Present: *No*

Aquifer Tests (most recent first)

No.	Date	Testing Method	Duration (minutes) Pumping	Duration (minutes) Recovery	Avg. Rate (lpm)	NPWL (metre)	Drawdown (metre)	Level-End (metre)	Pump (metre)	Q20 (m³/day)* Apparent	Q20 (m³/day)* Effective	Transmissivity (m²/day)* Apparent	Transmissivity (m²/day)* Aquifer	Transmissivity (m²/day)* Effective
1	20 Jan 1988 11:00	Air	120.0		159.1	13.72		—						

--- Used as Observation Water Well During Aquifer Test No. 2 with M35377 085986 ---

Alternative IDs

Z379169

AENV - GIC (WELLID): *0086957*

** TGWC calculated or determined value.*
*** 75 - MT GPS — 10TM NAD83*
**** 80 - MT DEM — (Ground, AMSL)*

Owner: *Penn West Petroleum Ltd*
2200, 425 - 1st Street SW, Calgary, AB T2P 3L8
Contractor: *Hi-Rate Drilling 1985 Ltd.*
Well Name: *Water Source Well No. 1*
Well Alias: *Pumping Well No. 1*

METRIC REPORT

08-12-043-28 W4M

M35377.084088

Easting (m): *72,804.87 *** *75/80*
Northing (m): *5,835,997.54 ***
Elevation (m): *874 ****

Work Type: *Water Test Hole*
Drilling Method: *Rotary*
Proposed Use: *Industrial*
Completion Type: *Perforated Casing/Liner*
Date Started: *Nov 15, 1989*
Date Completed: *Nov 15, 1989*
Well Status: *Producing*

Elog Taken: *No*
Gamma Taken: *No*
Flowing: *No*

General Details

Depth Completed (m): *134.7*
Depth Drilled (m): *134.7*
Completion Aquifer: *Bedrock **
Top of Bedrock (m): *34.8 **
Completion Interval (m): *94.8 — 134.7 **

Field Survey: *20 May 2004; Confirmed - Physically*

Water Level (m): *40.82 m — 28 Feb 2006 09:51*

Completion Details

Surface Casing: *Steel — 177.8 mm (O.D.) x 5.87 mm (thick) x 94.79 m (bottom)*
Perforated Casing: *Steel — 141.2 mm (O.D.) x 4.78 mm (thick)*

Intervals

(Liner: 94.5 m - 134.7 m)

— Completion Interval(s) —

Liner: *94.8 to 134.7 m - 0.25 x 6 - Method: Torch*

— Construction Interval(s) —

Cement/Grout: *0.0 to 94.8 m*

Lithology Details

Elevation (AMSL)	Depth (BGL)	Lithology Descriptions (11)
839.1	34.8	Brown Till
828.1	45.7	Soft Grey Shale
808.9	64.9	Light Grey Sandstone
778.2	95.7	Grey Shale
776.0	97.8	Grey Siltstone
769.0	104.8	Grey Shale
768.1	105.8	Grey Shale
765.0	107.9	Grey Siltstone
765.1	108.8	Grey Sandstone
762.9	110.9	Siltstone
739.1	134.7	Grey Sandstone

Chemistry Summary Details (mg/L)

(most recent first)

Sampling Details: *Dec 18, 2003 @ 08:55*
Analysis Details: *Dec 29, 2003 - Norwest Labs (276677-1)*

Constituent	Result	Constituent	Result	Constituent	Result
Conductivity (µS/cm):	*954*	Nitrate as N:	*0.006*	Colour:	*> 60*
TDS (Calculated):	*567*	Nitrite as N:	*< 0.002*	Turbidity:	*2.1*
Temperature (°C):	*19.5*	pH (pH Unit):	*8.95*	Sulfate:	*0.15*
Hardness (as CaCO3):	*3.9*	Oil & Grease		Fluoride:	*2.06*
T-Alkalinity (as CaCO3):	*468*	Total Coliforms:		Carbonate:	*77*
P-Alkalinity (as CaCO3):	*64*	Fecal Coliforms:		Bicarbonate:	*414*
Nitrate + Nitrite as N:	*0.006*	Ion Balance (%):	*95*	Hydroxide:	*< 5*

Constituent	Extractable	Dissolved	Constituent	Extractable	Dissolved
Calcium:	*1.8*		Mercury:		
Chloride:		*49.1*	Molybdenum:		
Iron:	*0.04*		Magnesium:	*< 0.2*	
Manganese:	*0.007*		Sodium:	*235*	
Aluminum:			Potassium:	*0.5*	
Arsenic:			Vanadium:		
Barium:			Strontium:		
Beryllium:			Nickel:		
Cadmium:			Zinc:		
Chromium:			Copper:		
Cobalt:			Lead:		

Extractable - unfiltered
Dissolved - filtered

Chemistry Comments: *Sample collected by MOW-TECH LTD.*

147463 - (1 / 2)

General Comments / Observations

Water Source Well (WSW) is located in South East corner of lease inside green dome.
Troll has been installed in WSW

Oil Present: *No*
Gas Present: *No*

AENV File Number(s): *F23766*

Aquifer Tests (most recent first)

No.	Date	Testing Method	Duration (minutes) Pumping	Duration (minutes) Recovery	Avg. Rate (lpm)	NPWL (metre)	Drawdown (metre)	Level-End (metre)	Pump (metre)	Q20 (m³/day)* Apparent	Q20 (m³/day)* Effective	Transmissivity (m²/day)* Apparent	Transmissivity (m²/day)* Aquifer	Transmissivity (m²/day)* Effective
2	01 Dec 1989 13:00	Pump	4,320.0	7,230.0	274.6	35.52	40.60	76.12	—	323.0		14.4	2.9	97.
1	15 Nov 1989 11:00	[unknown]				—	—	—	—					

— Used as Observation Water Well During Aquifer Test No. 2 with M35377.085986 —

Alternative IDs

Z117089

AENV - GIC (WELLID): *0151716*

** TGWC calculated or determined value.*
*** 75 - MT GPS — 10TM NAD83*
**** 80 - MT DEM — {Ground ; AMSL}*

SE 18

WESTERN INDUSTRIAL LABORATORIES LIMITED

LABORATORY REPORT

Telephone
(403) 439-7969
433-6362

8109 - 102 Street
Edmonton, Alberta
T6E 4A4

CHEMICAL ANALYSIS OF WATER

Submitted by Hydrogeological Consultants Ltd. Date 10 June 1991

Sample Pan Canadian - Engelen Well Report No. 296-1910

Sampled: 5 June 1991 Lab No. 91-1618

Constituent	mg/L	Constituent	mg/L
Total Dissolved Solids	823	Sulfate SO_4	121
Fixed Dissolved Solids	721	Chloride Cl	7
Sodium & Potassium (Calc. as Na)	278	Iron Fe Total	0.34
Calcium Ca	28	Fluoride F	0.70
Magnesium Mg	11	Nitrate + Nitrite N	<0.2
Total Hardness as $CaCO_3$	115	Manganese Mn	—
Carbonate CO_3	50		
Bicarbonate HCO_3	610		
Total Alkalinity as $CaCO_3$	583		

pH 8.40 Conductivity 1275 micromhos/cm Turbidity _____ N.T.U

Remarks

WESTERN INDUSTRIAL LABORATORIES LIMITED

F. D. Haz

F. D. Haz

M35377.092578

Metric Report

This report was generated on: 01 Apr 2003 ; Page 2 of 3

Available Chemical Result(s) — South Water Source Well No. 1-89

Well Owner: *Encana Corporation*
1800, 855 – 2nd Street SW, Calgary, Alberta T2P

Legal Location: **SE 23-043-28 W4M**

Drilled Depth: *152.4 (m)*
Completed Depth: *139.6 (m)*
Top of Bedrock: *5.5 m **

Completion Interval: *121.0 m - 139.6 m **
Completion Aquifer: *Upper Lacombe **

3 of 6

General

Sample Details: *06 Jan 1992 @ 10:22*
Analysis Details: *17 Jan 1992 - Western Industrial Laboratories Limited (92-182)*

107420

Routine

pH (pH Units): *9.07*	Carbonate: *50*	Hydroxide:
Conductivity (µS/cm): *888*	Bicarbonate: *415*	Silica:
Temperature (°C):	Oil & Grease:	Fluoride: *2.42*
T-Alkalinity (as CaCO3): *425*	Turbidity:	Sulphate: *32*
P-Alkalinity (as CaCO3):	Ignition Loss:	
Hardness (as CaCO3): *5*	Colour (T.C.U.):	
TDS (Calculated): *571*	Ion Balance (%):	

Metal Constituents

Manganese:	Calcium: *2*	Lithium:
Potassium:	Cobalt:	Thallium:
Sodium: *217*	Bismuth:	Titanium:
Aluminum:	Copper:	Strontium:
Vanadium:	Lead:	Zinc:
Selenium:	Boron:	Mercury:
Beryllium:	Nickel:	Antimony:
Cadmium:	Silver:	Barium:
Chromium:	Silicon:	Sulphur:
Magnesium: *<1*	Tin:	Uranium:
Molybdenum:	Iron: *0.86*	
Arsenic:	Chloride: *14*	

If filtering method unknown 'Dissolved' (filtered) assumed.

Field

— constituents not analyzed —

Nutrients

Nitrite as N:	Ammonia:
Nitrate as N:	TKN:
Nitrate + Nitrite as N: *< 0.2*	Total Phosphate:
Total Nitrogen:	

Micro-Biological

— constituents not analyzed —

Miscellaneous

Cyanide:	DOC:
Sulphide:	FDS: *390*
Total Carbon:	FFR:
Phenol:	DIC:
TPH:	H2S:
SAR:	TIC:
COD:	TOC:
Phosphorus:	

Organics

— constituents not analyzed —

Pesticides

— constituents not analyzed —

Comments

Sample had a small amount of dark grey sediment in the bottom.

4 of 6

General

Sample Details: *04 Jul 1991 @ 04:00*
Analysis Details: *12 Jul 1991 - Western Industrial Laboratories Limited (91-2049)*

107418

Routine

pH (pH Units): *9.09*	Carbonate: *54*	Hydroxide:
Conductivity (µS/cm): *841*	Bicarbonate: *415*	Silica:
Temperature (°C):	Oil & Grease:	Fluoride: *2.83*
T-Alkalinity (as CaCO3): *430*	Turbidity:	Sulphate: *34*
P-Alkalinity (as CaCO3):	Ignition Loss:	
Hardness (as CaCO3): *3*	Colour (T.C.U.):	
TDS (Calculated): *552*	Ion Balance (%):	

Metal Constituents

Manganese:	Calcium: *1*	Lithium:
Potassium:	Cobalt:	Thallium:
Sodium: *222*	Bismuth:	Titanium:
Aluminum:	Copper:	Strontium:
Vanadium:	Lead:	Zinc:
Selenium:	Boron:	Mercury:
Beryllium:	Nickel:	Antimony:
Cadmium:	Silver:	Barium:
Chromium:	Silicon:	Sulphur:
Magnesium: *<1*	Tin:	Uranium:
Molybdenum:	Iron: *0.06*	
Arsenic:	Chloride: *14*	

If filtering method unknown 'Dissolved' (filtered) assumed.

Field

— constituents not analyzed —

Nutrients

Nitrite as N:	Ammonia:
Nitrate as N:	TKN:
Nitrate + Nitrite as N: *< 0.2*	Total Phosphate:
Total Nitrogen:	

Micro-Biological

— constituents not analyzed —

Miscellaneous

Cyanide:	DOC:
Sulphide:	FDS: *380*
Total Carbon:	FFR:
Phenol:	DIC:
TPH:	H2S:
SAR:	TIC:
COD:	TOC:
Phosphorus:	

Organics

— constituents not analyzed —

Pesticides

— constituents not analyzed —

Comments

** The Groundwater Centre™ calculated or determined value*

hydrogeological Consultants ltd

Owner: *Encana Corporation*
1800, 855 – 2nd Street SW, Calgary, Alberta T2P 4J7

Contractor: *McAllister Holdings Ltd. - (VA4003)*
Well Name: *South Water Source Well No. 1-89*
Well Alias: *Water Test Hole No. 1-89*

Metric Report

Easting (m): *70,935* ** 75/87
Northing (m): *5,838,284* **
Elevation (m): *942* ***

SE 23-043-28 W4M
M35377.092578

Work Type: *Reconstructed [Producing]*
Drilling Method: *Rotary*
Completion Type: *Casing/Perforated Liner*
Proposed Use: *Industrial*

Date Started: *01 Apr 1989*
Date Completed: *07 Dec 1990*

Elog Taken: *Yes* Oil Present: *No*
Gamma Taken: *No* Gas Present: *Yes*
Flowing Well: *No*

General Details

Depth Completed (m): *139.6*
Depth Drilled (m): *152.4*
Top of Bedrock: *5.5 m* *
Completion Interval: *121.0 m - 139.6 m* *
Completion Aquifer: *Upper Lacombe * (Top: 128.6 m)*

Field Survey: *21 Apr 1989: Confirmed - Physically*

Water Level: *86.50 m — 31 Dec 2000 @ 18:00*

Completion Details

Surface Casing: *Steel — 218.9 mm (O.D.)* Bottom (m): *121.0*
Perforated Liner: *Steel — 177.8 mm (O.D.) 5.92 mm (thick)*

Intervals (Liner: 121.0 m - 139.6 m)

— Completion Interval(s) —

Liner: *133.5 to 139.6 m — 0.25 x 12 (Perforation Method: Torch)*

— Construction Interval(s) —

AENV Seal: *0.0 to 120.7 m [Benseal]*

Lithology Details

Elevation (AMSL)	Depth (BGL)	Lithology Descriptions (32)
941.6	0.3	Topsoil
936.4	5.5	Brown Till
929.1	12.8	Oxidized Shale
920.6	21.3	Grey Shale
920.0	21.9	Grey Siltstone
918.4	23.5	Grey Shale
918.1	23.8	Grey Siltstone
866.3	75.6	Grey Shale
864.5	77.4	Grey Siltstone
863.3	78.6	Grey Sandstone
863.0	78.9	Grey Siltstone
858.1	83.8	Grey Shale
855.7	86.3	Grey Sandstone
851.7	90.2	Grey Sandstone
851.4	90.5	Grey Siltstone
848.9	93.0	Grey Sandstone
841.3	100.6	Grey Shale
839.8	102.1	Grey Sandstone
837.1	104.9	Sandy Grey Shale
836.1	105.8	Grey Shale
832.8	109.1	Sandy Grey Shale
831.9	110.0	Grey Siltstone
822.4	119.5	Grey Shale
822.1	119.8	Grey Siltstone
814.2	127.7	Grey Sandstone
813.3	128.6	Grey Siltstone
807.8	134.1	Grey Sandstone
807.2	134.7	Grey Siltstone
802.3	139.6	Grey Sandstone
799.9	142.0	Grey Siltstone
794.1	147.8	Grey Shale
789.5	152.4	Sandy Grey Shale

Chemistry Summary Details (mg/L) (most recent first)

Sample Details: *<no information available>* (1 of 6)
Analysis Details: *05 Feb 1998 - Norwest Labs (4 148335)*

Temperature (°C):		Calcium:	*0.9*	Silica:	
Conductivity (µS/cm):	*871*	Chloride:	*12.2*	Phosphate:	
TDS (Calculated):	*549*	Fluoride:	*2.42*	Vanadium:	
pH (pH Unit):	*9.18*	Iron:	*0.06*	Strontium:	
Hardness (as CaCO3):	*2.8*	Manganese:	*< 0.003*	Nickel:	
T-Alkalinity (as CaCO3):	*433*	Aluminum:		Zinc:	
P-Alkalinity (as CaCO3):	*62*	Arsenic:		Total Nitrogen:	
Magnesium:	*0.1*	Barium:		Total Carbon:	
Sodium:	*229*	Beryllium:		Hydroxide:	
Potassium:	*2.30*	Cadmium:		Colour:	
Carbonate:	*74.9*	Chromium:		Turbidity:	
Bicarbonate:	*376*	Cobalt:		Oil & Grease	
Sulfate:	*45.1*	Copper:		Total Coliforms:	
Nitrate as N:		Lead:		Fecal Coliforms:	
Nitrite as N:		Mercury:		Ion Balance (%):	*~ 98.6*
Nitrate + Nitrite as N:	*< 0.05*	Molybdenum:			

Comments:

16775

Available Chemical Constituents *(www.groundwatercentre.com)*
Dissolved: *Yes* Pesticides: *No* Extractable: *No* Misc: *No* *NOTE constituents assumed to*
Field: *No* Organics: *No* Soil: *No* Gas: *No*

General Comments / Observations

Originally Drilled Also By Mcallister Drlg on Apr1/89 To 500', Liner 438'-458' Perfed Full Length. Original Well Reconstructed Due To Gas.

Aquifer Tests (most recent first)

No.	Date	Testing Method	Duration (minutes) Pumping	Duration (minutes) Recovery	Avg. Rate (lpm)	NPWL (metre)	Drawdown (metre)	Level-End (metre)	Pump (metre)	Q20 (m³/day)* Apparent	Q20 (m³/day)* Effective	Transmissivity (m²/day)* Apparent	Transmissivity (m²/day)* Aquifer	Transmissivity (m²/day)* Effective
	30 Mar 2003 12:34	>>> Used as Observation Water Well During Aquifer Test No. 2 with M37711 542269 <<<												
5	07 Dec 1990 11:00	Air			454.6	85.64	11.3	96.9		1,362		75		
	26 Apr 1989 11:57	>>> Used as Observation Water Well During Aquifer Test No. 9 with M35377 092577 <<<										785	120	24
	21 Apr 1989 10:30	>>> Used as Observation Water Well During Aquifer Test No. 8 with M35377.092577 <<<										442	38	38

1 — *spatial* *quality* *physical* *hydraulic*

Alternative IDs

Alberta Environment (AENV): *160356*

* *The Groundwater Centre calculated or determined value*
** *75 - MT GPS — {10TM NAD27}*
*** *87 - Reference Elevation from local survey 'grid' — {Ground ; AMSL}*

hydrogeological consultants ltd

PONOKA WECC

Owner: *Ponoka County*
6000 Highway #2A, Ponoka, AB T4J 1P6
Contractor: *Schmidt Drilling Ltd.*
Well Name: *Crestomere Water Test Hole No. 1-03*

IMPERIAL REPORT

Easting (m): *71,136.26 *** *75/80*
Northing (m): *5,838,524.62 ***
Elevation (ft): *3,069 ****

01-23-043-28 W4M

M37711.542269

148195-337892-10

Work Type: *New Well*
Drilling Method: *Rotary*
Proposed Use: *Argicultural*
Completion Type: *Casing/Open Hole*
Date Started: *Mar 27, 2003*
Date Completed: *Apr 11, 2003*
Well Status: *Producing*

Elog Taken: *No*
Gamma Taken: *No*
Flowing: *No*

General Details

Depth Completed (ft): *480.0*
Depth Drilled (ft): *480.0*
Top of Bedrock (ft): *5.0 **
Completion Interval (m): *340.0 — 480.0 **

Completion Details

Surface Casing: *Steel — 8.6 inch (O.D.) x 0.24 inch (thick) x 409.99 ft (bottom)*
Liner: *Steel — 7.0 inch (O.D.)*

Intervals

(Liner: 410.0 ft - 480.0 ft)

-- Completion Interval(s) --

Slotted: *410.0 to 480.0 ft - Method: Torch*

-- Construction Interval(s) --

Grout: *0.0 to 409.1 ft*

Lithology Details

Elevation (AMSL)	Depth (BGL)	Lithology Descriptions (35 of 42)
3,063.7	5.0	Clay
3,043.7	25.0	Brown Shale
2,976.7	92.0	Grey Shale
2,974.7	94.0	Grey Silt & Rocks
2,938.7	130.0	Grey Shale
2,936.7	132.0	Grey Shale & Rocks
2,928.7	140.0	Grey Shale
2,927.7	141.0	Grey Shale
2,923.7	145.0	Sandstone
2,919.7	149.0	Sandy Shale
2,908.7	160.0	Grey Shale
2,888.7	180.0	Grey Shale
2,873.7	195.0	Grey Shale
2,859.7	209.0	Grey Shale
2,857.7	211.0	Grey Sandstone
2,848.7	220.0	Grey Shale
2,843.7	225.0	Grey Shale
2,833.7	235.0	Grey Sandstone
2,832.7	236.0	Siltstone
2,828.7	240.0	Hard Grey Shale
2,819.7	249.0	Siltstone
2,790.7	278.0	Hard Sandstone
2,788.7	280.0	Hard Shale
2,781.7	287.0	Hard Shale
2,780.7	288.0	Siltstone
2,776.7	292.0	Grey Shale
2,768.7	300.0	Grey Sandstone
2,764.7	304.0	Sandstone
2,748.7	320.0	Hard Grey Shale
2,728.7	340.0	Hard Grey Shale
2,713.7	355.0	Grey Shale
2,709.7	359.0	Soft Grey Sandstone
2,688.7	380.0	Fine Grained Grey Sandstone
2,668.7	400.0	Fine Grained Grey Sandstone
2,648.7	420.0	Fine Grained Grey Sandstone

Chemistry Summary*Details (mg/L)

(most recent first)

Sampling Details: *Apr 23, 2003 @ 20:20* *(410.1 to 479.0 ft)*
Analysis Details: *May 26, 2003 - Norwest Labs (233786)*

Constituent	Result	Constituent	Result	Constituent	Result
Conductivity (µS/cm):	851	Nitrate as N:	0.045	Colour:	> 60
TDS (Calculated):	519	Nitrite as N:	< 0.002	Turbidity:	49.7
Hardness (as CaCO3):	128	pH (pH Unit):	8.14	Fluoride:	0.15
T-Alkalinity (as CaCO3):	459	Oil & Grease:		Carbonate:	< 6
P-Alkalinity (as CaCO3):	< 5	Total Coliforms:		Bicarbonate:	559
Nitrate + Nitrite as N:	0.045	Fecal Coliforms:		Hydroxide:	< 5
Total Suspended Solids:		Escherichia coli:		Total Iron:	
Sulfate Reducing Bacteria*:		Ion Balance (%):	97	Total Mn:	
Iron Related Bacteria:				Temperature (°C):	19.2

Constituent	Extractable	Dissolved	Constituent	Extractable	Dissolved
Calcium:	28.8		Mercury:	< 0.0001	
Chloride:		0.8	Molybdenum:		
Iron:	2.1		Magnesium:	13.5	
Manganese:	0.087		Sodium:	160	
Aluminum:	0.395		Potassium:	2.2	
Arsenic:	0.0026		Vanadium:		
Barium:	0.135		Strontium:		
Beryllium:			Nickel:		
Cadmium:	0.00014		Zinc:	0.467	
Chromium:	0.0031		Copper:	0.002	
Cobalt:			Lead:	0.0042	
Sulfate:	38.6				

Extractable - unfiltered
Dissolved - filtered

(1 / 2)

* MPN/mL

note: constituents have been compared to the maximum acceptable concentration, as stated in the Summary of Guidelines for Canadian Drinking Water Quality (Federal–Provincial–Territorial Committee on Drinking Water, March 2006)

148195

General Comments / Observations

Most Recent Water Level (ft): *206.15 ft — Jun 13, 2003*
Oil Present: *No* Gas Present: *No*
Observations (water): Colour: ; Odor: ; Quality:

Aquifer Tests

No.	Date	Testing Method	Duration (minutes) Pumping	Duration (minutes) Recovery	Avg. Rate (igpm)	NPWL (feet)	Drawdown (feet)	Level-End (feet)	Pump (feet)	Q20 (ig/min)* Apparent	Q20 (ig/min)* Effective	Transmissivity (ig/d/ft)* Apparent	Transmissivity (ig/d/ft)* Aquifer	Transmissivity (ig/d/ft)* Effective
10	12 May 2003 16:30	Pump	3,840.0	10,281.0	82.7	188.10	136.00	324.10	374.03	51.1		1,279.9		
9	03 Apr 2003 13:13	Pump	40.0	5.0	16.3	256.64	48.53	305.17	359.93	10.8		494.3		
8	01 Apr 2003 16:25	Pump	887.0		26.4	256.38	8.43	264.81	359.93	146.4		5,658.3		
7	29 Mar 2003 12:34	Pump	100.0		23.3	254.28	6.17	260.45	359.93	160.6		7,123.4		

Alternative IDs

* TGWC calculated or determined value.
** 75 - MT GPS — 10TM NAD83
*** 80 - MT DEM — (Ground ; AMSL)
Imperial values derived from metric values.

Maxxam Analytics Inc

GAS ANALYSIS

Sample Point I.D.	SAFEA59G
Client I.D.	
Meter Number	
Laboratory Number	A320026:490-1/5
Operator Name	SAMSON CANADA
LSD	0014-07-043-27-W4M
Well ID	100/14-07-043-27W4/ 0
Well Name	SAMSON FERRYBANK 14-07-043-27-W4M
Name of Sampler	N/A
Company	SWAB SERVICES
Field or Area	FERRYBANK
Pool or Zone	VIKING
Sample Point	METER RUN
Container Identity	11934,12504
Percent Full	
Test Recovery	
Test Type / No. / Multiple Recovery	
Interval 1 From:	1537.0
Interval 1 To:	1538.4
Interval 2	
Interval 3	
Elevations (m) KB	902.0
Elevations (m) GRD	
Sample Gathering Point	
Solution Gas	
Well Fluid Status	
Well Status Mode	
Production Rates Water m3/d	12.485
Production Rates Oil m3/d	0.020
Production Rates Gas 1000m3/d	41.563
Gauge Pressures kPa Source	345
Gauge Pressures kPa As Received	300
Temperature °C Source	11
Temperature °C As Received	23.0
Well Status Type	
Well Type	
Gas or Condensate Project	
Licence No.	
Date Sampled Start	2003/09/24
Date Sampled End	
Date Received	2003/09/26
Date Reported	2003/10/03
Date Revision Reported	2003/10/03
Analyst	AG

COMPOSITION

COMPONENT	MOLE FRACTION AIR FREE AS REC'D	MOLE FRACTION AIR FREE ACID GAS FREE	LIQUID VOLUME mL/m3 AIR FREE AS REC'D
H2	0.0001	0.0001	
He	0.0004	0.0004	
N2	0.0206	0.0212	
CO2	0.0301		
H2S	0.0000		
C1	0.8423	0.8685	
C2	0.0731	0.0754	260.76
C3	0.0242	0.0250	88.94
IC4	0.0036	0.0037	15.71
NC4	0.0041	0.0042	17.24
IC5	0.0008	0.0008	3.91
NC5	0.0005	0.0005	2.42
C6	0.0002	0.0002	1.10
C7+	Trace	Trace	Trace
TOTAL	1.0000	1.0000	390.08

PROPERTIES

Calculated Mole Weight (Moisture Free as Sampled)
- Total: 19.2
- C7+:

Calculated Relative Densities
- Moisture Free as Sampled: 0.664
- Moisture & Acid Gas Free: 0.638

Calculated Pseudo Critical Properties

As Sampled		Acid Gas Free	
pPc (kPa)	pTc (Kelvin)	pPc (kPa)	pTc (Kelvin)
4658.9	207.5	4574.8	204.4

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C
- A.P.M.C (AGA #5): 40.14
- A.P.M.C (AGA #5) Acid Gas Free: 41.38
- C7+ as Received:

Gas Compressibility @ 101.325 kPa & 15°C: 0.9974

Hydrogen Sulphide

On Site		In Lab	
Gaseous (mole ppm)	Tenellar (mole%)	<1 Gaseous (mole ppm)	Tubular (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Maxxam Analytics Inc

LIQUID HYDROCARBON ANALYSIS

Sample Point I.D.	SAFEA59C
Client I.D.	
Meter Number	
Laboratory Number	A320026:496476
Operator Name	SAMSON CANADA
LSD	0014-07-043-27-W4M
Well ID	100/14-07-043-27W4/ 0
Well Name	SAMSON FERRYBANK 14-07-043-27-W4M
Name of Sampler	N/A
Company	SWAB SERVICES
Field or Area	FERRYBANK
Pool or Zone	VIKING
Sample Point	SIGHTGLASS
Container Identity	Plastic
Percent Full	
Test Recovery	
Test Type / No. / Multiple Recovery	
Interval 1 From	1537.0
Interval 1 To	1538.4
Interval 2	
Interval 3	
Elevations (m) KB	902.0
Elevations (m) GRD	
Sample Gathering Point	
Solution Gas	
Well Fluid Status	
Well Status Mode	
Production Rates Water m3/d	12.485
Production Rates Oil m3/d	0.020
Production Rates Gas 1000m3/d	41.563
Gauge Pressures kPa Source	
Gauge Pressures kPa As Received	
Temperature °C Source	
Temperature °C As Received	
Well Status Type	
Well Type	
Gas or Condensate Project	
Licence No.	
Date Sampled Start	2003/09/24
Date Sampled End	
Date Received	2003/09/26
Date Reported	2003/10/03
Date Revision Reported	2003/10/03
Analyst	GA

COMPOSITION

COMPONENT	MOLE FRACTION	MASS FRACTION	VOLUME FRACTION
N2			
CO2			
H2S			
C1	0.0000	0.0000	0.0000
C2	0.0031	0.0006	0.0014
C3	0.0083	0.0025	0.0040
IC4	0.0043	0.0017	0.0025
NC4	0.0155	0.0062	0.0086
IC5	0.0186	0.0092	0.0120
NC5	0.0263	0.0131	0.0168
C6	0.0726	0.0431	0.0523
C7+	0.8513	0.9236	0.9024
TOTAL	1.0000	1.0000	1.0000

PROPERTIES

RESIDUE	RELATIVE DENSITY @ 15 °C OBSERVED	RELATIVE DENSITY @ 15 °C CALCULATED	RELATIVE MOLECULAR MASS OBSERVED	RELATIVE MOLECULAR MASS CALCULATED	DATA SUMMARY MOLE FRACTION	DATA SUMMARY MASS FRACTION	DATA SUMMARY VOLUME FRACTION
C5+		0.817		148	0.9688	0.9890	0.9835
C6+		0.823		152	0.9239	0.9667	0.9547
C7+	0.832		201	158	0.8513	0.9236	0.9024
C10+					0.4264	0.6026	0.5740
C12+					0.2901	0.4695	0.4411
TOTAL		0.813		145			

Calculated Absolute Density Total Sample: 812.3 kg/m3 @ 15°C
Gas Equivalent Factor: 132.47 m3 Gas/m3 Liquid

** Information not supplied by client – data derived from LSD information

Results relate only to items tested

Remarks:

Maxxam Analytics Inc

LIQUID HYDROCARBON ANALYSIS

SAMSON CANADA
Operator Name

A320026:496476
Laboratory Number

SAMSON FERRYBANK 14-07-043-27-W4M
Well Name

SIGHTGLASS
Sample Point

SWAB SERVICES
Company

SAFEA59C
Sample Point I.D.

