

A REPORT BY ENVIROS CONSULTING LIMITED: JUNE 2009

**HOLMESTOWN WASTE
MANAGEMENT FACILITY**

ANNUAL ENVIRONMENTAL REPORT 2008



Quality Control Sheet

Publication title	Annual Environmental Report for Holmestown Waste Management Facility
Project number	WE0620040
Version	Final Report
Date	August 2009

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EXECUTIVE SUMMARY

This *Annual Environmental Report* has been prepared for Holmestown Waste Management Facility, Waste Licence 191-1, for the reporting period from **1 January 2008 to 31 December 2008 inclusive**. The report includes the information specified in Schedule H of the Waste Licence, Content of the Annual Environmental Report, in accordance with Waste Licensing - *Draft Guidance on Environmental Management Systems (EMS) and Reporting to the Agency, 1999*. The main topics discussed with this report are as follows:

- ◆ General Site Information
- ◆ Management and Staffing
- ◆ Reported Incidents and Complaints
- ◆ Development Works
- ◆ Waste Acceptance and Handling
- ◆ Emissions Management
- ◆ Environmental Nuisances
- ◆ Resource and Energy Consumption
- ◆ Environmental Monitoring and Emissions

The waste management facility commenced accepting waste on site on 29 April 2008 with the northern end of the landfill, namely Cells 3 + 4 in Phase 1, being used as the active tipping area. The total quantity of waste accepted at the facility for the reporting period 1st January to 31st December 2008 was 16,645,240 kgs.

An environmental management system was prepared for Holmestown Waste Management Facility in October 2008 consisting of the following elements:

- Schedule of Environmental Objectives and Targets
- Environmental Management Plan
- Corrective Action procedures
- Awareness and training Programme

A number of objectives and targets were developed for the facility which can be reviewed and updated where appropriate on an annual basis.

The majority of engineering works associated with the general development of the site including the preparation of Phase 1, Cells 1-4, were completed during 2006 and 2007. During the latter part of 2008 engineering works associated with the completion of Contract 3 (construction of head wall, swales, litter fencing, noise barriers etc) and snagging works were completed.

Wexford County Council carried out a comprehensive environmental monitoring programme during 2008, in compliance with the waste licence conditions. The monitoring programme included Landfill Gas, Leachate Level & Quality, Surface Water Quality, Groundwater Level & Quality, Noise and Dust monitoring, Odour monitoring and Meteorological monitoring, as well as Biological and Topographical surveys.

1 INTRODUCTION

1.1 General Information

The Annual Environmental Report (AER) for Holmestown Waste Management Facility includes as a minimum the information specified in Schedule H of the Waste Licence 191-1, *Content of Annual Environmental Report* and in addition the AER requirement under Condition 12.4 for a statement on the cost of landfill of waste. The AER has been prepared in accordance with the Environmental Protection Agency (EPA) publication '*Waste Licensing – Draft Guidance on Environmental Management Systems (EMS) and Reporting to the Agency, 1999*' and further guidance provided on the EPA website. This document is the first AER prepared for the site.

The reporting period for this AER is **1 January 2008 to 31 December 2008 inclusive**.

The waste management facility commenced accepting waste on site on 29 April 2008.

1.2 Site information

Table 1 **Site information on Holmestown Waste Management Facility**

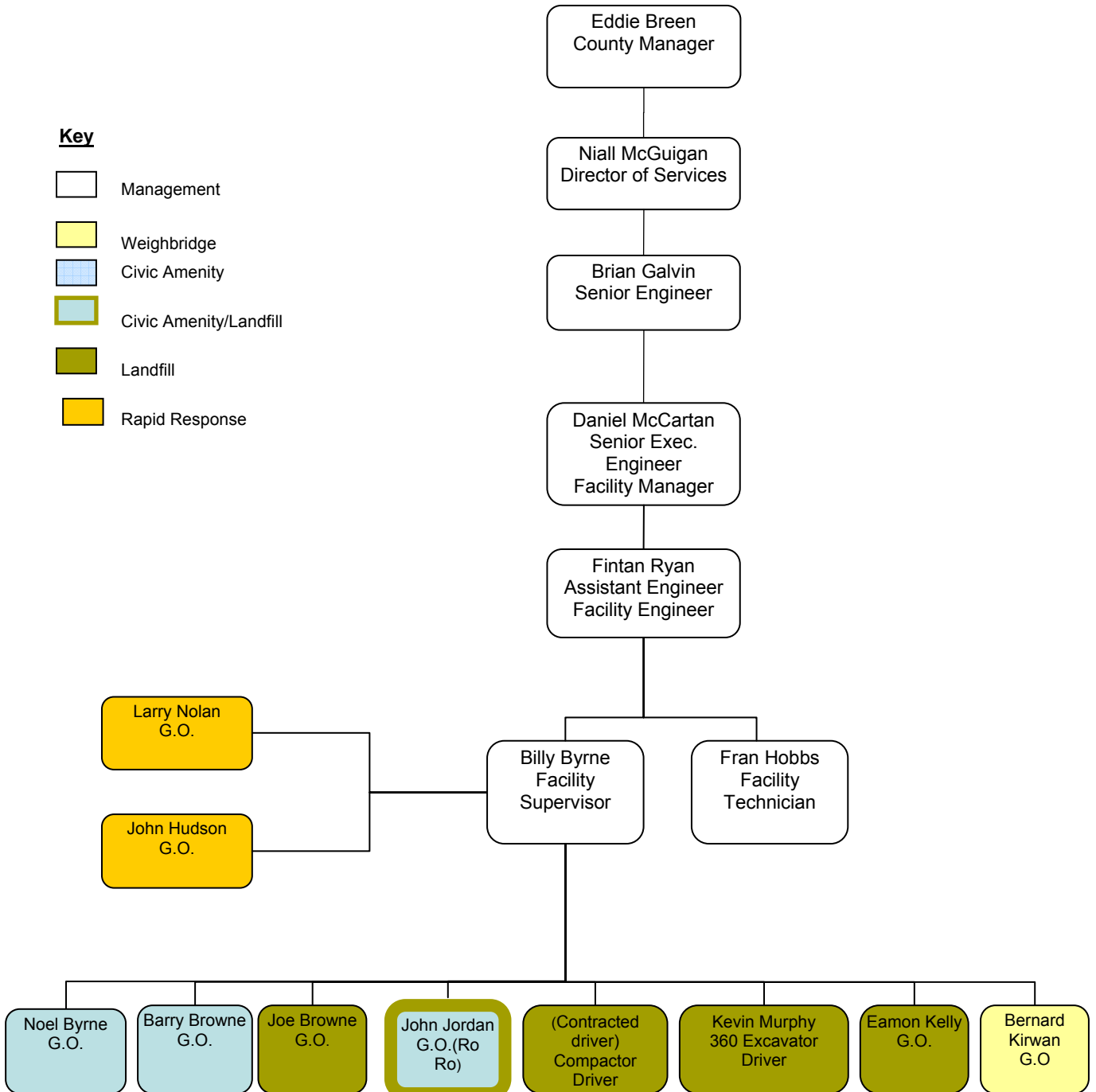
HOLMESTOWN WASTE MANAGEMENT FACILITY	
Waste licence register no:	191-1 (granted 10/12/2004) and Technical Amendment A of 09 th August, 2005 and Technical Amendment B of 14 th January, 2006.
Name and address of operator:	Wexford County Council County Hall Spawell Road County Wexford
Name and address of facility:	Holmestown Waste Management Facility Barntown County Wexford
Site Description:	<p>Holmestown Waste Management Facility is located within the townlands of Holmestown Great, Glenduff, Bolgerstown, Muchwood and Ballyeaton, approximately 8 kilometres west from Wexford Town (National Grid Reference 2973, 1230). The site which lies to the north of the N25, Wexford to New Ross road comprises an area of approximately 63 hectares of which 15 hectares will be used for landfilling and is situated within a mixed forested plantation of mainly coniferous trees known as Holmestown Wood.</p> <p>The property is bounded by agricultural lands to the North, South, East and West. The land use in the surrounding area is good quality grazing and is intensely farmed to the west, north and east by dairy and livestock farmers. There are a number of dwellings surrounding the site including farmhouses, residences and a nursing home. The site is within the catchment of the Slaney River, and a number of small streams drain the site to the Slaney, less than 2km away. A site location map is provided as Figure 1.</p>



2 MANAGEMENT & STAFFING STRUCTURE

2.1 Management and staffing structure for Holmestown Waste Management Facility

Management structure for Holmestown Waste Management Facility 2008



The Holmestown Waste Management Facility was operated by Wexford County Council during 2008 with consultancy support provided by sub consultants including Fehily Timoney & Company, Irish Biotech Services and Enviro Consulting. Details of the management structure during the reporting period for the facility are provided above. Details on staff training including health & safety, environmental and landfill courses are provided in Appendix 2.

2.2 Financial provisions

In accordance with Condition 12.1 Wexford County Council paid a sum of €24,599 to the Environmental Protection Agency for the management and monitoring of the waste licence during 2008.

2.2.1 Provision for the Closure, Restoration and Aftercare

Wexford County Council (WCC), as a Local Authority, has made the necessary provisions, for the development, management, restoration and aftercare of Holmestown Waste Management Facility. WCC has assigned a full time permanent senior executive engineer for the management of the facility. Wexford County Council is committed to the ongoing provision of funding for all site development works, environmental monitoring costs and restoration and aftercare works at Holmestown Waste Management Facility for the duration of the Waste Licence.

2.2.2 Community Support and Development

An environmental monitoring committee (EMC) was established in July 2005 and includes two members of the Barntown Environmental Alliance, two members of local Wexford County Councillors' and two Wexford Council officials. The Committee meets once a month. A community support and development fund was set up by Wexford County Council during the reporting period.

2.3 Environmental Management System

Condition 2.3 requires the licensee to establish and maintain an Environmental Management System (EMS) at the facility. The site environmental management system was prepared in October 2008. The EMS consists of the following elements:

- Schedule of Environmental Objectives and Targets
- Environmental Management Plan
- Corrective Action procedures
- Awareness and training Programme

Other procedures relevant to the EMS have been introduced at the site in 2008; these are listed in Section 2.3.5.

2.3.1 Environmental Objectives & Targets – Progress

The Environmental Objectives and Targets for the period October 2008 to December 2008 and details of progress made regarding each objective are detailed in Table 3 hereafter. In summary the objectives and targets established include the following;

- Objective No 1: Operate facility in accordance with the conditions of the waste licence and promote continual environmental improvement



- Objective No 2: Improve Environmental Performance of the facility by maintaining a comprehensive monitoring regime
- Objective No 3: Maximise recycling levels within the civic amenity and site office
- Objective No 4: Promote energy efficiency in the site offices
- Objective No 5: Minimisation of Complaints

2.3.2 Environmental Management Plan

An environmental management plan (EMP) was prepared as part of the EMS in October 2008. The EMP comprises information on the following topics:

- Site description
- Site infrastructure
- Types of waste accepted on site
- Civic amenity site
- Leachate Collection and treatment Leachate Management System
- Landfill Gas Abatement Methods
- Surface water Control Measures
- Environmental Monitoring
- Site Security and Site Offices
- Operational Matters
- Noise and dust abatement
- Vermin and litter control
- Fires
- Restoration and Aftercare

2.3.3 Corrective action Procedure

As part of the EMS report procedures are in place in accordance with Condition 2.3.2.3 of the licence to monitor, measure, audit and record the environmental performance of the environmental management system. These procedures establish how non-conformance within the system is dealt with and how any corrective and preventive action is carried out.

2.3.4 Awareness and Training Programme

In accordance with Condition 2.3.2.4 of the licence, an awareness and training programme has been developed to increase environmental awareness among staff and identify training needs of all personnel working at Holmestown Waste Management Facility. The facility manager has overall responsibility for reviewing training needs on an annual basis to ensure that all staff have the necessary skills and level of awareness to carry out their duties to the highest environmental and safety standards. A copy of the training records which are kept on file at Holmestown Waste Management Facility can be found in Appendix A.2.



Table 2 Achievements of Objectives and Targets for 2008/2009

Achievements of Objectives and Targets for 2008/2009			
	Comments	Target	Progress
Objective No 1: Operate facility in accordance with the conditions of the waste licence and promote continual environmental improvement			
1.1 To implement a documented EMS at Holmestown Waste Management Facility	Ensure that annual modifications, omissions or deletions are incorporated into the EMS and agreed for inclusion into the AER	End of December 2008.	Completed
1.2 Review training schedule for each staff member	Ensure all staff are fully trained to carry out day to day operation of the facility in a safe and efficient manner.	January 2009	Completed
1.3 Maintain landfill gas management on site	A horizontal and vertical pipework system will be installed in 2009. This will involve a temporary gas extraction system involving a carbon filter and flare unit. This will be used until the permanent flare is in place.	Ongoing improvement and development of the system as the placement of waste expands – November 2008 to October 2009	Ongoing
1.4 Establish and maintain a clear labeling system of all monitoring and sampling locations. Maintain safe access to these locations.	Safe access to all monitoring points is needed and a clear labelling system to facilitate monitoring	November 2008	Ongoing
1.5 Programme of regular inspections of the foul and surface water drainage infrastructure & desludge as necessary.	Weekly inspections of all foul and surface water infrastructure is currently being carried out .	November 2008 through to October 2009	Ongoing
Objective No 2: Improve environmental performance of the facility by maintaining a comprehensive monitoring regime			



Achievements of Objectives and Targets for 2008/2009

	Comments	Target	Progress
2.1 Monitor the groundwater quality for a period of one year and review groundwater trigger levels	Groundwater monitoring currently undertaken on a quarterly basis. Interim groundwater trigger levels have been set for 9 wells for electrical conductivity, ammoniacal nitrogen and chloride.	October 2009	Ongoing
2.2 Set up continuous monitoring from the Inlet of the storm water retention pond and establish trigger levels.	Sampling carried out on an interim weekly basis during the reporting period.	October 2009	Ongoing
2.3 Establish a meteorological station on-site as per Waste Licence Condition 8.10	Weather station to be installed during 2009. Planning report submitted to EPA in August 2008.	October 2009	Ongoing
2.4 Regularly review environmental monitoring data and monitor changes in trends	Monitoring data is reviewed on a quarterly basis. Trend analysis graphs to be produced for main environmental parameters	November 2008 through to October 2009	Ongoing
	Comments	Target	Progress
Objective No 3: Maximise recycling levels within the civic amenity and site office			
3.1 Promote dry recyclables collection in the site offices	All staff to participate in and be made fully aware of recycling objectives	November 2008 through to October 2009	Ongoing
3.2 Continue efforts to source new markets for recyclable products .	A full review of all contractors and products to be undertaken.	November 2008 through to October 2009	Ongoing
3.3 Increase public awareness of the recycling facility through advertising	School tours of the facility are scheduled in coming year, and radio and paper advertising will be continued.	November 2008 through to October 2009	Ongoing
3.3 Maintain the civic amenity facility in a tidy and	Daily inspections carried out.	November 2008 through	Ongoing



Achievements of Objectives and Targets for 2008/2009

	Comments	Target	Progress
orderly manner		to October 2009	
	Comments	Target	Progress
Objective No 4: Promote energy efficiency in the site offices			
4.1 Promote energy efficiency in-house through the use of solar panels	Solar panels installed in 2008.	November 2008 through to October 2009	Completed
4.2 Ensure all lights and appliances are powered off upon leaving the building	All staff consulted regarding energy efficiency in the site offices. All computers will be turned off remotely at night by the IT department.	November 2008 through to October 2009	Ongoing
4.3 Liaise with Wexford County Council regarding proposals for the conversion of vehicles to biofuels	Review of cost benefit analysis of conversion of vehicles to be carried out in 2009	November 2008 through to October 2009	Ongoing
	Comments	Target	Progress
Objective No 5: Minimisation of Complaints			
5.1 Effectively deal with complaints	All complaints are recorded in the complaints register and fully investigated with action plans implemented immediately if necessary	November 2008 through to October 2009	Ongoing
5.2 Review complaints register and formulate action plans for next period to minimise/reduce complaints	Complaints register reviewed by facility manager on a regular basis. Issues identified are fully investigated and action plans put in place to reduce or eliminate future complaints	April 2008/October 2009	Ongoing
5.3 Improve housekeeping practices to minimise the number of complaints received	Litter picking of the site and surrounding areas daily, onsite noise	November 2008 through to October 2009	Ongoing



Achievements of Objectives and Targets for 2008/2009

	Comments	Target	Progress
5.4 Maintain the site in an orderly and accessible fashion	monitoring to reduce noise impact daily. All staff responsible for upkeep of site	November 2008 through to October 2009	Ongoing
5.5 Engage with the local community through meetings and school visits	School tours are scheduled for 2009 and local community are kept informed through the EMC committee.	November 2008 through to October 2009	Ongoing
5.6 Maintain site vehicle speed limits to mitigate potential dust formation. Spray in dry weather.	Contractor hired in to spray roads in dry weather.	November 2008 through to October 2009	Ongoing
5.7 Odour management – landfill gas extraction and use of woodchip on active areas	Temporary gas extraction system will be installed on site early January 2009. Woodchip used on active areas of landfill as daily cover in conjunction with Hessian matting.	November 2008 through to October 2009	Ongoing



2.3.5 Full title of any procedures developed by the licensee in the year which relates to the facility operation

During the reporting period January – December 2008 a number of different site procedures were developed at the facility. All procedures are kept on file at the site office and all staff are made fully aware of new procedures as they are developed. A procedure on waste acceptance was developed during November 2007 and was submitted to EPA in 2008. A list of procedures developed for the site during 2008 are as follows:

- Waste Handling Procedure
- Communication Procedure
- Environmental Records Procedure
- Corrective Action Procedure
- Leachate Handling Procedure
- Emergency Response Procedure
- Firewater Risk Retention Assessment Procedure
- Entering Private Property Procedure
- Civic Amenity Procedure
- Weighbridge Procedure
- Fire Evacuation – Emergency Procedure
- Accident and Reporting Procedure

2.3.6 Report on communication programme

In accordance with Condition 2.4.1 of the waste licence a communications programme has been developed at the facility. A leaflet was produced in April 2008 to provide the local community and other interested parties with information on the location of the facility, opening hours, site rules and the types of waste that could be accepted. An environmental monitoring committee also convene once a month to discuss a range of matters relating to the environmental monitoring, management and operation of the waste management facility. In addition Wexford County Council provides the following documentation for public viewing at the site and at the Wexford County Hall:

Table 3 List of records available for public viewing in relation to the landfill

List of records available for public viewing
Waste Licence W00191-1
Waste Licence application
Correspondence with the EPA
Minutes of EMC meetings
Incident / complaints records



List of records available for public viewing
Audit records
Waste acceptance records
Rejected waste records
All monitoring records
Surface water inspection forms
Leachate removal records
Bird / vermin control reports

3 REPORTED INCIDENTS & COMPLAINTS SUMMARIES

3.1 Incidents

A recurring incident which was initially reported to the EPA on 11 January 2008 relating to the detection of carbon dioxide and methane gas at a number of gas monitoring boreholes is the only reported incident during the period January to December 2008.

Monitoring of gas wells was carried out between September 2007 and March 2008. Naturally occurring methane and carbon dioxide were regularly detected in a number of boreholes located outside the perimeter of the constructed lined cells during routine monitoring on site prior to waste acceptance. As a means of investigating these recurring gas levels the EPA requested that an investigation be carried out on site, the was undertaken between March and April 2008.

The investigation found existing levels of naturally occurring methane and carbon dioxide in the area as a result of the breakdown of organic material in the soil. An assessment was carried out and the risk associated with naturally occurring methane and carbon dioxide on the site was deemed not to be significant due to the underlying geology of the area. The presence of clay which has a low permeability acts as a natural containment material preventing gas from travelling through the ground for any considerable distance. The cells are also fully lined with a double liner system consisting of a geocomposite liner on top of an engineered clay liner. A number of recommendations were made to monitor and manage the landfill in the absence of perimeter gas wells through maintaining a negative pressure within the waste body. Two reports were submitted to the EPA during April and December 2008 entitled:

- ◆ Investigation of Naturally Occurring Background Gas Levels at Holmestown Landfill – Risk Assessment and Recommendations (Revision 1)
- ◆ Investigation of Naturally Occurring Background Gas Levels at Holmestown Landfill – Risk Assessment and Recommendations – Trace Gas Analysis (Revision 2).

3.2 Complaints

A total of 8 complaints were received during this reporting period. A summary of these complaints is as follows:

Table 4 Summary of complaints received during the reporting period and corrective action undertaken.

Date	Summary	Corrective action
19/01/08	From: - Mr. Patrick D’Helft High level of suspended solids in the Polehore stream. Debris litter on road/track on site from ESB. Poor drainage and filtration of the flows from the site	Heavy rainfall reason for increased level of suspended solids. Debris cleared from site road. Drainage issues and site levels investigated further.
21/01/08	From: - Mr. Gerard Cowman Message received regarding dirty water from the site.	Filter stone and rock placed to reduce silt. Water pumped out of working area over flood plain to minimise silt to river. Drainage pipes cleaned out. Road/haul tracks dammed off to stop silt entering river.



Date	Summary	Corrective action
23/04/08	From: - Mr. Patrick D'Helft Trespass onto land, blocking access on laneway during noise monitoring exercise.	Personnel responsible contacted immediately and reprimanded.
14/05/08	From: - Mr. Jimmy O'Rourke Gates left open on site by contractor and lights left on with no visible site security present.	Revised site lock up procedure developed. Staff presence on site until 7pm each evening while contractor present.
06/08/08 and 11/08/08	From: - Mr Gerard Cowman Issue of excessive noise from landfill Increase in odour from the landfill	Noise from a suction tanker operating close to the storm water pond. Isolated maintenance issue with low likelihood of reoccurrence. Alternative methods of maintenance in this area to be investigated. Issue fully investigated. Sufficient temporary cover applied to waste over the weekend.
02/09/08	From: - Mr Patrick D'Helft Increase in odour from the landfill	Site operation reviewed. Odour neutralizing agent sprayed on site. Cover material increased in depth.
05/11/08	From: - Mr Gerard Cowman Odour issue from landfill	Issue investigated but no significant odours noted on site. Trial round bailed straw used as daily cover due to reduced availability of shredded timber. Extracted gas from central stack in cell 4 to the carbon filter.
06/12/08	From Mr Gerard Cowman Noise and odour issues from landfill	Odour assessment carried out on site. Cold weather and calm conditions may be a contributing factor. Daily cover changed to straw combined with Hessian and shale. Temporary gas extraction system to be commissioned at start of January.

3.3 Non-compliances

A licence audit report was issued to WCC by the EPA on 02/02/2009 detailing the Agency's findings following an audit of Holmestown Waste Management Facility on 12/11/2008. The facility was noted to be compliant with the waste licence with a number of observations made in the audit report. In general the audit team were satisfied with the infrastructure installed at the site and the overall level of progress and compliance at the site.

A summary of observations made during the audit were as follows:



Table 5 Summary of Licence Audit Observations 12/11/2008

Audit observations	Corrective Action Required	Action taken by Wexford County Council
<p>1/ Monitoring Results Presentation and interpretation of surface water monitoring report for Quarter 3, 2008 was deemed to be limited.</p>	<p>Omit lab certificates from the monitoring reports and provide more detailed interpretation over time of indicator parameters for all monitoring locations e.g. BOD, pH and suspended solids. Include a colour coded drawing in the report showing all monitoring locations.</p>	<p>In future all monitoring reports will provide interpretation of the results. Trend graphs will be produced for the parameters of concern. Drawing showing monitoring locations will be included in the report.</p>
<p>2/ Landfill Gas Flare Position of flare considered to be too close to a number of trees on site.</p>	<p>Refer to flare manufacturers guidelines on minimum clearance distances required for the flare.</p>	<p>The manufacturer of the flare was consulted and a buffer zone of 10m around the flare was cleared of trees.</p>
<p>3/ Cover Material The use of shredded timber and soil as an intermediate cover at the site was discussed as was the use of Hessian, clay and soil as an intermediate cover material.</p>	<p>The licensee was advised that the use of shredded timber wasn't suitable for use as an intermediate cover and that soil should be used instead in sufficient depth to ensure that no odour nuisance is caused.</p>	<p>Woodchip combined with Hessian is currently being used for daily and intermediate cover. It is proposed that a trial of a US company, who uses a mixture of paper product and chemicals as a daily cover, be carried out in 2009.</p>
<p>4/ Segregated Waste Collection At the civic amenity centre the only waste stream collected in skips was noted to be scrap metal.</p>	<p>In the civic amenity area carry out a survey of the waste collected in the household waste skips. Investigate recycling opportunities for each of the different waste streams identified. Provide additional skip waste segregation facilities on site.</p>	<p>Investigations have been carried out and one additional skip was provided for untreated timber. We will be trialling the taking in, free of charge, of untreated timber/ garden cuttings which will be shredded and used for landfill cover in 2009.</p>
<p>5/ Documented Procedures Documents previously submitted to the Agency as required by the licence such as Emergency Response Procedures, Waste Acceptance Procedures etc require updating.</p>	<p>Maintain all documents to reflect ongoing operations and licence compliance requirements e.g. review waste acceptance procedures and Emergency Response Procedures.</p>	<p>Reviews of procedures are currently ongoing.</p>



Audit observations	Corrective Action Required	Action taken by Wexford County Council
6/ Leachate Treatment Plant Leachate currently being tankered off site for treatment. The on-site treatment plant is currently being integrity tested.	The Agency shall be notified in advance of when it is proposed to the commence operation of the on-site leachate treatment plant.	The leachate treatment plant is currently at the commissioning phase. The EPA will be notified when leachate treatment plant is fully operational.
7/ Visual Berm The Agency noted that the licensee is proposing to relocate the position of the visual berm between the surface water lagoon and the landfill body.	Submit a proposal to the Agency for approval outlining the details of the visual berm relocation and timeframe involved.	Following a full review of the north eastern visual berm it was agreed that the berm should be located closer to the landfill working face. It was decided that an in-cell site berm located on the north east corner of cell 4 constructed at final level would be the best option. This work will commence in 2009.
8/ Landfill Gas Collection Infrastructure Installation of the landfill gas collection infrastructure and connection to the flare in conjunction with the phased placement of the horizontal pipework is expected to commence in early 2009.	Notify the Agency in advance of the placement of any horizontal pipework on the waste body and when the landfill gas collection infrastructure and flare are to be connected and operational.	No horizontal pipework was completed in 2008, and it is expected that this work will commence in early 2009.
9/ Ongoing/Planned Works A number of works are currently ongoing/planned at the site.	Submit a Gantt chart or equivalent of all works ongoing/planned at the site including a brief description and commencement/completion timeframes.	Please refer to the schedule of planned engineering works for 2009



4 DEVELOPMENT WORKS UNDERTAKEN DURING THE REPORTING PERIOD & THOSE PROPOSED FOR THE COMING YEAR

4.1 Landfill Engineering Works

Condition 3.1 of the licence states that the licensee shall establish all infrastructure referred to in the licence prior to the commencement of the licensed activities or as required by the waste licence. In accordance with Condition 3.2 proposals for all Specified Engineering Works reports (SEWs) have been submitted to the Agency for approval. A list of these reports to date is as follows. Due to a numbering error SEW No. 7 was omitted i.e. the follow on report from SEW No. 6 is in fact SEW No. 8.

