Annual Environmental Report 2009

Derryconnell Landfill and Civic Amenity Site

WASTE LICENCE REGISTRATION NO. W00089-02

Prepared By: -
Mairéad Hales
Executive Engineer

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

LIST OF DRAWINGS

1. INTRODUCTION

1.1 Scope and Purpose of the Report

Waste Licence No. 89-1 was issued to Cork County Council by the Environmental Protection Agency (EPA) for Derryconnell Landfill Site in October 2000. In November 2008, Waste Licence No. W0089-02 was issued by the EPA, replacing 89-1, and is the current Waste Licence relating to the site.

Condition 11.12 of the waste licence states the following:-

'The licensee shall submit to the Agency, by the 31st March of each year, an AER covering the previous calendar year.'

1.2 Reporting Period

This Annual Environmental Report (AER) covers the reporting period 1st January 2009 to 31st December 2009.

1.3 Site Location

The facility address and contact numbers are detailed below:-

Derryconnell Landfill,
Derryconnell,
Schull,
Co. Cork
Tel. (028) 37048
Fax: (028) 37742

The National Grid Reference for the site is E9627, N3396.

2. DESCRIPTION OF THE SITE

2.1 Waste Management Activities at the Facility

Waste Activities at the Derryconnell landfill site are restricted to those outlined below: -

Waste Management Act 1996 to 2008: Third Schedule

Class 1. Deposit on, in or under land (including landfill).

Class 4. Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.

Class 5. Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment.

Class 12. Repacking prior to submission to any activity referred to in a preceding paragraph of this Schedule (Principal Activity).

Class 13. Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.

Waste Management Act 1996 to 2008: Fourth Schedule

Class 2. Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological processes).

Class 3. Recycling or reclamation of metals and metal compounds.

Class 4. Recycling or reclamation of other inorganic materials.

Class 13. Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.

In accordance with Schedule A of the Waste Licence, the waste categories and quantities acceptable at the facility are limited to those shown in Table 2.1.

Waste Types		**Maximum Tonnes Per Annum**
Non-Hazardous Waste	*Residual Municipal Waste For disposal*	17,000
	Storage of Waste prior to recovery	7,000
Hazardous Waste	*Storage of Waste prior to recovery or disposal*	152
Total including disposal and recovery		**24,152**

Table 2.1: Waste Categories and Quantities Acceptable at the Facility

2.2 Management and Staffing Structure of the Facility.

The following staff are employed on site: -

- One Facility Manager
- One Machine Operator (operates landfill compactor).
- Two General Operatives / Deputy Facility Managers
- In addition there is one part-time, relief General Operative.

Site and managerial staff details are shown in the following tables 2.2(a) and 2.2(b).

Employee	Position	Duties and Responsibilities	Experience / Qualifications
Mr. John Hurley (Externally hired Contractor)	Compactor Operator	Systematic and regularised placement and compaction of waste within active cell	Over 20 years experience of landfill compaction.
Mr. Joe Newman	General Operative Deputy Facility Manager	General site operation and maintenance. Collection of gate fees. Administration of on-site records. Implementation of waste acceptance procedures. Coordination and control of customer activities. Deputising as Facility Manager	12 years landfill operation experience. Completed Site Operative modules of FAS Waste Management Course. Trained in operation and management of various on site systems.
Mr. Frank Cronin	General Operative Deputy Facility Manager	General site operation and maintenance. Collection of gate fees. Administration of on-site records. Implementation of waste acceptance procedures. Coordination and control of customer activities. Deputising as Facility Manager	10 years landfill operation experience. Completed Site Operative modules of FAS Waste Management Course. Trained in operation and management of various on site systems.
Mr. Jerry McCarthy	Relief General Operative	General site operation and maintenance. Collection of gate fees. Implementation of waste acceptance procedures. Coordination and control of customer activities.	5 years landfill operation experience. Completed Site Operative modules of FAS Waste Management Course. Trained in operation and management of various on site systems.

Table 2.2(a): Site Staff

The following staff are also responsible for operation and management of the facility.

Position	Contact Details
Senior Executive Officer *Ms. Gráinne O'Mahony*	Cork County Council, Environment & Recreation, Hume House, Wolfe Tone Street, Clonakilty, Co. Cork. Tel: 023 8858812 Fax: 023 8858814
Senior Executive Engineer *Mr. Paudie Hegarty, B.E.*	
Facility Manager / Executive Engineer *Ms. Mairéad Hales, B.E.*	

Table 2.2(b): Managerial Staff

2.3 Waste Quantities and Composition

The quantity and composition of the waste **received and disposed of** at the facility during the reporting period is recorded in table 2.3(a).

Waste Disposed of at Derryconnell Landfill (Tns) – 2009				
Month	**Household**	**Commercial**	**Construction & Demolition**	**Total**
January	585.62	20.34	151.60	757.56
February	492.08	37.48	232.20	761.76
March	613.32	17.88	98.88	730.08
April	573.80	63.88	66.16	703.84
May	591.94	6.84	71.38	670.16
June	608.30	14.78	48.10	671.18
July	812.54	4.62	167.86	985.02
August	730.42	16.08	125.16	871.66
September	608.56	4.40	183.54	796.50
October	503.38	14.36	75.38	593.12
November	598.26	12.70	140.80	751.76
December	720.30	17.38	104.56	842.24
Totals	**7,438.52**	**230.74**	**1,465.62**	**9,134.88**

Table 2.3(a): Quantities of Waste received and disposed of / landfilled during the reporting period January 2009 to December 2009.

The quantity and composition of the waste **received and recovered** during the reporting period, at the facility is recorded in table 2.3(b).

Waste Recovered at Derryconnell Landfill (Tns) – 2009													
Month	**Paper Card Plastic**	**Glass Bottles**	**Alum. Cans**	**Steel Cans**	**Scrap Metal**	**Timber**	**Batt.**	**Aerosl**	**Textiles**	**Oils**	**WEEE**	**Light Tubes**	**Gas Cylndrs**
January	20.10	9.82	0.20	0.66	6.82	9.18	0.00	0.00	1.28	0.00	15.16	0.00	0.00
February	16.08	9.54	0.18	0.72	17.52	6.28	1.60	0.12	1.62	0.00	12.3	0.00	0.00
March	14.02	5.20	0.04	0.78	12.54	5.44	0.00	0.00	0.62	0.00	7.26	0.16	0.00
April	18.66	11.00	0.16	0.34	7.04	9.90	0.00	0.00	1.38	0.00	9.60	0.00	0.00
May	21.54	8.00	0.14	0.80	12.12	4.92	1.72	0.08	0.78	1.46	6.72	0.08	0.00
June	16.76	0.00	0.16	0.56	12.62	9.36	1.23	0.00	1.34	0.00	11.87	0.00	0.00
July	22.52	17.80	0.34	1.02	13.60	8.40	0.00	0.06	1.22	0.82	9.20	0.00	0.00
August	22.76	13.16	0.34	0.34	12.40	18.14	1.98	0.08	1.34	0.98	9.44	0.00	0.00
September	17.44	5.96	0.10	0.50	14.68	9.36	1.14	0.00	2.06	0.00	12.30	0.00	0.00
October	17.18	7.52	0.14	0.60	13.86	5.92	0.00	0.00	1.18	0.00	7.18	0.00	0.00
November	14.44	0.00	0.26	1.26	6.82	5.60	2.76	0.00	1.18	1.24	20.38	0.36	0.78
December	16.78	7.76	0.10	0.52	13.26	7.94	0.00	0.14	0.52	0.00	9.24	0.00	0.00
Totals	**218.28**	**95.76**	**2.16**	**8.10**	**143.28**	**100.44**	**10.43**	**0.48**	**14.52**	**4.50**	**130.65**	**0.60**	**0.78**

Table 2.3(b): Quantity of Waste received and recovered during the reporting period January 2009 to December 2009.

2.4 Site Capacity

The filling sequence outlined below is based on the current landfill rates.

Phase	**Available Capacity**	**Available Capacity**	**Filling Commencement**	**Filling Completion**	**Restoration Completion**
	(m3)	**Months**	**Date**	**Date**	**Date**
Cell 1	0	0	Feb 2004	Nov 2004	March 2005
Cell 2	0	0	Nov 2004	Aug 2006	Temp. Cap Aug 2006
Cell 3	2,200	4	Sept 2006	Estimate Q1 2010	Estimate Q4 2010
Total	**2,200**	**4**			

Table 2.4: Phasing of Filling and Restoration Operations – Status at 31st Dec 2010

3. SITE DEVELOPMENT WORKS

3.1 Works During 2009

No major construction works were carried out on site at Derryconnell Landfill Site in 2009. The works which were carried out are as follows:

- Installation of traffic barriers and automated pay station at entrance to civic amenity area.
- Repairs to netting around cell 3.
- General maintenance works and upkeep of site.

3.2 Proposed Works for 2010

It is expected that final capping, leachate and gas management of all cells will be completed in 2010. Contract documents have been prepared and tenders received from suitable Contractors. As specified by condition 3.2 of the Waste Licence, proposals for the works shall be submitted to the Agency at least 2 months in advance of commencement of such works.

4. EMISSIONS AND ENVIRONMENTAL MONITORING DATA:

4.1 Monitoring points

All surface environmental monitoring points are shown on drawing No.1.

These consist of the following:

- **Groundwater Emissions monitoring Points: (7 no.)**
  (GW1, GW2, GW4, GW5, GW6, GW7, GW8)
- **Surface Water Emissions monitoring Points: (9 no.)**
  (SW1, SW2, SW3, SW4, SW5, SW6, SW7, SW8, SW9)
- **Leachate Quality monitoring Points: (8 no.)**
  (L1, L2, L3, L4, L5, L6, L7, L8)
- **Gas Emissions monitoring Points: (8 no.)**
  (L1, L2, L3, L4, L5, L6, L7, L8)
- **Dust Emissions monitoring Points: (4 no.)**
  (D1, D3, D6, D8) – number of points reduced with EPA agreement
- **Noise Emissions monitoring Points: (5 no.)**
  (N1, N6, N7, N8, N12) - number of points reduced with EPA agreement
- **Emissions to air monitoring Point: (1 no.)**
  Flare Stack

All sampling on site is carried out by Cork County Council personnel. Following the granting of Waste Licence W0089-02, environmental monitoring reporting is now via the AER. This replaces the previous system of reporting via two biannual reports.

The results of all environmental monitoring carried out on site during 2009 are tabulated in appendix 1.

4.2 Leachate

The leachate lagoon was operational throughout 2009. The total volume of leachate removed from the lagoon in 2009 was 23,910.68 M^3. All leachate extracted was transported to Bandon waste water treatment plant. Quantities extracted monthly are shown in table 4.2.

Month	***Vol (L)***
January	2,008,140
February	2,332,720
March	1,928,120
April	1,520,020
May	824,200
June	867,000
July	1,048,040
August	2,185,620
September	2,341,340
October	2,417,860
November	2,677,100
December	3,760,520
Total Leachate	**23,910,680**

Table 4.2: Leachate Disposal per Month 2009

4.3 Continuous Monitoring Systems utilised on site:

4.3.1 Surface water emissions monitoring (SCADA):

Surface water emissions from site are continuously analysed by means of a SCADA system that measures the following: TOC (Total Organic Carbon), pH, Conductivity, Ammonia as N, Temperature and Flow. A full record of hourly SCADA results is kept electronically and in hard copy on site.

4.3.2 Flare Emissions Monitoring:

A 500 M^3/Hr Flaring system was in operation on site throughout 2009. Gas quality and emissions are continuously analysed for the following: Methane %, Carbon Dioxide %, Oxygen %, Carbon Monoxide, Combustion Temperature, Flow & Pressure.

Flare monitoring results and emissions analysis are tabulated in appendix 2.

5.0 ENERGY CONSUMPTION

5.1 General

- During 2009, the site machinery comprised of an excavator, landfill compactor, teletruck and a site dumper, consumed approximately 48,000 litres of fuel.

- Water supply to the site is not yet metered.

- Electricity usage at the site during 2009 was estimated at approximately 98 kWh per day.

6.0 ENVIRONMENTAL INCIDENTS, NON-COMPLIANCES AND COMPLAINTS

6.1 Environmental Incidents reported to EPA in 2009

A schedule of reported incidents and relevant remedial action is detailed in the following table.

Date	Nature of Incident	Corrective Action
27/02/09	Exceedance of TOC limit	Surface water was diverted to leachate lagoon. TOC monitor was cleaned, serviced and recalibrated. TOC subsequently found to be within limits.
20/11/09	Exceedance of level limits in leachate lagoon and waste cells	Extraction of leachate increased to maximum accepted by treatment plants. Levels brought to below specified limits.
22/12/09	Exceedance of CO_2 limits	Increased monitoring carried out to determine source.

Table 6.1: Environmental Incidents

6.2 Agency Notifications of Non-Compliance in 2009

A schedule of non-compliance's and relevant action is detailed in the following table.

Date	*Nature of Non Compliance*	*Corrective Action*
26/03/09	Failure to notify Agency of non-operation of flaring system	Commitment given to give notification of future malfunctions or breakdowns
02/12/09	Leachate Monitoring Records High Leachate Levels	Daily monitoring and recording of leachate levels put in place. Leachate levels brought below and kept below 1.0M.
02/12/09	Failure to notify Agency of exceedance of dust emission limit.	Incident investigated and report issued. Commitment given to give notification of all future exceedances.
02/12/09	Failure to submit fire-water risk assessment, energy efficiency audit & environmental liabilities risk assessment	Reports are being prepared for submission to the Agency.
02/12/09	No wind sock on site	Wind sock has been installed on site.

Table 6.2: Non-Compliances.

6.3 Complaints Summary

- On January 28th 2009, a complaint was received by telephone from a member of the public, identified only as Leah. The complaint was in relation to odours coming from the site.
- On February 13th 2009, a complaint, from an anonymous Complainant, was received by Cork County Council in relation to Derryconnell Landfill. The complaint was in relation to odours coming from the site and was notified to Cork County Council via the EPA.

There were no further complaints in 2009. An odour log kept on site has not indicated any further notable problems with odours during 2009.

6.4 Nuisance Controls

6.4.1 Litter

There were no serious littering incidents during 2009. Litter can become apparent on site during periods of high wind but this is always dealt with in a timely fashion by site staff.

6.4.2 Birds

A Bird Control Programme was in place on site during 2009. Records of visits by the Bird Control specialists are kept on site. The programme consists of a monthly service visit by the specialists and use of the following on site to assist in the prevention of bird scavenging at the site:-

- Helekite
- Hawk Kites
- Helegas 7.82cuM & Regulator
- Bird Scaring Pistol / 50 M Bang Cartridge

Bird presence on site in 2009 did not result in any impairment of, or interference with the amenity or the environment.

