



Annual Environmental Report

DRUMABODEN LANDFILL SITE **(Waste Licence Ref. W0063-1)**

By
Donegal County Council
For
Environmental Protection Agency

Reporting Period: January 2009 to December 2009

March 2010

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1. INTRODUCTION

1.1 This Annual Environmental Report (AER) has been prepared to meet the requirements of Condition 2.4 of Waste Licence W0063-1 for Drumaboden Landfill and includes the information listed in Schedule A of the Waste Licence. This report provides an environmental review of the site from January 2009 to December 2009.

1.2 Waste Licence Requirements

Donegal County Council ceased operational activity at Drumaboden in April 1999. On the 29th of June 2001 the Environmental Protection Agency granted the Council a Waste Licence (registration number W0063-1) for the orderly closure, capping and restoration of the landfill facility, in accordance with the Third Schedule of the Waste Management Act, 1996. Donegal County Council was only permitted to accept inert waste at the facility for the purpose of restoration and aftercare of the site. The quantity of inert waste to be accepted was limited to 40,000 tonnes. The Licence requires the Council to manage the facility to ensure that activities do not cause environmental pollution and carry out regular environmental monitoring and submit all monitoring results and reports.

1.3 Nature of the Facility

Drumaboden Landfill is an unlined landfill, historically operated on the 'dilute and disperse' principle, whereby leachate generated by rainfall infiltration and the decomposition of the landfilled wastes is allowed to disperse into the surrounding environment. The landfill is situated on blanket bog and is bounded to the north by the River Leannon and to the south by the R249. A peripheral leachate cut-off drain has been provided to intercept seepage of leachate from the landfill mass. The leachate is then pumped from the cut-off drain into a leachate treatment system (puraflo). The facility was fully restored during 2007.

2. WASTE ACTIVITIES CARRIED OUT AT THE FACILITY**2.1 Type of Waste**

The licensed disposal activities, in accordance with the Third Schedule of the Waste Management Act, 1996 are restricted to those listed as follows

- **Class 1 Deposit on, in or under land (including landfill):** This activity is limited to the disposal of inert waste only and leachate treatment at the facility.
- **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:** This activity is limited to leachate collection and storage prior to treatment.

3. QUANTITIES AND COMPOSITION OF WASTE**3.1 Quantities of Waste for Restoration**

In accordance with Condition 1 of the waste licence only inert waste shall be accepted for the purposes of remediation, rehabilitation, enhancement and restoration of the facility. The maximum total of inert waste to be disposed of at the site is 40,000 tonnes. The quantities of waste received during previous years at the facility are presented in Table 3.1.

3.2 The total capacity of Drumabodan landfill is 128,000 tonnes and this amount of waste has already been landfilled. The site is closed and no more waste will be accepted.

3.3 Restoration of the landfill was carried out during this period and the quantity of inert material imported is shown in the following table.

Table 3.1 Waste quantities accepted (tonnes)

Waste Types	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	5596	1515	0	0	0	0	0	0	0	85,716	0	0

4. SUMMARY REPORT OF EMISSIONS

4.1 Introduction

The following is a general description of the results of monitoring for each media type with regard to the extent of emissions. Detailed results of monitoring are presented in Appendix A.

Due to flooding problems throughout the second part of the year surface water sampling locations were inaccessible. This was communicated to the EPA.

4.2 Groundwater

The two upstream wells are GW1 & GW5. GW1 again shows signs of contamination whereas GW5 is virtually clear of contamination. Downstream both wells (GW6 & 7) show signs of low-level contamination from parameters that would be indicative of leachate. Overall levels are similar in scale to those reported during the last period indicating that contamination from the waste body is entering the immediate groundwater environment. NB - all groundwater wells are located close to the waste body.

4.3 Surface Water

The only instances of surface water quality above MAC are upstream of the facility. The River Leannon has good assimilative capacity and this combined with the Puraflo system treating leachate on the site suggests that generally the landfill is not having a negative impact on the surface water environment in terms of leachate emissions. Results are a slight improvement of those of the last reporting period.

4.4 Leachate

Leachate is collected via a cut-off channel and pumped into a Puraflo treatment system. The Puraflo system (which is marketed in Ireland by Bord na Mona) is a package system containing peat media that filters the leachate. Leachate is monitored at the intake and discharge points and the results are contained in Tables 5.1 & 5.2, & Appendix A. The results show that the discharge effluent exceeded parameter limits for ammonia at the start of the period but was back within limits by the end of the period (ELV as stated in the Waste Licence). Maintenance works are currently underway on the puraflo system and it is hoped that performance will improve further.

4.5 Landfill Gas

Passive gas vents allow landfill gas to disperse to the atmosphere at Drumaboden. In addition to the vents, gas monitoring wells have been installed both within waste in the body of the landfill (LG1,2,3&5), and as peripheral wells on the road verge outside the landfill (LG6,7&8). The wells within waste show levels of methane from 0.1% to 51.1%; and CO₂ from 0.6% to 43.1%. The peripheral wells show exceedances for both methane (at LG7) and CO₂ (at LG6 & LG7).

4.6 Dust

Dust monitoring was not undertaken at the site prior to restoration due to the absence of operational activity. Monitoring plans were in place as required during the restoration contract. This monitoring programme was not deployed. Since restoration dust levels are inspected during monitoring and a management system can be deployed if required.

5. RESULTS & INTERPRETATIONS OF MONITORING INCLUDING PLANS & UPDATES OF MONITORING LOCATIONS.

5.1 Monitoring Locations, Parameters and Frequencies

Monitoring locations are shown on drawing numbers 5234.60/103 & /06. Also contained on these drawings are the location coordinates for each monitoring point (where available). The required parameters to be monitored and frequencies are listed in Schedule D5 of the Waste Licence. All results from the monitoring programme are contained in Appendix A together with graphical representations of key parameters.

5.2. Groundwater

Groundwater is monitored at locations GW1, GW5, GW6, GW7 (refer to drg. no. 5234.60/06). GW1 and GW5 are representative of groundwater upstream of the landfill and GW6 and GW7 are representative of downstream conditions, although all wells are close to the waste body. Wells labelled GW2, GW3 and GW4 are located within waste and are only used to monitor groundwater / leachate levels.

Results from monitoring of these wells are contained in graphical and tabular format. These results have been compared to EC Quality of Water Intended for Human Consumption Regulations, 1988, the European communities (Drinking Water) Regulations, 2000 and the EPA Interim Report, Towards Setting Guidelines Values for the Protection of Groundwater in Ireland. The majority of the parameters measured were below the MAC's.

At all locations except GW1, ammoniacal nitrogen was found to be in excess of recommended limits, with the highest levels present in GW7 with 7.31mg/l recorded.

Levels in excess of recommended limits were also recorded for chloride, iron, manganese, barium and nutrients upstream both upstream and downstream.

5.3 Surface Water

Surface water is monitored at locations SW1, SW2, SW4, SW5 & SW6. SW1 is located upstream of the landfill, with SW2, SW4, SW5 & SW6 being downstream. Condition 9 and Schedule D of the licence requires the licensee to monitor surface water at six locations in the

vicinity of the site on a quarterly and annual basis. Monitoring point S3 as indicated in the licence is no longer monitored as the Puraflo treatment system does not discharge at this point.

These results have been compared to EC (Quality of Surface Water Intended for the Abstraction of Drinking Water) Regulations, 1989. The majority of the parameters have been below the recommended limits (Surface Water Quality Standards, (SWQS)) for A1 category surface water.

Ammoniacal Nitrogen levels were all below MAC.

The only instance of exceedance of MAC was at the upstream location SW1 where COD and BOD were in excess of the limits.

Due to flooding problems throughout the second part of the year surface water sampling locations were inaccessible. This was communicated to the EPA.

5.4 Leachate

Leachate quality can vary during the lifetime of a landfill site depending on the phase of decomposition of the waste. Leachate results and graphs for the reporting period are presented in Appendix A and some of the characteristic parameters of the leachate are listed in Table 5.1 below. Table 5.2 illustrates the maximum and minimum concentrations for both Raw and Treated Leachate.

Table 5.1: Raw Leachate Concentrations 2009					
	Drumaboden Landfill Site		From 30 samples from UK/Irish landfills accepting domestic waste Results in mg/l		
PARAMETER	Min.Conc	Max.Conc	Min.Conc	Max.Conc	Mean
Ammonia (mg/N)	17.91	55.75	<0.2	1700	491
BOD	0.30	4.10	4.5	>4800	>834
COD	22	66	<10	33,700	3078
Chloride (mg/l)	71	89	27	3410	1256
Iron (mg/l)	-	<0.000019	0.4	664	54.4
Potassium (mg/l)	-	27.60	2.7	1480	491
TON (mg/l N)	<0.01	5.15	/	/	/
Conductivity (mS/cm)	885	2019	503	19,200	7789
pH	6.59	8.05	6.4	8	7.2

PARAMETER	Raw Leachate		Treated Leachate	
	Min.Conc	Max.Conc	Min.Conc	Max.Conc
Ammonia (mg/N)	17.91	55.75	16.27	44.50
BOD (mg/l)	0.3	4.10	<0.01	4.50
COD (mg/l)	22	66	14	96
Chloride (mg/l)	71	89	92	95
TON (mg/l N)	<0.01	5.15	0.38	8.40
Conductivity (mS/cm)	885	2019	913	1976
pH	6.59	8.05	6.98	8.02

Raw leachate parameters have been compared to "Typical Leachate Composition of 30 Samples from UK/Irish Landfills accepting mainly Domestic Waste" (Landfill Operational Practices). All parameters are consistent with typical leachate composition.

Treated leachate levels were in excess of the ELV for this facility in the early months of the reporting period, but are back within this limit by the end of the reporting period. Maintenance of the treatment plant is currently being carried out and it is hoped that performance of the plant will improve further after these works.

5.5 Landfill Gas

Gas is monitored at locations LG1 to LG8 inclusive. LG4 has since been lost (covered over). Wells LG1, LG2, LG3 & LG5 are located in waste. Wells LG6, LG7 and LG8 are peripheral gas wells and these wells were replaced during this reporting period.

All wells within waste are actively producing landfill gas. Gas monitoring on the mature waste body is indicative of methanogenic gas processes that would be occurring under anaerobic conditions. Maximum and minimum levels recorded for each piezometer are shown below in Table 5.3.

In peripheral wells there were exceedances of both the methane (max 25.4% at LG6) and carbon dioxide (max 15.1% at LG6) trigger levels (1.0% v/v & 1.5% v/v respectively).

PIEZOMETER	Methane (CH ₄)		Carbon Dioxide (CO ₂)	
	Min.Conc %	Max.Conc %	Min.Conc %	Max.Conc %
LG1	12.9	51.1	9.4	43.1
LG2	0.1	0.7	1.0	3.3
LG3	0.1	0.7	1.0	3.3
LG4	0.4	0.7	16.7	17.1
LG5	0.2	33.4	0.6	16.1

5.6 Dust

Dust monitoring was not undertaken at the site prior to restoration due to the absence of operational activity. Monitoring plans were in place if required during the restoration contract. This monitoring programme was not deployed. Dust levels are inspected during monitoring and if required a dust management programme will be deployed.

6. VOLUME OF LEACHATE PRODUCED AND VOLUME DISCHARGED

As previously stated a leachate cut off channel has been installed along part of the western site boundary to intercept seepage of leachate from the landfill mass. The raw leachate is treated through the "Puraflo" peat filtration bed. A water balance calculation has been undertaken and is shown in Appendix B. This indicates that the estimated volume of leachate being generated at the site for the reporting period is 4745m³.

7. REPORTED INCIDENTS AND COMPLAINTS SUMMARIES

- 7.1 Donegal County Council reports on an on-going basis all instances where either surface waters or groundwaters are found to contain in excess of 0.2mg/l ammonia, or where perimeter gas wells are found to contain greater than either 1% methane or 1.5% carbon dioxide. These are reported as incidents twice per year when the results become available.
- 7.2 Apart from the on-going emissions exceedances reporting referred to above, no incidents have been reported to the Environmental Protection Agency during this reporting period.
- 7.3 No complaints were received during this reporting period.

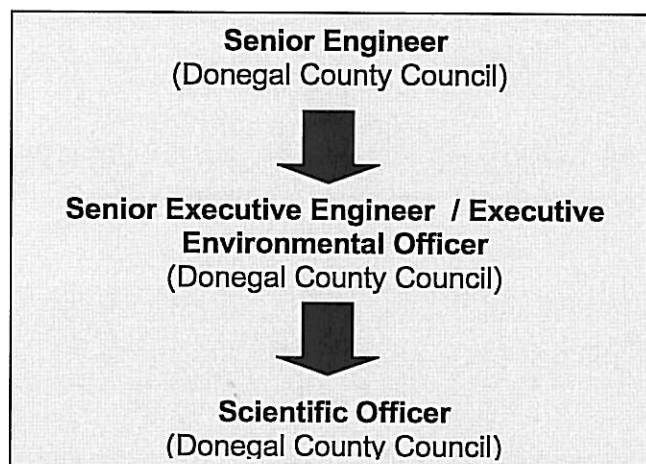
8. REVIEW OF NUISANCE CONTROLS

The facility is no longer operational and all areas formerly used for the placement of municipal waste have been fully restored. Accordingly no incidence of nuisance has been recorded during the reporting period. The appropriate control systems (as outlined in the EMS) will be deployed should any sign of nuisance, in the form of vermin, litter, odour, dust or birds, be detected in the course of the regular site inspections.

9. MANAGEMENT STRUCTURE OF SITE

9.1 Management Structure

The management of the landfill site is as follows.



9.2 Management Responsibility

Senior Engineer: Overall responsibility for the management of the site and maintenance of the waste licence. Delegation of authority and responsibility to ensure the effective management of the facility.

Senior Executive Engineer: Responsible for the ongoing management of the facility as directed by the Senior Engineer.

Executive Environmental Officer: Responsible for overall compliance with EPA Licence.

Scientific Officers: Carry out environmental inspections, monitoring, analysis and reporting in accordance with licence requirements.

10. PROGRAMME FOR PUBLIC INFORMATION

A public communication programme has been included in the EMS in accordance with Condition 2 of the Waste Licence to ensure that information concerning the environmental performance is available at reasonable times. The public may view environmental records at the Environment Section in Donegal County Council Headquarters in Lifford. Details regarding this are contained in Section 2 of the Environmental Management System Manual.

A public information / consultation programme was run prior to restoration works commencing.

11. CAPPING AND RESTORATION OF THE SITE.

The site was fully restored during the reporting period (works commenced April 2007 and works were substantially complete in January 2008).

12. REPORT ON DEVELOPMENT WORK UNDERTAKEN DURING THE REPORTING PERIOD, AND A TIME SCALE FOR THOSE PROPOSED DURING THE COMING YEAR.

During 2009 the monitoring programme highlighted the fact that the treatment system was not delivering the reductions in ammonia levels in leachate previously achieved. The situation was investigated in conjunction with the proprietors of the system, Bord na Mona, and some investigations carried out. The peat filtration media was inspected by Bord na Mona and found to be in good enough condition to facilitate treatment. It was concluded that the system was overgrown and pipework clogged. An overhaul of the system is currently underway to clear vegetation and replace pipework. The performance of the system will be reviewed when work is complete.