- SEW Report No. 1: Development of the facility including preparatory works and lining – October 2005
- SEW Report No. 2: Installation of the Civic Amenity Facility – October 2005
- SEW Report No. 3: Installation of the Landfill Gas System – October 2005
- SEW Report No. 3A: Installation of the Landfill Gas System (Revised) – September 2007
- SEW Report No. 4: Installation of the Leachate Management System – October 2005
- SEW Report No. 5: Installation of the Groundwater Control Infrastructure – October 2005
- SEW Report No. 6 Installation of the Surface Water Management Infrastructure – October 2005
- SEW Report No. 8: Installation of Clay Liner – February 2007
- SEW Report No. 9: Access to Additional Cells – July 2008
- SEW Report No. 10: Landfill Cell Development Phase 2 – April 2009

4.1.1 Completed Engineering Works 2008

The majority of engineering works associated with the general development of the site including the preparation of Phase 1, Cells 1-4, were completed during 2006 and 2007. During the latter part of 2008 engineering works associated with the completion of contract 3 and snagging works were completed.

A description of other engineering works completed at Holmestown Waste Management Facility during 2008 is as follows:

Table 6 Summary of Development Works 2008

Start Date	Development Works
January	<ul style="list-style-type: none">○ <u>Completion of Contract 3</u><ul style="list-style-type: none">▪ Northern headwall outlet works▪ Various headwalls poured▪ Baffle outlet works constructed



Start Date	Development Works
February	<ul style="list-style-type: none">○ <u>Completion of Contract 3</u><ul style="list-style-type: none">▪ Swale to the north of pond constructed▪ Litter fencing erected
March	<ul style="list-style-type: none">○ <u>Completion of Contract 3</u><ul style="list-style-type: none">▪ Laying blacktop around Administration Building and weighbridge down to Maintenance Machinery Building.▪ Entrance ramp to cell 4▪ Grading of site roads▪ Widening of entrance road west of cells 1-4▪ 4 m noise barrier at weighbridge
April	<ul style="list-style-type: none">○ Background methane investigational wells bored.
May	<ul style="list-style-type: none">○ Construction of flare base, construction of pay-station slabs, construction of turning circle at entrance to cells. Plinth at entrance to quarantine slab.○ Grading of site berms for grass seeding.
September	<ul style="list-style-type: none">○ Construction of artificial badger set.

4.1.2 Proposed Engineering Works 2009

A description of engineering works proposed at Holmestown Waste Management Facility for 2009 is as follows:

Start Date	Development Works
January	<ul style="list-style-type: none">○ Installation of temporary flare for cells 3 and 4 (Duration =2 weeks)○ Sealing the sides of the embankments impermeable membrane (D= 2 weeks)
February	<ul style="list-style-type: none">○ Clearing forest area northeast of civic amenity and clearing windblown trees (D= 2 weeks)○ Construction of an area for timber shredding (D= 3 weeks)
March	<ul style="list-style-type: none">○ Installation of horizontal pipework for landfill gas infrastructure (D= 4 weeks)○ Topsoil for northern / eastern berms for planting (D= 2 weeks)
April	<ul style="list-style-type: none">○ Contract 5 start: Gas infrastructure: installation of twin gas lines from cells 3 and 4 to enclosed gas flare. Excavation of earthworks and inlet works to

Start Date	Development Works
	<ul style="list-style-type: none"> 1800 storm pipe. (D= 4 months) ○ Phase 2 investigatory works: installation of monitoring boreholes in phase 2 area. (D= 4 weeks) ○ Planting of northern and eastern berms with shrubs and trees. (D= 2 weeks)
May	<ul style="list-style-type: none"> ○ Shredding trial of bulky timber. (D= 1 day)
June	<ul style="list-style-type: none"> ○ Construction of on-cell noise berm. (D= 5 days)
July	<ul style="list-style-type: none"> ○ Installation of edge detail on cells 3 and 4. (D= 3 weeks)
Aug	<ul style="list-style-type: none"> ○ On site fencing. (D= 4 weeks) ○ Construction of weather station
September	<ul style="list-style-type: none"> ○ Phase 2 (D= unknown) <ul style="list-style-type: none"> ▪ Excavation and lining of 4 new cells ▪ Construction of new entrance ramp to phase 1 ▪ Widening of perimeter road.
October	<ul style="list-style-type: none"> ○ Installation of wind turbine

4.2 Restoration and Aftercare

Acceptance of waste to Holmestown Waste Management Facility commenced during April 2008 with the placement of waste into Cells 3 and 4 of Phase 1, No restoration works were carried out on site during 2008.

4.3 Slope Stability Assessment

Condition 8.14 of the Waste Licence states that upon commencement of waste activities, and annually thereafter, the licensee shall carry out a stability assessment of the side slopes of the facility. Due to the fact that there were no waste slopes in 2008, a stability assessment of the side slopes at the Holmestown Waste Management Facility is scheduled to be carried out during 2009.

4.4 Topographical Survey

A topographical survey of the site was carried out in January 2009 and is included in Appendix 3. The previous topographical survey prior to the placement of waste into Phase 1 was undertaken in 2008 and can also be found in Appendix 7.

Condition 4.2 of the Waste Licence states that the final pre-settlement contours of the facility (mAOD). shall be as shown in *Drawing No. 2.8 Rev A* of the *EIS Addendum*. The final landform, after landfill settlement has taken place, will gradually slope upwards from a height of approximately 20m at the northern end of the site (Phase 1) to a height of 45m towards the south of the site. The maximum height recorded on the topographical survey of February 2008 was 17.84 m AOD in Cell 4 of Phase 1, located towards the northern end of the landfill.



4.5 Facility Notice Board

In accordance with Condition 3.3 of the licence a facility notice board has been erected outside the main entrance to the facility. The Civic Amenity site opening hours were also displayed on the site notice board during the reporting period.

4.6 Facility Security

In accordance with Condition 3.4 of the licence security and stock proof fencing and gates have been installed at the facility. A 2.4m high plastic coated chain link fence surrounds the working area of the facility. This fence is buried 300mm into the ground to prevent animals burrowing under. Pedestrian gates are located at the sampling points around the facility to provide access.

4.7 Facility Roads

In accordance with Condition 3.5 of the Waste Licence effective site roads have been provided at the Holmestown Waste Management Facility to ensure the safe movement of vehicles. In conjunction with this suitable paving has been provided around the administration building, the Civic Amenity facility area and the Machinery Maintenance building.

4.8 Facility Office

In accordance with Condition 3.6 of the licence an administration building has been constructed on site to facilitate on site staff and the processing and storing of documentation relating to the facility. The site administration office also includes a conference/training room, canteen and changing room facilities.

5 WASTE ACCEPTANCE & HANDLING

5.1 Waste Activities carried out at the Facility

In accordance with Schedule A of the Licence, Holmestown Waste Management Facility is licensed to accept 80,000 tonnes of waste per annum. This includes 55,000 tonnes of non-hazardous household and commercial waste, 5,000 tonnes of waste for composting, 8,000 tonnes of construction and demolition waste for recovery and 12,000 tonnes of household and commercial waste for recovery.

Both waste recovery and disposal operations took place on site at Holmestown Waste Management Facility during 2008. Disposal began in April and recovery began in June 2008.

5.2 Waste Acceptance and Handling Procedures

Holmestown Waste Management Facility opened in April of 2008, as a replacement landfill for Killurin which ceased accepting waste on site at the end of June 2008.

Currently the northern end of the landfill, namely Cells 3 + 4 in Phase 1 is being used as the active tipping area. Basic characterization is required for each type of waste stream, and on site verification is carried out to ensure that the waste being accepted on site is the same as that which has been subjected to basic characterization. A waste acceptance procedure and a waste handling procedure have been developed for the facility to aid staff in the day to day running of the landfill. Both procedures are kept on file at the site administration building.

If any waste load is found to contain a waste type not acceptable for disposal or recovery at the facility then the consignment is rejected and a waste rejection form completed. The waste collector will return the load to an appropriate waste disposal/recovery facility and the waste enforcement section of Wexford County Council is informed. A written record of each load of waste entering and leaving the facility including weights is kept in the weighbridge office.

5.3 Waste Deposition

Waste is brought to the active tipping face by refuse transport vehicles. Each vehicle is reversed to the tipping face and the load tipped out. The waste is spread out and compacted into the active tipping area through the use of a steel wheeled compactor and covered as soon as possible with suitable material. The compaction process is a continuous one and the compactor is in operation almost continuously during site operating hours. Several passes are made over the consignment of waste prior to pushing the remnants over the Tipping Face itself. These passes are necessary to achieve the required optimum compaction of 0.8 tonnes/cubic meter. The deposition of the remnants of the consignment, i.e. a small fraction of the consignment, over the Tipping Face gradually extends the Tipping Face into the active cell thereby filling it.

Hessian matting and woodchip are used to cover the working area at the end of each day as per the Procedure for covering the landfill (*HWMF 005*). Wood chip is used for the purposes of cover material at the facility. Advantages of the woodchip include: excellent trafficking qualities, low road maintenance, odour abatement and it is suited to the use of the landfill as a bioreactor. At the end of each day a layer of cover material is placed over any exposed hessian matting to provide adequate protection.



In accordance with Condition 5.4 of the licence only one working face is operational at any one time with a maximum working face height of 2.5m after compaction. The working face is kept to less than 25m wide with a slope no greater than 1 in 3.

All waste consigned off-site during 2008 was disposed of to facilities licensed or permitted to accept or treat that waste. Transport of waste was carried out in accordance with the *Waste Management (Collection Permit) Regulations, SI 820 of 2007, and Amendment Regulations, SI 87 of 2008* as appropriate.

5.4 Total Quantity of Wastes Accepted on Site

A summary of the total quantity of waste accepted at the facility for the reporting period 1st January to 31st December 2008 is presented below in Table 7.

Waste acceptance for disposal commenced on site during April, 2008.

5.5 Total Quantity of Waste Consigned Off Site

A summary of the total quantity of waste consigned off site at Holmestown Waste Management Facility for the period 1st January to 31st December 2008 is presented below in table 8.

The total volume of leachate sent off site for treatment at Enniscorthy and Wexford Wastewater Treatment Works was 3329.92 tonnes.



Table 7 Waste accepted to Holmestown Waste Management Facility from 1st January 2008 to 31st December 2008 (kgs)

Waste In	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly Totals
CIVIC AMENITY WASTE	0	0	0	0	42,640	171,080	273,920	292,860	289,140	231,140	249,280	249,760	1,799,820
COMMERCIAL WASTE	0	0	0	0	0	0	0	0	0	237,500	389,280	388,920	1,015,700
DOMESTIC WASTE	0	0	0	92,040	1,060,980	980,380	990,300	976,680	1,009,740	972,040	948,260	900,900	7,931,320
ILLEGAL DUMPING / FLY TIPPING	0	0	0	0	9,120	54,260	42,220	27,700	37,420	112,240	55,520	25,480	363,960
LANDFILL COVER	0	0	0	0	247,460	362,440	366,940	433,620	459,100	256,420	489,700	550,040	3,165,720
LITTERBINS	0	0	0	0	4,860	18,620	28,000	26,700	18,940	27,460	17,940	18,640	161,160
WASTE FROM MECHANICAL SEGREGATION	0	0	0	0	0	0	0	0	0	16,200	22,360	0	38,560
SWEEPINGS	0	0	0	0	5,200	25,060	34,400	28,120	27,440	58,060	56,120	42,320	276,720
SOIL / STONES	0	0	0	15,000	145,740	0	80	84,020	132,060	83,500	561,680	64,120	1,086,200
Monthly Total:	0	0	0	107,040	1,516,000	1,611,840	1,735,860	1,869,700	1,973,840	1,994,560	2,790,140	2,240,180	15,839,160



Table 8 Waste consigned off-site from Holmestown Waste Management Facility from 1st January to 31st December 2008 (Kgs)

Waste Out	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly Totals
BATTERIES :	0	0	0	0	0	0	0	2,900	3,120	880	2,940	0	9,840
FLUORESCENT LIGHTS :	0	0	0	0	0	0	0	0	80	0	40	0	120
GLASS BOTTLES :	0	0	0	0	0	3,220	4,640	6,700	5,200	4,880	4,680	6,940	36,260
LEACHATE	0	0	0	0	174,500	207,680	445,140	601,960	186,760	779,320	445,340	489,220	3,329,920
PLASTIC BOTTLES :	0	0	0	0	0	760	1,560	1,700	1,660	1,500	1,280	1,120	9,580
TEXTILES :	0	0	0	0	0	1,200	2,260	2,240	2,440	2,800	1,860	1,620	14,420
SCRAP METAL	0	0	0	0	0	0	0	5,640	31,340	27,800	24,320	27,020	116,120
ALLUMINIUM CANS	0	0	0	0	0	160	100	260	260	280	260	300	1,620
CARDBOARD	0	0	0	0	0	0	6,800	8,660	5,020	4,640	3,380	6,020	34,520
NEWSPAPER	0	0	0	0	0	2,680	6,660	3,760	4,040	3,840	4,060	2,880	27,920
TETRAPACK	0	0	0	0	0	0	340	380	500	420	5,720	480	7,840
WASTE ELECTRONICS	0	0	0	0	0	18,580	29,640	29,420	35,400	25,320	29,260	31,600	199,220
WASTE ENGINE OIL	0	0	0	0	0	0	0	1,020	0	1,480	480	0	2,980
MAGAZINES	0	0	0	0	0	0	600	3,460	2,180	2,760	2,820	2,860	14,680
Monthly Totals:	0	0	0	0	174,500	234,280	497,740	668,100	278,000	855,920	526,440	570,060	3,805,040



5.6 Remaining Capacity of the Site

Waste was first accepted on site at Holmestown Waste Management Facility during April 2008. The site is designed to provide for the disposal and recovery of a maximum of 80,000 tonnes of waste per annum comprising non-hazardous household and commercial waste, waste for composting, construction and demolition waste for recovery and household and commercial waste accepted for recovery at the civic waste facility and materials recovery facility.

Wexford County Council intention, in planning, constructing and operating the Holmestown Landfill Facility is to provide a void space for 900,000 tonnes of compacted municipal solid waste and to place same in accordance with the profile set by An Bord Pleanála grant of planning and the EPA licence.

Based on an allowance for 25% for daily cover material and achieving 0.8 tonnes/m³ compaction ratio an overall volume capacity requirement of 1,406,250 cubic meters is estimated over the operational life of the facility.

The site will be infilled and restored on a phased basis over a twenty year period with each phase lasting approximately 2 years. The waste figures allow for a reduction in waste quantity to comply with the Landfill Directive. A topographical survey carried out in January 2009 showed that the volume of waste present within Cell 3 and Cell 4 was 16,542m³.

5.7 Area occupied by waste

A topographical survey completed in January 2009 showed the area of waste present within Cell 3 and Cell 4 to be 6,235m². The overall area where waste will be landfilled is approximately 15.2 ha (152,000 m²).

6 Emissions Management

6.1 Landfill Gas Management

The installation of the landfill gas control system is an ongoing process and develops further as each of the cells is filled with waste. The system being installed comprises a horizontal system that is placed concurrent with waste activities and a vertical extraction system. The pipe work system is then connected to a carbon filter and flare unit. As waste was only accepted on site beginning on 29 April, 2008 volumes of landfill gas were noted to be relatively low and of poor quality during the reporting period. It is proposed a carbon filter extraction unit is installed on site towards the start of January 2009. More detailed information on the landfill gas extraction currently being installed on site can be found in the following report which can also be viewed on file in the site office:

- *SEW Report No. 3A: Installation of the Landfill Gas System (Revised) which was submitted to the EPA in September 2007*

6.1.1 **Estimated annual and cumulative quantities of landfill gas emitted from the site.**

As stated above the volumes of landfill gas were noted to be relatively low and of poor quality during the reporting period. As no flaring took place in 2008, no specific on site data is available in relation to the annual and cumulative quantities of landfill gas emitted from the site during 2008.

One method for assessing landfill gas quantity is the 'rule of thumb method'. Using this method it can be assumed that every tonne of degradable waste will produce about 6m³ landfill gas per year for ten years from the time of emplacement. During this reporting period a total of 11,587.24 tonnes of waste (excluding cover and stone) were deposited on site which relates to a total gas production of 69,523.44 m³.

6.2 Leachate, Groundwater and Surface Water Management

6.2.1 **Leachate**

Leachate is generated by moisture in waste and rainfall seeping into the landfill and becoming contaminated by contact with the waste product, and by the decomposition of the waste itself. Other potential sources of leachate generation, such as groundwater and surface water ingress are prevented from entering the waste fill areas through a number of site specific engineering works.

Between June and September 2008 leachate was pumped from the sump at L4 in Phase 1 directly into a tanker for subsequent treatment and disposal off-site. Upon commissioning of the leachate balancing tank, which took place in October 2008, leachate from Cells 3 & 4 was pumped directly to the leachate balancing tank using the cell pumps. A road tanker then removed the untreated leachate from the leachate balancing tank to either Enniscorthy or Wexford town wastewater treatment plant for treatment and disposal.

The on-site leachate treatment plant will be commissioned during 2009 and begin to accept leachate directly from Phase 1 for treatment. The treatment plant will provide a capacity of approximately 1200 m³, equivalent to a process retention time of 15 days at the maximum flow (average estimate is 55m³ per day, estimated peak flow is 80m³ per day). The plant will comprise the following main elements, together with ancillary pipe work to convey the leachate between tanks:

- ◆ Sequencing batch reactor (SBR);

- ◆ Treated leachate balance tank (TLBT);
- ◆ Raw leachate feed pump;
- ◆ Venturi aerators;
- ◆ Decant pump;
- ◆ Final discharge pump;
- ◆ Alkali dosing facilities; and
- ◆ Nutrient dosing facilities.

The treated leachate will then be removed off site by road tanker on a routine basis and transported to Enniscorthy or Wexford wastewater treatment plant for final treatment in accordance with the leachate management plan for the site.

As waste has only been accepted on-site since April 2008, leachate was pumped from L4 directly into a mobile tanker for treatment off-site beginning in June 2008. This process continued until October 2008 when leachate was pumped directly to the leachate balancing tank for storage. Monthly volumes of leachate tankered off site are presented in Table 9 below.

Table 9 Leachate volumes removed from site in 2008

Month	Volume (m ³)
January	0.0
February	0.0
March	0.0
April	0.0
May	174.5
June	207.68
July	445.14
August	601.96
September	186.78
October	779.32
November	445.34
December	489.22
Total	3329.94

6.2.2 Groundwater

Condition 3.10 of the licence states that effective groundwater management infrastructure shall be provided and maintained at the facility during construction, operation, restoration and aftercare of the facility. As a minimum, the infrastructure is required to be capable of the following:

- Protection of groundwater resources from pollution by the waste activities
- Protection of other infrastructure, such as the liner; from any adverse effects caused by groundwater.

At Holmestown Waste Management facility the cell formation levels have been designed so that they will be a minimum of 2m above the expected winter water-table levels. The nature of the excavation elsewhere on site is shallow so groundwater is not expected to be encountered.

Groundwater resources will be protected from waste related pollution by the construction of a quality-assured composite lining system, which will comprise the following:

- ◆ 1,000 mm compacted engineered clay with hydraulic conductivity (k) $\leq 1 \times 10^{-9}$ m/sec; overlain by
- ◆ 2 mm fully-welded HDPE liner.

Leachate arising from waste activities will be contained within the landfill by the lined system and conveyed to the on-site leachate treatment plant via sealed pipe systems. Effluent will eventually be removed from site via a pumped rising main to Wexford Wastewater Treatment Plant.

There will be no discharge to groundwater from any aspect of the development. Leachate will be treated on site before being pumped to Wexford Wastewater Treatment Plant, as outlined in *Specified Engineering Works Report No. 4*. All other surface water run-off will drain to the surface water pond, and then discharge to the adjacent stream. Foul water will drain to a proprietary wastewater treatment plant on site. Effluent from the wastewater treatment plant will discharge to the leachate treatment plant.

6.2.3 Surface Water

Condition 3.10 (part) of the waste licence states the following:

3.10.6 The licensee shall install and maintain silt traps and oil interceptors at the facility to ensure that all surface water discharges from the facility pass through a silt trap and oil interceptor prior to discharge. The interceptors shall be Class I full retention interceptors and the silt traps and interceptors shall be in accordance with *European Standard prEN 858 (installations for the separation of light liquids)*.

3.10.7 All wastewater gullies, drainage grids and manhole covers shall be painted with red squares whilst all surface water discharge gullies, drainage grids and manhole covers shall be painted with blue triangles. These colour codes shall be maintained at all times during facility operation, and any identification designated in this licence (e.g. SW1) shall be inscribed on these manholes.

Condition 3.15 of the waste licence 'Surface Water Management' states the following:

3.15.1 Effective surface water management infrastructure shall be provided and maintained at the facility during construction, operation, restoration and aftercare of the facility. As a minimum, the infrastructure shall be capable of the following:-

a) The prevention of contaminated water and leachate discharges into surface water drains and water courses.

b) The containment of surface water discharge during peak flows via a system of weirs, drains and retention ponds, as described in Section 9.62 of the *EIS Addendum* and *Section C.3(b) of the Article 12 response* received by the Agency on 06/05/04.

c) The collection/diversion of run off arising from capped and restored areas.



d) The diversion of runoff from the waste handling, inspection, quarantine and storage areas of the Civic Waste Facility, Materials Recovery Facility and Composting facility to the leachate treatment plant.

e) The diversion of runoff other than runoff from the waste handling and storage areas of the Civic Waste Facility, Materials Recovery Facility and Composting facility to a soak-away via a grit trap and a Class I oil interceptor.

In accordance with the above conditions, surface water is collected on site via a network of drains, and is fed into the surface water collection pond to the north of the site at SWP1. The water settles in the pond and is then released to a petrol interceptor tank via SWP2. From there the surface water flows in an easterly direction to the stream on the east of the site, and enters the stream at SW4.

The following describes the various aspects of surface water collection systems:

- All clean surface water from paved roads and roofed areas on site drains into the constructed surface water drainage system and drains to the surface water pond via carrier pipes and open channels.
- Until such time as the continuous monitoring of the surface water pond is fully commissioned all surface water from the civic amenity site and reception area is collected and diverted to the leachate treatment plant
- Surface water run-off from the screening berm at the north end of the site is collected by a number of embankment swales and directed to the surface water pond.
- Surface water in constructed landfill cells in which waste has not yet commenced is pumped to the surface water pond. Water is pumped from the cells via the cell side riser sleeves. The pumps discharge water to a swale located on top of the perimeter embankment, which then discharges to the surface water pond.

The surface water pond located to the north east of the landfill is lined with a 1 m thick layer of clay, engineered to ensure a maximum permeability of 1×10^{-9} m/sec. The pond is designed to attenuate peak flows up to a 1 in 100 year return period, and to fully contain peak flows up to a 1 in 5 year return period. The pond is designed to cater for the worst case scenarios during the lifetime of the entire landfill. The allowable discharge from the pond has been reduced below baseline flow levels in order to enable water settlement and achieve a suspended solids content of 25 mg/l.

6.2.4 Water Balance Calculations

The objective of the assessment of water balance calculations is to understand and predict the liquid inputs and outputs of the facility. In order to predict the approximate leachate volumes which would be generated on-site water balance calculations have been calculated for the period 31st of April 2008 to 31st of December 2008 to estimate the approximate volumes of leachate that would have been generated during the reported period.

The water balance addressed the volume of leachate generated at the site including the estimated annual infiltration of rainfall. The water balance methodology is described below and the calculation are shown in appendix 9.