6.4.3 Vermin & Flying Insects

Vermin and fly control is carried out under contract with pest specialists and a record of same kept on site as required under condition 11.3 of the Waste Licence.

6.4.4 Scavenging

Scavenging did not occur on site during 2009. A CCTV system is operational on site to deter and record any potential scavenging incidents.

6.5 Programme for Public Information

6.5.1 Information Available to the Public

A site notice at the facility entrance states the following displays information on the facility including the following:-

- Facility name and address and telephone number
- Emergency contact information
- Opening hours
- Waste Licence information

Personnel associated with the facility are also available by appointment to meet with members of the public and answer queries regarding the facility if requested. The following information is held in a public file at the facility offices, available for the public to inspect: -

- A copy of the waste licence application.
- A copy of the current waste licence W0089-02.
- All correspondence from the Agency relating to the facility.
- All correspondence from Cork County Council to the Agency relating to the facility.
- Copies of environmental monitoring reports.

7. ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

An Environmental Management Plan was prepared for the site in accordance with EPA guidance documents. A copy is kept on site and acts as a manual for the operation of Derryconnell Landfill. It outlines the requirements of the Waste Licence and sets out a programme for achieving the schedule of objectives and targets.

7.1 Schedule of Objectives and Targets for Year 2010

The proposed Objectives & Targets for 2010 are as follows:

Objective 1: Final Capping, Leachate and Gas Management of cell 2 and cell 3.

Objective 2: Transition from bulk waste acceptance to bagged waste acceptance only once final cell reaches capacity.

Objective 1: Final Capping, Leachate and Gas Management

Contract documents have been drawn up and tenders received from suitable Contractors for carrying out these works. Once Cell 3 has reached capacity, the Agency will be notified and agreement sought for proceeding with final capping.

Objective 2: Acceptance of bagged waste only

A mobile compactor has been sourced and is in place on site. Once the final cell reaches capacity, bagged waste only will be accepted on site and stored and compacted in the compactor. Waste will be disposed of at an alternative permitted facility to be agrees with the Agency.

7.2 Implementation of Objectives and Targets From 2009

Objective 1: Capping of cell 2 and cell 3.

As Cell 3 was not filled to capacity during 2009, final capping will not take place until 2010.

Objective 2: Investigate further waste streams for recycling.

While no new waste streams for recycling were introduced in 2009, alternative, more economic, Service Providers were sought for some waste streams. Agency approval was received for any change in Service Provider.

Objective 3: Start clearing of site for Waste Transfer Station.

Due to changes both financially and otherwise within the council the construction of the Waste Transfer Station will now not take place in the foreseeable future on site.

7.3 Update of Procedures Associated with the Facility

In general, site procedures associated with the facility remained unchanged throughout 2009. However, following an incident involving excessive amounts of rainfall leading to a massive increase in leachate production on site in late 2009, additional destinations and hauliers have been sourced to deal with the situation should similar conditions occur on site in future.

7.4 Staff Training

Site Operatives underwent the following training in 2009:-

- Fire Safety
- Dangerous Substances Handling
- Manual Handling

7.5 Financial Provision

Cork County Council has the ability to meet any financial commitments or liabilities incurred by the carrying out of the disposal activities relating to the Derryconnell Landfill. These commitments include compliance with the waste management licence (No. W00089-02) and restoration and aftercare of the site as specified in Condition 8 of the licence.

Under Section 38 of the Waste Management Act, 1996, Cork County Council ''shall provide and operate, or arrange of, such facilities as may be necessary for the recovery and disposal of household waste arising within the functional area''. Compliance with Section 38 and all other relevant sections of the Waste Management Act, 1996 is a statutory obligation of Cork County Council. Cork County Council annually, in the preparation of budget estimates and the passing of these estimates, shall make provision for any capital works and maintenance works required to fulfil conditions of the waste licence for the Derryconnell Landfill.

APPENDICES

APPENDIX 1

SUMMARY OF ENVIRONMENTAL MONITORING

- On site monitoring and sampling was carried out by Cork County Council Personnel.

- All Surface Water, Groundwater, Leachate and Dust analysis was carried out by INAB Accredited Environmental Laboratory Services, Acorn Business Campus, Mahon Industrial Park, Blackrock, Cork.
- (Note: Blank results indicate monitoring location was dry at time of sampling)

- Noise Monitoring was carried out by McSwiney Environmental & Safety Consulting Ltd., Corner House, Kenmare, Co. Kerry, Ireland.

LANDFILL GAS MONITORING

The Waste Licence specifies monitoring of landfill gas emissions on a monthly basis.

Additional monitoring is carried out by the Licencee for informational purposes.

L1 – L2 MONITORING RESULTS

L1							L2					
Date	Depth (m)	Temp °C	Pressure Mb	O_2%	CO_2%	CH_4%	Depth (m)	Temp °C	Pressure Mb	O_2%	CO_2%	CH_4%
09/01/2009	0.91	-	-	-	-	-	2.13	-	-	-	-	-
23/01/2009	0.89	-	-	-	-	-	2.20	-	-	-	-	-
30/01/2009	0.90	-	-	-	-	-	2.21	-	-	-	-	-
06/02/2009	0.92	-	-	-	-	-	2.26	-	-	-	-	-
12/02/2009	0.90	-	-	-	-	-	2.25	-	-	-	-	-
20/02/2009	0.89	-	-	-	-	-	2.20	-	-	-	-	-
26/02/2009	0.85	-	-	-	-	-	2.20	-	-	-	-	-
06/03/2009	0.82	-	-	-	-	-	2.22	-	-	-	-	-
13/03/2009	0.80	-	-	-	-	-	2.20	-	-	-	-	-
20/03/2009	0.82	-	-	-	-	-	2.24	-	-	-	-	-
27/03/2009	0.80	-	-	-	-	-	2.20	-	-	-	-	-
06/04/2009	0.79	-	-	-	-	-	2.18	-	-	-	-	-
17/04/2009	0.80	-	-	-	-	-	2.15	-	-	-	-	-
24/04/2009	0.82	-	-	-	-	-	2.11	-	-	-	-	-
01/05/2009	0.90	-	-	-	-	-	2.01	-	-	-	-	-
13/05/2009	0.86	-	-	-	-	-	1.99	-	-	-	-	-
21/05/2009	0.87	-	-	-	-	-	1.95	-	-	-	-	-
29/05/2009	0.88	-	-	-	-	-	1.92	-	-	-	-	-
05/06/2009	0.85	-	-	-	-	-	1.92	-	-	-	-	-
12/06/2009	0.84	-	-	-	-	-	1.87	-	-	-	-	-
19/06/2009	0.83	-	-	-	-	-	1.82	-	-	-	-	-
26/06/2009	0.90	-	-	-	-	-	2.01	-	-	-	-	-
03/07/2009	0.86	-	-	-	-	-	1.88	-	-	-	-	-
10/07/2009	0.80	-	-	-	-	-	1.80	-	-	-	-	-
17/07/2009	0.78	-	-	-	-	-	2.01	-	-	-	-	-
31/07/2009	0.92	-	-	-	-	-	2.09	-	-	-	-	-
07/08/2009	0.81	-	-	-	-	-	2.02	-	-	-	-	-
14/08/2009	0.82	-	-	-	-	-	1.84	-	-	-	-	-
17/08/2009	1.02	-	-	-	-	-	1.94	-	-	-	-	-
28/08/2009	1.03	-	-	-	-	-	1.96	-	-	-	-	-
11/09/2009	1.06	-	-	-	-	-	2.11	-	-	-	-	-
18/09/2009	1.07	-	-	-	-	-	2.50	-	-	-	-	-
25/09/2009	0.80	-	-	-	-	-	2.14	-	-	-	-	-
02/10/2009	1.11	-	-	-	-	-	2.21	-	-	-	-	-
09/10/2009	1.01	-	-	-	-	-	2.30	-	-	-	-	-
16/10/2009	1.11	-	-	-	-	-	2.56	-	-	-	-	-
23/10/2009	1.09	-	-	-	-	-	2.53	-	-	-	-	-
06/11/2009	1.09	-	-	-	-	-	2.48	-	-	-	-	-
20/11/2009	1.05	-	-	-	-	-	2.41	-	-	-	-	-
26/11/2009	1.07	-	-	-	-	-	2.45	-	-	-	-	-
04/12/2009	1.04	-	-	-	-	-	2.41	-	-	-	-	-
10/12/2009	0.99	-	-	-	-	-	2.25	-	-	-	-	-
17/12/2009	1.01	-	-	-	-	-	2.29	-	-	-	-	-

L3 – L4 MONITORING RESULTS

L3							L4					
Date	**Depth (m)**	**Temp °C**	**Pressure Mb**	**O_2%**	**CO_2%**	**CH_4%**	**Depth (m)**	**Temp °C**	**Pressure Mb**	**O_2%**	**CO_2%**	**CH_4%**
09/01/2009	0.01	8.70	1015.00	19.50	0.50	0.00	0.84	-	-	-	-	-
23/01/2009	0.02	-	-	-	-	-	1.09	-	-	-	-	-
30/01/2009	0.01	-	-	-	-	-	0.92	-	-	-	-	-
06/02/2009	0.01	-	-	-	-	-	0.89	-	-	-	-	-
12/02/2009	0.01	-	-	-	-	-	0.86	-	-	-	-	-
20/02/2009	0.01	-	-	-	-	-	0.80	-	-	-	-	-
26/02/2009	0.01	12.00	1020.00	20.90	0.00	0.00	0.80	-	-	-	-	-
06/03/2009	0.01	-	-	-	-	-	0.75	-	-	-	-	-
13/03/2009	0.01	-	-	-	-	-	0.72	-	-	-	-	-
20/03/2009	0.01	-	-	-	-	-	0.75	-	-	-	-	-
27/03/2009	0.02	-	-	-	-	-	0.69	-	-	-	-	-
06/04/2009	0.01	-	-	-	-	-	0.65	-	-	-	-	-
17/04/2009	0.00	-	-	-	-	-	0.62	-	-	-	-	-
24/04/2009	0.01	14.10	1012.00	19.30	0.10	0.00	0.60	-	-	-	-	-
01/05/2009	0.01	-	-	-	-	-	0.26	-	-	-	-	-
13/05/2009	0.00	-	-	-	-	-	0.80	-	-	-	-	-
21/05/2009	0.00	-	-	-	-	-	0.74	-	-	-	-	-
29/05/2009	0.00	17.00	1017.00	20.10	0.00	0.00	0.74	-	-	-	-	-
05/06/2009	0.00	-	-	-	-	-	0.76	-	-	-	-	-
12/06/2009	0.01	-	-	-	-	-	0.73	-	-	-	-	-
19/06/2009	0.00	-	-	-	-	-	0.70	-	-	-	-	-
26/06/2009	0.01	18.30	1010.00	20.10	0.00	0.00	0.89	-	-	-	-	-
03/07/2009	0.00	15.90	1015.00	20.10	0.00	0.00	0.70	-	-	-	-	-
10/07/2009	0.00	-	-	-	-	-	0.61	-	-	-	-	-
17/07/2009	0.01	-	-	-	-	-	0.64	-	-	-	-	-
31/07/2009	1.64	18.50	1015.00	19.50	5.00	0.00	0.86	-	-	-	-	-
07/08/2009	1.59	-	-	-	-	-	0.57	-	-	-	-	-
14/08/2009	1.76	-	-	-	-	-	0.79	-	-	-	-	-
17/08/2009	1.83	22.60	1010.00	19.70	0.00	0.00	0.81	-	-	-	-	-
28/08/2009	1.85	-	-	-	-	-	0.83	-	-	-	-	-
11/09/2009	Dry	26.90	1028.00	19.70	0.90	0.00	1.02	-	-	-	-	-
18/09/2009	1.92	-	-	-	-	-	1.61	-	-	-	-	-
25/09/2009	1.46	-	-	-	-	-	0.96	-	-	-	-	-
02/10/2009	1.84	-	-	-	-	-	1.71	-	-	-	-	-
09/10/2009	1.42	12.00	998.00	20.40	0.20	0.00	1.26	-	-	-	-	-
16/10/2009	1.51	-	-	-	-	-	1.49	-	-	-	-	-
23/10/2009	1.42	-	-	-	-	-	1.52	-	-	-	-	-
06/11/2009	1.47	-	-	-	-	-	1.60	-	-	-	-	-
20/11/2009	1.49	9.80	994.00	21.10	0.00	0.00	1.52	-	-	-	-	-
26/11/2009	1.43	-	-	-	-	-	1.59	-	-	-	-	-
04/12/2009	1.40	-	-	-	-	-	1.50	-	-	-	-	-
10/12/2009	1.36	9.04	1001.00	20.10	0.00	0.00	1.42	-	-	-	-	-
17/12/2009	1.41	-	-	-	-	-	1.49	-	-	-	-	-