Client I.D.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Revision Reported	Analyst
2003/09/24		2003/09/26	2003/10/03	2003/10/03	GA

COMPONENT	BOILING POINT (°C)	MOLE FRACTION	MASS FRACTION	VOLUME FRACTION
Nitrogen	-196			
Carbon Dioxide	-79			
Hydrogen Sulphide	-60			
Methane	-162	0.0000	0.0000	0.0000
Ethane	-89	0.0031	0.0006	0.0014
Propane	-42	0.0083	0.0025	0.0040
Iso-Butane	-12	0.0043	0.0017	0.0025
n-Butane	0	0.0155	0.0062	0.0086
Iso-Pentane	28	0.0186	0.0092	0.0120
n-Pentane	36	0.0263	0.0131	0.0168
Hexanes	37-69	0.0726	0.0431	0.0523
Heptanes	70-98	0.1731	0.1155	0.1174
Octanes	99-126	0.1283	0.0998	0.1041
Nonanes	127-151	0.1235	0.1057	0.1069
Decanes	152-174	0.0861	0.0816	0.0818
Undecanes	175-196	0.0502	0.0515	0.0511
Dodecanes	197-216	0.0342	0.0376	0.0369
Tridecanes	217-236	0.0291	0.0340	0.0330
Tetradecanes	237-253	0.0247	0.0306	0.0295
Pentadecanes	254-271	0.0220	0.0287	0.0274
Hexadecanes	272-287	0.0186	0.0254	0.0241
Heptadecanes	288-302	0.0183	0.0266	0.0252
Octadecanes	303-317	0.0156	0.0239	0.0225
NonaDecanes	318-331	0.0122	0.0197	0.0185
Eicosanes	332-343	0.0109	0.0191	0.0179
Heneicosanes	344-357	0.0103	0.0189	0.0177
Docosanes	358-369	0.0096	0.0181	0.0168
Tricosanes	370-380	0.0090	0.0174	0.0162
Tetracosanes	381-391	0.0082	0.0164	0.0152
Pentacosanes	392-402	0.0075	0.0155	0.0143
Hexacosanes	403-412	0.0069	0.0145	0.0134
Heptacosanes	413-422	0.0064	0.0140	0.0128
Octacosanes	423-432	0.0061	0.0136	0.0124
Nonacosanes	433-441	0.0058	0.0133	0.0121
Triacosanes+	442-449+	0.0347	0.0822	0.0752
Totals		1.0000	1.0000	1.0000
Neo-Hexane/Cyclopentane	50	0.0000	0.0000	0.0000
Methylcyclopentane	70	0.0178	0.0103	0.0100
Benzene	80	Trace	Trace	Trace
Cyclohexane	81	0.0158	0.0092	0.0086
Methylcyclohexane	101	0.0525	0.0355	0.0338
Toluene	111	0.0005	0.0003	0.0003
Ethylbenzene	136	0.0043	0.0031	0.0026
m&p-Xylene	139	0.0049	0.0036	0.0031
o-Xylene	144	0.0015	0.0011	0.0010
1,2,4-Trimethylbenzene	169	0.0021	0.0018	0.0014

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

FILE COPY

Core Lab

WATER ANALYSIS

285 - 2		343165	52134-2006-1046
CONTAINER IDENTITY	METER ID	WELL LICENSE NUMBER	LABORATORY FILE NUMBER

Samson Canada Ltd. — OPERATOR

2 — PAGE

100/11-07-043-27W4/00	SC et al Fbank 11-7-43-27	889.7	886.5
LOCATION (UWI)	WELL NAME	KB ELEV (m)	GR ELEV (m)

Ferrybank	Edmonton	Caliber Test
FIELD OR AREA	POOL OR ZONE	SAMPLER

TEST TYPE AND NO. — TEST RECOVERY

Flowline

POINT OF SAMPLE — SAMPLE POINT ID

PUMPING — FLOWING — GAS LIFT — SWAB

208.0 - 531.0 — TEST INTERVAL or PERFS (meters)

WATER m³/d — OIL m³/d — GAS m³/d

SEPARATOR — RESERVOIR — OTHER — @ °C CONTAINER WHEN SAMPLED — @ °C CONTAINER WHEN RECEIVED

Pressures, kPa (gauge)

SEPARATOR — OTHER

Temperatures, °C

08:00 Hrs

2006 02 05	2006 02 13	2006 02 17	K/S/D		@ °C
DATE SAMPLED (Y/M/D)	DATE RECEIVED (Y/M/D)	DATE ANALYZED (Y/M/D)	ANALYST	AMT. AND TYPE CUSHION	MUD RESISTIVITY

CATIONS

ION	mg/L	mg Fraction	meq/L
Na	1,520	0.2555	66.1
K	5.1	0.0009	0.1
Ca	43	0.0072	2.1
Mg	8.6	0.0014	0.7
Ba			
Sr			
Fe	Pres.		
Mn			

ANIONS

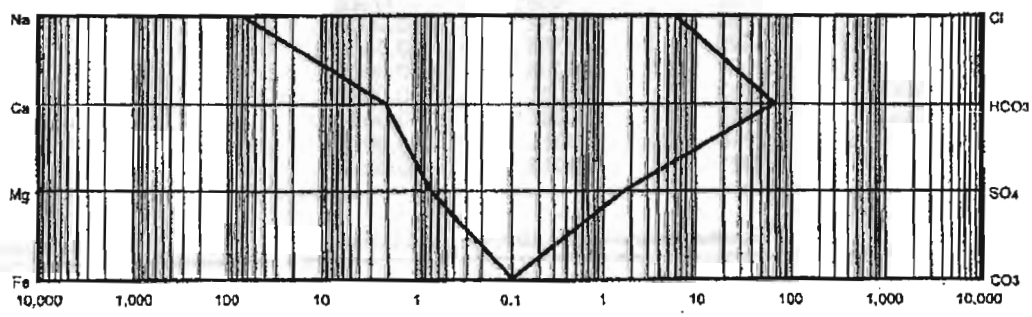
ION	mg/L	mg Fraction	meq/L
Cl	209	0.0351	5.9
Br			
I			
HCO_3	4,081	0.6860	66.9
SO_4	82	0.0138	1.7
CO_3	0.00	0.0000	0.0
OH	0.00	0.0000	0.0
H_2S	N.D.		

Total Dissolved Solids (mg/L)

Not Requested — By Evaporation @ 110 °C	Not Requested — By Evaporation @ 180 °C
Not Requested — At Ignition	5949 — Calculated
1.0021 @ 15.6 °C — Specific Gravity	1.3339 @ 26 °C — Refractive Index
8.1 — pH	1.946 @ 25 °C — Resistivity (Ohm-Meters)

LOGARITHMIC PATTERNS OF DISSOLVED IONS

meq/L



REMARKS: N.D.- Not Detected Pres. - Analyte Present

Maxxam Analytics Inc

WATER ANALYSIS

Sample Point I.D. / Client I.D.	SAFEA59W
Meter Number	
Laboratory Number	A320026:496477
Operator Name	SAMSON CANADA
LSD	0014-07-043-27-W4M
Well ID	100/14-07-043-27W4/ 0
Well Name	SAMSON FERRYBANK 14-07-043-27-W4M
Name of Sampler	N/A
Company	SWAB SERVICES
Field or Area	FERRYBANK
Pool or Zone	VIKING
Sample Point	SIGHTGLASS ON P-TANK
Container Identity	Plastic(2)
Percent Full	
Test Recovery	
Test Type / No. / Multiple Recovery	
Interval 1 From:	1537.0
Interval 1 To:	1538.4
Interval 2	
Interval 3	
Elevations (m) KB	902.0
Elevations (m) GRD	
Sample Gathering Point	
Solution Gas	
Well Fluid Status	
Well Status Mode	
Production Rates Water m3/d	12.485
Production Rates Oil m3/d	0.020
Production Rates Gas 1000m3/d	41.563
Gauge Pressures kPa Source / As Received	
Temperature °C Source	
Temperature °C As Received	23.0
Well Status Type	
Well Type	
Gas or Condensate Project	
Licence No.	
Date Sampled Start	2003/09/24
Date Sampled End	
Date Received	2003/09/26
Date Reported	2003/10/03
Date Revision Reported	2003/10/03
Analyst	JW ,RD1,MH1,LUL

CATIONS

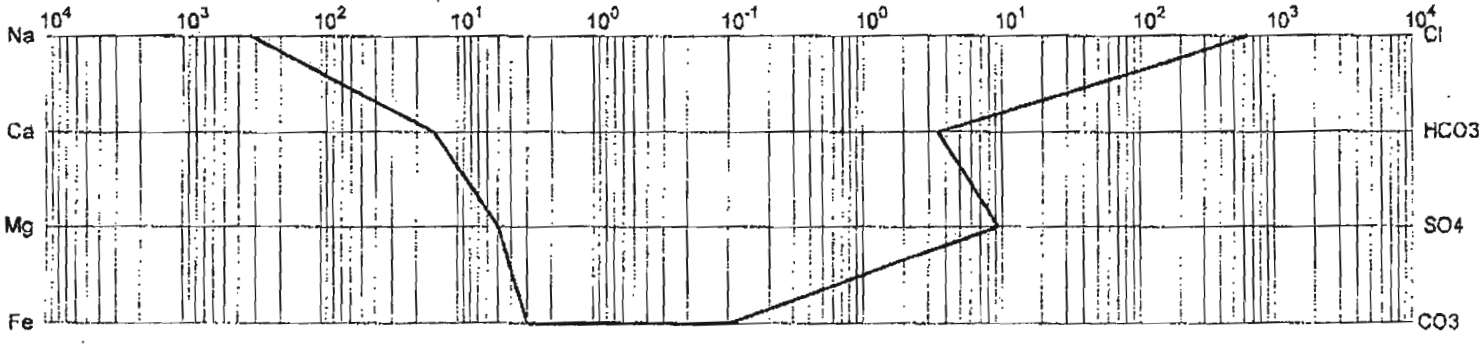
Ion	mg/L	meq/L
Na	7520	327
K	10700	268
Ca	293	15.1
Mg	60.6	5.0
Ba	5.35	<0.1
Sr	38.4	0.9
Fe	82.4	3.03
H+		

ANIONS

Ion	mg/L	meq/L
Cl	22000	631
HCO3	213	3.5
SO4	449	9.4
CO3	<0.5	<0.1
OH	<0.5	<0.1

Total Dissolved Solids (mg/L) Measured	43000
Total Dissolved Solids (mg/L) Calculated	41400
Relative Density	1.030
Refractive Index	1.337
Conductivity (uS/cm)	50000
Resistivity (ohms) @25°C	0.200
Total Hardness as CaCO3 (mg/L)	1000
Total Alkalinity as CaCO3 (mg/L)	175
Total Fe (mg/L)	
Total Mn (mg/L)	
Observed pH	6.30
H2S Spot Test	ABSENT

Logarithmic Patterns of Dissolved Ions (meq/L)



** Information not supplied by client – data derived from LSD information

Results relate only to items tested

Remarks.

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

A5391[illegible]32238

Sample Point I.D. | Client I.D. | Meter Number | Laboratory Number

WIEBE ENVIRONMENTAL SERVICES INC.

Operator Name

0002-18-043-27-W4M

LSD

100/02-18-043-27W4/0 **

Well ID

CAMPBELL 0002-18-043-27-W4M

Well Name

GT

Name of Sampler

WIEBE

Company

HOUSE

Sample Point

Tedlar Bag

Container Identity

Field or Area | Pool or Zone | Recovery

Test Recovery | Interval 1 | Interval 2 | Interval 3 | Elevations (m) | Sample Gathering Point | Solution Gas

Test Type No | Multiple Recovery | From | To | RB | GRD | Well Fluid Status | Well Status Minor

Production Rates | Gauge Pressure kPa | Temperature C 18.4 | Well Status Type | Well Type

Water m3/d | Oil m3/d | Gas 1000m3/d | Source | As Received | Source | As Received | Gas or Condensate Present | Licence No

2005/09/26 | 2005/09/26 | 2005/10/06 | 2005/10/06 | MW .MS2

Date Sampled Start | Date Sampled End | Date Received | Date Reported | Date Revision Reported | Analyst

COMPOSITION

COMPONENT	MOLE FRACTION AS REC'D	MOLE FRACTION AIR FREE	CARBON ISOTOPE ABUNDANCE
H2	0.0000	0.0000	
He	Trace	Trace	
O2	0.1745		
N2	0.0000	0.0000	
CO2	0.5741	0.6954	-22.38
H2S	0.0000	0.0000	
C1	0.2514	0.3046	-58.35
C2	Trace	Trace	-31.19
C3	0.0000	0.0000	-26.58
IC4	0.0000	0.0000	-27.85
NC4	0.0000	0.0000	-25.86
IC5	0.0000	0.0000	
NC5	0.0000	0.0000	
C6	0.0000	0.0000	
C7+	0.0000	0.0000	
TOTAL	1.0000	1.0000	

SAMPLE CLASSIFICATION

Mud Depth (m):

NOTES

Carbon isotope abundance is measured in units of:

$$\text{*delta 13C (PDB) ppt} = \frac{(13C/12C)-(13C/12C)PDB}{(13C/12C)PDB} \times 1000$$

Where PDB is an international sample of Belemnite taken from the Pee Dee formation in South Carolina.

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Maxxam Analytics Inc.

GAS ANALYSIS (INCLUDING OXYGEN)

A53912[illegible]32243

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
WIEBE ENVIRONMENTAL SERVICES INC.		0002-18-043-27-W4M	100/02-18-043-27W4/0 **
Operator Name		LSD	Well ID
CAMPBELL 0002-18-043-27-W4M		GT	WIEBE
Well Name		Name of Sampler	Company
		WELL	Tedlar Bag
Field or Area	Pool or Zone	Sample Point	Container Identity / Percent I

Test Recovery — Interval 1 — Interval 2 — Interval 3 — Elevations (m) — Sample Gathering Point — Solution Gas

Test Type: No — Multiple Recovery — From — To — KB — GRD — Well Fluid Status — Well Status Mode

Production Rates — Gauge Pressures kPa — Temperature °C 17.8 — Well Status Type — Well Type

Water m3/d — Oil m3/d — Gas 10³m³/d — Source — As Received — Source — As Received — Gas or Condensate Project — Licence No

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Revision Reported	Analyst
2005/09/26		2005/09/26	2005/10/06	2005/10/06	MW

COMPOSITION

COMPONENT	MOLE FRACTION AS REC'D	MOLE FRACTION AIR FREE	MOLE FRACTION AIR FREE ACID GAS FREE
H2	0.0000	0.0000	0.0000
He	Trace	Trace	1.0000
O2	0.1935		0.0000
N2	0.6930	0.0000	0.0000
CO			
CO2	0.1135	1.0000	
H2S	0.0000	0.0000	
C1	0.0000	0.0000	0.0000
C2	0.0000	0.0000	0.0000
C3	0.0000	0.0000	0.0000
IC4	0.0000	0.0000	0.0000
NC4	0.0000	0.0000	0.0000
IC5	0.0000	0.0000	0.0000
NC5	0.0000	0.0000	0.0000
C6	0.0000	0.0000	0.0000
C7+	0.0000	0.0000	0.0000
TOTAL	1.0000	1.0000	1.0000

PROPERTIES

Calculated Mole Weight (Moisture Free as Sampled): 44.0 (Mol) — C7+

Calculated Relative Densities: 1.519 (Moisture Free as Sampled) — 0.138 (Moisture & Acid Gas Free)

Calculated Pseudo Critical Properties

As Sampled		Acid Gas Free	
7374.0 (kPa(a))	304.1 (Tc (Kelvin))	227.5 (kPa(a))	5.2 (Tc (Kelvin))

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: A.P.M.C. (AGA #5) — A.P.M.C. (AGA #5) Acid Gas Free — C7+ as Received

Gas Compressibility @ 101.325 kPa & 15°C

Hydrogen Sulphide

On Site		In Lab	
Gas/liquid (ppm)	Tubes (ppm/%)	<1 Gas/liquid (ppm)	Tubes (ppm/%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks

Maxxam Analytics Inc.

GAS ANALYSIS (INCLUDING OXYGEN

A539120:932242

Sample Point I.D. | Client I.D. | Meter Number | Laboratory Number

WIEBE ENVIRONMENTAL SERVICES INC. | 0002-18-043-27-W4M | 100/02-18-043-27W4/0 **

Operator Name | LSD | Well ID

CAMPBELL 0002-18-043-27-W4M | GT | WIEBE

Asset Name | Name of Sampler | Company

HYDRANT | Tedlar Bag

Field or Area | Pool or Zone | Sample Point | Container Identity | Pressure

Test Reference | Interval 1 | Interval 2 | Interval 3 | Elevations (m) | Sample Gathering Point | Solution Gas

From

Test Type | Multiple Recovery | To | KB | GRD | Well Fluid Status | Well Status Mode

Production Rates | Gauge Pressures kPa | Temperature C 18.4 | Well Status Type | Well Type

Water m3/d | Oil m3/d | Gas 10³m³/d | Source | As Received | Source | As Received | Gas or Condensate Project | License No.

2005/09/26 | 2005/09/26 | 2005/10/06 | 2005/10/06 | MW

Date Sampled Start | Date Sampled End | Date Received | Date Reported | Date Revision Reported | Analyst

COMPOSITION

COMPONENT	MOLE FRACTION AS REC'D	MOLE FRACTION AIR FREE	MOLE FRACTION AIR FREE ACID GAS FREE
H2	0.0000	0.0000	0.0000
He	Trace	Trace	1.0000
O2	0.1886		0.0000
N2	0.6718	0.0000	0.0000
CO			
CO2	0.1396	1.0000	
H2S	0.0000	0.0000	
C1	0.0000	0.0000	0.0000
C2	0.0000	0.0000	0.0000
C3	0.0000	0.0000	0.0000
IC4	0.0000	0.0000	0.0000
NC4	0.0000	0.0000	0.0000
IC5	0.0000	0.0000	0.0000
NC5	0.0000	0.0000	0.0000
C6	0.0000	0.0000	0.0000
C7+	0.0000	0.0000	0.0000
TOTAL	1.0000	1.0000	1.0000

PROPERTIES

Calculated Mole Weight (Moisture Free as Sampled): 44.0

Calculated Relative Densities: 1.519 (Moisture Free as Sampled) | 0.138 (Moisture & Acid Gas Free)

Calculated Pseudo Critical Properties

As Sampled		Acid Gas Free	
7374.0	304.1	227.5	5.2

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: 0.00 | 0.00

Gas Compressibility @ 101.325 kPa & 15°C: 1.0023

Hydrogen Sulphide

On Site	In Lab
<1	

On site analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependent.

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks

TABLE 1. GROUNDWATER QUALITY RESULTS
ROUTINE and INDICATOR PARAMETERS
Penn West Petroleum - CAMPBELL RESIDENCE 02-18-043-27 W4M

Sample Name	Sample Date	Conductivity (µS/cm)	pH	TDS (mg/L)	HCO_3 (mg/L)	CO_3 (mg/L)	Cl (mg/L)	SO_4 (mg/L)	NO_2/NO_3-N (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Na (mg/L)	Fe (mg/L)	Mn (mg/L)
Water Supply Well (Well1)	22-Sep-05	910	8.22	547	613	ND	13.3	27.7	ND	55.2	20.9	2.8	125	0.30	0.059
CDWQ GUIDELINES:		NS	6.5-8.5[AO]	500[AO]	NS	NS	250[AO]	500[AO]	10[MAC]	NS	NS	NS	200[AO]	0.3[AO]	0.05[AO]

Note: ND - Not Detected
NS - No Standards
MAC - Maximum Acceptable Concentration
AO - Aesthetic Objective
CDWQ - Guidelines for Canadian Drinking Water Quality (CCME, 1999)
Shading indicates values above CDWQ Guideline levels.

TABLE 2. GROUNDWATER QUALITY RESULTS
DISSOLVED HYDROCARBON ANALYSIS
Penn West Petroleum - CAMPBELL RESIDENCE 02-18-043-27 W4M

Sample Name	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	F1 (mg/L)	F2 (mg/L)
Water Supply Well (Well1)	22-Sep-05	ND	ND	ND	ND	ND	ND
ALBERTA GUIDELINES:		0.005	0.024	0.0024	0.3	4.6	2.1

Note: ND - Not Detected
NA - Not Analyzed
NS - No Standards
Alberta guidelines - Alberta Soil and Water Quality Guidelines for Hydrocarbons at Upstream Oil and Gas Facilities (Alberta Environment, 2001).
Shading indicates values above applicable guidelines

Maxxam Analytics Inc

Water Well Gas Summary

Maxxam File: A539120*932238
Date: October 2, 2005

Water Well location: 02-18-043-24-W4M
Water Well Name: Campbell Residence

Analysis Summary

Table1: Air components

	Hydrogen (H2)	Helium (He)	Oxygen (O2)	Nitrogen (N2)	Carbon Dioxide (CO2)
Percent (%)	0.00	Trace	17.45	0.00	57.41

Table 2: Hydrocarbon Component

	Methane (C1)	Ethane (C2)	Propane (C3)	N-Butane (NC4)	Butane (C4)
Percent (%)	25.14	Trace	N/D	N/D	N/D

Table 3: Stable Carbon Isotope

	$\delta^{13}C$ C_1	$\delta^{13}C$ C_2	$\delta^{13}C$ C_3	$\delta^{13}C$ i-C_4	$\delta^{13}C$ n-C_4	$\delta^{13}C$ CO_2
	-58.35	-31.19	-26.58	-27.85	-25.86	-22.38

***N/D= not detected

Stable Carbon Isotope Interpretation

	Maxxam	U of A
Possible Depth (m)	600-650	N/A
Possible Geologic Formation:	Viking	Viking

Maxxam's Remarks:

- Based on a comparison of the carbon isotope data to the database a likely soucre is the viking formation (600m-650m)

Dr. Karlis Muehlenbachs' Remarks (University of Alberta):

- This gas has a isotope fingerprint of a relatively deep gas, perhaps the Viking.

- Maxxam's interpretation and remarks were done by Margaret Woodruff
- Email: margaret.woodruff@maxxamanalytics.com
- The University of Alberta interpretation and remarks were done by Dr. Karlis Muehlenbachs
- Email: karlis.muehlenbachs@ualberta.ca

Dr. Karlis Muehlenbachs' Carbon Isotope Abundance

31-sept-05	LSD	SEC	T	R	M	Company	Sample ID	13C1	13C2	13C3	13iC4	13nC4	CO2
house	2	18	43	27	4	wiebe	A539120-932238	-58.35	-31.19	-26.58	-27.85	-25.86	-22.38

This gas has an isotope fingerprint of a relatively deep gas, perhaps from the Viking.

Carbon Isotope Abundance and Interpertaions were done by Dr. Karlis Muehlenbachs at the University of Alberta
Email: karlis.muehlenbachs@ualberta.ca

NORWEST LABS

Analytical Report

Norwest Labs
Bay 9, 2712-37 Avenue
Calgary, AB. T1Y-5L3
Phone: (403) 291-2022
Fax: (403) 291-2021

Bill to: Newpark Environmental Services
Report to: Newpark Environmental Services
300, 635 - 6 Avenue S. W.
Calgary, AB, Canada
T2P 0T5
Attn: Steffen Spoelstra
Sampled By:
Company:

Project ID: Samson 11-7 WWE
Name:
Location:
LSD: 11-7-43-27 W4M
P.O.:
Acct. Code:

NWL Lot ID: 426281
Control Number: E 253495
Date Received: Nov 24, 2005
Date Reported: Nov 29, 2005
Report Number: 787547

NWL Number	426281-7	Trailer well
Sample Description	7 / 11-7-43-27	
Sample Matrix	Water	

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Physical and Aggregate Properties						
Colour	Apparent, Potable	Colour units	6	5	15	Acceptable
Turbidity		NTU	8.5	0.1	5	Above Asethetic
Temperature of observed pH		°C	21.1	-		n/a
Routine Water						
pH			8.62	-	6.5 - 8.5	High
Electrical Conductivity		µS/cm at 25 C	1220	1		n/a
Calcium	Extractable	mg/L	2.2	0.2		n/a
Magnesium	Extractable	mg/L	0.4	0.1		n/a
Sodium	Extractable	mg/L	288	0.4	200	Above Aesthetic
Potassium	Extractable	mg/L	0.5	0.4		n/a
Iron	Extractable	mg/L	0.08	0.03	0.3	Acceptable
Manganese	Extractable	mg/L	<0.005	0.005	0.05	Acceptable
Chloride	Dissolved	mg/L	1.6	0.4	250	Acceptable
Fluoride		mg/L	0.48	0.05	1.5	Pass
Nitrate - N		mg/L	<0.01	0.01	10	Pass
Nitrite - N		mg/L	<0.005	0.005	1	Pass
Nitrate and Nitrite - N		mg/L	<0.02	0.02	10	Pass
Sulfate (SO4)		mg/L	123	0.9	500	Acceptable
Hydroxide		mg/L	<5	5		n/a
Carbonate		mg/L	30	6		n/a
Bicarbonate		mg/L	603	5		n/a
P-Alkalinity	as CaCO3	mg/L	25	5		n/a
T-Alkalinity	as CaCO3	mg/L	545	5	250-650	Acceptable
Total Dissolved Solids		mg/L	743	1	500	Above Aesthetic
Hardness	as CaCO3	mg/L	7	-		Soft
Ionic Balance		%	94	-		n/a

NORWEST LABS

Analytical Report

Norwest Labs
Bay 9, 2712-37 Avenue
Calgary, AB. T1Y-5L3
Phone: (403) 291-2022
Fax: (403) 291-2021

Bill to: Newpark Environmental Services
Report to: Newpark Environmental Services
300, 635 - 6 Avenue S. W.
Calgary, AB, Canada
T2P 0T5
Attn: Steffen Spoelstra
Sampled By:
Company:

Project
ID: Samson 11-7 WWE
Name:
Location:
LSD: 11-7-43-27 W4M
P.O.:
Acct. Code:

NWL Lot ID: 426281
Control Number: E 253495
Date Received: Nov 24, 2005
Date Reported: Nov 29, 2005
Report Number: 787547

NWL Number	426281-9	Trailer well
Sample Description	9 / 11-7-43-27	
Sample Matrix	Water	

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Mercury	Extractable	mg/L	<0.0001	0.0001	0.001	Pass
Aluminum	Extractable	mg/L	0.139	0.005	0.1	Above Aesthetic
Antimony	Extractable	mg/L	<0.0002	0.0002	0.006	Pass
Arsenic	Extractable	mg/L	<0.0002	0.0002	0.025	Pass
Barium	Extractable	mg/L	0.038	0.001	1	Pass
Boron	Extractable	mg/L	0.354	0.002	5	Pass
Cadmium	Extractable	mg/L	<0.00001	0.00001	0.005	Pass
Chromium	Extractable	mg/L	0.0016	0.0005	0.05	Pass
Copper	Extractable	mg/L	0.001	0.001	1	Acceptable
Lead	Extractable	mg/L	0.0007	0.0001	0.01	Pass
Selenium	Extractable	mg/L	<0.0002	0.0002	0.01	Pass
Uranium	Extractable	mg/L	<0.0005	0.0005	0.02	Pass
Zinc	Extractable	mg/L	0.004	0.001	5	Acceptable

Approved by: R L Neumann

Randy Neumann, BSc
Vice President, Environmental

NORWEST LABS

Analytical Report

Norwest Labs
Bay 9, 2712-37 Avenue N.E.
Calgary, AB. T1Y-5L3
Phone: (403) 291-2022
Fax: (403) 291-2021

Bill to: Newpark Environmental Services
Report to: Newpark Environmental Services
300, 635 - 6 Avenue S. W.
Calgary, AB, Canada
T2P 0T5
Attn: Steffen Spoelstra
Sampled By:
Company:

Project
ID: Samson 11-7 WWE
Name:
Location:
LSD: 11-7-43-27 W4M
P.O.:
Acct. Code:

NWL Lot ID: 426281
Control Number: E 253495
Date Received: Nov 24, 2005
Date Reported: Nov 29, 2005
Report Number: 787547

NWL Number	426281-8	Trailer well
Sample Description	8 / 11-7-43-27	
Sample Matrix	Water	

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Microbiological Analysis						
Total Coliforms	Membrane Filtration	CFU/100 mL	28	1	<1	Fail
Fecal Coliforms	Membrane Filtration	CFU/100 mL	<1	-	<1	Pass

