

**BORD NA MÓNA** 

**BORD NA MÓNA ENERGY LIMITED**

**Derrygreenagh, Rochfortbridge, Mullingar, Co-Westmeath.**

**Annual Environmental Report 2009  
Clonbullogue Ash Repository  
Waste Licence W0049-02**

**March 2010**

Bord na Móna today operates 5 main subsidiary companies in more than 20 locations throughout Ireland, the UK and USA. The principal businesses are in the Energy, Resource Recovery, Horticulture, Home Heating and Wastewater Treatment and Air Pollution Abatement markets. The company also engages in an extensive rehabilitation program to develop its peat lands in an environmentally sustainable manner.

## A NEW CONTRACT WITH NATURE

Bord na Móna has long recognised the need to diversify its activities in order to secure a sustainable future. In this context we identified the energy and resource recovery sectors as appropriate areas of growth and development, given our assets, strengths and skills. Significant challenges face Ireland in meeting the country's needs to provide secure sustainable energy and manage waste while minimising the impact on the environment.

Bord na Móna is in a strong position to contribute to dealing with these challenges. We have a unique mixture of assets, experience and innovation which will enable us to cross-link our activities in energy, water and resource recovery to provide products and services which will meet Ireland's needs. We also have the capacity to become an exemplar for others to follow in these fields. With this background we have scoped out a new vision for the future sustainable development of Bord na Móna.

Following on from our vision, we have developed a new mission for Bord na Móna which the Company is committed to achieving.

In 1934 the Turf Development Board was formed to 'develop and improve the turf industry.' The experience of fuel shortages during the war re-enforced the Irish State's commitment to developing the country's bogs. In 1944 the TDB was asked to devise and submit a comprehensive programme, the outcome was the transformation in 1946 of the TDB into Bord na Móna. The Board was given a mandate to increase the use of peat as a fuel and in energy production. Markets for the use of moss peat in horticulture were also developed.

In 1990 Bord na Móna implemented a divisionalised and decentralised structure, designed to delegate responsibility downwards ensuring a sharper focus on each profit centre and a greater spirit of enterprise.

## *Group Vision*

We conduct our affairs with openness, honesty and integrity.

We are Ireland's leading environmentally responsible integrated utility service provider encompassing electricity, heating solutions, resource recovery, water, horticulture and related services.

We capitalise on international opportunities where we have a competitive advantage.

We achieve continuing growth through superior customer service, outstanding quality and innovation delivered through the excellence and commitment of our people.

We engage in sustainable profitable business in the communities we serve, which is rewarding and challenging for employees and other stakeholders.

## *Group Mission*



The vision statement defines the Company's purpose, in terms of its values.

Values are guiding beliefs about how things should be done.

The vision statement communicates both the purpose and values of Bord na Móna.

For employees, it gives direction about how they are expected to behave and inspires them to give their best. Shared with customers, it shapes the customers' understanding of why they should work with Bord na Móna.

Bord na Móna will seek solutions that optimise the creative energy and potential of the organisation, driven by long term goals and the organisation's vision and mission.

In this context our devolved business units will align their vision and strategic planning with the global direction provided.

Consistent with our vision, innovation will once again return to the core of everything we do. We will capitalise on opportunities to cross fertilise our unique range of skills and technologies that add value and are socially and environmentally sustainable.

Greater focus will be placed on managing and developing our land assets in a responsible and sustainable manner. Our award winning initiatives at Lough Boora (Co. Offaly) and Oweninny (Co Mayo), provide shining examples of what can be achieved

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## **Section 1.**

### **1.1 Introduction**

The following is the Annual Environmental Report for the Clonbullogue Ash Repository, located at Cloncreen, Clonbullogue, Co Offaly. It covers the period from 1<sup>st</sup> Jan 2009 to 31<sup>st</sup> December 2009.

#### 1.1.1. Environmental Policy



### **Environmental Policy Statement**

Bord Na Mona Energy Limited is a commercial semi-state body with responsibility to develop Ireland's peat resources in the national interest.

Bord Na Mona Energy Limited is committed to gather and make available information on all aspects of its environmental impact and to help improve understanding among the public generally of its role and of the importance of Irish peatlands.

Bord Na Mona Energy Limited recognises the importance of peatland conservation.

Bord Na Mona Energy Limited will leave behind all areas it owns as either an economically or socially integrated resource of high environmental value.