L5 – L6 MONITORING RESULTS

L5							L6					
Date	**Depth (m)**	**Temp °C**	**Pressure Mb**	**O_2%**	**CO_2%**	**CH_4%**	**Depth (m)**	**Temp °C**	**Pressure Mb**	**O_2%**	**CO_2%**	**CH_4%**
09/01/2009	2.74	6.90	1015.00	20.00	1.20	0.00	1.64	6.50	1015.00	18.90	1.40	0.00
23/01/2009	2.72	5.80	976.00	19.70	0.90	0.00	2.25	6.60	976.00	19.70	1.00	0.00
30/01/2009	2.69	6.60	992.00	18.90	0.40	0.00	1.92	6.70	990.00	18.70	0.90	0.00
06/02/2009	2.71	9.10	1001.00	20.10	0.10	0.00	1.80	8.90	1001.00	18.90	0.40	0.00
12/02/2009	2.70	8.20	1010.00	18.90	0.40	0.00	1.88	8.40	1011.00	18.60	0.60	0.00
20/02/2009	2.75	9.20	1011.00	20.80	0.10	0.00	1.74	9.10	1010.00	19.20	0.20	0.00
26/02/2009	2.73	12.20	1020.00	20.80	0.00	0.00	1.68	12.30	1020.00	18.80	0.50	0.00
06/03/2009	2.70	11.90	1015.00	21.00	0.00	0.00	1.60	12.00	1014.00	18.90	0.40	0.00
13/03/2009	2.72	12.10	1011.00	20.10	0.00	0.00	1.62	12.20	1012.00	19.10	1.00	0.00
20/03/2009	2.74	11.90	1011.00	20.00	0.10	0.00	1.60	12.00	1011.00	19.90	0.20	0.00
27/03/2009	2.70	12.20	1010.00	19.90	0.20	0.00	1.64	12.40	1010.00	19.80	0.30	0.00
06/04/2009	2.77	11.10	1011.00	20.10	0.10	0.00	1.66	11.20	1011.00	20.10	0.10	0.00
17/04/2009	2.82	11.00	1011.00	19.50	0.30	0.00	1.69	11.20	1012.00	19.90	0.10	0.00
24/04/2009	2.75	12.00	1012.00	19.40	0.30	0.00	1.72	12.20	1012.00	20.00	0.10	0.00
01/05/2009	2.77	14.70	1012.00	19.40	0.20	0.00	1.83	13.60	1012.00	19.10	1.40	0.00
13/05/2009	2.74	15.00	1001.00	20.10	0.10	0.00	1.51	15.10	1001.00	19.20	1.00	0.00
21/05/2009	2.78	15.50	1011.00	20.00	0.10	0.00	1.69	15.40	1011.00	19.50	1.10	0.00
29/05/2009	2.79	16.60	1017.00	19.90	0.20	0.00	1.86	15.10	1017.00	18.90	1.30	0.00
05/06/2009	2.74	17.40	1000.00	20.20	0.10	0.00	1.59	15.90	1000.00	19.10	1.40	0.00
12/06/2009	2.76	17.50	1008.00	20.10	0.00	0.00	1.51	15.40	1008.00	20.00	0.40	0.00
19/06/2009	2.71	16.80	1008.00	19.90	0.20	0.00	1.50	17.10	1008.00	18.80	1.40	0.00
26/06/2009	2.89	18.20	1010.00	19.90	0.20	0.00	1.75	18.10	1010.00	18.80	0.60	0.00
03/07/2009	2.65	16.10	1015.00	19.90	0.20	0.00	1.73	16.40	1015.00	18.80	1.20	0.00
10/07/2009	2.60	17.10	998.00	20.10	0.10	0.00	1.68	17.80	998.00	19.40	1.50	0.00
17/07/2009	2.61	16.10	1014.00	19.90	0.20	0.00	1.66	16.80	1014.00	19.80	0.20	0.00
31/07/2009	2.79	18.50	1015.00	20.00	1.20	0.00	1.72	18.50	1015.00	18.90	1.40	0.00
07/08/2009	2.68	15.90	1012.00	19.60	0.30	0.00	1.69	16.60	1012.00	20.00	0.20	0.00
14/08/2009	2.96	20.10	999.00	20.40	0.10	0.00	2.21	19.90	999.00	19.80	1.20	0.00
17/08/2009	2.76	23.60	1010.00	19.70	0.00	0.00	1.83	22.20	1009.00	16.60	3.10	0.00
28/08/2009	2.79	-	-	-	-	-	1.95	-	-	-	-	-
11/09/2009	2.77	23.50	1027.00	21.10	0.40	0.00	1.86	22.20	1027.00	20.10	0.30	0.00
18/09/2009	2.12	-	-	-	-	-	2.30	-	-	-	-	-
25/09/2009	2.27	-	-	-	-	-	1.50	-	-	-	-	-
02/10/2009	2.06	-	-	-	-	-	2.20	-	-	-	-	-
09/10/2009	2.42	11.80	998.00	20.20	0.30	0.00	1.98	11.90	998.00	19.90	1.10	0.00
16/10/2009	2.39	-	-	-	-	-	2.09	-	-	-	-	-
23/10/2009	2.24	-	-	-	-	-	2.18	-	-	-	-	-
06/11/2009	2.18	-	-	-	-	-	2.06	-	-	-	-	-
20/11/2009	2.02	9.60	994.00	20.20	0.80	0.00	2.20	8.70	994.00	19.20	1.40	0.00
26/11/2009	2.11	-	-	-	-	-	2.09	-	-	-	-	-
04/12/2009	2.04	-	-	-	-	-	2.02	-	-	-	-	-
10/12/2009	1.98	9.00	1001.00	19.80	0.00	0.00	2.01	9.31	1001.00	19.10	1.20	0.00
17/12/2009	2.01	-	-	-	-	-	2.12	-	-	-	-	-

L7 – L8 MONITORING RESULTS

L7							L8					
Date	**Depth (m)**	**Temp °C**	**Pressure Mb**	**O_2%**	**CO_2%**	**CH_4%**	**Depth (m)**	**Temp °C**	**Pressure Mb**	**O_2%**	**CO_2%**	**CH_4%**
09/01/2009	0.85	6.20	1015.00	19.40	0.40	0.00	0.26	-	-	-	-	-
23/01/2009	0.76	-	-	-	-	-	0.28	-	-	-	-	-
30/01/2009	0.80	-	-	-	-	-	0.28	-	-	-	-	-
06/02/2009	0.82	-	-	-	-	-	0.31	-	-	-	-	-
12/02/2009	1.02	-	-	-	-	-	0.30	-	-	-	-	-
20/02/2009	0.87	-	-	-	-	-	0.29	-	-	-	-	-
26/02/2009	0.68	12.60	1020.00	18.70	0.80	0.00	0.28	-	-	-	-	-
06/03/2009	0.62	-	-	-	-	-	0.29	-	-	-	-	-
13/03/2009	0.54	-	-	-	-	-	0.30	-	-	-	-	-
20/03/2009	0.55	-	-	-	-	-	0.28	-	-	-	-	-
27/03/2009	0.56	-	-	-	-	-	0.27	-	-	-	-	-
06/04/2009	0.55	-	-	-	-	-	0.25	-	-	-	-	-
17/04/2009	0.56	-	-	-	-	-	0.24	-	-	-	-	-
24/04/2009	0.58	15.30	1012.00	18.40	1.20	0.00	0.25	-	-	-	-	-
01/05/2009	0.64	-	-	-	-	-	0.24	-	-	-	-	-
13/05/2009	0.30	-	-	-	-	-	0.25	-	-	-	-	-
21/05/2009	0.52	-	-	-	-	-	0.25	-	-	-	-	-
29/05/2009	0.62	13.90	1017.00	18.60	1.40	0.00	0.22	-	-	-	-	-
05/06/2009	0.12	-	-	-	-	-	0.16	-	-	-	-	-
12/06/2009	0.36	-	-	-	-	-	0.14	-	-	-	-	-
19/06/2009	0.25	-	-	-	-	-	0.13	-	-	-	-	-
26/06/2009	0.55	18.00	1010.00	18.70	1.30	0.00	0.23	-	-	-	-	-
03/07/2009	0.50	15.50	1015.00	18.70	1.20	0.00	0.21	-	-	-	-	-
10/07/2009	0.51	17.90	999.00	18.90	1.30	0.00	0.19	-	-	-	-	-
17/07/2009	0.51	16.90	1015.00	18.90	1.10	0.00	0.21	-	-	-	-	-
31/07/2009	0.85	18.20	1014.00	19.40	0.40	0.00	0.29	-	-	-	-	-
07/08/2009	0.53	16.80	1011.00	19.10	1.10	0.00	0.30	-	-	-	-	-
14/08/2009	0.38	20.10	999.00	19.00	1.40	0.00	0.31	-	-	-	-	-
17/08/2009	0.32	21.90	1007.00	16.80	2.40	0.00	0.37	-	-	-	-	-
28/08/2009	0.35	-	-	-	-	-	0.39	-	-	-	-	-
11/09/2009	0.56	22.80	1027.00	19.70	0.90	0.00	0.31	-	-	-	-	-
18/09/2009	0.69	-	-	-	-	-	0.62	-	-	-	-	-
25/09/2009	0.46	-	-	-	-	-	0.36	-	-	-	-	-
02/10/2009	0.65	-	-	-	-	-	0.58	-	-	-	-	-
09/10/2009	0.61	12.10	998.00	19.60	0.40	0.00	0.45	-	-	-	-	-
16/10/2009	0.72	-	-	-	-	-	0.50	-	-	-	-	-
23/10/2009	0.69	-	-	-	-	-	0.49	-	-	-	-	-
06/11/2009	0.68	-	-	-	-	-	0.57	-	-	-	-	-
20/11/2009	0.65	9.80	994.00	19.80	0.90	0.00	0.55	-	-	-	-	-
26/11/2009	0.66	-	-	-	-	-	0.61	-	-	-	-	-
04/12/2009	0.64	-	-	-	-	-	0.59	-	-	-	-	-
10/12/2009	0.62	9.20	1001.00	19.00	1.00	0.00	0.55	-	-	-	-	-
17/12/2009	0.65	-	-	-	-	-	0.60	-	-	-	-	-

GW1 – GW2 MONITORING RESULTS

GW1							GW2					
Date	**Depth (m)**	**Temp °C**	**Pressure Mb**	**O_2%**	**CO_2%**	**CH_4%**	**Depth (m)**	**Temp °C**	**Pressure Mb**	**O_2%**	**CO_2%**	**CH_4%**
09/01/2009	2.62	9.40	1015.00	19.60	0.70	0.00	1.78	6.30	1015.00	19.80	0.20	0.00
23/01/2009	2.06	-	-	-	-	-	1.10	-	-	-	-	-
30/01/2009	2.10	-	-	-	-	-	1.27	-	-	-	-	-
06/02/2009	2.35	-	-	-	-	-	1.36	-	-	-	-	-
12/02/2009	2.42	-	-	-	-	-	1.49	-	-	-	-	-
20/02/2009	2.60	-	-	-	-	-	1.52	-	-	-	-	-
26/02/2009	2.81	12.10	1019.00	19.60	0.00	0.00	1.79	11.70	1020.00	20.40	0.50	0.00
06/03/2009	2.72	-	-	-	-	-	1.72	-	-	-	-	-
13/03/2009	2.69	-	-	-	-	-	1.69	-	-	-	-	-
20/03/2009	2.60	-	-	-	-	-	1.62	-	-	-	-	-
27/03/2009	2.55	-	-	-	-	-	1.60	-	-	-	-	-
06/04/2009	2.49	-	-	-	-	-	1.58	-	-	-	-	-
17/04/2009	2.42	-	-	-	-	-	1.55	-	-	-	-	-
24/04/2009	2.32	12.80	1012.00	18.40	1.10	0.00	1.46	12.40	1012.00	19.30	0.10	0.00
01/05/2009	2.27	-	-	-	-	-	1.50	-	-	-	-	-
13/05/2009	2.28	-	-	-	-	-	1.52	-	-	-	-	-
21/05/2009	2.27	-	-	-	-	-	1.51	-	-	-	-	-
29/05/2009	2.32	15.60	1017.00	19.80	0.80	0.00	1.54	14.90	1017.00	19.80	0.50	0.00
05/06/2009	2.62	-	-	-	-	-	1.75	-	-	-	-	-
12/06/2009	2.76	-	-	-	-	-	1.83	-	-	-	-	-
19/06/2009	2.81	-	-	-	-	-	1.96	-	-	-	-	-
26/06/2009	3.00	17.80	1010.00	20.20	0.90	0.00	1.79	17.80	1009.00	20.00	1.30	0.00
03/07/2009	2.79	-	-	-	-	-	1.90	-	-	-	-	-
10/07/2009	2.52	-	-	-	-	-	1.61	-	-	-	-	-
17/07/2009	2.48	-	-	-	-	-	1.59	-	-	-	-	-
31/07/2009	2.60	18.60	1015.00	19.60	0.70	0.00	1.79	18.10	1015.00	20.30	0.10	0.00
07/08/2009	2.32	-	-	-	-	-	1.42	-	-	-	-	-
14/08/2009	2.49	-	-	-	-	-	1.62	-	-	-	-	-
17/08/2009	2.32	17.60	1007.00	18.80	0.70	0.00	1.49	20.30	1010.00	18.70	0.70	0.00
28/08/2009	-	-	-	-	-	-	-	-	-	-	-	-
11/09/2009	2.38	20.90	1027.00	20.10	1.10	0.00	1.47	19.30	1028.00	20.40	0.20	0.00
18/09/2009	-	-	-	-	-	-	-	-	-	-	-	-
25/09/2009	-	-	-	-	-	-	-	-	-	-	-	-
02/10/2009	-	-	-	-	-	-	-	-	-	-	-	-
09/10/2009	2.24	12.20	999.00	20.40	0.20	0.00	1.36	12.40	999.00	20.40	0.20	0.00
16/10/2009	-	-	-	-	-	-	-	-	-	-	-	-
23/10/2009	-	-	-	-	-	-	-	-	-	-	-	-
06/11/2009	-	-	-	-	-	-	-	-	-	-	-	-
20/11/2009	2.02	10.50	994.00	20.10	0.70	0.00	1.12	9.30	994.00	21.00	0.00	0.00
26/11/2009	-	-	-	-	-	-	-	-	-	-	-	-
04/12/2009	-	-	-	-	-	-	-	-	-	-	-	-
10/12/2009	1.98	9.60	1001.00	20.60	0.40	0.00	1.08	9.00	1001.00	20.40	0.20	0.00
17/12/2009	-	-	-	-	-	-	-	-	-	-	-	-