NOTES

- 1. GRID REFERENCE SITE ENTRANCE: 216683 421703
- SITE BOUNDARY
- GROUNDWATER MONITORING BOREHOLES
- LEACHATE LEVEL LOCATION
- GAS MONITORING LOCATIONS
- GAS VENT LOCATIONS
- LEACHATE SAMPLING LOCATIONS
- DUST SAMPLING LOCATIONS

MONITORING TYPE	REF NO	GRID REFERENCE
GROUNDWATER	GW1	216671 421703
	GW5	216628 421747
	GW6	216790 422024
	GW7	216920 421796
LEACHATE LEVELS	GW2	216648 421834
	GW3	216740 421812
	GW4	216772 421931
	GW8	216688 421845
GAS MONITORING LOCATIONS	LG1	216742 421811
	LG2	216732 421878
	LG3	216732 421878
	LG4	216756 421929
LEACHATE SAMPLING LOCATIONS	LG5	216756 421929
	LG6	216535 421873
	LG7	216595 421783
	LG8	216916 421717
DUST MONITORING LOCATIONS	D1	216790 421975
	D2	216648 421918
	D3	216702 421845
		216931 421863

GRID COORDINATES DETERMINED FROM SITE SURVEY

REV	DESCRIPTION	DATE	CHECK BY	DATE
A	UPDATED GRID COORDINATES MONITORING POINTS ADDED	JULY 05/JULY 05	AMG	

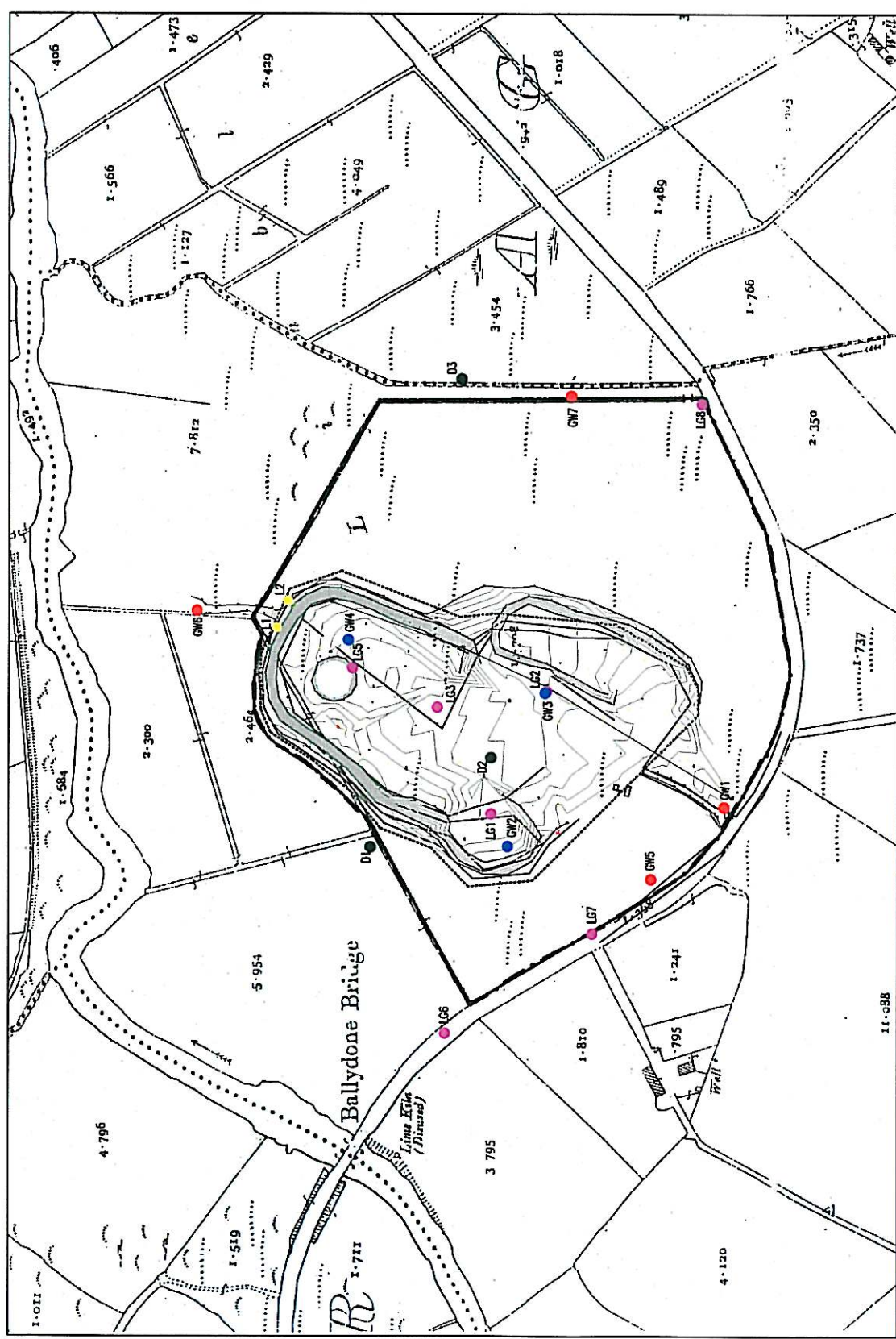
DATE	NOV 04	DATE	NOV 04	DATE
DRAWN BY	KD	CHECK BY	AMG	APPROVED

BASE DRAWING 1:2500 SCHEDULE SHEETS
 SCALE
 CLIENT

DONEGAL COUNTY COUNCIL
 PROJECT
 DRUMABODAN RESTORATION AND AFTERCARE
 TITLE
 MONITORING POINTS PLAN

RPS Kirk McClure Morton
 CONSULTING ENGINEERS
 EDWARDS HOUSE
 21 BUCKLER ROAD
 BELFAST BT1 1RZ
 TEL: 028 906 714
 FAX: 028 906 024
 www.rpsmccluremorton.com

ARCHITECT	DWG. STATUS
DRAWING No. 5234.60/06	PRELIM
REVISION A	TENDER
	CONST.
	RECORD



NOTES

- 1. GRID REFERENCE SITE ENTRANCE: 216663 421703
- SITE BOUNDARY
- S1 SURFACE WATER MONITORING LOCATIONS

MONITORING TYPE	REF NO	GRID REFERENCE
SURFACE WATER	S1	NOT AVAILABLE
	S2	NOT AVAILABLE
	S3	NOT AVAILABLE
	S4	NOT AVAILABLE
	S5	NOT AVAILABLE

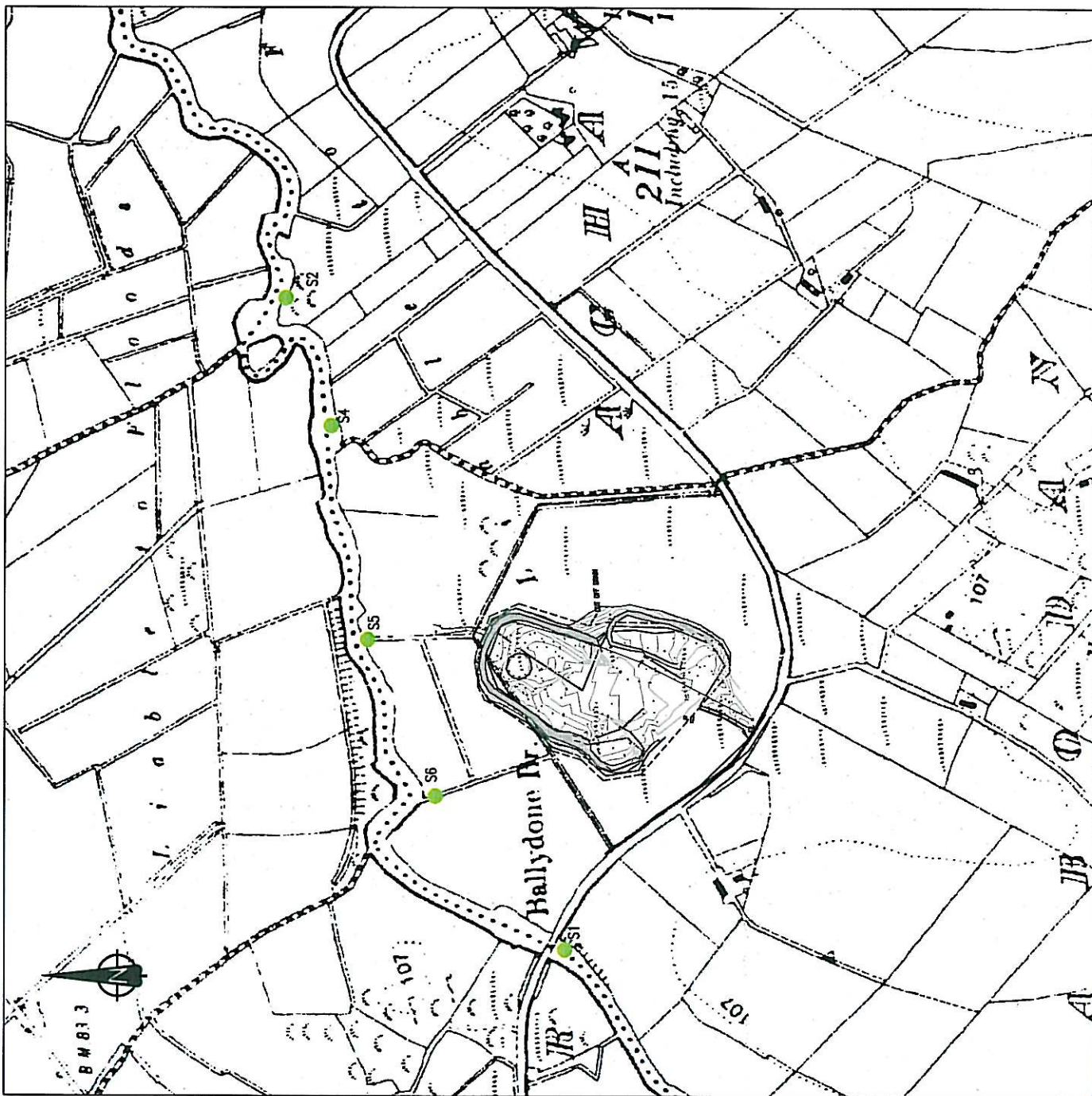
REV	DESCRIPTION	BY	DATE	DATE
A	UPDATED GRID COORDINATES	JD	AUG	JULY 05

DATE	APPROVED DD	CHECK BY	DATE	DATE
AUG 03		JD	AUG 03	AUG 03

CLIENT: DONEGAL COUNTY COUNCIL
 PROJECT: DRUMABODEN LANDFILL SITE
 TITLE: SURFACE WATER MONITORING LOCATIONS

ARCHITECT: RPS Kirk McClure Morton
 CONSULTING ENGINEERS
 TEL: 074 918 1827 Fax: 074 918 1828
 THE ENTERPRISE FUND BUSINESS CENTRE BALLYFRANK
 LETCHWORTH CO. DUNELM

ARCHITECT	DWG. NO.	DATE	REVISION	RECORD
RPS Kirk McClure Morton	5234.60/103		A	



100mm

APPENDIX A

RESULTS OF MONITORING

Location		Drumaboden, Kilmacrennan, Co Donegal											
Sample Type		surface water											
Site No		SW1											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1415	1606	2185	2467	2747	3487	3858					
pH		7.22	7.35	7.35	7.29	6.90	7.10	6.77					
Temp	C	8.90	9.27	14.00	16.40	15.00	18.00	17.10					
Electrical Conductivity	uS/cm	125	121	139	144	99	122	109					
Ammonical Nitrogen	mg/l	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01					
COD	mg/l	3	3	12	23	19	48	41					
BOD	mg/l	1.27	1.22	3.50	6.87	1.58	0.62	1.15					
Dissolved Oxygen	mg/l	12.65	12.34	9.96	9.68	10.81	9.80	8.90					
SS	mg/l	1.60	1.00	0.20		5.00	1.20						
Residue on Evaporator	mg/l												
Calcium	ug/l												
Cadmium	ug/l												
Chromium	ug/l												
Chloride	mg/l			28		31	26						
Chlorine	mg/l												
Copper	ug/l												
Cyanide	mg/l												
Total Iron	ug/l												
Lead	ug/l												
Magnesium	ug/l												
Manganese	ug/l												
Mercury	ug/l												
Nickel	mg/l												
Potassium	mg/l												
Sodium	mg/l												
Sulphate as S	mg/l												
Zinc	ug/l												
Total Alkalinity as CaCO3	mg/l												
Total Organic Carbon	mg/l												
Total Oxidised Nitrogen	mg/l	0.20	0.23	0.14	0.10	0.09	0.20	0.20					
Arsenic	mg/l												
Barium	mg/l												
Boron	ug/l												
Flouride	mg/l												
Phenol	mg/l												
Phosphorous	mg/l												
Selenium	mg/l												
Silver	mg/l												
Microtox	Toxic Units												
Microtox	Toxic Units												
Nitrite	mg/l	<0.03	0.066	<0.03	<0.03	<0.03	0.040	0.420					
Nitrate	mg/l	0.8707	0.9061	0.5800	0.3900	0.3800	0.8380	0.8300					
Phosphate - ORTHO	mg/l	<0.0001	<0.0001	<0.0001	0.008	0.048	<0.0001	0.022					
Phosphate - TOTAL	mg/l												
Total Coliforms													
Facel Coliforms													
Depth	m												

--- not applicable

***:insufficient sample / No Access

Location		Drumaboden, Kilmacrennan, Co Donegal											
Sample Type		surface water											
Site No		SW2											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1416	1607	2186	2468	2748	3488	3859					
pH		7.24	7.41	7.44	7.61	6.90	7.23	6.81					
Temp	C	8.58	9.73	13.50	13.90	15.00	18.00	16.90					
Electrical Conductivity	uS/cm	117	118	140	110	101	118	100					
Ammonical Nitrogen	mg/l	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01					
COD	mg/l	1	1	14		19	34	21					
BOD	mg/l	1.18	1.39	0.90	0.93	0.11	0.34	0.15					
Dissolved Oxygen	mg/l	10.98	12.51	10.06	9.99	10.52	9.70	9.40					
SS	mg/l	1.0	1.4	2.4		4.4	1.3						
Residue on Evaporator	mg/l												
Calcium	ug/l												
Cadmium	ug/l												
Chromium	ug/l												
Chloride	mg/l			27		23	24						
Chlorine	mg/l												
Copper	ug/l												
Cyanide	mg/l												
Total Iron	ug/l												
Lead	ug/l												
Magnesium	ug/l												
Manganese	ug/l												
Mercury	ug/l												
Nickel	mg/l												
Potassium	mg/l												
Sodium	mg/l												
Sulphate as S	mg/l												
Zinc	ug/l												
Total Alkalinity as CaCO3	mg/l												
Total Organic Carbon	mg/l												
Total Oxidised Nitrogen	mg/l	0.24	0.25	0.10	0.15	0.10	0.11	0.15					
Arsenic	mg/l												
Barium	mg/l												
Boron	ug/l												
Flouride	mg/l												
Phenol	mg/l												
Phosphorous	mg/l												
Selenium	mg/l												
Silver	mg/l												
Microtox	Toxic Units												
Nitrite	mg/l	0.426	0.071	<0.03	<0.03	<0.03	0.030	0.035					
Nitrate	mg/l	1.0033	1.0210	0.440	0.640	0.411	0.428	0.630					
Phosphate - ORTHO	mg/l	0.005	0.026	0.010	0.035	0.003	0.015	0.021					
Phosphate - TOTAL	mg/l												
Total Coliforms													
Facel Coliforms													
Depth	m												