Bord Na Mona Energy Limited seeks to conduct all aspects of its business in an environmentally sensitive manner.

- Bord Na Mona Energy Limited will establish an environmental management system specifically addressing the following impacts:
- Discharges to water
- Emissions to atmosphere
- Waste disposal
- Use of natural resources
- Noise, vibration, odour, dust and visual effects
- Natural environmental and eco-system

The environmental management system will be monitored, maintained and continually improved. A system of regular environmental audits will be put in place.

Bord Na Mona Energy Limited will continue research and development (R&D) into all aspects of its environmental impact.

This statement is published and is available at all locations within the section and its contents are brought to the attention of all employees

## **1.2 Site Description**

The Clonbullogue Ash Repository is located approximately 8 km South West of the Town of Edenderry and 2 km North West of Clonbullogue village. The facility is located approximately 0.75 km from the Clonbullogue to Daingean road (third class road which links the Edenderry to Tullamore Regional Road – R402). It is located on Cloncreen bog, a cut-away peatland area within the Allen Group of Bogs. The Northern, Western and Eastern sides of the landfill are bounded by raised and/or cut-away peatlands, while the Southern side is bounded by a tree line, which is subsequently bound by pastoral land.

Topographically, the Allen Group of Bogs consists of raised bogs of the Central Lowlands which have been extensively harvested by mechanised cutting. Drainage ditches evacuated in the surrounding peatlands by Bord na Mona are orientated in an East – West axis and essentially divert any seepage or drainage water from the peatlands. Drainage from the site is along a West – East drainage ditch which discharges ultimately to the Figile River. The geology of the Cloncreen site is dominated by the Upper Palaeozoic Lower Carboniferous Allenwood formation (Edenderry Limestone).

## **1.3 Waste Activities carried out at the Clonbullogue Ash Facility.**

The functional element of the Bord na Mona Energy Ltd, Clonbullogue Ash Repository is to dispose of inert waste products (fly ash and bottom ash), arising from peat combustion within the boiler of the Edenderry Power Ltd., Peat Fired Power Station.

Further to this, Bord na Mona was successful in 2006, in a review process of the facility licence. This review was carried out as a result of Edenderry Power Ltd gaining permission to co-fuel peat with biomass and or meat and bonemeal.

The main aspect of the review was to allow a change in the type of ash that could be accepted because the previous licence only allowed for the acceptance of peat ash.

During 2009 there was 68,611 tonnes of biomass (woodchip) co fuelled in the station. This produced approximately 343.05 tonnes of biomass ash, which was transported to the repository and deposited in cell 3 A.

The relevant waste disposal and waste recovery activities, as per the Third and Fourth Schedules of the Waste Management Act 1996 to which this activity applies are:

Third Schedule – Waste Disposal Activities:

Activities on the site can be categorised as “deposit on, in or under land”

Fourth Schedule – waste Recovery Activities:

No activities as defined by the Fourth Schedule of the Waste Management Act 1996 will take place on-site.

## **Section 2: Environmental Data**

### **2.1 Waste Quantity & Composition**

#### **Quantity**

During the reporting period (1<sup>st</sup> Jan 2009 to 31<sup>st</sup> December 2009) a total of 5,475 tonnes of Bottom Ash and 28,532 tonnes of Fly Ash were disposed of in the Ash Repository. This gives a total of 34,007 tonnes for the period.

#### **Composition**

*Bottom Ash & Fly Ash Composition – Mineralogy:* Furnace bottom ash is a solid, coarse grained, granular ash. White fly ash is lighter and fine grained and accounts for – 80% of the ash produced from peat combustion. Compositional analysis of the fly ash indicates the presence of a large quantity of inerts which are calcium, magnesium, iron, silica and sulphur based (Calcite –  $\text{CaCO}_3$ , Hydrated Lime –  $\text{Ca}(\text{OH})_2$ , Quartz –  $\text{SiO}_2$  Brucite –  $\text{Mg}(\text{OH})_2$  and Magnesium Carbonate  $\text{MgCO}_3$ , are typically the main phases present) and trace amounts of heavy metals (Zn, Cu, Pb, B Ni, V Mo, Cr, As, Sr).