The water balance calculations are based on the methodology specified in the EPA's Landfill Site Design Manual. The calculation used is as follows: -

- ◆ $Lo = [ER(A) + LW + IRCA + ER(I)] - [aw]$



- ◆ L_o = leachate produced (m^3)
- ◆ ER = effective rainfall (m) (Use actual rainfall (R) for active cells)
- ◆ A = area of cell (m^2)
- ◆ LW = liquid waste (m^3)
- ◆ $IRCA$ = infiltration through restored and capped areas (m)
- ◆ I = surface area of lagoon (m^2)
- ◆ a = absorptive capacity of new waste (m^3/t)
- ◆ w = weight of waste deposited (t/a)

An absorptive capacity of 0.06 m^3 per tonne was assumed.

The meteorological data used was obtained from the nearby Met Eireann meteorological station at Rosslare. As the facility only opened on the 31st of April, the total rainfall from 31st April to the 31st December 2008 was approximately 901.2 mm. Meteorological data is presented in Appendix 7.

The landfill areas included in the calculations were the active fill areas. Actual (total) rainfall rates were used for the active fill areas. As the active areas of cells 4 and 3 were uncapped during 2008 it is estimated that 100% of this rainwater would have entered the waste body. This is in accordance with the EPA Landfill Site Design Manual. An absorptive capacity of 0.06 m^3 per tonne was assumed.

Waste was first placed in cell 4 from the 31st of April until the 29th of October, then waste was placed in both cells 4 and 3 up to the 31st of December. The active area of cell 4 was 4350 m^2 and the active area of both cells 4 and 3 was 8700 m^2

The estimated volume of leachate generated for the period 31st of April 2008 to the 31st of December 2008 is 4240 m^3 . During the same period 3329.92 m^3 of leachate was removed from the site for treatment in the waste water treatment plant at Enniscorthy and Wexford. A monthly breakdown of leachate volumes removed is presented in table 9.

7 ENVIRONMENTAL NUISANCES

7.1 Review of environmental nuisance control at the facility for the reporting period

Condition 8.15 of the Waste Licence states that the licensee will inspect the facility and its immediate surrounds for nuisances caused by litter, vermin, birds, flies, mud, dust and odours. Nuisances at Holmestown Waste Management Facility are logged in a weekly tick-box report and action is taken immediately to address any identified issues. Table 10 below summarises the measures implemented on site to combat environmental nuisances during 2008.

Condition 7.3 of the Waste Licence states that litter fencing shall be installed and maintained around the perimeter of the active tipping area prior to the disposal of waste in any cells and that all litter control infrastructure shall be inspected on a daily basis. A litter fence was installed around Cells 3 + 4 during February 2008. The litter control infrastructure is inspected on a daily basis and any defects remedied immediately. Any loose litter or other litter identified on site is removed and disposed of in an appropriate manner and all vehicles delivering waste to or removing recyclables from Holmestown Waste Management Facility are appropriately covered.

Table 10 Environmental Nuisance Control during 2008

Nuisance	Mitigation Measures in Place
Birds	<i>Arrow – Pest Control</i> contracted for birds. Present on site on a daily basis from 31 March for the duration of the reporting period. Harris hawk used to control birds. Daily log kept and weekly report produced. No birds landing on waste. Reports kept at site office.
Vermin	<i>ISS Facility Services</i> . Permanent bait points set up on site (internal and external). Inspections carried out on a monthly basis. If infection found then weekly inspections until rodent free. Monthly reports produced and kept at site office.
Litter	Daily litter picking and litter inspections are carried out at the site on an ongoing basis. Inspection log kept at site office. Litter fencing has been erected around Cells 3 + 4.
Flies	<i>Ecolab</i> employed to control flies. Inspections carried out on a weekly basis. If flies present then treated through spraying. Weekly reports kept in site office.
Odour	Fixed monitoring points established on site and assessed on a daily basis. All waste is covered with a layer of wood chip and hessian at the end of each day and an odour neutralising agent is used on site when deemed necessary. Odour inspections adhere to recommendations from the Office of Environmental Enforcement's method of assessment of odours. Records of daily, weekly and quarterly odour assessments are maintained on site.



Condition 11.5 of the licence states that prior to the commencement of waste disposal, the licensee shall submit to the Agency for its agreement a proposal for the control and eradication of vermin and fly infestations at the facility.

A number of proposals were produced by Wexford County Council during 2008 and submitted to the Agency for approval. These proposals have since been approved and implemented on site in order to address the issue of nuisance monitoring as follows:

- Control and eradication of vermin and fly infestation proposal.
- Odour monitoring proposal

Copies of both proposals and associated correspondence with the Agency are kept on file at the site office.



8 RESOURCE & ENERGY CONSUMPTION

8.1 Electricity and Energy Usage

Electricity usage for the reporting period was estimated at 56,498 KW. The administration building at Holmestown has been designed with energy efficiency in mind. The following is a list of energy saving mechanisms that have been implemented:

- Control of internal lighting based on occupancy and the level of available natural light.
- Hot water heated by a combination of wood chip boiler and highly efficient vacuum tube solar panels
- Under floor heating system and wood chip boiler providing all heat for administration building
- Mechanical heat recovery unit which uses exhaust warm air to heat cold air coming into the building
- Rainwater harvester in operation to collect water from building roof for reuse in toilets
- Building management system monitors the temperature in each room and controls
- Mini wind turbine with solar panel mounted on each light column in operation in the car park area.
- The construction of a wind turbine has been granted planning permission and will be located near the Administration Building.

8.2 Water

During dry periods in 2008 approximately 20,000 litres of water were used on site for the purposes of dust suppression. As there was no water meter installed in the site office during 2008 to monitor water intake, no domestic water usage data is available. A water harvester was however in operation to supply water for sanitary use.

8.3 Diesel

Total diesel fuel consumption is estimated to be 31,427 litres from 28 April to 31 December 2008.

9 ENVIRONMENTAL MONITORING & EMISSIONS SUMMARY

9.1 Summary report on emissions

A summary of Environmental parameters monitored at Holmestown Waste Management Facility carried out during this reporting period (January 2008 – December 2008) is contained in Table 11 below. The location of all monitoring points is detailed in Figure 2.

The E-PRTR Regulation (EC) No 166/2006 concerning the establishment of a European Pollutant Release and Transfer Register came into force in February 2006 and was brought into Irish law through SI No 123 of 2007. As a result all industries have to annually report environmental emissions and waste transfer data through a web-based form as part of their AER. The PRTR 2008 document is included in Appendix A1.

Table 11 A summary of Emissions monitoring as specified in Waste Licence 191-1

Emission Monitoring	Frequency
Landfill Gas Site Office Gas Boreholes	Weekly Monthly
Leachate Leachate levels Leachate analysis	Continuous Annual
Surface water	Quarterly / Annual
Groundwater Levels	Monthly
Groundwater	Quarterly / Annual
Noise	Quarterly
Dust	Tri-Annually
Odour	Quarterly

9.2 Environmental Monitoring

Wexford County Council carries out a comprehensive environmental monitoring programme, in compliance with the waste licence conditions, to assess the significance of emissions. The monitoring programme includes Landfill Gas, Leachate Level & Quality, Surface Water Quality, Groundwater Level & Quality, Noise and Dust monitoring, Odour monitoring and Meteorological monitoring, as well as Biological and Topographical surveys. Bioaerosols monitoring was not undertaken during 2008 due to the fact that no composting operations took place on site during the reporting period.

Results interpretation focuses on the Control Rule principal. The Control Rule involves the establishment of Control Levels and Trigger Levels. A Control Level is set as an indicator of possible environmental pollution. A Trigger Level is defined as the level at which significant adverse environmental effects have occurred. The Control Rule that shall be implemented at HWMF is as follows: Breach of a trigger level will have occurred when the emission limit/control level is exceeded twice within four successive measurements.

There are emission limits in the license for gas and noise parameters. Interim Trigger Levels (based on available data) have also been set for selected groundwater parameters and emissions from the storm water attenuation pond. All other parameters monitored will be interpreted using similar principles or utilised as supplementary data to expand interpretation as applicable.

Contingency actions for Holmestown Waste Management Facility are set out in Table 12 below.

Table 12 **Contingency Actions**

Contingency Action	Control Level/ Emission Limit	Trigger Level
Advise Site Management	√	√
Report to EPA.		√
Confirm by repeat sampling and analysis	√	
Review existing monitoring information, control and trigger levels as applicable and report findings and recommendations to facility management.	√	√
Review site management and operations and report findings and recommendations to facility management.		√
Implement corrective procedures in consultation with the EPA		√

A breach (identified by the Control Rule) is to be treated as an incident. Incident reporting requirements are set out in sections 9.1 and 11.2 of the licence.

Monitoring during this reporting period was carried out according to Schedule D of Waste Licence W191-01. Monitoring reports for Quarters 1, 2, 3 and 4 of 2008 are summarised in this chapter.

9.3 Landfill gas

In accordance with Schedule D.1 of the Waste Licence W191-01, the following monitoring has been carried out and reported to the Agency.

- Perimeter gas monitoring boreholes GS11 to GS17 which were monitored on a bi-monthly basis



- Gas monitoring points located within the site office and weighbridge which were monitored on a continuous basis
- Gas investigation monitoring boreholes GW1 to GW10 installed during April 2008 as part of an investigation into naturally occurring gas levels at Holmestown Waste Management Facility were monitored on a bi-monthly basis

Gas monitoring points GS1 to GS10 will be installed as the site develops. GS1 will be located at the machinery shed while GS2 to GS10 will be located along the western boundary of the site. They are due to be installed in phases as the landfill is developed. GS5, GS6, GS7, GS8 and GS10 are due to be installed in the next phase of construction.

The majority of boreholes monitored were noted to have varying levels of gas quality present over the reporting period with no particular trend evident. The location of all gas monitoring boreholes can be found in *Figure 2: Monitoring Locations*. Detailed graphs showing gas trends over time can be found in *Appendix 3*.

Table 13 Gas Monitoring Points

List of landfill gas monitoring points for 2008	
Points	Description
GS11, GS12, GS13, GS14, GS15, GS16, GS17	Perimeter gas migration monitoring wells
GB1, GB2, GB3, GB4	Gas monitoring points in buildings
GW2 East west, GW3 East west, GW4 North south, GW5, GW6, GW7, GW8, GW9 East west, GW10	Gas investigation wells (March/April 2008)*
Middle stack	Vertical extraction well in Phase 1. Name changed to L4 as agreed with EPA. Monitoring results for October, November and December 2008 included in graphs in Appendix 3.

* Investigation of Naturally Occurring Background Gas Levels at Holmestown Landfill – Risk Assessment and Recommendations - Revision 1 and Investigation of Naturally Occurring Background Gas Levels at Holmestown Landfill – Risk Assessment and Recommendations – Trace Gas Analysis, Revision 2.

9.3.1 Carbon Dioxide (CO₂)

Perimeter gas migration monitoring wells (GS11 to GS17)

The CO₂ trigger level at the gas monitoring wells is 1.5% volume by volume (v/v)

CO₂ levels at GS13, GS14 and GS16 were noted to be consistently above the trigger level of 1.5% v/v during each of the monitoring rounds. These boreholes are located in the northern and north-east section of the landfill, around the boundary of Phase 1 where waste was deposited during 2008 (Cells 3 & 4). CO₂ levels as high as 48.9% were recorded at GS13 during July 2008 while at GS16 a CO₂ level of 45.9% was recorded during October 2008.



At GS11 the highest CO₂ level recorded was 1.5% v/v during April 2008. At GS12 the highest CO₂ level was 3.1% v/v during August 2008. GS15 did not exceed the trigger level throughout the monitoring period. A graph showing the recorded gas levels for each of the wells GS11 to GS17 can be found in *Appendix 3*.

An investigation into recorded gas levels within the perimeter gas wells GS11 to GS17 was carried out in early April 2008 prior to the placement of any waste material into Phase 1. The investigation determined that the source of the recorded methane and carbon dioxide levels within the wells was as a result of natural decaying processes on site i.e. the gases were naturally occurring in the ground. It was determined that when fill material was placed on top of the existing forest floor this acted as a semi impermeable blanket, inhibiting venting of gases arising from vegetation decomposition, and causing a build up of gases in the ground. A risk assessment was carried out and found that the risk associated with these naturally occurring methane and carbon dioxide gases on the site did not pose a significant risk, due to the underlying geology of the area. Holmestown Waste Management facility is a fully engineered landfill and the predominant underlying geology is clay. Clay acts as a natural containment material because of its low permeability i.e. gas is unable to move through the clay material for any considerable distance.

Additional gas investigation wells (GW2 to GW10)

A number of additional gas monitoring wells, namely GW2 – GW10, were installed on site during April 2008. The wells were installed as part of an investigation into elevated methane and carbon dioxide levels detected in existing perimeter gas monitoring wells prior to the acceptance of waste on site. The wells were positioned to the north east and east of the existing perimeter gas wells GS11 to GS17 and were installed to provide additional information on ground conditions and gas source layers on site. These wells were subsequently used as additional gas monitoring boreholes on site.

CO₂ levels detected at GW3 east, GW4 north and GW4 south, GW9 east and L4 (middle stack) were noted to be consistently above the trigger level of 1.5% v/v. The highest CO₂ level was detected at GW4 south during Quarter 3, 2008 at a concentration of 51.4%. Levels of CO₂ at GW2 west, GW3 west, GW5 and GW10 did not exceed the trigger level of 1.5% v/v during the reporting period. As previously discussed the detection of elevated carbon dioxide levels at a number of the monitoring wells were determined to be as a result of naturally occurring decaying processes on site. The risks associated with naturally occurring methane and carbon dioxide were deemed to be insignificant due to the underlying geology of the area. A graph showing the recorded gas levels for each of the wells GW2 to GW10 can be found in *Appendix 3*.

9.3.2 Methane (CH₄)

The CH₄ trigger level at the gas monitoring wells is 1.0% volume by volume (v/v)

Perimeter gas migration monitoring wells (GS11 to GS17)

CH₄ levels recorded at GS13, GS14, GS15 and GS16 were noted to be consistently above the trigger level of 1.0% v/v during the reporting period. CH₄ levels as high as 54.9% v/v were recorded in GS13 during October 2008.

Methane levels recorded at GS11 and GS12 were noted to be below the trigger level of 1.0% v/v during each of the monitoring periods with the exception of a slightly elevated methane reading in July 2008, when GS12 showed a result of 3.1%. GS17 was noted not to exceed the trigger level of 1.0% v/v throughout the monitoring period.



As previously discussed elevated methane and carbon dioxide levels detected in perimeter gas monitoring wells were determined to be from naturally occurring decaying processes on site. A graph showing the recorded gas levels for each of the wells GS11 to GS17 can be found in Appendix 3.

Additional gas investigation wells (GW2 to GW10)

CH₄ levels at monitoring points GW3 east, GW4 south, GW6, GW9 east, GW9 west and L4 (middle stack) were noted to be consistently above the trigger level of 1.0% v/v for the period April – December 2008. The highest CH₄ level was detected at GW4 south during Quarter 2, 2008 at a concentration of 50.9%. All other monitoring points were noted to be below the trigger level 1.0% v/v for the same period. The reason for the elevated methane levels has previously been discussed above. A graph showing the recorded gas levels for each of the wells GW2 to GW10 can be found in Appendix 3.

9.4 Leachate

9.4.1 Leachate levels

Leachate levels are monitored on a continuous basis. For the 2008 reporting period leachate levels were monitored at a single point only, namely L4 situated within Phase 1 (see Figure 2).

9.4.2 Leachate Quality

Leachate quality was monitored as per licence conditions during 2008. A sample was taken in October 2008 and analysed for a range of parameters. Details of the results are presented in Table 14 below.

Table 14 **Leachate analysis results October 2008**

Leachate analysis October 2008		
		Sampling point¹
Parameter	Units	L4
Ammonia	mg/l N	197.28
BOD	mg/l O ₂	40
Boron	µg/l B	393.7
Cadmium	µg/l Cd	0.4
Chloride	mg/l Cl	346.01
Chromium	µg/l Cr	24.8
COD	mg/l O ₂	604.0
Conductivity	µS/cm	3880.0
Copper	µg/l Cu	21.3
Total Cyanide	spectro	30
Fluoride	mg/l F	0.63



Leachate analysis October 2008		
		Sampling point ¹
Parameter	Units	L4
Lead	µg/l Pb	18.6
Mercury	µg/l Hg	<0.2
Nickel	µg/l Ni	84.5
Total Oxidised Nitrogen	mg/l N	0.17
pH	pH	7.5
Ortho-phosphate	mg/l P	0.041
Sulphate	mg/l SO ₄	269.74
Zinc	µg/l Zn	48.3

9.4.3 Inspection and testing of leachate storage tanks 2008

Integrity testing of the leachate storage tanks was carried out during December 2007. The test was carried out in accordance with the procedure described in the *Civil Engineering specification for the Water Industry (CESWI)*. All tanks assessed passed the integrity test.

9.5 Surface Water

Surface water is collected on site via a network of drains and is fed into the surface water collection pond to the north of the site at SWP1. The water settles in the pond and is then released to a petrol interceptor tank via SWP2. From the interceptor tank surface water then flows in an easterly direction to the stream on the east of the site and enters the stream at SW4. All clean surface water from paved roads and roofed areas on site drains into the constructed surface water drainage swales and is fed into the surface water collection pond.

Monitoring points SW1, SW2, SW3, SW6, SW7 and SW8 are located upstream of the discharge point SW4, while the monitoring point SW5 is located downstream of SW4 and downstream of the waste management facility. All surface water monitoring points are detailed in Figure 2.

Table 15 Surface water monitoring locations

Surface water Monitoring Locations	
Surface water monitoring point	SW1, SW2, SW2a, SW3, SW4, SW5, SW6, SW7, SW8, SW9
Surface water pond monitoring point	SWP1, SWP2

9.5.1 Visual inspection of surface water

A visual inspection of each of the surface water monitoring locations was carried out on a weekly during 2008 as per licence requirements. Records of the weekly inspections are kept on file at the site office and can be viewed at any time by appointment.

9.5.2 Surface Water Quality

Surface water analysis was carried out on a quarterly basis at each of the monitoring locations SW1 – SW8 during 2008.



The first surface water samples were collected in 2002. The results from this pre-construction and landfilling monitoring are utilised as baseline data for comparison as required.

Schedule C4 of the Licence sets discharge limits for the level of suspended solids from the outlet (SWP2) of the attenuation pond. The discharge limit (Trigger Level) is detailed in Table 16 below.

Table 16 Surface Water Discharge Limit.
Measured at the outlet of the surface water pond (SWP2).

Level (Suspended Solids mg/l)
25

In accordance with section 6.5.3 of the Licence proposals have been submitted to the Agency for continuous monitoring of water in the surface water retention ponds. These proposals include the criteria/trigger levels which determine when the outlet from these ponds shall be closed. The parameters monitored include conductivity, pH and TOC and are to be carried out on the inlet to the storm water retention pond. Interim levels have been set which are to be reviewed when more substantial data is available. The interim trigger levels are summarised in Table 17 below.

Table 17 Interim Trigger Levels for the Attenuation Pond.

Monitoring Point	pH		Electrical Conductivity	TOC
	Upper	Lower		
	pH Units		uS/cm	mg/l
SWP1	9.5	6.5	2500	-
SWP2	9.5	6.5	2500	-

WCC submission to the Agency recommends that TOC trigger levels are set when sufficient data has been accrued. For full details of attenuation pond trigger levels see report as follows:

- ◆ Fehily Timoney and Company (January 2008). Trigger Levels for Surface Water Retention Ponds.

Detailed monitoring results are presented in the quarterly monitoring reports submitted to the agency during the reporting period. Apart from an elevated ammonia level in SWP2 in Quarter 4 and exceedances of suspended solids throughout the reporting period which can be attributed to on-going maintenance and construction works all other parameters were recorded within acceptable limits. Copies of all monitoring reports are kept on file at the site office and can be viewed upon request.

9.5.3 Surface water Biological Survey

A biological survey of the surface water streams surrounding Holmestown Waste Management Facility was carried out on 16 July 2008 by Euro Environmental Services. A total of 4 locations were selected for monitoring as follows:

- KS01 Upstream SE of facility within the site boundary – Un-named stream
- KS02 Downstream NE of the facility within the site boundary – Un-named stream
- KS03 Downstream of the facility within the site boundary – Polehore stream

- KS04 Upstream of the facility within the site boundary – Polehore stream

The overall quality of the streams both upstream and downstream of the facility were determined to be moderately polluted and rated as Q3 at each of the monitoring points using the EPA Q-value rating system. There were no signs of animal access to the river at any of the monitoring locations. There was no noticeable difference in water quality between upstream and downstream locations. All surface water biological monitoring locations are detailed on Figure 2. A copy of the biological monitoring report is kept on file at the site office and can be viewed upon request.

9.6 Groundwater

Groundwater monitoring was carried out at a total of 7 locations on a quarterly basis as detailed with Schedule D of the waste licence. Figure 2 shows the location of all groundwater monitoring locations on site.

Table 18 **Groundwater Monitoring Locations**

Groundwater Monitoring Locations	
Existing Groundwater Monitoring Wells	BH1, BH2, BH3, BH6, BH7, BH8, BH9.

9.6.1 Groundwater levels

Monitoring of groundwater levels was carried out at each of the aforementioned locations on a monthly basis with the use of a dip meter. Details of groundwater levels are available for inspection at the site office and are also attached in Appendix 6 for review purposes. Groundwater levels remained relatively consistent throughout the monitoring period, with only minor variations in groundwater levels recorded in accordance with prevailing weather conditions.

9.6.2 Groundwater Quality

Each of the groundwater monitoring wells were analysed for a variety of chemical parameters as detailed in Table D.1.1 of the waste licence. Interim trigger levels have been set for groundwater at Holmestown Waste Management Facility for the parameters electrical conductivity (EC), chloride and ammoniacal nitrogen. For all other parameters the EPA Interim Guideline Values for Groundwater in Ireland have been used for comparison purposes. The interim trigger levels for pH and EC are as follows:

- Chloride – 30 mg/l
- EC - 2500 µg/cm
- Ammoniacal Nitrogen – 0.3 mg/l

Interim trigger levels are to be used in conjunction with a control rule. For Holmestown Waste Management Facility breach of a trigger level will have occurred when two exceedences occur within four successive measurements.

pH and EC

Overall pH and EC levels were noted to be below the interim trigger levels set for groundwater at each of the wells during the monitoring period with the exception of BH 2. At BH 2 elevated EC levels and low pH levels were noted during Quarter 1 and Quarter 4, 2008 ranging from 1533 to 1353 µg/cm and 6.2 to 6.4 pH units respectively.



Ammonia

Ammonia values in BH2 were noted to exceed the interim trigger level of 0.3mg/l NH₄ during each of the monitoring rounds. Ammonia values of 25.4mg/l, 28.81mg/l, 0.88mg/l, 0.74mg/l and 26.61mg/l were recorded during Q1 (analysed twice) to Q4 respectively. BH2 is located directly to the north of the active Phase 1 area where waste was deposited in Cells 3 and 4 during 2008.

Slightly elevated ammonia levels were also detected in BH1 (Quarter 1 – 0.42 mg/l), BH7 (Quarter 1 – 0.45 mg/l). Elevated ammonia values were detected in wells on site prior to the placement of any waste into Phase 1.

Chloride

The recommended EPA guideline value for chloride in groundwater is 30mg/l Cl. The interim trigger value for chloride at the site has also been set at 30 mg/l. A number of groundwater wells were noted to have elevated chloride values present in the water prior to the placement of any waste into Phase 1.

Chloride values were noted to range from 31.70 mg/l at BH8 during Quarter 1 to 100.24mg/l at BH2 during Quarter 2. During Quarter 1 elevated chloride readings were noted at BH2, BH7, BH8 and BH9. BH 2 consistently showed chloride levels above the limit of 30mg/l during each monitoring round.

At BH8 elevated chloride levels were found in Quarter 1 and Quarter 4, 2008 while at BH9 elevated chloride levels were detected during Quarter 1, Quarter 3 and Quarter 4, 2008. BH 8 is located to the west of Phase 1 close to the site boundary while BH 9 is situated directly to the east of Phase 1.

Graphs showing the results for ammonia and chloride at each of the monitoring wells during 2008 can be found in Appendix 4. All other parameters listed in the waste licence were noted to be within acceptable limits for each of the groundwater monitoring points during 2008.

Dissolved oxygen

There is no specific guideline value for Dissolved Oxygen levels for groundwater.

Dissolved oxygen levels were noted to range from 4.2% sat O₂ at BH2 during Quarter 2 to 33% sat O₂ detected at BH8 during Quarter 1, 2008. A level of 6 % sat O₂ was detected at BH2 during Quarter 1, 2008. Other wells which showed low DO levels ranging from 12.7% sat O₂ to 29 % sat O₂ included BH1 (Quarters 1 + 2), BH3 (Quarters 2 + 4), BH6 (Quarters 1, 2 + 4), BH7 (Quarter 1), BH8 (Quarters 1 – 4) and BH9 (Quarters 1, 2 + 4).

Annual Suite of Parameters

The annual suite of groundwater monitoring which includes a more comprehensive list of chemical parameters compared to the quarterly groundwater monitoring suite was carried out in May 2008.



