



Sunday, 04 January 2015

Ms Amanda Langstaff,
Natural Resources Wales,
Chester Road,
Buckley,
Flintshire.
CH7 3AJ

Dear Ms Langstaff,

Data Submission November 2014

Please find enclosed the monthly data submission for routine environmental monitoring undertaken at our Ruabon Landfill Site during November 2014.

We trust this is satisfactory, please do not hesitate to contact us should you require further clarification.

**Yours sincerely,
for FCC ENVIRONMENT**

Geoff Forrest

Environment Manager, North Wales



Ruabon Landfill Site

Routine Environmental Monitoring Data Submission

November 2014

Prepared by G.Forrest
28th December 2014

APPENDIX 1

Field Logs

Field log report

Ruabon

04-November-2014

Equipment 01 Calibration Due	21/02/2015
Equipment 01 Last Calibration	08/10/2014
Equipment 01 Serial No.	LT1
Equipment 01 Type	Hannah Instruments HI98130
Equipment 02 Last Calibration	N/A
Equipment 02 Serial No.	30858
Equipment 02 Type	Dip Meter, In Situ Rugged Level tape 200
Personnel 01	L.Terrace
Time OFF	15:10
Time ON	08:38
Weather	Sunny

Issued By:

Signed By :

Name :

Field log report

Ruabon

06-November-2014

Equipment 01 Last Calibration	24/09/2014
Equipment 01 Serial No.	GA5000 + G500863
Personnel 01	INF00307 alan.parry
Time OFF	13:54
Time ON	11:49
Weather	Unknown

Issued By:

Signed By :

Name :

Field log report

Ruabon

10-November-2014

Equipment 01 Last Calibration	24/09/2014
Equipment 01 Serial No.	GA5000 + G500863
Personnel 01	INF00307 alan.parry
Time OFF	11:15
Time ON	10:07
Weather	Wet

Issued By:

Signed By :

Name :

Field log report

Ruabon

13-November-2014

Equipment 01 Calibration Due	21/02/2015
Equipment 01 Last Calibration	20/08/2014
Equipment 01 Last Calibration	24/09/2014
Equipment 01 Serial No.	GA5000 + G500863
Equipment 01 Serial No.	G501869
Equipment 01 Type	GA5000
Personnel 01	L Terrace
Personnel 01	INF00307 alan.parry
Time OFF	12:20
Time OFF	15:05
Time ON	12:35
Time ON	09:31
Weather	Clear
Weather	Raining

Issued By:

Signed By :

Name :

Field log report

Ruabon

20-November-2014

Equipment 01 Calibration Due	21/02/2015
Equipment 01 Last Calibration	24/09/2014
Equipment 01 Last Calibration	20/08/2014
Equipment 01 Serial No.	GA5000 + G500863
Equipment 01 Serial No.	79281-10
Equipment 01 Serial No.	G501869
Equipment 01 Type	GA5000
Equipment 01 Type	Geotechnical Atex Dip Meter
Personnel 01	L Terrace
Personnel 01	G Forrest
Personnel 01	INF00307 alan.parry
Time OFF	15:03
Time OFF	11:30
Time OFF	13:25
Time ON	10:30
Time ON	10:15
Time ON	09:24
Weather	Wet
Weather	o/c, mild
Weather	Overcast

Issued By:

Signed By :

Name :

Field log report

Ruabon

27-November-2014

Equipment 01 Last Calibration	24/09/2014
Equipment 01 Serial No.	GA5000 + G500863
Personnel 01	INF00307 Alan.Parry
Time OFF	11:51
Time ON	10:11
Weather	Cold

Issued By:

Signed By :

Name :

Field log report

Ruabon

28-November-2014

Equipment 01 Calibration Due	21/02/2015
Equipment 01 Last Calibration	20/08/2014
Equipment 01 Serial No.	G501869
Equipment 01 Type	GA5000
Personnel 01	L Terrace
Time OFF	12:20
Time ON	08:45
Weather	Overcast

Issued By:

Signed By :

Name :