*Bottom Ash & Fly Ash Leachate Composition:* In general, the chemical quality (BOD, COD, Phosphorous – P,  $\text{NH}_3$  – N,  $\text{NO}_3$  – N) of the leachate associated with the fly and bottom ash samples are good. The leachate generated from peat fly ash, dominated by admixed and surface adsorbed alkali and alkaline salts, is slightly acidic due to the dissolution of the absorbed  $\text{SO}_2$  onto the surface of dissolved organic salts. However, thereafter, the solution becomes quickly alkaline due to the hydrolysis of CaO flecks and the dissolution of  $\text{Ca}(\text{OH})_2$ . A significantly elevated pH is, therefore noted for both leachate samples. Only trace amounts of heavy metals (As, Sn, Hg, Cr, Zn, Cd, Pb, Co, Ni, Fe, B, Cu, Al, Ba) were detected in both leachate samples.

### **2.2 Remaining Capacity at Ash Site**

At present the facility has just completed its ninth year of operation. At current ash volumes being accepted at the facility and experiences to date in cells 1, 2 and 3, it is estimated that the remaining capacity for peat ash is approximately 844,025 tonnes, to be deposited in five future cells.

The lining of cell 3 B, to the specification set out in relation to the acceptance of Meat and Bone Meal Ash, was completed during the reporting period, with ash deposition now taking place in that cell only. However it should be noted that only ash emanating from the co-fuelling of peat and bio-mass has been deposited in the landfill to date.

Under current conditions cell 3 B is expected to receive approximately three more years of ash, although this may reduce depending on whether meat and bonemeal is co-fuelled with peat in the future.



## 2.3 Emission Data

### 2.3.1 Dust

Dust monitoring was carried out between April and August 2009. Monitoring took place at four locations: DM01, DM02, DM03 and DM04. The Bergerhoff method of collection was used. During the period the dust monitoring was compliant and no complaints of a dust nuisance were received.

Due to the exceptional amount of precipitation, dust suppression was minimal during the reporting period.

Dust monitoring will be carried out at the same locations in 2010.

The results of dust monitoring are attached in Appendix 1.

### 2.3.2 Noise

Noise monitoring is no longer scheduled as a parameter of the Licence monitoring regime, unless requested by the Agency.

### 2.3.3 Ground Water

Groundwater monitoring took place on a monthly basis, at bore wells MW02 – MW11. As was the case in 2008 due to cell development works, MW04 had become redundant. Wells MW08 – MW11 are bedrock wells, with 8 and 10 being up gradient and 9 and 11 down gradient. The remaining wells are overburden and only extend into the overburden peat.

Following an amendment to the licence, the monitoring of wells MW02 and MW03 was reactivated and therefore there is no data pre 2008.

Appendix 2 contains graphs of monitoring results.

#### **Comment:**

In general ground water quality at the facility showed no great variation during the period. Elevated **ammonia** at MW2, MW3, MW5 & MW 6 can be expected as these are overburden wells located in peat. These four wells are located up gradient of the facility. The ammonia at MW3 appears to be decreasing over the last four sample events.

The slight elevations of **conductivity** at MW 11, in previous sampling regimes, are believed to be attributed to the holes discovered in the Leachate Lagoon lining system at that time. Although elevated in comparison with other groundwater monitoring locations, results were still within the I/PV of 2500 mg/l,- Drinking Water Directive. Following repairs to the lagoon, conductivity levels at MW 11 have reduced. The results for 2009 show a marked decrease in conductivity at that location.

**pH** values at all wells have been satisfactory, with the more acidic overburden wells giving expected slightly lower pH values. In general pH values have been a model of consistency since sampling began.

**Sulphate** results were elevated at MW03 & MW08, as was the case in 2008. Both of these wells are up gradient, the latter being bedrock. However results are still within the I/PV of 250 mg/l,- Drinking Water Directive. Ground water **levels** have remained constant.

The graphs attached in appendix 2 are representative of the last four reporting periods (48months)

### 2.3.4 Surfacewaters

Surfacewater monitoring took place on a quarterly basis with visual inspections, carried out weekly. The monitoring locations were at SW4, SW5, SW6, SW7 and SW8.

SW4 is immediately downstream of the leachate lagoon outlet L2, SW8 is half way to the confluence of the East / West drain with the river and SW7 is at the confluence. SW5 and SW6 are up and down stream of the confluence respectively.

Following an amendment to the licence in 2008, monitoring at locations SW4, SW7 and SW8 was requested and therefore there is no data pre 2008.