GW4 – GW5 MONITORING RESULTS

GW4							GW5					
Date	**Depth (m)**	**Temp °C**	**Pressure Mb**	**O_2%**	**CO_2%**	**CH_4%**	**Depth (m)**	**Temp °C**	**Pressure Mb**	**O_2%**	**CO_2%**	**CH_4%**
09/01/2009	0.70	6.70	1015.00	20.30	0.30	0.00	1.15	5.40	1015.00	20.10	1.20	0.00
23/01/2009	0.36	8.70	976.00	19.90	0.30	0.00	0.46	8.10	976.00	18.70	0.70	0.00
30/01/2009	0.44	-	-	-	-	-	0.52	-	-	-	-	-
06/02/2009	0.47	-	-	-	-	-	0.55	-	-	-	-	-
12/02/2009	0.77	-	-	-	-	-	0.62	-	-	-	-	-
20/02/2009	0.69	-	-	-	-	-	0.60	-	-	-	-	-
26/02/2009	0.66	12.20	1019.00	20.10	0.00	0.00	0.64	12.20	1020.00	19.90	0.10	0.00
06/03/2009	0.71	-	-	-	-	-	0.69	-	-	-	-	-
13/03/2009	0.72	-	-	-	-	-	0.71	-	-	-	-	-
20/03/2009	0.68	-	-	-	-	-	0.70	-	-	-	-	-
27/03/2009	0.64	-	-	-	-	-	0.69	-	-	-	-	-
06/04/2009	0.62	11.20	1011.00	19.80	0.40	0.00	0.68	11.00	1011.00	20.00	0.20	0.00
17/04/2009	0.60	-	-	-	-	-	0.70	-	-	-	-	-
24/04/2009	0.55	12.30	1012.00	19.70	0.60	0.00	0.72	12.50	1012.00	19.90	0.60	0.00
01/05/2009	0.56	14.30	1012.00	19.70	0.60	0.00	0.70	14.70	1012.00	20.10	0.20	0.00
13/05/2009	0.55	-	-	-	-	-	0.72	-	-	-	-	-
21/05/2009	0.56	-	-	-	-	-	0.74	-	-	-	-	-
29/05/2009	0.59	14.50	1017.00	19.80	0.50	0.00	0.76	13.60	1017.00	19.90	0.50	0.00
05/06/2009	0.61	-	-	-	-	-	0.77	-	-	-	-	-
12/06/2009	-	-	-	-	-	-	-	-	-	-	-	-
19/06/2009	0.65	-	-	-	-	-	0.79	-	-	-	-	-
26/06/2009	1.15	18.00	1010.00	20.80	0.10	0.00	1.81	18.00	1010.00	20.40	0.50	0.00
03/07/2009	0.63	-	-	-	-	-	0.76	-	-	-	-	-
10/07/2009	0.54	-	-	-	-	-	0.69	-	-	-	-	-
17/07/2009	0.50	-	-	-	-	-	0.62	-	-	-	-	-
31/07/2009	0.65	19.50	1015.00	20.40	0.20	0.00	0.98	17.90	1015.00	20.00	1.40	0.00
07/08/2009	0.58	-	-	-	-	-	0.71	-	-	-	-	-
14/08/2009	0.56	-	-	-	-	-	0.69	-	-	-	-	-
17/08/2009	0.48	-	-	-	-	-	0.54	21.60	1010.00	17.90	1.20	0.00
28/08/2009	-	-	-	-	-	-	-	-	-	-	-	-
11/09/2009	0.67	19.00	1028.00	20.50	1.00	0.00	0.90	15.50	1028.00	21.70	0.30	0.00
18/09/2009	-	-	-	-	-	-	-	-	-	-	-	-
25/09/2009	-	-	-	-	-	-	-	-	-	-	-	-
02/10/2009	-	-	-	-	-	-	-	-	-	-	-	-
09/10/2009	0.52	11.80	998.00	19.80	1.10	0.00	0.14	12.00	998.00	21.00	0.00	0.00
16/10/2009	-	-	-	-	-	-	-	-	-	-	-	-
23/10/2009	-	-	-	-	-	-	-	-	-	-	-	-
06/11/2009	-	-	-	-	-	-	-	-	-	-	-	-
20/11/2009	0.40	11.00	993.00	19.70	1.20	0.10	0.17	10.80	994.00	20.20	0.00	0.00
26/11/2009	-	-	-	-	-	-	-	-	-	-	-	-
04/12/2009	-	-	-	-	-	-	-	-	-	-	-	-
10/12/2009	0.34	9.10	1001.00	20.40	0.80	0.00	0.15	9.20	1001.00	21.00	0.00	0.00
17/12/2009	-	-	-	-	-	-	-	-	-	-	-	-

GW6 – GW7 MONITORING RESULTS

GW6							GW7					
Date	**Depth (m)**	**Temp °C**	**Pressure Mb**	**O_2%**	**CO_2%**	**CH_4%**	**Depth (m)**	**Temp °C**	**Pressure Mb**	**O_2%**	**CO_2%**	**CH_4%**
09/01/2009	0.51	5.10	1015.00	18.30	0.50	0.00	0.52	6.90	1013.00	20.10	0.30	0.00
23/01/2009	0.46	5.80	976.00	19.80	0.40	0.00	Full	-	-	-	-	-
30/01/2009	Full	-	-	-	-	-	Full	-	-	-	-	-
06/02/2009	Full	-	-	-	-	-	0.42	8.80	1001.00	20.90	0.00	0.00
12/02/2009	0.38	7.90	1011.00	19.10	0.40	0.00	0.42	8.00	1010.00	20.10	0.00	0.00
20/02/2009	0.45	9.10	1010.00	18.90	0.50	0.00	0.42	9.00	1011.00	19.90	0.10	0.00
26/02/2009	0.48	12.20	1020.00	18.20	1.00	0.00	0.45	13.00	1020.00	18.90	0.60	0.00
06/03/2009	0.49	11.80	1014.00	19.30	1.10	0.00	0.45	12.00	1014.00	19.60	0.40	0.00
13/03/2009	0.45	12.20	1011.00	18.40	1.20	0.00	0.44	12.10	1012.00	19.90	0.20	0.00
20/03/2009	0.44	12.00	1011.00	19.10	0.40	0.00	0.42	12.00	1012.00	20.00	0.10	0.00
27/03/2009	Full	-	-	-	-	-	Full	-	-	-	-	-
06/04/2009	Full	-	-	-	-	-	Full	-	-	-	-	-
17/04/2009	Full	-	-	-	-	-	Full	-	-	-	-	-
24/04/2009	0.44	12.10	1012.00	18.60	1.10	0.00	Full	-	-	-	-	-
01/05/2009	0.49	14.40	1012.00	18.40	1.20	0.00	0.30	15.50	1012.00	19.40	0.50	0.00
13/05/2009	0.45	15.00	1000.00	19.80	0.50	0.00	Full	-	-	-	-	-
21/05/2009	0.47	15.40	1011.00	19.90	0.40	0.00	Full	-	-	-	-	-
29/05/2009	0.46	17.30	1017.00	19.70	1.00	0.00	0.30	16.40	1017.00	19.50	1.10	0.00
05/06/2009	0.56	17.20	1000.00	20.20	0.20	0.00	0.40	16.30	1000.00	20.10	0.30	0.00
12/06/2009	0.55	17.10	1008.00	19.90	0.40	0.00	0.50	20.10	1008.00	19.70	0.30	0.00
19/06/2009	0.57	17.90	1016.00	19.80	0.50	0.00	0.60	19.20	1016.00	20.10	0.60	0.00
26/06/2009	0.41	18.10	1009.00	19.70	0.50	0.10	0.52	17.80	1009.00	20.00	0.10	0.00
03/07/2009	0.57	17.20	1014.00	19.90	0.40	0.00	0.58	17.90	1014.00	19.70	0.70	0.00
10/07/2009	0.55	17.20	1007.00	19.90	0.40	0.00	0.52	19.10	1007.00	19.60	0.30	0.00
17/07/2009	0.51	16.20	1010.00	18.90	0.50	0.00	0.49	16.10	1009.00	19.70	0.80	0.00
31/07/2009	0.34	18.10	1015.00	19.60	0.70	0.00	0.32	18.70	1015.00	20.30	0.30	0.00
07/08/2009	0.49	14.60	1001.00	18.90	1.10	0.00	0.10	-	-	-	-	-
14/08/2009	0.58	20.90	998.00	19.00	0.40	0.00	0.53	19.90	999.00	19.90	0.90	0.00
17/08/2009	0.27	21.00	1010.00	14.80	1.40	0.40	0.10	23.40	1010.00	19.70	0.00	0.00
28/08/2009	-	-	-	-	-	-	-	-	-	-	-	-
11/09/2009	0.44	14.20	1027.00	21.00	1.50	0.00	Full	18.60	1027.00	20.30	0.80	0.00
18/09/2009	-	-	-	-	-	-	-	-	-	-	-	-
25/09/2009	-	-	-	-	-	-	-	-	-	-	-	-
02/10/2009	-	-	-	-	-	-	-	-	-	-	-	-
09/10/2009	Full	-	-	-	-	-	Full	-	-	-	-	-
16/10/2009	-	-	-	-	-	-	-	-	-	-	-	-
23/10/2009	-	-	-	-	-	-	-	-	-	-	-	-
06/11/2009	-	-	-	-	-	-	-	-	-	-	-	-
20/11/2009	Full	-	-	-	-	-	Full	-	-	-	-	-
26/11/2009	-	-	-	-	-	-	-	-	-	-	-	-
04/12/2009	-	-	-	-	-	-	-	-	-	-	-	-
10/12/2009	Full	-	-	-	-	-	Full	-	-	-	-	-
17/12/2009	-	-	-	-	-	-	-	-	-	-	-	-

GW8 & SITE OFFICE MONITORING RESULTS

GW8								Site Office				
Date	Depth (m)	Temp °C	Pressure Mb	O_2%	CO_2%	CH_4%		Temp °C	Pressure Mb	O_2%	CO_2%	CH_4%
09/01/2009	1.32	5.60	1015.00	20.40	0.20	0.00		5.70	1015.00	20.10	0.00	0.00
23/01/2009	0.92	6.20	976.00	19.70	0.20	0.00		6.60	977.00	20.10	0.10	0.00
30/01/2009	0.98	6.90	990.00	20.90	0.00	0.00		6.80	990.00	20.10	0.10	0.00
06/02/2009	0.95	8.90	1001.00	20.90	0.00	0.00		8.90	1000.00	21.00	0.00	0.00
12/02/2009	1.00	8.10	1011.00	20.10	0.00	0.00		8.50	1010.00	20.10	0.00	0.00
20/02/2009	1.09	9.40	1011.00	20.10	0.00	0.00		9.40	1010.00	20.10	0.00	0.00
26/02/2009	1.27	12.60	1020.00	20.70	0.00	0.00		12.10	1020.00	20.10	0.00	0.00
06/03/2009	1.21	12.10	1015.00	20.10	0.00	0.00		12.20	1015.00	19.90	0.10	0.00
13/03/2009	1.24	12.20	1011.00	20.10	0.00	0.00		12.40	1012.00	20.00	0.00	0.00
20/03/2009	1.19	12.10	1012.00	20.10	0.00	0.00		12.50	1012.00	21.00	0.00	0.00
27/03/2009	1.02	12.30	1010.00	20.10	0.00	0.00		12.50	1010.00	20.10	0.10	0.00
06/04/2009	1.00	11.20	1011.00	20.00	0.10	0.00		11.00	1011.00	20.00	0.10	0.00
17/04/2009	1.01	11.10	1011.00	20.10	0.00	0.00		-	-	-	-	-
24/04/2009	0.99	12.20	1012.00	19.50	0.10	0.00		-	-	-	-	-
01/05/2009	1.00	14.40	1012.00	19.50	0.00	0.00		-	-	-	-	-
13/05/2009	1.02	15.20	1001.00	20.10	0.00	0.00		-	-	-	-	-
21/05/2009	1.03	15.50	1012.00	20.00	0.00	0.00		-	-	-	-	-
29/05/2009	1.06	15.80	1017.00	19.90	0.10	0.00		-	-	-	-	-
05/06/2009	1.30	15.20	1000.00	20.10	0.10	0.00		-	-	-	-	-
12/06/2009	1.36	17.30	1008.00	19.70	0.10	0.00		-	-	-	-	-
19/06/2009	1.42	17.60	1015.00	20.20	0.10	0.00		-	-	-	-	-
26/06/2009	1.42	17.90	1009.00	20.20	0.00	0.00		-	-	-	-	-
03/07/2009	1.39	18.20	1013.00	20.20	0.10	0.00		16.90	1015.00	21.00	0.00	0.00
10/07/2009	1.34	18.40	1007.00	19.70	0.10	0.00		18.20	999.00	20.10	0.00	0.00
17/07/2009	1.28	17.00	1009.00	19.90	0.10	0.00		17.40	1014.00	20.10	0.00	0.00
31/07/2009	1.21	18.90	1014.00	20.40	0.10	0.00		19.10	1015.00	20.00	0.00	0.00
07/08/2009	0.91	14.90	1011.00	19.80	0.10	0.00		17.60	1011.00	20.10	0.00	0.00
14/08/2009	1.31	20.10	999.00	19.10	0.40	0.00		21.20	999.00	20.10	0.00	0.00
17/08/2009	1.09	22.60	1009.00	19.20	0.00	0.00		26.60	1010.00	19.90	0.00	0.00
28/08/2009	-	-	-	-	-	-		22.40	1014.00	21.00	0.00	0.00
11/09/2009	0.98	24.40	1027.00	21.20	0.20	0.00		22.60	1027.00	21.00	0.00	0.00
18/09/2009	-	-	-	-	-	-		19.60	1012.00	21.00	0.00	0.00
25/09/2009	-	-	-	-	-	-		15.20	1001.00	21.00	0.00	0.00
02/10/2009	-	-	-	-	-	-		18.50	998.00	21.00	0.00	0.00
09/10/2009	0.86	12.40	998.00	21.10	0.00	0.00		16.90	998.00	21.00	0.00	0.00
16/10/2009	-	-	-	-	-	-		15.90	1009.00	20.10	0.00	0.00
23/10/2009	-	-	-	-	-	-		16.20	1004.00	21.00	0.00	0.00
06/11/2009	-	-	-	-	-	-		18.20	998.00	21.00	0.00	0.00
20/11/2009	0.77	8.10	994.00	21.10	0.00	0.00		13.50	994.00	20.10	0.00	0.00
26/11/2009	-	-	-	-	-	-		19.20	997.00	21.00	0.00	0.00
04/12/2009	-	-	-	-	-	-		16.20	999.00	21.00	0.00	0.00
10/12/2009	0.72	7.60	1001.00	19.80	0.10	0.00		9.54	1001.00	19.90	0.00	0.00
17/12/2009	-	-	-	-	-	-		8.30	1012.00	21.00	0.00	0.00

SURFACE WATER

SURFACE WATER MONITORING RESULTS

SW1	Units	06-May-09	18-Jun-09	09-Sep-09	03-Dec-09
Ammoniacal N	**mg/l N**	0.416	0.292	0.408	0.329
Chloride	**mg/l**	27.600	18.900	18.600	25.900
Conductivity	**us/cm**	167.000	126.200	152.000	143.000
Dissolved Oxygen	**mg/l**	7.900	-	-	9.270
Boron	**mg/l**	-	-	-	<0.020
Cadmium	**ug/l**	-	-	-	<0.100
Calcium	**mg/l**	-	-	-	8.800
Chromium (total)	**ug/l**	-	-	-	<1.000
Copper	**mg/l**	-	-	-	<0.003
Iron	**ug/l**	-	-	-	265.000
Lead	**ug/l**	-	-	-	<0.300
Magnesium	**mg/l**	-	-	-	2.000
Manganese	**ug/l**	-	-	-	103.000
Nickel	**ug/l**	-	-	-	0.700
Potassium	**mg/l**	-	-	-	2.000
Sodium	**mg/l**	-	-	-	14.800
Zinc	**ug/l**	-	-	-	5.700
Mercury	**ug/l**	-	-	-	<0.020
Sulphate	**mg/l**	-	-	-	<1.000
Total Phosphorous	**mg/l P**	-	-	-	<0.010
Total Coliforms	**No/100ml**	-	-	-	866
E.Coli	**No/100ml**	-	-	-	185