APPENDIX 2

Perimeter Borehole Gas Data

Ruabon Perimeter Borehole Gas Data - November 2014



From : 04/11/2014
To : 28/11/2014

04/11/2014

Sample Point	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	Dip to Water (m)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)	TD (m)
RUBH0006	980	0	4.4	2.12	0	4.1	-0.36	11.72
RUBH0007	980	5.5	6.6	3.48	0	0.8	-0.16	38.67
RUBH0008	980	0	2.5	6.17	0	17.4	-0.19	42.37
RUBH0009	980	0	2.7	3.32	0	17.7	-0.16	7.49
RUBH0010	980	0	0.8	4.78	0	19.7	-0.1	36.15
RUBH0013	978	0	0.2	1.37	0	20.2	-0.21	34.63
RUBH0014	978	0	0.5	2.4	0	20.3	-0.12	10.72
RUBH0015	979	0	0.1	6.02	0	20.2	-0.35	41.7
RUBH0016	979	0	0.3	10.71	0	20.1	-0.12	47.13
RUBH001A	978	0	0.2	4.84	0	20.8	-0.29	12.8
RUBH001B	973	0	6.7	5.13	0	10.9	-0.14	6.38
RUBH002A	979	0	0.1	5.1	0	20.8	-0.09	6.49
RUBH002B	979	0	0.3	5.16	0	20.7	-0.24	11.72
RUBH003A	979	0	0.5	5.73	0	20.3	-0.12	13.09
RUBH003B	980	0	0.1	5.66	0	20.8	-0.05	6.37
RUBH004A	980	0	2.3	5.64	0	18.3	-0.64	11.04
RUBH004B	980	0	3.8	5.59	0	18.2	-0.17	6.33
RUBH011A	978	0	1.5	2.07	0	19	0.1	12.78
RUBH011P	978	0	0.1	5.18	0	20.3	-0.17	14.42
RUBH012A	978	0	1.8	3.67	0	18.6	-0.07	5.35
RUGBH001	980	0	3.7	6.05	0	18.1	-0.16	6.05
RUGBH002	980	0	4.9	2.64	0	17	-0.07	7.01
RUGBH003	980	0	0.8	2.93	0	19.9	-0.07	4.9
RUGBH004	980	0	0.4	3.03	0	20.1	-0.26	21.9
RUGBH005	980	0.5	0.6	3.12	0	19.4	-0.21	6.33
RUGBH006	980	0	5.2	2.51	0	16.5	-0.12	6.94
RUGBH007	978	0	0.2	0.75	0	20.5	-0.14	2.95
RUGBH008	978	0	0.2	1.04	0	20.4	-0.12	6.18
RUGBH009	979	0	0.4	0.9	0	20.3	2.7	8.23
RUGBH010	979	0	1.3	0.69	0	20.1	-0.14	3.95
RUGBH02A	979	0	0.2	1.35	0	20.4	-0.57	1.4
RUGP0001	980	13.2	1.5		0	17.7	7.8	
RUGP0002	980	0	6		0	15	-0.1	
RUGP0003	980	0	0.4		0	20.2	-12.53	
RUGP0004	980	0	2.2		0	19.5	-0.05	
RUGP0008	980	0	1.5		0	19.4	-0.02	
RUGP0009	980	0	1.4		0	19.5	-0.12	
RUGP0010	980	0	2.5		0	19	-0.17	
RUGP0011	980	0	2.1		0	19.7	-0.1	
RUGP0012	980	0	0.7		0	20.2	-0.05	
RUGP0013	980	0	1.2		0	19.9	-0.12	
RUGP0014	980	0	4.6		0	17.3	0.07	
RUGP0015	979	0	0.9		0	19.4	0.07	
RUGP0016	979	0	0.9		0	20	-0.26	
RUGP0018	979	0	0.4		0	19.5	9.73	
RUGP0019	979	0	0.1		0	20.4	-0.12	
RUGP0020	979	0	0.2		0	20.1	-0.5	
RUGP0021	978	0	0.2		0	20.3	0.02	
RUGP00A1	980	0	0.1		0	20	-0.16	

Issued By:

From : 04/11/2014

To : 28/11/2014

04/11/2014

	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	Dip to Water (m)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)	TD (m)
RUGP00A2	980	0.6	0.3		0	19.2	-0.12	
RUGP00A3	980	0	0.1		0	17.3	-10.56	
RUGP00B1	980	0	0.1		0	19.1	-0.02	
RUGP00B2	980	5	1		0	15.2	-1.56	
RUGP00B3	980	0	0.1		0	20.2	-0.14	
RUGP00C1	980	0	0.1		0	19.7	-0.12	
RUGP00C2	980	0	0.1		0	18.4	-0.21	
RUGP00C3	980	0	0.1		0	20.2	-6.27	
RUGP00D1	980	0	0.1		0	20.3	-0.09	
RUGP00D2	980	0	0.1		0	20.2	-0.14	
RUGP00D3	979	0	0.1		0	18.1	-2.63	
RUGP00E1	980	0	0.1		0	20.4	-0.19	
RUGP00E2	980	0	0.1		0	20.4	0.02	
RUGP00E3	980	0	0.1		0	19.9	-0.02	
RUGP00F1	980	0	0.1		0	20.3	-0.17	
RUGP00F2	979	0	0.1		0	19.5	-0.26	
RUGP00F3	980	0	0.1		0	20.5	-0.69	
RUWB001A	980	0	0.5	2.88	0	17.1	-0.03	48.87
RUWB001B	980	0	1.8	4.53	0	19.2	-0.07	7.88
RUWB002A	980	0	0.2	5.51	0	19.7	-0.09	21.36
RUWB002B	980	0	1.1	10.45	0	19.9	-0.1	6.03
RUWB002C	980	0	1.4	8.01	0	19.6	-0.09	6.32
RUWB002D	980	0	0.3	6.08	0	20.5	-0.14	21.66
RUWB003A	978	0	0.7	8.97	0	13.9	-0.17	10.69
RUWB003B	978	0	1	0.99	0	13	3.27	7.55
RUWB004A	979	0	1.1	3.21	0	12.3	-2.52	48.83
RUWB004B	979	0	3.1	1.13	0	16.9	-0.09	8.54
RUWB005A	980	0	0.1	3.05	0	20.6	-0.09	25.37
RUWB005B	980	0	1.3	6.14	0	19.7	-0.09	8.38

Issued By:

Ruabon Perimeter Borehole Gas Data - November 2014



From : 04/11/2014
To : 28/11/2014

13/11/2014

Sample Point	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUBH0006	980	0	2.5	0	15.6	2.11
RUBH0007	979	9.6	6.7	0	1.2	1.76
RUBH0008	979	0	2.1	0	18.6	56.23
RUBH0009	979	0	1.8	0	18.7	-0.1
RUBH0010	978	0	0.8	0	19.8	-0.1
RUBH0013	978	0	0.5	0	20.4	-0.12
RUBH0014	977	0	0.7	0	20.1	8.69
RUBH0015	978	0	0.1	0	20.7	-0.21
RUBH0016	978	0	0.3	0	20.6	0.28
RUBH001A	980	0	0.3	0	20.6	-0.16
RUBH001B	980	0	0.9	0	19.7	-0.14
RUBH002A	981	2.7	5.4	0	2.8	-0.07
RUBH002B	981	0	0.2	0	20.8	-0.07
RUBH003A	981	0	0.7	0	20.3	3.06
RUBH003B	980	0	1.9	0	19.7	-0.24
RUBH004A	980	0	2.2	0	18.8	2.78
RUBH004B	980	0	3.7	0	18.5	-0.1
RUBH011A	977	0	1.3	0	19.8	29.71
RUBH011P	978	0	0.1	0	20.8	-0.26
RUBH012A	978	0	0.3	0	20.5	-0.16
RUGBH001	980	0	3.9	0	18.1	-0.12
RUGBH002	980	0	3	0	18.6	-0.14
RUGBH003	980	0	1.7	0	15	0.02
RUGBH004	980	0.9	1	0	18.8	0.28
RUGBH005	980	2.3	1	0	19.9	-0.09
RUGBH006	979	0	2.1	0	18.8	-0.19
RUGBH007	977	0	0.5	0	20.2	0.66
RUGBH008	977	0	0.3	0	20.6	-0.12
RUGBH009	978	0	0.5	0	20.7	-0.16
RUGBH010	978	0	1.4	0	20.5	1.95
RUGBH02A	980	0	0.2	0	20.8	-0.17
RUGP0001	981	39.5	5.4	0	10.4	7.86
RUGP0002	981	0	6.2	0	15.3	-0.12
RUGP0003	981	0	0.5	0	20.3	9.54
RUGP0004	981	0	2.2	0	19.3	-0.1
RUGP0008	981	0	1.3	0	19.4	0
RUGP0009	981	0	2.4	0	16.6	-0.14
RUGP0010	981	0	2.2	0	19.6	-0.09
RUGP0011	981	0	1.7	0	20.5	-0.14
RUGP0012	980	0	0.4	0	20.6	0
RUGP0013	980	0	1.3	0	19.7	-0.22
RUGP0014	980	0	4.1	0	18.3	0
RUGP0015	978	0	2.1	0	19.1	2.64
RUGP0016	977	0	1.1	0	19.5	-0.33
RUGP0018	978	0	0.6	0	19.6	10.32
RUGP0019	978	0	0.1	0	20.9	0.05
RUGP0020	977	0	0.1	0	20.8	-0.17
RUGP0021	977	0	0.2	0	20.7	2.14
RUGP00A1	980	0	0.1	0	20.2	0.17