--- not applicable

*** insufficient sample/ no access

Location		Drumaboden, Kilmacrennan, Co Donegal											
Sample Type		surface water											
Site No		SW4											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1417	1608	2187	2469	2749	3489	3860					
pH		7.42	7.16	7.44	7.49	7.03	7.12	6.76					
Temp	C	9.12	9.65	13.20	13.80	15.20	18.00	16.90					
Electrical Conductivity	uS/cm	122	117	140	109	101	118	109					
Ammonical Nitrogen	mg/l	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01					
COD	mg/l	3	0	17		11	35	27					
BOD	mg/l	1.64	1.34	0.87	0.45	0.35	0.74	1.10					
Dissolved Oxygen	mg/l	12.25	12.03	10.13	10.10	10.41	9.70	9.20					
SS	mg/l	0.60	0.8	0.6		5.2	1.3						
Residue on Evaporator	mg/l												
Calcium	ug/l												
Cadmium	ug/l												
Chromium	ug/l												
Chloride	mg/l			29		26	25						
Chlorine	mg/l												
Copper	ug/l												
Cyanide	mg/l												
Total Iron	ug/l												
Lead	ug/l												
Magnesium	ug/l												
Manganese	ug/l												
Mercury	ug/l												
Nickel	mg/l												
Potassium	mg/l												
Sodium	mg/l												
Sulphate as S	mg/l												
Zinc	ug/l												
Total Alkalinity as CaCO3	mg/l												
Total Organic Carbon	mg/l												
Total Oxidised Nitrogen	mg/l	0.26	0.18	0.16	0.13	0.09	0.10	0.16					
Arsenic	mg/l												
Barium	mg/l												
Boron	ug/l												
Flouride	mg/l												
Phenol	mg/l												
Phosphorous	mg/l												
Selenium	mg/l												
Silver	mg/l												
Microtox	Toxic Units												
Microtox	Toxic Units												
Nitrite	mg/l	0.095		<0.03	<0.03	<0.03	<0.03	0.049					
Nitrate	mg/l	1.0166		0.670	0.550	0.380	0.360	0.710					
Phosphate - ORTHO	mg/l	<0.0001		0.004	0.046	<0.0001	0.001	0.019					
Phosphate - TOTAL	mg/l												
Total Coliforms	mg/l												
Facel Coliforms	mg/l												
Depth	m												

--- not applicable

***insufficient sample/ No Access

Location		Drumaboden, Kilmacrennan, Co Donegal											
Sample Type		surface water											
Site No		SW5											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1418	1609	2188	2470	2750	3490	3861	---	---	---	---	---
pH	C	7.21	7.29	7.45	7.36	7.14	7.30	6.85	---	---	---	---	---
Electrical Conductivity	uS/cm	118	116	139	112	100	117	106	---	---	---	---	---
Ammonical Nitrogen	mg/l	<0.01	---	<0.01	<0.01	0.02	0.01	<0.01	---	---	---	---	---
COD	mg/l	6	0	16	17	16	38	27	---	---	---	---	---
BOD	mg/l	1.29	1.87	0.81	1.11	0.72	0.96	1.09	---	---	---	---	---
Dissolved Oxygen	mg/l	11.81	12.59	10.16	10.02	10.56	9.60	9.00	---	---	---	---	---
SS	mg/l	0.80	0.4	1.2	---	5.4	1.6	---	---	---	---	---	---
Residue on Evaporator		---	---	---	---	---	---	---	---	---	---	---	---
Calcium	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Cadmium	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Chromium	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Chloride	mg/l	---	---	29	---	25	24	---	---	---	---	---	---
Chlorine	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Cyanide	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Iron	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Lead	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Manganese	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Mercury	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Nickel	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Sodium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Sulphate as S	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Zinc	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Organic Carbon	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Oxidised Nitrogen	mg/l	0.22	0.20	0.18	0.12	0.09	0.19	0.20	---	---	---	---	---
Arsenic	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Barium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Boron	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Flouride	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Phenol	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Phosphorous	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Silver	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Microtox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Microtox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Nitrite	mg/l	<0.03	---	<0.03	<0.03	<0.03	0.046	0.090	---	---	---	---	---
Nitrate	mg/l	0.2120	---	0.1710	0.5100	0.3900	0.7600	0.7500	---	---	---	---	---
Phosphate - ORTHO	mg/l	<0.01	---	<0.01	<0.0001	0.004	0.005	0.003	---	---	---	---	---
Phosphate - TOTAL	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Coliforms	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Facel Coliforms	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Depth	m	---	---	---	---	---	---	---	---	---	---	---	---

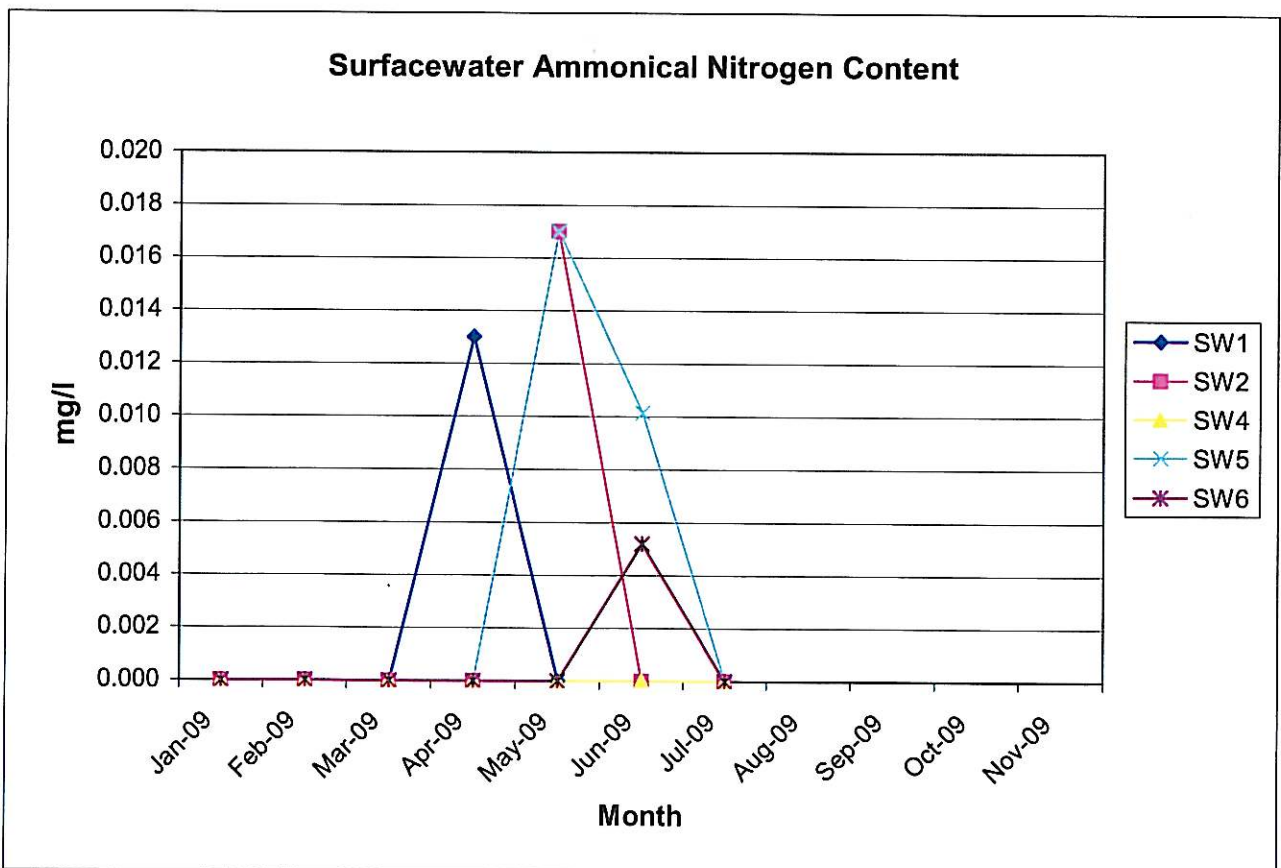
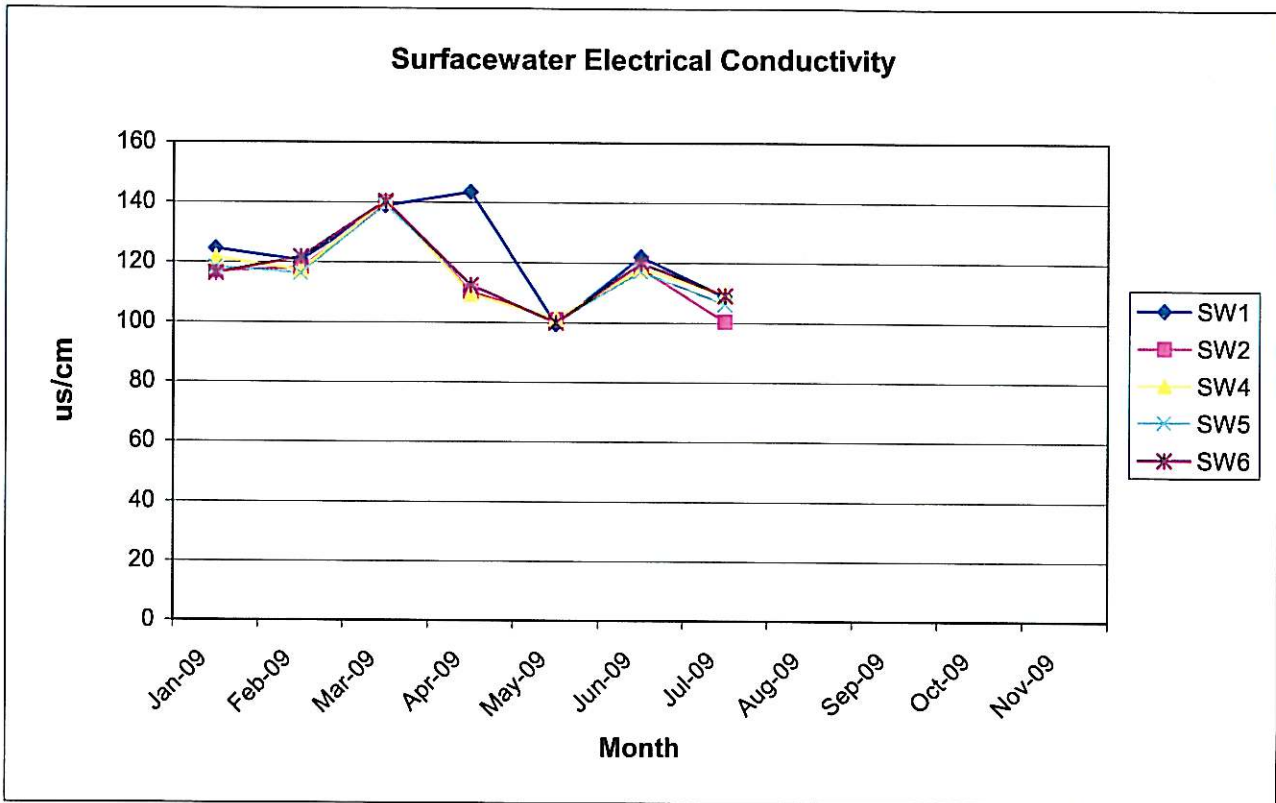
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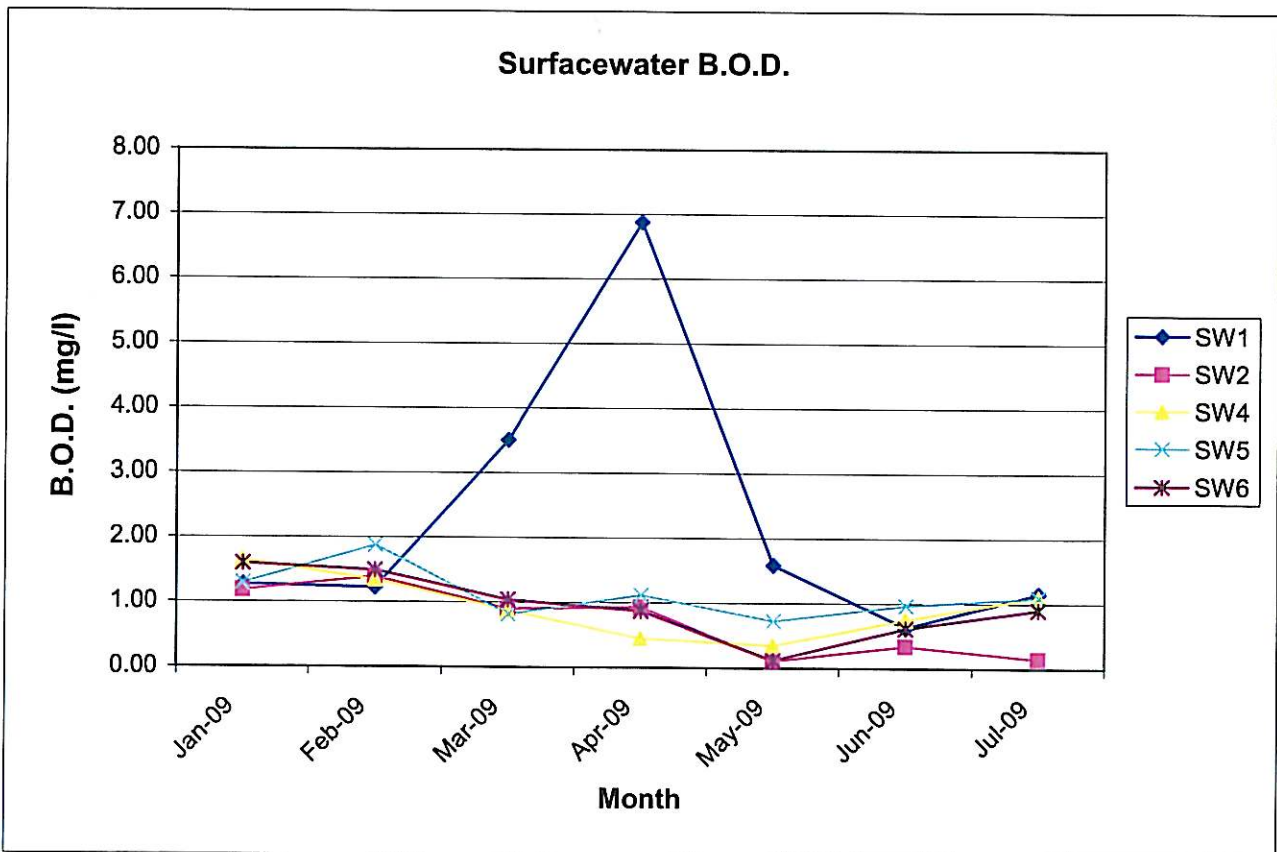
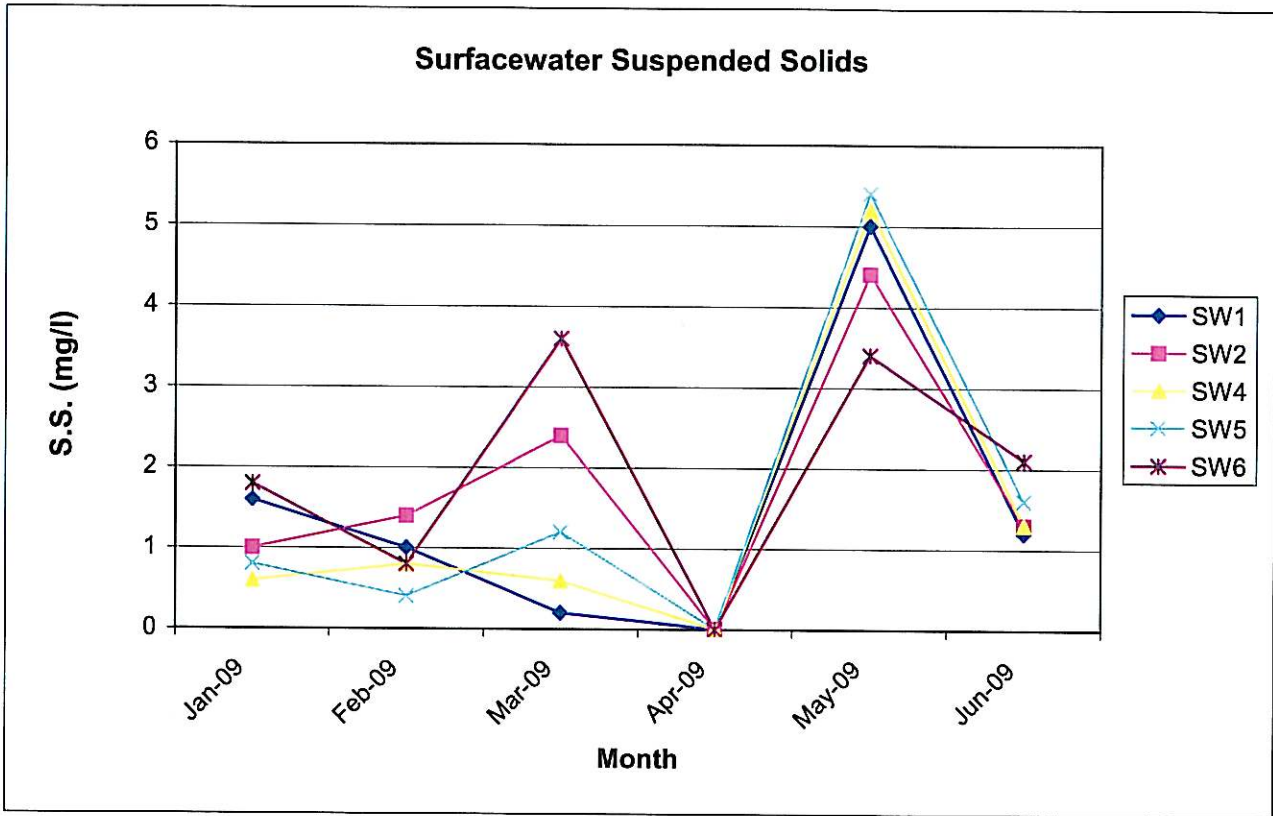
***:insufficient sample/ no access