SURFACE WATER MONITORING RESULTS

SW2	Units	06-May-09	18-Jun-09	09-Sep-09	03-Dec-09
Ammoniacal N	**mg/l N**	-	-	0.057	0.013
Chloride	**mg/l**	-	-	9.580	20.300
Conductivity	**us/cm**	-	-	72.000	104.000
Dissolved Oxygen	**mg/l**	-	-	-	10.180
Boron	**mg/l**	-	-	-	<0.020
Cadmium	**ug/l**	-	-	-	<0.100
Calcium	**mg/l**	-	-	-	4.000
Chromium (total)	**ug/l**	-	-	-	<1.000
Copper	**mg/l**	-	-	-	<0.003
Iron	**ug/l**	-	-	-	158.000
Lead	**ug/l**	-	-	-	<0.300
Magnesium	**mg/l**	-	-	-	2.000
Manganese	**ug/l**	-	-	-	23.800
Nickel	**ug/l**	-	-	-	6.000
Potassium	**mg/l**	-	-	-	1.100
Sodium	**mg/l**	-	-	-	11.700
Zinc	**ug/l**	-	-	-	2.500
Mercury	**ug/l**	-	-	-	<0.020
Sulphate	**mg/l**	-	-	-	<1.000
Total Phosphorous	**mg/l P**	-	-	-	<0.010
Total Coliforms	**No/100ml**	-	-	-	2481
E.Coli	**No/100ml**	-	-	-	52

SURFACE WATER MONITORING RESULTS

SW3	Units	06-May-09	18-Jun-09	09-Sep-09	03-Dec-09
Ammoniacal N	**mg/l N**	0.120	0.125	0.178	0.121
Chloride	**mg/l**	31.600	21.900	19.300	25.800
Conductivity	**us/cm**	163.000	130.800	126.000	145.000
Dissolved Oxygen	**mg/l**	8.200	-	-	9.780
Boron	**mg/l**	-	-	-	<0.020
Cadmium	**ug/l**	-	-	-	<0.100
Calcium	**mg/l**	-	-	-	7.200
Chromium (total)	**ug/l**	-	-	-	<1.000
Copper	**mg/l**	-	-	-	<0.003
Iron	**ug/l**	-	-	-	308.000
Lead	**ug/l**	-	-	-	<0.300
Magnesium	**mg/l**	-	-	-	2.100
Manganese	**ug/l**	-	-	-	106.000
Nickel	**ug/l**	-	-	-	1.100
Potassium	**mg/l**	-	-	-	1.300
Sodium	**mg/l**	-	-	-	15.700
Zinc	**ug/l**	-	-	-	5.000
Mercury	**ug/l**	-	-	-	<0.020
Sulphate	**mg/l**	-	-	-	<1.000
Total Phosphorous	**mg/l P**	-	-	-	<0.010
Total Coliforms	**No/100ml**	-	-	-	649
E.Coli	**No/100ml**	-	-	-	83

SURFACE WATER MONITORING RESULTS

SW4	Units	06-May-09	18-Jun-09	09-Sep-09	03-Dec-09
Ammoniacal N	**mg/l N**	0.308	0.549	0.504	0.257
Chloride	**mg/l**	28.400	23.700	19.500	25.700
Conductivity	**us/cm**	170.000	146.200	147.000	140.000
Dissolved Oxygen	**mg/l**	7.500	-	-	7.830
Boron	**mg/l**	-	-	-	<0.020
Cadmium	**ug/l**	-	-	-	0.300
Calcium	**mg/l**	-	-	-	7.700
Chromium (total)	**ug/l**	-	-	-	<1.000
Copper	**mg/l**	-	-	-	<0.003
Iron	**ug/l**	-	-	-	306.000
Lead	**ug/l**	-	-	-	<0.300
Magnesium	**mg/l**	-	-	-	2.100
Manganese	**ug/l**	-	-	-	76.100
Nickel	**ug/l**	-	-	-	0.800
Potassium	**mg/l**	-	-	-	1.800
Sodium	**mg/l**	-	-	-	15.600
Zinc	**ug/l**	-	-	-	1.400
Mercury	**ug/l**	-	-	-	<0.020
Sulphate	**mg/l**	-	-	-	<1.000
Total Phosphorous	**mg/l P**	-	-	-	<0.010
Total Coliforms	**No/100ml**	-	-	-	816
E.Coli	**No/100ml**	-	-	-	52

SURFACE WATER MONITORING RESULTS

SW5	Units	06-May-09	18-Jun-09	09-Sep-09	03-Dec-09
Ammoniacal N	**mg/l N**	0.137	0.142	0.194	0.183
Chloride	**mg/l**	31.700	22.400	19.000	25.300
Conductivity	**us/cm**	163.000	129.600	124.000	136.000
Dissolved Oxygen	**mg/l**	9.400	-	-	9.740
Boron	**mg/l**	-	-	-	<0.020
Cadmium	**ug/l**	-	-	-	<0.100
Calcium	**mg/l**	-	-	-	7.600
Chromium (total)	**ug/l**	-	-	-	<1.000
Copper	**mg/l**	-	-	-	<0.003
Iron	**ug/l**	-	-	-	343.000
Lead	**ug/l**	-	-	-	<0.300
Magnesium	**mg/l**	-	-	-	2.300
Manganese	**ug/l**	-	-	-	117.000
Nickel	**ug/l**	-	-	-	1.000
Potassium	**mg/l**	-	-	-	1.400
Sodium	**mg/l**	-	-	-	15.400
Zinc	**ug/l**	-	-	-	<1.000
Mercury	**ug/l**	-	-	-	<0.020
Sulphate	**mg/l**	-	-	-	<1.000
Total Phosphorous	**mg/l P**	-	-	-	<0.010
Total Coliforms	**No/100ml**	-	-	-	556
E.Coli	**No/100ml**	-	-	-	88

SURFACE WATER MONITORING RESULTS

SW6	Units	06-May-09	18-Jun-09	09-Sep-09	03-Dec-09
Ammoniacal N	**mg/l N**	-	-	5.230	7.150
Chloride	**mg/l**	-	-	22.500	31.100
Conductivity	**us/cm**	-	-	329.000	359.000
Dissolved Oxygen	**mg/l**	-	-	-	8.330
Boron	**mg/l**	-	-	-	0.030
Cadmium	**ug/l**	-	-	-	<0.100
Calcium	**mg/l**	-	-	-	33.400
Chromium (total)	**ug/l**	-	-	-	<1.000
Copper	**mg/l**	-	-	-	<0.003
Iron	**ug/l**	-	-	-	2003.000
Lead	**ug/l**	-	-	-	<0.300
Magnesium	**mg/l**	-	-	-	5.100
Manganese	**ug/l**	-	-	-	1140.000
Nickel	**ug/l**	-	-	-	1.500
Potassium	**mg/l**	-	-	-	7.400
Sodium	**mg/l**	-	-	-	22.500
Zinc	**ug/l**	-	-	-	5.000
Mercury	**ug/l**	-	-	-	<0.020
Sulphate	**mg/l**	-	-	-	4.300
Total Phosphorous	**mg/l P**	-	-	-	0.020
Total Coliforms	**No/100ml**	-	-	-	613
E.Coli	**No/100ml**	-	-	-	2

SURFACE WATER MONITORING RESULTS

SW7	Units	07-Jan-09	06-Feb-09	13-Mar-09	08-Apr-09	06-May-09	18-Jun-09	16-Jul-09	26-Aug-09	02-Sep-09	14-Oct-09	12-Nov-09	03-Dec-09
pH	**pH units**	6.600	8.000	8.100	8.100	6.800	7.000	6.330	6.440	6.500	6.900	6.440	
Ammoniacal N	**mg/l N**	0.620	0.190	0.240	0.260	0.422	0.112	0.439	0.585	0.147	0.931	0.436	0.092
Conductivity	**us/cm**	594.000	530.000	572.000	529.000	167.000	118.000	131.000	-	125.000	152.000	136.000	131.000
Susp. Solids	**mg/l**	-	-	-	-	<1.000	<1.000	-	-	<5.000	<5.000	-	-
COD	**mg/l**	-	-	-	-	<8.000	20.000	-	-	23.000	15.000	-	-
Chloride	**mg/l**	-	-	-	-	28.800	19.700	-	-	18.300	27.700	-	25.400
DO	**mg/l**	-	-	-	-	8.100	-	-	-	8.400	-	-	9.340
Boron	**mg/l**	-	-	-	-	-	-	-	-	-	-	-	<0.020
Cadmium	**ug/l**	-	-	-	-	-	-	-	-	-	-	-	<0.100
Calcium	**mg/l**	-	-	-	-	-	-	-	-	-	-	-	6.800
Tot. Chromium	**ug/l**	-	-	-	-	-	-	-	-	-	-	-	<1.000
Copper	**mg/l**	-	-	-	-	-	-	-	-	-	-	-	<0.003
Iron	**ug/l**	-	-	-	-	-	-	-	-	-	-	-	248.000
Lead	**ug/l**	-	-	-	-	-	-	-	-	-	-	-	<0.300
Magnesium	**mg/l**	-	-	-	-	-	-	-	-	-	-	-	2.000
Manganese	**ug/l**	-	-	-	-	-	-	-	-	-	-	-	63.500
Nickel	**ug/l**	-	-	-	-	-	-	-	-	-	-	-	0.800
Potassium	**mg/l**	-	-	-	-	-	-	-	-	-	-	-	1.700
Sodium	**mg/l**	-	-	-	-	-	-	-	-	-	-	-	14.800
Zinc	**ug/l**	-	-	-	-	-	-	-	-	-	-	-	2.100
Mercury	**ug/l**	-	-	-	-	-	-	-	-	-	-	-	<0.020
Sulphate	**mg/l**	-	-	-	-	-	-	-	-	-	-	-	<1.000
Tot Phosphor	**mg/l P**	-	-	-	-	-	-	-	-	-	-	-	<0.010
Total Coliforms	**No/100ml**	-	-	-	-	-	-	-	-	-	-	-	579
E.Coli	**No/100ml**	-	-	-	-	-	-	-	-	-	-	-	259

SURFACE WATER MONITORING RESULTS

SW8	Units	06-May-09	18-Jun-09	09-Sep-09	03-Dec-09
Ammoniacal N	**mg/l N**	-	-	0.135	0.022
Chloride	**mg/l**	-	-	10.100	20.300
Conductivity	**us/cm**	-	-	74.000	107.000
Dissolved Oxygen	**mg/l**	-	-	-	10.980
Boron	**mg/l**	-	-	-	<0.020
Cadmium	**ug/l**	-	-	-	<0.100
Calcium	**mg/l**	-	-	-	4.100
Chromium (total)	**ug/l**	-	-	-	<1.000
Copper	**mg/l**	-	-	-	<0.003
Iron	**ug/l**	-	-	-	197.000
Lead	**ug/l**	-	-	-	<0.300
Magnesium	**mg/l**	-	-	-	2.100
Manganese	**ug/l**	-	-	-	85.000
Nickel	**ug/l**	-	-	-	0.700
Potassium	**mg/l**	-	-	-	0.900
Sodium	**mg/l**	-	-	-	12.300
Zinc	**ug/l**	-	-	-	8.100
Mercury	**ug/l**	-	-	-	<0.020
Sulphate	**mg/l**	-	-	-	<1.000
Total Phosphorous	**mg/l P**	-	-	-	<0.010
Total Coliforms	**No/100ml**	-	-	-	3873
E.Coli	**No/100ml**	-	-	-	96

SURFACE WATER MONITORING RESULTS

SW9	Units	06-May-09	18-Jun-09	09-Sep-09	03-Dec-09
Ammoniacal N	**mg/l N**	-	-	0.121	0.113
Chloride	**mg/l**	-	-	22.400	27.000
Conductivity	**us/cm**	-	-	104.000	118.000
Dissolved Oxygen	**mg/l**	-	-	-	9.590
Boron	**mg/l**	-	-	-	<0.020
Cadmium	**ug/l**	-	-	-	<0.100
Calcium	**mg/l**	-	-	-	2.400
Chromium (total)	**ug/l**	-	-	-	<1.000
Copper	**mg/l**	-	-	-	<0.003
Iron	**ug/l**	-	-	-	1954.000
Lead	**ug/l**	-	-	-	<0.300
Magnesium	**mg/l**	-	-	-	1.800
Manganese	**ug/l**	-	-	-	384.000
Nickel	**ug/l**	-	-	-	1.100
Potassium	**mg/l**	-	-	-	0.500
Sodium	**mg/l**	-	-	-	16.100
Zinc	**ug/l**	-	-	-	2.300
Mercury	**ug/l**	-	-	-	<0.020
Sulphate	**mg/l**	-	-	-	<1.000
Total Phosphorous	**mg/l P**	-	-	-	<0.010
Total Coliforms	**No/100ml**	-	-	-	2046
E.Coli	**No/100ml**	-	-	-	15

GROUNDWATER

GROUND WATER MONITORING RESULTS

GW1	Units	06-May-09	18-Jun-09	09-Sep-09	03-Dec-09
Ammoniacal N	mg/l N	0.152	0.110	0.207	0.024
Conductivity	us/cm	286.000	285.000	260.000	262.000
Chloride	mg/l	24.800	-	-	28.700
Boron	mg/l	-	-	-	0.007
Cadmium	ug/l	-	-	-	<0.100
Calcium	mg/l	-	-	-	35.800
Chromium (total)	ug/l	-	-	-	<1.000
Copper	mg/l	-	-	-	<0.003
Iron	ug/l	2531.000	-	-	633.000
Lead	ug/l	-	-	-	<0.300
Magnesium	mg/l	-	-	-	4.000
Manganese	ug/l	1151.000	-	-	24.700
Nickel	ug/l	-	-	-	5.000
Potassium	mg/l	0.900	-	-	9.000
Sodium	mg/l	14.500	-	-	13.700
Zinc	ug/l	-	-	-	4.800
Cyanide (total)	ug/l	-	-	-	<10.000
Fluoride	mg/l	-	-	-	0.100
Mercury	ug/l	-	-	-	<0.020
Sulphate	mg/l	-	-	-	<1.000
Total Phosphorous	mg/l	-	-	-	0.010
Total Coliforms	MPN/100ml	109	-	-	4106
E. Coli	MPN/100ml	0	-	-	8