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Ruabon Perimeter Borehole Gas Data - November 2014



From : 04/11/2014
To : 28/11/2014

13/11/2014

	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUGP00A2	980	0	0.3	0	20.2	1.09
RUGP00A3	979	0	0.1	0	17.6	0.33
RUGP00B1	980	0	0.1	0	18.9	8.02
RUGP00B2	980	4.4	0.9	0	15.2	-0.07
RUGP00B3	980	0	0.1	0	20.6	-5.53
RUGP00C1	980	0	0.1	0	19.5	-0.12
RUGP00C2	980	0	0.1	0	18.9	0.41
RUGP00C3	980	0	0.1	0	20.7	-4.58
RUGP00D1	980	0	0.1	0	20.8	0.03
RUGP00D2	979	0	0.1	0	20.8	-0.28
RUGP00D3	979	0	0.1	0	20.9	0.81
RUGP00E1	980	0	0.1	0	20.8	0.83
RUGP00E2	980	0	0.1	0	20.9	0.47
RUGP00E3	980	0	0.1	0	20.7	0.35
RUGP00F1	980	0	0.2	0	18.8	0.03
RUGP00F2	980	0	0.1	0	20	0.1
RUGP00F3	980	0	0.1	0	20.9	-0.21
RUWB001A	981	0	0.4	0	19.3	-0.17
RUWB001B	981	0	6.3	0	14.4	0.55
RUWB002A	980	0	0.4	0	19.6	-0.81
RUWB002B	980	0	3.7	0	18.1	-0.19
RUWB002C	980	0	3.4	0	18.4	-0.07
RUWB002D	980	0	0.3	0	20.6	-0.14
RUWB003A	977	0	0.7	0	14.8	-1.47
RUWB003B	977	0	0.7	0	14	14.09
RUWB004A	978	0	0.8	0	15	3.58
RUWB004B	978	0	2.4	0	16.4	-4.17
RUWB005A	979	0	0.1	0	20.9	-0.14
RUWB005B	979	0	1	0	20.3	-0.1

Issued By:

Ruabon Perimeter Borehole Gas Data - November 2014



From : 04/11/2014

To : 28/11/2014

20/11/2014

Sample Point	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUBH0006	1012	0	2.7	0	12.9	-0.14
RUBH0007	1012	10.8	6.6	0	0.6	-0.41
RUBH0008	1012	0	3.6	0	17.2	-57.63
RUBH0009	1012	0	0.9	0	19.7	-0.1
RUBH0010	1011	0	0.7	0	19.9	-0.17
RUBH0013	1010	0	0.9	0	19.9	-0.05
RUBH0014	1010	0	1.2	0	20.6	-9.52
RUBH0015	1011	0	0.1	0	20.6	-0.14
RUBH0016	1010	0	0.3	0	20.5	-0.16
RUBH001A	1012	0	0.3	0	20.6	-0.12
RUBH001B	1011	0	0.9	0	19.7	-0.09
RUBH002A	1012	3.1	5.7	0	2.3	-0.12
RUBH002B	1012	0	0.2	0	20.7	-0.1
RUBH003A	1012	0	0.5	0	20.5	-2.44
RUBH003B	1012	0	0.1	0	20.8	-0.29
RUBH004A	1012	0	2.2	0	18.7	-5.74
RUBH004B	1012	0	4.2	0	17.7	-0.05
RUBH011A	1010	0	1.6	0	19.3	2.21
RUBH011P	1010	0	0.1	0	20.7	-0.35
RUBH012A	1010	0	1.2	0	19.6	-0.1
RUGBH001	1012	0	3.9	0	17.8	0.5
RUGBH002	1012	0	0.5	0	20.2	-0.14
RUGBH003	1012	0	1.3	0	16.4	0.16
RUGBH004	1012	0	1	0	19.9	-0.17
RUGBH005	1012	0	0.1	0	20.5	-0.22
RUGBH006	1012	0	1.7	0	19.5	2.51
RUGBH007	1009	0	0.7	0	20.2	-0.12
RUGBH008	1009	0	0.3	0	20.6	-0.14
RUGBH009	1010	0	0.4	0	20.4	0.8
RUGBH010	1010	0	1.5	0	20.2	-0.12
RUGBH02A	1012	0	0.3	0	20.5	-0.19
RUGP0001	1012	49.8	6.4	0	7.2	-5.03
RUGP0002	1011	0	6	0	14.8	-0.05
RUGP0003	1012	0	0.5	0	19.7	16.7
RUGP0004	1012	0	2.3	0	18.6	0.02
RUGP0008	1012	0	1.2	0	19.4	-0.14
RUGP0009	1012	0	3.1	0	14.1	-0.17
RUGP0010	1012	0	2.4	0	18.9	-0.26
RUGP0011	1012	0	1.2	0	20	-0.14
RUGP0012	1012	0	0.4	0	20.5	-0.16
RUGP0013	1012	0	1.1	0	19.9	-0.12
RUGP0014	1012	0	3.7	0	18.7	-0.21
RUGP0015	1010	0	0.8	0	20.3	-0.16
RUGP0016	1009	0	1.4	0	18	-0.09
RUGP0018	1010	0	0.3	0	19.7	-2.63
RUGP0019	1010	0	0.1	0	20.7	-0.05
RUGP0020	1010	0	0.2	0	20.6	-0.05
RUGP0021	1009	0	0.2	0	20.7	0.02
RUGP00A1	1012	0	0.1	0	20.3	0.02