Volatile organic compounds were detected in BH2 at a concentration of 107.6µg/l. Elevated iron and manganese levels were noted at a number of wells throughout the monitoring period possibly reflecting existing background levels in the groundwater. Groundwater with low dissolved oxygen levels can sometimes have elevated levels of iron and manganese due to the fact that these parameters become more soluble in oxygen poor waters. All other parameters listed within the waste licence were noted to be within acceptable limits during 2008 with the exception of a slightly elevated orthophosphate level detected in BH 1 at a concentration of 0.039mg/l. The EPA guideline value for orthophosphate is 0.03mg/l.

Monitoring results were not available for BH7 during Quarters 2, 3 and 4 due to a slow recharge time for the well on the day of sampling. Monitoring results were also unavailable for BH1 during Quarter 4 as the well was found to be dry during sampling.

Copies of all monitoring reports are kept on file at the site office and can be viewed upon request.

9.7 Private Wells

Table 19 Private Well Monitoring Locations

Private Well Monitoring Locations	
Private well monitoring points	PW1, PW2, PW2a, PW2b, PW4, PW5, PW6, PW7, PW8, PW9, PW10, PW11, PW11A.

Private well monitoring was carried out at a total of 13 locations on a quarterly basis as per licence requirements. The location of each of the private monitoring wells is detailed in Figure 2. As mentioned previously interim trigger values have been set for groundwater for the parameters ammoniacal nitrogen (0.30 mg/l), electrical conductivity (1,000µg/cm) and chloride (30mg/l). For all other parameters the EPA Interim Guideline Values for Groundwater in Ireland have been used for comparison purposes. With the exception of a slightly elevated ammonia level at PW 2 during Quarter 4 at a concentration of 0.43 mg/l all ammoniacal nitrogen and electrical conductivity results for each of the private wells were noted to be below the specified trigger level limits.

Slightly elevated manganese levels were detected at PW3, PW3A, PW4, PW4A and PW5 during Quarter 1 and Quarter 2, 2008 while at PW2A, PW4, PW4A and PW5 slightly elevated iron levels were found during Quarter 1 and Quarter 2, 2008. Low dissolved oxygen levels may be one possible reason for the reported levels of manganese and iron due to the fact that these elements become more soluble in water as dissolved oxygen levels decrease. Levels of manganese and iron were however noted to decrease during Quarter 3 and Quarter 4, 2008. Water hardness was recorded as moderate with a number of wells showing hardness (total) above 200mg/l at PW1, PW2A, PW2B, PW3, PW4A, PW7 and PW8 on a number of occasions reflecting the natural mineral content present in the water for the area.

At PW 2 (Quarter 3 + 4), PW 7 (Quarter 2) and PW 8 (Quarter 4) low pH levels were recorded in the groundwater ranging from 6.3 to 6.4 pH units.

All of the remaining parameters listed within the waste licence and monitored on a quarterly basis were noted to fall within acceptable limits for the reporting period. Due to a scheduling error testing for dissolved oxygen, chloride and total organic carbon was not carried out for any of the private wells during 2008.



Graphs showing water quality results for the parameters ammonia and chloride for each of the private well locations can be found in Appendix 4.

9.8 Noise

The EPA Waste Licence (W191-01) specifies that noise emissions from the site shall not exceed an LAeq 30 min. of 55dBA during the daytime and an LAeq 30 min. of 45 dBA during night time.

Under Schedule D4 of the waste licence, monitoring of noise emissions from the site is required on a quarterly basis at a number of onsite locations previously agreed with the Agency. During 2008 noise monitoring was carried out at a total of 10 locations.

Euro Environmental Services and Dixon Brosnan Environmental Consultants carried out day and night time noise monitoring at each of the predetermined noise monitoring locations around Holmestown Waste Management Facility. Measurements lasted 30 minutes.

Noise monitoring during 2008 was carried out as follows with the overall results detailed hereafter:

Quarter 1 – Day and night time noise monitoring was carried out at 10 locations between 27 – 28 March 2008.

Quarter 2 – Day time noise monitoring was carried out on 24th April and 29th May 2009. Night time noise monitoring was carried out on 23rd April, 24th April, 29th May and 30th May. All 10 noise monitoring locations were assessed.

Quarter 3 - Day and night time noise measurements were taken at 9 locations on 28th and 29th July, respectively. N6 was monitored on 14th August.

Quarter 4 – Day and night time noise measurements were taken at 9 locations between 01st – 29th October. N6 was monitored on 03rd November.

Noise results – Quarter 1

Day time Noise Monitoring Results				
Monitoring Location	Date & Time	L(A)eq	L(A)10	L(A)90
N1	27.03.08 @ 12:05	52	52	40
N2	27.03.08 @ 13:33	49	51	43
N3	27.03.08 @ 14:38	47	49	43
N4	27.03.08 @ 15:17	55	53	46
N5	27.03.08 @ 16:02	54	43	36
N6	27.03.08 @ 18:00	58	53	39
N7	27.03.08 @ 17:46	52	48	38
N8	27.03.08 @ 12:56	51	49	40
N9	27.03.08 @ 13:16	53	56	45
N10	27.03.08 @ 16:58	46	46	38

Night time Noise Monitoring Results				
Monitoring Location	Date & Time	L(A)eq	L(A)10	L(A)90
N1	27.03.08 @ 23:22	61	64	51
N2	27.03.08 @ 23:40	45	45	26
N3	28.03.08 @ 00:15	44	40	22
N4	27.03.08 @ 23:04	53	52	35



Night time Noise Monitoring Results				
N5	27.03.08 @ 22:44	57	59	46
N6	27.03.08 @ 22:00	40	41	31
N7	27.03.08 @ 22:04	69	56	43
N8	27.03.08 @ 23:54	59	61	46
N9	28.03.08 @ 00:24	66	70	34
N10	27.03.08 @ 22:31	47	40	31

Noise results –Quarter 2

Day time Noise Monitoring Results				
Monitoring Location	Date & Time	L(A)eq	L(A)10	L(A)90
N1	24.04.08 @ 14:37	61	62	52
N2	24.04.09 @ 10:39	57	58	51
N3	24.04.09 @ 11:22	62	53	47
N4	24.04.09 @ 12:22	58	56	48
N5	29.05.08 @ 14:03	40	42	34
N6	30.05.08 @ 15:57	54	59	36
N7	24.04.08 @ 13:52	53	55	42
N8	24.04.08 @ 09:34	59	59	51
N9	24.04.08 @ 10:06	60	60	49
N10	24.04.08 @ 13:02	67	53	43

Night time Noise Monitoring Results				
Monitoring Location	Date & Time	L(A)eq	L(A)10	L(A)90
N1	30.05.08 @ 00:25	36	40	26
N2	29.05.08 @ 22:00	41	44	35
N3	29.05.08 @ 22:37	31	32	23
N4	24.04.08 @ 00:18	64	56	44
N5	23.04.08 @ 23:08	51	53	43
N6	30.05.08 @ 22:06	51	56	27
N7	23.04.08 @ 22:00	51	53	43
N8	29.05.08 @ 23:48	38	39	27
N9	29.05.08 @ 23:13	39	43	31
N10	23.04.08 @ 23:39	78	61	47

Noise results –Quarter 3

Day time Noise Monitoring Results – Monitoring session 3				
Monitoring Location	Date & Time	L(A)eq	L(A)10	L(A)90
N1	28.07.08 @ 10:47	54	47	40
N2	28.07.08 @ 14:34	50	41	35
N3	28.07.08 @ 14:01	49	46	32
N4	28.07.08 @ 12:51	39	42	35
N5	28.07.08 @ 11:29	51	47	34
N6	14.08.08 @ 15:46	43	47	37
N7	28.07.08 @ 10:46	46	41	32
N8	28.07.08 @ 15:42	47	48	39



Day time Noise Monitoring Results – Monitoring session 3				
N9	28.07.08 @ 15:09	45	47	40
N10	28.07.08 @ 12:06	41	39	34

Night time Noise Monitoring Results – Monitoring session 3				
Monitoring Location	Date & Time	L(A)eq	L(A)10	L(A)90
N1	29.07.08 @ 00:41	37	39	23
N2	29.07.08 @ 01:50	56	59	42
N3	29.07.08 @ 01:41	45	41	23
N4	29.07.08 @ 00:07	40	40	23
N5	28.07.08 @ 23:33	37	34	26
N6	14.08.08 @ 22:07	34	35	30
N7	28.07.08 @ 22:00	71	74	59
N8	29.07.08 @ 03:24	61	64	48
N9	29.07.08 @ 02:24	68	72	38
N10	28.07.08 @ 22:43	57	61	29

Noise results – Quarter 4

Day time Noise Monitoring Results				
Monitoring Location	Date & Time	L(A)eq	L(A)10	L(A)90
N1	02.10.08 @ 14:48	58	60	50
N2	02.10.08 @ 16:45	62	59	46
N3	02.10.08 @ 15:31	58	56	46
N4	03.10.08 @ 11:43	40	42	36
N5	03.10.08 @ 12:38	42	44	38
N6	28.10.08 @ 09:46	46	49	37
N7	01.10.08 @ 16:28	43	46	37
N8	03.10.08 @ 11:01	50	48	42
N9	03.10.08 @ 10:27	50	51	45
N10	03.10.08 @ 13:30	50	50	39

Night time Noise Monitoring Results				
Monitoring Location	Date & Time	L(A)eq	L(A)10	L(A)90
N1	02.10.08 @ 23:38	52	52	40
N2	29.10.08 @ 22:00	48	51	38
N3	02.10.08 @ 22:45	51	54	41
N4	02.10.08 @ 00:09	74	42	25
N5	01.10.08 @ 23:26	42	37	28
N6	27.10.08 @ 22:34	31	31	29
N7	27.10.08 @ 22:01	43	44	33
N8	02.10.08 @ 22:02	52	55	44
N9	29.10.08 @ 22:54	59	54	35
N10	01.10.08 @ 23:26	47	46	27

- indicated exceedance above licence limits



Exceedances recorded during the reporting period (highlighted in yellow) were attributed to various factors including interference from heavy rain, general machinery noise from the active landfill face during operational hours, dogs barking, strong wind, noise from leaves in trees rustling, traffic from the main road and nearby water course. Copies of all reports can be found on file in the site office and are available for review upon request.

9.9 Dust

Euro Environmental Services carried out dust monitoring was at three representative locations using Bergerhoff dust gauges on three separate occasions during 2008, as specified in Schedule D.3.1 of the waste licence. Sampling locations and results are provided in the table below. The location of all dust monitoring locations can be found in Figure 2.

9.9.1 Dust monitoring results

Dust Monitoring Locations and Frequency			
Dust analysis	On site	D1 – D10	Licence requires three times a year
Dust Monitoring Results (mg/m ² /day)			
	26 th June to 29 th July 2008	06 th August to 06 th September 2008	09 th October to 09 th November 2008
D1	128.6	115.6	424.0
D2	16.2	20.0	72.0
D3	Nd	22.9	136.0
D4	105.4	26.3	728.0
D5	28.8	19.5	147.0
D6	147.5	55.2	480.0
D7	562.9	191.5	324.0
D8	44.0	13.0	189.0
D9	Nd	14.2	136.0
D10	31.6	35.3	105.0

The dust deposition limit of 350 mg/m²/day was exceeded a total of four times during the reporting period as follows:

- At monitoring location D7 during the sampling period June/July 2008 with a value of 562.9mg/m³/day
- At location D1 during the period October/November 2008 with a value of 424.0mg/m³/day.
- At location D4 during the sampling period October/November 2008 with a value of 728.0mg/m³/day

- At location D6 during the sampling period October/November 2008 with a value of 480.0mg/m³/day.

The most likely reason for the exceedances at D1, D4 and D6 was reported as the presence of algae in the sample jars. The monitoring points were noted to be located in close proximity to over hanging wooded areas which may have contributed to leaf blown litter collecting in the jars and associated algae then becoming established within the jars. It is proposed that the locations of the dust monitoring stations be reviewed in 2009 to ensure that future dust monitoring locations are situated away from overhanging trees.

A graph of the dust monitoring results for 2008 can be found in Appendix 5. Copies of all monitoring reports are kept on file at the site office and can be viewed upon request.

9.10 PM₁₀ Monitoring

PM₁₀ monitoring was carried out as per Licence condition D.3.1 over a 24 hour period from 09th – 10th October, 2008. PM₁₀ monitoring was undertaken at the same locations as the dust monitoring locations. All results were noted to be below the trigger value of 50ug/m³ as specified in the waste licence. A graph showing each of the PM₁₀ values recorded for 2008 can be found in Appendix 5.

Table 20 PM₁₀ Monitoring Results

PM ₁₀ Monitoring	
Location	Result (ug/m ³)
D1	23.61
D2	4.17
D3	20.83
D4	13.89
D5	0
D6	18.03
D7	30.56
D8	27.78
D9	27.78
D10	0

9.11 Odour

Odour monitoring was carried out at Holmestown Waste Management Facility during Q3 and Q4 as per EPA Guidance. Three odour monitoring points previously agreed with the Agency were monitored and labelled OD1, OD2 and OD3. OD1 is located to the northeast of the landfill on a bordering farm property. OD2 is located on the landfill between the active tipping area and Holmestown Little on the western boundary of the site. OD3 is located between the landfill and Bolgerstown on the eastern boundary of the site. Two additional locations are also selected on the day the assessment is carried out, one up wind and one down wind of the active landfill area. Odour monitoring is based on a combination of odour persistence which is rated on a scale of 0 to 2 (0 = none, 1 = intermittent, 2 = persistent), and odour intensity which is rated on a scale of 0 to 4 (0 = none, 1 = faint, 2 = moderate, 3 = strong, 4 = very strong).

No odour persistence or intensity was recorded during Q3 at the monitoring points.



Details of the odour monitoring logs can be found in Appendix 5. All incidents of odour complaints are investigated immediately and every effort is made to identify the source of any odours which are then rectified as a matter of urgency. On a daily basis site personnel carry out a brief walkover of the site, to assess potential odour issues. If any odours are identified during the walkover then measures are implemented to reduce or remove the source of odour as soon as possible. Copies of all monitoring reports are kept on file at the site office and can be viewed upon request.

9.12 Bioaerosols

Bioaerosols monitoring was not carried out on site at Holmestown Waste Management Facility during 2008. As per licence conditions bioaerosols monitoring is only required to be carried out upon commencement of composting operations on site. To date no composting of materials has taken place at Holmestown Waste Management Facility.

9.13 Meteorological monitoring

All monitoring information was obtained from the weather station located at Johnstown House in Wexford; this station is within 10km of Holmestown Waste Management Facility. A full set of data has previously been sent to the Agency on a quarterly basis. Meteorological graphs showing trends over time are available for review in Appendix 7. Copies of all monitoring reports are kept on file at the site office and can be viewed upon request.



Figures

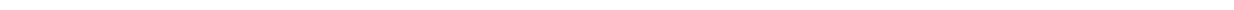
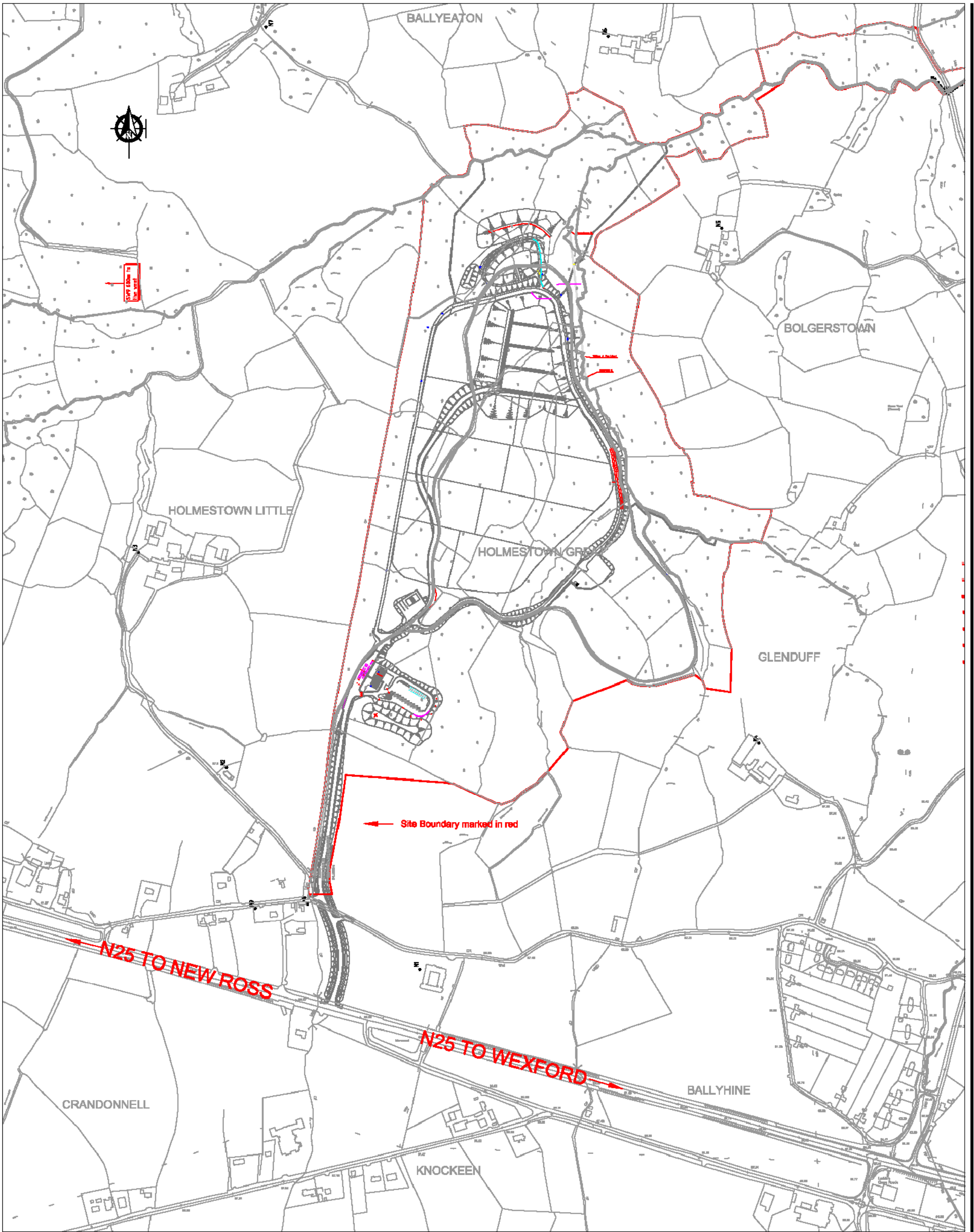




Figure 1 Site Location Map



**Wexford
County
Council**



**Holmestown Waste
Management Facility**
Wexford County Council,
Wexford
Tel: 053-9120922

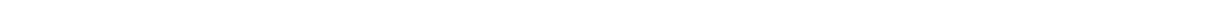
PROJECT TITLE:
**Holmestown Waste Management
Facility**

DRAWING TITLE:
**Figure 1
Site Location Plan**

DRAWN:
CHECKED:
DATE:
SCALE:
DRAWING No:



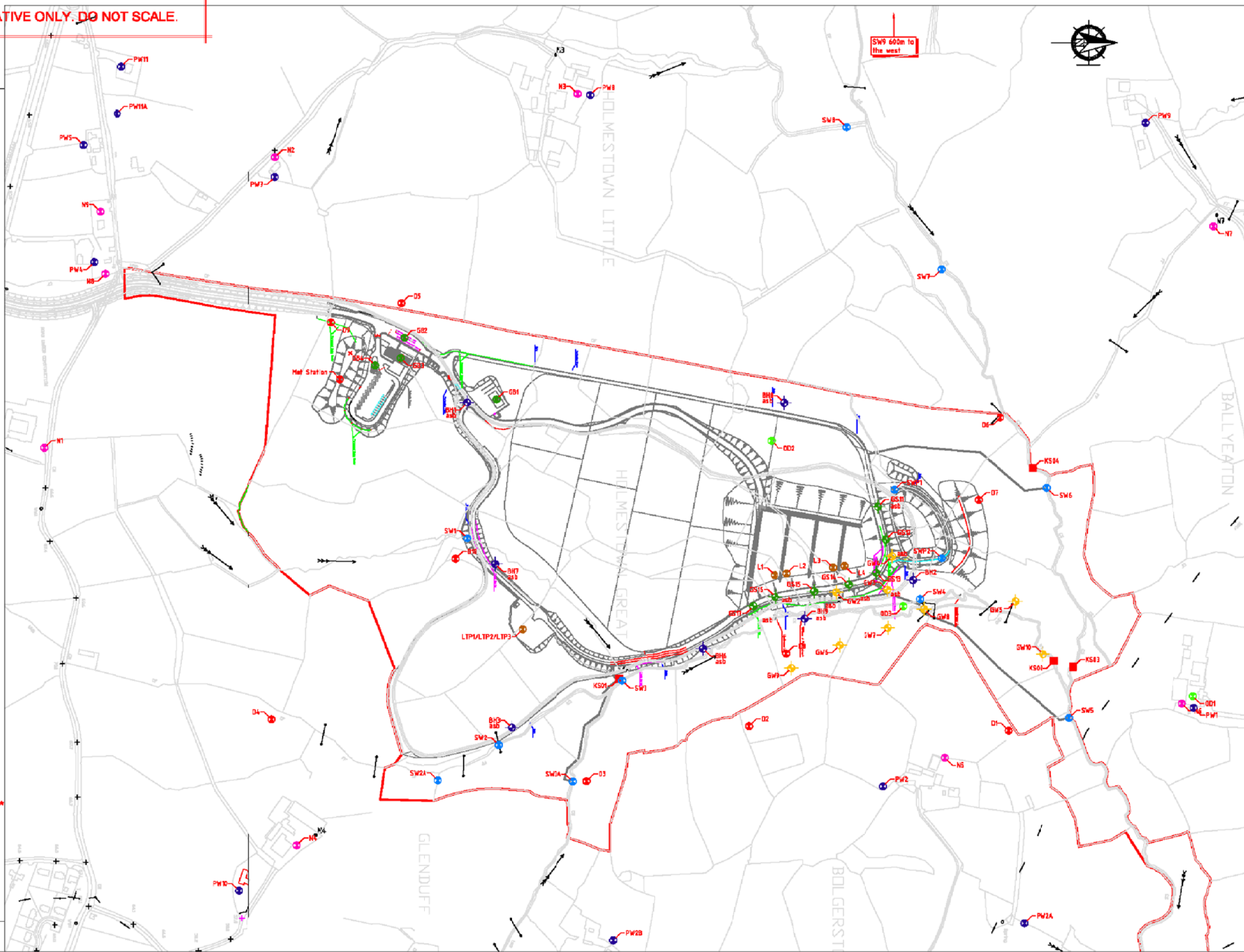
Figure 2 Monitoring Locations



DRAWING IS INDICATIVE ONLY. DO NOT SCALE.

BH1	297038.975	122914.473	42.730
BH2	297208.259	123408.887	14.707
BH3	297607.800	122878.303	24.256
BH5	297118.262	123352.888	0.000
BH6	297363.118	123153.185	17.184
BH7	297278.112	122854.464	33.137
BH8	297940.298	123270.843	33.285
BH9	297355.738	123298.788	23.888
BH10	297186.000	123330.000	0.000
D1	297511.748	123583.241	0.000
D10	297284.704	122797.578	0.000
D2	297608.338	123218.998	0.000
D3	297884.834	122848.308	0.000
D4	297408.487	122832.488	0.000
D6	298887.048	122718.788	0.000
D8	297081.388	123680.984	0.000
D7	297178.938	123580.038	0.000
D9	297401.931	123273.788	0.000
D8	298854.782	123817.587	0.000
GB1	297035.277	122856.228	0.000
GB2	298948.853	122723.357	0.000
GB3	298875.975	122717.818	0.000
GB4	298868.415	122811.418	0.000
GB11	297188.710	123408.848	23.368
GB12	297287.100	123418.981	0.000
GB13	297284.989	123403.337	17.844
GB14	297301.851	123322.823	17.238
GB16	297311.888	123313.406	17.338
GB18	297318.988	123298.097	0.000
GB17	297335.300	123288.333	18.368
GW1	297323.000	123587.000	0.000
GW2	297313.000	123545.000	0.000
GW3	297308.000	123418.000	0.000
GW4	297281.000	123428.000	0.000
GW5	297328.000	123803.000	0.000
GW6	297368.000	123550.000	0.000
GW7	297280.000	123420.000	0.000
GW8	297287.000	123412.000	0.000
GW9	297422.000	123281.000	0.000
GW10	297402.000	123943.000	0.000
KS01	297437.000	123333.000	0.000
KS02	297411.800	123288.588	0.000
KS03	297438.128	123808.388	0.000
KS04	297154.000	123838.000	0.000
L1	297288.298	123298.887	0.000
L2	297285.780	123214.312	0.000
L3	297277.324	123340.788	0.000
L4	297274.778	123356.848	0.000
LTP1/LTP2/LTP3	297288.033	123893.971	0.000
M1	297033.882	122188.788	0.000
M2	298888.388	122804.241	0.000
M3	298888.982	122873.801	0.000
M4	297878.851	122885.448	0.000
M5	297617.287	123583.548	0.000
M6	297308.322	123878.843	0.000
M7	298788.828	123877.905	0.000
M8	298884.738	123293.882	0.000
M9	298785.477	122285.437	0.000
PW1	297478.900	123850.882	18.338
PW10	297742.158	123485.520	0.000
PW11	298558.802	123317.028	0.000
PW2	297848.337	123408.888	0.000
PW2A	297884.888	123893.388	0.000
PW2B	297827.481	123031.488	0.000
PW4	298887.888	122278.877	0.000
PW5	298888.484	122281.078	0.000
PW6	298748.425	123477.448	0.000
PW7	298718.488	123537.448	0.000
PW8	298607.354	123001.803	0.000
PW9	298857.800	123790.527	0.000
SW1	297238.001	122814.848	0.000
SW2	297532.458	122858.447	0.000
SW2A	297883.282	122772.100	0.000
SW3	297438.978	123037.365	0.000
SW3A	297888.017	122988.788	0.000
SW4	297322.540	123488.848	0.000
SW5	297488.852	123880.581	0.000
SW6	297182.838	123948.888	0.000
SW7	298848.357	123488.913	0.000
SW8	298843.048	123358.888	0.000
SW9	298827.358	123314.882	0.000
SWP1	297186.348	123428.828	0.000
SWP2	297284.018	123487.170	0.000
OD1	297888.000	123880.000	
OD2	297885.000	123882.000	
OD3	297833.000	123442.000	
Met Station	297008.800	122881.500	0.000

* Approximate, to be checked on site



Legend

- GS1 Perimeter Gas Migration Monitoring Well
- GB1 Gas Monitoring Point in Building
- SW1 Surface Water Monitoring Point
- SWP1 Surface Water Pond Monitoring Point
- PW1 Private Well (subject to owners consent)
- BH1 Existing Groundwater Monitoring Well
- L1 Leachate Monitoring Point
- LTP1 Leachate Treatment Plant Monitoring Point
- M1 Noise Monitoring Point
- DT1 Dust Monitoring Point
- OD1 Odour Monitoring Point
- Met Station Met Station
- SW1 Methane Gas Investigation Well (Mar/Apr 2008)
- KS01 Biological Monitoring Points

Wexford County Council



Holmestown Waste Management Facility

Wexford County Council,
Wexford
Tel: 053-9120922

Drawing Notes

No.	Revision Description	Date	Ini.	Ckd.