Location		Drumaboden, Kilmacrennan, Co Donegal											
Sample Type		surface water											
Site No		SW6											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1419	1610	2189	2471	2751	3491	3862	---	---	---	---	---
pH		7.33	7.31	7.46	7.33	7.16	7.97	6.86	---	---	---	---	---
Temp	C	9.16	10.44	13.40	15.10	15.40	18.00	17.00	---	---	---	---	---
Electrical Conductivity	uS/cm	116	122	140	112	100	120	109	---	---	---	---	---
Ammonical Nitrogen	mg/l	<0.01	---	<0.01	<0.01	<0.01	0.01	<0.01	---	---	---	---	---
GOD	mg/l	12	0	10	19	17	38	25	---	---	---	---	---
BOD	mg/l	1.59	1.49	1.04	0.87	0.12	0.61	0.90	---	---	---	---	---
Dissolved Oxygen	mg/l	12.96	11.70	10.02	9.91	10.58	9.80	9.50	---	---	---	---	---
SS	mg/l	1.80	0.8	3.6	---	3.4	2.1	---	---	---	---	---	---
Residue on Evaporator	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Calcium	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Cadmium	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Chromium	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Chloride	mg/l	---	---	30	---	27	24	---	---	---	---	---	---
Chlorine	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Cyanide	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Iron	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Lead	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Manganese	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Mercury	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Nickel	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Sodium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Sulphate as S	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Zinc	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Organic Carbon	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Oxidised Nitrogen	mg/l	0.22	---	0.16	0.09	0.09	0.20	0.19	---	---	---	---	---
Arsenic	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Barium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Boron	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Flouride	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Phenol	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Phosphorous	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Silver	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Microtox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Microtox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Nitrite	mg/l	<0.03	---	<0.03	<0.03	<0.03	0.046	0.040	---	---	---	---	---
Nitrate	mg/l	0.9503	---	0.690	0.370	0.380	0.809	0.770	---	---	---	---	---
Phosphate - ORTHO	mg/l	<0.0001	---	<0.0001	0.015	<0.0001	0.013	0.069	---	---	---	---	---
Phosphate - TOTAL	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Coliforms	---	---	---	---	---	---	---	---	---	---	---	---	---
Facal Coliforms	---	---	---	---	---	---	---	---	---	---	---	---	---
Depth	m	---	---	---	---	---	---	---	---	---	---	---	---

--- not applicable

***: insufficient sample/ no access





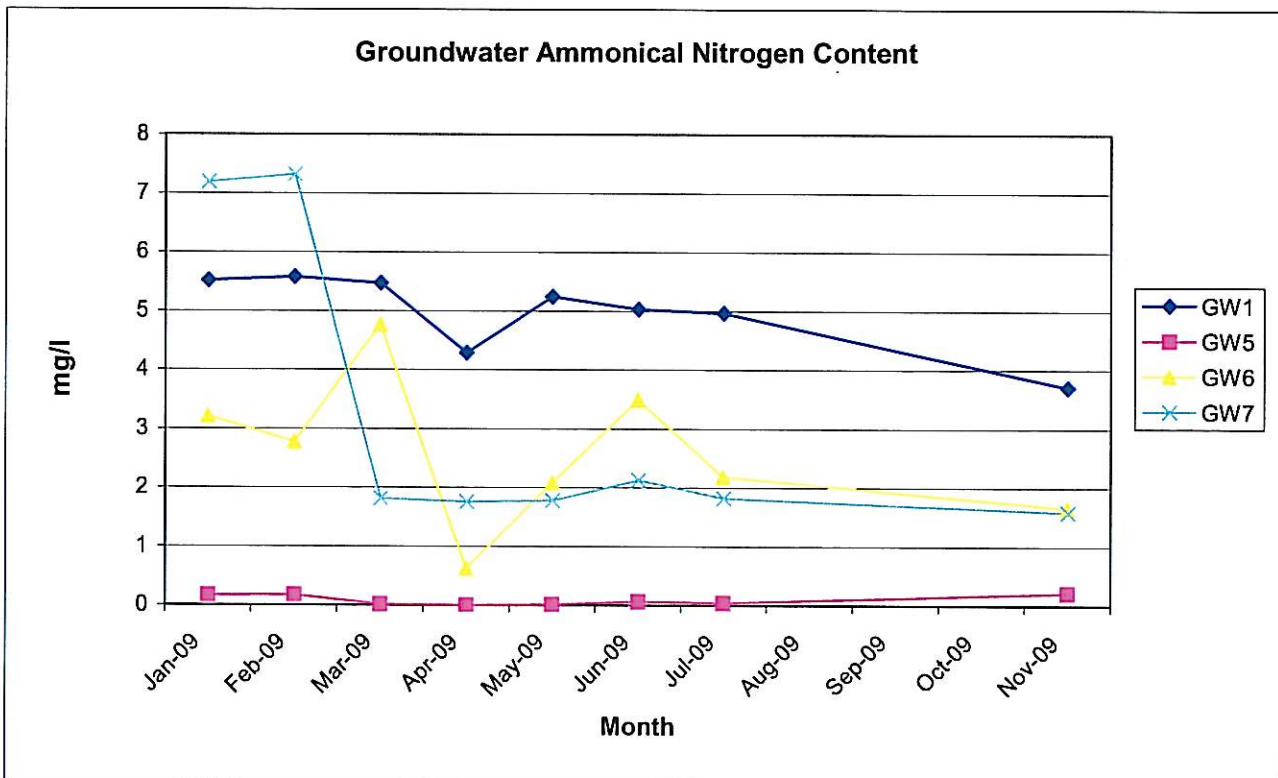
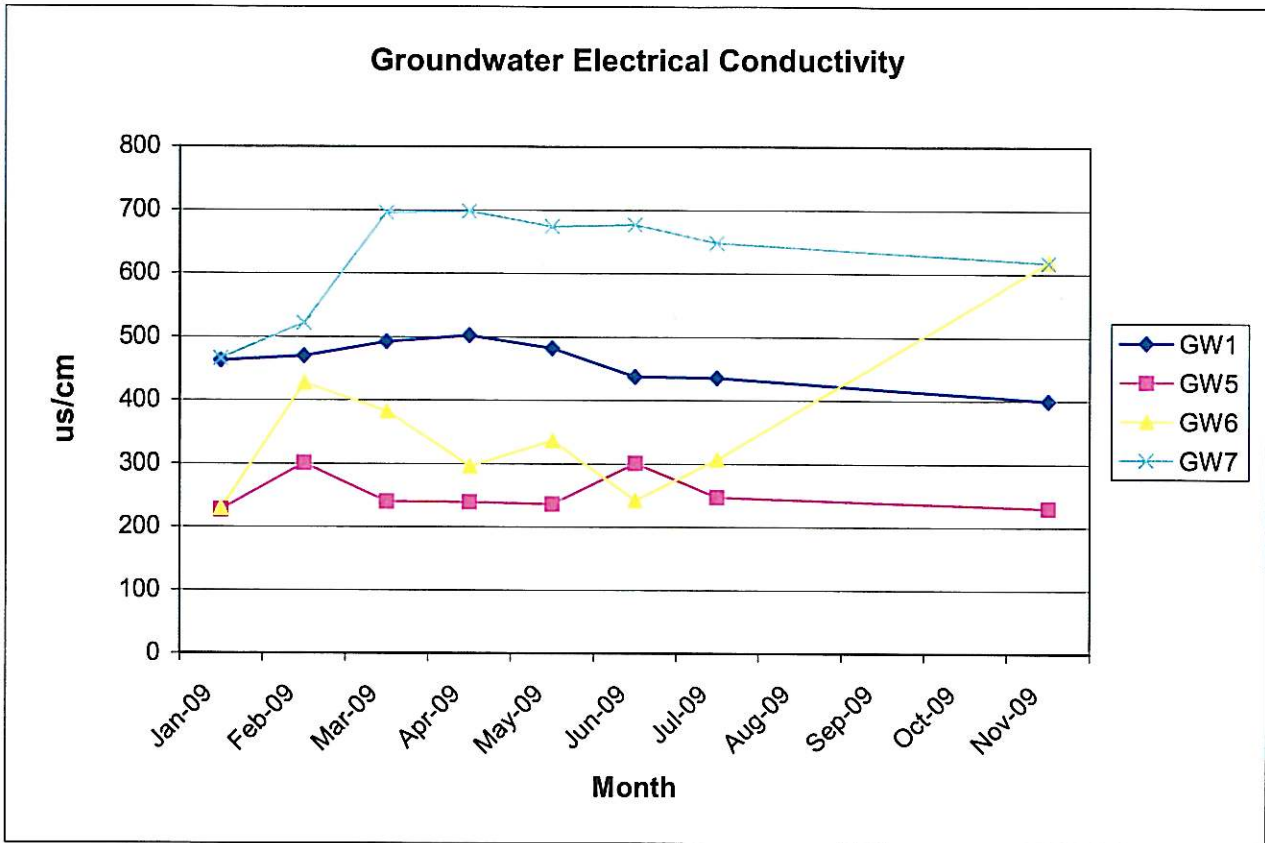
Location		Drumaboden, Kilmacrennan, Co Donegal											
Sample Type		groundwater											
Site No		GW1											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1420	1611	2190	2472	2752	3492	3863				6095	
pH		6.89	6.56	6.75	6.60	6.76	6.50	6.91				6.94	
Temp	C	11.37	12.09	13.60	13.00	14.20	19.40	17.40				9.90	
Electrical Conductivity	uS/cm	462.00	469	492	502	482	437	435				399	
Ammonical Nitrogen	mg/l	5.51	5.57	5.47	4.28	5.24	5.03	4.96				3.70	
COD	mg/l				0								
BOD	mg/l												
Dissolved Oxygen	mg/l	1.98	3.13	3.07	1.91	1.93	1.03	1.40				4.73	
SS	mg/l	404.00	231.5	194.0			249.0						
Residue on Evaporator	mg/l											333	
Calcium	ug/l											31	
Cadmium	ug/l											<0.22	
Chromium	ug/l											<3	
Chloride	mg/l			30			30						
Chlorine	mg/l												
Copper	ug/l												
Cyanide	mg/l											2.72	
Total Iron	ug/l	11000.00			1.30			0.59				<0.05	
Lead	ug/l											<0.019	
Magnesium	ug/l											<0.4	
Manganese	ug/l											16.5000	
Mercury	ug/l											217.0000	
Nickel	mg/l											<0.01	
Potassium	mg/l	1.70			<2.34			<2.34				<1.5	
Sodium	mg/l	19.00			17.10			16.80				<2.34	
Sulphate as S	mg/l											17.6000	
Zinc	ug/l											<3	
Total Alkalinity as CaCO3	mg/l											6.41	
Total Organic Carbon	mg/l	17.69											
Total Oxidised Nitrogen	mg/l	<0.01	0.01	<0.01	0.03	<0.01	0.003	0.05				0.45	
Arsenic	mg/l											<0.75	
Barium	mg/l											75.6000	
Boron	ug/l											<18	
Flouride	mg/l											<0.5	
Phenol	mg/l	<0.01			<0.016			<0.015				<0.025	
Phosphorous	mg/l											<105	
Selenium	mg/l											<1	
Silver	mg/l												
Microtox	Toxic Units												
Microtox	Toxic Units												
Nitrite	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				<0.03	
Nitrate	mg/l	<0.04	0.04	<0.04	0.1500	<0.04	<0.04	0.2000				0.4400	
Phosphate - ORTHO	mg/l	0.05	0.06	0.050	0.039	0.050	0.059	0.054				<0.01	
Phosphate - TOTAL	mg/l				<0.01							<0.01	
Total Coliforms		0			<0.01			<0.01				<0.01	
Facel Coliforms		0			<0.01			<0.01				<0.01	
Depth	m	0.30	0.40	0.40	0.50	0.52	0.60	0.50	0.50			0.60	