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Ruabon Perimeter Borehole Gas Data - November 2014



From : 04/11/2014
To : 28/11/2014

20/11/2014

	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUGP00A2	1012	0	0.3	0	20.1	0.03
RUGP00A3	1012	0	0.1	0	17.4	-13.1
RUGP00B1	1012	0	0.1	0	19.7	-0.17
RUGP00B2	1012	2.6	0.6	0	17.1	0
RUGP00B3	1012	0	0.1	0	20.5	-0.05
RUGP00C1	1012	0	0.1	0	19.5	-0.09
RUGP00C2	1012	0	0.1	0	18.7	0.64
RUGP00C3	1012	0	0.1	0	20.6	-3.58
RUGP00D1	1013	0	0.1	0	20.7	-0.09
RUGP00D2	1012	0	0.1	0	20.7	-0.1
RUGP00D3	1012	0	0.1	0	19.7	-0.09
RUGP00E1	1012	0	0.1	0	20.6	-0.12
RUGP00E2	1012	0	0.1	0	20.8	-0.19
RUGP00E3	1012	0	0.1	0	20.7	0
RUGP00F1	1013	0	0.1	0	20.3	-0.17
RUGP00F2	1012	0	0.1	0	20.5	-0.02
RUGP00F3	1012	0	0.1	0	20.9	-0.16
RUWB001A	1012	0	0.4	0	18.9	0.03
RUWB001B	1012	0	7	0	13.1	-0.31
RUWB002A	1012	0	0.3	0	19.4	-0.12
RUWB002B	1012	0	1	0	20.2	-0.52
RUWB002C	1012	0	1.6	0	19.6	-0.14
RUWB002D	1012	0	0.3	0	20.7	-0.09
RUWB003A	1010	0	0.7	0	14.1	-16.2
RUWB003B	1010	0	0.6	0	13.7	-1.88
RUWB004A	1010	0	0.7	0	13.5	-9.9
RUWB004B	1010	0	1.7	0	15.5	-14.31
RUWB005A	1011	0	0.1	0	20.7	-0.07
RUWB005B	1011	0	0.7	0	20.1	0.21

Issued By:

Ruabon Perimeter Borehole Gas Data - November 2014



From : 04/11/2014
To : 28/11/2014

28/11/2014

Sample Point	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUBH0006	991	0	2.8	0	11.7	3.73
RUBH0007	992	10.2	6.6	0	1.7	14.16
RUBH0008	991	0	0.7	0	19.8	-24.01
RUBH0009	991	0	1.2	0	19.7	-0.05
RUBH0010	990	0	0.5	0	20.3	-0.1
RUBH0013	989	0	1.4	0	20	-0.16
RUBH0014	989	0	1.3	0	20.5	-0.07
RUBH0015	990	0	0.1	0	20.6	-0.19
RUBH0016	990	0	0.3	0	20.5	-0.14
RUBH001A	991	0	0.3	0	20.1	-0.1
RUBH001B	991	0	1.3	0	18.5	-0.19
RUBH002A	991	3	5.5	0	3.6	-0.07
RUBH002B	992	0	0.2	0	20.4	-0.12
RUBH003A	991	0	0.5	0	20.2	2.06
RUBH003B	991	0	0.1	0	20.8	-0.09
RUBH004A	991	0	2.2	0	18.4	3.96
RUBH004B	991	0	4.2	0	17.6	-0.09
RUBH011A	989	0	1.8	0	19.1	0.4
RUBH011P	989	0	0.1	0	20.7	-0.12
RUBH012A	989	0	1.1	0	20.3	-0.1
RUGBH001	991	0	4.2	0	17.6	-0.17
RUGBH002	992	0	1	0	20.6	0.09
RUGBH003	991	0	1.2	0	17	-0.6
RUGBH004	991	0	0.8	0	19.6	0.14
RUGBH005	991	0.5	0.3	0	20.3	-0.07
RUGBH006	991	0	1.8	0	19.8	-0.03
RUGBH007	989	0	0.9	0	20.5	0.47
RUGBH008	989	0	0.3	0	20.6	-0.14
RUGBH009	989	0	0.7	0	20.6	-0.19
RUGBH010	990	0	1.6	0	20.4	0.1
RUGBH02A	992	0	0.3	0	20.5	0.05
RUGP0001	991	28.6	3.3	0	12.1	0.02
RUGP0002	991	0	6.1	0	13.4	-0.19
RUGP0003	991	0	0.4	0	19.4	30.4
RUGP0004	991	0	2.6	0	17	-0.03
RUGP0008	991	0	1.4	0	18	-0.05
RUGP0009	991	0	4.3	0	11.8	-0.05
RUGP0010	991	0	2.6	0	18.5	0
RUGP0011	991	0	1.4	0	19.5	1.16
RUGP0012	991	0	0.4	0	20.4	1.12
RUGP0013	991	0	1.3	0	19.9	-0.03
RUGP0014	991	0	3.5	0	18.6	-0.07
RUGP0015	990	0	0.7	0	20.5	-0.14
RUGP0016	988	0	1.6	0	18.3	-0.05
RUGP0018	990	0	0.4	0	19.6	9.26
RUGP0019	989	0	0.1	0	21	0
RUGP0020	989	0	0.2	0	20.7	1.31
RUGP0021	989	0	0.3	0	20.7	0.1
RUGP00A1	992	0	0.1	0	19.7	-0.24