No.	Revision Description	Date	Ini.	Ckd.

Project Title
Holmestown Waste Management Facility

Drawing Title
Figure 2
Monitoring Locations

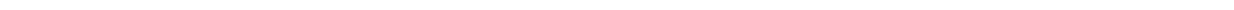
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Checked FH
Date 21-04-09
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Surveyed FR
Drawing No. 001



APPENDICES



A1 PRTR 2008





AER Returns Worksheet

Version 1.1.04

REFERENCE YEAR	2008
-----------------------	------

1. FACILITY IDENTIFICATION

Parent Company Name	Wexford County Council
Facility Name	Holmestown Waste Management Facility
PRTR Identification Number	W0191
Licence Number	W0191-01

Waste or IPPC Classes of Activity

No.	class_name
3.5	Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment.
3.6	Biological treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1. to 10. of this Schedule.
3.7	Physico-chemical treatment not referred to elsewhere in this Schedule (including evaporation, drying and calcination) which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1. to 10. of t...
3.11	Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.
3.12	Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.
3.13	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.
4.2	Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).
4.3	Recycling or reclamation of metals and metal compounds.
4.9	Use of any waste principally as a fuel or other means to generate energy.
4.10	The treatment of any waste on land with a consequential benefit for an agricultural activity or ecological system.
4.11	Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.
4.12	Exchange of waste for submission to any activity referred to in a preceding paragraph of this Schedule.
4.13	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.
4.4	Recycling or reclamation of other inorganic materials.
3.1	Deposit on, in or under land (including landfill).
3.2	Land treatment, including biodegradation of liquid or sludge discards in soils.
3.4	Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.

Address 1	Barntown
Address 2	Co. Wexford
Address 3	
Address 4	
Country	Ireland
Coordinates of Location	0.000
River Basin District	IESE
NACE Code	382
Main Economic Activity	Waste treatment and disposal
AER Returns Contact Name	Dan McCartan
AER Returns Contact Email Address	Dan.mccartan@wexfordcoco.ie
AER Returns Contact Position	Executive Engineer
AER Returns Contact Telephone Number	052 - 9120872
AER Returns Contact Mobile Phone Number	
AER Returns Contact Fax Number	
Production Volume	0.0
Production Volume Units	
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	0
User Feedback/Comments	Emissions to Water: no flow is specified in the licence. No annual load could be calculated so there is no result for suspended solids for this document. Emissions to Wastewater & Sewer: there are no leachate analysis results for alkalinity and dissolved methane as specified in the licence.
Web Address	http://www.wexford.ie/wex/Departments/Environment/HolmestownWasteManagementFacility/

2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
-----------------	---------------

3. SOLVENTS REGULATIONS (S.I. No. 543 of 2002)

Is it applicable?	No
Have you been granted an exemption?	No
If applicable which activity class applies (as per Schedule 2 of the regulations)?	
Is the reduction scheme compliance route being used?	

4.1 RELEASES TO AIR

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR								
POLLUTANT		METHOD			QUANTITY			
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
						0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO AIR								
POLLUTANT		METHOD			QUANTITY			
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
01	Methane (CH4)	C	OTH	Rule of Thumb' method: 1 tonne of biodegradable waste produces 6 metres cubed of landfill gas per year for 10 years after emplacement.		69523.44	0.0	69523.44

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION C : REMAINING POLLUTANT EMISSIONS (As required in your Licence)

RELEASES TO AIR								
POLLUTANT		METHOD			QUANTITY			
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
						0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

Additional Data Requested from Landfill operators

For the purposes of the National Inventory on Greenhouse Gases, landfill operators are requested to provide summary data on landfill gas (Methane) flared or utilised on their facilities to accompany the figures for total methane generated. Operators should only report their Net methane (CH4) emission to the environment under T(total) KG/yr for Section A: Sector specific PRTR pollutants above. Please complete the table below:

Landfill:	Holmestown Waste Management Facility			
Please enter summary data on the quantities of methane flared and / or utilised			Method Used	
	T (Total) kg/Year	M/C/E	Method Code	Designation or Description
Total estimated methane generation (as per site model)	0.0			Facility Total Capacity m3 per hour
Methane flared	0.0			3000.0 (Total Flaring Capacity)
Methane utilised in engine/s	0.0			0.0 (Total Utilising Capacity)
Net methane emission (as reported in Section A above)	0.0			N/A

4.2 RELEASES TO WATERS

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO WATERS	
POLLUTANT	
No. Annex II	Name

* Select a row by double-clicking on the Pollutant Name (Column B)

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO WATERS	
POLLUTANT	
No. Annex II	Name

* Select a row by double-clicking on the Pollutant Name (Column B)

SECTION C : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

RELEASES TO WATERS	
POLLUTANT	
Pollutant No.	Name

* Select a row by double-clicking on the Pollutant Name (Column B)

Data on ambient monitoring of storm/surface water or groundwater, conducted as part of your licence requirements, should NOT

M/C/E		Method Used		Emission Point 1	T (Total) KG/Year
		Method Code	Designation or Description		
				0.0	0.0

then click the delete butt

M/C/E		Method Used		Emission Point 1	T (Total) KG/Year
		Method Code	Designation or Description		
				0.0	0.0

then click the delete butt

M/C/E		Method Used		Emission Point 1	T (Total) KG/Year
		Method Code	Designation or Description		
				0.0	0.0

then click the delete butt

To be submitted under AER / PRTR Reporting as this only concerns Releases from your facility

QUANTITY	
A (Accidental) KG/Year	F (Fugitive) KG/Year
0.0	0.0

QUANTITY	
A (Accidental) KG/Year	F (Fugitive) KG/Year
0.0	0.0

QUANTITY	
A (Accidental) KG/Year	F (Fugitive) KG/Year
0.0	0.0

4.3 RELEASES TO WASTEWATER OR SEWER

SECTION A : PRTR POLLUTANTS

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER									
POLLUTANT		METHOD			QUANTITY				
No, Annex II	Name	M/C/E	Method Used		Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year	
			Method Code	Designation or Description					
06	Ammonia (NH3)		ALT	Procedure os based on the 'Standard Method for the Examination of Water and Wastewater 2005, 21st Edition, Method 4500 NH3 F'. Awuachem method AMMDIC and SSA Book Series 5, Methods of Soil analysis - Extraction of Exchangeable Ammonium and Nitrate and Nitrite 1996	L4	0.656	0.656	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER									
POLLUTANT		METHOD			QUANTITY				
Pollutant No.	Name	M/C/E	Method Used		Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year	
			Method Code	Designation or Description					
303	BOD		ALT	Procedure is based on 'Standard Method for the Examination of Water and Wastewater 2005, 21st Edition, Method 5210B	L4	0.133	0.133	0.0	0.0
306	COD		ALT	Procedure is based on 'Standard Method for the Examination of Water and Wastewater 2005, 21st Edition, Method 5220D	L4	2.01	2.01	0.0	0.0
327	Nitrate (as N)		ALT	Procedure is based on 'Standard Method for the Examination of Water and Wastewater 2005, 21st Edition, Method 4500-NO3 H	L4	0.000566	0.000566	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

4.4 RELEASES TO LAND

SECTION A : PRTR POLLUTANTS

RELEASES TO LAND	
POLLUTANT	
No. Annex II	Name

* Select a row by double-clicking on the Pollutant Name (Column B)

SECTION B : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

RELEASES TO LAND	
POLLUTANT	
Pollutant No.	Name

* Select a row by double-clicking on the Pollutant Name (Column B)

METHOD			
M/C/E	Method Used		Emission Point 1
	Method Code	Designation or Description	
			0.0

then click the delete button

METHOD			
M/C/E	Method Used		Emission Point 1
	Method Code	Designation or Description	
			0.0

then click the delete button

QUANTITY	
T (Total) KG/Year	A (Accidental) KG/Year
0.0	0.0

QUANTITY	
T (Total) KG/Year	A (Accidental) KG/Year
0.0	0.0

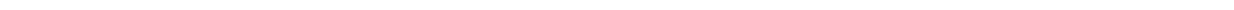
5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

Transfer Destination	European Waste Code	Hazardous	Quantity T/Year	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Name and Licence / Permit No. of Recoverer / Disposer / Broker	Address of Recoverer / Disposer / Broker	Name and Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)	Licence / Permit No. of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	20 03 01	No	1799.82	mixed residual waste (household)	D1	M	Weighed	Onsite in Ireland	Holmestown Landfill W0191-01	Holmestown, Barnstown, Wexford		
Within the Country	20 01 01	No	34.52	cardboard non-packaging,	R3	M	Weighed	Offsite in Ireland	Geoff recycling Ltd. WO0229-01	Kilrane, Rosslare, Wexford		
Within the Country	20 01 01	No	42.6	newspaper & magazines	R3	M	Weighed	Offsite in Ireland	Recycling 2000 (newspapers) WP/06/06. Greenstar (magazines) WO220-01	Recycling 2000, Rosslare Road, Wexford & Greenstar, Ramstown, Gorey, Co. Wexford		
Within the Country	15 01 07	No	36.0	glass packaging	R3	M	Weighed	Offsite in Ireland	South East Recycling. WO111-03	Pembrokestown, Co. Wexford		
Within the Country	15 01 04	No	1.62	aluminium cans (packaging)	R4	M	Weighed	Offsite in Ireland	South East Recycling. WO111-04	Pembrokestown, Co. Wexford		
Within the Country	20 01 40	No	116.12	other metals (non-packaging)	R4	M	Weighed	Offsite in Ireland	Killurin Landfill WO016-02.	Crossabeg, Wexford. Carrigbawn,		
Within the Country	15 01 02	No	10.0	plastic packaging	R3	M	Weighed	Offsite in Ireland	South East Recycling. WO111-04	Pembrokestown, Co. Wexford		
Within the Country	20 01 11	No	14.42	textiles (non-packaging)	R3	M	Weighed	Offsite in Ireland	Textile Recycling Ltd.	Glen Abbey Complex, Balgard Road, Tallaght, Dublin		
Within the Country	20 01 34	No	6.96	small batteries	R5	M	Weighed	Offsite in Ireland	Enva Environmental 084/1	Clonman, Portlaoise, Co. Laois		
Within the Country	16 06 01	Yes	20.0	lead acid batteries	R5	M	Weighed	Offsite in Ireland	Enva Environmental 084/1	Clonman, Portlaoise, Co. Laois		
Within the Country	13 02 08	Yes	2.98	lubrication, vehicle, machine, other	R9	M	Weighed	Offsite in Ireland	Enva Environmental 084/1	Cedar Resource Management, Unit 14A1, Greenogue Business Park, Rathcoole, Dublin		
Within the Country	20 01 35	Yes	199.34	mixed WEEE	R5	M	Weighed	Offsite in Ireland	Immark Ireland 185/01	Kilkenny Road, Athy, Co. Kildare		
Within the Country	20 01 21	Yes	0.12	flourescent tubes and lighting	R5	M	Weighed	Offsite in Ireland	Irish Lamp Recycling Ltd. 02/20013	Geoff recycling Ltd. WO0229-01		
Within the Country	20 01 01	No	7.84	tetra pack	R3	M	Weighed	Offsite in Ireland	Geoff recycling Ltd. WO0229-01	Kilrane, Rosslare, Wexford		

* Select a row by double-clicking the Description of Waste then click the delete button



A2 Staff Training Records




Subject	Staff Member								Target Dates for completion	Details
	Barry Browne	Noel Byrne	John Jordan	Joe Browne	Kevin Murphy	Eamon Kelly	Larry Nolan	John Hudson		
HEALTH & SAFETY										
Fas Safe Pass										
Basic First Aid										
Occupational First Aid										
Current Health and Safety Legislation (Course to be agreed)										
									Jun-09	Internal Wex co co
									Dec-09	
ENVIRONMENT AND LANDFILL COURSES										
CSCS Tickets -Loading Shovel										
									Jun-09	F.A.S.
CSCS Tickets -Compactor										
									Jun-09	F.A.S.
CSCS Tickets -360 Excavator										
CSCS Tickets -Dumper										
									Jun-09	F.A.S.
Fas Waste Management Certificate										
									Dec-09	F.A.S.
Manual Handling										
Fas Waste Operatives Training Course										
									Dec-09	F.A.S.
Certificate in the Use of Fire Extinguishers										
									Dec-08	Larry Brown Fire Safety
Small Plant Course										
									Dec-09	Daralinn H&S
Banksman training										
									Dec-09	Daralinn H&S
Customer Care										
									Jun-09	Internal Wex co co
GENERAL COURSES										
E.C.D.L Computer Course										
									Dec-09	Westgate Computer Centre
Beginners Computers										
									Dec-09	Westgate Computer Centre

- Course/ Training Complete
- Course/ Training Not Complete
- Recommend attend course/training

Subject	Staff Member				Target Dates for completion	Details
	Dan McCartan	Finian Ryan	Fran Hobbs	Billy Byrne		

HEALTH & SAFETY

Fas Safe Pass						
Occupational First Aid						
Certificate in Health & Safety , Welfare and management						
Current Health and Safety Legislation (Course to be agreed)					Dec-09	

 Course/ Training Complete

 Course/ Training Not Complete

 Recommend attend course/training

ENVIRONMENT AND LANDFILL COURSES

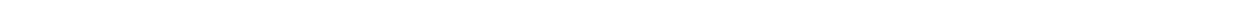
Fas Waste Management Certificate					Dec-09	F.A.S.
Fas Waste Management On-Site Competency Assessment					Dec-09	F.A.S.
FAS Leachate and Landfill Gas Management and Control					Dec-09	F.A.S.
Manual Handling						
Customer Care					Jun-09	Internal Wex co co
Certificate in the Use of Fire Extinguishers					Dec-08	Larry Brown Fire Safety
New Conditions of Contract (Course to be agreed)					Dec-09	
IOSH Certificate of Competence in Environmental Noise Measurement					Dec-09	Enviraud

GENERAL COURSES

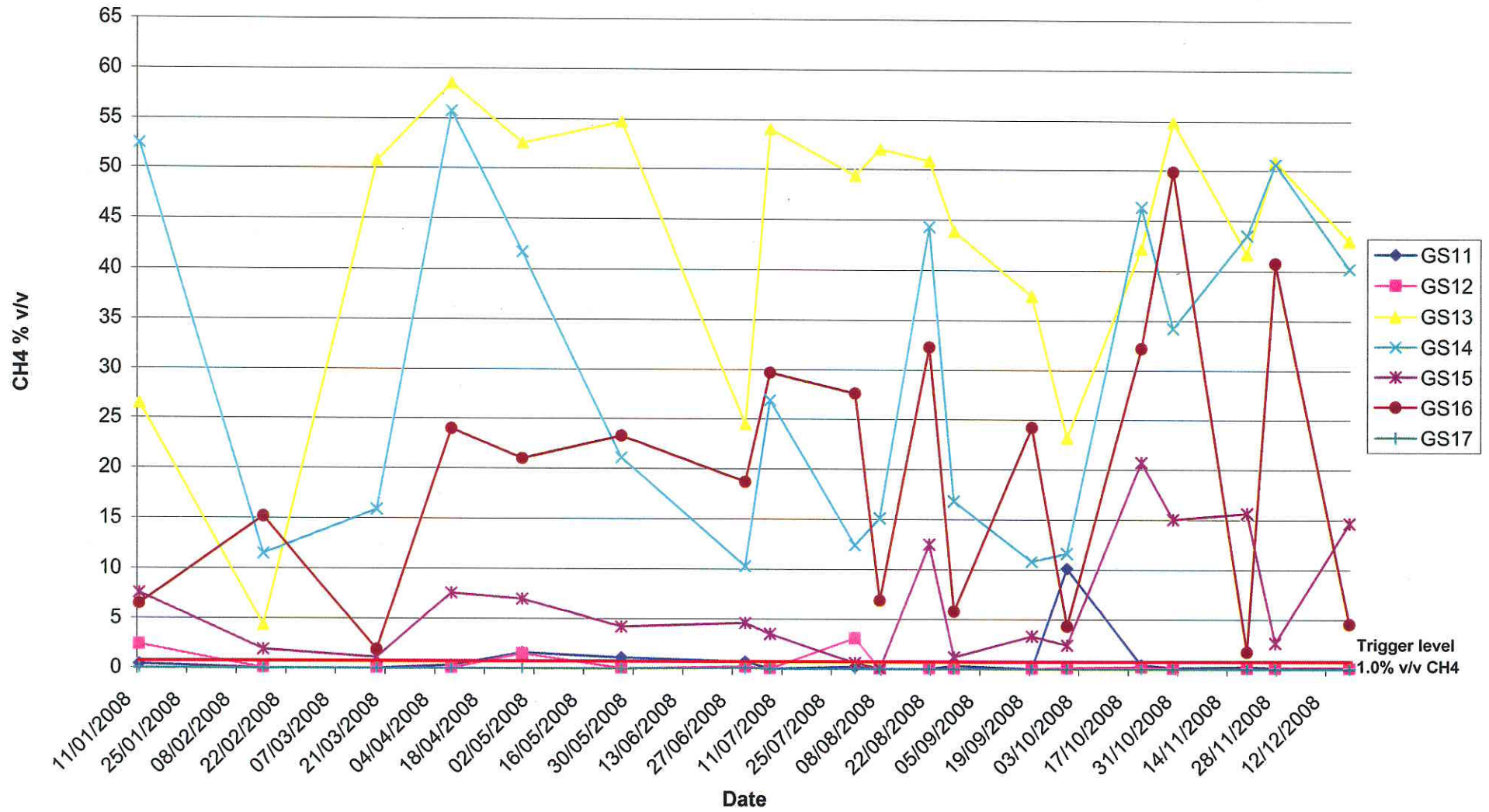
E.C.D.L Computer Course						
Certificate in Local Government Studies						
Financial software (Course to be agreed)					Dec-09	
Report Writing (Course to be agreed)					Dec-09	