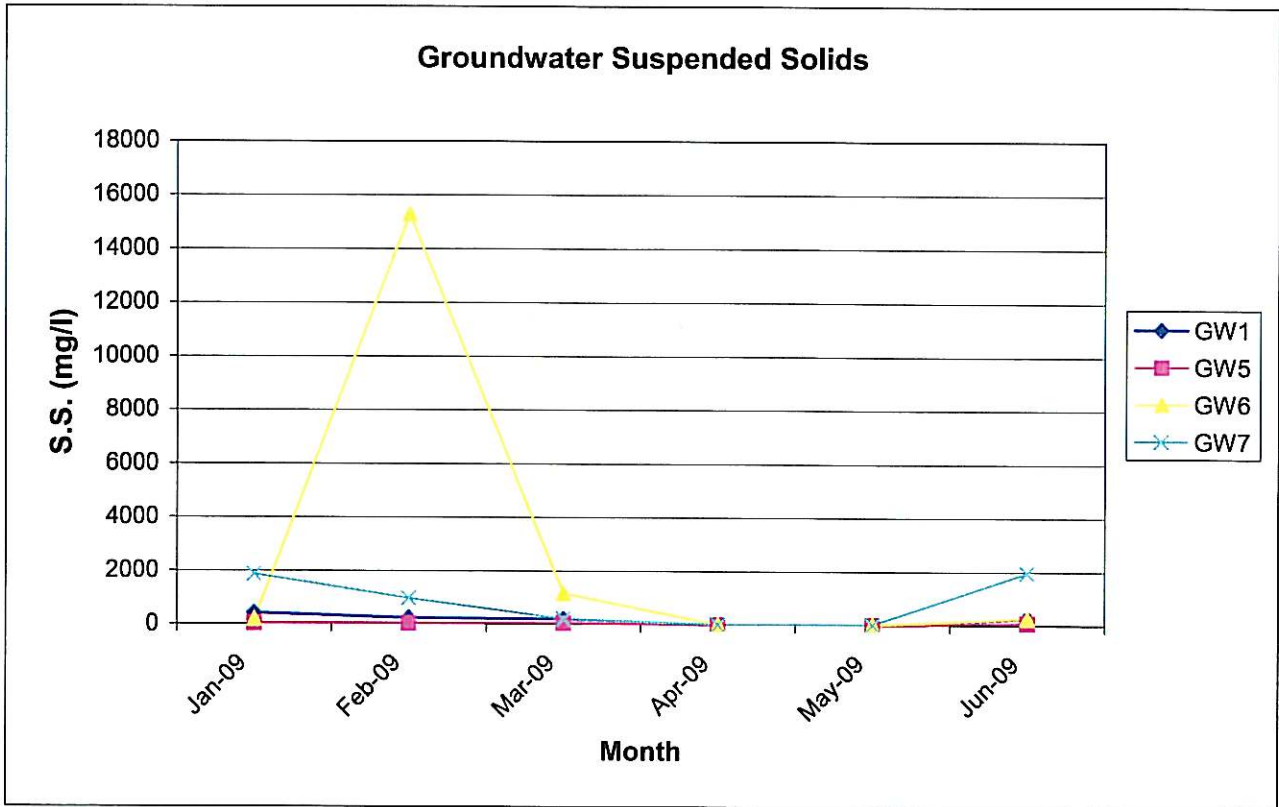
--- not applicable

Location		Drumaboden, Kilmacrennan, Co Donegal											
Sample Type		groundwater											
Site No		GW5											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1424	1615	2194	2476	2756	3496	3867				6096	
pH		7.92	7.15	8.20	8.54	8.20	8.20	7.44				8.55	
Temp	C	10.91	11.65	13.50	12.40	13.70	18.60	16.70				8.60	
Electrical Conductivity	uS/cm	227	301	240	239	236	301	247				230	
Ammonical Nitrogen	mg/l	0.17	0.17	0.02	<0.01	0.01	0.06	0.04				0.22	
COD	mg/l												
BOD	mg/l												
Dissolved Oxygen	mg/l	2.46	3.17	2.99	3.22	3.27	2.00	3.90				1.55	
SS	mg/l	34.20	39.00	50.00			81.00						
Residue on Evaporator	mg/l											202	
Calcium	ug/l											14	
Cadmium	ug/l											<0.22	
Chromium	ug/l											<3	
Chloride	mg/l			35			37					31	
Chlorine	mg/l												
Copper	ug/l												
Cyanide	mg/l											<1.6	
Total Iron	ug/l	850.00			<0.019			<0.019				<0.05	
Lead	ug/l											<0.4	
Magnesium	ug/l											4.39	
Manganese	ug/l											58.50	
Mercury	ug/l											<0.01	
Nickel	mg/l											<1.5	
Potassium	mg/l	1.7000			<2.34			<2.34				<2.34	
Sodium	mg/l	41.0000			35.10			34.90				38.00	
Sulphate as S	mg/l											<3	
Zinc	ug/l											<5	
Total Alkalinity as CaCO3	mg/l												
Total Organic Carbon	mg/l	0.8783											
Total Oxidised Nitrogen	mg/l	0.03	0.01	0.05	<0.01	<0.01	0.02	0.08				<0.01	
Arsenic	mg/l											1.12	
Barium	mg/l											6.96	
Boron	ug/l											<18	
Flouride	mg/l											<0.5	
Phenol	mg/l	<0.01			<0.016			<0.015				<0.025	
Phosphorous	mg/l											<105	
Selenium	mg/l											<1	
Silver	mg/l												
Microtox	Toxic Units												
Microtox	Toxic Units												
Nitrite	mg/l	<0.03	0.036	<0.03	<0.03	<0.03	<0.03	0.430				<0.03	
Nitrate	mg/l	0.093	<0.04	0.200	<0.04	<0.04	0.058	0.290					
Phosphate - ORTHO	mg/l	0.026	0.015	0.039	0.050	0.050	0.041	<0.0001				<0.01	
Phosphate - TOTAL	mg/l												
Total Coliforms	mg/l	0			<0.01			<0.01				<0.01	
Facel Coliforms		0			<0.01			<0.01				<0.01	
Depth	m	0.50	0.40	1.00	1.10	1.10	1.00	0.90	1.10			1.20	

Location		Drumaboden, Kilmacrennan, Co Donegal											
Sample Type		groundwater											
Site No		GW6											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1425	1616	2195	2477	2757	3497	3868				6097	
pH		7.32	7.89	6.50	6.80	6.25	6.30	6.78				6.75	
Temp	C	10.99	12.78	13.50	13.00	13.90	18.90	18.70				8.60	
Electrical Conductivity	uS/cm	229	427	382	296	336	242	307				619	
Ammonical Nitrogen	mg/l	3.21	2.77	4.76	0.62	2.07	3.49	2.18				1.65	
COD	mg/l												
BOD	mg/l												
Dissolved Oxygen	mg/l	6.72	4.69	0.62	5.53	2.90	4.10	4.60				0.45	
SS	mg/l	188	15280	1163			265						
Residue on Evaporator	mg/l											482	
Calcium	ug/l											31	
Cadmium	ug/l											<0.22	
Chromium	ug/l											<3	
Chloride	mg/l			30			39					34	
Chlorine	mg/l												
Copper	ug/l											4.12	
Cyanide	mg/l											<0.05	
Total Iron	ug/l	18000.00			0.82			<0.019				<0.019	
Lead	ug/l											<0.4	
Magnesium	ug/l											5.69	
Manganese	ug/l											2380.00	
Mercury	ug/l											<0.01	
Nickel	mg/l											2.3900	
Potassium	mg/l	1.8000			<2.34			6				<2.34	
Sodium	mg/l	21.0000			15			14				13.70	
Sulphate as S	mg/l											<3	
Zinc	ug/l											7.06	
Total Alkalinity as CaCO3	mg/l												
Total Organic Carbon	mg/l	7.7438											
Total Oxidised Nitrogen	mg/l	0.48	0.83	0.30	0.17	0.01	<0.01	0.02				<0.01	
Arsenic	mg/l											<0.75	
Barium	mg/l											79.50	
Boron	ug/l											<18	
Flouride	mg/l											<0.5	
Phenol	mg/l	<0.01			0.03			<0.015				<0.025	
Phosphorous	mg/l											<105	
Selenium	mg/l											<1	
Silver	mg/l												
Microtox	mg/l												
Toxic Units													
Microtox	Toxic Units												
Nitrite	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				<0.03	
Nitrate	mg/l	2.1172	3.67	1.3400	0.7400	<0.04	<0.04	0.8000					
Phosphate - ORTHO	mg/l	0.046	0.058	0.182	0.1	0.050	0.054	0.041				<0.01	
Phosphate - TOTAL	mg/l												
Total Coliforms	mg/l	0			<0.01			<0.01				<0.01	
Facel Coliforms	mg/l	0			<0.01			<0.01				<0.01	
Depth	m	0.40	0.60	1.10	1.00	1.30	1.50	1.20	1.30			1.40	

Location		Drumaboden, Kilmacrennan, Co Donegal											
Sample Type		groundwater											
Site No		GW7											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1426	1617	2196	2478	2758	3498	3869				6098	
pH		7.15	6.93	6.68	6.69	6.76	6.90	6.90				6.74	
Temp	C	11.84	13.53	13.40	12.90	14.90	19.00	18.70				8.50	
Electrical Conductivity	uS/cm	465	521	695	697	674	677	648				617	
Ammonical Nitrogen	mg/l	7.19	7.31	1.81	1.75	1.77	2.12	1.82				1.58	
COD	mg/l												
BOD	mg/l												
Dissolved Oxygen	mg/l	2.71	2.99	1.79	1.23	1.04	1.50	1.30				1.71	
SS	mg/l	1850.0	959	200			1940						
Residue on Evaporator	mg/l											433.00	
Calcium	ug/l											149.00	
Cadmium	ug/l											<0.22	
Chromium	ug/l											<3	
Chloride	mg/l			24			36					40.00	
Chlorine	mg/l												
Copper	ug/l											<1.6	
Cyanide	mg/l											<0.05	
Total Iron	ug/l	3400.00			0.62			<0.019				<0.019	
Lead	ug/l											<0.4	
Magnesium	ug/l											10.00	
Manganese	ug/l											614.00	
Mercury	ug/l											<0.01	
Nickel	mg/l											2.30	
Potassium	mg/l	1.5000			5.1			<2.34				3.98	
Sodium	mg/l	20.0000			15.7			19.3				14.50	
Sulphate as S	mg/l											<3	
Zinc	ug/l											<5	
Total Alkalinity as CaCO3	mg/l												
Total Organic Carbon	mg/l	8.3150											
Total Oxidised Nitrogen	mg/l	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				<0.01	
Arsenic	mg/l											1.31	
Barium	mg/l											2800.00	
Boron	ug/l											<18	
Flouride	mg/l											<0.5	
Phenol	mg/l	<0.01			<0.016			<0.015				<0.025	
Phosphorous	mg/l											<105	
Selenium	mg/l											<1	
Silver	mg/l												
Microtox	Toxic Units												
Microtox	Toxic Units												
Nitrite	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				<0.03	
Nitrate	mg/l	0.0682	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04				<0.01	
Phosphate - ORTHO	mg/l	0.29	0.31	0.05	0.05	0.05	0.04	0.05				<0.01	
Phosphate - TOTAL	mg/l												
Total Coliforms	mg/l	0			<0.01			<0.01				<0.01	
Facal Coliforms	mg/l	0			<0.01			<0.01				<0.01	
Depth	m	0.42	0.35	0.70	0.60	0.70	0.80	0.90	0.80			0.70	



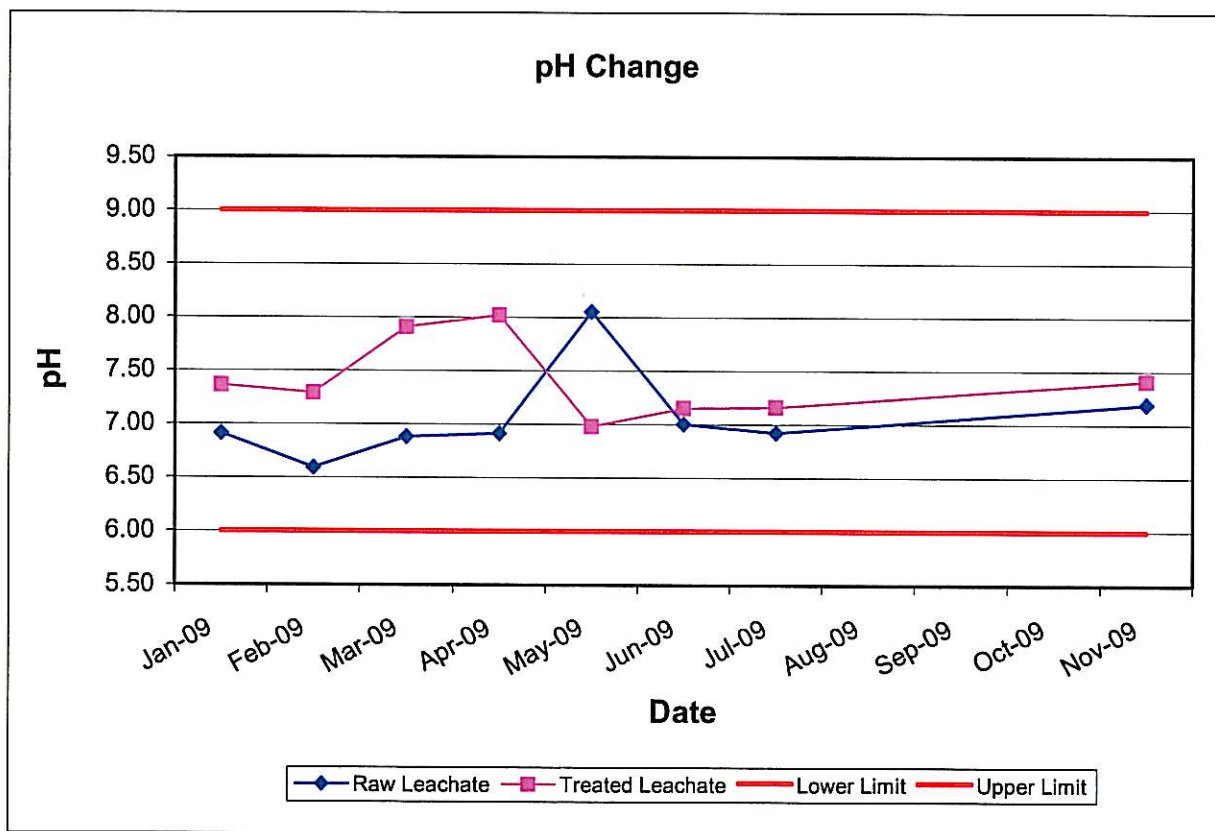


Location		Drumaboden, Kilmacrennan, Co Donegal											
Sample Type		leachate											
Site No		L1 (Outlet)											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1428	1619	2197	2479	2759	3500	3879				6103	
pH		7.36	7.29	7.91	8.02	6.98	7.15	7.16				7.41	
Temp	C	10.71	12.86	13.60	14.00	14.00	18.41	18.40				10.30	
Electrical Conductivity	uS/cm	1603	1976	1777	1619	913	1838	1664				1262	
Ammonical Nitrogen	mg/l	44.50	42.80	30.00	22.76	20.79	38.97	35.42				16.27	
COD	mg/l	59	60	36	24	32	96	46				14	
BOD	mg/l	—	1.43	1.40	1.50	1.75	4.50	<0.01				0.02	
Dissolved Oxygen	mg/l	10.47	10.15	9.36	9.50	1.07	5.34	6.70					
SS	mg/l	251.0	369.0	11.0			326.0						
Residue on Evaporator	mg/l												
Calcium	ug/l												
Cadmium	ug/l											156	
Chromium	ug/l											<0.22	
Chloride	mg/l			93			95					<3	
Chlorine	mg/l											92	
Copper	ug/l												
Cyanide	mg/l											2.92	
Total Iron	ug/l											<0.05	
Lead	ug/l											<0.019	
Magnesium	ug/l											<0.4	
Manganese	ug/l											40.80	
Mercury	ug/l											693.00	
Nickel	mg/l											<0.01	
Potassium	mg/l											44.70	
Sodium	mg/l											64.60	
Sulphate as S	mg/l											34.00	
Zinc	ug/l											<5	
Total Alkalinity as CaCO3	mg/l												
Total Organic Carbon	mg/l												
Total Oxidised Nitrogen	mg/l	6.70	4.19	1.74	0.38	1.89	8.40	7.61				4.45	
Arsenic	mg/l												
Barium	mg/l												
Boron	ug/l												
Flouride	mg/l												
Phenol	mg/l												
Phosphorous	mg/l												
Selenium	mg/l												
Silver	mg/l												
Micrtox	mg/l												
Micrtox	Toxic Units												
Nitrite	mg/l	0.886	0.200	<0.03	<0.03	0.098	4.360	3.840				0.300	
Nitrate	mg/l	28.4206	18.26	7.69	1.66	8.25	31.25	28.46				4.1500	
Phosphate - ORTHO	mg/l	0.230	0.06	0.19	0.39	0.05	0.26	0.10				<0.01	
Phosphate - TOTAL	mg/l												
Total Coliforms													
Facel Coliforms													
Depth	m												