NORWEST LABS

Analytical Report

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Report to: Newpark Environmental Services
300, 635 - 6 Avenue S. W.
Calgary, AB, Canada
T2P 0T5
Attn: Steffen Spoelstra
Sampled By:
Company:

Project
ID: Samson 11-7 WWE
Name:
Location:
LSD: 11-7-43-27 W4M
P.O.:
Acct. Code:

NWL Lot ID: 426281
Control Number: E 253495
Date Received: Nov 24, 2005
Date Reported: Nov 29, 2005
Report Number: 787547

NWL Number	426281-4	House well
Sample Description	4 / 11-7-43-27	
Sample Matrix	Water	

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Physical and Aggregate Properties						
Colour	Apparent, Potable	Colour units	7	5	15	Acceptable
Turbidity		NTU	0.8	0.1	5	Acceptable
Temperature of observed pH		°C	21.4	-		n/a
Routine Water						
pH			8.24	-	6.5 - 8.5	Acceptable
Electrical Conductivity		µS/cm at 25 C	1050	1		n/a
Calcium	Extractable	mg/L	13.5	0.2		n/a
Magnesium	Extractable	mg/L	3.4	0.1		n/a
Sodium	Extractable	mg/L	236	0.4	200	Above Aesthetic
Potassium	Extractable	mg/L	1.5	0.4		n/a
Iron	Extractable	mg/L	0.11	0.03	0.3	Acceptable
Manganese	Extractable	mg/L	0.010	0.005	0.05	Acceptable
Chloride	Dissolved	mg/L	13.0	0.4	250	Acceptable
Fluoride		mg/L	0.19	0.05	1.5	Pass
Nitrate - N		mg/L	<0.01	0.01	10	Pass
Nitrite - N		mg/L	<0.005	0.005	1	Pass
Nitrate and Nitrite - N		mg/L	<0.02	0.02	10	Pass
Sulfate (SO4)		mg/L	59.6	0.9	500	Acceptable
Hydroxide		mg/L	<5	5		n/a
Carbonate		mg/L	<6	6		n/a
Bicarbonate		mg/L	619	5		n/a
P-Alkalinity	as CaCO3	mg/L	<5	5		n/a
T-Alkalinity	as CaCO3	mg/L	507	5	250-650	Acceptable
Total Dissolved Solids		mg/L	632	1	500	Above Aesthetic
Hardness	as CaCO3	mg/L	48	-		Soft
Ionic Balance		%	96	-		n/a

NORWEST LABS

Analytical Report

Norwest Labs
Bay 9, 2712-37 Avenue N.E.
Calgary, AB. T1Y-5L3
Phone: (403) 291-2022
Fax: (403) 291-2021

Bill to: Newpark Environmental Services
Report to: Newpark Environmental Services
300, 635 - 6 Avenue S. W.
Calgary, AB, Canada
T2P 0T5
Attn: Steffen Spoelstra
Sampled By:
Company:

Project ID: Samson 11-7 WWE
Name:
Location:
LSD: 11-7-43-27 W4M
P.O.:
Acct. Code:

NWL Lot ID: 426281
Control Number: E 253495
Date Received: Nov 24, 2005
Date Reported: Nov 29, 2005
Report Number: 787547

NWL Number	426281-5	House well
Sample Description	5 / 11-7-43-27	
Sample Matrix	Water	

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Microbiological Analysis						
Total Coliforms	Membrane Filtration	CFU/100 mL	<1	1	<1	Pass
Fecal Coliforms	Membrane Filtration	CFU/100 mL	<1	-	<1	Pass

NORWEST LABS

Analytical Report

Norwest Labs
Bay 9, 2712-37 Avenue N.E.
Calgary, AB. T1Y-5L3
Phone: (403) 291-2022
Fax: (403) 291-2021

Bill to: Newpark Environmental Services
Report to: Newpark Environmental Services
300, 635 - 6 Avenue S. W.
Calgary, AB, Canada
T2P 0T5
Attn: Steffen Spoelstra
Sampled By:
Company:

Project ID: Samson 11-7 WWE
Name:
Location:
LSD: 11-7-43-27 W4M
P.O.:
Acct. Code:

NWL Lot ID: 426281
Control Number: E 253495
Date Received: Nov 24, 2005
Date Reported: Nov 29, 2005
Report Number: 787547

NWL Number	426281-6
Sample Description	6 / 11-7-43-27 House well
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Mercury	Extractable	mg/L	<0.0001	0.0001	0.001	Pass
Aluminum	Extractable	mg/L	0.008	0.005	0.1	Acceptable
Antimony	Extractable	mg/L	<0.0002	0.0002	0.006	Pass
Arsenic	Extractable	mg/L	<0.0002	0.0002	0.025	Pass
Barium	Extractable	mg/L	0.041	0.001	1	Pass
Boron	Extractable	mg/L	0.252	0.002	5	Pass
Cadmium	Extractable	mg/L	<0.00001	0.00001	0.005	Pass
Chromium	Extractable	mg/L	0.0013	0.0005	0.05	Pass
Copper	Extractable	mg/L	0.004	0.001	1	Acceptable
Lead	Extractable	mg/L	0.0008	0.0001	0.01	Pass
Selenium	Extractable	mg/L	<0.0002	0.0002	0.01	Pass
Uranium	Extractable	mg/L	<0.0005	0.0005	0.02	Pass
Zinc	Extractable	mg/L	0.091	0.001	5	Acceptable

NORWEST LABS

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Calgary, AB. T1Y-5L3
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Fax: (403) 291-2021

Bill to: Newpark Environmental Services
Report to: Newpark Environmental Services
300, 635 - 6 Avenue S. W.
Calgary, AB, Canada
T2P 0T5
Attn: Steffen Spoelstra
Sampled By:
Company:

Project ID: Samson 11-7 WWE
Name:
Location:
LSD: 11-7-43-27 W4M
P.O.:
Acct. Code:

NWL Lot ID: 426281
Control Number: E 253495
Date Received: Nov 24, 2005
Date Reported: Nov 29, 2005
Report Number: 787547

NWL Number	426281-1	
Sample Description	1 / 11-7-43-27	Yard well
Sample Matrix	Water	

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Physical and Aggregate Properties						
Colour	Apparent, Potable	Colour units	7	5	15	Acceptable
Turbidity		NTU	1.6	0.1	5	Acceptable
Temperature of observed pH		°C	21.4	-		n/a
Routine Water						
pH			8.42	-	6.5 - 8.5	Acceptable
Electrical Conductivity		µS/cm at 25 C	1260	1		n/a
Calcium	Extractable	mg/L	6.7	0.2		n/a
Magnesium	Extractable	mg/L	1.3	0.1		n/a
Sodium	Extractable	mg/L	291	0.4	200	Above Aesthetic
Potassium	Extractable	mg/L	1.0	0.4		n/a
Iron	Extractable	mg/L	0.11	0.03	0.3	Acceptable
Manganese	Extractable	mg/L	0.008	0.005	0.05	Acceptable
Chloride	Dissolved	mg/L	4.5	0.4	250	Acceptable
Fluoride		mg/L	0.23	0.05	1.5	Pass
Nitrate - N		mg/L	<0.01	0.01	10	Pass
Nitrite - N		mg/L	<0.005	0.005	1	Pass
Nitrate and Nitrite - N		mg/L	<0.02	0.02	10	Pass
Sulfate (SO4)		mg/L	77.9	0.9	500	Acceptable
Hydroxide		mg/L	<5	5		n/a
Carbonate		mg/L	16	6		n/a
Bicarbonate		mg/L	703	5		n/a
P-Alkalinity	as CaCO3	mg/L	14	5		n/a
T-Alkalinity	as CaCO3	mg/L	604	5	250-650	Acceptable
Total Dissolved Solids		mg/L	744	1	500	Above Aesthetic
Hardness	as CaCO3	mg/L	22	-		Soft
Ionic Balance		%	95	-		n/a

NORWEST LABS

Analytical Report

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Report to: Newpark Environmental Services
300, 635 - 6 Avenue S. W.
Calgary, AB, Canada
T2P 0T5
Attn: Steffen Spoelstra
Sampled By:
Company:

Project ID: Samson 11-7 WWE
Name:
Location:
LSD: 11-7-43-27 W4M
P.O.:
Acct. Code:

NWL Lot ID: 426281
Control Number: E 253495
Date Received: Nov 24, 2005
Date Reported: Nov 29, 2005
Report Number: 787547

NWL Number	426281-2	Yard well
Sample Description	2 / 11-7-43-27	
Sample Matrix	Water	

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Microbiological Analysis						
Total Coliforms	Membrane Filtration	CFU/100 mL	<1	1	<1	Pass
Fecal Coliforms	Membrane Filtration	CFU/100 mL	<1	-	<1	Pass

NORWEST LABS

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300, 635 - 6 Avenue S. W.
Calgary, AB, Canada
T2P 0T5
Attn: Steffen Spoelstra
Sampled By:
Company:

Project
ID: Samson 11-7 WWE
Name:
Location:
LSD: 11-7-43-27 W4M
P.O.:
Acct. Code:

NWL Lot ID: 426281
Control Number: E 253495
Date Received: Nov 24, 2005
Date Reported: Nov 29, 2005
Report Number: 787547

NWL Number	426281-3
Sample Description	3 / 11-7-43-27 Yard well
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Mercury	Extractable	mg/L	<0.0001	0.0001	0.001	Pass
Aluminum	Extractable	mg/L	0.006	0.005	0.1	Acceptable
Antimony	Extractable	mg/L	<0.0002	0.0002	0.006	Pass
Arsenic	Extractable	mg/L	<0.0002	0.0002	0.025	Pass
Barium	Extractable	mg/L	0.039	0.001	1	Pass
Boron	Extractable	mg/L	0.321	0.002	5	Pass
Cadmium	Extractable	mg/L	<0.00001	0.00001	0.005	Pass
Chromium	Extractable	mg/L	0.0016	0.0005	0.05	Pass
Copper	Extractable	mg/L	0.053	0.001	1	Acceptable
Lead	Extractable	mg/L	0.0014	0.0001	0.01	Pass
Selenium	Extractable	mg/L	<0.0002	0.0002	0.01	Pass
Uranium	Extractable	mg/L	<0.0005	0.0005	0.02	Pass
Zinc	Extractable	mg/L	0.008	0.001	5	Acceptable

GCHEM Ltd: Chemical & Isotopic Forensic Fingerprinting Natural Gas in Water Wells **Table-1**

Shawn and Ronaline Campbell Domestic Water Well (SRC-DWW) - SE 1/4 (Lsd 02) 18-043-27W4M

Gas Sample Collection Summary Water-Degasser (FTC): SRC-DWW July 21-2006

Well Location	GCHEM Sample ID	Test Date	Sample Time	WW Purge Volume	Sample Type	GCHEM Container	Sampling-Collection Comments
SE/4 02-18-043-27W4M	SRC-DWW	July 21-06	12:25		H/S Gas FTC	60ml	collected 60ml H/S gas from FTC
					H/S Gas FTC	125ml	collected 125ml H/S gas from FTC
			12:35		H/S Gas FTC	60ml	collected 60ml H/S gas from FTC
			18:15		H/S Gas FTC	125ml	collected 125ml H/S gas from FTC
					H/S Gas FTC	60ml	collected 60ml H/S gas from FTC
					H/S Gas FTC	60ml	collected 60ml H/S gas from FTC
			19:13		H/S Gas FTC	125ml	collected 125ml H/S gas from FTC
					H/S Gas FTC	60ml	collected 60ml H/S gas from FTC
			19:18		H/S Gas FTC	125ml	collected 125ml H/S gas from FTC
			19:21		H/S Gas FTC	125ml	collected 125ml H/S gas from FTC
			19:26		H/S Gas FTC	125ml	collected 125ml H/S gas from FTC
			19:42		H/S Gas FTC	125ml	collected 125ml H/S gas from FTC
			19:43		H/S Gas FTC	125ml	collected 125ml H/S gas from FTC
			19:44		H/S Gas FTC	125ml	collected 125ml H/S gas from FTC
						14	Total Samples Collected

Shawn & Ronaline Campbell SE/4 (Lsd 02)-18-043-27W4M Domestic Water Well (SRC-DWW): Total Drill Depth: 115ft / 35.1m **TABLE-2**

Molecular & Carbon Isotope Compositions of Light Alkane Gases: On-Site Water Degasser (FTC): Tested July 21-2006

Molecular Compositions

Gas Component / Spl.Time / Wtr. Purge Vol.	FTC-1 12:25 __ L	FTC-2 12:25 __ L	FTC-1 12:35 __ L	FTC-2 12:35 __ L	FTC-1 18:15 __ L	FTC-1 19:13 __ L	FTC-2 19:13 __ L	FTC-1 19:18 __ L	FTC-1 19:21 __ L	FTC-1 19:22 __ L	FTC-1 19:26 __ L	FTC-1 19:42 __ L	FTC-1 19:43 __ L	FTC-1 19:44 __ L
H_2	25.64	151.39	78.56	83.92	70.06	63.28	160.58	36.70	33.33	36.98	2790.2	21.68	22.47	22.04
He	163.73	24.50	85.97	76.90	207.55	154.18	66.29	148.50	160.67	170.02	40.54	148.57	153.24	151.30
N_2	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm
O_2	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm
CO_2	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm
*H_2S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CH_4	487648	485077	139040	131168	216958	162568	155900	173757	183225	183687	87074	133009	133966	137866
C_2H_6	303.5	294.8	717.0	663.8	1072.2	839.7	825.0	923.1	960.6	955.4	516.3	654.9	658.2	681.7
C_2H_4	-nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	2.76	nd	nd	nd
C_3H_8	86.27	79.97	231.14	205.29	267.41	194.46	195.84	188.71	198.72	186.9	111.20	152.0	162.53	160.94
C_3H_6	0.11	0.13	0.10	0.12	0.12	0.18	0.15	0.08	0.08	0.08	0.29	0.20	nd	nd
i-C_4H_{10}	34.98	31.05	102.36	87.95	133.69	91.88	94.63	93.60	99.77	97.66	44.34	75.76	79.45	81.64
n-C_4H_{10}	6.01	4.91	16.82	13.45	20.03	14.11	15.19	14.04	14.88	14.2	6.86	11.27	13.56	11.98
i-C_5H_{12}	3.29	1.50	7.97	4.80	9.73	5.55	7.80	6.92	7.53	7.31	2.21	5.45	6.44	5.89
n-C_5H_{12}	0.10	0.07	4.88	0.15	0.30	0.30	0.60	0.22	0.22	0.20	0.11	0.29	>0.01	>0.01
*C_6+	4.94	2.05	3.09	1.77	2.86	5.06	5.39	0.56	0.68	0.61	5.60	0.16	>0.10	>0.01
CH_4 / SUM C_2+	1232.1	1277.6	144.1	148.6	159.6	155.1	150.5	154.3	156.0	158.8	137.3	162.6	160.6	161.3
C_2H_6/ SUM C_3+	3.3	3.5	2.9	3.0	3.7	4.0	3.9	4.6	4.5	4.8	4.4	4.0	3.7	3.9
C_3H_8 / C_4H_{10}	14.35	16.29	13.74	15.26	13.36	13.78	12.89	13.44	13.35	13.19	16.21	13.48	11.99	13.43
NG Vol % CH_4	99.92	99.92	99.31	99.33	99.38	99.36	99.34	99.36	99.36	99.37	99.28	99.39	99.38	99.38
NG Vol % C_2+	0.08	0.08	0.69	0.67	0.62	0.64	0.66	0.64	0.64	0.63	0.72	0.61	0.62	0.62

Isotopic Compositions

Isotopic Comp. / Spl.Time / Wtr. Purge Vol.	FTC-1 12:25 __ L	FTC-2 12:25 __ L	FTC-1 12:35 __ L	FTC-2 12:35 __ L	FTC-1 18:15 __ L	FTC-1 19:13 __ L	FTC-2 19:13 __ L	FTC-1 19:18 __ L	FTC-1 19:21 __ L	FTC-1 19:22 __ L	FTC-1 19:26 __ L	FTC-1 19:42 __ L	FTC-1 19:43 __ L	FTC-1 19:44 __ L
$\delta^{13}C$ CH_4	-58.01					-58.37								
$\delta^{13}C$ C_2H_6	-31.10					-31.46								
$\delta^{13}C$ C_3H_8	-26.82					-27.11								
$\delta^{13}C$ i-C_4H_{10}	-22.53					-22.12								
$\delta^{13}C$ n-C_4H_{10}	nd					-27.43								
$\delta^{13}C$ i-C_5H_{12}	nd					-23.63								
$\delta^{13}C$ n-C_5H_{12}	nd					-26.71								
$\delta^{13}C$ CO_2	-23.69					-28.27								
δD CH_4	nm					nm								
δD C_2H_6	nm					nm								
δD C_3H_8	nm					nm								

NORWEST LABS

Analytical Report

Norwest Labs
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Bill to: Real Resources Inc.
Report to: Real Resources Inc.
700, 555 - 4 Avenue S. W.
Calgary, AB, Canada
T2P 3E7
Attn: Dean Tucker
Sampled By: Shane Way
Company: Golder

Project ID:
Name: Campbell Residence
Location: Rimbey
LSD: 18-43-27-W4M
P.O.:
Acct. Code:

NWL Lot ID: 479929
Control Number: E 291352
Date Received: Jul 22, 2006
Date Reported: Aug 28, 2006
Report Number: 880323
Preliminary

NWL Number	479929-1
Sample Date	Jul 21, 2006 4:30:00PM
Sample Description	Well #1 / SE-18-43-27 W4M / Rimbey / 5C
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Metals Dissolved						
Mercury	Dissolved	mg/L	<0.0001	0.0001	0.001	Pass
Aluminum	Dissolved	mg/L	0.044	0.005	0.1	Acceptable
Antimony	Dissolved	mg/L	0.0004	0.0002	0.006	Pass
Arsenic	Dissolved	mg/L	0.0006	0.0002	0.01	Pass
Barium	Dissolved	mg/L	0.107	0.001	1.0	Pass
Beryllium	Dissolved	mg/L	<0.0001	0.0001		n/a
Bismuth	Dissolved	mg/L	<0.0005	0.0005		n/a
Boron	Dissolved	mg/L	0.159	0.002	5.0	Pass
Cadmium	Dissolved	mg/L	<0.00001	0.00001	0.005	Pass
Chromium	Dissolved	mg/L	0.0024	0.0005	0.05	Pass
Cobalt	Dissolved	mg/L	<0.0001	0.0001		n/a
Copper	Dissolved	mg/L	<0.001	0.001	1.0	Acceptable
Lead	Dissolved	mg/L	<0.0001	0.0001	0.01	Pass
Lithium	Dissolved	mg/L	0.048	0.001		n/a
Molybdenum	Dissolved	mg/L	<0.001	0.001		n/a
Nickel	Dissolved	mg/L	<0.0005	0.0005		n/a
Selenium	Dissolved	mg/L	<0.0002	0.0002	0.01	Pass
Silver	Dissolved	mg/L	<0.0001	0.0001		n/a
Strontium	Dissolved	mg/L	1.07	0.001		n/a
Thallium	Dissolved	mg/L	<0.00005	0.00005		n/a
Tin	Dissolved	mg/L	<0.001	0.001		n/a
Titanium	Dissolved	mg/L	0.0008	0.0005		n/a
Uranium	Dissolved	mg/L	<0.0005	0.0005	0.02	Pass
Vanadium	Dissolved	mg/L	0.0065	0.0001		n/a
Zinc	Dissolved	mg/L	0.005	0.001	5.0	Acceptable
Subsample	Field Filtered		Yes	-	-	n/a
Metals Total						
Iron	Total	mg/L	0.3	0.1	0.3	Acceptable
Manganese	Total	mg/L	0.078	0.005	0.05	Above Aesthetic
Microbiological Analysis						
Total Coliforms	Membrane Filtration	CFU/100 mL	<1	1	<1	Pass
Sulfate Reducing Bacteria	MPN	MPN/mL	9.3	0.3		n/a

NORWEST LABS

Analytical Report

Norwest Labs
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Attn: Dean Tucker
Sampled By: Shane Way
Company: Golder

Project ID:
Name: Campbell Residence
Location: Rimbey
LSD: 18-43-27-W4M
P.O.:
Acct. Code:

NWL Lot ID: 479929
Control Number: E 291352
Date Received: Jul 22, 2006
Date Reported: Aug 28, 2006
Report Number: 880323
Preliminary

NWL Number	479929-1
Sample Date	Jul 21, 2006 4:30:00PM
Sample Description	Well #1 / SE-18-43-27 W4M / Rimbey / 5C
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Microbiological Analysis - Continued						
Fecal Coliforms	Membrane Filtration	CFU/100 mL	<1	-	<1	Pass
Approximate Iron Related Bacteria Population	BART Kit	CFU/mL	9000	-		n/a
Physical and Aggregate Properties						
Colour	Apparent, Potable	Colour units	10	5	15	Acceptable
Turbidity		NTU	1.6	0.1	5	Acceptable
Temperature of observed pH		°C	19.8	-		n/a
Routine Water						
pH			7.84	-	6.5 - 8.5	Acceptable
Electrical Conductivity		µS/cm at 25 C	908	1		n/a
Calcium	Dissolved	mg/L	66.4	0.2		n/a
Magnesium	Dissolved	mg/L	29.2	0.1		n/a
Sodium	Dissolved	mg/L	107	0.4	200	Acceptable
Potassium	Dissolved	mg/L	3.4	0.4		n/a
Iron	Dissolved	mg/L	0.38	0.01	0.3	Above Aesthetic
Manganese	Dissolved	mg/L	0.084	0.005	0.05	Above Aesthetic
Chloride	Dissolved	mg/L	11.8	0.4	250	Acceptable
Fluoride		mg/L	0.20	0.05	1.5	Pass
Nitrate - N		mg/L	<0.01	0.01	10	Pass
Nitrite - N		mg/L	<0.005	0.005	1	Pass
Nitrate and Nitrite - N		mg/L	<0.02	0.02	10	Pass
Sulfate (SO4)	Dissolved	mg/L	37.4	0.9	500	Acceptable
Hydroxide		mg/L	<5	5		n/a
Carbonate		mg/L	<6	6		n/a
Bicarbonate		mg/L	567	5		n/a
P-Alkalinity	as CaCO3	mg/L	<5	5		n/a
T-Alkalinity	as CaCO3	mg/L	465	5	250-650	Acceptable
Total Dissolved Solids	Calculated	mg/L	534	1		n/a
Hardness	Dissolved as CaCO3	mg/L	286	-		n/a
Ionic Balance	Dissolved	%	101	-		n/a

NORWEST LABS

Analytical Report

Norwest Labs
Bay 9, 2712-37 Avenue N.E.
Calgary, AB. T1Y-5L3
Phone: (403) 291-2022
Fax: (403) 291-2021

Bill to: Real Resources Inc.
Report to: Real Resources Inc.
700, 555 - 4 Avenue S. W.
Calgary, AB, Canada
T2P 3E7
Attn: Dean Tucker
Sampled By: Shane Way
Company: Golder

Project ID:
Name: Campbell Residence
Location: Rimbey
LSD: 18-43-27-W4M
P.O.:
Acct. Code:

NWL Lot ID: **479929**
Control Number: E 291352
Date Received: Jul 22, 2006
Date Reported: Aug 28, 2006
Report Number: 880323
Preliminary

NWL Number	479929-1
Sample Date	Jul 21, 2006 4:30:00PM
Sample Description	Well #1 / SE-18-43-27 W4M / Rimbey / 5C
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Methane Content of Water						
Methane	Volume Gas / Volume Liquid	mL gas/m³ water	7840	5		n/a
Methane	Mass / Volume Liquid	mg/L	5.14	0.003		n/a

NORWEST LABS

Analytical Report

Norwest Labs
Bay 9, 2712-37 Avenue N.E.
Calgary, AB. T1Y-5L3
Phone: (403) 291-2022
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Bill to: Real Resources Inc.
Report to: Real Resources Inc.
700, 555 - 4 Avenue S. W.
Calgary, AB, Canada
T2P 3E7
Attn: Dean Tucker
Sampled By: Shane Way
Company: Golder

Project ID:
Name: Campbell Residence
Location: Rimbey
LSD: 18-43-27-W4M
P.O.:
Acct. Code:

NWL Lot ID: 479929
Control Number: E 291352
Date Received: Jul 22, 2006
Date Reported: Aug 28, 2006
Report Number: 880323
Preliminary

NWL Number	479929-2
Sample Date	Jul 21, 2006 4:30:00PM
Sample Description	Well #1 - Gas
Sample Matrix	Gases

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Isotopic Analyses						
delta 13CO2		per mil dev.	-24.17	-		n/a
delta 13C1		per mil dev.	-57.50	-		n/a
delta 13C2		per mil dev.	-30.75	-		n/a
delta 13C3		per mil dev.	-26.48	-		n/a
delta 13iC4		per mil dev.	-25.62	-		n/a
delta 13nC4		per mil dev.	-24.75	-		n/a
Gas Analysis - Not Air Corrected						
Helium	Not air corrected	Mole %	0.02	0.01		n/a
Hydrogen	Not air corrected	Mole %	<0.01	0.01		n/a
Carbon Dioxide	Not air corrected	Mole %	2.44	0.01		n/a
Oxygen	Not air corrected	Mole %	2.88	0.01		n/a
Nitrogen	Not air corrected	Mole %	72.14	0.01		n/a
Methane	Not air corrected	Mole %	22.35	0.01		n/a
Ethane	Not air corrected	Mole %	0.12	0.01		n/a
Propane	Not air corrected	Mole %	0.03	0.01		n/a
Iso-Butane	Not air corrected	Mole %	0.01	0.01		n/a
n-Butane	Not air corrected	Mole %	<0.01	0.01		n/a
Iso-Pentane	Not air corrected	Mole %	<0.01	0.01		n/a
n-Pentane	Not air corrected	Mole %	<0.01	0.01		n/a
Hexanes	Not air corrected	Mole %	<0.01	0.01		n/a
Heptanes	Not air corrected	Mole %	<0.01	0.01		n/a
Octanes	Not air corrected	Mole %	<0.01	0.01		n/a
Nonanes	Not air corrected	Mole %	<0.01	0.01		n/a
Decanes +	Not air corrected	Mole %	<0.01	0.01		n/a
Hydrogen Sulfide	Calculated Value	ppm	9.9	-		n/a

Approved by:

NORWEST LABS

Analytical Report

Norwest Labs
Bay 9, 2712-37 Avenue N.E.
Calgary, AB. T1Y-5L3
Phone: (403) 291-2022
Fax: (403) 291-2021

Bill to: Real Resources Inc.
Report to: Real Resources Inc.
700, 555 - 4 Avenue S. W.
Calgary, AB, Canada
T2P 3E7
Attn: Dean Tucker
Sampled By: Shane Way
Company: Golder

Project ID:
Name: Campbell Residence
Location: Rimbey
LSD: 18-43-27-W4M
P.O.:
Acct. Code:

NWL Lot ID: 479930
Control Number: E 291352
Date Received: Jul 22, 2006
Date Reported: Aug 15, 2006
Report Number: 880324

NWL Number	479930-1
Sample Date	Jul 21, 2006 5:35:00PM
Sample Description	Well #2 / NE-12-43-28 W4M / Rimbey / 5C
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Metals Total						
Iron	Total	mg/L	<0.1	0.1	0.3	Acceptable
Manganese	Total	mg/L	<0.005	0.005	0.05	Acceptable
Microbiological Analysis						
Total Coliforms	Membrane Filtration	CFU/100 mL	1	1	<1	Fail
Sulfate Reducing Bacteria	MPN	MPN/mL	7.5	0.3		n/a
Fecal Coliforms	Membrane Filtration	CFU/100 mL	<1	-	<1	Pass
Approximate Iron Related Bacteria Population	BART Kit	CFU/mL	9000	-		n/a
Physical and Aggregate Properties						
Colour	Apparent, Potable	Colour units	<5	5	15	Acceptable
Turbidity		NTU	0.2	0.1	5	Acceptable
Temperature of observed pH		°C	19.7	-		n/a
Routine Water						
pH			7.88	-	6.5 - 8.5	Acceptable
Electrical Conductivity		µS/cm at 25 C	834	1		n/a
Calcium	Dissolved	mg/L	47.4	0.2		n/a
Magnesium	Dissolved	mg/L	42.7	0.1		n/a
Sodium	Dissolved	mg/L	84.3	0.4	200	Acceptable
Potassium	Dissolved	mg/L	2.6	0.4		n/a
Iron	Dissolved	mg/L	<0.01	0.01	0.3	Acceptable
Manganese	Dissolved	mg/L	<0.005	0.005	0.05	Acceptable
Chloride	Dissolved	mg/L	3.5	0.4	250	Acceptable
Fluoride		mg/L	0.13	0.05	1.5	Pass
Nitrate - N		mg/L	1.10	0.01	10	Pass
Nitrite - N		mg/L	<0.005	0.005	1	Pass
Nitrate and Nitrite - N		mg/L	1.10	0.02	10	Pass
Sulfate (SO4)	Dissolved	mg/L	47.7	0.9	500	Acceptable
Hydroxide		mg/L	<5	5		n/a
Carbonate		mg/L	<6	6		n/a
Bicarbonate		mg/L	547	5		n/a

NORWEST LABS

Analytical Report

Norwest Labs
Bay 9, 2712-37 Avenue N.E.
Calgary, AB. T1Y-5L3
Phone: (403) 291-2022
Fax: (403) 291-2021