#### **Comment:**

With the exception of one occasion at SW4 and SW8, results clearly show that **pH** levels in the Figile River at SW 5 (upstream), are consistently above levels recorded at the site, with no great variation between the upstream and downstream recordings at SW6.

**Suspended solids** remained within emission limit values during the monitoring period, with results being lower than those from the Figile River, both upstream and downstream of its confluence with the East-West drain.

**Ammonia** results were all below the I/PV of 4mg/l for A3 Waters.

**COD** results, with the exception of one peak of 120 mg/l at SW7, were below the Bord na Mona set trigger levels of 100 mg/l. The I/PV is 40 mg/l for A3 Waters, however background COD levels in the Figile River at SW5, are consistently above all other locations.

Additional monitoring took place at SW4, 7 and 8 during discharge events from the leachate lagoon, the results of which are dealt with below.

The graphs attached in appendix 2 are representative of the last four years reporting periods (16 Quarters).

### 2.3.5 Discharges To Surfacewater

Discharge to surfacewater monitoring took place at SWR1. This is located at the exit to the surface water runoff silt settlement pond and the frequency was quarterly.

#### **Comment:**

As is evident from the graph attached, **pH** values have remained constant over the last 16 quarters, with all results being within the emission limit values of 6 – 10 pH units.

**COD** results were below Bord na Mona set trigger levels of 100 mg/l.

**Ammonia** results were all below the I/PV of 4mg/l for A3 Waters.

**Suspended Solid** results were all within the emission limit value of 35 mg/l.

Additional monitoring took place at SWR-1 during discharge events from the leachate lagoon, the results of which are dealt with below.

The graphs attached in appendix 2 are representative of the last four reporting periods (16 Quarters).

### **2.3.6 Leachate**

Leachate monitoring took place at the sumps, LC1A, LC2A and LC3A. Monitoring also took place at the leachate lagoon L1. The monitoring frequency was bi-annual. All locations are afforded the protection of a 2mm thick high density polyethylene lining system

#### **Comment:**

As is normal, all parameters were elevated at each of the monitoring locations. LC1A, LC2A and LC3A, which are located within fully lined cells and are contained. A similar situation pertains to L1, which is a fully lined Lagoon and is also designed for total containment.

However, the management of Leachate at the site again proved difficult due to unprecedented rainfall experienced in 2009.

The graphs attached in appendix 2 are representative of the last four years reporting periods (8 Bi-annual events).

### **2.3.7 Leachate Discharge:**

Leachate discharge monitoring took place at L2. This is the outlet point of the leachate lagoon and the monitoring frequency was bi-annually.

#### **Comment:**

Due to a complaint during the 2008 reporting period, discharge from the Leachate lagoon at L2 was suspended following a request to do so by the Agency. As a result of this there was no sample available for analysis at the time of that sampling event.

Following the cleaning of the lagoon and subsequent repair works, discharge recommenced following permission from the Agency. As is evident from the graph all parameters were within emission limit or guideline values.

The graphs attached in appendix 2 are representative of the last four years reporting periods (16 Quarters).

Outside of the scheduled leachate discharge monitoring, additional leachate discharge monitoring also took place during all discharge events as per the Leachate Management Plan.

This monitoring took place both before and during each leachate discharge event from L2.

During these discharge events, all emission limit values had to be satisfied prior to any discharge.

On one occasion at SW4, the suspended solid result was 79mg/l, which was reported to the agency. However as it was not more than 3 times the ELV (105mg/l) it did not constitute a non-compliance. At the time, all parameters sampled downstream were licence compliant.

Graphs of these results are attached in appendix 2.

### 2.3.8 Monitoring of Private Wells:

The monitoring of private wells is no longer a requirement of this Licence.

### 2.3.9 Meteorology

Meteorological data was gathered from the Agency agreed weather station at Derrygreenagh Works, 10 km from the facility. November proved to be the wettest month, with 175.7mm of rainfall recorded and February proved to be the driest, with 22.9mm. Meteorological conditions did have an effect on operations at the facility, in that the unprecedented rainfall experienced in 2009, created problems, as mentioned above, in the management of Leachate.

Below is a table containing all the gathered met data for 2009.