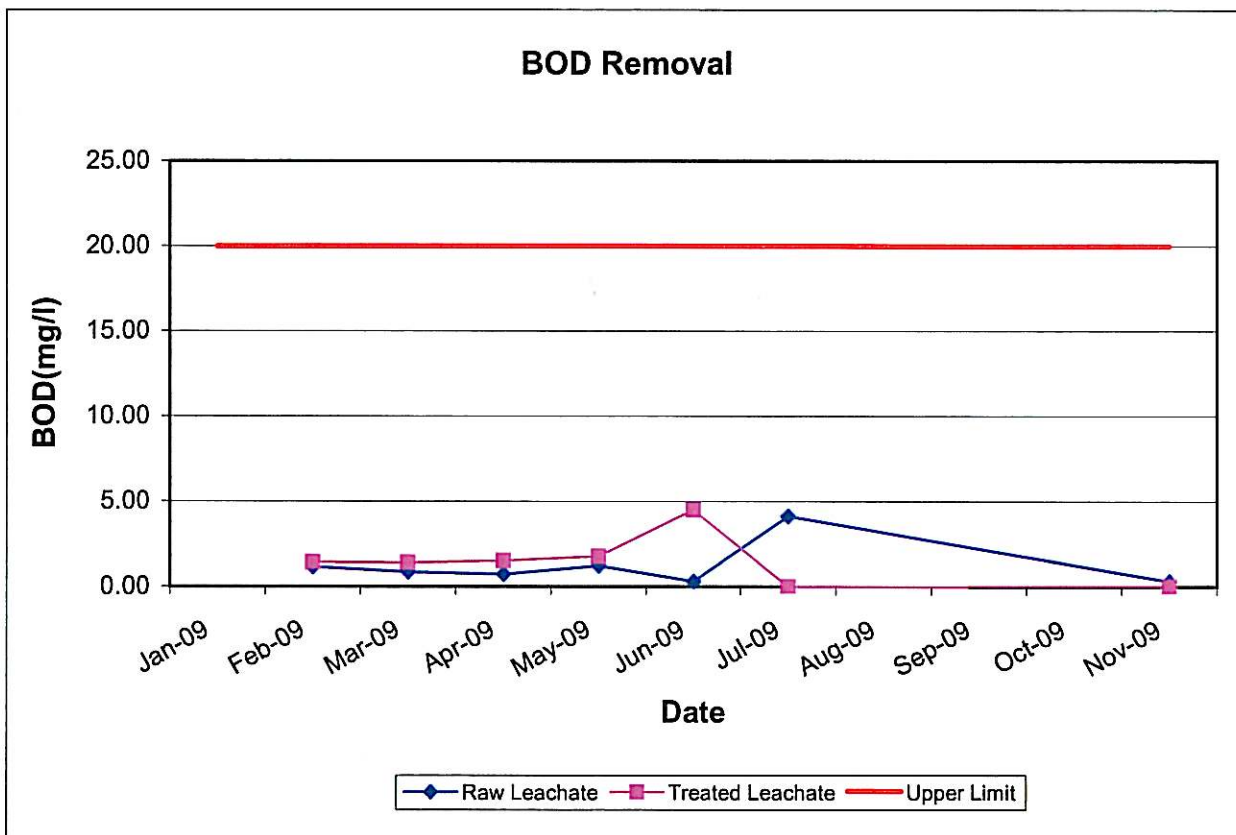
Location		Drumaboden, Kilmacrennan, Co Donegal											
Sample Type		leachate											
Site No		L2 (Intake)											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1427	1618	2198	2480	2760	3499	3878				6102	
pH		6.91	6.59	6.88	6.91	8.05	7.00	6.92				7.19	
Temp	C	10.08	11.15	13.60	13.30	14.20	18.14	18.61				10.30	
Electrical Conductivity	uS/cm	1493	2019	1249	978	1597	1679	1411				885	
Ammonical Nitrogen	mg/l	40.90	38.59	48.52	35.00	55.75	46.80	43.80				17.91	
COD	mg/l	56	51	66	53	62	60	35				22	
BOD	mg/l		1.15	0.85	0.72	1.21	0.30	4.10				0.30	
Dissolved Oxygen	mg/l	2.90	2.56	0.76	2.79	7.54	0.34	3.94					
SS	mg/l	95.0	87.0	73.6			96.0						
Residue on Evaporator	mg/l												
Calcium	ug/l											122	
Cadmium	ug/l											<0.22	
Chromium	ug/l											<3	
Chloride	mg/l			71			81					89	
Chlorine	mg/l												
Copper	ug/l											6.97	
Cyanide	mg/l											<0.05	
Total Iron	ug/l											<0.019	
Lead	ug/l											<0.4	
Magnesium	ug/l											23.00	
Manganese	ug/l											577.00	
Mercury	ug/l											<0.01	
Nickel	mg/l												
Potassium	mg/l											27.60	
Sodium	mg/l											37.00	
Sulphate as S	mg/l											50.90	
Zinc	ug/l											<5	
Total Alkalinity as CaCO3	mg/l												
Total Organic Carbon	mg/l												
Total Oxidised Nitrogen	mg/l	0.58	0.93	5.14	4.61	5.15	0.07	<0.01				0.06	
Arsenic	mg/l												
Barium	mg/l												
Boron	ug/l											326.00	
Flouride	mg/l											<0.5	
Phenol	mg/l												
Phosphorous	mg/l												
Selenium	mg/l												
Silver	mg/l												
Microtox	mg/l												
Microtox	Toxic Units												
Nitrite	mg/l	<0.03	<0.03	<0.03	0.430	0.095	0.557	<0.03				<0.03	
Nitrate	mg/l	2.5636	4.12	22.7200	19.810	21.490	<0.04	<0.04				0.0600	
Phosphate - ORTHO	mg/l	0.230	0.06	0.190	0.050	0.050	0.05	0.160				0.040	
Phosphate - TOTAL	mg/l												
Total Coliforms	mg/l												
Facal Coliforms	mg/l												
Depth	m												

---- not applicable

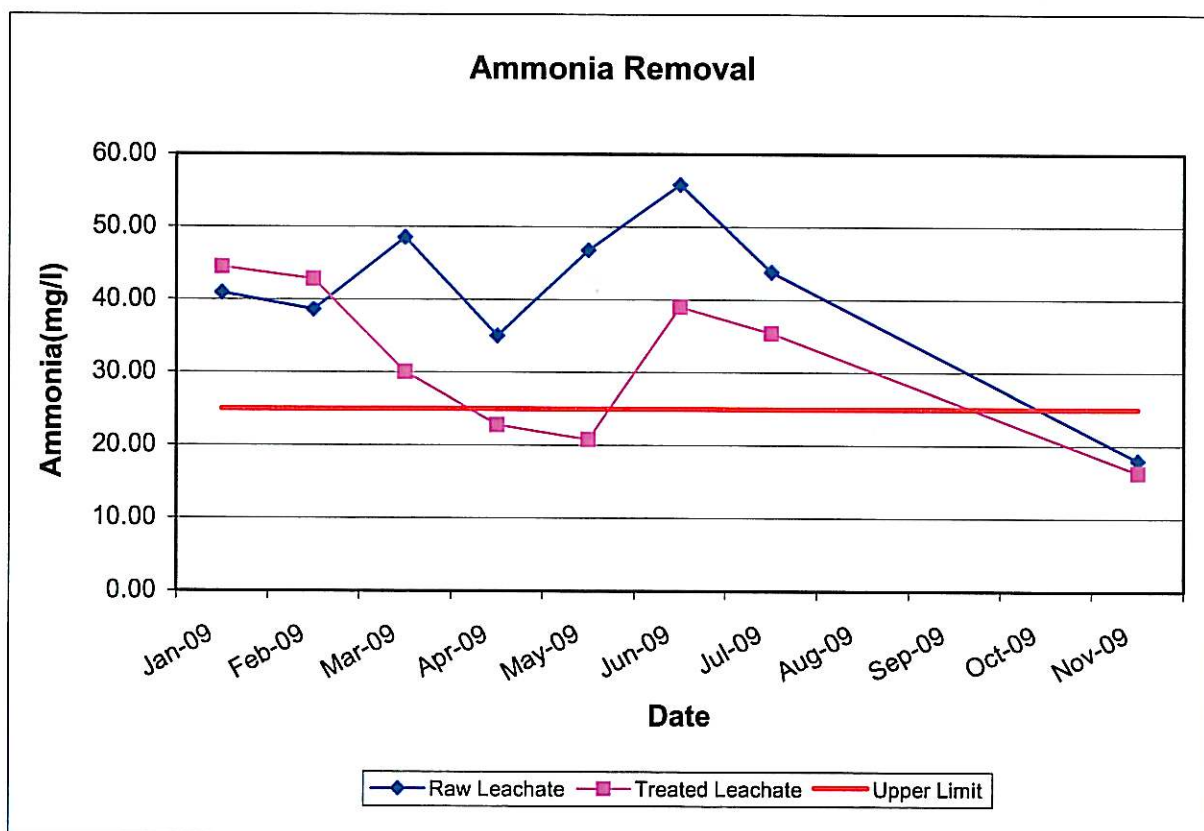
pH				
Date	Raw Leachate	Treated Leachate	Lower Limit	Upper Limit
Jan-09	6.91	7.36	6	9
Feb-09	6.59	7.29	6	9
Mar-09	6.88	7.91	6	9
Apr-09	6.91	8.02	6	9
May-09	8.05	6.98	6	9
Jun-09	7.00	7.15	6	9
Jul-09	6.92	7.16	6	9
Nov-09	7.19	7.41	6	9



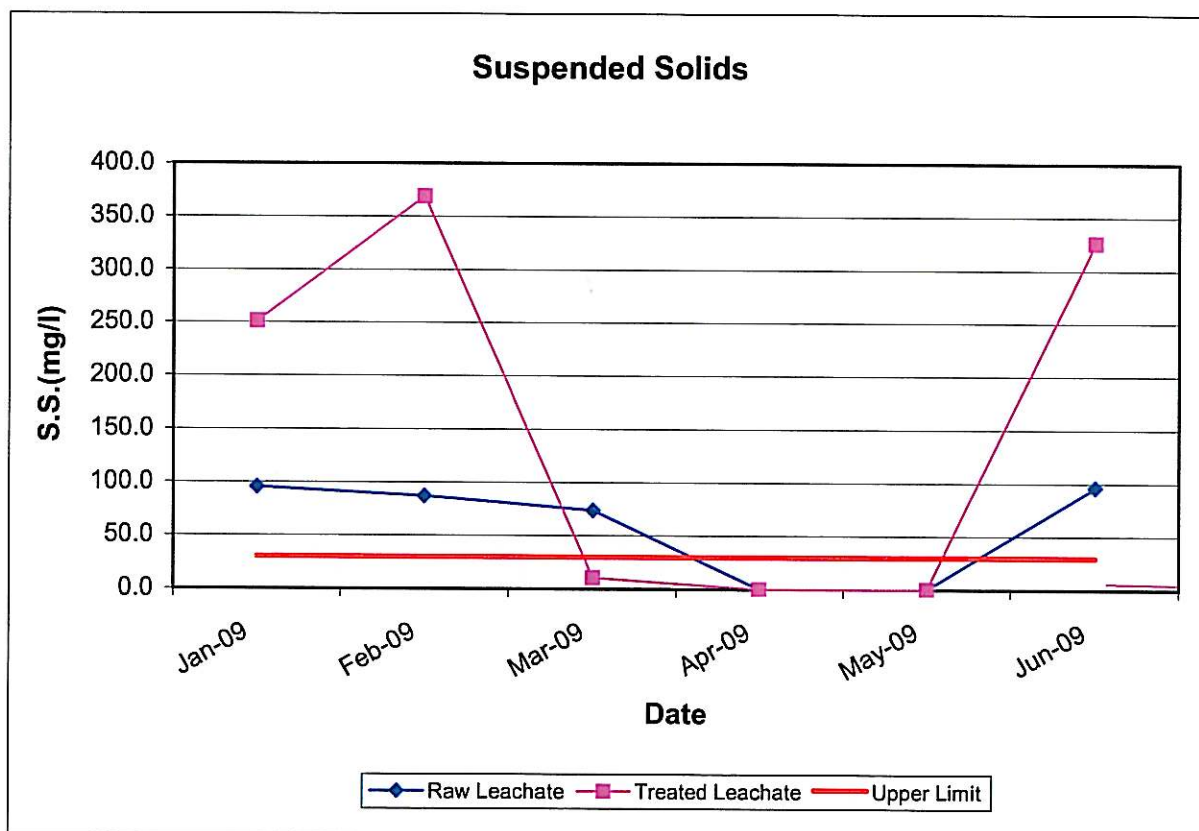
BOD				
Date	Raw Leachate	Treated Leachate	Lower Limit	Upper Limit
Jan-09				20
Feb-09	1.15	1.425		20
Mar-09	0.85	1.4		20
Apr-09	0.72	1.5		20
May-09	1.21	1.75		20
Jun-09	0.30	4.5		20
Jul-09	4.10	<0.01		20
Nov-09	0.30	0.02		20



Ammonical Nitrogen				
Date	Raw Leachate	Treated Leachate	Lower Limit	Upper Limit
Jan-09	40.90	44.50		25
Feb-09	38.59	42.80		25
Mar-09	48.52	30.00		25
Apr-09	35.00	22.76		25
May-09	46.80	20.79		25
Jun-09	55.75	38.97		25
Jul-09	43.80	35.42		25
Nov-09	17.91	16.27		25



Suspended Solids				
Date	Raw Leachate	Treated Leachate	Lower Limit	Upper Limit
Jan-09	95.0	251.0		30
Feb-09	87.0	369.0		30
Mar-09	73.6	11.0		30
Apr-09	---	---		30
May-09	---	---		30
Jun-09	96.0	326.0		30



Location		<i>Drumaboden Landfill, Kilmacrennan Co Donegal</i>											
Sample Type		Landfill Gas levels											
Site No		LG1											
Date of Sample	Units	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
Jan-09		Water	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	
	%	Water	12.9	15.2	17.3	15.7	17.1	18.2	27.6	24.2	42.5	51.1	
	%	Logged	10.2	9.4	11.2	12.7	10.2	9.9	14.7	12.1	36.1	43.1	
	%	Water	2.3	5.6	1.6	3.8	4.1	2.0	3.0	2.4	0.4	0.0	
	mBar	Logged	1010.0	998.0	1005	1009	997.0	1001.0	1002.0	998.0	1005.0	996.0	

Location		Drumaboden Landfill, Kilmacrennan Co Donegal											
Sample Type		Landfill Gas levels											
Site No		LG2											
Date of Sample													
Parameters	Units	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
Methane	%	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09
Carbon Dioxide	%	Water	Water	0.4	0.7	0.5	0.5	0.2	0.6	0.1	0.3	0.6	0.5
Oxygen	%	Logged	Logged	1.4	1.2	1.0	1.6	1.9	1.0	2.3	3.3	2.4	1.1
Atmos. Pressure	mBar	Water	Water	18.3	17.4	19.1	16.2	19.4	18.8	18.6	17.2	16.9	18.3
		Logged	Logged	1010.0	998.0	1005	1009	997.0	1001.0	1002.0	998.0	1005.0	996.0