GROUND WATER MONITORING RESULTS

GW2	Units	06-May-09	18-Jun-09	09-Sep-09	03-Dec-09
Ammoniacal N	mg/l N	<0.007	0.027	0.047	0.025
Conductivity	us/cm	236.000	228.000	160.000	258.000
Chloride	mg/l	9.710	-	-	9.590
Boron	mg/l	-	-	-	0.004
Cadmium	ug/l	-	-	-	0.400
Calcium	mg/l	-	-	-	22.900
Chromium (total)	ug/l	-	-	-	<1.000
Copper	mg/l	-	-	-	<0.003
Iron	ug/l	<5.000	-	-	23.400
Lead	ug/l	-	-	-	0.600
Magnesium	mg/l	-	-	-	1.600
Manganese	ug/l	29.600	-	-	14.800
Nickel	ug/l	-	-	-	1.100
Potassium	mg/l	2.200	-	-	2.400
Sodium	mg/l	9.200	-	-	6.700
Zinc	ug/l	-	-	-	1026.000
Cyanide (total)	ug/l	-	-	-	<10.000
Fluoride	mg/l	-	-	-	<0.100
Mercury	ug/l	-	-	-	<0.020
Sulphate	mg/l	-	-	-	<1.000
Total Phosphorous	mg/l	-	-	-	<0.010
Total Coliforms	MPN/100ml	2420	-	-	980
E. Coli	MPN/100ml	39	-	-	43

GROUND WATER MONITORING RESULTS

GW4	Units	06-May-09	18-Jun-09	09-Sep-09	03-Dec-09
Ammoniacal N	**mg/l N**	0.148	0.037	0.161	1.480
Conductivity	**us/cm**	396.000	189.000	421.000	509.000
Chloride	**mg/l**	40.400	-	-	44.100
Boron	**mg/l**	-	-	-	0.006
Cadmium	**ug/l**	-	-	-	<0.100
Calcium	**mg/l**	-	-	-	62.000
Chromium (total)	**ug/l**	-	-	-	<1.000
Copper	**mg/l**	-	-	-	0.005
Iron	**ug/l**	521.000	-	-	8448.000
Lead	**ug/l**	-	-	-	0.400
Magnesium	**mg/l**	-	-	-	7.800
Manganese	**ug/l**	1001.000	-	-	2143.000
Nickel	**ug/l**	-	-	-	1.400
Potassium	**mg/l**	0.700	-	-	2.200
Sodium	**mg/l**	25.700	-	-	34.900
Zinc	**ug/l**	-	-	-	23.900
Cyanide (total)	**ug/l**	-	-	-	<10.000
Fluoride	**mg/l**	-	-	-	<0.100
Mercury	**ug/l**	-	-	-	<0.020
Sulphate	**mg/l**	-	-	-	1.540
Total Phosphorous	**mg/l**	-	-	-	<0.010
Total Coliforms	**MPN/100ml**	3654	-	-	16
E. Coli	**MPN/100ml**	0	-	-	0

GROUND WATER MONITORING RESULTS

GW5	Units	06-May-09	18-Jun-09	09-Sep-09	03-Dec-09
Ammoniacal N	**mg/l N**	0.009	0.032	0.086	0.120
Conductivity	**us/cm**	240.000	164.000	164.000	400.000
Chloride	**mg/l**	26.500	-	-	36.200
Boron	**mg/l**	-	-	-	0.006
Cadmium	**ug/l**	-	-	-	1.100
Calcium	**mg/l**	-	-	-	74.800
Chromium (total)	**ug/l**	-	-	-	<1.000
Copper	**mg/l**	-	-	-	0.007
Iron	**ug/l**	961.000	-	-	295.500
Lead	**ug/l**	-	-	-	2.500
Magnesium	**mg/l**	-	-	-	4.100
Manganese	**ug/l**	899.000	-	-	1867.000
Nickel	**ug/l**	-	-	-	1.800
Potassium	**mg/l**	0.500	-	-	0.900
Sodium	**mg/l**	19.200	-	-	20.300
Zinc	**ug/l**	-	-	-	11.300
Cyanide (total)	**ug/l**	-	-	-	<10.000
Fluoride	**mg/l**	-	-	-	<0.100
Mercury	**ug/l**	-	-	-	<0.020
Sulphate	**mg/l**	-	-	-	<1.000
Total Phosphorous	**mg/l**	-	-	-	0.040
Total Coliforms	**MPN/100ml**	7270	-	-	866
E. Coli	**MPN/100ml**	22	-	-	2

GROUND WATER MONITORING RESULTS

GW6	Units	06-May-09	18-Jun-09	09-Sep-09	03-Dec-09
Ammoniacal N	**mg/l N**	5.170	5.860	5.050	0.038
Conductivity	**us/cm**	414.000	404.000	368.000	229.000
Chloride	**mg/l**	58.500	-	-	23.600
Boron	**mg/l**	-	-	-	0.007
Cadmium	**ug/l**	-	-	-	2.100
Calcium	**mg/l**	-	-	-	36.400
Chromium (total)	**ug/l**	-	-	-	<1.000
Copper	**mg/l**	-	-	-	0.006
Iron	**ug/l**	6716.000	-	-	409.900
Lead	**ug/l**	-	-	-	3.600
Magnesium	**mg/l**	-	-	-	2.500
Manganese	**ug/l**	2289.000	-	-	<0.020
Nickel	**ug/l**	-	-	-	3.300
Potassium	**mg/l**	5.000	-	-	1.400
Sodium	**mg/l**	36.600	-	-	10.400
Zinc	**ug/l**	-	-	-	256.000
Cyanide (total)	**ug/l**	-	-	-	<10.000
Fluoride	**mg/l**	-	-	-	0.200
Mercury	**ug/l**	-	-	-	<0.020
Sulphate	**mg/l**	-	-	-	8.300
Total Phosphorous	**mg/l**	-	-	-	0.060
Total Coliforms	**MPN/100ml**	86	-	-	2613
E. Coli	**MPN/100ml**	0	-	-	11

GROUND WATER MONITORING RESULTS

GW7	Units	06-May-09	18-Jun-09	09-Sep-09	03-Dec-09
Ammoniacal N	**mg/l N**	0.015	1.960	0.388	5.070
Conductivity	**us/cm**	486.000	654.000	381.000	910.000
Chloride	**mg/l**	27.700	-	-	43.300
Boron	**mg/l**	-	-	-	0.030
Cadmium	**ug/l**	-	-	-	0.100
Calcium	**mg/l**	-	-	-	81.100
Chromium (total)	**ug/l**	-	-	-	<1.000
Copper	**mg/l**	-	-	-	<0.003
Iron	**ug/l**	7682.000	-	-	8091.000
Lead	**ug/l**	-	-	-	0.500
Magnesium	**mg/l**	-	-	-	7.200
Manganese	**ug/l**	2410.000	-	-	3865.000
Nickel	**ug/l**	-	-	-	2.400
Potassium	**mg/l**	7.000	-	-	7.200
Sodium	**mg/l**	25.300	-	-	29.500
Zinc	**ug/l**	-	-	-	4588.000
Cyanide (total)	**ug/l**	-	-	-	<10.000
Fluoride	**mg/l**	-	-	-	0.200
Mercury	**ug/l**	-	-	-	<0.020
Sulphate	**mg/l**	-	-	-	5.850
Total Phosphorous	**mg/l**	-	-	-	0.030
Total Coliforms	**MPN/100ml**	203	-	-	241
E. Coli	**MPN/100ml**	10	-	-	0

GROUND WATER MONITORING RESULTS

GW8	Units	06-May-09	18-Jun-09	09-Sep-09	03-Dec-09
Ammoniacal N	**mg/l N**	0.123	0.230	0.066	0.101
Conductivity	**us/cm**	176.000	184.000	102.000	150.000
Chloride	**mg/l**	36.800	-	-	26.000
Boron	**mg/l**	-	-	-	0.006
Cadmium	**ug/l**	-	-	-	<.100
Calcium	**mg/l**	-	-	-	9.400
Chromium (total)	**ug/l**	-	-	-	<1.000
Copper	**mg/l**	-	-	-	0.005
Iron	**ug/l**	2728.000	-	-	693.000
Lead	**ug/l**	-	-	-	0.800
Magnesium	**mg/l**	-	-	-	1.700
Manganese	**ug/l**	1017.000	-	-	1044.000
Nickel	**ug/l**	-	-	-	1.700
Potassium	**mg/l**	0.900	-	-	1.200
Sodium	**mg/l**	26.000	-	-	14.800
Zinc	**ug/l**	-	-	-	3462.000
Cyanide (total)	**ug/l**	-	-	-	<10.000
Fluoride	**mg/l**	-	-	-	0.300
Mercury	**ug/l**	-	-	-	<0.020
Sulphate	**mg/l**	-	-	-	1.730
Total Phosphorous	**mg/l**	-	-	-	0.040
Total Coliforms	**MPN/100ml**	75	-	-	187
E. Coli	**MPN/100ml**	10	-	-	1

LEACHATE

LEACHATE MONITORING RESULTS

03-Dec-2009	Units	L1	L2	L3	L4	L5	L6	L7	L8	Lagoon
Ammoniacal N	**mg/l N**	-	159.000	-	386.000	-	-	1.360	-	308.000
BOD	**mg/l**	-	34.000	-	34.000	-	-	22.000	-	201.000
COD	**mg/l**	-	218.000	-	369.000	-	-	35.000	-	700.000
Chloride	**mg/l**	-	174.000	-	387.000	-	-	20.600	-	371.000
Conductivity	**us/cm**	-	2110.000	-	3982.000	-	-	421.000	-	3929.000
pH	**pH units**	-	8.200	-	8.200	-	-	8.100	-	8.600
Boron	**mg/l**	-	0.410	-	1.740	-	-	0.060	-	0.970
Cadmium	**ug/l**	-	<0.100	-	<0.100	-	-	<0.100	-	<0.100
Calcium	**mg/l**	-	98.400	-	174.000	-	-	67.200	-	146.000
Chromium (total)	**ug/l**	-	5.100	-	7.400	-	-	12.300	-	36.300
Copper	**mg/l**	-	0.007	-	0.013	-	-	0.007	-	0.020
Iron	**ug/l**	-	2362.000	-	7539.000	-	-	2098.000	-	1938.000
Lead	**ug/l**	-	<0.300	-	0.400	-	-	2.000	-	2.900
Magnesium	**mg/l**	-	36.400	-	64.300	-	-	8.700	-	55.100
Manganese	**ug/l**	-	5966.000	-	3695.000	-	-	367.000	-	3191.000
Nickel	**ug/l**	-	7.600	-	24.900	-	-	2.700	-	27.500
Potassium	**mg/l**	-	98.200	-	191.000	-	-	7.400	-	299.000
Sodium	**mg/l**	-	171.300	-	324.000	-	-	15.200	-	351.000
Zinc	**ug/l**	-	28.600	-	61.900	-	-	31.600	-	105.000
Cyanide (total)	**ug/l**	-	<10.000	-	<10.000	-	-	<10.000	-	<10.000
Fluoride	**mg/l**	-	0.400	-	<0.100	-	-	0.100	-	0.900
Mercury	**ug/l**	-	1.320	-	1.220	-	-	1.180	-	1.790
Sulphate	**mg/l**	-	25.400	-	62.200	-	-	4.850	-	15.400
Total Phosphorous	**mg/l P**	-	0.950	-	0.510	-	-	0.450	-	3.630

DUST & NOISE MONITORING RESULTS

DUST MONITORING RESULTS

LOCATION	Units	20-May-09	12-Jun-09	14-Oct-09
D1	**mg/m^2/day**	95.0	151.3	363.0
D3	**mg/m^2/day**	320.0	251.5	432.0
D8	**mg/m^2/day**	190.0	183.6	276.0
D6	**mg/m^2/day**	48.0	32.1	-

NOISE MONITORING RESULTS - DECEMBER 2009

LOCATION	Units	L_{Aeq} 30 mins	L_{A90} 30 mins	L_{A10} 30 mins
N1	**dB(A)**	43.4	35.8	46.6
N6	**dB(A)**	45.2	36.8	48.2
N7	**dB(A)**	48.2	41.9	51.3
N10	**dB(A)**	49.8	38.1	53.5
N12	**dB(A)**	60.1	40.1	62.6