Bill to: Real Resources Inc.
Report to: Real Resources Inc.
700, 555 - 4 Avenue S. W.
Calgary, AB, Canada
T2P 3E7
Attn: Dean Tucker
Sampled By: Shane Way
Company: Golder

Project ID:
Name: Campbell Residence
Location: Rimbey
LSD: 18-43-27-W4M
P.O.:
Acct. Code:

NWL Lot ID: 479930
Control Number: E 291352
Date Received: Jul 22, 2006
Date Reported: Aug 15, 2006
Report Number: 880324

NWL Number	479930-1
Sample Date	Jul 21, 2006 5:35:00PM
Sample Description	Well #2 / NE-12-43-28 W4M / Rimbey / 5C
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
P-Alkalinity	as CaCO3	mg/L	<5	5		n/a
T-Alkalinity	as CaCO3	mg/L	449	5	250-650	Acceptable
Total Dissolved Solids	Calculated	mg/L	497	1		n/a
Hardness	Dissolved as CaCO3	mg/L	294	-		n/a
Ionic Balance	Dissolved	%	95	-		n/a

Approved by: Zayna Jaafar

Zayna Jaafar, BSc., Biology
Microbiology Client Services R

NORWEST LABS

Analytical Report

Norwest Labs
7217 Roper Road NW
Edmonton, AB. T6B 3J4
Phone: (780) 438-5522
Fax: (780) 438-0396

Bill to: Real Resources Inc.
Report to: Real Resources Inc.
700, 555 - 4 Avenue S. W.
Calgary, AB, Canada
T2P 3E7
Attn: Dean Tucker
Sampled By: Shane Way
Company: Golder

Project ID:
Name: Campbell Residence
Location: Rimbey
LSD: 12-43-28 W4M
P.O.:
Acct. Code:

NWL Lot ID: 480913
Control Number: E 291479
Date Received: Jul 26, 2006
Date Reported: Aug 18, 2006
Report Number: 882000

NWL Number	480913-1
Sample Date	Jul 26, 2006 9:55:00AM
Sample Description	NE 12-43-28 W4M / Well #1
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Metals Total						
Iron	Total	mg/L	<0.1	0.1	0.3	Acceptable
Manganese	Total	mg/L	<0.005	0.005	0.05	Acceptable
Microbiological Analysis						
Total Coliforms	Membrane Filtration	CFU/100 mL	<1	1	<1	Pass
Sulfate Reducing Bacteria	MPN	MPN/mL	<0.3	0.3		n/a
Fecal Coliforms	Membrane Filtration	CFU/100 mL	<1	-	<1	Pass
Approximate Iron Related Bacteria Population	BART Kit	CFU/mL	2300	-		n/a
Physical and Aggregate Properties						
Colour	Apparent, Potable	Colour units	<5	5	15	Acceptable
Turbidity		NTU	0.5	0.1	5	Acceptable
Temperature of observed pH		°C	18.5	-		n/a
Routine Water						
pH			8.62	-	6.5 - 8.5	High
Electrical Conductivity		µS/cm at 25 C	1100	1		n/a
Calcium	Dissolved	mg/L	3.7	0.2		n/a
Magnesium	Dissolved	mg/L	1	0.1		n/a
Sodium	Dissolved	mg/L	269	0.4	200	Above Aesthetic
Potassium	Dissolved	mg/L	0.9	0.4		n/a
Iron	Dissolved	mg/L	0.02	0.01	0.3	Acceptable
Manganese	Dissolved	mg/L	<0.005	0.005	0.05	Acceptable
Chloride	Dissolved	mg/L	<0.4	0.4	250	Acceptable
Fluoride		mg/L	0.44	0.05	1.5	Pass
Nitrate - N		mg/L	0.01	0.01	10	Pass
Nitrite - N		mg/L	<0.005	0.005	1	Pass
Nitrate and Nitrite - N		mg/L	<0.02	0.02	10	Pass
Sulfate (SO4)	Dissolved	mg/L	115	0.9	500	Acceptable
Hydroxide		mg/L	<5	5		n/a
Carbonate		mg/L	16	6		n/a
Bicarbonate		mg/L	574	5		n/a

NORWEST LABS

Analytical Report

Norwest Labs
7217 Roper Road NW
Edmonton, AB. T6B 3J4
Phone: (780) 438-5522
Fax: (780) 438-0396

Bill to: Real Resources Inc.
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700, 555 - 4 Avenue S. W.
Calgary, AB, Canada
T2P 3E7
Attn: Dean Tucker
Sampled By: Shane Way
Company: Golder

Project ID:
Name: Campbell Residence
Location: Rimbey
LSD: 12-43-28 W4M
P.O.:
Acct. Code:

NWL Lot ID: 480913
Control Number: E 291479
Date Received: Jul 26, 2006
Date Reported: Aug 18, 2006
Report Number: 882000

NWL Number	480913-1
Sample Date	Jul 26, 2006 9:55:00AM
Sample Description	NE 12-43-28 W4M / Well #1
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
P-Alkalinity	as CaCO3	mg/L	13	5		n/a
T-Alkalinity	as CaCO3	mg/L	497	5	250-650	Acceptable
Total Dissolved Solids	Calculated	mg/L	688	1		n/a
Hardness	Dissolved as CaCO3	mg/L	10	-		n/a
Ionic Balance	Dissolved	%	97	-		n/a

Approved by: Anthony Neumann

Anthony Neumann, MSc
Laboratory Operations Manager

FILE COPY

Core Lab

EXTENDED GAS ANALYSIS

V0011842 - 1		343165	52134-2006-1046
CONTAINER IDENTITY	METER ID	WELL LICENSE NUMBER	LABORATORY FILE NUMBER

Samson Canada Ltd. — OPERATOR

1 — PAGE

100/11-07-043-27W4/00 — LOCATION (UWI)

SC et al Fbank 11-7-43-27 — WELL NAME

889.7 — KB ELEV (m)

886.5 — GR ELEV (m)

Ferrybank — FIELD OR AREA

Edmonton — POOL OR ZONE

Caliber Test — SAMPLER

TEST TYPE AND NO.

TEST RECOVERY

Separator — POINT OF SAMPLE

SAMPLE POINT ID

PUMPING | FLOWING | GAS LIFT | SWAB

WATER m³/d | OIL m³/d | GAS m³/d

208.0 - 531.0 — TEST INTERVAL or PERFS (meters)

172 — SEPARATOR

RESERVOIR

OTHER

@ °C — CONTAINER WHEN SAMPLED

200 @ 22 °C — CONTAINER WHEN RECEIVED

Pressures, kPa (gauge)

10.0 — SEPARATOR

OTHER

Temperatures, °C

08:00 Hrs

2006 02 05 — DATE SAMPLED (Y/M/D)

2006 02 13 — DATE RECEIVED (Y/M/D)

2006 02 22 — DATE ANALYZED (Y/M/D)

YW — ANALYST

AMT. AND TYPE CUSHION

@ °C — MUD RESISTIVITY

COMPONENT	MOLE FRACTION AIR FREE AS RECEIVED	MOLE FRACTION AIR FREE ACID GAS FREE	mL/m³ AIR FREE AS RECEIVED
H_2	0.0002	0.0003	
He	0.0002	0.0002	
N_2	0.0106	0.0120	
CO_2	0.1196	0.0000	
H_2S	0.0000	0.0000	
C_1	0.8668	0.9846	
C_2	0.0024	0.0027	8.5
C_3	0.0002	0.0002	0.7
IC_4	Trace	Trace	Trace
C_4	Trace	Trace	Trace
iC_5	Trace	Trace	Trace
C_5	Trace	Trace	Trace
C_6	0.0000	0.0000	0.0
C_{7+}	0.0000	0.0000	0.0
Total	1.0000	1.0000	9.2

CALCULATED GROSS HEATING VALUE MJ/m³ @ 15°C & 101.325 kPa (abs.)

32.94 — MOISTURE FREE

37.41 — MOISTURE & ACID GAS FREE

CALCULATED VAPOR PRESSURE kPa (abs.) @ 40 °C

PENTANES PLUS

CALCULATED TOTAL SAMPLE PROPERTIES (AIR=1) @ 15°C & 101.325 kPa
MOISTURE FREE AS SAMPLED

0.827 kg/m³ — DENSITY

0.675 — RELATIVE DENSITY

19.5 — RELATIVE MOLECULAR MASS

CALCULATED PSEUDOCRITICAL PROPERTIES

AS SAMPLED: 4917.5 kPa (abs) — pPc; 203.7 K — pTc

ACID GAS FREE: 4583.4 kPa (abs) — pPc; 190.0 K — pTc

C_{7+} PROPERTIES @ 15°C & 101.325 kPa

kg/m³ — DENSITY

MOLECULAR WEIGHT

MOLE FRACTION	LOCATION	METHOD
0.0000000	Field	Other

HYDROGEN SULPHIDE

REMARKS:

H2S was not detected in the field.

NOTE: THE GROSS HEATING VALUE HAS BEEN CALCULATED IN ACCORDANCE TO AGA REPORT #5 AND ALL PROPERTIES HAVE BEEN CALCULATED UTILIZING GPA 2145 - 03 PHYSICAL CONSTANTS AND BOILING POINT GROUPING.

EXTENDED GAS ANALYSIS

V0000645 - 5		343162	62134-2006-3761
CONTAINER IDENTITY	METER ID	WELL LICENSE NUMBER	LABORATORY FILE NUMBER

Samson Canada Ltd.
OPERATOR

102/02-07-043-27W4/00	SC et al Fbank 2-7-43-27	875.0	871.80
LOCATION (UWI)	WELL NAME	KB ELEV (m)	GR ELEV (m)

Ferrybank	CBM,WAIN,LETH	Caliber Test
FIELD OR AREA	POOL OR ZONE	SAMPLER

TEST TYPE AND NO.: Wellhead
TEST RECOVERY:

TEST INTERVAL or PERFS (metres): 486.70 - 630.50

POINT OF SAMPLE: PUMPING / FLOWING / GAS LIFT / SWAB
SAMPLE POINT ID:
WATER mM / OIL mM / GAS mM

Pressures, kPa (gauge): SEPARATOR / RESERVOIR / OTHER / @ °C CONTAINER WHEN SAMPLED / 320 @ 22 °C CONTAINER WHEN RECEIVED

Temperatures, °C: SEPARATOR / OTHER

13:00 Hrs 2006 05 25	2006 05 30	2006 06 12	TN		@ °C
DATE SAMPLED (YYMD)	DATE RECEIVED (YYMD)	DATE ANALYZED (YYMD)	ANALYST	AMT. AND TYPE CUSHION	MUD RESISTIVITY

COMPONENT	MOLE FRACTION AIR FREE AS RECEIVED	MOLE FRACTION AIR FREE ACID GAS FREE	mL/m³ AIR FREE AS RECEIVED
H_2	0.0000	0.0000	
He	0.0001	0.0001	
N_2	0.2661	0.2663	
CO_2	0.0005	0.0000	
H_2S	0.0000	0.0000	
C_1	0.7301	0.7303	
C_2	0.0028	0.0029	9.9
C_3	0.0003	0.0003	1.1
iC_4	Trace	Trace	Trace
C_4	Trace	Trace	Trace
iC_5	0.0001	0.0001	0.5
C_5	Trace	Trace	Trace
C_6	Trace	Trace	Trace
C_{7+}	Trace	Trace	Trace
Total	1.0000	1.0000	11.5

CALCULATED GROSS HEATING VALUE MJ/m³ @ 15°C & 101.325 kPa (abs.)		CALCULATED VAPOR PRESSURE kPa (abs.) @ 40 °C
27.79	27.81	151.4
MOISTURE FREE	MOISTURE & ACID GAS FREE	PENTANES PLUS

CALCULATED TOTAL SAMPLE PROPERTIES (AIR=1) @ 15°C & 101.325 kPa
MOISTURE FREE AS SAMPLED

0.816 kg/m³	0.666	19.9
DENSITY	RELATIVE DENSITY	RELATIVE MOLECULAR MASS

CALCULATED PSEUDOCRITICAL PROPERTIES

AS SAMPLED		ACID GAS FREE	
4280.4 kPa (abs)	173.9 K	4278.8 kPa (abs)	173.8 K
pPc	pTc	pPc	pTc

C_{7+} PROPERTIES @ 15°C & 101.325 kPa		MOLE FRACTION	LOCATION	METHOD
kg/m³		0.0000000	Laboratory	Chromatograph
DENSITY	MOLECULAR WEIGHT	HYDROGEN SULPHIDE		

REMARKS:

NOTE: THE GROSS HEATING VALUE HAS BEEN CALCULATED IN ACCORDANCE TO AGA REPORT #5 AND ALL PROPERTIES HAVE BEEN CALCULATED UTILIZING GPA 2145 - 03 PHYSICAL CONSTANTS AND BOILING POINT GROUPING.

EXTENDED GAS ANALYSIS

V0008477 - 1		343159	52134-2006-4035
CONTAINER IDENTITY	METER ID	WELL LICENSE NUMBER	LABORATORY FILE NUMBER

Samson Canada Ltd.
OPERATOR

PAGE

100/05-07-043-27W4/00	SC FBank 5-7-43-27	874.8	871.6
LOCATION (U/W)	WELL NAME	KB ELEV (m)	GR ELEV (m)

Ferrybank	Belly River	Caliber Test
FIELD OR AREA	POOL OR ZONE	SAMPLER

TEST TYPE AND NO. | TEST RECOVERY

Wellhead
POINT OF SAMPLE | SAMPLE POINT ID

639.0 - 640.0
669.0 - 670.0
672.5 - 673.5
TEST INTERVAL or PERFS (meters)

PUMPING | FLOWING | GAS LIFT | SWAB

WATER m³/d | OIL m³/d | GAS m³/d

SEPARATOR | RESERVOIR | OTHER | @ °C CONTAINER WHEN SAMPLED | 80 @ 22 °C CONTAINER WHEN RECEIVED

Pressures, kPa (gauge)

SEPARATOR | OTHER

Temperatures, °C

2006 07 07	2006 06 09	2006 06 25	RT		@ °C
DATE SAMPLED (Y/M/D)	DATE RECEIVED (Y/M/D)	DATE ANALYZED (Y/M/D)	ANALYST	AMT. AND TYPE CUSHION	MUD RESISTIVITY

COMPONENT	MOLE FRACTION AIR FREE AS RECEIVED	MOLE FRACTION AIR FREE ACID GAS FREE	mL/m³ AIR FREE AS RECEIVED
H_2	0.0053	0.0055	
He	0.0008	0.0008	
N_2	0.0288	0.0301	
CO_2	0.0427	0.0000	
H_2S	0.0000	0.0000	
C_1	0.9167	0.9577	
C_2	0.0047	0.0049	18.7
C_3	0.0007	0.0007	2.6
iC_4	0.0002	0.0002	0.9
C_4	0.0001	0.0001	0.4
iC_5	Trace	Trace	Trace
C_5	Trace	Trace	Trace
C_6	0.0000	0.0000	0.0
C_{7+}	0.0000	0.0000	0.0
Total	1.0000	1.0000	20.6

CALCULATED GROSS HEATING VALUE MJ/m³ @ 15°C & 101.325 kPa (abs.)		CALCULATED VAPOR PRESSURE kPa (abs.) @ 40 °C
35.11	38.61	
MOISTURE FREE	MOISTURE & ACID GAS FREE	PENTANES PLUS

CALCULATED TOTAL SAMPLE PROPERTIES (AIR=1) @ 15°C & 101.325 kPa
MOISTURE FREE AS SAMPLED

0.744 kg/m³	0.608	17.6
DENSITY	RELATIVE DENSITY	RELATIVE MOLECULAR MASS

CALCULATED PSEUDOCRITICAL PROPERTIES

AS SAMPLED		ACID GAS FREE	
4652.7 kPa (abs)	193.3 K	4541.9 kPa (abs)	188.4 K
pPc	pTc	pPc	pTc

C_{7+} PROPERTIES @ 15°C & 101.325 kPa		MOLE FRACTION	LOCATION	METHOD
kg/m³		0.0000000	Laboratory	Chromatograph
DENSITY	MOLECULAR WEIGHT	HYDROGEN SULPHIDE		

REMARKS:

Field sampling conditions were not provided.

NOTE: THE GROSS HEATING VALUE HAS BEEN CALCULATED IN ACCORDANCE TO AGA REPORT #5 AND ALL PROPERTIES HAVE BEEN CALCULATED UTILIZING GPA 2145 - 03 PHYSICAL CONSTANTS AND BOILING POINT GROUPING.

NORWEST LABS

Analytical Report

Norwest Labs
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Edmonton, AB. T6B 3J4
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Calgary, AB, Canada
T2P 3N2
Attn: Mitchell Golay
Sampled By:
Company:

Project ID:
Name: Real Resources
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 466771
Control Number:
Date Received: May 29, 2006
Date Reported: Jun 15, 2006
Report Number: 864825

NWL Number	466771-1
Sample Description	NE 12-43-28 W4M / House
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Metals Total						
Iron	Total	mg/L	<0.1	0.1	0.3	Acceptable
Manganese	Total	mg/L	<0.005	0.005	0.05	Acceptable
Physical and Aggregate Properties						
Colour	Apparent, Potable	Colour units	<5	5	15	Acceptable
Turbidity		NTU	0.4	0.1	5	Acceptable
Temperature of observed pH		°C	22.3	-		n/a
Routine Water						
pH			8.58	-	6.5 - 8.5	High
Electrical Conductivity		µS/cm at 25 C	1120	1		n/a
Calcium	Dissolved	mg/L	3.7	0.2		n/a
Magnesium	Dissolved	mg/L	0.8	0.1		n/a
Sodium	Dissolved	mg/L	277	0.4	200	Above Aesthetic
Potassium	Dissolved	mg/L	0.7	0.4		n/a
Iron	Dissolved	mg/L	0.01	0.01	0.3	Acceptable
Manganese	Dissolved	mg/L	<0.005	0.005	0.05	Acceptable
Chloride	Dissolved	mg/L	1.5	0.4	250	Acceptable
Fluoride		mg/L	0.51	0.05	1.5	Pass
Nitrate - N		mg/L	<0.01	0.01	10	Pass
Nitrite - N		mg/L	<0.005	0.005	1	Pass
Nitrate and Nitrite - N		mg/L	<0.02	0.02	10	Pass
Sulfate (SO4)	Dissolved	mg/L	114	0.9	500	Acceptable
Hydroxide		mg/L	<5	5		n/a
Carbonate		mg/L	16	6		n/a
Bicarbonate		mg/L	579	5		n/a
P-Alkalinity	as CaCO3	mg/L	13	5		n/a
T-Alkalinity	as CaCO3	mg/L	501	5	250-650	Acceptable
Total Dissolved Solids	Calculated	mg/L	699	1		n/a
Hardness	Dissolved as CaCO3	mg/L	10	-		n/a
Ionic Balance	Dissolved	%	99	-		n/a
Methane Content of Water						

NORWEST LABS

Analytical Report

Norwest Labs
7217 Roper Road NW
Edmonton, AB. T6B 3J4
Phone: (780) 438-5522
Fax: (780) 438-0396

Bill to: Chinook Environmental Services Ltd.
Report to: Chinook Environmental Services Ltd.
#501 100-4 Ave. SW
Calgary, AB, Canada
T2P 3N2
Attn: Mitchell Golay
Sampled By:
Company:

Project ID:
Name: Real Resources
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 466771
Control Number:
Date Received: May 29, 2006
Date Reported: Jun 15, 2006
Report Number: 864825

NWL Number	466771-1
Sample Description	NE 12-43-28 W4M / House
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Methane Content of Water - Continued						
Methane	Volume Gas / Volume Liquid	mL gas/m³ water	<5	5		n/a
Methane	Mass / Volume Liquid	mg/L	<0.003	0.003		n/a

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Acct. Code:

NWL Lot ID: 466771
Control Number:
Date Received: May 29, 2006
Date Reported: Jun 15, 2006
Report Number: 864825

NWL Number	466771-2
Sample Description	NE 12-43-28 W4M / Live Stock
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Metals Total						
Iron	Total	mg/L	<0.1	0.1	0.3	Acceptable
Manganese	Total	mg/L	<0.005	0.005	0.05	Acceptable
Physical and Aggregate Properties						
Colour	Apparent, Potable	Colour units	<5	5	15	Acceptable
Turbidity		NTU	0.5	0.1	5	Acceptable
Temperature of observed pH		°C	22.5	-		n/a
Routine Water						
pH			8.07	-	6.5 - 8.5	Acceptable
Electrical Conductivity		µS/cm at 25 C	826	1		n/a
Calcium	Dissolved	mg/L	48.4	0.2		n/a
Magnesium	Dissolved	mg/L	41.0	0.1		n/a
Sodium	Dissolved	mg/L	88.2	0.4	200	Acceptable
Potassium	Dissolved	mg/L	2.6	0.4		n/a
Iron	Dissolved	mg/L	<0.01	0.01	0.3	Acceptable
Manganese	Dissolved	mg/L	<0.005	0.005	0.05	Acceptable
Chloride	Dissolved	mg/L	2.9	0.4	250	Acceptable
Fluoride		mg/L	0.12	0.05	1.5	Pass
Nitrate - N		mg/L	0.73	0.01	10	Pass
Nitrite - N		mg/L	<0.005	0.005	1	Pass
Nitrate and Nitrite - N		mg/L	0.73	0.02	10	Pass
Sulfate (SO4)	Dissolved	mg/L	45.8	0.9	500	Acceptable
Hydroxide		mg/L	<5	5		n/a
Carbonate		mg/L	<6	6		n/a
Bicarbonate		mg/L	535	5		n/a
P-Alkalinity	as CaCO3	mg/L	<5	5		n/a
T-Alkalinity	as CaCO3	mg/L	438	5	250-650	Acceptable
Total Dissolved Solids	Calculated	mg/L	492	1		n/a
Hardness	Dissolved as CaCO3	mg/L	289	-		n/a
Ionic Balance	Dissolved	%	98	-		n/a
Methane Content of Water						

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Project ID:
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NWL Lot ID: 466771
Control Number:
Date Received: May 29, 2006
Date Reported: Jun 15, 2006
Report Number: 864825

NWL Number	466771-2
Sample Description	NE 12-43-28 W4M / Live Stock
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Methane Content of Water - Continued						
Methane	Volume Gas / Volume Liquid	mL gas/m³ water	<5	5		n/a
Methane	Mass / Volume Liquid	mg/L	<0.003	0.003		n/a

Approved by: Anthony Neumann

Anthony Neumann, MSc
Laboratory Operations Manager

NORWEST LABS

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Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 466773
Control Number:
Date Received: May 29, 2006
Date Reported: Jun 15, 2006
Report Number: 864819

NWL Number	466773-1
Sample Description	SE 18-43-27 W4M / House
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Metals Total						
Iron	Total	mg/L	0.2	0.1	0.3	Acceptable
Manganese	Total	mg/L	0.025	0.005	0.05	Acceptable
Physical and Aggregate Properties						
Colour	Apparent, Potable	Colour units	6	5	15	Acceptable
Turbidity		NTU	27.4	0.1	5	Above Asethetic
Temperature of observed pH		°C	22.6	-		n/a
Routine Water						
pH			8.33	-	6.5 - 8.5	Acceptable
Electrical Conductivity		µS/cm at 25 C	1220	1		n/a
Calcium	Dissolved	mg/L	28.2	0.2		n/a
Magnesium	Dissolved	mg/L	10.9	0.1		n/a
Sodium	Dissolved	mg/L	264	0.4	200	Above Aesthetic
Potassium	Dissolved	mg/L	1.8	0.4		n/a
Iron	Dissolved	mg/L	<0.01	0.01	0.3	Acceptable
Manganese	Dissolved	mg/L	0.025	0.005	0.05	Acceptable
Chloride	Dissolved	mg/L	10	0.4	250	Acceptable
Fluoride		mg/L	0.56	0.05	1.5	Pass
Nitrate - N		mg/L	<0.01	0.01	10	Pass
Nitrite - N		mg/L	<0.005	0.005	1	Pass
Nitrate and Nitrite - N		mg/L	<0.02	0.02	10	Pass
Sulfate (SO4)	Dissolved	mg/L	132	0.9	500	Acceptable
Hydroxide		mg/L	<5	5		n/a
Carbonate		mg/L	6	6		n/a
Bicarbonate		mg/L	672	5		n/a
P-Alkalinity	as CaCO3	mg/L	5	5		n/a
T-Alkalinity	as CaCO3	mg/L	561	5	250-650	Acceptable
Total Dissolved Solids	Calculated	mg/L	785	1		n/a
Hardness	Dissolved as CaCO3	mg/L	116	-		n/a
Ionic Balance	Dissolved	%	97	-		n/a
Methane Content of Water						

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NWL Lot ID: 466773
Control Number:
Date Received: May 29, 2006
Date Reported: Jun 15, 2006
Report Number: 864819

NWL Number	466773-2
Sample Description	SE 18-43-28 / Livestock
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Metals Total						
Iron	Total	mg/L	0.2	0.1	0.3	Acceptable
Manganese	Total	mg/L	0.022	0.005	0.05	Acceptable
Physical and Aggregate Properties						
Colour	Apparent, Potable	Colour units	9	5	15	Acceptable
Turbidity		NTU	6.4	0.1	5	Above Asethetic
Temperature of observed pH		°C	23.0	-		n/a
Routine Water						
pH			8.34	-	6.5 - 8.5	Acceptable
Electrical Conductivity		µS/cm at 25 C	1230	1		n/a
Calcium	Dissolved	mg/L	26.9	0.2		n/a
Magnesium	Dissolved	mg/L	10.3	0.1		n/a
Sodium	Dissolved	mg/L	272	0.4	200	Above Aesthetic
Potassium	Dissolved	mg/L	1.8	0.4		n/a
Iron	Dissolved	mg/L	<0.01	0.01	0.3	Acceptable
Manganese	Dissolved	mg/L	0.022	0.005	0.05	Acceptable
Chloride	Dissolved	mg/L	7.2	0.4	250	Acceptable
Fluoride		mg/L	0.54	0.05	1.5	Pass
Nitrate - N		mg/L	<0.01	0.01	10	Pass
Nitrite - N		mg/L	<0.005	0.005	1	Pass
Nitrate and Nitrite - N		mg/L	<0.02	0.02	10	Pass
Sulfate (SO4)	Dissolved	mg/L	142	0.9	500	Acceptable
Hydroxide		mg/L	<5	5		n/a
Carbonate		mg/L	6	6		n/a
Bicarbonate		mg/L	679	5		n/a
P-Alkalinity	as CaCO3	mg/L	5	5		n/a
T-Alkalinity	as CaCO3	mg/L	568	5	250-650	Acceptable
Total Dissolved Solids	Calculated	mg/L	800	1		n/a
Hardness	Dissolved as CaCO3	mg/L	110	-		n/a
Ionic Balance	Dissolved	%	97	-		n/a
Methane Content of Water						

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Acct. Code:

NWL Lot ID: 466773
Control Number:
Date Received: May 29, 2006
Date Reported: Jun 15, 2006
Report Number: 864819

NWL Number	466773-1
Sample Description	SE 18-43-27 W4M / House
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Methane Content of Water - Continued						
Methane	Volume Gas / Volume Liquid	mL gas/m³ water	440	5		n/a
Methane	Mass / Volume Liquid	mg/L	0.289	0.003		n/a

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NWL Lot ID: 466773
Control Number:
Date Received: May 29, 2006
Date Reported: Jun 15, 2006
Report Number: 864819

NWL Number	466773-2
Sample Description	SE 18-43-28 / Livestock
Sample Matrix	Water

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Methane Content of Water - Continued						
Methane	Volume Gas / Volume Liquid	mL gas/m³ water	<5	5		n/a
Methane	Mass / Volume Liquid	mg/L	<0.003	0.003		n/a

Approved by: Anthony Neumann

Anthony Neumann, MSc
Laboratory Operations Manager

Table 1
Groundwater Analytical Results
Campbell Residence
Near Rimbey, Alberta

Analytical Parameter	Units	Detection Limit	Campbell Residence Well #1 SE16-43-27-W4M Rimbey	Campbell Residence Well #1 NE12-43-28-W4M Rimbey	Campbell Residence Well #2 NE12-43-28-W4M Rimbey	Guideline[1]
Total Metals						
Iron	mg/L	0.1	0.3	<0.1	<0.1	0.3
Manganese	mg/L	0.005	0.478	<0.005	<0.005	0.05
Microbial Analysis						
Total Coliforms	CFU/100 mL[2]	1	<1	<1	<1	0
Fecal Coliforms	CFU/100 mL[2]	-	<1	<1	<1	0
Sulfate Reducing Bacteria	MPN/mL	0.3	<0.3	<0.3	7.5	NG3
Approximate Iron Related BART Kit Bacterial Population	CFU/100 mL	-	9000	2300	9000	NG[3]
Physical Aggregate Properties						
Colour	Colour Units	5	10	<5	<0.5	15
Turbidity	NTU	0.1	1.6	0.5	0.2	NG[3]
Temperature	Degrees C	-	19.0	18.5	19.7	NG[3]
Routine Water Quality						
pH	pH units	-	7.84	7.92	7.00	6.5 - 8.5
Electrical Conductivity	uS/cm	1	900	1100	834	NG[3]
Calcium	mg/L	0.2	66.4	3.7	42.4	NG[3]
Magnesium	mg/L	0.1	29.2	1	42.7	NG[3]
Sodium	mg/L	0.4	107	269	84.3	200
Potassium	mg/L	0.4	3.4	0.9	2.6	NG[3]
Iron	mg/L	0.01	0.34	0.02	<0.01	0.3
Manganese	mg/L	0.005	0.341	<0.005	<0.005	0.05
Chloride	mg/L	0.4	11.8	<0.4	3.5	250
Fluoride	mg/L	0.05	0.20	0.44	0.13	1.5
Nitrate-N	mg/L	0.01	<0.01	0.01	1.1	10
Nitrite-N	mg/L	0.005	<0.005	<0.005	<0.005	3.2
Nitrate and Nitrite-N	mg/L	0.02	<0.02	<0.02	1.1	NG[3]
Sulfate (SO_4^{2-})	mg/L	0.9	37.4	115	40.7	500
Hydroxide	mg/L	5	<5	<5	<5	NG[3]
Carbonate	mg/L	6	<6	16	<6	NG[3]
Bicarbonate	mg/L	5	567	574	547	NG[3]
P-Alkalinity	mg/L	5	<5	13	<5	NG[3]
T-Alkalinity	mg/L	5	465	497	449	NG[3]
Total Dissolved Solids	mg/L	1	534	615	497	500
Hardness	mg/L	-	286	10	294	NG[3]
Ionic Balance	%	-	101	97	95	NG[3]
Dissolved Metals						
Mercury	mg/L	0.0001	<0.0001	-	-	0.001
Aluminum	mg/L	0.005	0.044	-	-	0.1
Antimony	mg/L	0.0002	0.0004	-	-	0.006
Arsenic	mg/L	0.0002	0.0006	-	-	0.025
Barium	mg/L	0.001	0.107	-	-	1
Beryllium	mg/L	0.0001	<0.0001	-	-	NG[3]
Bismuth	mg/L	0.0005	<0.0005	-	-	NG[3]
Boron	mg/L	0.002	0.139	-	-	5
Cadmium	mg/L	0.00001	<0.00001	-	-	0.005
Chromium	mg/L	0.0005	0.0024	-	-	0.05
Cobalt	mg/L	0.0001	<0.0001	-	-	NG[3]
Copper	mg/L	0.001	<0.001	-	-	1
Lead	mg/L	0.0001	<0.0001	-	-	0.01
Lithium	mg/L	0.001	0.049	-	-	NG[3]
Molybdenum	mg/L	0.001	<0.001	-	-	NG[3]
Nickel	mg/L	0.0005	<0.0005	-	-	NG[3]
Selenium	mg/L	0.0002	<0.0002	-	-	0.01
Silver	mg/L	0.0001	<0.0001	-	-	NG[3]
Strontium	mg/L	0.001	1.07	-	-	NG[3]
Thallium	mg/L	0.00005	<0.00005	-	-	NG[3]
Tin	mg/L	0.001	<0.001	-	-	NG[3]
Titanium	mg/L	0.0005	0.0008	-	-	NG[3]
Uranium	mg/L	0.0005	<0.0005	-	-	0.02
Vanadium	mg/L	0.0001	0.0065	-	-	NG[3]
Zinc	mg/L	0.001	0.005	-	-	5.0
Methane Content of Water						
Methane (Volume Gas/Volume Liquid)	mL gas/ml water	5	7840	-	-	NG[3]
Methane (Mass/Volume Liquid)	mg/L	0.003	5.14	-	-	NG[3]
Isotopic Water Analysis						
Dissolved Organic Carbon - delta 13C	per mil dev.	-	-13.41	-	-	NG[3]
Water - Delta 18O	per mil dev.	-	-19.94	-	-	NG[3]
Water - delta D	per mil dev.	-	-147.1	-	-	NG[3]

Notes:
Highlighted values exceed the applicable guideline.
1) Health Canada, 2006. Guidelines for Canadian Drinking Water Quality Summary Table, prepared by the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment, March, 2006.
2) CFU - Colifom Units.
3) NG - Guideline Not Available.
- Parameter not analyzed or Detection Limit not applicable.