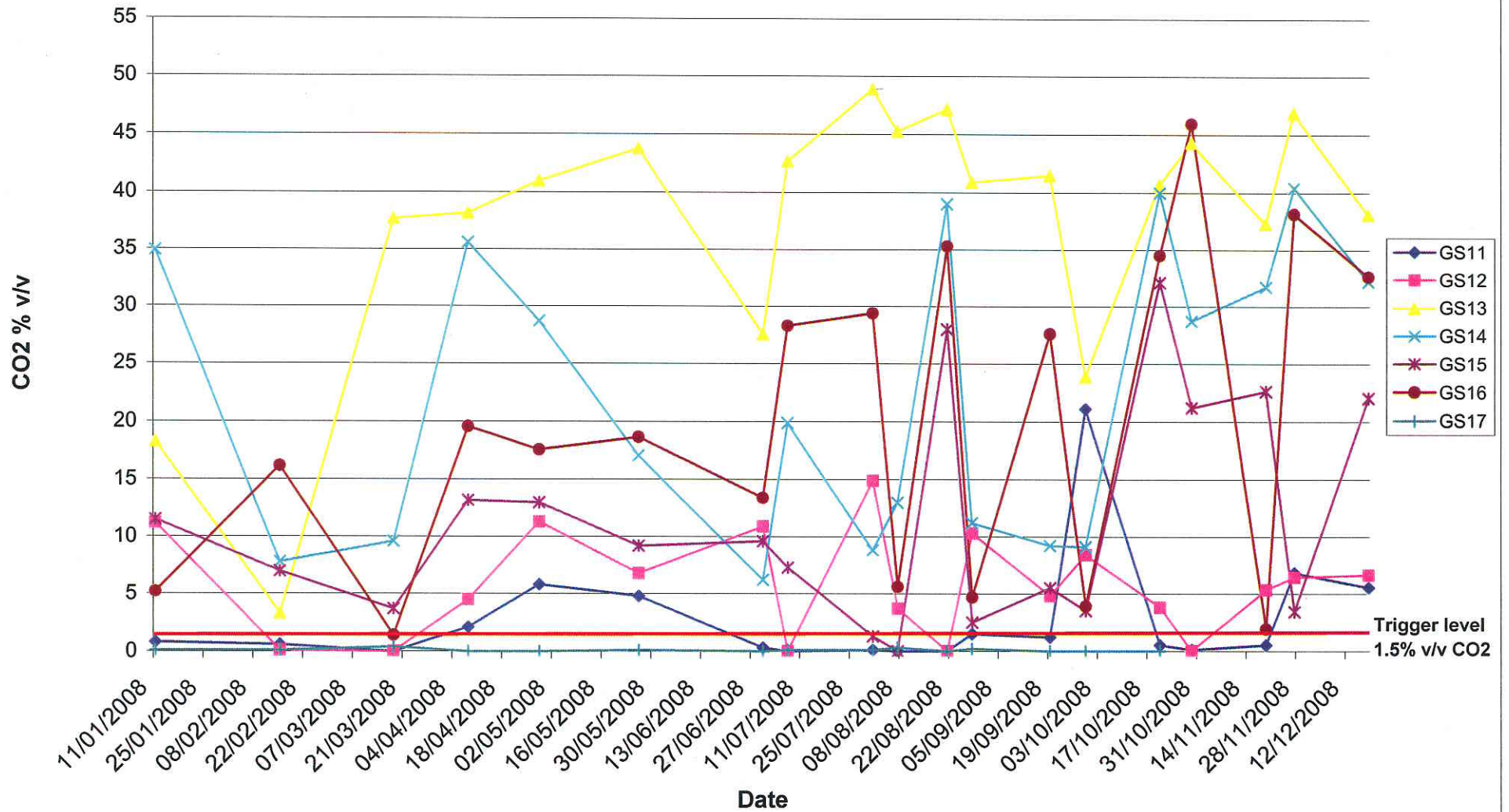
A3 Gas Monitoring Time Series Graphs



CH4 Levels - Perimeter Gas Wells - Holmestown Waste Management Facility 2008

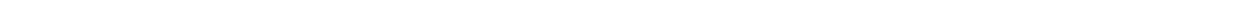


CO2 Levels - Perimeter Gas Wells Holmestown Waste Management Facility 2008

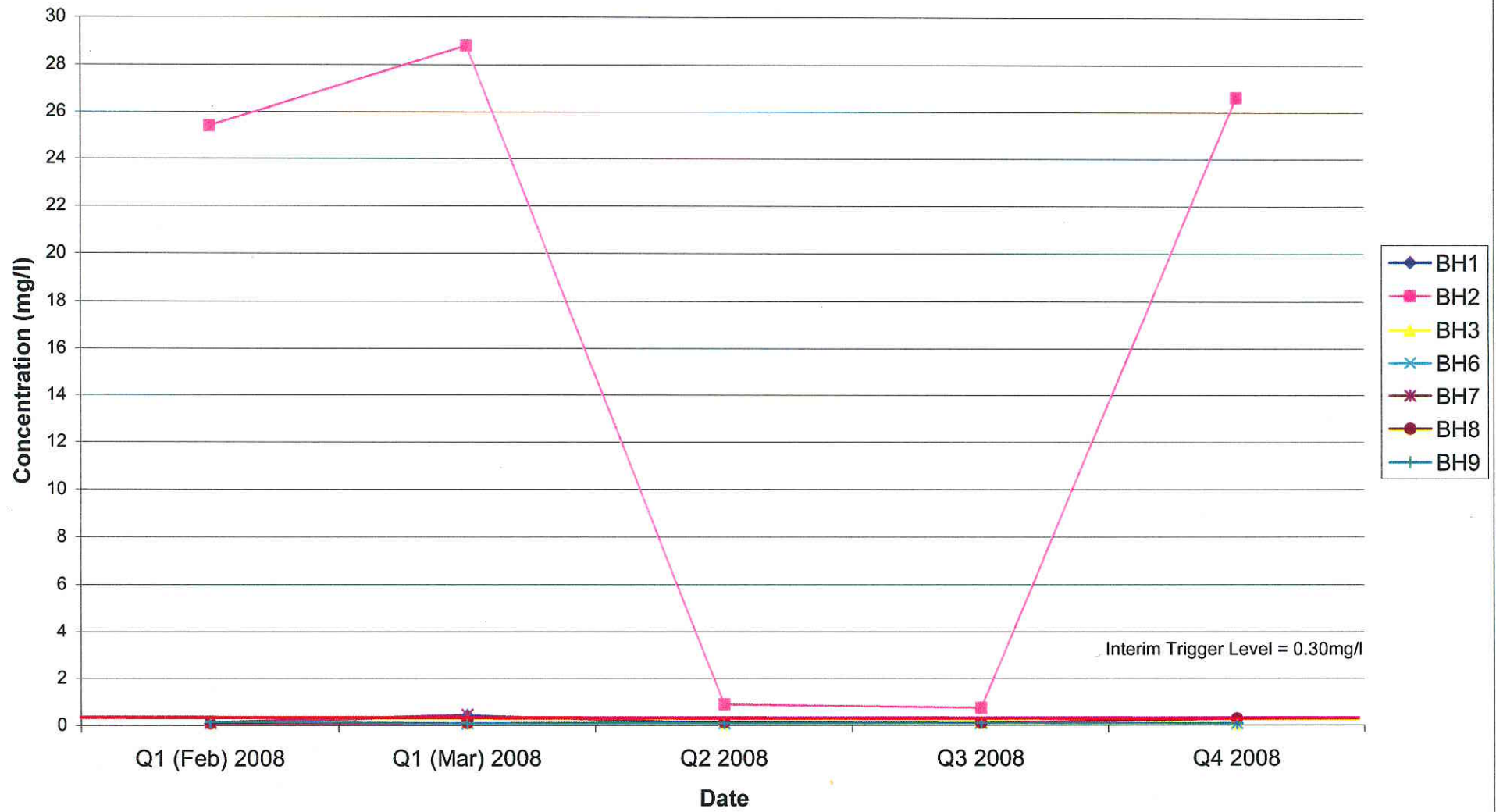




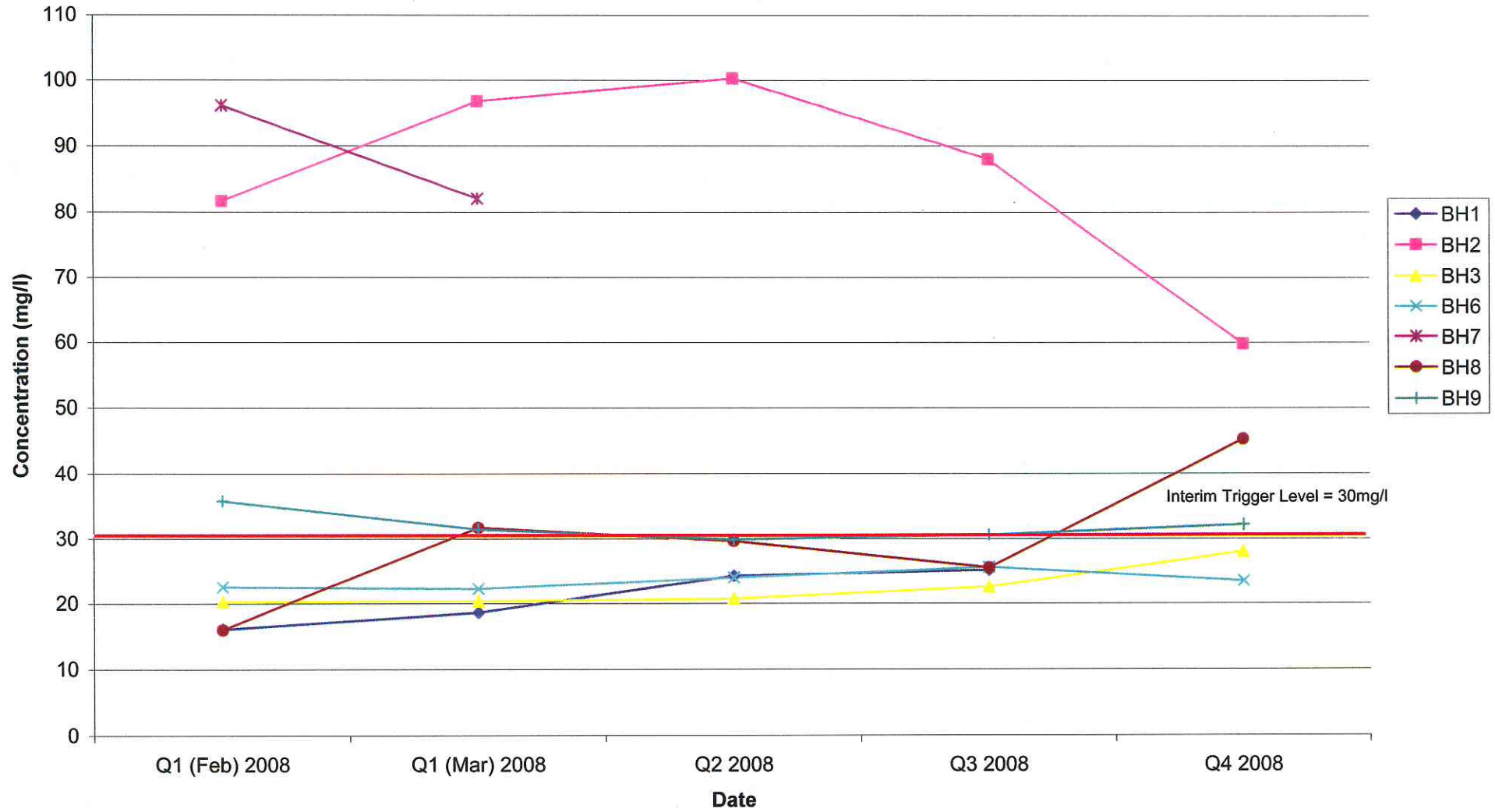
A4 Water Monitoring Time Series Graphs



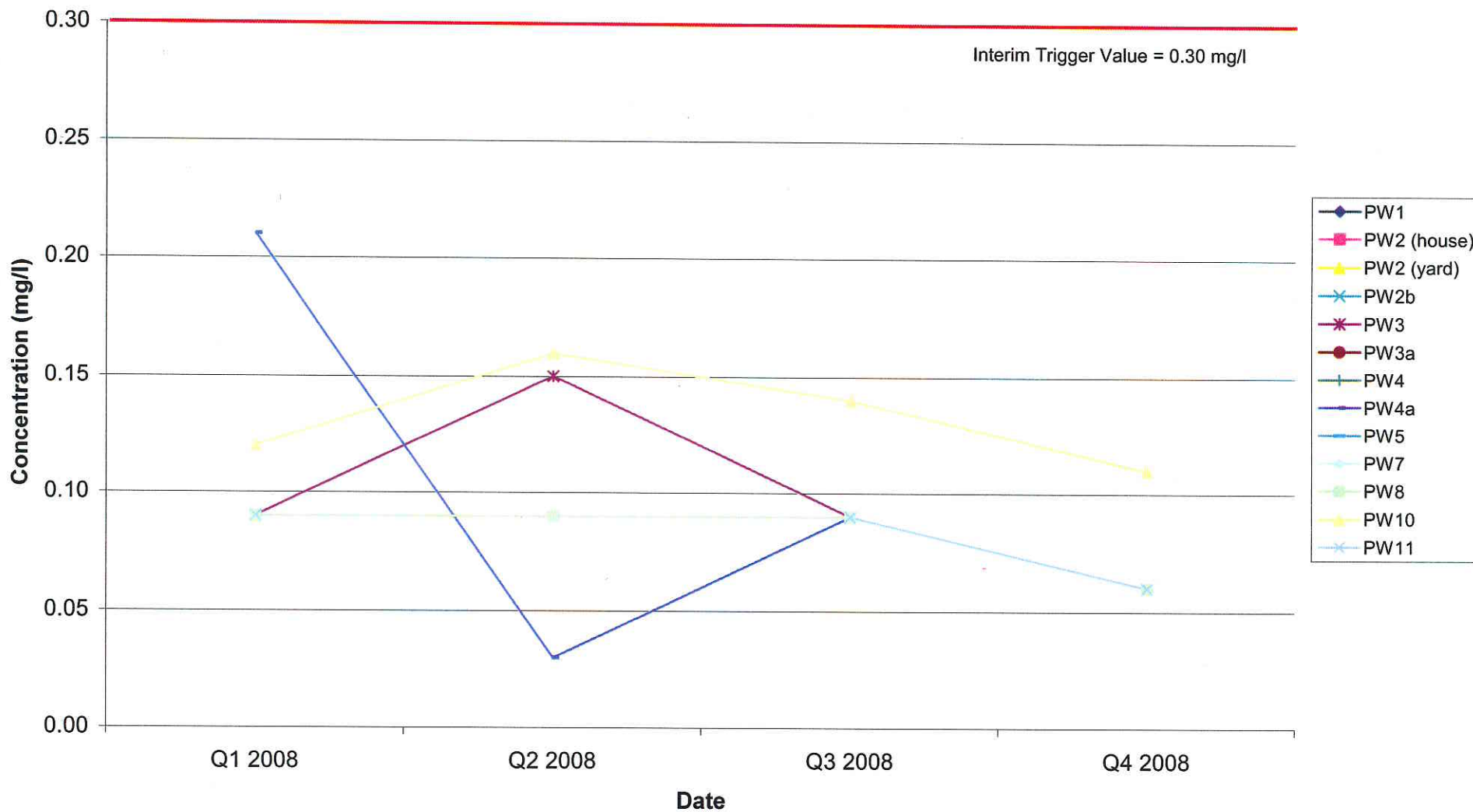
Ammonia Levels - Groundwater Wells - Holmestown Waste Management Facility 2008



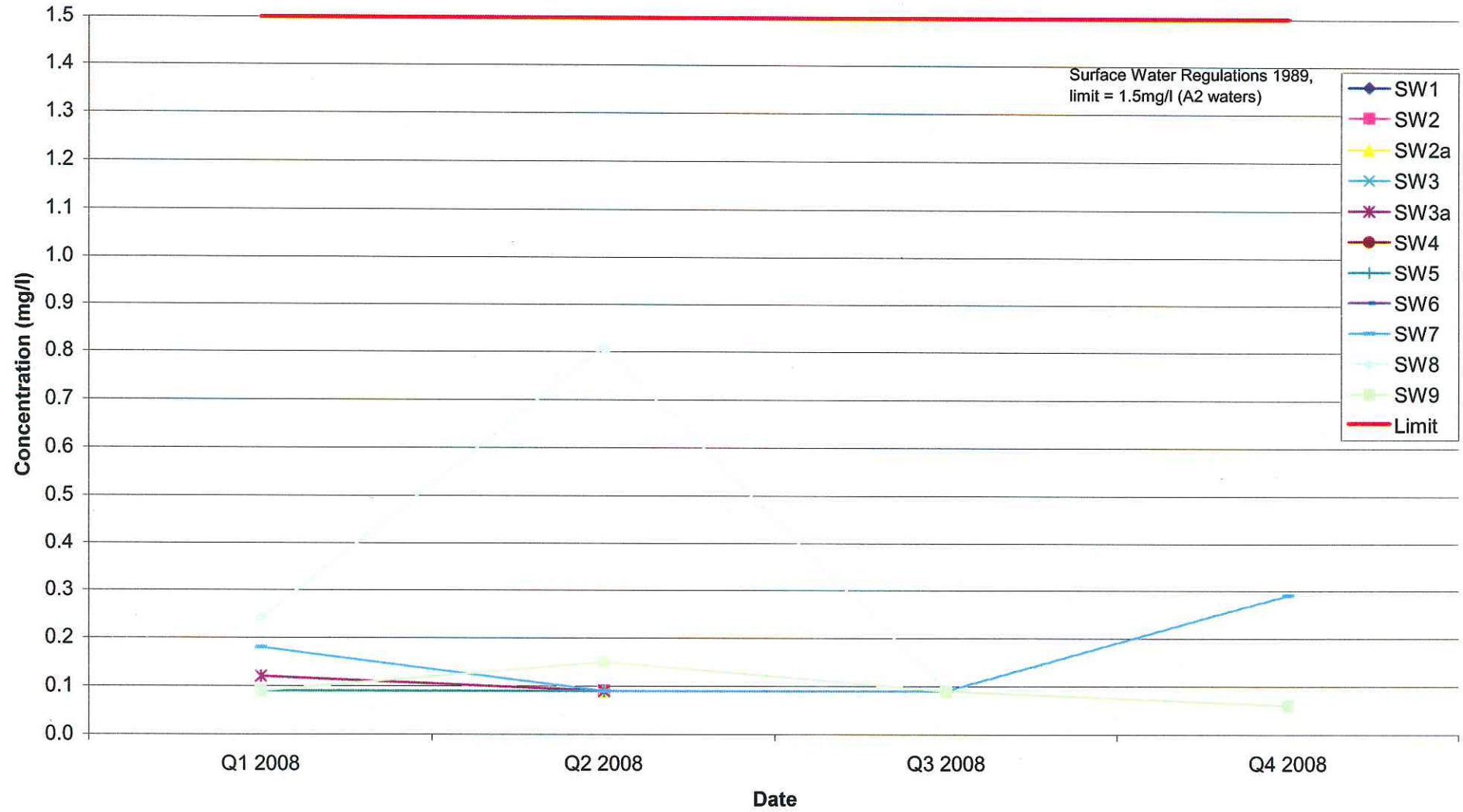
Chloride Levels - Groundwater Wells - Holmestown Waste Management Facility 2008



Ammonia Levels - Private Wells Holmestown Waste Management Facility 2008

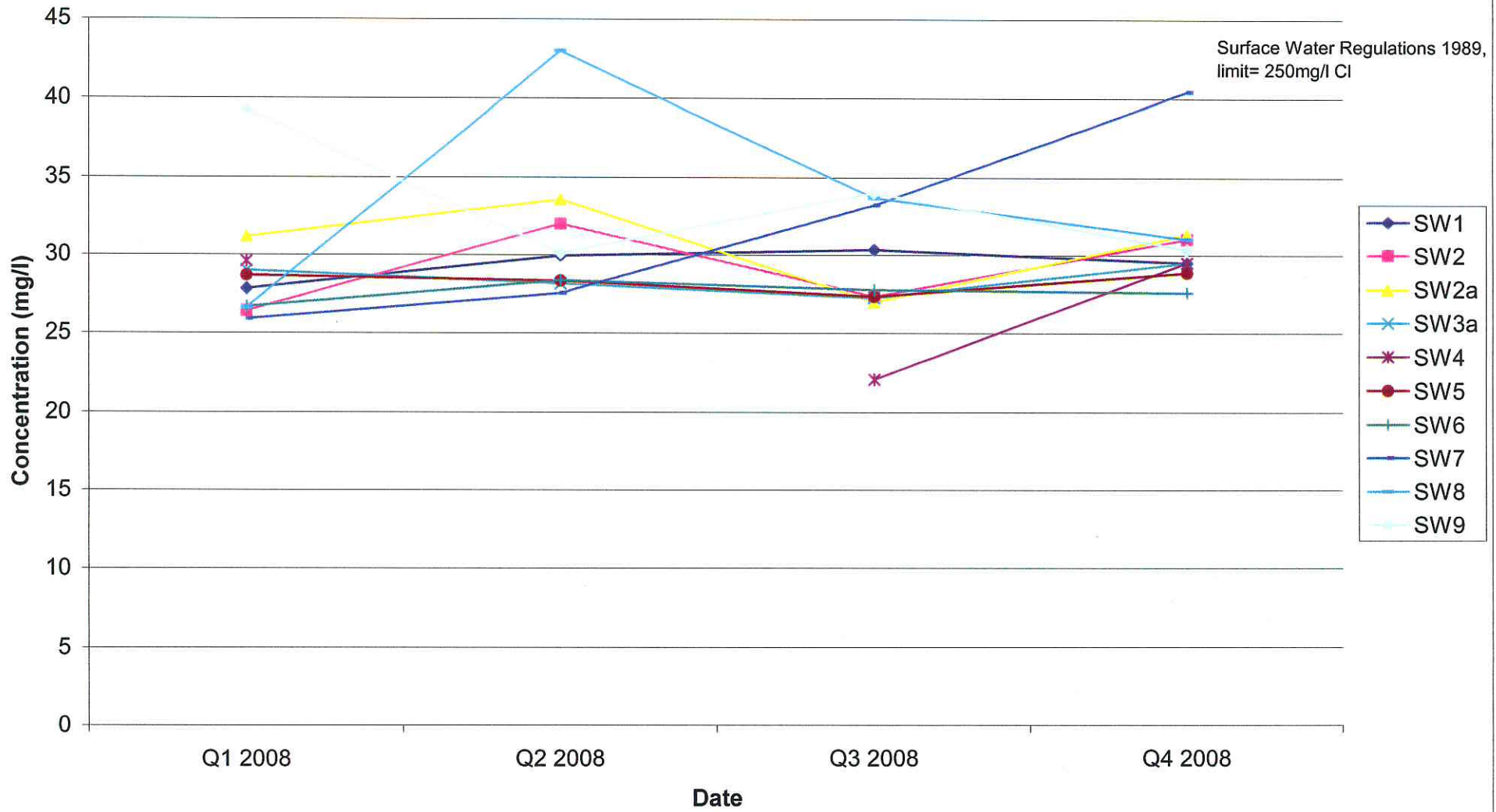


Ammonia Levels - Surface Water Holmestown Waste Management Facility 2008

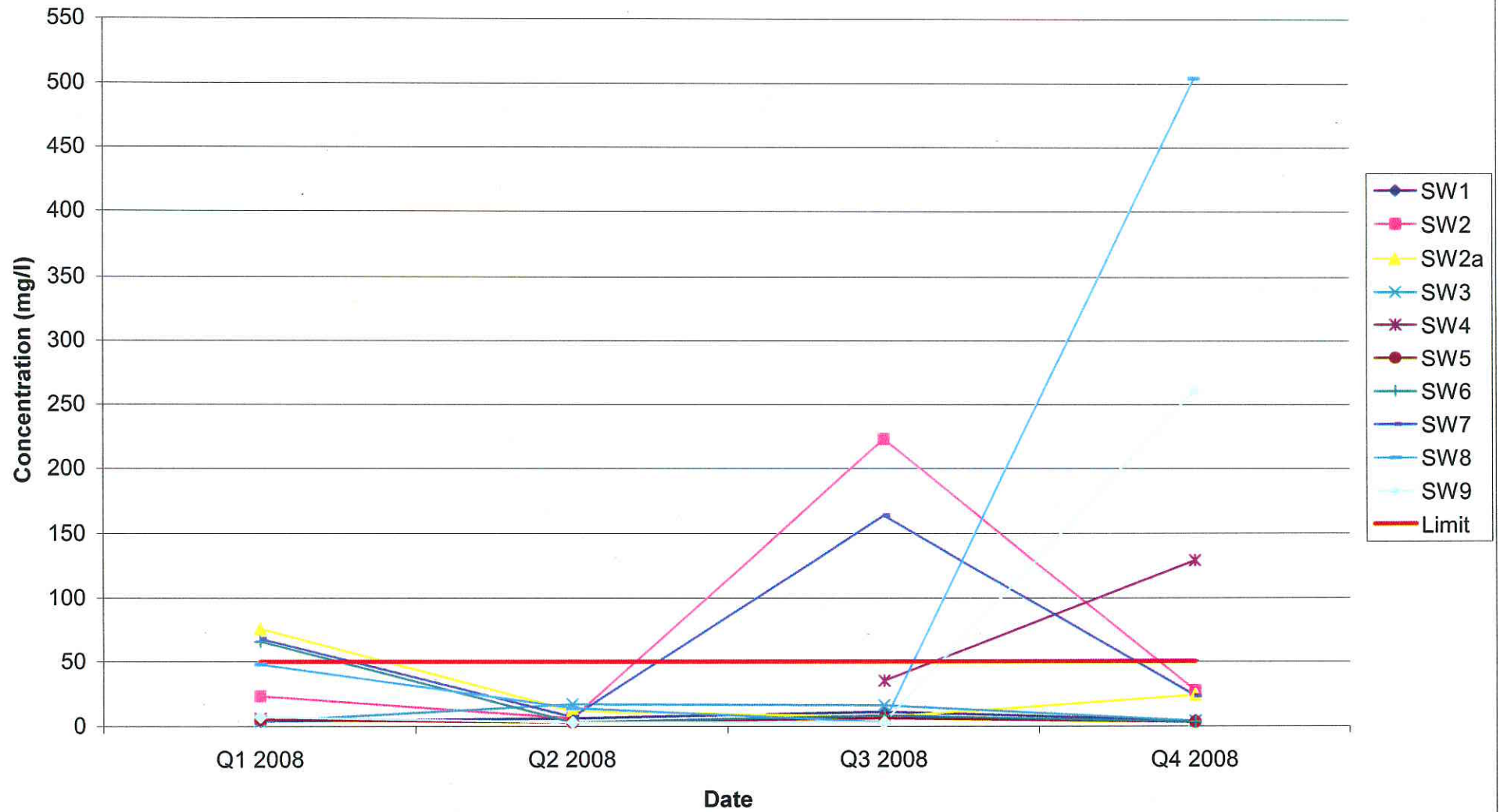


Chloride Levels - Surface Water Holmestown Waste Management Facility 2008

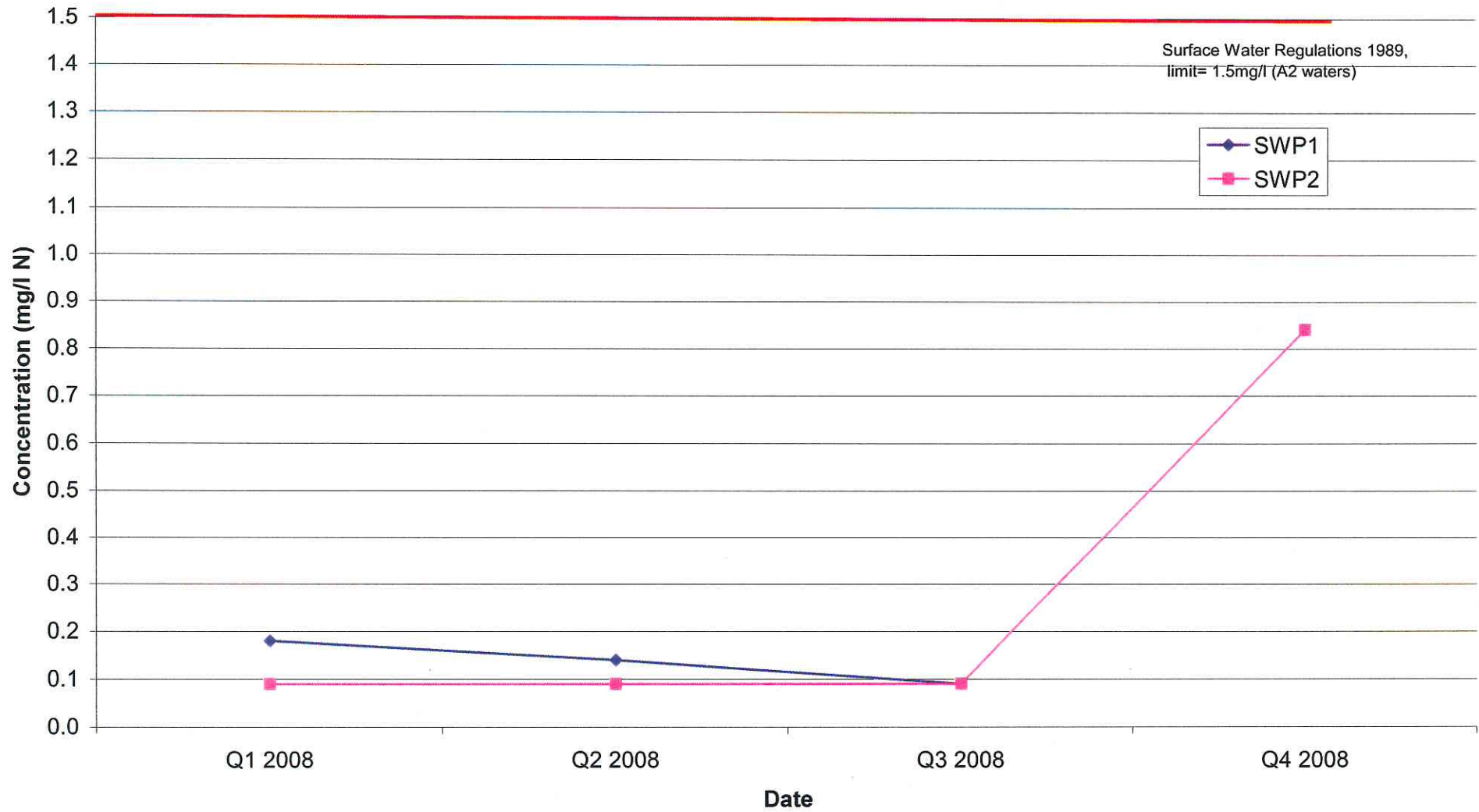
Surface Water Regulations 1989,
limit= 250mg/l Cl