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Ruabon Perimeter Borehole Gas Data - November 2014



From : 04/11/2014

To : 28/11/2014

28/11/2014

	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUGP00A2	992	0	0.4	0	19.9	0.5
RUGP00A3	992	0	0.1	0	17.5	-2.52
RUGP00B1	991	0	0.1	0	18.7	1.94
RUGP00B2	991	2.3	0.6	0	16.8	2.7
RUGP00B3	992	0	0.1	0	20.5	0
RUGP00C1	991	0	0.1	0	18.9	0.45
RUGP00C2	991	0	0.1	0	18.1	-0.03
RUGP00C3	991	0	0.1	0	20.5	-3.89
RUGP00D1	991	0	0.1	0	20.6	-0.17
RUGP00D2	991	0	0.1	0	20.6	-1.88
RUGP00D3	991	0	0.1	0	18.6	4.82
RUGP00E1	992	0	0.1	0	20.6	1.18
RUGP00E2	991	0	0.1	0	20.7	0.54
RUGP00E3	991	0	0.1	0	20.7	-0.22
RUGP00F1	992	0	0.2	0	19.1	-0.07
RUGP00F2	992	0	0.1	0	19.8	-0.03
RUGP00F3	992	0	0.1	0	20.8	0.16
RUWB001A	991	0	0.3	0	18.7	-0.05
RUWB001B	991	0	6.6	0	13.2	-0.09
RUWB002A	991	0	0.3	0	19.2	0.03
RUWB002B	992	0	1	0	20.2	0.02
RUWB002C	991	0	4.2	0	17.6	-0.03
RUWB002D	991	0	0.3	0	20.6	-0.07
RUWB003A	989	0	0.7	0	13.2	-1.69
RUWB003B	989	0	0.5	0	11.5	-0.29
RUWB004A	989	0	0.6	0	12.8	-5.67
RUWB004B	989	0	1.4	0	15.3	-4.86
RUWB005A	990	0	0.1	0	20.9	0
RUWB005B	991	0	0.7	0	20.4	-0.09

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APPENDIX 3

Landfill Gas Field Extraction and Balancing Data

Ruabon Landfill Gas Extraction and Balancing Data - November 2014

Well ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	Residual N2 (%)	Original Valve (%)	Depart Valve (%)
RUAW0055	06/11/2014 11:47	13	22.2	0.1	64.7	-0.17	989	0	0	64.32	5	5
RUAW0008	06/11/2014 11:49	0.5	12.4	8.3	78.8	-0.03	988	0	0	47.59	0	0
RUAW0063	06/11/2014 11:52	0.6	16.2	4.3	78.9	-0.07	988	0	0	62.73	0	0
RUAW0007	06/11/2014 11:55	20.9	21.9	0	57.2	-0.28	988	0	0	57.2	0	0
RUAW0062	06/11/2014 11:57	9.4	15.2	6	69.4	-0.21	987	0	0	46.84	0	0
RUAMW07R	06/11/2014 12:00	37.9	29.1	0.4	32.6	-1.36	988	0	0	31.1	5	5
RUAMW07R	06/11/2014 12:00	37.9	29.1	0.4	32.6	-1.36	988	0	0	31.1	5	5
RUAMW004	06/11/2014 12:03	20	25.5	0	54.5	-0.07	988	0	0	54.5	0	0
RUAMW004	06/11/2014 12:03	20	25.5	0	54.5	-0.07	988	0	0	54.5	0	0
RUAW0044	06/11/2014 12:06	38.5	27.6	2.5	31.4	-7.45	987	0	0	22	5	5
RUAW0043	06/11/2014 12:09	40.7	27.9	0	31.4	-41.32	989	0	0	31.4	5	5
RUAW0013	06/11/2014 12:14	30.2	26.7	0	43.1	-6.27	989	0	0	43.1	5	1
RUAW0014	06/11/2014 12:16	28.2	26.6	0	45.2	-19.97	988	0	0	45.2	20	5
RUAW0014	06/11/2014 12:19	29.7	27.6	0	42.7	-27.35	988	0	0	42.7	5	5
RUAW0015	06/11/2014 12:22	26.6	24.8	3.2	45.4	-13	987	0	0	33.37	20	5
RUAW0015	06/11/2014 12:24	26.2	24.6	3.5	45.7	-7.14	987	0	0	32.54	5	5
RUAW0015	06/11/2014 12:24	26.2	24.6	3.5	45.7	-7.14	987	0	0	32.54	5	5
RUAW0045	06/11/2014 12:29	74.4	27.3	0	0	-37.58	986	0	0	0	10	10
RUAMW08R	06/11/2014 12:33	37.4	26.9	0.3	35.4	-0.62	987	0	0	34.27	5	5
RUAW0046	06/11/2014 12:35	39.7	28.5	0	31.8	-0.02	986	0	0	31.8	0	5
RUAW0046	06/11/2014 12:38	38.4	28.9	0	32.7	-3.01	986	0	0	32.7	5	5
RUAW0016	06/11/2014 12:41	0.9	9.5	12.2	77.4	0.09	987	0	0	31.53	0	0
RUAW0016	06/11/2014 12:41	0.9	9.5	12.2	77.4	0.09	987	0	0	31.53	0	0
RUAW0017	06/11/2014 12:45	59	33.6	0	7.4	0.65	985	0	0	7.4	0	10
RUAW0017	06/11/2014 12:47	54.3	33.9	0	11.8	-3.15	985	0	0	11.8	10	10
RUAW0064	06/11/2014 12:51	53.4	32.1	0	14.5	-11.52	985	0	0	14.5	10	10
RUAW0047	06/11/2014 12:54	35.6	20.9	8.8	34.7	-40.97	987	0	0	1.61	5	0