**MONTHLY VALUES OF ELEMENTS AT MIDLAND SITES IN 2009**

		air temperature		MSL	CBL	
	rainfall	mean max.	mean min.	mean pressure	mean pressure	mean R.H.
January	105.4	7.0	-0.6	1004.9	992.1	88.8
February	22.9	8.1	1.0	1017.0	1004.1	89.0
March	29.4	11.6	1.8	1014.4	1001.6	84.9
April	100.8	13.6	3.6	1010.7	998.1	84.2
May	69.9	16.0	6.0	1015.2	1002.6	82.2
June	81.5	20.2	8.9	1017.8	1005.3	76.9
July	142.0	19.3	10.2	1008.9	996.6	84.6
August	121.1	19.3	10.6	1011.4	999.0	86.7
September	30.4	17.4	7.6	1022.1	1009.8	86.5
October	107.2	14.8	6.5	1012.9	1000.8	90.3
November	175.7	10.4	2.6	995.4	983.3	91.6
December	76.8	5.8	-1.4	1004.8	992.4	93.5
	mm.	degrees Celsius		hectoPascals		%

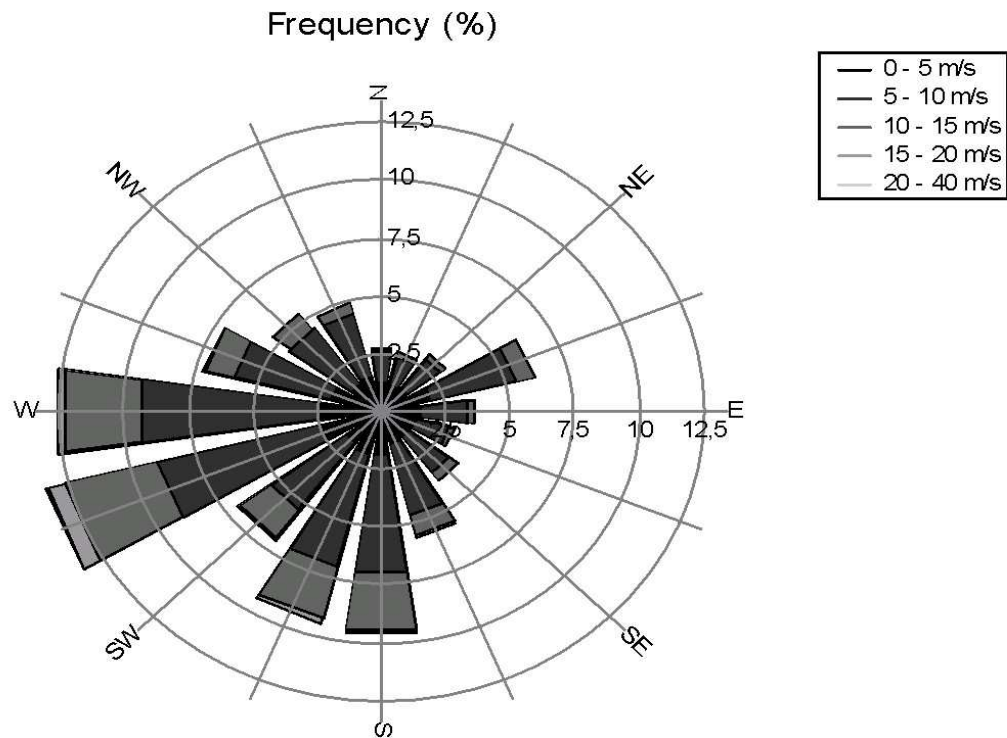
Rainfall and temperature from Derrygreenagh

Pressure and humidity from Mullingar

MSL: corrected to mean sea level

CBL: barometer level

## Wind Atlas for the Cloncreen Area



### Comment:

A wind-rose for the period was unavailable for inclusion in this report. The image above is generated from a wind atlas of Ireland. It is representative of the Cloncreen area. It is not directly based on any measurements; rather it is based on a predictive model of the wind regime for the country, which has been checked against actual data when its accuracy was being assessed.

## 2.4 Energy Consumption

Diesel is used in the every day operation, of ash transportation, placement and dust suppression at the repository. It is envisaged that these figures will remain constant as long as there isn't a change in the plant used at the facility. The electricity usage at the facility extends to approximately 1300 kwh/year.