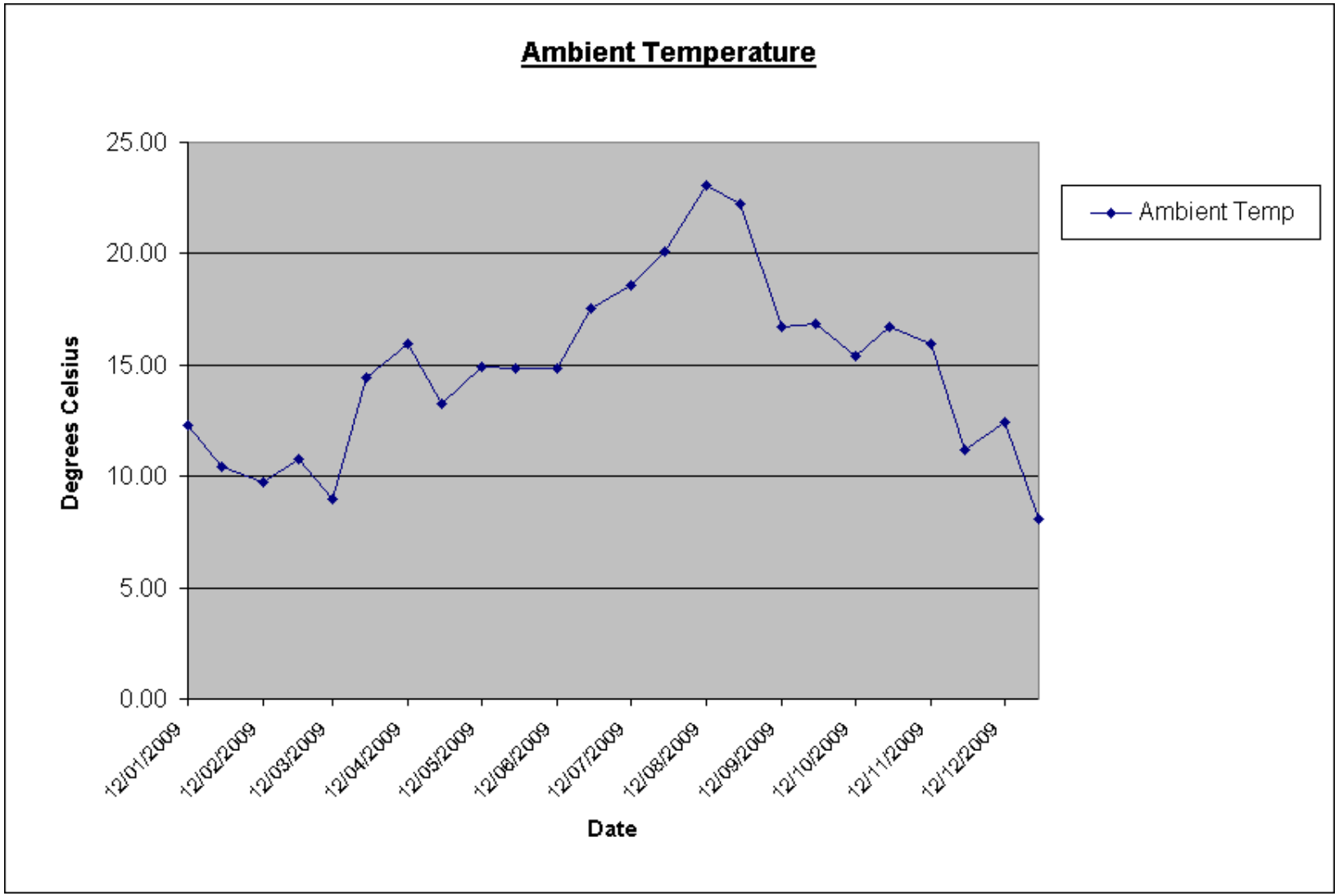
APPENDIX 2

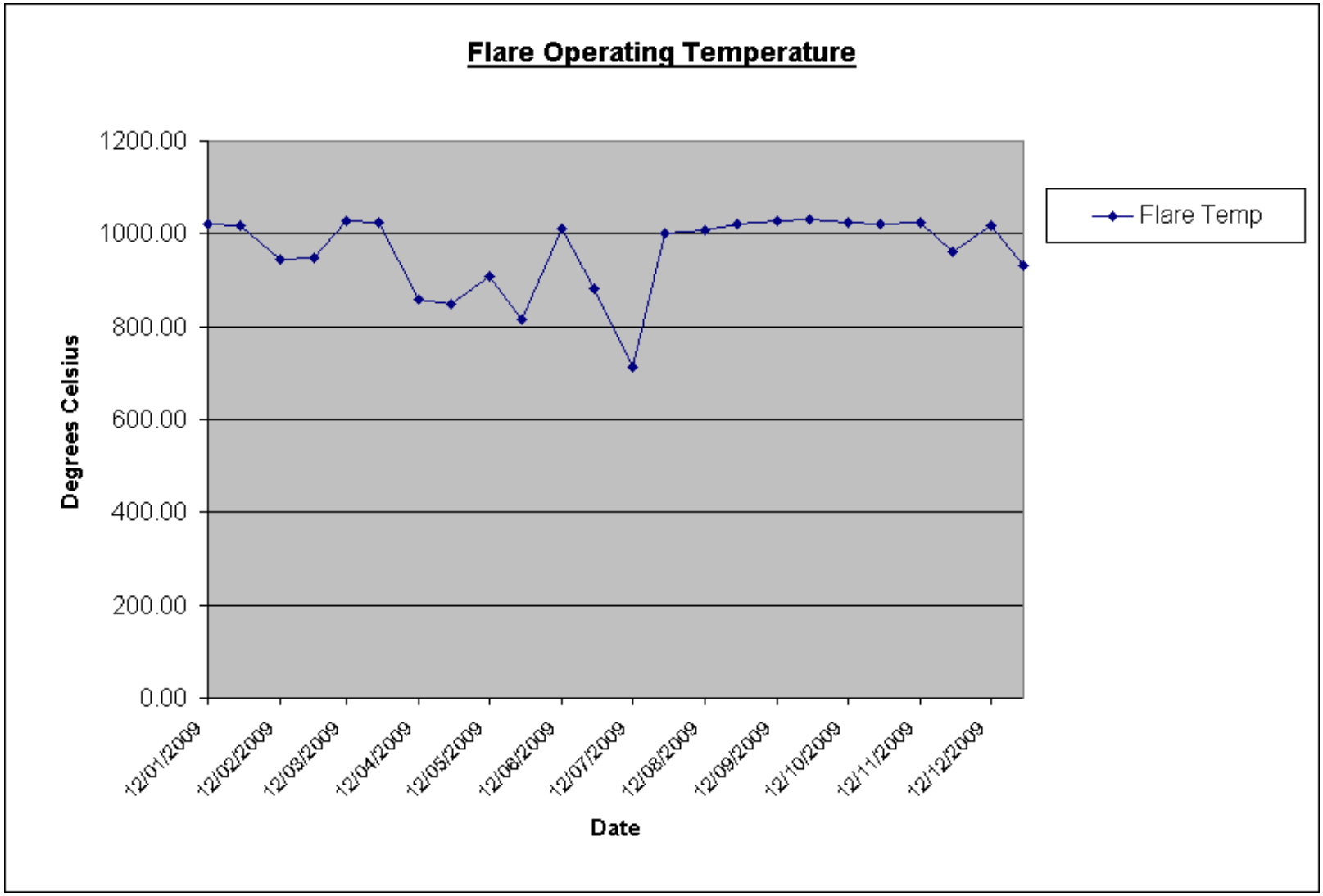
FLARE EMISSIONS MONITORING RESULTS & GRAPHS

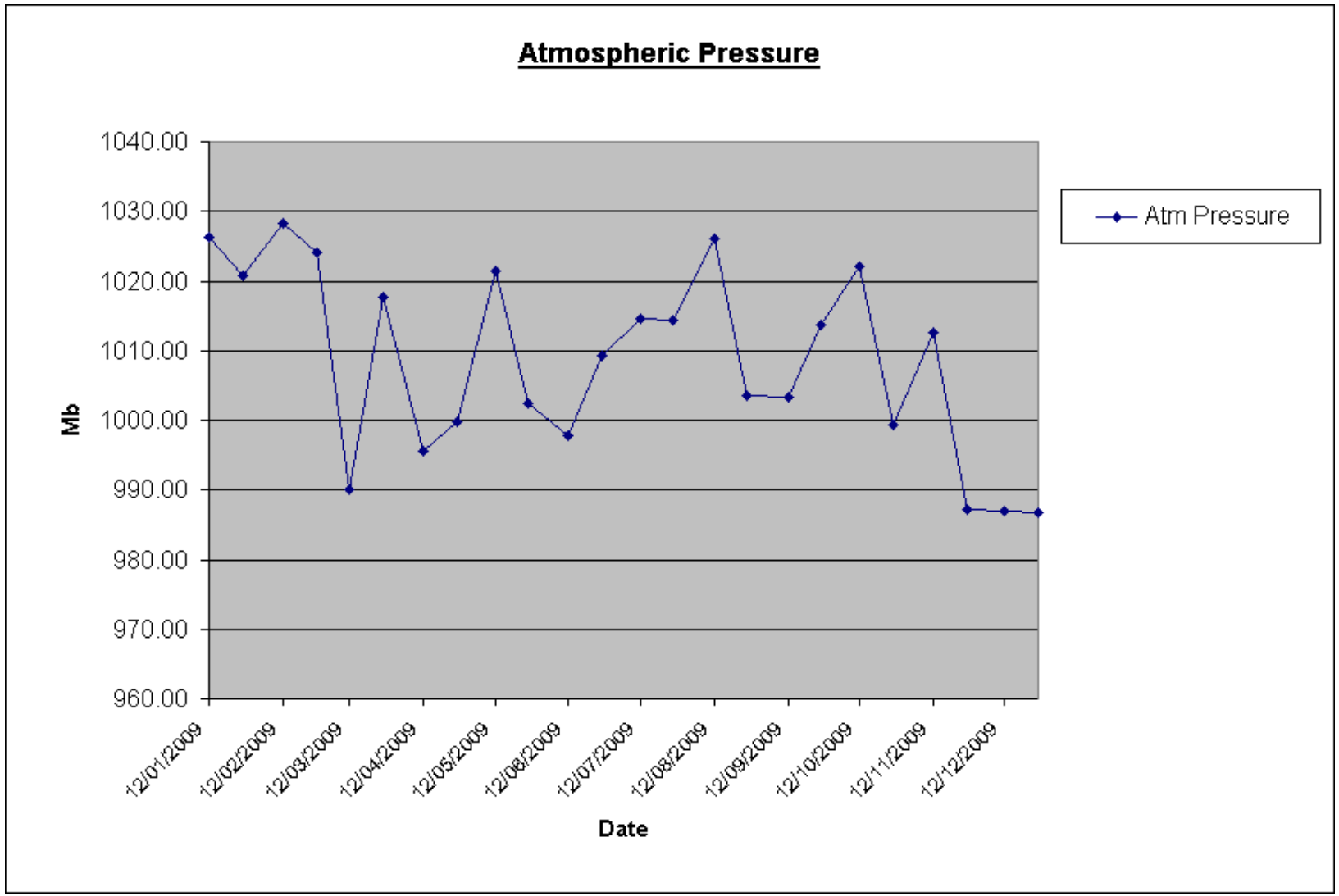
Biannual Flare Emissions Monitoring was carried out Environmental H&S Consultants RPS Group, Innishmore, Ballincollig, Co. Cork.