Table 2
Gas Analytical Results
Campbell Residence
Near Rimbey, Aberta

Analytical Parameter	Units	Detection Limit	Campbell Residence Well #1 SE18-43-27-W4M Rimbey
Istotopic Gas Analysis			
delta 13CO2	per mil dev.	-	-24.17
delta 13C1	per mil dev.	-	-57.5
delta 13C2	per mil dev.	-	-30.75
delta 13C3	per mil dev.	-	-26.48
delta 13iC4	per mil dev.	-	-25.62
delta 13nC4	per mil dev.	-	-24.75
Gas Analysis - Not Air Corrected			
Helium	Mole %	0.01	0.02
Hydrogen	Mole %	0.01	<0.01
Carbon Dioxide	Mole %	0.01	2.44
Oxygen	Mole %	0.01	2.88
Nitrogen	Mole %	0.01	72.14
Methane	Mole %	0.01	22.35
Ethane	Mole %	0.01	0.12
Propane	Mole %	0.01	0.03
Iso-Butane	Mole %	0.01	0.01
n-Butane	Mole %	0.01	<0.01
Iso-Pentane	Mole %	0.01	<0.01
n-Pentane	Mole %	0.01	<0.01
Hexanes	Mole %	0.01	<0.01
Heptanes	Mole %	0.01	<0.01
Octanes	Mole %	0.01	<0.01
Nonanes	Mole %	0.01	<0.01
Decanes +	Mole %	0.01	<0.01
Hydrogen Sulfide[1]	ppm	-	9.9

Notes:

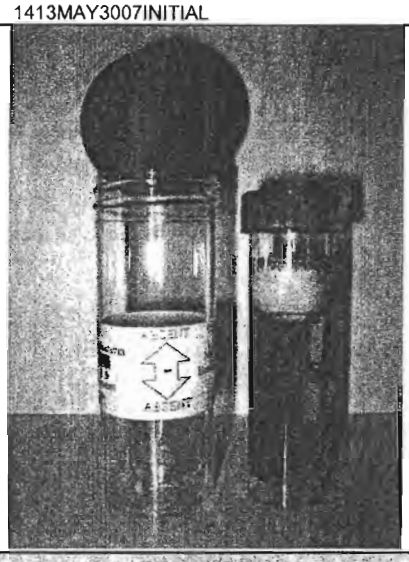
1) Calculated value.

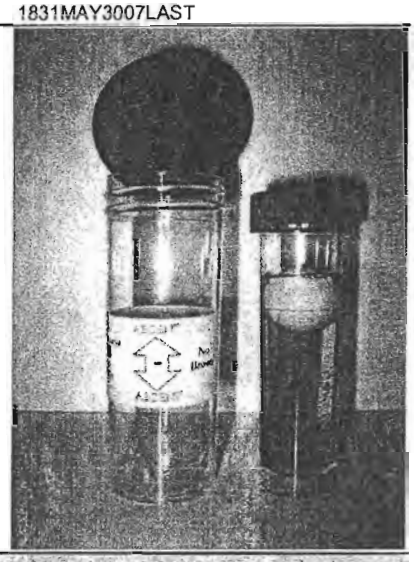
- Detection Limit not applicable.

Alberta Environment - Central Region, Spruce grove
BARTs (Bacteriological Activity Reactivity Tests)

Incident Reference No.	133729
Date Sampled	30-May-07
Sampler	M Krezalek
Interpretation	M Krezalek

Sample Q Point	Hydrant	Hydrant
Samples Taken	IRB BART	IRB BARTs
Sample Identification	1413MAY3007INITIAL	1831MAY3007LAST





Comments		
	Reaction Negative (Absent)	Reaction Negative (Absent)

Sample Verification

Name	Martin Krezalek	Original Signed
Position	Regional Groundwater Inspector	
Department	Compliance - AENV, Central Region, Spruce Grove	Signature

Reference	IRB BART - Iron Related Bacteria Bacteriological Activity Reactivity Test

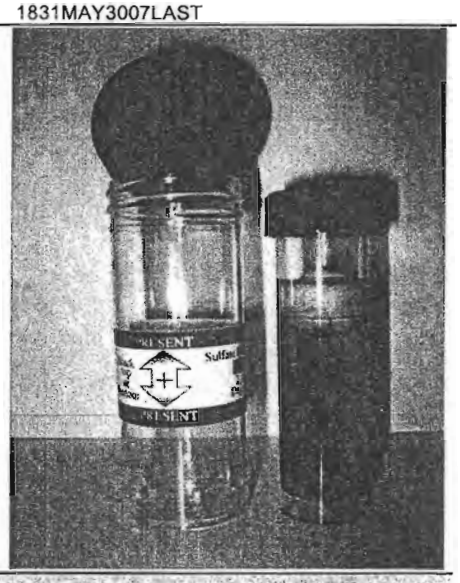
Iron Related Bacteria - Reaction Sequence(s) (2004 Droycon Biocencepts Inc.)

FO	BR BG BC	GC	RC	CL	BL
FOAM(FO) around ball - Anaerobic Bacteria.	BROWN RINGS(BR), GEL(BG), and/or CLOUDS(BC) - IRB.	Solution GREEN-CLOUDY(GC) - Pseudomonads.	Solution RED-CLOUDY(RC) - Enteric Bacteria.	Solution CLOUDY(CL) - Heterotrophic Bacteria.	Solution BLACK(BL) - Pseudomonads and Enterics.

Alberta Environment - Central Region, Spruce grove
BARTs (Bacteriological Activity Reactivity Tests)

Incident Reference No.	133729
Date Sampled	30-May-07
Sampler	M Krezalek
Interpretation	M Krezalek

Sample Q Point	Hydrant	Hydrant
Samples Taken	SRB BART	SRB BART
Sample Identification	1413MAY3007INITIAL	1831MAY3007LAST



Comments		
	Positive reaction BB Indication of anaerobic consortium	Positive reaction BB, BT Combination anaerobic and aerobic consortium

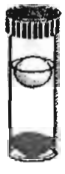
Sample Verification

Name	Martin Krezalek	Original Signed
Position	Regional Groundwater Inspector	
Department	Compliance - AENV, Central Region, Spruce Grove	Signature

Reference

SRB BART - Sulfate Reducing Bacteriological Activity Reactivity Test

Sulfate Reducing Bacteria - Reaction Sequence(s) (2004 Droycon Biocencepts Inc.)



BLACK only in BASE(**BB**) - Dense anaerobic SRB consortium.

BLACK only around BALL/TOP(**BT**) - Aerobic SRB consortium.

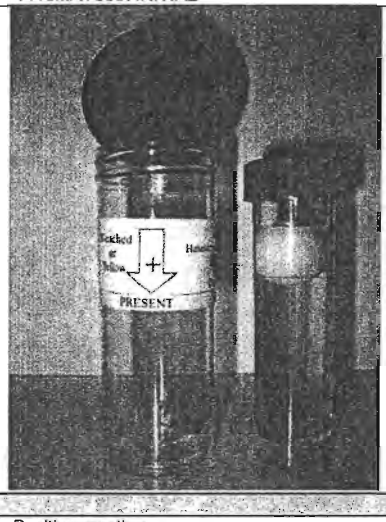
BLACK in BASE and around BALL - Combination of aerobic(**BT**) and anaerobic(**BB**) SRB.

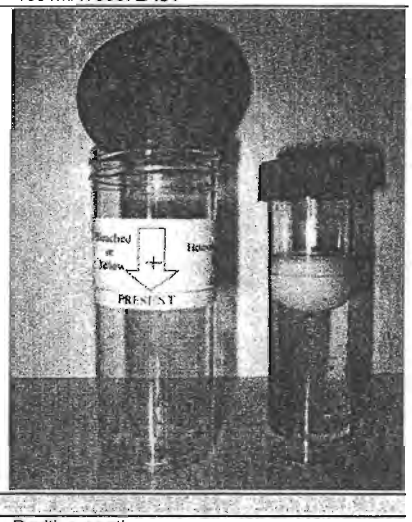
Solution CLOUDY - Anaerobic bacteria present.

Alberta Environment - Central Region, Spruce grove
BARTs (Bacteriological Activity Reactivity Tests)

Incident Reference No.	133729
Date Sampled	30-May-07
Sampler	M Krezalek
Interpretation	M Krezalek

Sample Q Point	Hydrant	Hydrant
Samples Taken	HAB BART	HAB BART
Sample Identification	1413MAY3007INITIAL	1831MAY3007LAST





Comments		
	Positive reaction DO Aerobic bacteria indication	Positive reaction DO Aerobic bacteria indication

Sample Verification

Name	Martin Krezalek	*Original Signed*
Position	Regional Groundwater Inspector	
Department	Compliance - AENV, Central Region, Spruce Grove	Signature

Reference	HAB BART - Heterotrophic Aerobic Bacteriological Activity Reactivity Test

Heterotrophic Aerobic Bacteria - Reaction Sequence(s) (2004 Droycon Biocencepts Inc.)

Advanced test information.

Determination of Dominant Bacteria

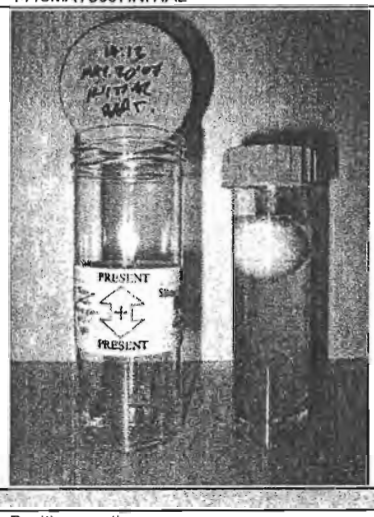
Blue Bleaching Up from Bottom **(UP)** - Aerobic Bacteria.

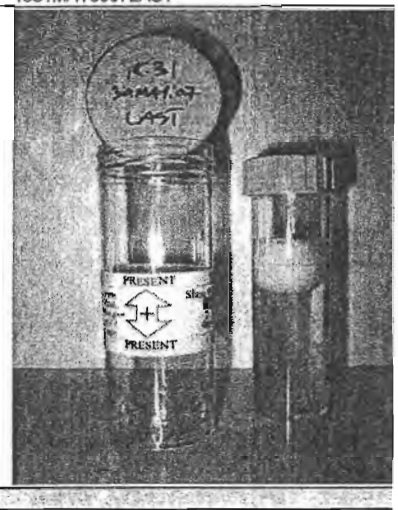
Blue Bleaching Down from Top **(DO)** - Anaerobic.

Alberta Environment - Central Region, Spruce grove
BARTs (Bacteriological Activity Reactivity Tests)

Incident Reference No.	133729
Date Sampled	30-May-07
Sampler	M Krezalek
Interpretation	M Krezalek

Sample Q Point	Hydrant	Hydrant
Samples Taken	SLYM BART	SLYM BART
Sample Identification	1413MAY3007INITIAL	1831MAY3007LAST





Comments		
	Positive reaction CL Poorly defined cloudy slime growth	Positive reaction CL Poorly defined cloudy slime growth

Sample Verification

Name	Martin Krezalek	Original Signed
Position	Regional Groundwater Inspector	
Department	Compliance - AENV, Central Region, Spruce Grove	**Signature**

Reference	SLYM BART - Slime Forming Bacteriological Activity Reactivity Test

Slime Forming Bacteria - Reaction Sequence(s) (2004 Droycon Biocencepts Inc.)

Advanced test information.

Determination of Dominant Bacteria

DENSE SLIME(**DS**) in base or SLIME RING(**SR**) around ball- Dense Slime Bacteria.

CLOUDY(**CL**) growth or LAYERED PLATES(**CP**)- Slime Forming Bacteria.

around ball(U.V. light) - Fluorescing Pseudomonads.

BLACKENED LIQUID(**BL**) - Pseudomonads and Enterics.

THREAD-LIKE STRANDS(**TH**) - Tight Slime Bacteria.

ALBERTA RESEARCH COUNCIL | ORGANICS ANALYSIS DATA SHEET | ARC SAMPLE NUMBER: T07-1529

EXTRACTABLE PRIORITY POLLUTANTS

Contact: Krezalek
SmpNo : ProjNo : ABSbl GrpSmpNo :
StaNo : StaType:
Comment: CMK0531071830
Matrix :
SmpDate: @ Samplers..ID1 :
EndDate: @ ..ID2 :

METHOD: EC/3
SCAN: EPP

			TimeLines (days) from sample date	
			Max	Actual
Date Received :	1-Jun-07	by: DRC	-	**
Date Extracted:	4-Jun-07	by: drc	7	**
Date Analyzed :	4-Jun-07	by: drc	21	**

Raw DataFile : E1529

VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-	VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-
100730	1,2,4-Trichlorobenzene	0.0		.1	.1	100734	1,2-Diphenylhydrazine	0.0		.1	.1
103632	2,3,4,6-Tetrachlorophenol	0.0		.1	.2	100708	2,4,6-Trichlorophenol	0.0		.1	.2
100700	2,4-Dichlorophenol	0.0		.1	.2	100701	2,4-Dimethylphenol	0.0		.2	.2
100703	2,4-Dinitrophenol	0.0		.1	.2	100732	2,4-Dinitrotoluene	0.0		.1	.1
100733	2,6-Dinitrotoluene	0.0		.1	.1	100725	2-Chloronaphthalene	0.0		.1	.1
100699	2-Chlorophenol	0.0		.2	.2	100702	2-Methyl-4,6-dinitrophenol	0.0		.1	.2
100704	2-Nitrophenol	0.0		.1	.2	100738	4-Bromophenyl phenyl ether	0.0		.1	.1
100698	4-Chloro-3-methylphenol	0.0		.1	.2	100742	4-Chlorophenyl phenyl ether	0.0		.1	.1
100705	4-Nitrophenol	0.0		.1	.2	100709	Acenaphthene	0.0		.1	.1
100710	Acenaphthylene	0.0		.1	.1	100711	Anthracene	0.0		.1	.1
100731	Benzidine	0.0		.2	.2	100712	Benzo(a)anthracene	0.0		.1	.1
100716	Benzo(a)pyrene	0.0		.1	.2	100713	Benzo(b)fluoranthene	0.0		.1	.1
100715	Benzo(ghi)perylene	0.0		.2	.1	100714	Benzo(k)fluoranthene	0.0		.1	.1
100739	Bis(2-chloroethoxy)methane	0.0		.1	.1	100740	Bis(2-chloroethyl)ether	0.0		.1	.1
100741	Bis(2-chloroisopropyl)ether	0.0		.1	.1	100748	Bis(2-ethylhexyl)phthalate	0.0		.1	.1
100743	Butylbenzylphthalate	.1	HX	.1	.1	100717	Chrysene	0.0		.1	.1
100744	Di-n-butylphthalate	0.0		.1	.1	100747	Di-n-octyl phthalate	0.0		.1	.1
100718	Dibenzo(ah)anthracene	0.0		.5	.1	100745	Diethyl phthalate	0.0		.1	.1
100746	Dimethyl phthalate	0.0		.1	.1	100719	Fluoranthene	0.0		.1	.1
100720	Fluorene	0.0		.1	.1	100726	Hexachlorobenzene	0.0		.1	.1
100727	Hexachlorobutadiene	0.0		.5	.1	100728	Hexachlorocyclopentadiene	0.0		.1	.1
100729	Hexachloroethane	0.0		.5	.1	100721	Indeno(1,2,3-cd)pyrene	0.0		.1	.1
100749	Isophorone	0.0		.1	.1	100737	N-Nitroso-di-n-propylamine	0.0		.2	.1
100736	N-Nitrosodiphenylamine	0.0		.1	.1	100722	Naphthalene	0.0		.1	.1
100735	Nitrobenzene	0.0		.1	.1	100706	Pentachlorophenol	0.0		.1	.2
100723	Phenanthrene	0.0		.1	.1	100707	Phenol	0.0		.1	.2
100724	Pyrene	0.0		.1	.1						

Zero (0) values indicate that the analyte is not DETECTED. MDL - Method Detection Limit

flags B - This analyte is found in the blank as well as the sample. The blank value has been subtracted.
X - Estimated value. The target compound meets the identification criteria, but is less than the MDL.
H - Compound Detected Q - Qualifying ions present but failed the ion ratio limits.
M - This value is calculated by an alternate Raw DataFile.

* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.

** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Yogesh Kumar
Date: 6-Jun-07
Contact Person: Grant Prill

BUSINESS UNIT MANAGER
ANALYTICAL CHEMISTRY
ALBERTA RESEARCH COUNCIL
BAG 4000, VEGREVILLE, ALBERTA
T9C 1T4 (780) 632-8455

mail to: Krezalek Martin
Alberta Environment
250 Diamond Avenue
Spruce Grove, Alberta T7X 4C7

If there are any questions or concerns regarding this report, please contact the person indicated above.
Please check the mailing information and inform the lab if changes are required.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	By	Batch
L512564-1 CMK0531071830 A								
Sampled By: MK on 30-MAY-07								
Matrix: WATER								
Dissolved Metals								
Dissolved Major Metals								
Calcium (Ca)	20.8		0.5	mg/L		04-JUN-07	HAS	R531122
Potassium (K)	1.8		0.1	mg/L		04-JUN-07	HAS	R531122
Magnesium (Mg)	7.85		0.01	mg/L		04-JUN-07	HAS	R531122
Sodium (Na)	247		0.5	mg/L		04-JUN-07	HAS	R531122
Iron (Fe)	0.034		0.005	mg/L		04-JUN-07	HAS	R531122
Manganese (Mn)	0.016		0.001	mg/L		04-JUN-07	HAS	R531122
Dissolved Trace Metals (Low Level)								
Silver (Ag)	<0.0002		0.0002	mg/L		07-JUN-07	CVM	R532349
Aluminum (Al)	<0.01		0.01	mg/L		07-JUN-07	CVM	R532349
Arsenic (As)	<0.0004		0.0004	mg/L		07-JUN-07	CVM	R532349
Boron (B)	0.332		0.002	mg/L		07-JUN-07	CVM	R532349
Barium (Ba)	0.0684		0.0001	mg/L		07-JUN-07	CVM	R532349
Beryllium (Be)	<0.0005		0.0005	mg/L		07-JUN-07	CVM	R532349
Bismuth (Bi)	<0.00005		0.00005	mg/L		07-JUN-07	CVM	R532349
Cadmium (Cd)	<0.0001		0.0001	mg/L		07-JUN-07	CVM	R532349
Cobalt (Co)	<0.0001		0.0001	mg/L		07-JUN-07	CVM	R532349
Chromium (Cr)	0.0013		0.0004	mg/L		07-JUN-07	CVM	R532349
Copper (Cu)	<0.0006		0.0006	mg/L		07-JUN-07	CVM	R532349
Molybdenum (Mo)	0.0001		0.0001	mg/L		07-JUN-07	CVM	R532349
Nickel (Ni)	0.0015		0.0001	mg/L		07-JUN-07	CVM	R532349
Lead (Pb)	<0.0001		0.0001	mg/L		07-JUN-07	CVM	R532349
Antimony (Sb)	<0.0004		0.0004	mg/L		07-JUN-07	CVM	R532349
Selenium (Se)	0.0015		0.0004	mg/L		07-JUN-07	CVM	R532349
Tin (Sn)	<0.0002		0.0002	mg/L		07-JUN-07	CVM	R532349
Strontium (Sr)	0.494		0.0001	mg/L		07-JUN-07	CVM	R532349
Titanium (Ti)	0.0006		0.0003	mg/L		07-JUN-07	CVM	R532349
Thallium (Tl)	<0.00005		0.00005	mg/L		07-JUN-07	CVM	R532349
Uranium (U)	<0.0001		0.0001	mg/L		07-JUN-07	CVM	R532349
Vanadium (V)	0.0003		0.0001	mg/L		07-JUN-07	CVM	R532349
Zinc (Zn)	0.008		0.002	mg/L		07-JUN-07	CVM	R532349
L512564-2 CMK0531071830 B								
Sampled By: MK on 30-MAY-07								
Matrix: WATER								
Total Metals								
Total Major Metals								
Calcium (Ca)	22.3		0.5	mg/L		05-JUN-07	HAS	R531318
Potassium (K)	1.8		0.1	mg/L		05-JUN-07	HAS	R531318
Magnesium (Mg)	8.4		0.1	mg/L		05-JUN-07	HAS	R531318
Sodium (Na)	252		1	mg/L		05-JUN-07	HAS	R531318
Iron (Fe)	0.038		0.005	mg/L		05-JUN-07	HAS	R531318
Manganese (Mn)	0.016		0.001	mg/L		05-JUN-07	HAS	R531318
Total Trace Metals (Low Level)								
Silver (Ag)	<0.0004		0.0004	mg/L		05-JUN-07	CVM	R531685
Aluminum (Al)	<0.02		0.02	mg/L		05-JUN-07	CVM	R531685
Arsenic (As)	<0.0004		0.0004	mg/L		05-JUN-07	CVM	R531685
Boron (B)	0.40		0.02	mg/L		05-JUN-07	CVM	R531685
Barium (Ba)	0.0642		0.0002	mg/L		05-JUN-07	CVM	R531685
Beryllium (Be)	<0.001		0.001	mg/L		05-JUN-07	CVM	R531685
Bismuth (Bi)	<0.0001		0.0001	mg/L		05-JUN-07	CVM	R531685

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	By	Batch
L512564-2 CMK0531071830 B						[redacted]		
Sampled By: MK on 30-MAY-07						[redacted]		
Matrix: WATER								
Total Metals								
Total Trace Metals (Low Level)								
Cadmium (Cd)	<0.0002		0.0002	mg/L		05-JUN-07	CVM	R531685
Cobalt (Co)	<0.0002		0.0002	mg/L		05-JUN-07	CVM	R531685
Chromium (Cr)	0.0015		0.0008	mg/L		05-JUN-07	CVM	R531685
Copper (Cu)	0.001		0.001	mg/L		05-JUN-07	CVM	R531685
Molybdenum (Mo)	0.0002		0.0001	mg/L		05-JUN-07	CVM	R531685
Nickel (Ni)	0.0008		0.0002	mg/L		05-JUN-07	CVM	R531685
Lead (Pb)	<0.0001		0.0001	mg/L		05-JUN-07	CVM	R531685
Antimony (Sb)	<0.0004		0.0004	mg/L		05-JUN-07	CVM	R531685
Selenium (Se)	0.0032		0.0004	mg/L		05-JUN-07	CVM	R531685
Tin (Sn)	<0.0004		0.0004	mg/L		05-JUN-07	CVM	R531685
Strontium (Sr)	0.496		0.0002	mg/L		05-JUN-07	CVM	R531685
Titanium (Ti)	<0.005		0.005	mg/L		05-JUN-07	CVM	R531685
Thallium (Tl)	<0.0001		0.0001	mg/L		05-JUN-07	CVM	R531685
Uranium (U)	0.0001		0.0001	mg/L		05-JUN-07	CVM	R531685
Vanadium (V)	<0.0002		0.0002	mg/L		05-JUN-07	CVM	R531685
Zinc (Zn)	0.018		0.004	mg/L		05-JUN-07	CVM	R531685
L512564-3 CMK0531071830 C								
Sampled By: MK on 30-MAY-07								
Matrix: WATER								
Routine Water: Major Ions, Fe & Mn								
Chloride (Cl)	7		1	mg/L		04-JUN-07	BOC	R530799
ICP metals and SO4 for routine water								
Calcium (Ca)	19.2		0.5	mg/L		03-JUN-07	WYA	R530451
Potassium (K)	1.9		0.5	mg/L		03-JUN-07	WYA	R530451
Magnesium (Mg)	9.8		0.1	mg/L		03-JUN-07	WYA	R530451
Sodium (Na)	265		1	mg/L		03-JUN-07	WYA	R530451
Sulfate (SO4)	117		0.5	mg/L		03-JUN-07	WYA	R530451
Ion Balance Calculation								
Ion Balance	93.5			%		04-JUN-07		
TDS (Calculated)	769			mg/L		04-JUN-07		
Hardness (as CaCO3)	88			mg/L		04-JUN-07		
Iron (Fe)-Extractable	<0.05		0.05	mg/L		04-JUN-07	WYA	R530772
Manganese (Mn)-Extractable	<0.01		0.01	mg/L		04-JUN-07	WYA	R530772
Nitrate+Nitrite-N	<0.1		0.1	mg/L		02-JUN-07	MCH	R530244
Nitrate-N	<0.1		0.1	mg/L		02-JUN-07	MCH	R530244
Nitrite-N	<0.05		0.05	mg/L		02-JUN-07	MCH	R530244
pH, Conductivity and Total Alkalinity								
pH	8.4		0.1	pH		02-JUN-07	WAU	R530460
Conductivity (EC)	1200		0.2	uS/cm		02-JUN-07	WAU	R530460
Bicarbonate (HCO3)	679		5	mg/L		02-JUN-07	WAU	R530460
Carbonate (CO3)	15		5	mg/L		02-JUN-07	WAU	R530460
Hydroxide (OH)	<5		5	mg/L		02-JUN-07	WAU	R530460
Alkalinity, Total (as CaCO3)	582		5	mg/L		02-JUN-07	WAU	R530460
L512564-4 [redacted]								
Sampled By: [redacted]								
Matrix: WATER								
Total Metals								
Total Major Metals								

ALBERTA RESEARCH COUNCIL | ORGANICS ANALYSIS DATA SHEET | ARC SAMPLE NUMBER: T07-1528

VOLATILE PRIORITY POLLUTANTS

Contact: Krezalek
SmpNo : ProjNo : ABSbl GrpSmpNo :
StaNo : StaType:
Comment: CMK0531071830
Matrix :
SmpDate: @ Samplers..ID1 :
EndDate: @ ..ID2 :

METHOD: A102.1
SCAN: VPP

		TimeLines (days) from sample date	
		Max	Actual
Date Received :	1-Jun-07 by: DRC	-	**
Date Extracted:	4-Jun-07 by: SS	7	**
Date Analyzed :	4-Jun-07 by: BJS	7	**

Raw DataFile : V1528

VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-
100651	1,1,1,2-Tetrachloroethane	0.0		.1	.1
95224	1,1,2,2-Tetrachloroethane	0.0		.1	.1
95214	1,1-Dichloroethane	0.0		.1	.1
100645	1,1-Dichloropropylene	0.0		.1	.1
100655	1,2,3-Trichloropropane	0.0		.1	.1
100656	1,2,4-Trimethylbenzene	0.0		.1	.1
100641	1,2-Dibromoethane	0.0		.1	.1
95215	1,2-Dichloroethane	0.0		.1	.1
100657	1,3,5-Trimethylbenzene	0.0		.1	.1
100644	1,3-Dichloropropane	0.0		.1	.1
100643	2,2-Dichloropropane	0.0		.1	.1
100638	2-Chlorotoluene	0.0		.1	.1
95200	Benzene	0.0		.1	.1
95201	Bromodichloromethane	0.0		.1	.1
95203	Bromomethane	0.0		.1	.1
95205	Chlorobenzene	0.0		.1	.1
95208	Chloroform	0.0		.1	.1
95209	Dibromochloromethane	0.0		.1	.1
95221	Ethyl benzene	0.0		.1	.1
100647	Isopropylbenzene	0.0		.1	.1
95222	Methylene chloride	0.0		2.0	.1
95223	Styrene	0.0		.1	.1
95225	Tetrachloroethylene	0.0		.3	.1
100654	Trichloroethylene	0.0		.1	.1
95232	Vinyl chloride	0.0		.5	.1
100642	cis-1,2-Dichloroethylene	0.0		.1	.1
95234	m,p-Xylene	0.0		.1	.1
100650	n-Propylbenzene	0.0		.1	.1
100648	p-Isopropyltoluene	0.0		.1	.1
100636	tert-Butylbenzene	0.0		.1	.1
95220	trans-1,3-Dichloropropylene	0.0		.3	.1

VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-
95227	1,1,1-Trichloroethane	0.0		.1	.1
95228	1,1,2-Trichloroethane	0.0		.1	.1
95216	1,1-Dichloroethylene	0.0		.1	.1
100652	1,2,3-Trichlorobenzene	0.0		.1	.1
100653	1,2,4-Trichlorobenzene	0.0		.1	.1
100640	1,2-Dibromo-3-chloropropane	0.0		.3	.1
95211	1,2-Dichlorobenzene	0.0		.1	.1
95218	1,2-Dichloropropane	0.0		.1	.1
95212	1,3-Dichlorobenzene	0.0		.1	.1
95213	1,4-Dichlorobenzene	0.0		.1	.1
95207	2-Chloroethoxyethylene	0.0		.4	.1
100639	4-Chlorotoluene	0.0		.1	.1
100634	Bromobenzene	0.0		.1	.1
95202	Bromoform	0.0		.5	.1
95204	Carbon tetrachloride	0.0		.1	.1
95206	Chloroethane	0.0		.1	.1
106204	Chloromethane	0.0		.5	.1
95210	Dibromomethane	0.0		.1	.1
100646	Hexachlorobutadiene	0.0		.3	.1
102608	MTBE	0.0		.1	.1
100649	Naphthalene	0.0		.1	.1
100397	TRIHALOMETHANES	0.0		.1	.1
95226	Toluene	0.0		.1	.1
95229	Trichlorofluoromethane	0.0		.1	.1
100407	XYLENES	0.0		.1	.1
95219	cis-1,3-Dichloropropylene	0.0		.3	.1
100637	n-Butylbenzene	0.0		.1	.1
95233	o-Xylene	0.0		.1	.1
100635	sec-Butylbenzene	0.0		.1	.1
95217	trans-1,2-Dichloroethylene	0.0		.1	.1

Zero (0) values indicate that the analyte is not DETECTED. MDL - Method Detection Limit

flags B - This analyte is found in the blank as well as the sample. The blank value has been subtracted.
X - Estimated value. The target compound meets the identification criteria, but is less than the MDL.
H - Compound Detected Q - Qualifying ions present but failed the ion ratio limits.
M - This value is calculated by an alternate Raw DataFile.

* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.

** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Yogesh Kumar
Date: 6-Jun-07
Contact Person: Grant Prill

BUSINESS UNIT MANAGER
ANALYTICAL CHEMISTRY
ALBERTA RESEARCH COUNCIL
BAG 4000, VEGREVILLE, ALBERTA
T9C 1T4 (780) 632-8455

mail to: Krezalek Martin
Alberta Environment
250 Diamond Avenue
Spruce Grove, Alberta T7X 4C7

ALBERTA RESEARCH COUNCIL | ORGANICS ANALYSIS DATA SHEET | ARC SAMPLE NUMBER: T07-1530

Client: Krezalek

Sample No: | Group Sample No: | Site Descrip/Comment: CMK0531071830

Station No: | Project No: ABSbl | Canister:

Agency: 34 | Samp Type: | SampMatrix: | Collection: | Samp Date: | Time: | Samplers ID:

SubGroups	FILE	VMV	NAME	ConcRpt	MDL	ConcRptUnit	InjDate
DG_C1C4							
	W1530	106770	Butane	.66	.01	ug/L	4-Jun-07
	W1530	106771	Ethane	127.00	.01	ug/L	4-Jun-07
	W1530	106772	Ethylene	0.00	.01	ug/L	4-Jun-07
	W1530	106773	Isobutane	3.15	.01	ug/L	4-Jun-07
	W1530	106774	Methane	2170.00	.01	ug/L	4-Jun-07
	W1530	106775	Propane	5.36	.01	ug/L	4-Jun-07
DG_TCD							
	L1530	106776	Carbon dioxide	9.22	1.00	mg/L	4-Jun-07
	L1530	106777	Nitrogen	24.70	6.00	mg/L	4-Jun-07
G_C1C4							
	C1530	106778	Butane	2.95	.05	ppmv	4-Jun-07
	C1530	106779	Ethane	1400.00	.05	ppmv	4-Jun-07
	C1530	106780	Ethylene	0.00	.05	ppmv	4-Jun-07
	C1530	106781	Isobutane	24.40	.05	ppmv	4-Jun-07
	C1530	106782	Methane	67900.00	.05	ppmv	4-Jun-07
	C1530	106783	Propane	41.90	.05	ppmv	4-Jun-07
G_TCD							
	G1530	106784	Carbon dioxide	4190.00	300.00	ppmv	1-Jun-07
	G1530	106785	Nitrogen	819000.00	1000.00	ppmv	1-Jun-07

[ARC_Remarks]: WGAS plus H2S - minican 1525M

SubGroups

DG_C1C4 and DG_TCD - Disolved Gas in water sample

G_C1C4 and G_TCD - Free Gas from canister

Certified For: Yogesh Kumar, Business Unit Manager
Environmental Monitoring
Alberta Research Council
Vegreville, Alberta
T9C 1T4

By: _____

Date: 7-Jun-07

Contact Person: Grant Prill
Environmental Monitoring
Alberta Research Council
Vegreville, Alberta T9C 1T4
T9C 1T4
(780) 632-8455

Alberta Research Council
Environmental Monitoring
Vegreville, Alberta

Tabular Data Report
.....

Sample No: T07-1530 Comments: CMK0531071830
SmpDate: Time: By: Matrix:
Canister #: User Sample No:

SubGroup: rsc

FILE	RT	MQ	NAME	Concentration ppbv	MW	MolFormula	CAS
Analysis Date: 01-JUN-2007 10:52							
R1530	0.00	T	Carbonyl sulphide	0.	60	COS	463-58-1
R1530	0.00	T	Sulphur dioxide	0.	64	SO2	7446-09-5
R1530	0.00	T	Methyl mercaptan	0.	48	CH4S	74-93-1
R1530	0.00	T	Ethyl mercaptan	0.	62	C2H6S	75-08-1
R1530	0.00	T	Dimethyl sulphide	0.	62	C2H6S	75-18-3
R1530	0.00	T	Isopropyl mercaptan	0.	76	C3H8S	75-33-2
R1530	0.00	T	tert-Butyl mercaptan	0.	90	C4H10S	75-66-1
R1530	0.00	T	Propyl mercaptan	0.	76	C3H8S	107-03-9
R1530	0.00	T	Ethyl methyl sulphide	0.	76	C3H8S	624-89-5
R1530	0.00	T	Thiophene	0.	84	C4H4S	110-02-1
R1530	0.00	T	sec-Butyl mercaptan	0.	90	C4H10S	513-53-1
R1530	0.00	T	Isobutyl mercaptan	0.	90	C4H10S	513-44-0
R1530	0.00	T	Ethyl sulphide	0.	90	C4H10S	352-93-2
R1530	0.00	T	Butyl mercaptan	0.	98	C4H10S	109-79-5
R1530	0.00	T	tert-Pentyl mercaptan	0.	104	C5H12S	1679-09-0
R1530	0.00	T	Dimethyl disulphide	0.	94	C2H6S2	624-92-0
R1530	0.00	T	2-methyl Thiophene	0.	98	C5H6S	554-14-3
R1530	0.00	T	3-methyl Thiophene	0.	98	C5H6S	616-44-4
R1530	0.00	T	Pentyl mercaptan	0.	104	C5H12S	110-66-7
R1530	0.00	T	2-ethyl Thiophene	0.	112	C6H8S	872-55-9
R1530	0.00	T	Allyl sulphide	0.	114	C6H10S	592-88-1
R1530	0.00	T	2,5-dimethyl Thiophene	0.	112	C6H8S	638-02-8
R1530	0.00	T	Hexyl mercaptan	0.	118	C6H14S	111-31-9
R1530	0.00	T	Dimethyl trisulphide	0.	126	C2H6S3	3658-80-8
R1530	0.00	T	Heptyl mercaptan	0.	132	C7H16S	1639-09-4
R1530	0.00	T	Butyl sulphide	0.	146	C8H18S	544-40-1
R1530	0.00	T	Octyl mercaptan	0.	146	C8H18S	111-88-6
R1530	1.19	T	Hydrogen sulphide	1,790.	34	H2S	7783-06-4
R1530	6.76	T	Carbon disulphide	0.	76	CS2	75-15-0
			sum:	1,790			

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A717579:F09500

Operator Name: MATRIX SOLUTIONS INC.	LSD:	Well ID:
Well Name: MATRIX	Name of Sampler: N/A	Company: MATRIX
Field or Area:	Pool or Zone:	Sample Point: 714507501001
Container Identity: TEDLAR BAG	Percent Full:	

Test Recovery: Test Type: No.: Multiple Recovery:

Interval 1 / Interval 2 / Interval 3: From: To.

Elevations (m): KB: GRD:

Sample Gathering Point: Solution Gas:

Production Rates: Water m3/d: Oil m3/d: Gas 1000m3/d:

Gauge Pressures kPa: Source: As Received:

Temperature °C: Source: As Received: 23.0

GPS: N 0.000000 GPS: W 0.000000

Well Fluid Type: Licence No.:

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/01	2007/05/01	2007/05/23	2007/05/23	2007/05/23	VR1,ASC,NR ,LLE,MS2,MW

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	0.0003		
O2	0.0032		
N2	0.2910		
CO2	0.0001	100	-46.24
H2S	0.0000		
C1	0.7054		-68.95
C2	0.0000		-58.00
C3	0.0000		
IC4	0.0000		
NC4	0.0000		
IC5	0.0000		
NC5	0.0000		
C6	0.0000		
C7+	0.0000		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight (Moisture Free as Sampled)	Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C	Calculated Relative Densities (Relative to Air @15°C)
19.5 (Total)	26.57 (GPA 2172)	0.672 (Moisture Free as Sampled)

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 4015/1651 Date 2007/05/03 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Presence/Absence Method. Number is an estimate.
Presence/Absence Method. Number is an estimate.

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A717579:F09500

Operator Name	NTS (BC Survey)	Well ID
MATRIX SOLUTIONS INC.		

Well Name	Name of Sampler	Company
MATRIX	N/A	MATRIX

Field or Area	Pool or Zone	Sample Point	Container Identity	Percent Full
		714507501001	TEDLAR BAG	

Test Recovery

Test Type No. Multiple Recovery

Interval 1 Interval 2 Interval 3
From:
To:

Elevations (m)
KB GRD

Sample Gathering Point

Solution Gas

Well Fluid Status

Well Status Mode

Production Rates
Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa
Source As Received

Temperature °C
Source As Received: 23.0

Well Status Type

Well Type

Gas or Condensate Project

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/01		2007/05/01	2007/05/23	2007/05/23	VR1,ASC,NR ,LLE,MS2,MW

PARAMETER DESCRIPTION	Result	unit		MDL
Calculated Parameters				
Hardness (CaCO3)	5.0	mg/L	AEMM, Method 423	0.5
Ion Balance	0.98	N/A	SM 1030E	
Total Dissolved Solids	490	mg/L	Calculation	10
Misc. Inorganics				
Conductivity	836	uS/cm	SM 2510-B	1
pH	9.20	N/A	SM 4500-H B	
Anions				
Alkalinity (PP as CaCO3)	51.1	mg/L	SM 2320-B	0.5
Alkalinity (Total as CaCO3)	435	mg/L	SM 2320-B	0.5
Bicarbonate (HCO3)	407	mg/L	SM 2320-B	0.5
Carbonate (CO3)	61.3	mg/L	SM 2320-B	0.5
Dissolved Fluoride (F)	3.18	mg/L	SM 4500-F C	0.05
Dissolved Sulphate (SO4)	0.6	mg/L	EPA 375.4	0.5
Hydroxide (OH)	<0.5	mg/L	SM 2320-B	0.5
Dissolved Chloride (Cl)	15.5	mg/L	EPA 325.2	0.5
Microbiological Param.				
Iron Bacteria	9000	CFU/mL	BART TM	25
Sulphate reducing bacteria	200	CFU/mL	BART TM	200
Nutrients				
Dissolved Nitrate (N)	<0.003	mg/L	SM 4110-B	0.003
Dissolved Nitrite (N)	<0.003	mg/L	SM 4110-B	0.003
Nitrate plus Nitrite (N)	<0.003	mg/L	SM 4110B	0.003
Physical Properties				
True Colour	14	PtCo units	SM 2120-B	5

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Presence/Absence Method. Number is an estimate.
Presence/Absence Method. Number is an estimate.

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A717579:F09656

Operator Name: MATRIX SOLUTIONS INC.	LSD	Well ID
Well Name: MATRIX	Name of Sampler: N/A	Company: MAXXAM
Field or Area	Pool or Zone	Sample Point: 7145070501005
Container Identity: TEDLAR BAG	Percent Full	

Test Recovery

Test Type / No. / Multiple Recovery

Interval 1 / Interval 2 / Interval 3
From:
To:

Elevations (m): KB / GRD

Sample Gathering Point

Solution Gas

Production Rates: Water m3/d / Oil m3/d / Gas 1000m3/d

Gauge Pressures kPa: Source / As Received

Temperature °C: Source / As Received: 23.0

GPS: N 0.000000

GPS: W 0.000000

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/01		2007/05/01	2007/05/23	2007/05/23	VR1,ASC,NR ,LLE,MW

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	Trace		
O2	0.1812		
N2	0.8045		
CO2	0.0139		
H2S	0.0000		
C1	0.0004	400	
C2	0.0000		
C3	0.0000		
IC4	0.0000		
NC4	0.0000		
IC5	0.0000		
NC5	0.0000		
C6	0.0000		
C7+	0.0000		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight (Moisture Free as Sampled): 23.2 Total

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: 0.01 GPA 2172

Calculated Relative Densities (Relative to Air @15°C): 0.799 Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 4015/1651 Date 2007/05/03 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Presence/Absence Method. Number is an estimate.
Presence/Absence Method. Number is an estimate.

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	A717579:F09500 Laboratory Number

MATRIX SOLUTIONS INC.
Operator Name

NTS (BC Survey)

Well ID

MATRIX
Well Name

N/A
Name of Sampler

MATRIX
Company

Field or Area

Pool or Zone

714507501001
Sample Point

TEDLAR BAG
Container Identity

Percent Full

Test Recovery

Interval 1 — Interval 2 — Interval 3
From:
To:

Elevations (m)
KB GRD

Sample Gathering Point

Solution Gas

Test Type No. Multiple Recovery

Well Fluid Status

Well Status Mode

Production Rates
Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa
Source As Received

Temperature °C
23.0
Source As Received

Well Status Type

Well Type

Gas or Condensate Project

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/01		2007/05/01	2007/05/23	2007/05/23	VR1,ASC,NR ,LLE,MS2,MW

PARAMETER DESCRIPTION	Result	unit		MDL
Elements				
Dissolved Calcium (Ca)	1.6	mg/L	EPA 200.7	0.3
Dissolved Iron (Fe)	<0.06	mg/L	EPA 200.7	0.06
Dissolved Magnesium (Mg)	0.2	mg/L	EPA 200.7	0.2
Dissolved Manganese (Mn)	<0.004	mg/L	EPA 200.7	0.004
Dissolved Potassium (K)	0.5	mg/L	EPA 200.7	0.3
Dissolved Sodium (Na)	207	mg/L	EPA 200.7	0.5
Total Iron (Fe)	0.47	mg/L	EPA 200.7	0.06

** information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Presence/Absence Method. Number is an estimate.
Presence/Absence Method. Number is an estimate.

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A717579:F09656

Operator Name	NTS (BC Survey)	Well ID
MATRIX SOLUTIONS INC.		

Well Name	Name of Sampler	Company
MATRIX	N/A	MAXXAM

Field or Area	Pool or Zone	Sample Point	Container Identity	Percent Full
		7145070501005	TEDLAR BAG	

Test Recovery

Test Type | No. | Multiple Recovery

Interval 1 / Interval 2 / Interval 3
From:
To:

Elevations (m): KB | GRD

Sample Gathering Point | Solution Gas

Well Fluid Status | Well Status Mode

Production Rates: Water m3/d | Oil m3/d | Gas 1000m3/d

Gauge Pressures kPa: Source | As Received

Temperature °C: Source | As Received: 23.0

Well Status Type | Well Type

Gas or Condensate Project | Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/01		2007/05/01	2007/05/23	2007/05/23	VR1,ASC,NR ,LLE,MW

PARAMETER DESCRIPTION	Result	unit		MDL
Elements				
Dissolved Calcium (Ca)	56.5	mg/L	EPA 200.7	0.3
Dissolved Iron (Fe)	0.13	mg/L	EPA 200.7	0.06
Dissolved Magnesium (Mg)	29.8	mg/L	EPA 200.7	0.2
Dissolved Manganese (Mn)	0.046	mg/L	EPA 200.7	0.004
Dissolved Potassium (K)	2.2	mg/L	EPA 200.7	0.3
Dissolved Sodium (Na)	105	mg/L	EPA 200.7	0.5
Total Iron (Fe)	6.52	mg/L	EPA 200.7	0.06

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Presence/Absence Method. Number is an estimate.
Presence/Absence Method. Number is an estimate.

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	
Client I.D.	
Meter Number	
Laboratory Number	A717579:F09656
Operator Name	MATRIX SOLUTIONS INC.
NTS (BC Survey)	
Well ID	
Well Name	MATRIX
Name of Sampler	N/A
Company	MAXXAM
Field or Area	
Pool or Zone	
Sample Point	7145070501005
Container Identity	TEDLAR BAG
Percent Cut	
Test Recovery	
Interval 1 / Interval 2 / Interval 3	From: To.
Elevations (m)	KB / GRD
Sample Gathering Point	
Solution Gas	
Test Type / No. / Multiple Recovery	
Well Fluid Status	
Well Status Mode	
Production Rates	Water m3/d / Oil m3/d / Gas 1000m3/d
Gauge Pressures kPa	Source / As Received
Temperature °C	23.0 / Source / As Received
Well Status Type	
Well Type	
Gas or Condensate Project	
Licence No.	
Date Sampled Start	2007/05/01
Date Sampled End	2007/05/01
Date Received	2007/05/23
Date Reported	2007/05/23
Date Reissued	
Analysis	VR1,ASC,NR ,LLE,MW

PARAMETER DESCRIPTION	Result	unit		MDL
Calculated Parameters				
Hardness (CaCO3)	260	mg/L	AEMM, Method 423	0.5
Ion Balance	1.03	N/A	SM 1030E	
Total Dissolved Solids	498	mg/L	Calculation	10
Misc. Inorganics				
Conductivity	847	uS/cm	SM 2510-B	1
pH	8.03	N/A	SM 4500-H B	
Anions				
Alkalinity (PP as CaCO3)	<0.5	mg/L	SM 2320-B	0.5
Alkalinity (Total as CaCO3)	410	mg/L	SM 2320-B	0.5
Bicarbonate (HCO3)	500	mg/L	SM 2320-B	0.5
Carbonate (CO3)	<0.5	mg/L	SM 2320-B	0.5
Dissolved Fluoride (F)	0.12	mg/L	SM 4500-F C	0.05
Dissolved Sulphate (SO4)	28.6	mg/L	EPA 375.4	0.5
Hydroxide (OH)	<0.5	mg/L	SM 2320-B	0.5
Dissolved Chloride (Cl)	28.4	mg/L	EPA 325.2	0.5
Microbiological Param.				
Iron Bacteria	2300	CFU/mL	BART TM	25
Sulphate reducing bacteria	<200	CFU/mL	BART TM	200
Nutrients				
Dissolved Nitrate (N)	0.413	mg/L	SM 4110-B	0.003
Dissolved Nitrite (N)	0.019	mg/L	SM 4110-B	0.003
Nitrate plus Nitrite (N)	0.432	mg/L	SM 4110B	0.003
Physical Properties				
True Colour	<5	PtCo units	SM 2120-B	5

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Presence/Absence Method. Number is an estimate.
Presence/Absence Method. Number is an estimate.

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A718148:F12912

Operator Name	LSD	Well ID
MATRIX SOLUTIONS INC.		

Well Name	Name of Sampler	Company
MATRIX	N/A	MATRIX

Field or Area	Pool or Zone	Sample Point	Container Identity	Percent Full
		7145070502059	TEDLAR BAG	

Test Recovery

Test Type No. Multiple Recovery

Interval 1 Interval 2 Interval 3
From:
To:

Elevations (m): KB GRD

Sample Gathering Point

Solution Gas

N 0.000000 GPS

W 0.000000 GPS

Production Rates: Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa: Source As Received

Temperature °C: Source As Received

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/06/13	2007/06/13	MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	Trace		
O2	0.1796		
N2	0.6695		
CO2	0.0004	400	-12.97
H2S	0.0000		
C1	0.1502		-60.12
C2	0.0003	300	-41.71
C3	Trace		-30.66
IC4	Trace		
NC4	0.0000		
IC5	0.0000		
NC5	0.0000		
C6	0.0000		
C7+	0.0000		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight (Moisture Free as Sampled)	Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C	Calculated Relative Densities (Relative to Air @15°C)
21.2 (Total)	5.66 (GPA 2172)	0.732 (Moisture Free as Sampled)

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/10 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

GAS ANALYSIS PPM

Sample Point I.D.	Client I.D.	Meter Number	A718148:F12911 Laboratory Number

MATRIX SOLUTIONS INC.
Operator Name

LSD

Well ID

MATRIX
Well Name

N/A
Name of Sampler

MATRIX
Company

Field or Area

Pool or Zone

714507502056
Sample Point

TEDLAR BAG
Container Identity

Percent Full

Test Recovery

Test Type No. Multiple Recovery

Interval 1 Interval 2 Interval 3
From.
To:

Elevations (m)
KB GRD

Sample Gathering Point

N 0.000000
GPS

Solution Gas

W 0.000000
GPS

Production Rates
Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa
Source As Received

Temperature °C
Source As Received

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/06/13	2007/06/13	MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)
H2	Trace	
He	Trace	
O2	0.2143	
N2	0.7852	
CO2	0.0005	500
H2S	0.0000	
C1	0.0000	
C2	0.0000	
C3	0.0000	
IC4	0.0000	
NC4	0.0000	
IC5	0.0000	
NC5	0.0000	
C6	0.0000	
C7+	0.0000	
TOTAL	1.0000	

PROPERTIES

Calculated Mole Weight
Moisture Free as Sampled
22.0
Total

Calculated Gross Heating Value (MJ/m3)
@ 101.325 kPa & 15°C
Trace
GPA 2172

Calculated Relative Densities
Relative to Air @15°C
0.760
Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

QC Check Std # 6652/1651 Date 2007/05/05 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

GAS ANALYSIS PPM

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A718148:F12909

Operator Name	LSD	Well ID
MATRIX SOLUTIONS INC.		

Well Name	Name of Sampler	Company
MATRIX	N/A	MATRIX

Field or Area	Pool or Zone	Sample Point	Container Identity	Percent Full
		7145070502055	TEDLAR BAG	

Test Recovery

Test Type No. Multiple Recovery

Interval 1 — Interval 2 — Interval 3
From:
To:

Elevations (m): KB GRD

Sample Gathering Point

Solution Gas

N 0.000000 GPS

W 0.000000 GPS

Production Rates: Water m3/d, Oil m3/d, Gas 1000m3/d

Gauge Pressures kPa: Source, As Received

Temperature °C: Source, As Received

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/06/13	2007/06/13	MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)
H2	Trace	
He	Trace	
O2	0.2108	
N2	0.7852	
CO2	0.0040	
H2S	0.0000	
C1	0.0000	
C2	0.0000	
C3	0.0000	
IC4	0.0000	
NC4	0.0000	
IC5	0.0000	
NC5	0.0000	
C6	0.0000	
C7+	0.0000	
TOTAL	1.0000	

PROPERTIES

Calculated Mole Weight — Moisture Free as Sampled: 22.2 (Total)

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: Trace (GPA 2172)

Calculated Relative Densities — Relative to Air @15°C: 0.765 (Moisture Free as Sampled)

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

QC Check Std # 6652/1651 Date 2007/05/05 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

GAS ANALYSIS PPM

Sample Point I.D.	Client I.D.	Meter Number	A718148:F12908 Laboratory Number

MATRIX SOLUTIONS INC.
Operator Name

LSD

Well ID

MATRIX
Well Name

N/A
Name of Sampler

MATRIX
Company

Field or Area

Pool or Zone

7145070502054
Sample Point

TEDLAR BAG
Container identity

Percent Full

Test Recovery

Test Type No. Multiple Recovery

Interval 1 Interval 2 Interval 3
From:
To:

Elevations (m)
KB GRD

Sample Gathering Point

Solution Gas

N 0.000000
GPS

W 0.000000
GPS

Production Rates
Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa
Source As Received

Temperature °C
Source As Received

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/06/13	2007/06/13	MS2

COMPOSITION

Component	Mole Fraction As Rec`d	ppm (v/v)
H2	0.0000	
He	Trace	
O2	0.2145	
N2	0.7851	
CO2	0.0004	400
H2S	0.0000	
C1	0.0000	
C2	0.0000	
C3	0.0000	
IC4	0.0000	
NC4	0.0000	
IC5	0.0000	
NC5	0.0000	
C6	0.0000	
C7+	0.0000	
TOTAL	1.0000	

PROPERTIES

Calculated Mole Weight
Moisture Free as Sampled
22.0
Total

Calculated Gross Heating Value (MJ/m3)
@ 101.325 kPa & 15°C
0.00
GPA 2172

Calculated Relative Densities
Relative to Air @15°C
0.760
Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

QC Check Std # 6652/1651 Date 2007/05/05 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

GAS ANALYSIS PPM

Sample Point I.D.	Client I.D.	Meter Number	A718148:F12907 Laboratory Number

MATRIX SOLUTIONS INC.
Operator Name

LSD

Well ID

MATRIX
Well Name

N/A
Name of Sampler

MATRIX
Company

Field or Area

Pool or Zone

71407050253
Sample Point

TEDLAR BAG
Container Identity

Percent Full

Test Recovery

Interval 1 — Interval 2 — Interval 3
From:
To:

Elevations (m)
KB GRD

Sample Gathering Point

Solution Gas

Test Type No. Multiple Recovery

Production Rates
Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa
Source As Received

Temperature °C
Source As Received

N 0.000000
GPS

W 0.000000
GPS

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/06/13	2007/06/13	MS2

COMPOSITION

Component	Mole Fraction As Rec`d	ppm (v/v)
H2	0.0000	
He	Trace	
O2	0.2147	
N2	0.7845	
CO2	0.0005	500
H2S	0.0000	
C1	0.0003	300
C2	0.0000	
C3	0.0000	
IC4	0.0000	
NC4	0.0000	
IC5	0.0000	
NC5	0.0000	
C6	0.0000	
C7+	0.0000	
TOTAL	1.0000	

PROPERTIES

Calculated Mole Weight
Moisture Free as Sampled
22.0
Total

Calculated Gross Heating Value (MJ/m3)
@ 101.325 kPa & 15°C
0.01
GPA 2172

Calculated Relative Densities
Relative to Air @15°C
0.760
Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

QC Check Std # 6652/1651 Date 2007/05/05 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

GAS ANALYSIS PPM

Sample Point I.D.	Client I.D.	Meter Number	A718148;F12906 Laboratory Number

MATRIX SOLUTIONS INC.
Operator Name

LSD

Well ID

MATRIX
Well Name

N/A
Name of Sampler

MATRIX
Company

Field or Area

Pool or Zone

7145070502052
Sample Point

TEDLAR BAG
Container Identity

Percent Full

Test Recovery

Interval 1 — Interval 2 — Interval 3
From:
To:

Elevations (m)
KB GRD

Sample Gathering Point

Solution Gas

Test Type No. Multiple Recovery

N 0.000000
GPS

W 0.000000
Grid

Production Rates
Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa
Source As Received

Temperature °C
Source As Received

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/06/13	2007/06/13	MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)
H2	Trace	
He	Trace	
O2	0.2146	
N2	0.7849	
CO2	0.0005	500
H2S	0.0000	
C1	0.0000	
C2	0.0000	
C3	0.0000	
IC4	0.0000	
NC4	0.0000	
IC5	0.0000	
NC5	0.0000	
C6	0.0000	
C7+	0.0000	
TOTAL	1.0000	

PROPERTIES

Calculated Mole Weight
Moisture Free as Sampled
22.0
Total

Calculated Gross Heating Value (MJ/m3)
@ 101.325 kPa & 15°C
0.00
GPA 2172

Calculated Relative Densities
Relative to Air @15°C
0.760
Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1	Tutwiler (mole%)
		Gastec (ppm v/v)	

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

QC Check Std # 6652/1651 Date 2007/05/05 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

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GAS MIGRATION ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	A718148:F12945 Laboratory Number

MATRIX SOLUTIONS INC. Operator Name	LSD	Well ID
MATRIX Well Name	N/A Name of Sampler	MATRIX Company
Field or Area	Pool or Zone	7145070502058 Sample Point
11928 Container Identity	Percent Full	

Test Recovery

Test Type / No. / Multiple Recovery

Interval 1 / Interval 2 / Interval 3
From:
To:

Elevations (m): KB / GRD

Sample Gathering Point

Solution Gas

Production Rates: Water m3/d / Oil m3/d / Gas 1000m3/d

Gauge Pressures kPa: Source / As Received

Temperature °C: Source / As Received

N 0.000000 GPS

W 0.000000 GPS

Well Fluid Type

Licence No.