Machine Type	Consumption Litres/Week	Annual Consumption Megawatt/ Hours	Annual Consumption Litres
Locomotive	600	305.52	31200
Front-end Loader	954	485.78	49608
Tractor	272	138.50	14144
Excavator	480	244.42	24960
Diesel Pump	50	25.46	2600
<b>Totals</b>	<b>2356</b>	<b>1199.69</b>	<b>122512</b>

## 2.5 Environmental Expenditure.

Environmental Expenditure 2009	
Licence: W0049-02	
Works: Clonbullogue Ash Repository	
Description	Cost €
<b>Operating Costs</b>	
Material	191,090
Wages	232,186
<b>Cell Development</b>	
Cell 3B development costs	179,600
<b>Monitoring Costs</b>	
Analysis & Reports	15,384
<b>EPA Contribution</b>	
Fee Payable to EPA	15,566
<b>Total</b>	<b>€633,826.00</b>

## 2.6 Environmental Incidents & Complaints.

### Non-Compliances 2009

Licence: W0049-02
Works: Clonbullogue Ash Repository

Type	Non-Compliances	Location
Water	1	Exceedence of leachate level in sums LC1A & LC2A
Water	1	Exceedence of freeboard in Leachate Lagoon
Air	NA	
Procedural	1	Inadequate labeling of monitoring locations
<b>Totals</b>	<b>3</b>	

### Environmental Incidents 2009

Licence: W0049-02	
Works: Clonbullogue Ash Repository	
	Number
Incidents	2
Requiring corrective action	2
<b>Category</b>	
Water	1
Air	
Procedural	
Miscellaneous	1
<b>Total</b>	<b>2</b>

**Environmental Complaints 2009****Licence:W0049-02****Works: Clonbullogue Ash Repository**

	<b>Number</b>
Complaints	0
Requiring corrective action	0
<b>Category</b>	
Water	
Air	
Procedural	
Miscellaneous	
<b>Total</b>	<b>0</b>

Generally, operations ran smoothly during the reporting period. There were however, five different incidents / non-compliances.

These related to ingress of water into the capping system, inadequate labelling of monitoring locations on another, holes in the lining system of the leachate lagoon and elevated sump levels.

## Section 3: Environmental Management

### 3.1 Management & Staffing Structure

#### Environmental Management System Management Structure (Condition 2.6)

Management Structure (including Environmental Emergency Response Team)

#### Resource Manager (1)

(Eamon Mulhall)

#### ( Resource Assistant ) (2)

#### Transport / Quality Manager

(Justin McCarthy)

#### Environmental Co-ordinator (3)

(Michael Mulhall)

- (1) Overall responsibility rests with the Resource Manager.
- (2) Day to Day Transport Management (Based at the Power Station Office)
- (3) Site Management, Monitoring, Records, Reports and Inspections

<i>Position</i>	<i>Duties &amp; Responsibilities</i>	<i>Experience/Qualifications</i>
Resource Manager	Overall responsibility for the ongoing management of the site and maintenance of the waste licence. Delegation of authority and responsibility to ensure the effective management of the facility.	Resource Manager since 2007. Previously held other management positions. With Bord na Mona since 1977.
Resource Assistant Transport / Quality Manager	Responsibility for the transportation of ash to the facility as directed by the Resource Manager. The transport manager is based at the Power Station for the majority of the time.	Quality Manager, Derrygreenagh Works for 20 years with responsibility for transport of peat / ash and peat quality.
Environmental Co-Coordinator	Responsibility for the day to day implementation of routine compliance monitoring, maintenance of all environmental records and the environmental file and preparation of environmental reports as directed by the Resource Manager.	Environmental Co-ordinator Derrygreenagh for 3½ years. Previous experience as a supervisor in Bord na Mona for 5 years. Holder of National Skills Cert- Waste Management.

Mr Enda McDonagh. Head of Environmental Engineering, Bord na Mona Energy Ltd



### **3.2 Site Development Works.**

#### 3.2.1 Development Works Undertaken during the Reporting period

##### Cell 4 Excavation.

Initial development work for cell 4. Works included the clearing of the cell footprint of scrub and brush wood and the dozing of the existing ground level to cell floor formation levels.

##### Cell 4 Outfall Diversion.

The re-routing of an existing internal outfall to bypass the footprint of cell 4, with the diverted water redirected back to the existing silt settlement pond immediately upstream of SWR-1.