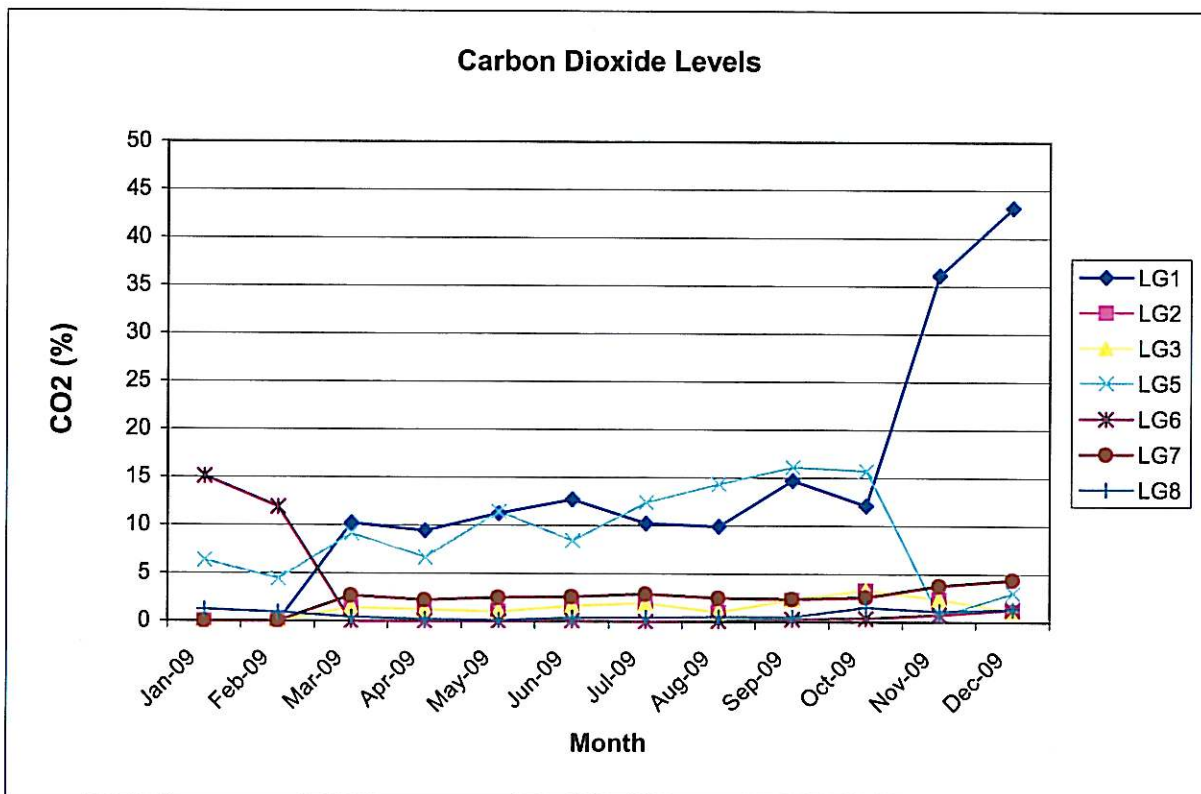
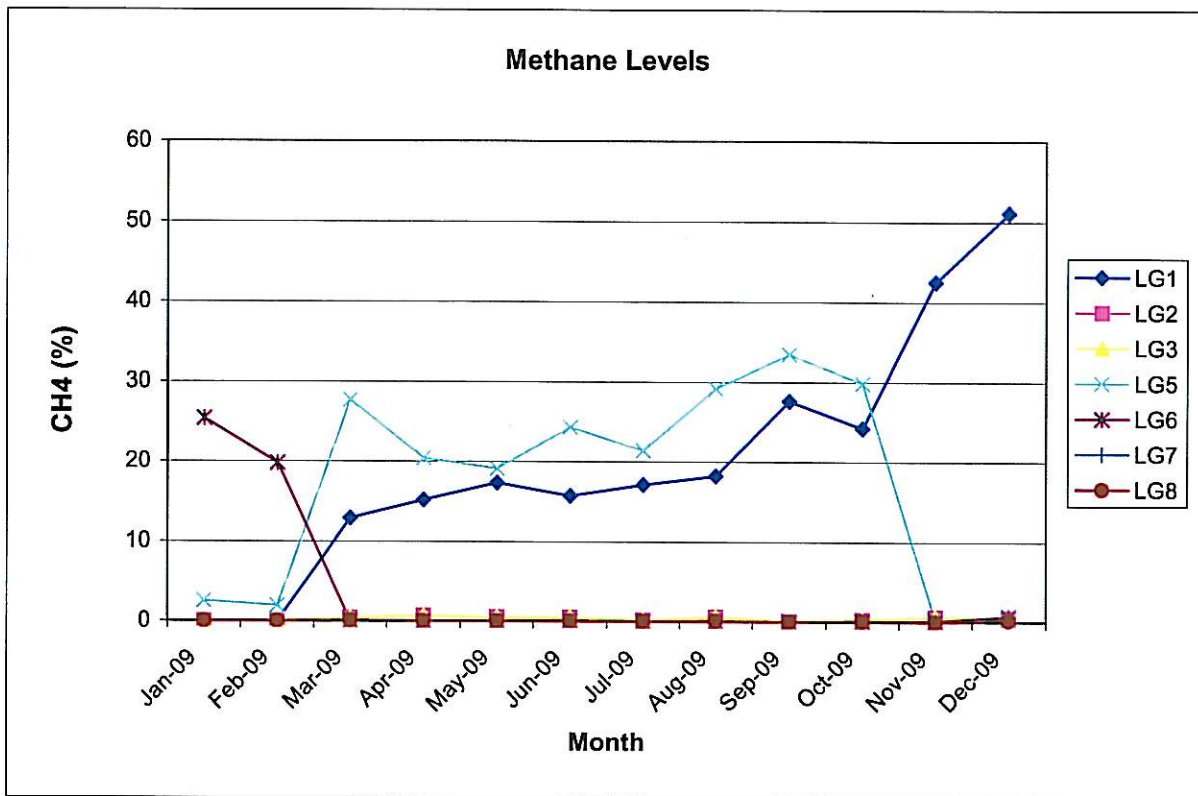
Location		Drumaboden Landfill, Kilmacrennan Co Donegal											
Sample Type		Landfill Gas levels											
Site No		LG3											
Date of Sample													
Parameters	Units	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
Methane	%	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09
Carbon Dioxide	%	Water	Water	0.4	0.7	0.5	0.5	0.2	0.6	0.1	0.3	0.6	0.5
Oxygen	%	Logged	Logged	1.4	1.2	1.0	1.6	1.9	1.0	2.3	3.3	2.4	1.1
Atmos. Pressure	mBar	Water	Water	18.3	17.4	19.1	16.2	19.4	18.8	18.6	17.2	16.9	18.3
		Logged	Logged	1010.0	998.0	1005	1009	997.0	1001.0	1002.0	998.0	1005.0	996.0

Location		<i>Drumabodan Landfill, Kilmacrennan Co Donegal</i>											
Sample Type		Landfill Gas levels											
Site No		LG5											
Date of Sample													
Parameters	Units	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
Methane	%	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09
Carbon Dioxide	%	2.5	1.9	27.7	20.4	19.1	24.3	21.4	29.1	33.4	29.8	0.2	0.3
Oxygen	%	6.3	4.4	9.1	6.6	11.4	8.4	12.4	14.3	16.1	15.7	0.6	3.0
Atmos. Pressure	mBar	12.0	13.3	4.1	3.9	2.9	2.0	1.6	2.1	1.6	1.9	9.4	8.7
		985.0	1009.0	1010.0	998.0	1005	1009	997.0	1001.0	1002.0	998.0	1005.0	996.0

Location		<i>Drumabodan Landfill, Kilmacrennan Co Donegal</i>											
Sample Type		Landfill Gas levels											
Site No		LG6											
Date of Sample		Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
Parameters	Units	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09
Methane	%	25.4	19.8	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.7
Carbon Dioxide	%	15.1	11.9	0.0	0.0	0.0	0.1	0.0	0.1	0.3	0.4	0.8	1.3
Oxygen	%	8.8	8.1	21.0	21.0	21.0	19.9	20.0	19.0	20.1	20.6	19.4	15.4
Atmos. Pressure	mBar	985.0	1009.0	1010.0	998.0	1005	1009	997.0	1001.0	1002.0	998.0	1005.0	996.0

Location		<i>Drumaboden Landfill, Kilmacrennan Co Donegal</i>												
Sample Type		Landfill Gas levels												
Site No		LG7												
Date of Sample	Units	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
		Jan-09	Water	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Methane	%	Feb-09	Water	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
Carbon Dioxide	%		Logged	2.7	2.5	2.6	2.9	2.5	2.4	2.5	2.6	2.6	3.8	4.4
Oxygen	%		Water	18.3	19.2	20.2	20.9	20.9	19.3	20.9	18.2	16.8	17.5	17.5
Atmos. Pressure	mBar		Logged	1010.0	1005	1009	997.0	1001.0	1002.0	1001.0	998.0	1005.0	996.0	996.0

Location		<i>Drumaboden Landfill, Kilmacrennan Co Donegal</i>											
Sample Type		Landfill Gas levels											
Site No		LG8											
Date of Sample													
Parameters	Units	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
Methane	%	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09
Carbon Dioxide	%	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.2
Oxygen	%	1.2	0.9	0.4	0.2	0.1	0.4	0.4	0.5	0.5	1.5	1.1	1.3
Atmos. Pressure	mBar	16.4	13.9	20.7	20.8	20.9	21.0	20.1	19.4	19.7	20.1	19.3	20.0
		985.0	1009.0	1010.0	998.0	1005	1009	997.0	1001.0	1002.0	998.0	1005.0	996.0



VOLATILE ORGANIC COMPOUNDS		<i>Drumaboden Landfill, Kilmacrennan Co. Donegal</i>	
Month			
Location	GW1		
Lab No			
PARAMETERS	UNITS	PARAMETERS	UNITS
Dichlorodifluoromethane	<1.3	1,2-Dibromoethane	<2.3
Chloromethane	<1.7	Tetrachloroethene	<1.5
Vinyl Chloride	<1.2	1,1,1,2-Tetrachloroethane	<1.3
Bromomethane	<2	Chlorobenzene	<3.5
Chloroethane	<2.5	Ethylbenzene	<2.5
Trichlorofluoromethane	<1.3	p/m-Xylene	<2.5
trans-1,2-Dichloroethene	<1.9	Bromoform	<3
Dichloromethane	<3.7	Styrene	<1.2
Carbon disulphide	<1.3	1,1,2,2-Tetrachloroethane	<5.2
1,1-Dichloroethene	<1.2	o-Xylene	<1.7
1,1-Dichloroethane	<1.2	1,2,3-Trichloropropane	<7.8
tert-butyl methyl ether	<1	Isopropylbenzene	<1.4
cis-1,2-Dichloroethene	<2.3	Bromobenzene	<2
Bromochloromethane	<1.9	2-Chlorotoluene	<1.9
Chloroform	<1.8	Propylbenzene	<2.6
2,2-Dichloropropane	<3.8	4-Chlorotoluene	<1.9
1,2-Dichloroethane	<3.3	1,2,4-Trimethylbenzene	<1.7
1,1,1-Trichloroethane	<1.3	4-Isopropyltoluene	<2.6
1,1-Dichloropropene	<1.3	1,3,5-Trimethylbenzene	<1.8
Benzene	<1.3	1,3-Dichlorobenzene	<2.2
Carbontetrachloride	<1.4	1,4-Dichlorobenzene	<2.7
Dibromomethane	<2.7	sec-Butylbenzene	<1.7
1,2-Dichloropropane	<3	tert-Butylbenzene	<2
Bromodichloromethane	<0.9	1,2-Dichlorobenzene	<3.7
Trichloroethene	<2.5	n-Butylbenzene	<2
cis-1,3-Dichloropropene	<1.9	1,2-Dibromo-3-chloropropane	<9.8
trans-1,3-Dichloropropene	<3.5	1,2,4-Trichlorobenzene	<2.3
1,1,2-Trichloroethane	<2.2	Naphthalene	<3.5
Toluene	<1.4	1,2,3-Trichlorobenzene	<3.1
1,3-Dichloropropane	<2.2	Hexachlorobutadiene	<2.5
Dibromochloromethane	<1.7		

SEMI-VOLATILE ORGANIC COMPOUNDS		Drumaboden Landfill, Co. Donegal	
Month		Kilmacrennan	
Location	GW1		
Lab No			
PARAMETERS	UNITS	PARAMETERS	UNITS
Phenol	<1	Benzo(k)fluoranthrene	<1
2-Chlorophenol	<1	Benzo(a)pyrene	<1
2-Methylphenol	<1	Indeno(1,2,3-cd)pyrene	<1
4-Methylphenol	<1	Dibenzo(a,h)anthracene	<1
2-Nitrophenol	<1	Benzo(ghi)perylene	<1
4-Nitrophenol	<1	2-Chloronaphthalene	<1
2,4-Dichlorophenol	<1	2-Methylnaphthalene	<1
2,4-Dimethylphenol	<1	Carbazole	<1
4-Chloro-3-methylphenol	<1	Isophorone	<1
2,4,6-Trichlorophenol	<1	Dibenzofuran	<1
2,4,5-Trichlorophenol	<1	Dimethyl phthalate	<1
Pentachlorophenol	<1	Diethyl phthalate	<1
1,3-Dichlorobenzene	<1	Di-n-butylphthalate	<1
1,4-Dichlorobenzene	<1	Di-n-octylphthalate	<1
1,2-Dichlorobenzene	<1	Bis(2-ethylhexyl)phthalate	<1
1,2,4-Trichlorobenzene	<1	Butylbenzylphthalate	<1
Nitrobenzene	<1	4-Chloroaniline	<1
Azobenzene	<1	2-Nitroaniline	<1
Hexachlorobenzene	<1	3-Nitroaniline	<1
Naphthalene	<1	4-Nitroaniline	<1
Acenaphthylene	<1	2,4-Dinitrotoluene	<1
Acenaphthene	<1	2,6-Dinitrotoluene	<1
Fluorene	<1	Bis(2-chloroethyl)ether	<1
Phenanthrene	<1	4-Bromophenylphenylether	<1
Anthracene	<1	4-Chlorophenylphenylether	<1
Fluoranthrene	<1	Hexachloroethane	<1
Pyrene	<1	Hexachlorobutadiene	<1
Benzo(a)anthracene	<1	Hexchlorocyclopentadiene	<1
Chrysene	<1	Bis(2-chloroethoxy)methane	<1
Benzo(b)fluoranthrene	<1	N-nitrosodi-n-propylamine	<1