Well ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	Residual N2 (%)	Original Valve (%)	Depart Valve (%)
RUAW0047	06/11/2014 12:56	34.6	20.8	9	35.6	-40.7	987	0	0	1.76	0	0
RUAW0014	06/11/2014 12:59	67.1	31.1	0	1.8	-35.48	986	0	0	1.8	10	10
RUAW0018	06/11/2014 12:59	67.1	31.1	0	1.8	-35.48	986	0	0	1.8	10	10
RUAW0019	06/11/2014 13:05	56.7	34.8	0	8.5	-6.2	986	0	0	8.5	10	10
RUAW0021	06/11/2014 13:12	46.3	34.7	0	19	-8.75	986	0	0	19	20	20
RUAW0068	06/11/2014 13:15	58.9	36.9	0.8	3.4	-37.39	987	0	0	0.39	10	10
RUAW0068	06/11/2014 13:15	58.9	36.9	0.8	3.4	-37.39	987	0	0	0.39	10	10
RUAW0022	06/11/2014 13:18	46.2	36.2	0	17.6	-5.61	986	0	0	17.6	20	20
RUAW0066	06/11/2014 13:21	22	24.3	1.3	52.4	-5.16	985	0	0	47.51	0	0
RUAW0020	06/11/2014 13:26	56.8	36.7	0	6.5	-40.46	985	0	0	6.5	20	30
RUAW0020	06/11/2014 13:28	56.9	37	0	6.1	-41.11	985	0	1	6.1	30	30
RUAW0028	06/11/2014 13:31	37.7	43.7	0	18.6	13.34	986	0	0	18.6	0	5
RUAW0028	06/11/2014 13:33	37.5	44.2	0	18.3	-10.36	986	0	0	18.3	5	5
RUAW056R	06/11/2014 13:38	38.1	31.3	1.9	28.7	-8.14	985	0	0	21.56	20	20
RUAW0027	06/11/2014 13:41	66.9	33.4	0.1	0	4.32	987	0	0	0	0	10
RUAW0027	06/11/2014 13:42	64.3	33.2	0.5	2	-32.74	987	0	0	0.12	10	10
RUAW0024	06/11/2014 13:50	32.1	24.7	8.1	35.1	-0.36	987	7	0	4.64	0	0
RUAW0024	06/11/2014 13:50	32.1	24.7	8.1	35.1	-0.36	987	7	0	4.64	0	0
RUAW025R	06/11/2014 13:53	61.3	36.3	0	2.4	-40.85	987	0	0	2.4	70	90
RUAW025R	06/11/2014 13:54	60.7	36.9	0	2.4	-41.02	987	0	0	2.4	90	90
RUAW025R	06/11/2014 13:54	60.7	36.9	0	2.4	-41.02	987	0	0	2.4	90	90
RUAW026R	06/11/2014 13:57	63.2	36.3	0	0.5	-32.31	986	0	0	0.5	20	20
RUAW030R	06/11/2014 14:12	67.1	23.7	2	7.2	-41.3	987	0	0	0	20	30
RUAW030R	06/11/2014 14:14	69.4	24.7	1.3	4.6	-41.33	987	0	0	0	30	30
RUAW033R	06/11/2014 14:16	69.3	32.5	0	0	-41.32	986	0	0	0	100	100
RUAW0021	10/11/2014 11:15	53.1	45.6	0.3	1	-7.87	991	8	0	0	10	10
RUAW0001	13/11/2014 09:33	21.6	26.7	0.2	51.5	-0.74	986	0	0	50.75	1	1
RUAMW001	13/11/2014 09:39	22.7	22.5	0.2	54.6	-2.77	986	0	0	53.85	5	0
RUAMW001	13/11/2014 09:41	22.5	22.9	0.2	54.4	-2.12	986	0	0	53.65	0	0

Well ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	Residual N2 (%)	Original Valve (%)	Depart Valve (%)
RUAW0003	13/11/2014 09:44	41.9	19.4	0	38.7	-0.91	985	0	1	38.7	0	5
RUAW0003	13/11/2014 09:46	41.9	19.5	0	38.6	-2.07	985	0	1	38.6	5	5
RUAW0053	13/11/2014 09:49	8.4	20.7	0	70.9	-2.84	985	0	0	70.9	0	0
RUAMW002	13/11/2014 09:52	25.7	21.6	0	52.7	-5.68	986	0	0	52.7	5	0
RUAMW002	13/11/2014 09:54	25.6	22.1	0	52.3	-5.68	986	0	0	52.3	0	0
RUAW065R	13/11/2014 09:57	33.4	27.1	0	39.5	-8.71	985	0	0	39.5	10	10
RUAW011R	13/11/2014 10:00	28.4	20	8.1	43.5	-8.5	985	0	0	13.04	10	0
RUAW011R	13/11/2014 10:04	35.8	25.6	4.2	34.4	-6.85	985	0	0	18.61	0	0
RUAMW005	13/11/2014 10:06	39.2	28.2	0	32.6	-19.04	985	0	0	32.6	20	20
RUAW0061	13/11/2014 10:08	18.5	24.1	0	57.4	-8.87	985	0	0	57.4	10	0
RUAW0061	13/11/2014 10:11	17.9	24.5	0	57.6	-7.61	985	0	0	57.6	0	0
RUAMW006	13/11/2014 10:13	61.7	35.8	0	2.5	-9.07	985	0	0	2.5	10	10
RUAMW09R	13/11/2014 10:17	24.4	27.5	0.1	48	-9.4	985	0	0	47.62	10	0
RUAMW09R	13/11/2014 10:19	24.7	27.3	0.5	47.5	-9.31	985	0	0	45.62	0	0
RUAW0060	13/11/2014 10:22	8.8	19.5	3.2	68.5	-0.83	985	0	0	56.47	0	0
RUAW0048	13/11/2014 10:26	49.3	34.1	2.7	13.9	-38.23	985	0	0	3.75	5	5
RUAW050R	13/11/2014 10:29	49.9	35.9	0.1	14.1	-0.83	984	0	0	13.72	0	5
RUAW050R	13/11/2014 10:31	50.2	36.2	0	13.6	-2	984	0	0	13.6	5	5
RUAW0054	13/11/2014 11:29	0.1	5.6	15.6	78.7	-0.4	983	0	0	20.04	0	0
RUAW030R	13/11/2014 11:45	75.6	26	0	0	-39.87	983	0	0	0	50	50
RUAW033R	13/11/2014 11:48	69.4	32.5	0	0	-39.75	985	0	0	0	100	100
RUAW031R	13/11/2014 11:51	48	35.3	0.1	16.6	-12.7	984	0	0	16.22	10	10
RUAW0051	13/11/2014 11:54	65.8	35.6	0.2	0	-18.47	983	1	0	0	10	10
RUAW0067	13/11/2014 11:58	29	28.5	0.9	41.6	-21.54	983	0	0	38.22	5	5
RUAW057R	13/11/2014 12:02	45.5	33.4	2	19.1	-21.42	983	0	0	11.58	5	5
RUAW032R	13/11/2014 12:05	59.9	37.3	0.3	2.5	-25.41	983	0	0	1.37	20	20
RUAW034R	13/11/2014 12:16	55.8	33.9	0.5	9.8	-22.64	983	1	0	7.92	5	5
RUAW0002	20/11/2014 09:24	1.1	14.8	2.2	81.9	-2.43	1010	0	0	73.63	0	0
RUAW0004	20/11/2014 09:30	20.3	21.7	0	58	-4.37	1010	0	0	58	0	0