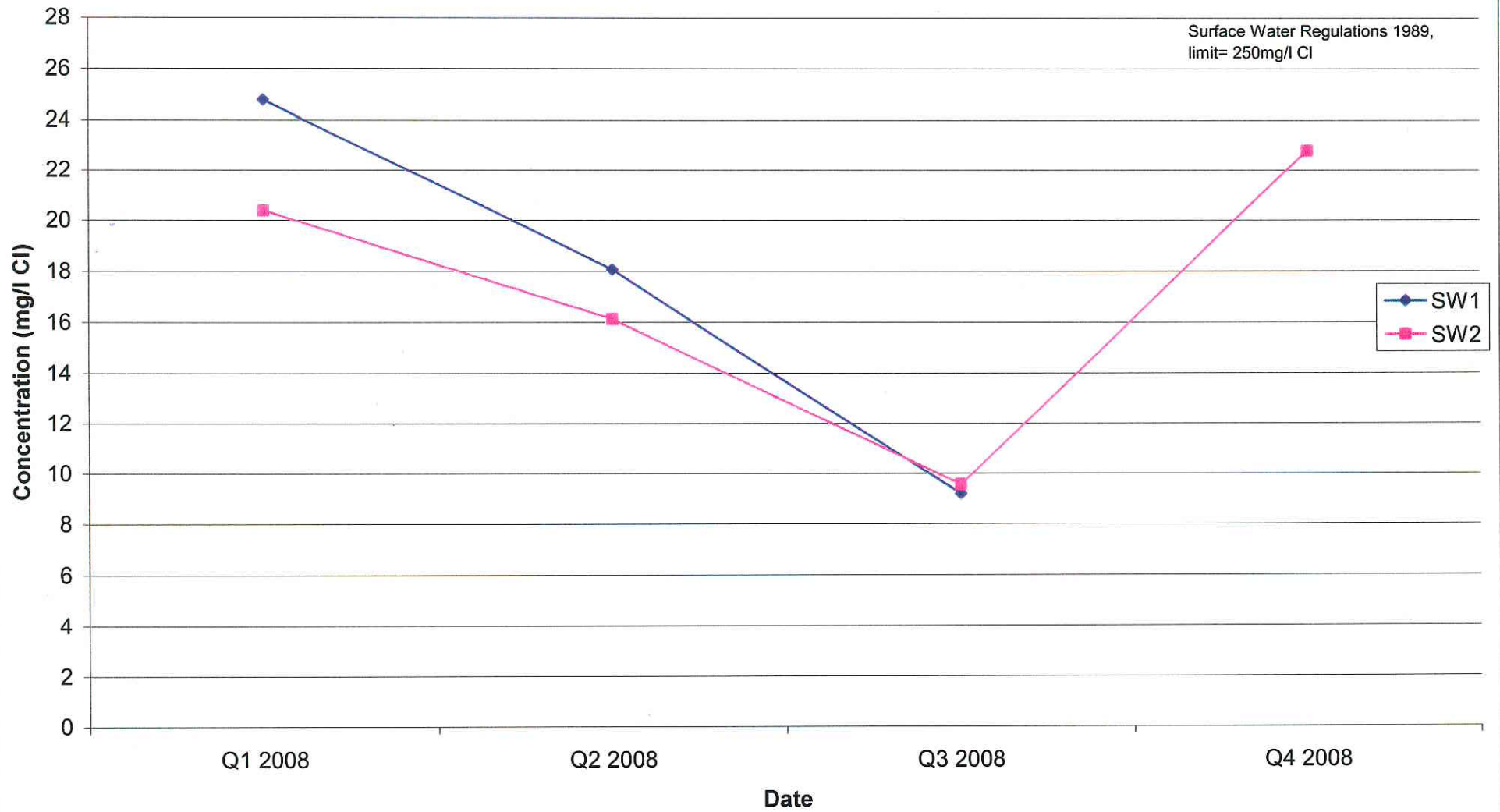
Suspended Solids Levels - Surface Water Holmestown Waste Management Facility 2008



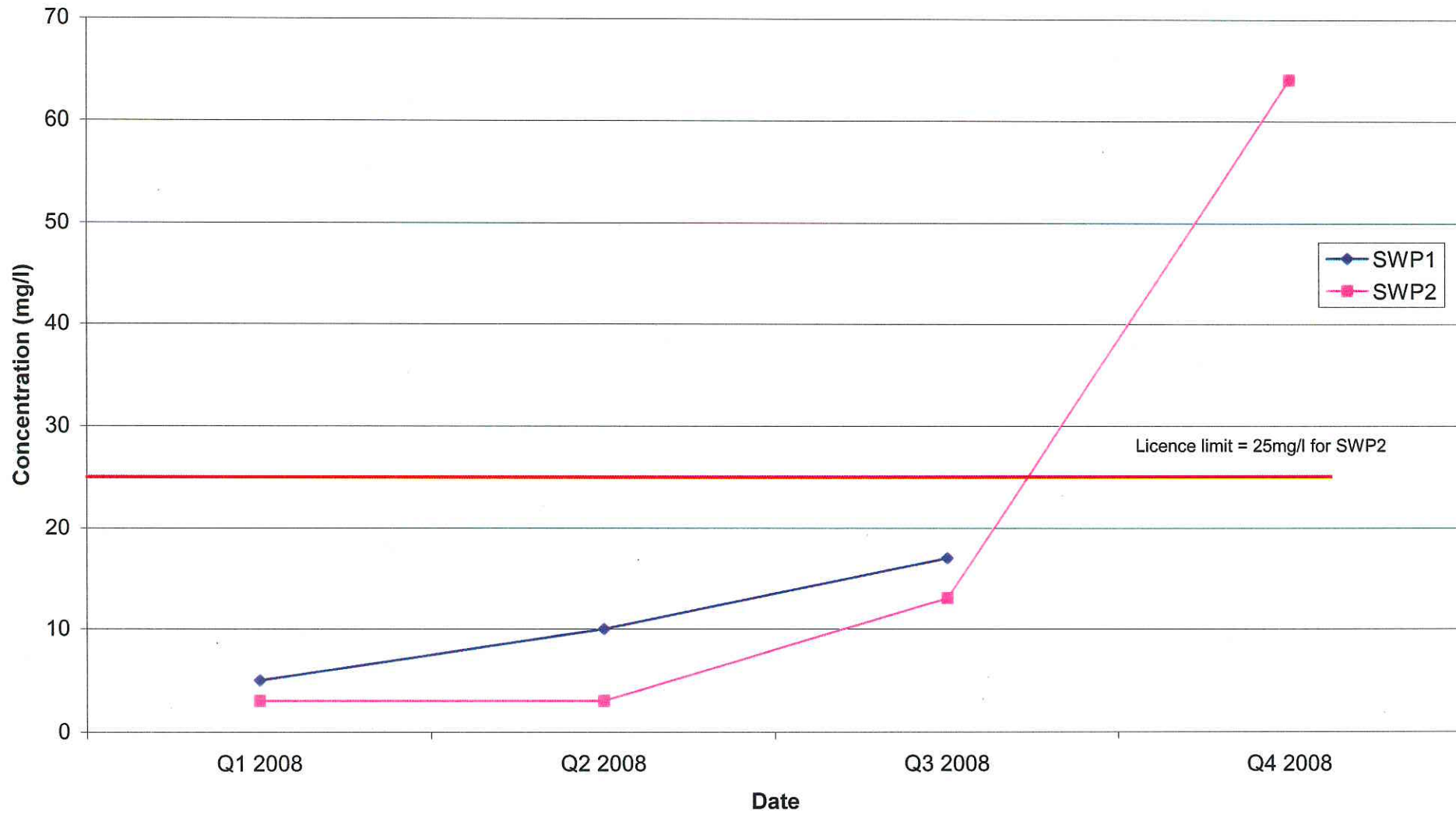
Ammonia Levels - Surface Water Pond Holmestown Waste Management Facility 2008



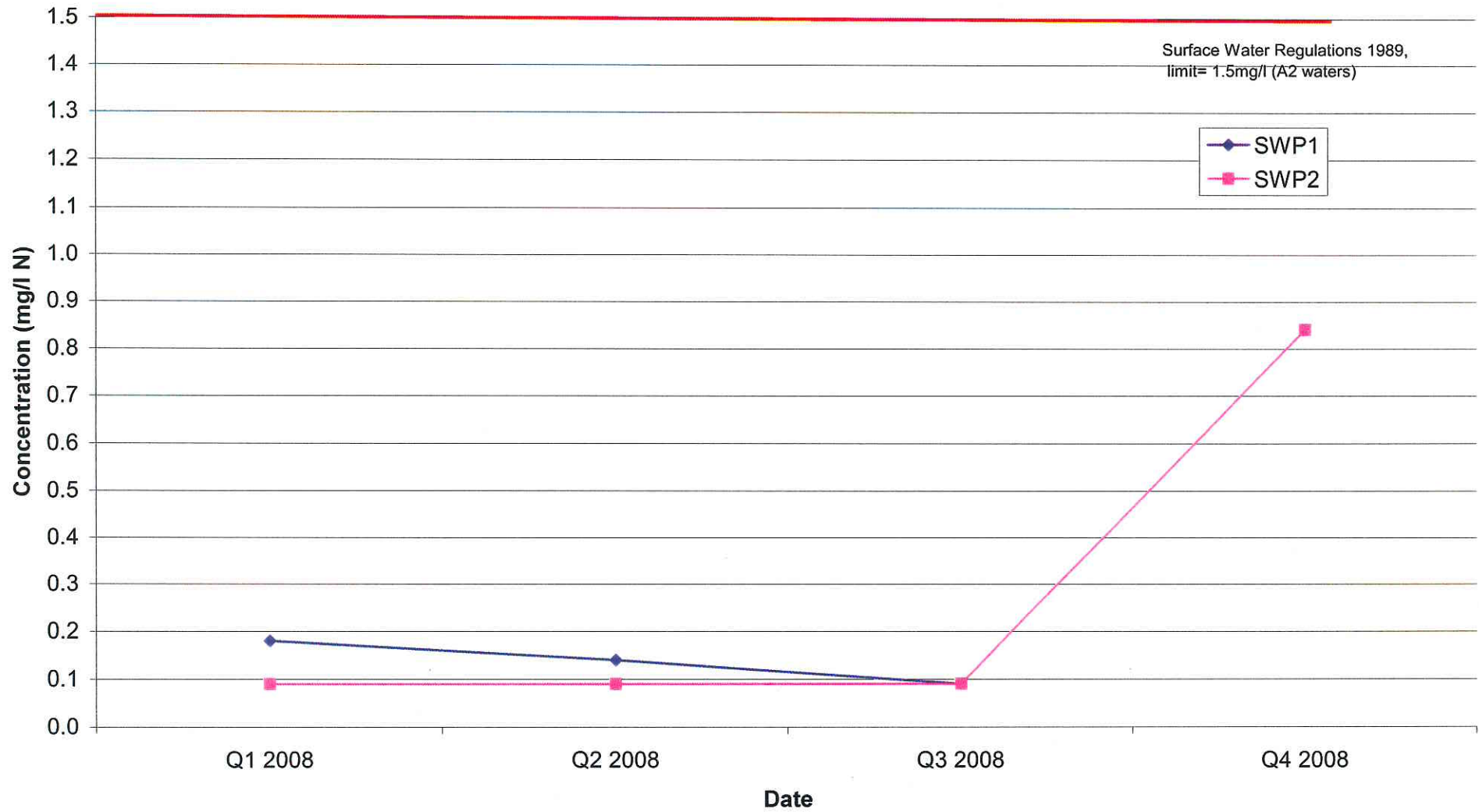
Chloride Levels - Surface Water Pond Holmestown Waste Management Facility 2008



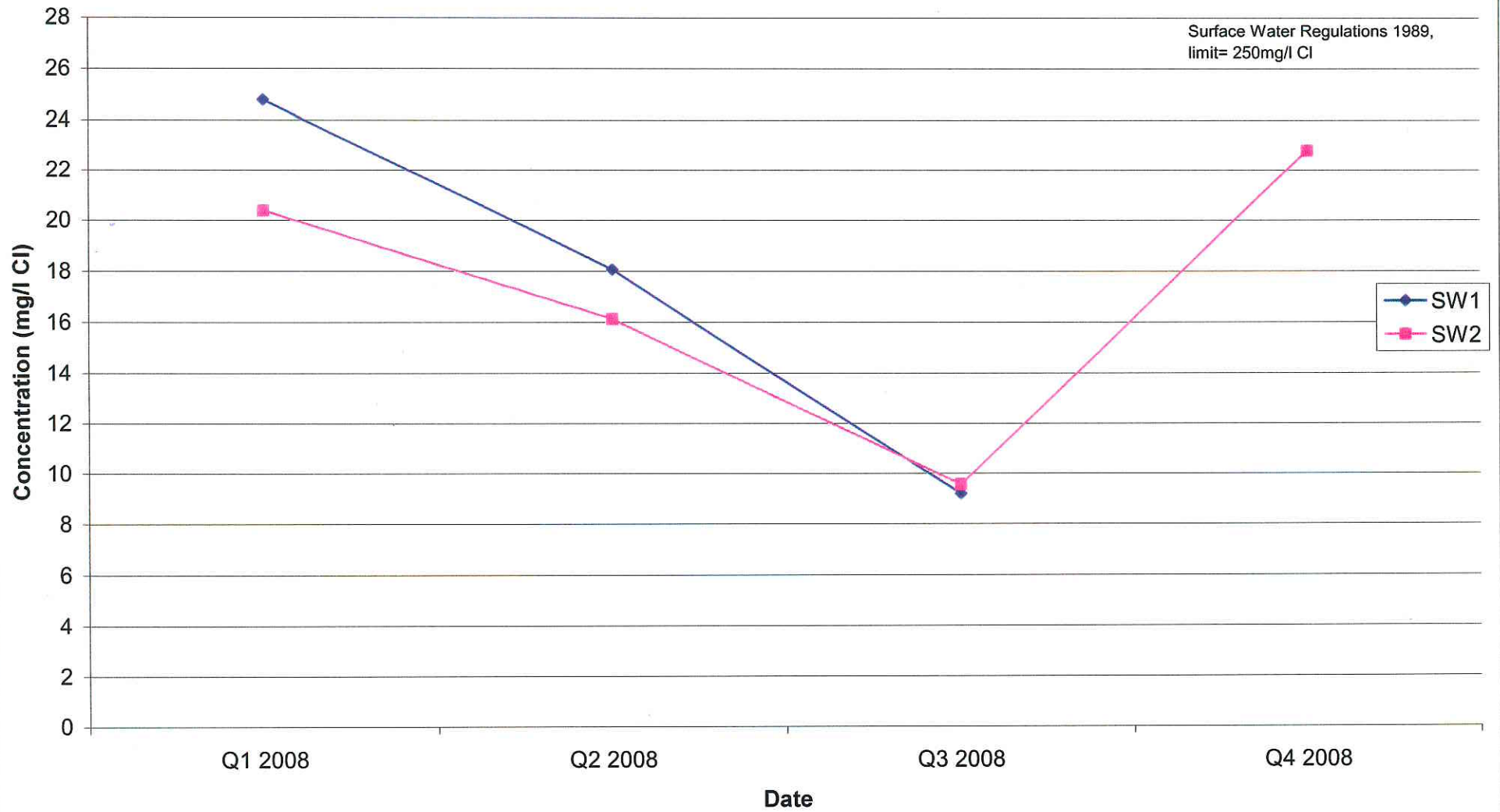
Suspended Solids Level - Surface Water Pond Holmestown Waste Management Facility 2008



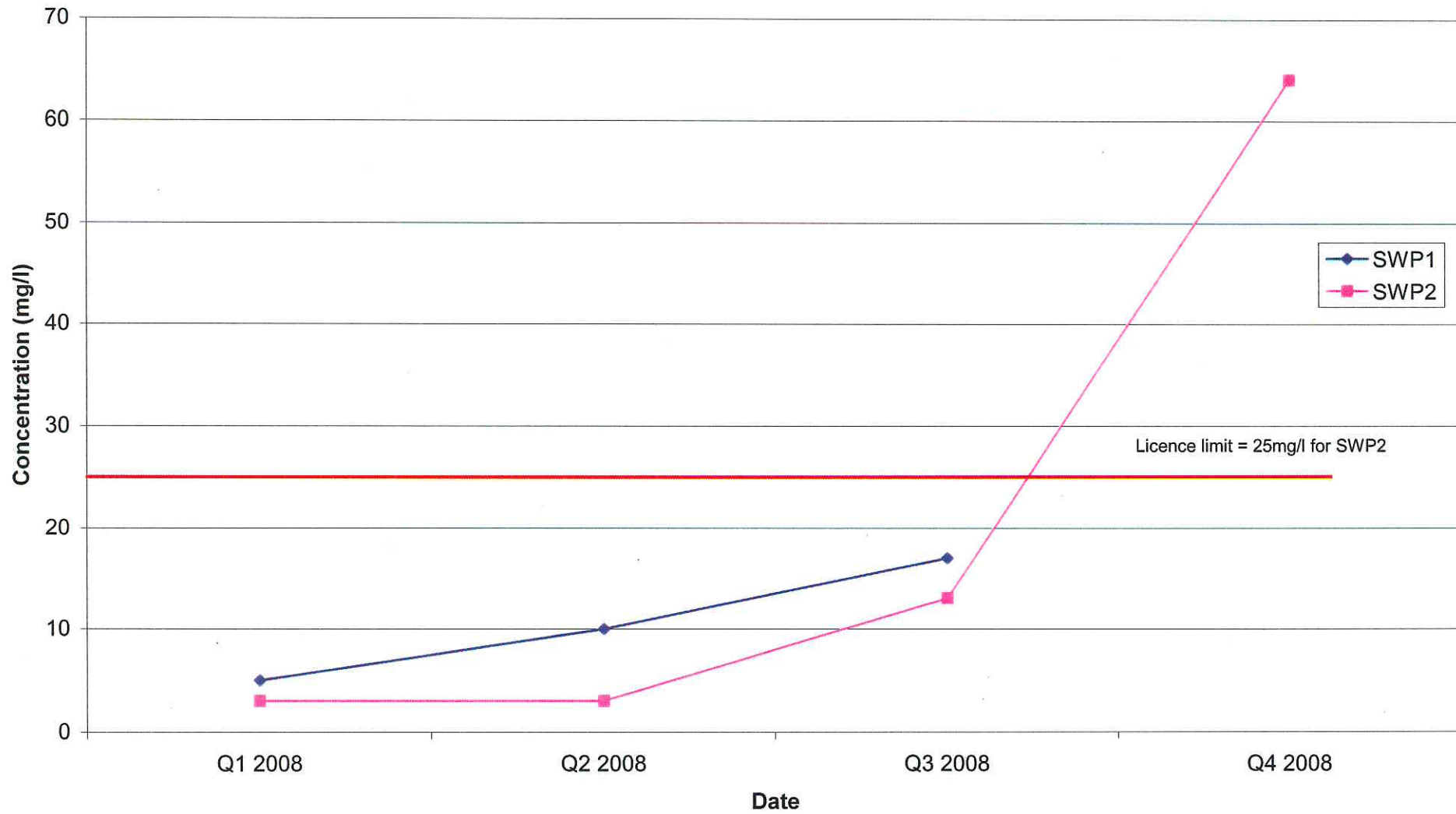
Ammonia Levels - Surface Water Pond Holmestown Waste Management Facility 2008



Chloride Levels - Surface Water Pond Holmestown Waste Management Facility 2008



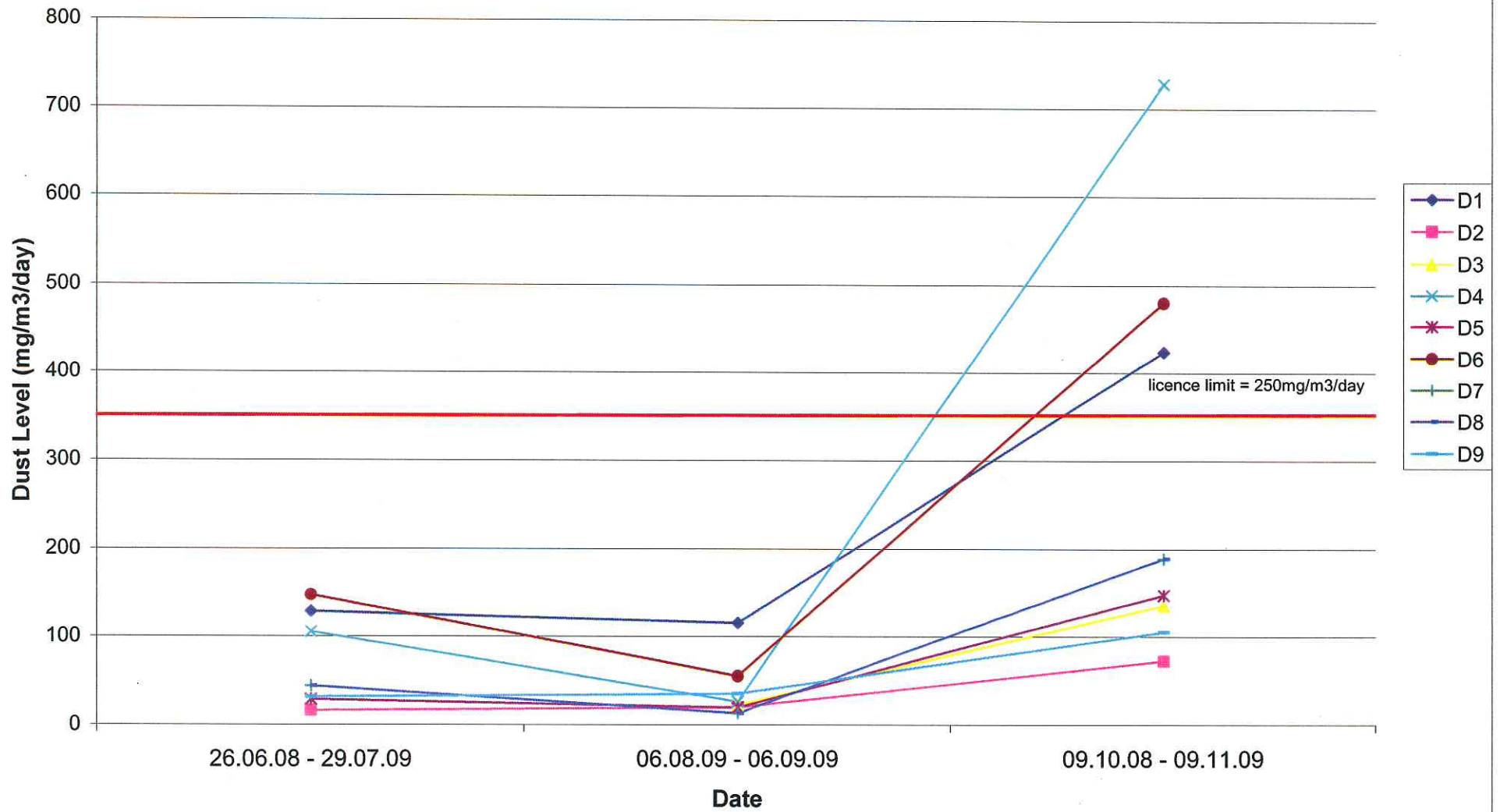
Suspended Solids Level - Surface Water Pond Holmestown Waste Management Facility 2008





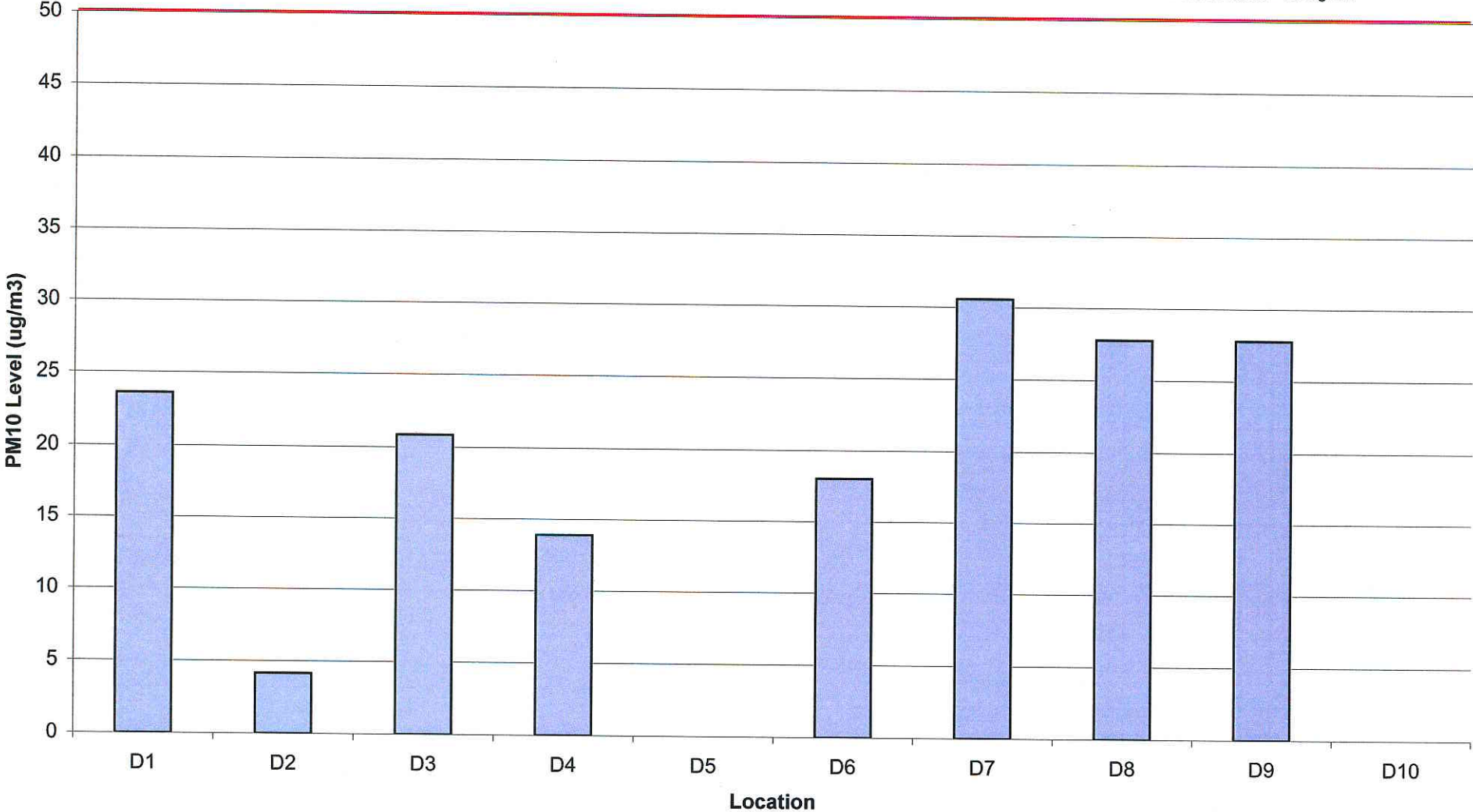
A5 Dust and Odour Monitoring Results

Dust Monitoring - Holmestown Waste Management Facility - 2008



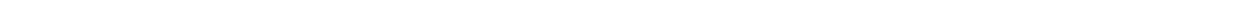
PM 10 Analysis - Holmestown Waste Management Facility - October 2008