2007/05/02 Date Sampled Start	Date Sampled End	2007/05/04 Date Received	2007/05/08 Date Reported	Date Reissued	MW , Analyst

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	0.0004		
O2	0.0002		
N2	0.0148		
CO2	0.0065		TBA
H2S	0.0000		
C1	0.7856		TBA
C2	0.0750		TBA
C3	0.0745		TBA
IC4	0.0120		TBA
NC4	0.0214		TBA
IC5	0.0037		
NC5	0.0033		
C6	0.0016		
C7+	0.0010	1000	
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight — Moisture Free as Sampled: 21.5 Total

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: 47.24 GPA 2172

Calculated Relative Densities — Relative to Air @15°C: 0.743 Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/08 QC Passed Yes

** Information not supplied by client —data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc.

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GAS MIGRATION ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	A718148:F12918 Laboratory Number

MATRIX SOLUTIONS INC.
Operator Name

LSD

Well ID

MATRIX
Well Name

N/A
Name of Sampler

MATRIX
Company

Field or Area

Pool or Zone

7145070502057
Sample Point

11707
Container Identity

Percent Full

Test Recovery

Test Type No. Multiple Recovery

Interval 1 Interval 2 Interval 3
From:
To:

Elevations (m)
KB GRD

Sample Gathering Point

Solution Gas

N 0.000000
GPS

W 0.000000
GPS

Production Rates
Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa
Source As Received

Temperature °C
Source As Received

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/05/08		MW

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	0.0005		
O2	0.0001		
N2	0.0153		
CO2	0.0059		TBA
H2S	0.0000		
C1	0.8143		TBA
C2	0.0625		TBA
C3	0.0603		TBA
IC4	0.0107		TBA
NC4	0.0201		TBA
IC5	0.0038		
NC5	0.0034		
C6	0.0018		
C7+	0.0013		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight
Moisture Free as Sampled
20.9
Total

Calculated Gross Heating Value (MJ/m3)
@ 101.325 kPa & 15°C
45.94
GPA 2172

Calculated Relative Densities
Relative to Air @15°C
0.721
Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/08 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

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GAS MIGRATION ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	A718148:F12916 Laboratory Number

MATRIX SOLUTIONS INC. — Operator Name

LSD: N/A — Well ID: MATRIX

Well Name: MATRIX — Name of Sampler: N/A — Company: MATRIX

Field or Area: — Pool or Zone: — Sample Point: 7145070502051 — Container Identity: 14913 — Percent Full:

Test Recovery: — Test Type: — No.: — Multiple Recovery:

Interval 1 / Interval 2 / Interval 3 — From: — To:

Elevations (m): KB — GRD

Sample Gathering Point: — Solution Gas:

N 0.000000 GPS — W 0.000000 GPS

Production Rates: Water m3/d — Oil m3/d — Gas 1000m3/d

Gauge Pressures kPa: Source — As Received

Temperature °C: Source — As Received

Well Fluid Type: — Licence No.:

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/05/08		MW ,

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	0.0006		
O2	0.0000		
N2	0.0196		
CO2	0.0058		TBA
H2S	0.0000		
C1	0.8740		TBA
C2	0.0518		TBA
C3	0.0287		TBA
IC4	0.0055		TBA
NC4	0.0067		TBA
IC5	0.0022		
NC5	0.0017		
C6	0.0015		
C7+	0.0019		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight — Moisture Free as Sampled: 19.0 Total

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: 41.84 GPA 2172

Calculated Relative Densities — Relative to Air @15°C: 0.655 Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\,‰ = [(^{13}C/^{12}C_{sample} - {}^{13}C/^{12}C_{standard}) / (^{13}C/^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/08 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

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GAS MIGRATION ANALYSIS

Sample Point I.D.	Client I.D	Meter Number	Laboratory Number: A718148:F12915

Operator Name: MATRIX SOLUTIONS INC.
LSD:
Well ID:

Well Name: MATRIX
Name of Sampler: N/A
Company: MATRIX

Field or Area:
Pool or Zone:
Sample Point: 7145070502050
Container Identity: 13853
Percent Full:

Test Recovery:
Test Type: No.: Multiple Recovery:

Interval 1 / Interval 2 / Interval 3
From:
To:

Elevations (m): KB: GRD:

Sample Gathering Point: N 0.000000 GPS
Solution Gas: W 0.000000 GPS

Production Rates: Water m3/d: Oil m3/d: Gas 1000m3/d:

Gauge Pressures kPa: Source: As Received:

Temperature °C: Source: As Received:

Well Fluid Type:
Licence No.:

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/05/08		MW ,

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	0.0006		
O2	0.0000		
N2	0.0196		
CO2	0.0058		TBA
H2S	0.0000		
C1	0.8742		TBA
C2	0.0514		TBA
C3	0.0288		TBA
IC4	0.0055		TBA
NC4	0.0066		TBA
IC5	0.0022		
NC5	0.0017		
C6	0.0015		
C7+	0.0021		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight — Moisture Free as Sampled: 19.0 Total

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: 41.84 GPA 2172

Calculated Relative Densities — Relative to Air @15°C: 0.655 Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\,‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/08 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

Driven by Service and Science

GAS MIGRATION ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	A718148:F12912 Laboratory Number

MATRIX SOLUTIONS INC. — Operator Name

LSD: N/A — Well ID: MATRIX

Well Name: MATRIX — Name of Sampler: N/A — Company: MATRIX

Field or Area — Pool or Zone — Sample Point: 7145070502059 — Container Identity: TEDLAR BAG — Percent Full

Test Recovery — Interval 1 / Interval 2 / Interval 3 (From. To) — Elevations (m): KB, GRD — Sample Gathering Point — Solution Gas

Test Type — No — Multiple Recovery

GPS: N 0.000000 — GPS: W 0.000000

Production Rates: Water m3/d, Oil m3/d, Gas 1000m3/d — Gauge Pressures kPa: Source, As Received — Temperature °C: Source, As Received — Well Fluid Type — Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/05/08		MW , ,MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	Trace		
O2	0.1796		
N2	0.6695		
CO2	0.0004	400	TBA
H2S	0.0000		
C1	0.1502		TBA
C2	0.0003	300	TBA
C3	Trace		TBA
IC4	Trace		TBA
NC4	0.0000		TBA
IC5	0.0000		
NC5	0.0000		
C6	0.0000		
C7+	0.0000		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight (Moisture Free as Sampled)	Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C	Calculated Relative Densities (Relative to Air @15°C)
21.2 (Total)	5.66 (GPA 2172)	0.732 (Moisture Free as Sampled)

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\,‰ = [(^{13}C/^{12}C_{sample} - {}^{13}C/^{12}C_{standard}) / (^{13}C/^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/05 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks.

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

Driven by Service and Science

GAS ANALYSIS PPM

Sample Point I.D.	Client I.D.	Meter Number	A718148:F12911 Laboratory Number

MATRIX SOLUTIONS INC.
Operator Name

LSD

Well ID

MATRIX
Well Name

N/A
Name of Sampler

MATRIX
Company

Field or Area

Pool or Zone

714507502056
Sample Point

TEDLAR BAG
Container Identity

Percent Full

Test Recovery

Test Type No. Multiple Recovery

Interval 1 Interval 2 Interval 3
From:
To:

Elevations (m)
KB GRD

Sample Gathering Point

Solution Gas

N 0.000000
GPS

W 0.000000
GPS

Production Rates
Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa
Source As Received

Temperature °C
Source As Received

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/05/08		MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)
H2	Trace	
He	Trace	
O2	0.2143	
N2	0.7852	
CO2	0.0005	500
H2S	0.0000	
C1	0.0000	
C2	0.0000	
C3	0.0000	
IC4	0.0000	
NC4	0.0000	
IC5	0.0000	
NC5	0.0000	
C6	0.0000	
C7+	0.0000	
TOTAL	1.0000	

PROPERTIES

Calculated Mole Weight
Moisture Free as Sampled
22.0
Total

Calculated Gross Heating Value (MJ/m3)
@ 101.325 kPa & 15°C
Trace
GPA 2172

Calculated Relative Densities
Relative to Air @15°C
0.760
Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content
H2S degrades variably in all sample containers and is also matrix dependant.

QC Check Std # 6652/1651 Date 2007/05/05 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

Driven by Service and Science

GAS ANALYSIS PPM

Sample Point I.D.	Client I.D.	Meter Number	A718148:F12909 Laboratory Number

MATRIX SOLUTIONS INC.
Operator Name

LSD

Well ID

MATRIX
Well Name

N/A
Name of Sampler

MATRIX
Company

Field or Area

Pool or Zone

7145070502055
Sample Point

TEDLAR BAG
Container Identity

Percent Full

Test Recovery

Test Type No. Multiple Recovery

Interval 1 Interval 2 Interval 3
From
To

Elevations (m)
KB GRD

Sample Gathering Point

Solution Gas

N 0.000000
GPS

W 0.000000
GPS

Production Rates
Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa
Source As Received

Temperature °C
Source As Received

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/05/08		MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)
H2	Trace	
He	Trace	
O2	0.2108	
N2	0.7852	
CO2	0.0040	
H2S	0.0000	
C1	0.0000	
C2	0.0000	
C3	0.0000	
IC4	0.0000	
NC4	0.0000	
IC5	0.0000	
NC5	0.0000	
C6	0.0000	
C7+	0.0000	
TOTAL	1.0000	

PROPERTIES

Calculated Mole Weight
Moisture Free as Sampled
22.2
Total

Calculated Gross Heating Value (MJ/m3)
@ 101.325 kPa & 15°C
Trace
GPA 2172

Calculated Relative Densities
Relative to Air @15°C
0.765
Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content
H2S degrades variably in all sample containers and is also matrix dependant.

QC Check Std # 6652/1651 Date 2007/05/05 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

Driven by Service and Science

GAS ANALYSIS PPM

Sample Point I.D.	Client I.D	Meter Number	A718148:F12908 Laboratory Number
MATRIX SOLUTIONS INC. Operator Name		LSD	Well ID
MATRIX Well Name		N/A Name of Sampler	MATRIX Company
Field or Area	Pool or Zone	7145070502054 Sample Point	TEDLAR BAG Container Identity / Percent Full

Test Recovery

Test Type / No. / Multiple Recovery

Interval 1 / Interval 2 / Interval 3 — From: To:

Elevations (m): KB / GRD

Sample Gathering Point: N 0.000000 GPS

Solution Gas: W 0.000000 GPS

Production Rates: Water m3/d / Oil m3/d / Gas 1000m3/d

Gauge Pressures kPa: Source / As Received

Temperature °C: Source / As Received

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/05/08		MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)
H2	0.0000	
He	Trace	
O2	0.2145	
N2	0.7851	
CO2	0.0004	400
H2S	0.0000	
C1	0.0000	
C2	0.0000	
C3	0.0000	
IC4	0.0000	
NC4	0.0000	
IC5	0.0000	
NC5	0.0000	
C6	0.0000	
C7+	0.0000	
TOTAL	1.0000	

PROPERTIES

Calculated Mole Weight — Moisture Free as Sampled: 22.0 Total

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: 0.00 GPA 2172

Calculated Relative Densities — Relative to Air @15°C: 0.760 Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

QC Check Std # 6652/1651 Date 2007/05/05 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A718148:F12945

Operator Name: MATRIX SOLUTIONS INC.
LSD:
Well ID:

Well Name: MATRIX
Name of Sampler: N/A
Company: MATRIX

Field or Area:
Pool or Zone:
Sample Point: 7145070502058
Container Identity: 11928
Percent Full:

Test Recovery:
Test Type: No.: Multiple Recovery:
Interval 1 From: To:
Interval 2:
Interval 3:
Elevations (m): KB: GRD:
Sample Gathering Point:
Solution Gas:

Production Rates: Water m3/d: Oil m3/d: Gas 1000m3/d:
Gauge Pressures kPa: Source: As Received:
Temperature °C: Source: As Received:

GPS: N 0.000000
GPS: W 0.000000
Well Fluid Type:
Licence No.:

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/06/13	2007/06/13	MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	0.0004		
O2	0.0002		
N2	0.0148		
CO2	0.0065		-10.17
H2S	0.0000		
C1	0.7856		-48.00
C2	0.0750		-30.13
C3	0.0745		-26.70
IC4	0.0120		-27.29
NC4	0.0214		-27.36
IC5	0.0037		
NC5	0.0033		
C6	0.0016		
C7+	0.0010	1000	
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight (Moisture Free as Sampled): 21.5 (Total)

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: 47.24 (GPA 2172)

Calculated Relative Densities (Relative to Air @15°C): 0.743 (Moisture Free as Sampled)

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1	
		Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/10 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A718148:F12918

Operator Name: MATRIX SOLUTIONS INC.

Well Name	Name of Sampler	Company	LSD	Well ID
MATRIX	N/A	MATRIX		

Field or Area	Pool or Zone	Sample Point	Container Identity	Percent Full
		7145070502057	11707	

Test Recovery | Interval 1 | Interval 2 | Interval 3 | Elevations (m) | Sample Gathering Point | Solution Gas

Test Type | No. | Multiple Recovery | From: | To: | KB | GRD | N 0.000000 GPS | W 0.000000 GPS

Production Rates: Water m3/d | Oil m3/d | Gas 1000m3/d

Gauge Pressures kPa: Source | As Received

Temperature °C: Source | As Received

Well Fluid Type | License No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/06/13	2007/06/13	MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	0.0005		
O2	0.0001		
N2	0.0153		
CO2	0.0059		-15.32
H2S	0.0000		
C1	0.8143		-53.19
C2	0.0625		-31.42
C3	0.0603		-29.51
IC4	0.0107		-28.03
NC4	0.0201		-28.31
IC5	0.0038		
NC5	0.0034		
C6	0.0018		
C7+	0.0013		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight (Moisture Free as Sampled)	Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C	Calculated Relative Densities (Relative to Air @15°C)
20.9 (Total)	45.94 (GPA 2172)	0.721 (Moisture Free as Sampled)

Hydrogen Sulphide

On Site		In Lab	
Gas (ppm v/v)	Liquid (mole%)	<1 Gas (ppm v/v)	Liquid (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/10 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A718148:F12916

Operator Name	LSD	Well ID
MATRIX SOLUTIONS INC.		

Well Name	Name of Sampler	Company
MATRIX	N/A	MATRIX

Field or Area	Pool or Zone	Sample Point	Container Identify	Percent Full
		7145070502051	14913	

Test Recovery

Test Type No. Multiple Recovery

Interval 1 Interval 2 Interval 3
From:
To:

Elevations (m): KB GRD

Sample Gathering Point: N 0.000000 GPS

Solution Gas: W 0.000000 GPS

Production Rates: Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa: Source As Received

Temperature °C: Source As Received

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/06/13	2007/06/13	MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	0.0006		
O2	0.0000		
N2	0.0196		
CO2	0.0058		-17.69
H2S	0.0000		
C1	0.8740		-50.05
C2	0.0518		-31.45
C3	0.0287		-30.28
IC4	0.0055		
NC4	0.0067		-30.18
IC5	0.0022		
NC5	0.0017		
C6	0.0015		
C7+	0.0019		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight (Moisture Free as Sampled): 19.0 Total

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: 41.84 GPA 2172

Calculated Relative Densities (Relative to Air @15°C): 0.655 Moisture Free as Sampled

Hydrogen Sulphide

On Site: Gastec (ppm v/v) Tutwiler (mole%)

In Lab: <1 Gastec (ppm v/v) Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/10 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A718148:F12915

Operator Name: MATRIX SOLUTIONS INC.
LSD:
Well ID:

Well Name: MATRIX
Name of Sampler: N/A
Company: MATRIX

Field or Area:
Pool or Zone:
Sample Point: 7145070502050
Container Identity: 13853
Percent Full:

Test Recovery:
Test Type: No.: Multiple Recovery:
Interval 1 From: To:
Interval 2:
Interval 3:
Elevations (m): KB: GRD:
Sample Gathering Point:
Solution Gas:
Production Rates: Water m3/d: Oil m3/d: Gas 1000m3/d:
Gauge Pressures kPa: Source: As Received:
Temperature °C: Source: As Received:
GPS: N 0.000000 GPS: W 0.000000
Well Fluid Type:
Licence No.:

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/06/13	2007/06/13	MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	0.0006		
O2	0.0000		
N2	0.0196		
CO2	0.0058		-15.63
H2S	0.0000		
C1	0.8742		-49.85
C2	0.0514		-30.50
C3	0.0288		-29.61
IC4	0.0055		-29.12
NC4	0.0066		-30.46
IC5	0.0022		
NC5	0.0017		
C6	0.0015		
C7+	0.0021		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight (Moisture Free as Sampled): 19.0 Total

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: 41.84 GPA 2172

Calculated Relative Densities (Relative to Air @15°C): 0.655 Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - {}^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/10 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

Driven by Service and Science

GAS ANALYSIS PPM

Sample Point I.D.	Client I.D.	Meter Number	A718148:F12906 Laboratory Number

MATRIX SOLUTIONS INC.
Operator Name

LSD

Well ID

MATRIX
Well Name

N/A
Name of Sampler

MATRIX
Company

Field or Area

Pool or Zone

7145070502052
Sample Point

TEDLAR BAG
Container Identity

Percent Full

Test Recovery

Test Type No. Multiple Recovery

Interval 1 Interval 2 Interval 3
From:
To:

Elevations (m)
KB GRD

Sample Gathering Point

Solution Gas

N 0.000000
GPS

W 0.000000
GPS

Production Rates
Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa
Source As Received

Temperature °C
Source As Received

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/05/08		MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)
H2	Trace	
He	Trace	
O2	0.2146	
N2	0.7849	
CO2	0.0005	500
H2S	0.0000	
C1	0.0000	
C2	0.0000	
C3	0.0000	
IC4	0.0000	
NC4	0.0000	
IC5	0.0000	
NC5	0.0000	
C6	0.0000	
C7+	0.0000	
TOTAL	1.0000	

PROPERTIES

Calculated Mole Weight	Calculated Gross Heating Value (MJ/m3)	Calculated Relative Densities
Moisture Free as Sampled	@ 101.325 kPa & 15°C	Relative to Air @15°C
22.0	0.00	0.760
Total	GPA 2172	Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

QC Check Std # 6652/1651 Date 2007/05/05 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

Driven by Service and Science

GAS ANALYSIS PPM

Sample Point I.D.	Client I.D.	Meter Number	A718148:F12907 Laboratory Number
MATRIX SOLUTIONS INC. Operator Name		LSD	Well ID
MATRIX Well Name		N/A Name of Sampler	MATRIX Company
Field or Area	Pool or Zone	71407050253 Sample Point	TEDLAR BAG Container Identity / Percent Full

Test Recovery | Test Type | No. | Multiple Recovery | Interval 1 From: To: | Interval 2 | Interval 3 | Elevations (m) KB GRD | Sample Gathering Point | Solution Gas

Production Rates: Water m3/d | Oil m3/d | Gas 1000m3/d

Gauge Pressures kPa: Source | As Received

Temperature °C: Source | As Received

N 0.000000 GPS | W 0.000000 GPS

Well Fluid Type | Licence No

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/04	2007/05/08		MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)
H2	0.0000	
He	Trace	
O2	0.2147	
N2	0.7845	
CO2	0.0005	500
H2S	0.0000	
C1	0.0003	300
C2	0.0000	
C3	0.0000	
IC4	0.0000	
NC4	0.0000	
IC5	0.0000	
NC5	0.0000	
C6	0.0000	
C7+	0.0000	
TOTAL	1.0000	

PROPERTIES

Calculated Mole Weight — Moisture Free as Sampled: 22.0 Total

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: 0.01 GPA 2172

Calculated Relative Densities — Relative to Air @15°C: 0.760 Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

QC Check Std # 6652/1651 Date 2007/05/05 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks.

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A717945:F11471

Operator Name: MATRIX SOLUTIONS INC.	LSD:	Well ID:
Well Name: MATRIX	Name of Sampler: N/A	Company: MATRIX
Field or Area:	Pool or Zone:	Sample Point: 7145070502013
Container Identity: TEDLAR BAG	Percent Full:	

Test Recovery: Test Type: No.: Multiple Recovery:

Interval 1 / Interval 2 / Interval 3 — From: To:

Elevations (m): KB: GRD:

Sample Gathering Point: Solution Gas:

Production Rates: Water m3/d: Oil m3/d: Gas 1000m3/d:

Gauge Pressures kPa: Source: As Received:

Temperature °C: Source: As Received:

N 0.000000 GPS — W 0.000000 GPS

Well Fluid Type: Licence No.:

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/02	2007/05/18	2007/05/25	MS2,MW

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	Trace		
O2	0.0030		
N2	0.0247		
CO2	0.0003	300	-24.90
H2S	0.0000		
C1	0.9720		-63.46
C2	0.0000		-59.32
C3	0.0000		
IC4	0.0000		
NC4	0.0000		
IC5	0.0000		
NC5	0.0000		
C6	0.0000		
C7+	0.0000		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight (Moisture Free as Sampled)	Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C	Calculated Relative Densities (Relative to Air @15°C)
16.3 (Total)	36.64 (GPA 2172)	0.563 (Moisture Free as Sampled)

Hydrogen Sulphide

On Site		In Lab	
Garitec (ppm v/v)	Tutwiler (mole%)	<1 Garitec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/04 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A717945:F11451

Operator Name	LSD	Well ID
MATRIX SOLUTIONS INC.		

Well Name	Name of Sampler	Company
MATRIX	N/A	MATRIX

Field or Area	Pool or Zone	Sample Point	Container Identity	Percent Full
		7145070502008	TEDLAR BAG	

Test Recovery

Test Type | No. | Multiple Recovery

Interval 1 | Interval 2 | Interval 3
From:
To:

Elevations (m): KB | GRD

Sample Gathering Point | Solution Gas

Production Rates: Water m3/d | Oil m3/d | Gas 1000m3/d

Gauge Pressures kPa: Source | As Received

Temperature °C: Source | As Received

N 0.000000 GPS | W 0.000000 GPS

Well Fluid Type | Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/02		2007/05/02	2007/05/18	2007/05/25	MS2,MW

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	0.0001		
He	0.0006		
O2	0.0062		
N2	0.5192		
CO2	0.0003	300	-17.65
H2S	0.0000		
C1	0.4711		-62.74
C2	0.0025		-31.13
C3	Trace		-18.67
IC4	0.0000		
NC4	0.0000		
IC5	0.0000		
NC5	0.0000		
C6	0.0000		
C7+	0.0000		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight	Calculated Gross Heating Value (MJ/m3)	Calculated Relative Densities
Moisture Free as Sampled	@ 101.325 kPa & 15°C	Relative to Air @15°C
22.2	17.90	0.766
Total	GPA 2172	Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/04 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A717945:F11463

Operator Name: MATRIX SOLUTIONS INC.
LSD:
Well ID:

Well Name: MATRIX
Name of Sampler: N/A
Company: MATRIX

Field or Area:
Pool or Zone:
Sample Point: 7145070502009
Container Identity: TEDLAR BAG
Percent Full:

Test Recovery:
Interval 1 / Interval 2 / Interval 3: From: To:
Elevations (m): KB GRD
Sample Gathering Point:
Solution Gas:

Test Type: No.: Multiple Recovery:

Production Rates: Water m3/d, Oil m3/d, Gas 1000m3/d
Gauge Pressures kPa: Source, As Received
Temperature °C: Source, As Received

GPS: N 0.000000
GPS: W 0.000000
Well Fluid Type:
Licence No.:

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Released	Analyst
2007/05/02		2007/05/02	2007/05/18	2007/05/25	MS2,MW

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	Trace		
O2	0.0136		
N2	0.0584		
CO2	0.0002	200	-28.01
H2S	0.0000		
C1	0.9278		-64.27
C2	0.0000		-56.94
C3	0.0000		
IC4	0.0000		
NC4	0.0000		
IC5	0.0000		
NC5	0.0000		
C6	0.0000		
C7+	0.0000		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight (Moisture Free as Sampled): 16.5 (Total)

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: 34.98 (GPA 2172)

Calculated Relative Densities (Relative to Air @15°C): 0.571 (Moisture Free as Sampled)

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/04 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Maxxam Job #: A717945
Report Date: 2007/05/25

MATRIX SOLUTIONS INC.
Client Project #: 7145-513
Site Reference: VARIOUS
Sampler Initials: KB

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID			F11447	F11462	F11470		
Sampling Date			2007/05/02	2007/05/02	2007/05/02		
COC Number			M014967	M014967	M014967		
	Units	**Criteria**	**7145070502008**	**7145070502009**	**7145070502013**	**RDL**	**QC Batch**
Physical Properties							
True Colour	PtCo units	**15**	6	**96**	**65**	5	1607436

RDL = Reportable Detection Limit

Maxxam Analytics Inc

Maxxam Job #: A717945
Report Date: 2007/05/25

MATRIX SOLUTIONS INC.
Client Project #: 7145-513
Site Reference: VARIOUS
Sampler Initials: KB

CBM BASELINE WATER-WELL TESTING (WATER)

Maxxam ID			F11447	F11462	F11470		
Sampling Date			2007/05/02	2007/05/02	2007/05/02		
COC Number			M014967	M014967	M014967		
	Units	**Criteria**	**7145070502008**	**7145070502009**	**7145070502013**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	-	7.3	4.3	3.9	0.5	1603565
Ion Balance	N/A	-	0.97	0.92	0.93	0.01	1604533
Total Dissolved Solids	mg/L	**500**	**520**	**582**	**558**	10	1603573
Misc. Inorganics							
Conductivity	uS/cm	-	863	1010	969	1	1609071
pH	N/A	**6.5:8.5**	**9.09**	**8.91**	**8.85**	0.01	1609070
Anions							
Alkalinity (PP as CaCO3)	mg/L	-	40.7	27.6	25.1	0.5	1609069
Alkalinity (Total as CaCO3)	mg/L	-	444	465	458	0.5	1609069
Bicarbonate (HCO3)	mg/L	-	442	500	498	0.5	1609069
Carbonate (CO3)	mg/L	-	48.8	33.1	30.1	0.5	1609069
Dissolved Fluoride (F)	mg/L	**1.5**	**2.67**	**2.37**	**2.36**	0.05	1609065
Hydroxide (OH)	mg/L	-	<0.5	<0.5	<0.5	0.5	1609069
Dissolved Sulphate (SO4)	mg/L	**500**	15.6	3.8	1.1	0.5	1607433
Dissolved Chloride (Cl)	mg/L	**250**	14.3	59.5	49.5	0.5	1605408
Microbiological Param.							
Iron Bacteria	CFU/mL	-	9000	9000	2300	25	1610813
Sulphate reducing bacteria	CFU/mL	-	200	100000	700000	200	1615283
Nutrients							
Dissolved Nitrate (N)	mg/L	**10**	0.782	<0.003	0.004	0.003	1607358
Nitrate plus Nitrite (N)	mg/L	**10**	0.782	<0.003	0.004	0.003	1604535
Dissolved Nitrite (N)	mg/L	**1**	<0.003	<0.003	<0.003	0.003	1607358
Elements							
Dissolved Calcium (Ca)	mg/L	-	2.5	1.7	1.5	0.3	1605604
Dissolved Iron (Fe)	mg/L	**.3**	<0.06	<0.06	<0.06	0.06	1605604
Total Iron (Fe)	mg/L	**.3**	0.08	0.10	0.28	0.06	1605602
Dissolved Magnesium (Mg)	mg/L	-	0.3	<0.2	<0.2	0.2	1605604
Dissolved Manganese (Mn)	mg/L	**.05**	<0.004	<0.004	<0.004	0.004	1605604
Dissolved Potassium (K)	mg/L	-	0.6	0.6	0.6	0.3	1605604
Dissolved Sodium (Na)	mg/L	**200**	**214**	**235**	**227**	0.5	1605604

RDL = Reportable Detection Limit

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	A718148:F12914 Laboratory Number

MATRIX SOLUTIONS INC.
Operator Name

LSD	Well ID	
MATRIX	N/A	MATRIX
Well Name	Name of Sampler	Company
7145070503061	14845	
Field or Area	Pool or Zone	Sample Point	Container Identity	Percent Full

Test Recovery
Test Type No. Multiple Recovery

Interval 1 Interval 2 Interval 3
From:
To:

Elevations (m)
KB GRD

Sample Gathering Point
Solution Gas

N 0.000000 GPS
W 0.000000 GPS

Production Rates
Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa
Source As Received

Temperature °C
Source As Received

Well Fluid Type
Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/03		2007/05/04	2007/06/13	2007/06/13	MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	0.0003		
He	0.0007		
O2	0.0000		
N2	0.0252		
CO2	0.0048		-16.42
H2S	0.0000		
C1	0.9084		-51.36
C2	0.0366		-32.18
C3	0.0154		-33.4
IC4	0.0021		-31.53
NC4	0.0038		-33.36
IC5	0.0011		
NC5	0.0009	900	
C6	0.0005	500	
C7+	0.0002	200	
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight (Moisture Free as Sampled)	Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C	Calculated Relative Densities (Relative to Air @15°C)
17.8 Total	39.28 GPA 2172	0.616 Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/10 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A718148:F12913

Operator Name	LSD	Well ID
MATRIX SOLUTIONS INC.		