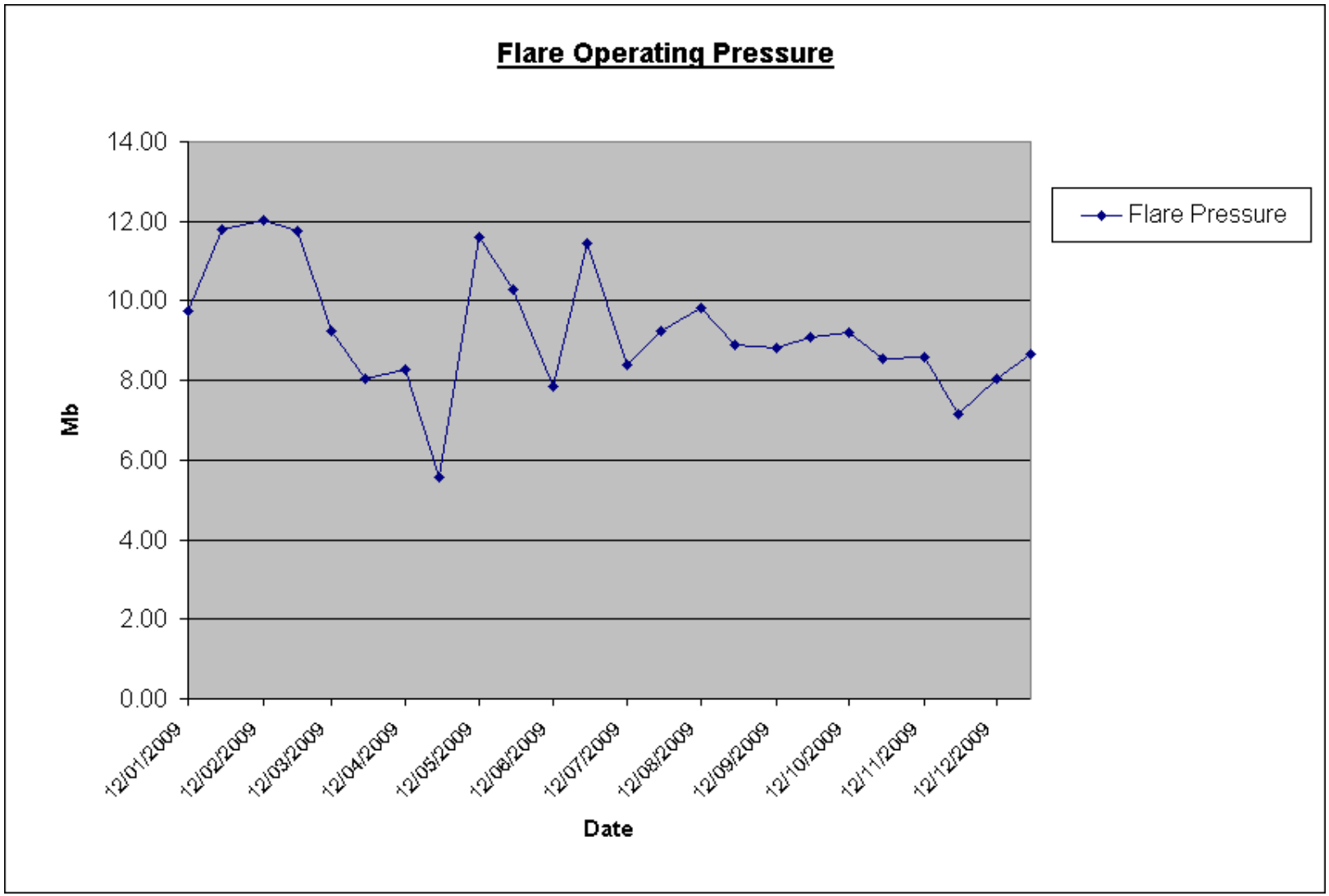
GAS FLARE DATA

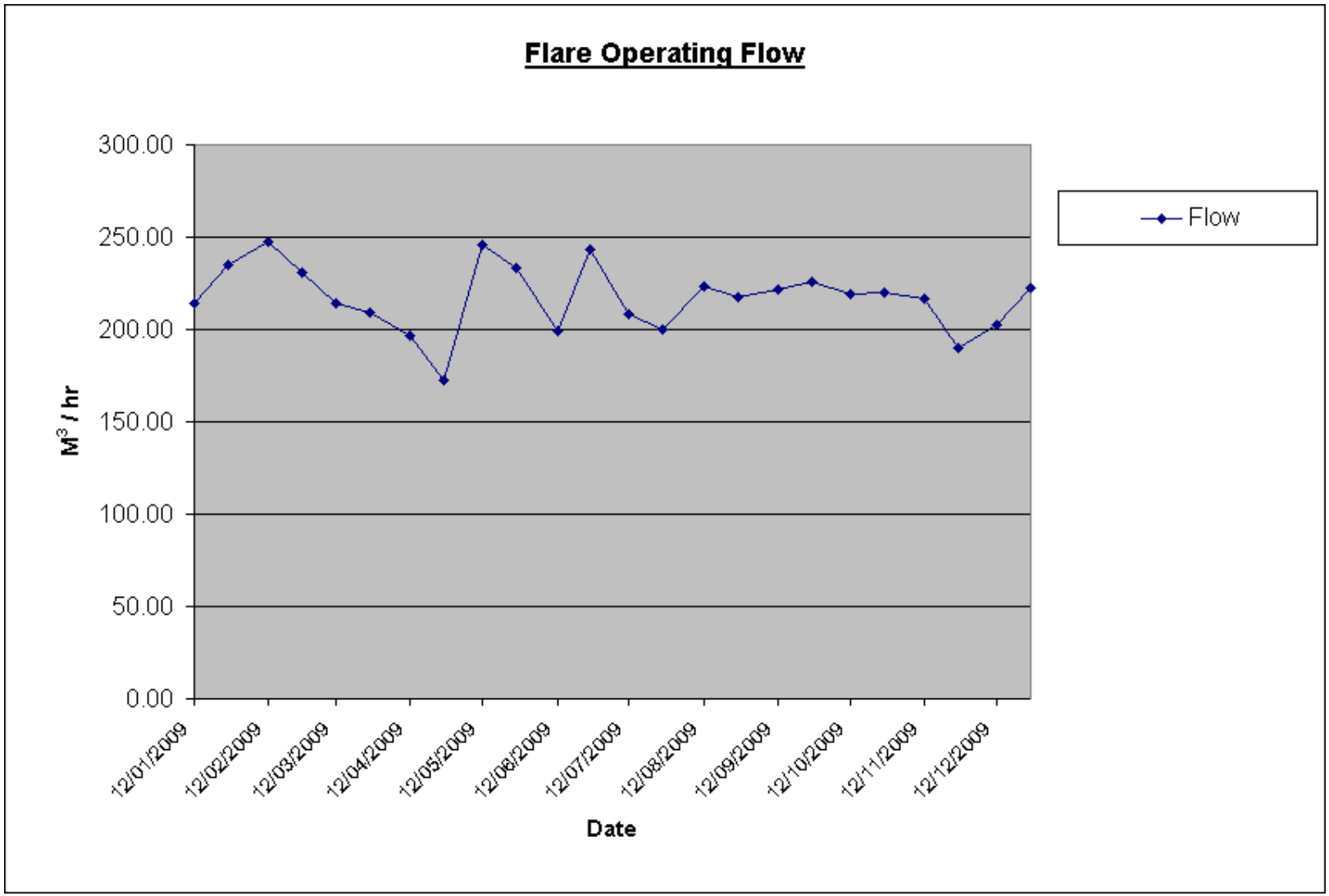
Date	Ambient Temp	Atm Pressure	CO_2	CO	Flow	CH_4	O_2	Flare Pressure	Flare Temp
12/01/2009	12.26	1026.22	32.41	12.36	214.44	41.82	3.32	9.74	1020.37
26/01/2009	10.44	1020.69	29.98	20.72	235.15	33.65	3.91	11.78	1016.57
12/02/2009	9.74	1028.21	29.16	19.42	247.66	27.86	4.27	12.03	945.38
26/02/2009	10.76	1024.17	28.61	21.36	230.51	29.72	3.75	11.76	946.79
12/03/2009	8.99	989.99	27.88	18.51	214.12	31.76	3.76	9.25	1027.24
26/03/2009	14.40	1017.63	30.86	9.78	209.10	36.94	3.43	8.03	1023.60
12/04/2009	15.94	995.49	32.91	13.01	196.71	35.11	0.58	8.28	859.20
26/04/2009	13.25	999.67	33.69	15.42	172.17	34.07	0.59	5.57	849.31
12/05/2009	14.90	1021.36	29.32	18.54	246.17	35.11	3.88	11.60	907.63
26/05/2009	14.82	1002.46	28.21	20.64	233.45	31.82	4.06	10.27	816.97
12/06/2009	14.84	997.89	28.53	19.54	199.18	36.12	4.41	7.84	1010.53
26/06/2009	17.57	1009.22	28.88	18.63	243.16	32.72	4.45	11.44	881.13
12/07/2009	18.60	1014.60	34.09	18.08	208.74	32.47	0.91	8.39	712.41
26/07/2009	20.10	1014.39	36.09	13.82	199.93	35.40	1.31	9.25	1001.36
12/08/2009	23.06	1026.09	37.94	16.42	223.36	39.63	1.21	9.82	1008.86
26/08/2009	22.23	1003.44	39.09	12.31	217.51	46.11	1.24	8.89	1022.55
12/09/2009	16.72	1003.30	37.26	15.06	221.27	39.58	1.48	8.83	1026.30
26/09/2009	16.84	1013.79	37.33	11.87	226.09	38.94	1.45	9.08	1030.16
12/10/2009	15.39	1022.18	37.70	18.20	218.79	37.27	1.43	9.19	1022.71
26/10/2009	16.74	999.28	38.94	13.54	219.95	46.81	1.23	8.53	1020.37
12/11/2009	15.95	1012.55	41.17	9.90	216.84	55.80	2.08	8.57	1024.12
26/11/2009	11.19	987.22	34.59	18.63	189.94	37.44	1.90	7.15	962.72
12/12/2009	12.45	986.93	37.09	14.79	202.81	51.69	1.95	8.04	1019.06
26/12/2009	8.10	986.68	32.09	16.57	222.38	31.64	2.00	8.66	930.80

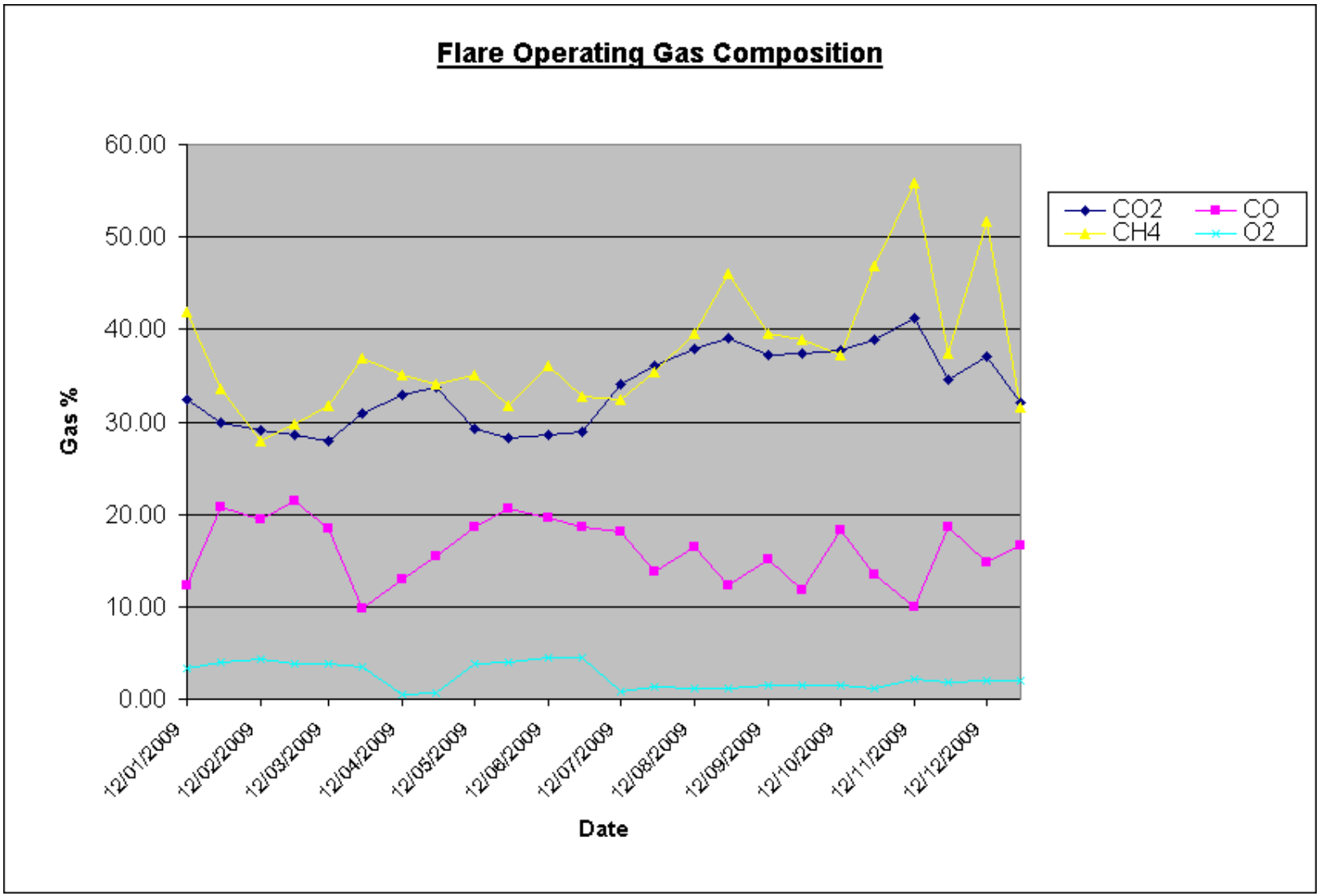

Ambient Temperature
25.00
20.00
15.00
10.00
5.00
0.00
Degrees Celsius
12/01/2009
12/02/2009
12/03/2009
12/04/2009
12/05/2009
12/06/2009
12/07/2009
12/08/2009
12/09/2009
12/10/2009
12/11/2009
12/12/2009
Date
Ambient Temp


Flare Operating Temperature
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
Degrees Celsius
12/01/2009
12/02/2009
12/03/2009
12/04/2009
12/05/2009
12/06/2009
12/07/2009
12/08/2009
12/09/2009
12/10/2009
12/11/2009
12/12/2009
Date
Flare Temp


Atmospheric Pressure
1040.00
1030.00
1020.00
1010.00
1000.00
990.00
980.00
970.00
960.00
Mb
12/01/2009
12/02/2009
12/03/2009
12/04/2009
12/05/2009
12/06/2009
12/07/2009
12/08/2009
12/09/2009
12/10/2009
12/11/2009
12/12/2009
Date
Atm Pressure


Flare Operating Pressure
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Mb
12/01/2009
12/02/2009
12/03/2009
12/04/2009
12/05/2009
12/06/2009
12/07/2009
12/08/2009
12/09/2009
12/10/2009
12/11/2009
12/12/2009
Date
Flare Pressure


Flare Operating Flow
300.00
250.00
200.00
150.00
100.00
50.00
0.00
M3 / hr
12/01/2009
12/02/2009
12/03/2009
12/04/2009
12/05/2009
12/06/2009
12/07/2009
12/08/2009
12/09/2009
12/10/2009
12/11/2009
12/12/2009
Date
Flow


Flare Operating Gas Composition
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Gas %
CO2
CO
CH4
O2
12/01/2009
12/02/2009
12/03/2009
12/04/2009
12/05/2009
12/06/2009
12/07/2009
12/08/2009
12/09/2009
12/10/2009
12/11/2009
12/12/2009
Date

Biannual Flare Emissions Monitoring

FLARE EMISSIONS MONITORING

FLARE STACK	Units	09-Mar-09	18-Sept-09	Emission Limit
Residence Time	**S**	0.39	0.32	>0.30
Nitrogen Oxides (NO_X)	**Mg/Nm^3**	53.20	43.10	150.00
Sulphur Dioxide (SO_2)	**Mg/Nm^3**	4.00	5.70	N/A
Carbon Monoxice (CO)	**Mg/Nm^3**	32.50	24.50	N/A
Temperature	**^oC**	1010.00	959.50	N/A

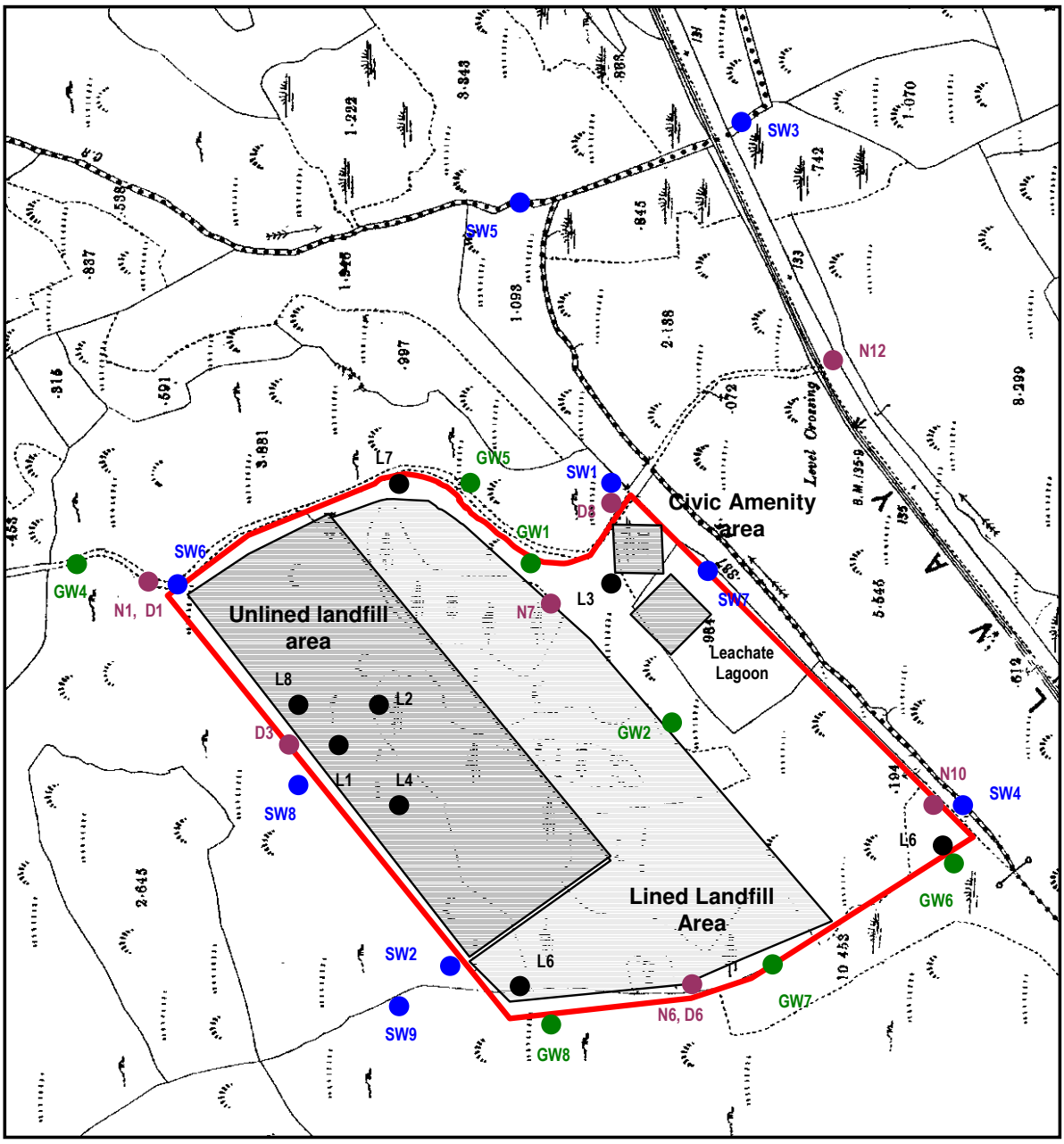
APPENDIX 3

2009 PRTR EMISSIONS DATA

DRAWINGS

DRAWING 01_2009

LOCATION OF ENVIRONMENTAL MONITORING POINTS



SURFACE WATER ● GROUNDWATER ● LEACHATE ●

NOISE & DUST ●

DRAWING 02_2009

2009 TOPOGRAPHICAL SURVEY