Well ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	Residual N2 (%)	Original Valve (%)	Depart Valve (%)
RUAW0005	20/11/2014 09:33	45	26.8	0	28.2	-5.29	1012	0	0	28.2	5	5
RUAW0052	20/11/2014 09:39	27.3	11.4	12.3	49	-39.22	1011	0	0	2.75	5	2
RUAW0052	20/11/2014 09:42	26.9	11.8	12.2	49.1	-39.49	1011	0	0	3.23	0	0
RUAMW003	20/11/2014 09:45	13.5	15.1	7.1	64.3	-32.83	1012	0	0	37.6	5	0
RUAMW003	20/11/2014 09:47	12.8	14.6	7.6	65	-33.97	1012	0	0	36.42	0	0
RUAW0036	20/11/2014 09:50	51.1	33.1	0.3	15.5	-43.62	1012	0	0	14.37	20	20
RUAW0059	20/11/2014 09:52	68.5	32.9	0	0	1.91	1011	1	0	0	0	0
RUAW0035	20/11/2014 09:56	45.6	32.8	0	21.6	-5.35	1012	0	0	21.6	5	5
RUARW042	20/11/2014 10:04	71.8	27.9	3.8	0	-33.47	1011	0	0	0	5	5
RUARW041	20/11/2014 10:05	0	1.7	20.9	76.7	-9.43	1014	0	0	0	5	1
RUARW041	20/11/2014 10:07	0	0.9	20.9	77.2	-11.88	1014	0	0	0	1	1
RUARW040	20/11/2014 10:10	67.5	29.8	0	2.7	-43.31	1012	1	0	2.7	1	1
RUARW039	20/11/2014 10:13	72.2	29	0	0	-43.81	1014	0	0	0	1	1
RUARW038	20/11/2014 10:16	69.8	31.4	0	0	-45.64	1013	1	0	0	100	100
RUARW037	20/11/2014 10:19	67.9	33.2	0	0	-45.79	1013	1	0	0	100	100
RUAW0023	20/11/2014 10:25	61.1	36.4	0	2.5	-39.42	1011	1	0	2.5	50	50
RUAW029R	20/11/2014 10:27	42.2	34.6	0.1	23.1	-22.67	1010	2	0	22.72	10	10
RUAW0049	20/11/2014 10:30	64.7	35.7	0	0	-0.34	1010	1	0	0	1	5
RUAW0049	20/11/2014 10:32	64.5	35.6	0	0	-35.84	1010	1	0	0	5	5
RUAW0012	20/11/2014 10:39	23.1	20.5	10.2	46.2	-8.26	1011	2	0	7.85	1	1
RUARW042	27/11/2014 10:39	72.3	29.9	0	0	-13.98	989	0	0	0	5	5
RUARW040	27/11/2014 10:44	66.8	30.1	0	3.1	-39.78	989	1	0	3.1	1	1
RUARW039	27/11/2014 10:47	72.9	27.8	0.7	0	-43.52	991	0	0	0	1	1
RUARW039	27/11/2014 10:49	70.3	31.8	0	0	-44.93	990	1	0	0	100	100
RUARW037	27/11/2014 10:52	68.6	33.7	0	0	-44.81	989	0	0	0	100	100
RUAW025R	27/11/2014 10:55	62.3	37	0	0.7	-44.6	990	1	0	0.7	80	80
RUAW0027	27/11/2014 10:58	17.8	7.9	16.4	57.9	-36.13	989	1	0	0	10	0
RUAW0027	27/11/2014 11:01	15.9	7.2	17	59.9	-36.43	989	0	0	0	0	0
RUAW057R	27/11/2014 11:03	34	29.2	3.5	33.3	-10.29	988	1	0	20.14	10	10

Well ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	Residual N2 (%)	Original Valve (%)	Depart Valve (%)
RUAW029R	27/11/2014 11:06	45.8	35.6	0	18.6	-20.45	987	1	0	18.6	10	10
RUAW0066	27/11/2014 11:09	30.7	28.7	0	40.6	-7.75	987	0	0	40.6	1	1
RUAW0022	27/11/2014 11:11	53.5	38.3	0	8.2	-8.44	988	2	0	8.2	10	10
RUAW0068	27/11/2014 11:14	60.4	37.3	0.5	1.8	-43.23	988	1	0	0	5	5
RUAW0021	27/11/2014 11:16	47.6	35.9	0	16.5	-10.97	986	0	0	16.5	10	10