##### Cell 3B Lining.

The complete lining of cell 3B, to the specification set out in the licence for the acceptance of Meat and Bonemeal ash, should it be deposited at the facility. A full Construction Quality Assurance document was compiled in relation to these works and is retained on file. This cell is currently being used for the placement of peat / biomass ash.

##### Capping.

Additional capping was stockpiled between the domes of Cells 1 & 2, for future capping improvements in 2010.

#### 3.2.2 Proposed Development Works for 2010

It is proposed to continue with the development of cell 4. Works will include the formation of the cell floor to the correct formation levels and the development of the cells embankments.

In addition to this, extra cover material will be placed into the hollow between the two peaks of cell one and the hollow between the interface of cell one and two. This is required to reduce the ingress of surface water into the capped cells 1 & 2, thus reduce the generation of leachate.

### **3.3 Restoration of Completed Cells/Phases**

An ecological survey of the capped cell 1 and cell 2 was carried out by Bord na Mona's Land Development Manager, the findings of which are outlined below.

#### **Visual inspection of vegetation cover**

The older vegetated areas are now heavily scrubbed over with Furze or Gorse and also Willow and Birch scrub and the overall vegetation cover on these areas is excellent with strong tussocky grass and scrub. The grass cover on the latest seeded cell is now practically 100% and is progressing on excellently. Work is in situ on spreading topsoil on the latest covered area and soil quality and thickness will insure a very good vegetation cover here also once seeded this Spring

### 3.3.1 Topographical Survey

#### Site Survey

A site survey was carried out in early 2009. This survey formed part of the Specified Engineering Works proposal sent to the Agency in relation to the lining of the remaining half of cell 3. It also identified to Bord na Mona areas of the capping system which required further placement of cover material to achieve the specified profile.

This work will continue into 2010.

### 3.4 Achievement of Objectives & Targets 2009

Project	Description & Status
<p><b>Project 1:</b>  <b>Conduct all operations on site in accordance with the schedules and conditions of the waste licence and also in conjunction with the restoration and aftercare programme</b></p>	<p>Achieved.</p> <p>There were also some alterations made to the ash dispensing silo at the Power Station. This work allowed for the use of the conventional ash buckets in the transportation of bottom ash to the ash site. This in turn allowed for the more efficient placement of ash.</p>
<p><b>Project 2:</b>  <b>Future cell development</b></p>	<p>Achieved</p> <p>The southern half of cell 3 ( Cell 3B ) was fully lined to the specification allowing the placement of Meat and Bonemeal.</p>
<p><b>Project 3:</b>  <b>Seed the remainder of capped cell 2</b></p>	<p>Not Achieved</p> <p>Due to the stockpiling of cover material on cell two, in order to accommodate the placement of that stock in the hollows of cell one and the hollow between cell 1 and 2, seeding was delayed.</p>
<p><b>Project 4:</b>  <b>Leachate Management Plan</b></p>	<p>Achieved</p> <p>A comprehensive plan was put in place, with aspects included additional discharge monitoring.</p>
<p><b>Project 5:</b>  <b>Alternative Use</b></p>	<p>Ongoing.</p> <p>Some inquiries made, with no definite alternative uses identified.</p> <p>An internal innovation meeting was set up and concluded its first session in relation alternative ash uses. Some interesting ideas suggested, with further meetings planned.</p>