Well Name	Name of Sampler	Company
MATRIX	N/A	MATRIX

Field or Area	Pool or Zone	Sample Point	Container Identity	Percent Full
		7145070503060	13850	

Test Recovery

Test Type No. Multiple Recovery

Interval 1 — Interval 2 — Interval 3
From:
To:

Elevations (m): KB GRD

Sample Gathering Point

Solution Gas

Production Rates: Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa: Source As Received

Temperature °C: Source As Received

N 0.000000 GPS

W 0.000000 GPS

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/03		2007/05/04	2007/06/13	2007/06/13	MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	0.0002		
He	0.0007		
O2	0.0002		
N2	0.0258		
CO2	0.0051		-15.35
H2S	0.0000		
C1	0.9092		-50.81
C2	0.0364		-32.68
C3	0.0144		-33.33
IC4	0.0020		
NC4	0.0036		-32.69
IC5	0.0009	900	
NC5	0.0008	800	
C6	0.0005	500	
C7+	0.0002	200	
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight — Moisture Free as Sampled: 17.8 Total

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: 39.12 GPA 2172

Calculated Relative Densities — Relative to Air @15°C: 0.614 Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C/^{12}C_{sample} - {}^{13}C/^{12}C_{standard}) / (^{13}C/^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/10 QC Passed Yes

** Information not supplied by client -- data derived from LSD Information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A718223:F13378

Operator Name	LSD	Well ID
MATRIX SOLUTIONS INC.		

Well Name	Name of Sampler	Company
MATRIX SOLUTIONS	N/A	MATRIX

Field or Area	Pool or Zone	Sample Point	Container Identity	Percent Full
		7145070503 028	TEDLAR BAG	

Test Recovery

Test Type No. Multiple Recovery

Interval 1 Interval 2 Interval 3
From:
To.

Elevations (m): KB GRD

Sample Gathering Point: N 0.000000 GPS; W 0.000000 GPS

Solution Gas

Production Rates: Water m3/d, Oil m3/d, Gas 1000m3/d

Gauge Pressures kPa: Source, As Received

Temperature °C: Source, As Received

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/03		2007/05/04	2007/05/18	2007/05/25	MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	Trace		
O2	0.2059		
N2	0.7936		
CO2	0.0005	500	
H2S	0.0000		
C1	0.0000		
C2	0.0000		
C3	0.0000		
IC4	0.0000		
NC4	0.0000		
IC5	0.0000		
NC5	0.0000		
C6	0.0000		
C7+	0.0000		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight — Moisture Free as Sampled: 22.3 (Total)

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: 0.00 (GPA 2172)

Calculated Relative Densities — Relative to Air @15°C: 0.768 (Moisture Free as Sampled)

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/08 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Insufficient sample volume to analysis for carbon isotopic fingerprinting.

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A718223:F13374

Operator Name	NTS (BC Survey)	Well ID
MATRIX SOLUTIONS INC.		

Well Name	Name of Sampler	Company
MATRIX SOLUTIONS	N/A	MATRIX

Field or Area	Pool or Zone	Sample Point	Container Identity	Percent Full
		7145070503 024	TEDLAR BAG	

Test Recovery

Test Type No. Multiple Recovery

Interval 1 Interval 2 Interval 3
From:
To:

Elevations (m)
KB GRD

Sample Gathering Point

Solution Gas

Well Fluid Status

Well Status Mode

Production Rates
Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa
Source As Received

Temperature °C
23.0
Source As Received

Well Status Type

Well Type

Gas or Condensate Project

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/03		2007/05/04	2007/05/18	2007/05/25	VR1,ASC,NR ,LLE

PARAMETER DESCRIPTION	Result	unit		MDL
Elements				
Dissolved Calcium (Ca)	1.6	mg/L	EPA 200.7	0.3
Dissolved Iron (Fe)	<0.06	mg/L	EPA 200.7	0.06
Dissolved Magnesium (Mg)	0.2	mg/L	EPA 200.7	0.2
Dissolved Manganese (Mn)	<0.004	mg/L	EPA 200.7	0.004
Dissolved Potassium (K)	0.6	mg/L	EPA 200.7	0.3
Dissolved Sodium (Na)	**204**	mg/L	EPA 200.7	0.5
Total Iron (Fe)	0.26	mg/L	EPA 200.7	0.06

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Presence/Absence Method. Number is an estimate.
Presence/Absence Method. Number is an estimate.

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	
Client I.D.	
Meter Number	
Laboratory Number	A718223:F13374
Operator Name	MATRIX SOLUTIONS INC.
NTS (BC Survey)	
Well ID	
Well Name	MATRIX SOLUTIONS
Name of Sampler	N/A
Company	MATRIX
Field or Area	
Pool or Zone	
Sample Point	7145070503 024
Container Identity	TEDLAR BAG
Percent Full	
Test Recovery	
Interval 1 From:	
Interval 2 To:	
Interval 3	
Elevations (m) KB	
Elevations (m) GRD	
Sample Gathering Point	
Solution Gas	
Test Type	
No.	
Multiple Recovery	
Well Fluid Status	
Well Status Mode	
Production Rates Water m3/d	
Production Rates Oil m3/d	
Production Rates Gas 1000m3/d	
Gauge Pressures kPa Source	
Gauge Pressures kPa As Received	
Temperature °C Source	
Temperature °C As Received	23.0
Well Status Type	
Well Type	
Gas or Condensate Project	
Licence No.	
Date Sampled Start	2007/05/03
Date Sampled End	
Date Received	2007/05/04
Date Reported	2007/05/18
Date Reissued	2007/05/25
Analyst	VR1,ASC,NR ,LLE

PARAMETER DESCRIPTION	Result	unit		MDL
Calculated Parameters				
Hardness (CaCO3)	5.0	mg/L	AEMM, Method 423	0.5
Ion Balance	0.98	N/A	SM 1030E	
Total Dissolved Solids	487	mg/L	Calculation	10
Misc. Inorganics				
Conductivity	880	uS/cm	SM 2510-B	1
pH	**9.16**	N/A	SM 4500-H B	
Anions				
Alkalinity (PP as CaCO3)	39.6	mg/L	SM 2320-B	0.5
Alkalinity (Total as CaCO3)	367	mg/L	SM 2320-B	0.5
Bicarbonate (HCO3)	351	mg/L	SM 2320-B	0.5
Carbonate (CO3)	47.5	mg/L	SM 2320-B	0.5
Dissolved Fluoride (F)	**3.79**	mg/L	SM 4500-F C	0.05
Dissolved Sulphate (SO4)	0.7	mg/L	EPA 375.4	0.5
Hydroxide (OH)	<0.5	mg/L	SM 2320-B	0.5
Dissolved Chloride (Cl)	56.6	mg/L	EPA 325.2	0.5
Microbiological Param.				
Iron Bacteria	35000	CFU/mL	BART TM	25
Sulphate reducing bacteria	1200	CFU/mL	BART TM	200
Nutrients				
Dissolved Nitrate (N)	0.004	mg/L	SM 4110-B	0.003
Dissolved Nitrite (N)	<0.003	mg/L	SM 4110-B	0.003
Nitrate plus Nitrite (N)	0.004	mg/L	SM 4110B	0.003
Physical Properties				
True Colour	**32**	PtCo units	SM 2120-B	5

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Presence/Absence Method. Number is an estimate.
Presence/Absence Method. Number is an estimate.

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	A718223:F13374 Laboratory Number

MATRIX SOLUTIONS INC.
Operator Name

LSD

Well ID

MATRIX SOLUTIONS
Well Name

N/A
Name of Sampler

MATRIX
Company

Field or Area

Pool or Zone

7145070503 024
Sample Point

TEDLAR BAG
Container Identity

Percent Full

Test Recovery

Test Type No. Multiple Recovery

Interval 1 Interval 2 Interval 3
From.
To:

Elevations (m)
KB GRD

Sample Gathering Point

Solution Gas

Production Rates
Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa
Source As Received

Temperature °C
23.0
Source As Received

N 0.000000
GPS

W 0.000000
GPS

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/03		2007/05/04	2007/05/18	2007/05/25	VR1,ASC,NR ,LLE

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2			
He			
O2			
N2			
CO2			
H2S			
C1			
C2			
C3			
IC4			
NC4			
IC5			
NC5			
C6			
C7+			
TOTAL			

PROPERTIES

Calculated Mole Weight
Moisture Free as Sampled
Total

Calculated Gross Heating Value (MJ/m3)
@ 101.325 kPa & 15°C
GPA 2172

Calculated Relative Densities
Relative to Air @15°C
Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # Date 2007/05/08 QC Passed Yes

** Information not supplied by client -- data derived from LSD Information

Results relate only to items tested

Remarks:

Presence/Absence Method. Number is an estimate.
Presence/Absence Method. Number is an estimate.

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A718223:F15845

Operator Name: MATRIX SOLUTIONS INC.	LSD:	Well ID:
Well Name: 7145070503024	Name of Sampler: N/A	Company: MATRIX
Field or Area:	Pool or Zone:	Sample Point: 714507053024
Container Identity: TEDLAR BAG	Percent Full:	

Test Recovery: Test Type / No. / Multiple Recovery

Interval 1 / Interval 2 / Interval 3: From. To.

Elevations (m): KB / GRD

Sample Gathering Point: N 0.000000 GPS; W 0.000000 GPS

Solution Gas

Production Rates: Water m3/d / Oil m3/d / Gas 1000m3/d

Gauge Pressures kPa: Source / As Received

Temperature °C: Source / As Received

Well Fluid Type:

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/03		2007/05/04	2007/05/18	2007/05/25	MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	Trace		
O2	0.0290		
N2	0.1579		
CO2	0.0002	200	-27.28
H2S	0.0000		
C1	0.8126		-57.53
C2	0.0003	300	-54.25
C3	0.0000		
IC4	0.0000		
NC4	0.0000		
IC5	0.0000		
NC5	0.0000		
C6	0.0000		
C7+	0.0000		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight	Calculated Gross Heating Value (MJ/m3)	Calculated Relative Densities
Moisture Free as Sampled	@ 101.325 kPa & 15°C	Relative to Air @15°C
17.5	30.64	0.603
Total	GPA 2172	Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/08 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A718223:F13343

Operator Name: MATRIX SOLUTIONS INC.	LSD:	Well ID:
Well Name: MATRIX SOLUTIONS	Name of Sampler: N/A	Company: MATRIX
Field or Area:	Pool or Zone:	Sample Point: 7145070503 020
Container Identity: TEDLAR BAG	Percent Full:	

Test Recovery: Test Type / No. / Multiple Recovery

Interval 1 / Interval 2 / Interval 3: From: To:

Elevations (m): KB / GRD

Sample Gathering Point: N 0.000000 GPS

Solution Gas: W 0.000000 GPS

Production Rates: Water m3/d / Oil m3/d / Gas 1000m3/d

Gauge Pressures kPa: Source / As Received

Temperature °C: Source / As Received

Well Fluid Type:

Licence No.:

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Released	Analyst
2007/05/03		2007/05/04	2007/05/18	2007/05/25	MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	Trace		
O2	0.0324		
N2	0.1220		
CO2	0.0002	200	-15.77
H2S	0.0000		
C1	0.8454		-54.70
C2	0.0000		
C3	0.0000		
IC4	0.0000		
NC4	0.0000		
IC5	0.0000		
NC5	0.0000		
C6	0.0000		
C7+	0.0000		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight (Moisture Free as Sampled): 17.0 Total

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: 31.86 GPA 2172

Calculated Relative Densities (Relative to Air @15°C): 0.587 Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/08 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Maxxam Analytics Inc

CARBON ISOTOPE ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A716223:F13359

Operator Name: MATRIX SOLUTIONS INC.	LSD:	Well ID:
Well Name: MATRIX SOLUTIONS	Name of Sampler: N/A	Company: MATRIX
Field or Area:	Pool or Zone:	Sample Point: 7145070503 022
Container Identity: TEDLAR BAG	Percent Full:	

Test Recovery: | Test Type: | No.: | Multiple Recovery:

Interval 1 / Interval 2 / Interval 3 — From: To:

Elevations (m): KB: GRD:

Sample Gathering Point: | Solution Gas:

Production Rates: Water m3/d: Oil m3/d: Gas 1000m3/d:

Gauge Pressures kPa: Source: As Received:

Temperature °C: Source: As Received:

GPS: N 0.000000 | GPS: W 0.000000

Well Fluid Type: | Licence No:

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/03		2007/05/04	2007/05/18	2007/05/25	MS2

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	Trace		
He	Trace		
O2	0.0049		
N2	0.0235		
CO2	0.0003	300	-25.93
H2S	0.0000		
C1	0.9713		-62.49
C2	0.0000		-57.72
C3	0.0000		
IC4	0.0000		
NC4	0.0000		
IC5	0.0000		
NC5	0.0000		
C6	Trace		
C7+	0.0000		
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight — Moisture Free as Sampled: 16.3 (Total)

Calculated Gross Heating Value (MJ/m3) @ 101.325 kPa & 15°C: 36.61 (GPA 2172)

Calculated Relative Densities — Relative to Air @15°C: 0.561 (Moisture Free as Sampled)

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/08 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

Maxxam Analytics Inc

Driven by Service and Science

GAS MIGRATION ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	A718148:F12914 Laboratory Number

MATRIX SOLUTIONS INC.
Operator Name

LSD

Well ID

MATRIX
Well Name

N/A
Name of Sampler

MATRIX
Company

Field or Area

Pool or Zone

7145070503061
Sample Point

14845
Container Identity

Percent Full

Test Recovery

Test Type No. Multiple Recovery

Interval 1 Interval 2 Interval 3
From:
To:

Elevations (m)
KB GRD

Sample Gathering Point

Solution Gas

N 0.000000
GPS

W 0.000000
GPS

Production Rates
Water m3/d Oil m3/d Gas 1000m3/d

Gauge Pressures kPa
Source As Received

Temperature °C
Source As Received

Well Fluid Type

Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Reissued	Analyst
2007/05/03		2007/05/04	2007/05/08		MW ,

COMPOSITION

Component	Mole Fraction As Rec'd	ppm (v/v)	$\delta^{13}C$ ‰
H2	0.0003		
He	0.0007		
O2	0.0000		
N2	0.0252		
CO2	0.0048		TBA
H2S	0.0000		
C1	0.9084		TBA
C2	0.0366		TBA
C3	0.0154		TBA
IC4	0.0021		TBA
NC4	0.0038		TBA
IC5	0.0011		
NC5	0.0009	900	
C6	0.0005	500	
C7+	0.0002	200	
TOTAL	1.0000		

PROPERTIES

Calculated Mole Weight
Moisture Free as Sampled
17.8
Total

Calculated Gross Heating Value (MJ/m3)
@ 101.325 kPa & 15°C
39.28
GPA 2172

Calculated Relative Densities
Relative to Air @15°C
0.616
Moisture Free as Sampled

Hydrogen Sulphide

On Site		In Lab	
Gastec (ppm v/v)	Tutwiler (mole%)	<1 Gastec (ppm v/v)	Tutwiler (mole%)

Onsite analysis is required for accurate source H2S content.
H2S degrades variably in all sample containers and is also matrix dependant.

$$\delta^{13}C\ ‰ = [(^{13}C / ^{12}C_{sample} - ^{13}C / ^{12}C_{standard}) / (^{13}C / ^{12}C_{standard})] * 1000$$

INTERPRETATION

QC Check Std # 6652/1651 Date 2007/05/08 QC Passed Yes

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

NO ONSITE H2S VALUE RECORDED

Maxxam Analytics Inc

Maxxam Job #: A718223
Report Date: 2007/05/25

MATRIX SOLUTIONS INC.
Client Project #: 7145-513
Site Reference:
Sampler Initials: KB

CBM BASELINE WATER-WELL TESTING (WATER)

Maxxam ID			F13371		
Sampling Date			2007/05/03		
COC Number			M019014		
	Units	**Criteria**	**7145070503025**	**RDL**	**QC Batch**
Calculated Parameters					
Hardness (CaCO3)	mg/L	-	6.0	0.5	1608631
Ion Balance	N/A	-	0.96	0.01	1608635
Total Dissolved Solids	mg/L	**500**	**681**	10	1608645
Misc. Inorganics					
Conductivity	uS/cm	-	1130	1	1609149
pH	N/A	**6.5:8.5**	**8.90**	0.01	1609148
Anions					
Alkalinity (PP as CaCO3)	mg/L	-	32.1	0.5	1609146
Alkalinity (Total as CaCO3)	mg/L	-	497	0.5	1609146
Bicarbonate (HCO3)	mg/L	-	528	0.5	1609146
Carbonate (CO3)	mg/L	-	38.5	0.5	1609146
Dissolved Fluoride (F)	mg/L	**1.5**	**1.54**	0.05	1609150
Hydroxide (OH)	mg/L	-	<0.5	0.5	1609146
Dissolved Sulphate (SO4)	mg/L	**500**	105	0.5	1611120
Dissolved Chloride (Cl)	mg/L	**250**	4.2	0.5	1611119
Microbiological Param.					
Iron Bacteria	CFU/mL	-	35000	25	1615182
Sulphate reducing bacteria	CFU/mL	-	700000	200	1615288
Nutrients					
Dissolved Nitrate (N)	mg/L	**10**	0.004	0.003	1611221
Nitrate plus Nitrite (N)	mg/L	**10**	0.004	0.003	1608641
Dissolved Nitrite (N)	mg/L	**1**	<0.003	0.003	1611221
Elements					
Dissolved Calcium (Ca)	mg/L	-	1.9	0.3	1609151
Dissolved Iron (Fe)	mg/L	**.3**	<0.06	0.06	1609151
Total Iron (Fe)	mg/L	**.3**	**0.66**	0.06	1609041
Dissolved Magnesium (Mg)	mg/L	-	0.3	0.2	1609151
Dissolved Manganese (Mn)	mg/L	**.05**	<0.004	0.004	1609151
Dissolved Potassium (K)	mg/L	-	0.7	0.3	1609151
Dissolved Sodium (Na)	mg/L	**200**	**269**	0.5	1609151

RDL = Reportable Detection Limit

Maxxam Analytics Inc

Maxxam Job #: A718223
Report Date: 2007/05/25

MATRIX SOLUTIONS INC.
Client Project #: 7145-513
Site Reference:
Sampler Initials: KB

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID			F13312	F13326	F13369		
Sampling Date			2007/05/03	2007/05/03	2007/05/03		
COC Number			M019014	M019014	M019014		
	Units	**Criteria**	**7145070503018**	**7145070503019**	**7145070503023**	**RDL**	**QC Batch**
Physical Properties							
True Colour	PtCo units	**15**	**94**	<5	6	5	1611121

RDL = Reportable Detection Limit

Maxxam ID			F13370	F13371		
Sampling Date			2007/05/03	2007/05/03		
COC Number			M019014	M019014		
	Units	**Criteria**	**7145070503017**	**7145070503025**	**RDL**	**QC Batch**
Physical Properties						
True Colour	PtCo units	**15**	<5	7	5	1611121

RDL = Reportable Detection Limit

Maxxam Analytics Inc

Maxxam Job #: A718223
Report Date: 2007/05/25

MATRIX SOLUTIONS INC.
Client Project #: 7145-513
Site Reference:
Sampler Initials: KB

CBM BASELINE WATER-WELL TESTING (WATER)

Maxxam ID			F13369	F13370		
Sampling Date			2007/05/03	2007/05/03		
COC Number			M019014	M019014		
	Units	**Criteria**	**7145070503023**	**7145070503017**	**RDL**	**QC Batch**
Calculated Parameters						
Hardness (CaCO3)	mg/L	-	6.4	8.3	0.5	1608631
Ion Balance	N/A	-	0.95	0.97	0.01	1608634
Total Dissolved Solids	mg/L	**500**	**682**	**633**	10	1608645
Misc. Inorganics						
Conductivity	uS/cm	-	1140	1070	1	1609149
pH	N/A	**6.5:8.5**	**8.90**	**8.92**	0.01	1609148
Anions						
Alkalinity (PP as CaCO3)	mg/L	-	31.9	28.2	0.5	1609146
Alkalinity (Total as CaCO3)	mg/L	-	501	456	0.5	1609146
Bicarbonate (HCO3)	mg/L	-	533	488	0.5	1609146
Carbonate (CO3)	mg/L	-	38.3	33.8	0.5	1609146
Dissolved Fluoride (F)	mg/L	**1.5**	**1.52**	**1.98**	0.05	1609150
Hydroxide (OH)	mg/L	-	<0.5	<0.5	0.5	1609146
Dissolved Sulphate (SO4)	mg/L	**500**	104	102	0.5	1611120
Dissolved Chloride (Cl)	mg/L	**250**	4.4	1.2	0.5	1611119
Microbiological Param.						
Iron Bacteria	CFU/mL	-	35000	9000	25	1615182
Sulphate reducing bacteria	CFU/mL	-	700000	1200	200	1615288
Nutrients						
Dissolved Nitrate (N)	mg/L	**10**	0.006	<0.003	0.003	1611221
Nitrate plus Nitrite (N)	mg/L	**10**	0.006	<0.003	0.003	1608640
Dissolved Nitrite (N)	mg/L	**1**	<0.003	<0.003	0.003	1611221
Elements						
Dissolved Calcium (Ca)	mg/L	-	2.0	2.3	0.3	1609151
Dissolved Iron (Fe)	mg/L	**.3**	<0.06	<0.06	0.06	1609151
Total Iron (Fe)	mg/L	**.3**	**0.77**	**1.10**	0.06	1609041
Dissolved Magnesium (Mg)	mg/L	-	0.3	0.6	0.2	1609151
Dissolved Manganese (Mn)	mg/L	**.05**	<0.004	<0.004	0.004	1609151
Dissolved Potassium (K)	mg/L	-	0.7	0.8	0.3	1609151
Dissolved Sodium (Na)	mg/L	**200**	**268**	**251**	0.5	1609151

RDL = Reportable Detection Limit

Maxxam Analytics Inc

Maxxam Job #: A718223
Report Date: 2007/05/25

MATRIX SOLUTIONS INC.
Client Project #: 7145-513
Site Reference:
Sampler Initials: KB

CBM BASELINE WATER-WELL TESTING (WATER)

Maxxam ID			F13312	F13326		
Sampling Date			2007/05/03	2007/05/03		
COC Number			M019014	M019014		
	Units	**Criteria**	**7145070503018**	**7145070503019**	**RDL**	**QC Batch**
Calculated Parameters						
Hardness (CaCO3)	mg/L	-	7.8	8.3	0.5	1608631
Ion Balance	N/A	-	0.96	0.96	0.01	1608634
Total Dissolved Solids	mg/L	**500**	**577**	**632**	10	1608645
Misc. Inorganics						
Conductivity	uS/cm	-	1000	1070	1	1609149
pH	N/A	**6.5:8.5**	**9.03**	**8.92**	0.01	1609148
Anions						
Alkalinity (PP as CaCO3)	mg/L	-	40.7	30.3	0.5	1609146
Alkalinity (Total as CaCO3)	mg/L	-	469	457	0.5	1609146
Bicarbonate (HCO3)	mg/L	-	472	484	0.5	1609146
Carbonate (CO3)	mg/L	-	48.8	36.4	0.5	1609146
Dissolved Fluoride (F)	mg/L	**1.5**	**2.07**	**1.98**	0.05	1609150
Hydroxide (OH)	mg/L	-	<0.5	<0.5	0.5	1609146
Dissolved Sulphate (SO4)	mg/L	**500**	1.6	103	0.5	1611120
Dissolved Chloride (Cl)	mg/L	**250**	51.1	1.2	0.5	1611119
Microbiological Param.						
Iron Bacteria	CFU/mL	-	9000	9000	25	1615182
Sulphate reducing bacteria	CFU/mL	-	<200	500	200	1615288
Nutrients						
Dissolved Nitrate (N)	mg/L	**10**	0.005	<0.003	0.003	1611203
Nitrate plus Nitrite (N)	mg/L	**10**	0.005	<0.003	0.003	1608640
Dissolved Nitrite (N)	mg/L	**1**	<0.003	<0.003	0.003	1611203
Elements						
Dissolved Calcium (Ca)	mg/L	-	2.7	2.4	0.3	1609151
Dissolved Iron (Fe)	mg/L	**.3**	<0.06	<0.06	0.06	1609151
Total Iron (Fe)	mg/L	**.3**	**0.79**	**0.44**	0.06	1609041
Dissolved Magnesium (Mg)	mg/L	-	0.2	0.6	0.2	1609151
Dissolved Manganese (Mn)	mg/L	**.05**	0.004	<0.004	0.004	1609151
Dissolved Potassium (K)	mg/L	-	0.8	0.7	0.3	1609151
Dissolved Sodium (Na)	mg/L	**200**	**238**	**248**	0.5	1609151

RDL = Reportable Detection Limit

U of C

		Free Gas				Dissolved Gas		
Sample I.D.	Field Site	$\delta^{13}C_{CH4}$ (‰)	$\delta^{13}C_{C2}$ (‰)	$\delta^{13}C_{Co2}$ (‰)	δD_{CH4} (‰)	$\delta^{13}C_{CH4}$ (‰)	$\delta^{13}C_{C2}$ (‰)	$\delta^{13}C_{CO2}$ (‰)
KC59-1	Kirkpatrick 86-2	-64.3	n.d.	0.0	-239.3	n.a.	n.a.	n.a.
KC60-1	Kirkpatrick 86-1	-68.8	-58.9	-7.6	-269.6	-67.1	n.a.	n.a.
KC61-1	Barons 615E	-70.8	-55.5	-4.2	n.d.	n.a.	n.a.	-18.4
KC62-1	Rosebud #1	-59.0	-40.5	-5.0	-285.0	n.r.	n.r.	n.r.
KC63-1	Jessica	-67.4	n.a.	-2.8	-298.3	-66.3	n.a.	n.a.
KC64-1	Lauridain	-63.3	n.a.	1.9	-291.2	-62.5	n.a.	n.a.
KC65-1	Signer	-66.9	n.a.	0.7	-297.2	-66.3	n.a.	n.a
KC66-1	Rosebud #2	-64.0	n.d	n.a	n.a.	-63.4	n.d.	n.a.
KC67-1	Rosebud #3	-68.1	n.d.	1.6	n.a.	-69.5	n.d.	n.a.
KC68-1	Campbell Well	-41.6	-29.3	-21.4	n.a.	n.d.	n.d.	n.a.
KC69	Pine Lake 2676 398	-50.6	n.d.	-22.3	n.a.	n.a.	n.d.	n.a.
KC70	Pine Lake 2679	-76.5	n.d.	-22.9	n.a.	n.a.	n.d.	n.a
KC71	Pine Lake 2688	-49.0	n.d.	-19.3	n.a.	n.a.	n.d.	n.a
KC72	Pine Lake 2680	-23.2	n.d.	-22.5	n.a.	n.a.	n.d.	-22.2
KC73	Okotoks 787	n.d.	n.d.	-18.2	n.a.	n.a.	n.d.	-18.3
KC74	Okotoks 786	-85.5	n.d.	-17.3	n.a.	-85.5	n.d.	n.a.
KC75	GEM 66-7	-36.7	n.d.	-19.0	n.a.	n.a.	n.d.	-19.1
KC76	Elnora ARC 1	n.r.	n.d.	n.r.	n.a.	-79	n.d.	n.a.
KC77	Elnora ARC 2	n.r.	n.d.	n.r.	n.a.	n.a.	n.d.	-18.5
KC78	Chrestomere Lake	-66.6	n.d.	n.d.	n.a.	-65.6	n.d.	n.a.
KC79	Entwistle	-79.3	n.d.	-22.4	n.a.	-78.8	n.d.	-21.4
KC80	Rollyview	-63.5	n.a.	n.d.	n.a.	-63.5	n.d.	7.5
KC81	Wetaskiwin 1962-1 South	-59.1	n.a.	n.d.	n.a.	-58.5	n.d.	n.a.
KC82	Wetaskiwin 1962-1 East	-63.2	n.a.	n.d.	n.a.	-61.1	n.d.	-18.7
KC83	Stettler 1962-4 135	-58.3	n.a.	-18.70	n.a.	-58.9	n.d.	-18.5
KC84	Ricinus 365	n.a.	n.a.	n.d.	n.a.	n.a.	n.d.	-20.0
KC85	Manysprings 364	n.a.	n.a.	n.d.	n.a.	n.a.	n.d.	-13.3
KC86	Camrose Landfill 149	-68.7	-52.00	4.1	n.a.	-68.2	n.d.	n.a.
KC87	Innisfree 2402 234	-70.2	n.a.	-19.30	n.a.	-67.8	n.d.	-18.3
KC88	Innisfree 2403 235	n.r.	n.r.	n.r.	n.a.	n.a.	n.d.	-18.9

nd not detected

na not analyzed

NA Not rec

GC = 0 /VA