APPENDIX 4

Leachate Level Data

Ruabon Leachate Level Data - November 2014



From : 20/11/2014

To : 20/11/2014

20/11/2014

Sample Point	Depth of Liq (m)	Dip to Water (m)	TD (m)	Water Level (mAOD)
LMP006R	1.61	18.31	19.03	113.01
LMP007R	0.80	17.99	18.98	111.60
LMP008R	1.43	21.04	21.94	111.43
LMP009R	1.60	21.38	21.6	111.90
RUGW00M1	0.84	13.33	14.62	111.29
RUGW00M3	1.60	11.29	11.84	113.85
RUGW00M5	0.77	20.55	21.07	111.27
RUGW00M10	1.84	26.77	27.59	97.84
RUGWM4r	0.62	17.21	17.55	110.70
RULMP2r	1.03	15.18	15.93	111.03

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APPENDIX 5

Groundwater Quality Data

Ruabon Groundwater Quality & Level Data - November 2014



From : 04/11/2014

To : 04/11/2014

04/11/2014

Sample Point	Amm-N (N:mg/l)	BOD (mg/l)	Ca(D) (mg/l)	Cd(D) (mg/l)	Chloride (mg/l)	COD (mg/l)	Cond (uS / cm)	Cond(Fld) (uS / cm)	Cr(D) (mg/l)	Cu(D) (mg/l)
RUBH0013	0.2	5.7	125	<0.0001	10	5	709	800	0.001	<0.001
RUWB002A	1.7	10.9	150	<0.0001	380	10	1750	1890	0.001	<0.001
RUWB002B	0.6	<3.6	89	<0.0001	197	14	1160	1340	0.001	<0.001
RUWB002C	2.5	<2.0	190	<0.0001	362	19	2520	2720	0.005	<0.001
RUWB002D	0.5	<2.0	11	<0.0001	27	<5	839	920	0.001	<0.001
RUWB003A	0.6	<3.6	4	<0.0001	22	9	696	740	0.002	<0.001
RUWB004A	1.2	5.7	3	<0.0001	20	9	1010	1060	0.002	<0.001
RUWB005A	1.3	6.4	2	<0.0001	38	24	1020	1100	<0.001	<0.001
RUWB005B	1.9	2.6	83	<0.0001	121	6	713	750	<0.001	<0.001

Sample Point	Dip to Water (m)	Fe(D) (mg/l)	K(D) (mg/l)	Mg(D) (mg/l)	Mn(D) (mg/l)	Na(D) (mg/l)	Ni(D) (mg/l)	Pb(D) (mg/l)	pH (Lab)	pH(Fld)
RUBH0013	1.37	0.12	4	11	0.489	31	0.001	<0.001	8	7.17
RUWB002A	5.51	0.17	25	48	0.398	140	0.005	<0.001	7.9	7.41
RUWB002B	10.45	0.12	10	18	0.155	145	0.016	<0.001	8.1	7.67
RUWB002C	8.01	0.16	13	19	2.486	423	0.036	<0.001	7.7	6.98
RUWB002D	6.08	0.05	8	3	0.051	215	<0.001	<0.001	8.5	8.11
RUWB003A	8.97	0.22	14	10	0.006	150	<0.001	<0.001	8.4	7.92
RUWB004A	3.21	0.37	7	<1	0.008	255	<0.001	<0.001	9.2	9.42
RUWB005A	3.05	0.16	12	<1	0.002	270	<0.001	<0.001	9.8	10.17
RUWB005B	6.14	0.1	15	12	0.217	35	0.001	<0.001	8.3	8.16

Sample Point	S.Solids (mg/l)	TD (m)	TOC (mg/l)	TON (mg/l)	Total S(D) SO4:mg/l	WtrTemp (Deg C)	Zn(D) (mg/l)
RUBH0013	303	34.63	2.2	<0.2	49	10.8	<0.002
RUWB002A	613	21.36	2.5	<0.2	31	10.5	<0.002
RUWB002B	103	6.03	4	<0.2	4	10.1	0.002
RUWB002C	1039	6.32	7.2	<0.2	43	10.1	<0.002
RUWB002D	32	21.66	1.8	<0.2	40	9.8	0.003
RUWB003A	99	10.69	3.1	<0.2	<3	10	<0.002
RUWB004A	58	48.83	2.2	<0.2	8	10.1	<0.002
RUWB005A	89	25.37	0.71	<0.2	175	10.1	<0.002
RUWB005B	58	8.38	2.1	<0.2	9	10.1	<0.002

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APPENDIX 6

Surface Water Quality Data

Ruabon Surface Water Quality Data - November 2014



From : 04/11/2014
To : 04/11/2014

04/11/2014

Sample Point	Amm-N (N:mg/l)	BOD (mg/l)	Chloride (mg/l)	COD (mg/l)	Cond (uS / cm)	Cond(Fld) (uS / cm)	DO(Lab) (mg/l)	pH (Lab)	pH(Fld)	S.Solids (mg/l)
RUWP004A	0.9	<2.0	51	31	715	760	9.5	8.5	7.76	8

Sample Point	WtrTemp (Deg C)
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RUWP004A	8.7
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APPENDIX 7

Leachate Quality Data

Ruabon Leachate Quality Data - November 2014



From : 04/11/2014
To : 04/11/2014

04/11/2014

Sample Point	Amm-N (N:mg/l)	BOD (mg/l)	Ca(D) (mg/l)	Cd(D) (mg/l)	Chloride (mg/l)	COD (mg/l)	Cond (uS / cm)	Cond(Fld) (uS / cm)	Cr(D) (mg/l)	Cu(D) (mg/l)
RULT0001	1040	253	92	<0.001	2800	2750	19000	>20000	0.142	0.025

Sample Point	Fe(D) (mg/l)	IonicBal (%)	K(D) (mg/l)	Mg(D) (mg/l)	Mn(D) (mg/l)	Ni(D) (mg/l)	Nitrate (N:mg/l)	Pb(D) (mg/l)	pH (Lab)	pH(Fld)
RULT0001	6.96	-5.2	758	104	0.238	0.206	<0.2	<0.01	7.9	7.39

Sample Point	Na(D) (mg/l)	T.Anions (meq/l)	T.Cations (meq/l)	TOC (mg/l)	TON (mg/l)	Total S(D) SO4:mg/l	WtrTemp (Deg C)	Zn(D) (mg/l)
RULT0001	2300	230	207	830	<0.2	102	10.2	0.449

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