Licence Limit = 50 ug/m3





A6 Groundwater Dip Levels



Borehole Dip Levels – Holmestown Waste Management Facility 2008

						Quarter 1 2008			
						18/01/2008	15/02/2008	18/03/2008	20/03/2008
Borehole	Ground Levels (mAOD)	Length of casing above GL (m)	Level Top of Casing (mAOD)	Depth of BH from top of casing (m)	Toe Level (mAOD)	Reduced Levels (m)	Reduced Levels (m)	Reduced Levels (m)	Reduced Levels (m)
BH1	42.730	0.600	43.330	22.52	22.52	29.690	29.590	29.550	nd
BH2	14.707	0.300	15.007	25.40	25.40	11.627	11.577	11.507	11.487
BH3	24.256	0.400	24.656	12.70	12.70	22.556	22.886	22.826	nd
BH6	17.184	0.800	17.984	18.25	18.25	12.664	12.514	12.464	nd
BH7	33.137	0.550	33.687	7.83	7.83	26.687	26.987	26.967	nd
BH8	33.260	0.400	33.660	26.20	26.20	13.810	13.710	13.660	nd
BH9	20.960	0.130	21.090	23.98	23.98	11.140	11.140	11.070	11.120

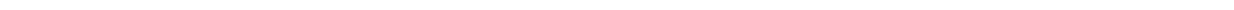
						Quarter 2 2008		
						23/04/2008	14/05/2008	30/06/2008
Borehole	Ground Levels (mAOD)	Length of casing above GL (m)	Level Top of Casing (mAOD)	Depth of BH from top of casing (m)	Toe Level (mAOD)	Reduced Levels (m)	Reduced Levels (m)	Reduced Levels (m)
BH1	42.730	0.600	43.330	22.52	22.52	43.330	43.330	43.330
BH2	14.707	0.300	15.007	25.40	25.40	15.007	15.007	15.007
BH3	24.256	0.400	24.656	12.70	12.70	24.656	24.656	24.656
BH6	17.184	0.800	17.984	18.25	18.25	17.984	17.984	17.984
BH7	33.137	0.550	33.687	7.83	7.83	33.687	33.687	33.687
BH8	33.260	0.400	33.660	26.20	26.20	33.660	33.660	33.660
BH9	20.960	0.130	21.090	23.98	23.98	21.090	21.090	21.090

						Quarter 3 2008		
						31/07/2008	21/08/2008	29/09/2008
Borehole	Ground Levels (mAOD)	Length of casing above GL (m)	Level Top of Casing (mAOD)	Depth of BH from top of casing (m)	Toe Level (mAOD)	Reduced Levels (m)	Reduced Levels (m)	Reduced Levels (m)
BH1	42.730	0.600	43.330	22.52	22.52	43.330	43.330	43.330
BH2	14.707	0.300	15.007	25.40	25.40	15.007	15.007	15.007
BH3	24.256	0.400	24.656	12.70	12.70	24.656	24.656	24.656
BH6	17.184	0.800	17.984	18.25	18.25	17.984	17.984	17.984
BH7	33.137	0.550	33.687	7.83	7.83	33.687	33.687	33.687
BH8	33.260	0.400	33.660	26.20	26.20	33.660	33.660	33.660
BH9	20.960	0.130	21.090	23.98	23.98	21.090	21.090	21.090

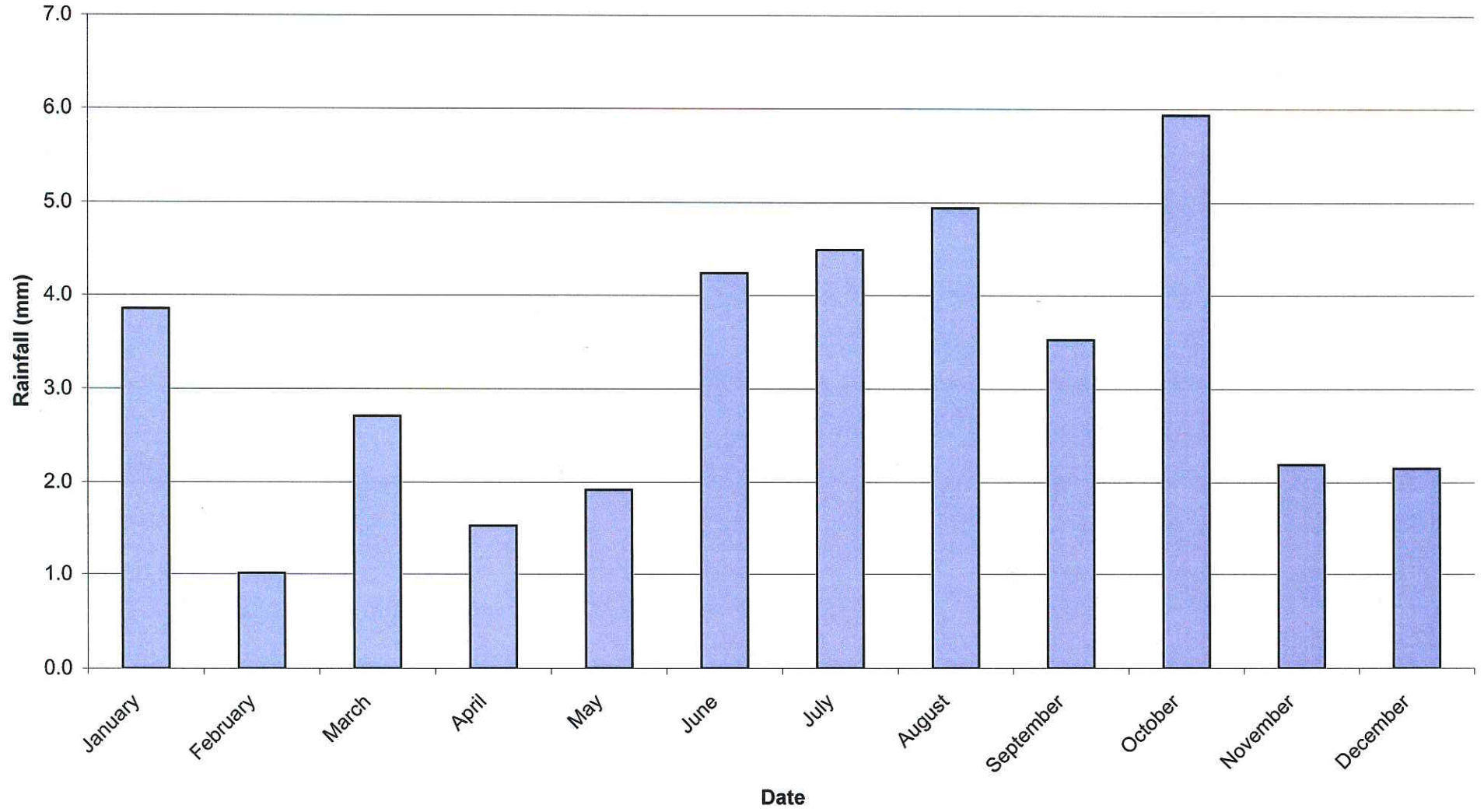
						Quarter 4 2008		
						20/10/2008	19/11/2008	18/12/2008
Borehole	Ground Levels (mAOD)	Length of casing above GL (m)	Level Top of Casing (mAOD)	Depth of BH from top of casing (m)	Toe Level (mAOD)	Reduced Levels (m)	Reduced Levels (m)	Reduced Levels (m)
BH1	42.730	0.600	43.330	22.52	22.52	43.330	43.330	43.330
BH2	14.707	0.300	15.007	25.40	25.40	15.007	15.007	15.007
BH3	24.256	0.400	24.656	12.70	12.70	24.656	24.656	24.656
BH6	17.184	0.800	17.984	18.25	18.25	17.984	17.984	17.984
BH7	33.137	0.550	33.687	7.83	7.83	33.687	33.687	33.687
BH8	33.260	0.400	33.660	26.20	26.20	33.660	33.660	33.660
BH9	20.960	0.130	21.090	23.98	23.98	21.090	21.090	21.090



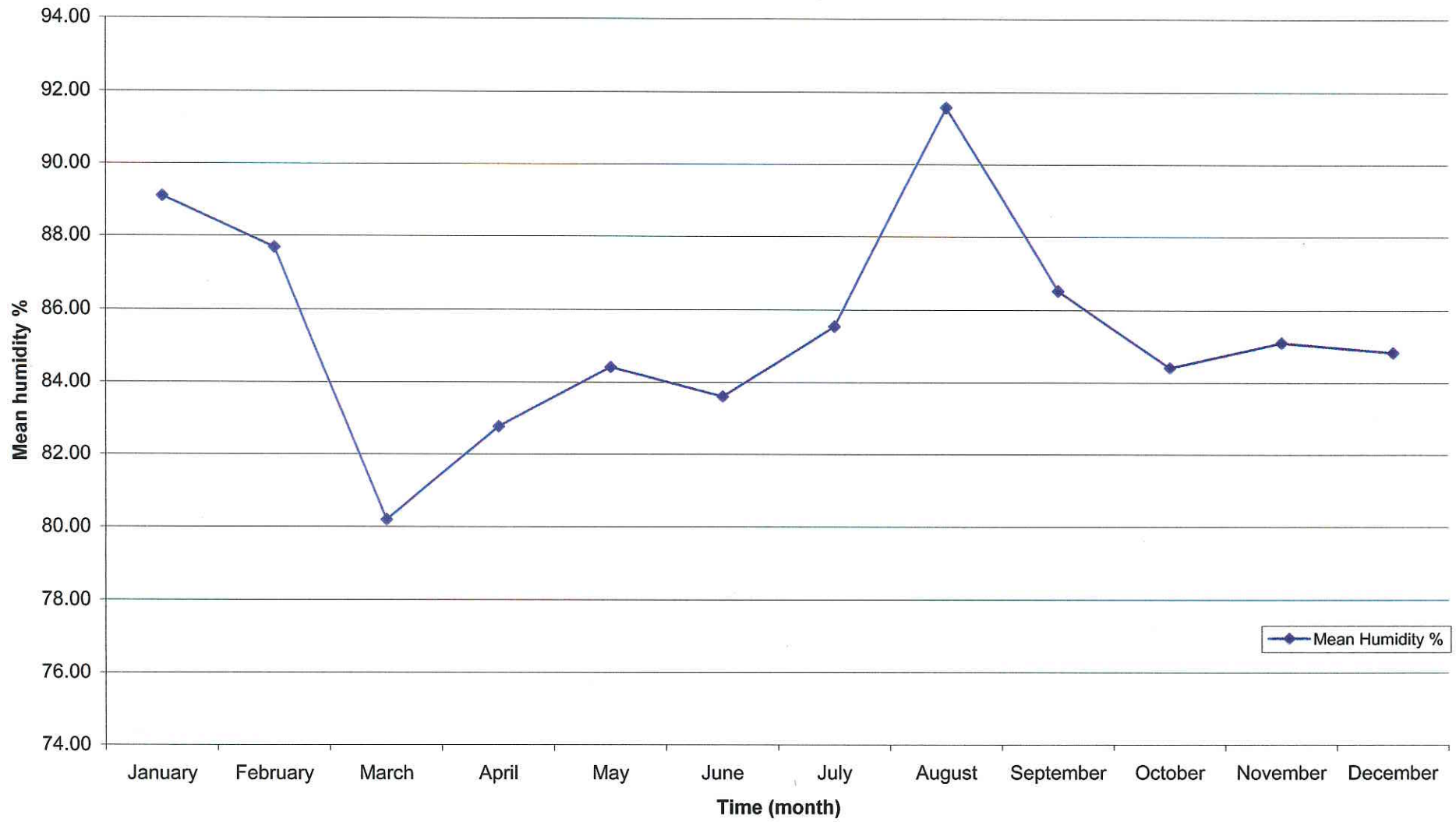
A7 Meteorological Data Graphs



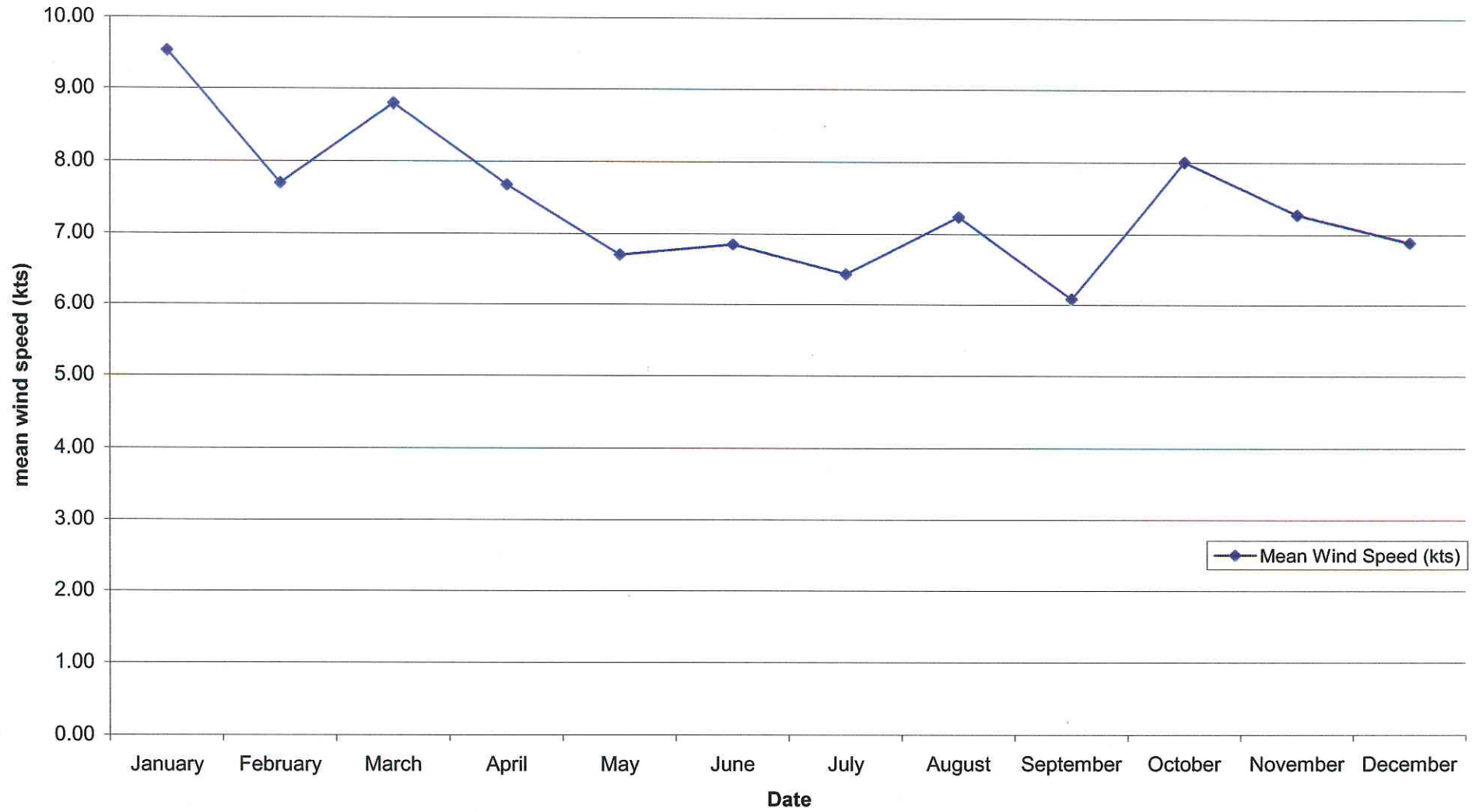
Average Rainfall - Holmestown Waste Management Facility 2008



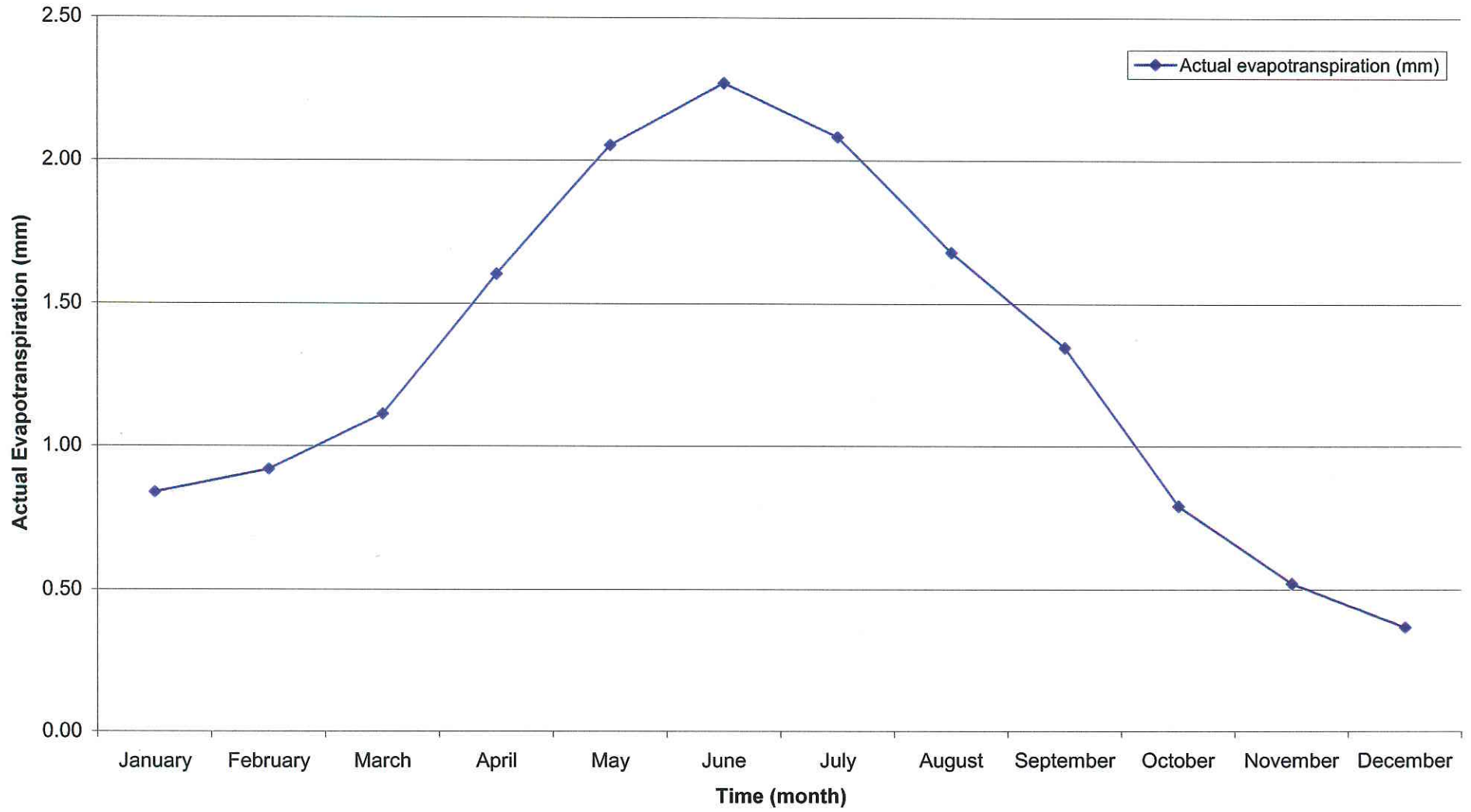
Mean Humidity - Homestown Waste Management Facility 2008



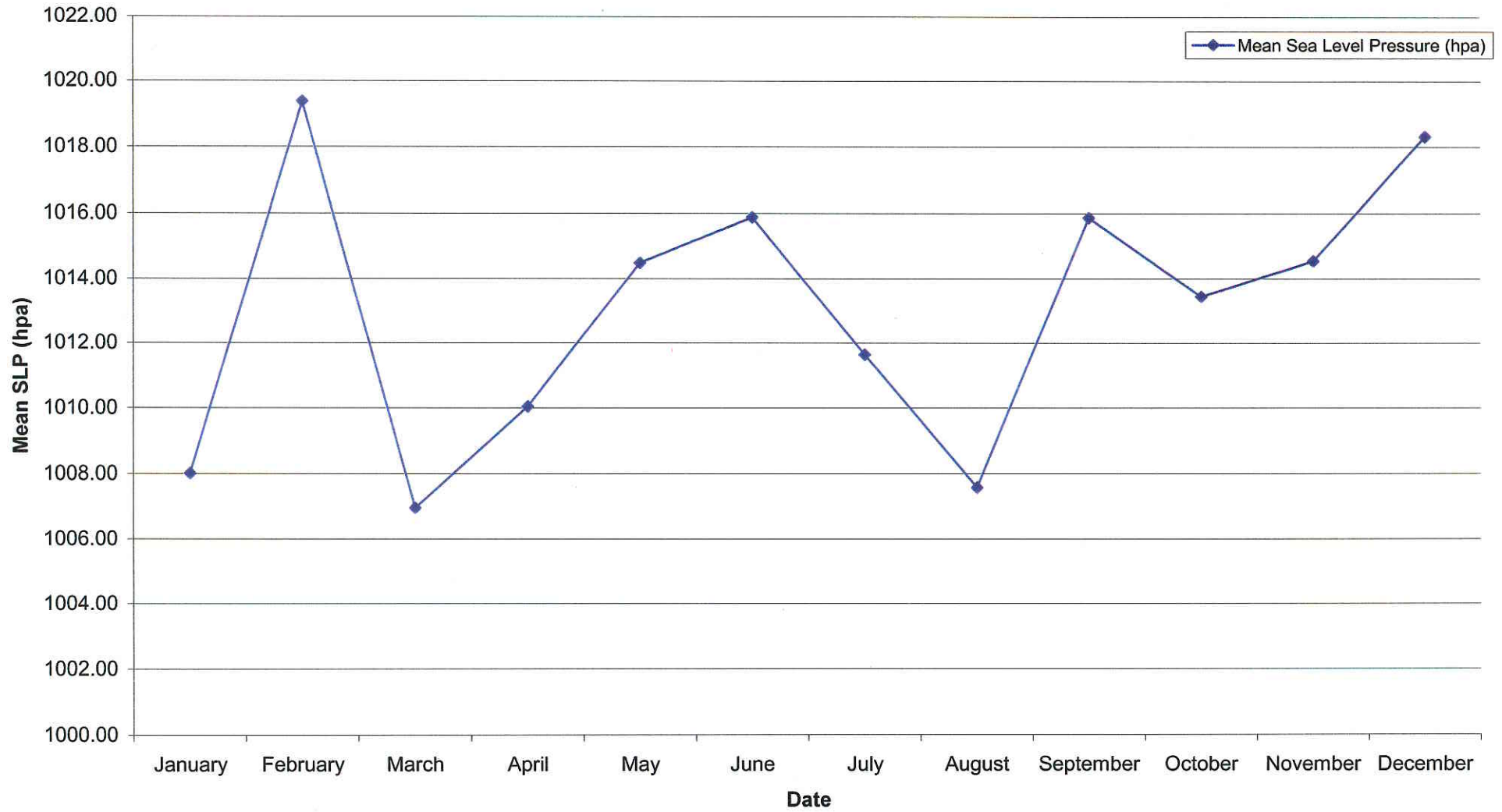
Mean Wind Speed - Holmestown Waste Management Facility 2008



Actual Evapotranspiration - Holmestown Waste Management Facility 2008

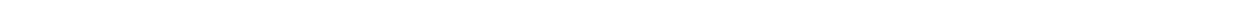


Mean Pressure - Holmestown Waste Management Facility 2008



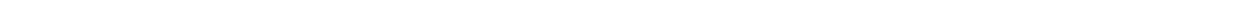


A8 Topographical Survey





A9 Water Balance Calculation Spreadsheet



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