VOLATILE ORGANIC COMPOUNDS		<i>Drumaboden Landfill, Co. Donegal</i> <i>Kllmacrennan</i>	
Month			
Location	GW5		
Lab No			
PARAMETERS	UNITS	PARAMETERS	UNITS
Dichlorodifluoromethane	<1.3	1,2-Dibromoethane	<2.3
Chloromethane	<1.7	Tetrachloroethene	<1.5
Vinyl Chloride	<1.2	1,1,1,2-Tetrachloroethane	<1.3
Bromomethane	<2	Chlorobenzene	<3.5
Chloroethane	<2.5	Ethylbenzene	<2.5
Trichlorofluoromethane	<1.3	p/m-Xylene	<2.5
trans-1,2-Dichloroethene	<1.9	Bromoform	<3
Dichloromethane	<3.7	Styrene	<1.2
Carbon disulphide	<1.3	1,1,2,2-Tetrachloroethane	<5.2
1,1-Dichloroethene	<1.2	o-Xylene	<1.7
1,1-Dichloroethane	<1.2	1,2,3-Trichloropropane	<7.8
tert-butyl methyl ether	<1	Isopropylbenzene	<1.4
cis-1,2-Dichloroethene	<2.3	Bromobenzene	<2
Bromochloromethane	<1.9	2-Chlorotoluene	<1.9
Chloroform	<1.8	Propylbenzene	<2.6
2,2-Dichloropropane	<3.8	4-Chlorotoluene	<1.9
1,2-Dichloroethane	<3.3	1,2,4-Trimethylbenzene	<1.7
1,1,1-Trichloroethane	<1.3	4-Isopropyltoluene	<2.6
1,1-Dichloropropene	<1.3	1,3,5-Trimethylbenzene	<1.8
Benzene	<1.3	1,3-Dichlorobenzene	<2.2
Carbontetrachloride	<1.4	1,4-Dichlorobenzene	<2.7
Dibromomethane	<2.7	sec-Butylbenzene	<1.7
1,2-Dichloropropane	<3	tert-Butylbenzene	<2
Bromodichloromethane	<0.9	1,2-Dichlorobenzene	<3.7
Trichloroethene	<2.5	n-Butylbenzene	<2
cis-1,3-Dichloropropene	<1.9	1,2-Dibromo-3-chloropropane	<9.8
trans-1,3-Dichloropropene	<3.5	1,2,4-Trichlorobenzene	<2.3
1,1,2-Trichloroethane	<2.2	Naphthalene	<3.5
Toluene	<1.4	1,2,3-Trichlorobenzene	<3.1
1,3-Dichloropropane	<2.2	Hexachlorobutadiene	<2.5
Dibromochloromethane	<1.7		

SEMI-VOLATILE ORGANIC COMPOUNDS		<i>Drumaboden Landfill, Kilmacrennan Co. Donegal</i>	
Month			
Location	GW5		
Lab No			
PARAMETERS	UNITS	PARAMETERS	UNITS
Phenol	<1	Benzo(k)fluoranthrene	<1
2-Chlorophenol	<1	Benzo(a)pyrene	<1
2-Methylphenol	<1	Indeno(1,2,3-cd)pyrene	<1
4-Methylphenol	<1	Dibenzo(a,h)anthracene	<1
2-Nitrophenol	<1	Benzo(ghi)perylene	<1
4-Nitrophenol	<1	2-Chloronaphthalene	<1
2,4-Dichlorophenol	<1	2-Methylnaphthalene	<1
2,4-Dimethylphenol	<1	Carbazole	<1
4-Chloro-3-methylphenol	<1	Isophorone	<1
2,4,6-Trichlorophenol	<1	Dibenzofuran	<1
2,4,5-Trichlorophenol	<1	Dimethyl phthalate	<1
Pentachlorophenol	<1	Diethyl phthalate	<1
1,3-Dichlorobenzene	<1	Di-n-butylphthalate	<1
1,4-Dichlorobenzene	<1	Di-n-octylphthalate	<1
1,2-Dichlorobenzene	<1	Bis(2-ethylhexyl)phthalate	<1
1,2,4-Trichlorobenzene	<1	Butylbenzylphthalate	<1
Nitrobenzene	<1	4-Chloroaniline	<1
Azobenzene	<1	2-Nitroaniline	<1
Hexachlorobenzene	<1	3-Nitroaniline	<1
Naphthalene	<1	4-Nitroaniline	<1
Acenaphthylene	<1	2,4-Dinitrotoluene	<1
Acenaphthene	<1	2,6-Dinitrotoluene	<1
Fluorene	<1	Bis(2-chloroethyl)ether	<1
Phenanthrene	<1	4-Bromophenylphenylether	<1
Anthracene	<1	4-Chlorophenylphenylether	<1
Fluoranthrene	<1	Hexachloroethane	<1
Pyrene	<1	Hexachlorobutadiene	<1
Benzo(a)anthracene	<1	Hexchlorocyclopentadiene	<1
Chrysene	<1	Bis(2-chloroethoxy)methane	<1
Benzo(b)fluoranthrene	<1	N-nitrosodi-n-propylamine	<1

VOLATILE ORGANIC COMPOUNDS		Drumaboden Landfill, Kilmacrennan Co. Donegal	
Month			
Location	GW6		
Lab No			
PARAMETERS	UNITS	PARAMETERS	UNITS
Dichlorodifluoromethane	<1.3	1,2-Dibromoethane	<2.3
Chloromethane	<1.7	Tetrachloroethene	<1.5
Vinyl Chloride	<1.2	1,1,1,2-Tetrachloroethane	<1.3
Bromomethane	<2	Chlorobenzene	<3.5
Chloroethane	<2.5	Ethylbenzene	<2.5
Trichlorofluoromethane	<1.3	p/m-Xylene	<2.5
trans-1,2-Dichloroethene	<1.9	Bromoform	<3
Dichloromethane	<3.7	Styrene	<1.2
Carbon disulphide	<1.3	1,1,2,2-Tetrachloroethane	<5.2
1,1-Dichloroethene	<1.2	o-Xylene	<1.7
1,1-Dichloroethane	<1.2	1,2,3-Trichloropropane	<7.8
tert-butyl methyl ether	<1	Isopropylbenzene	<1.4
cis-1,2-Dichloroethene	<2.3	Bromobenzene	<2
Bromochloromethane	<1.9	2-Chlorotoluene	<1.9
Chloroform	<1.8	Propylbenzene	<2.6
2,2-Dichloropropane	<3.8	4-Chlorotoluene	<1.9
1,2-Dichloroethane	<3.3	1,2,4-Trimethylbenzene	<1.7
1,1,1-Trichloroethane	<1.3	4-Isopropyltoluene	<2.6
1,1-Dichloropropene	<1.3	1,3,5-Trimethylbenzene	<1.8
Benzene	<1.3	1,3-Dichlorobenzene	<2.2
Carbontetrachloride	<1.4	1,4-Dichlorobenzene	<2.7
Dibromomethane	<2.7	sec-Butylbenzene	<1.7
1,2-Dichloropropane	<3	tert-Butylbenzene	<2
Bromodichloromethane	<0.9	1,2-Dichlorobenzene	<3.7
Trichloroethene	<2.5	n-Butylbenzene	<2
cis-1,3-Dichloropropene	<1.9	1,2-Dibromo-3-chloropropane	<9.8
trans-1,3-Dichloropropene	<3.5	1,2,4-Trichlorobenzene	<2.3
1,1,2-Trichloroethane	<2.2	Naphthalene	<3.5
Toluene	<1.4	1,2,3-Trichlorobenzene	<3.1
1,3-Dichloropropane	<2.2	Hexachlorobutadiene	<2.5
Dibromochloromethane	<1.7		

SEMI-VOLATILE ORGANIC COMPOUNDS		<i>Drumaboden Landfill, Co. Donegal</i> <i>Kilmacrennan</i>	
Month			
Location	GW6		
Lab No			
PARAMETERS	UNITS	PARAMETERS	UNITS
Phenol	<1	Benzo(k)fluoranthrene	<1
2-Chlorophenol	<1	Benzo(a)pyrene	<1
2-Methylphenol	<1	Indeno(1,2,3-cd)pyrene	<1
4-Methylphenol	<1	Dibenzo(a,h)anthracene	<1
2-Nitrophenol	<1	Benzo(ghi)perylene	<1
4-Nitrophenol	<1	2-Chloronaphthalene	<1
2,4-Dichlorophenol	<1	2-Methylnaphthalene	<1
2,4-Dimethylphenol	<1	Carbazole	<1
4-Chloro-3-methylphenol	<1	Isophorone	<1
2,4,6-Trichlorophenol	<1	Dibenzofuran	<1
2,4,5-Trichlorophenol	<1	Dimethyl phthalate	<1
Pentachlorophenol	<1	Diethyl phthalate	<1
1,3-Dichlorobenzene	<1	Di-n-butylphthalate	<1
1,4-Dichlorobenzene	<1	Di-n-octylphthalate	<1
1,2-Dichlorobenzene	<1	Bis(2-ethylhexyl)phthalate	<1
1,2,4-Trichlorobenzene	<1	Butylbenzylphthalate	<1
Nitrobenzene	<1	4-Chloroaniline	<1
Azobenzene	<1	2-Nitroaniline	<1
Hexachlorobenzene	<1	3-Nitroaniline	<1
Naphthalene	<1	4-Nitroaniline	<1
Acenaphthylene	<1	2,4-Dinitrotoluene	<1
Acenaphthene	<1	2,6-Dinitrotoluene	<1
Fluorene	<1	Bis(2-chloroethyl)ether	<1
Phenanthrene	<1	4-Bromophenylphenylether	<1
Anthracene	<1	4-Chlorophenylphenylether	<1
Fluoranthrene	<1	Hexachloroethane	<1
Pyrene	<1	Hexachlorobutadiene	<1
Benzo(a)anthracene	<1	Hexchlorocyclopentadiene	<1
Chrysene	<1	Bis(2-chloroethoxy)methane	<1
Benzo(b)fluoranthrene	<1	N-nitrosodi-n-propylamine	<1

VOLATILE ORGANIC COMPOUNDS		Drumaboden Landfill, Co. Donegal Kilmacrennan	
Month			
Location	GW7		
Lab No			
PARAMETERS	UNITS	PARAMETERS	UNITS
Dichlorodifluoromethane	<1.3	1,2-Dibromoethane	<2.3
Chloromethane	<1.7	Tetrachloroethene	<1.5
Vinyl Chloride	<1.2	1,1,1,2-Tetrachloroethane	<1.3
Bromomethane	<2	Chlorobenzene	<3.5
Chloroethane	<2.5	Ethylbenzene	<2.5
Trichlorofluoromethane	<1.3	p/m-Xylene	<2.5
trans-1,2-Dichloroethene	<1.9	Bromoform	<3
Dichloromethane	<3.7	Styrene	<1.2
Carbon disulphide	<1.3	1,1,2,2-Tetrachloroethane	<5.2
1,1-Dichloroethene	<1.2	o-Xylene	<1.7
1,1-Dichloroethane	<1.2	1,2,3-Trichloropropane	<7.8
tert-butyl methyl ether	<1	Isopropylbenzene	<1.4
cis-1,2-Dichloroethene	<2.3	Bromobenzene	<2
Bromochloromethane	<1.9	2-Chlorotoluene	<1.9
Chloroform	<1.8	Propylbenzene	<2.6
2,2-Dichloropropane	<3.8	4-Chlorotoluene	<1.9
1,2-Dichloroethane	<3.3	1,2,4-Trimethylbenzene	<1.7
1,1,1-Trichloroethane	<1.3	4-Isopropyltoluene	<2.6
1,1-Dichloropropene	<1.3	1,3,5-Trimethylbenzene	<1.8
Benzene	<1.3	1,3-Dichlorobenzene	<2.2
Carbontetrachloride	<1.4	1,4-Dichlorobenzene	<2.7
Dibromomethane	<2.7	sec-Butylbenzene	<1.7
1,2-Dichloropropane	<3	tert-Butylbenzene	<2
Bromodichloromethane	<0.9	1,2-Dichlorobenzene	<3.7
Trichloroethene	<2.5	n-Butylbenzene	<2
cis-1,3-Dichloropropene	<1.9	1,2-Dibromo-3-chloropropane	<9.8
trans-1,3-Dichloropropene	<3.5	1,2,4-Trichlorobenzene	<2.3
1,1,2-Trichloroethane	<2.2	Naphthalene	<3.5
Toluene	<1.4	1,2,3-Trichlorobenzene	<3.1
1,3-Dichloropropane	<2.2	Hexachlorobutadiene	<2.5
Dibromochloromethane	<1.7		

SEMI-VOLATILE ORGANIC COMPOUNDS		<i>Drumaboden Landfill, Co. Donegal</i> <i>Kilmacrennan</i>	
Month			
Location	GW7		
Lab No			
PARAMETERS	UNITS	PARAMETERS	UNITS
Phenol	<1	Benzo(k)fluoranthrene	<1
2-Chlorophenol	<1	Benzo(a)pyrene	<1
2-Methylphenol	<1	Indeno(1,2,3-cd)pyrene	<1
4-Methylphenol	<1	Dibenzo(a,h)anthracene	<1
2-Nitrophenol	<1	Benzo(ghi)perylene	<1
4-Nitrophenol	<1	2-Chloronaphthalene	<1
2,4-Dichlorophenol	<1	2-Methylnaphthalene	<1
2,4-Dimethylphenol	<1	Carbazole	<1
4-Chloro-3-methylphenol	<1	Isophorone	<1
2,4,6-Trichlorophenol	<1	Dibenzofuran	<1
2,4,5-Trichlorophenol	<1	Dimethyl phthalate	<1
Pentachlorophenol	<1	Diethyl phthalate	<1
1,3-Dichlorobenzene	<1	Di-n-butylphthalate	<1
1,4-Dichlorobenzene	<1	Di-n-octylphthalate	<1
1,2-Dichlorobenzene	<1	Bis(2-ethylhexyl)phthalate	<1
1,2,4-Trichlorobenzene	<1	Butylbenzylphthalate	<1
Nitrobenzene	<1	4-Chloroaniline	<1
Azobenzene	<1	2-Nitroaniline	<1
Hexachlorobenzene	<1	3-Nitroaniline	<1
Naphthalene	<1	4-Nitroaniline	<1
Acenaphthylene	<1	2,4-Dinitrotoluene	<1
Acenaphthene	<1	2,6-Dinitrotoluene	<1
Fluorene	<1	Bis(2-chloroethyl)ether	<1
Phenanthrene	<1	4-Bromophenylphenylether	<1
Anthracene	<1	4-Chlorophenylphenylether	<1
Fluoranthrene	<1	Hexachloroethane	<1
Pyrene	<1	Hexachlorobutadiene	<1
Benzo(a)anthracene	<1	Hexchlorocyclopentadiene	<1
Chrysene	<1	Bis(2-chloroethoxy)methane	<1
Benzo(b)fluoranthrene	<1	N-nitrosodi-n-propylamine	<1

APPENDIX B
WATER BALANCE CALCULATION

DRUMBODEN WATER BALANCE CALCULATION

Year	Active Phase		Rainfall		Temp Restored area		Temp Restored area		Restored area		Leachate		Cumulative	
			area	infiltration	area	infiltration	IRCA(m3)	IRCA(m3)	RCA(m2)	IRCA(m3)	Leachate produced	Lo(m3)	Leachate	Leachate
2009		Closed							40,500			4745		4745
Total			1171.70									4745		4745

Assumptions

IRCA=	Fully Capped/Restored area infiltration of rainfall estimated (2-10%) EPA Manual	10%	%
Landfill area	Area of landfill site.	40,500	m2
Rainfall Data	Data taken from Met Eireann Station Malin Head, Total Rainfall used.	1171.7	mm

APPENDIX C
E-PRTR Regulations
(AER Electronic Reporting System)

At the time of reporting the AER-PRTR return database for 2009 is not yet available for download. As such this return cannot yet be made. When the system is available for the 2009 period the return will be made and a copy of this forwarded to the Agency under separate cover.