## Proposed Environmental Objectives & Targets for 2010

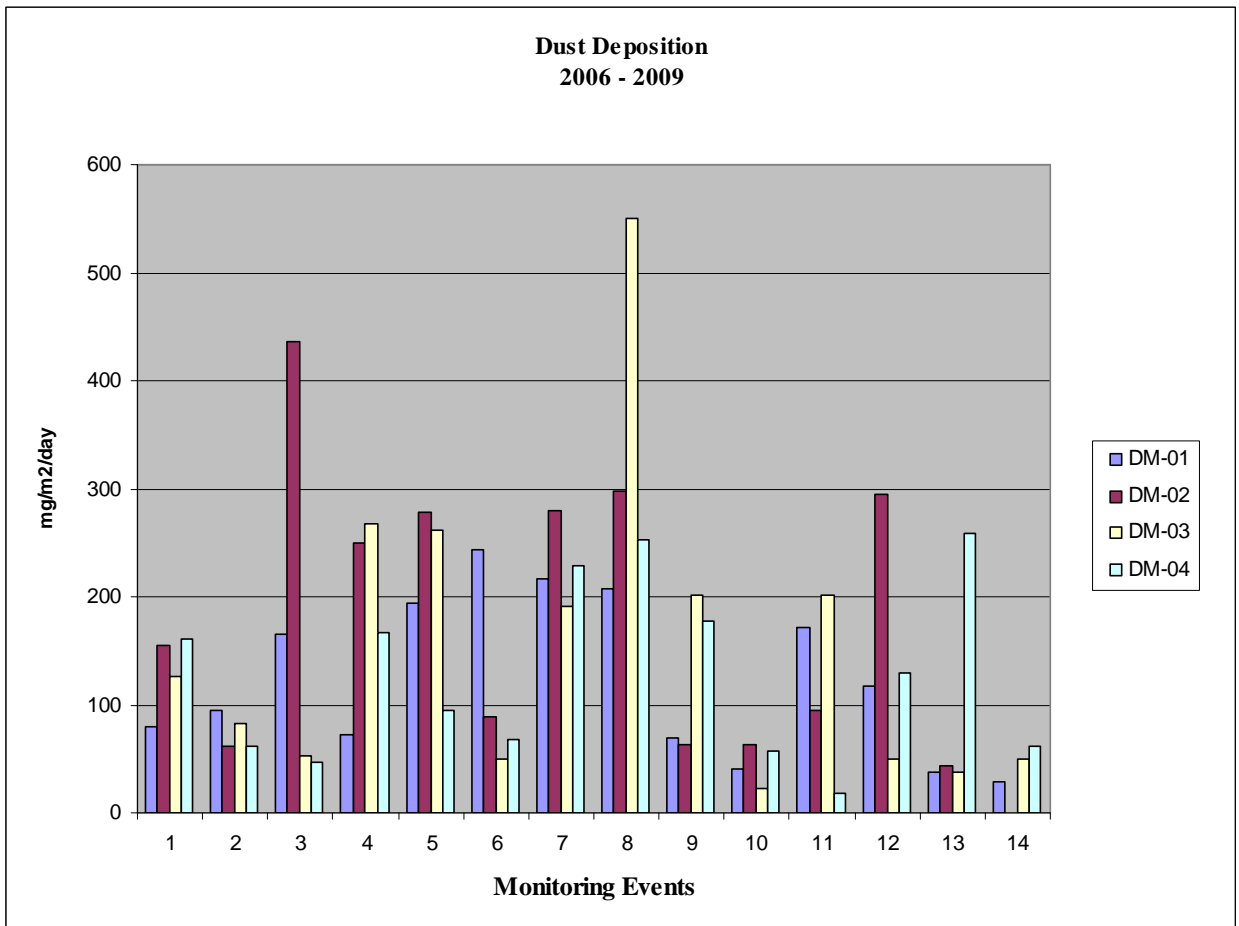
Project	Description & Status
<b>Project 1:</b>  <b>Conduct all operations on site in accordance with the schedules and conditions of the waste licence and also in conjunction with the restoration and aftercare programme</b>	Continue to conduct all operations on site in accordance with the schedules and conditions of the waste licence and also in conjunction with the Restoration & Aftercare programme.
<b>Project 2:</b>  <b>Future cell development</b>	Continue with the development of cell 4, to the specification set out in the review.
<b>Project 3:</b>  <b>Seed the remainder of capped cell 2</b>	Grass seed the remaining section of capped cell 2.
<b>Project 4:</b>  <b>Leachate Management Plan</b>	Continue with improvements to the leachate management system. Works to include a more efficient dilution system. Improve the capping beyond the licence requirements.
<b>Project 5:</b>  <b>Alternative ash / leachate use</b>	Continue with research for alternative use's / re-use's of ash waste and leachate.

### 3.5 Programme for Public Information

The Bord na Mona Energy Ltd site office at the Power Station, is the main ash site office for keeping all the records associated with the ordinary day to day operation of the landfill and the Waste Licence. Documents kept here include the Annual Environmental Report, Environmental Management Programme, Schedule of Objectives and Targets, all Monitoring Data, ash tonnages and volumes, Emergency Response Procedure, Bord na Mona Energy LTD's, Environmental Policy. Any individual wishing to view these documents may call to the office during working hours.

# **Appendix 1**

## **Dust Monitoring Results**

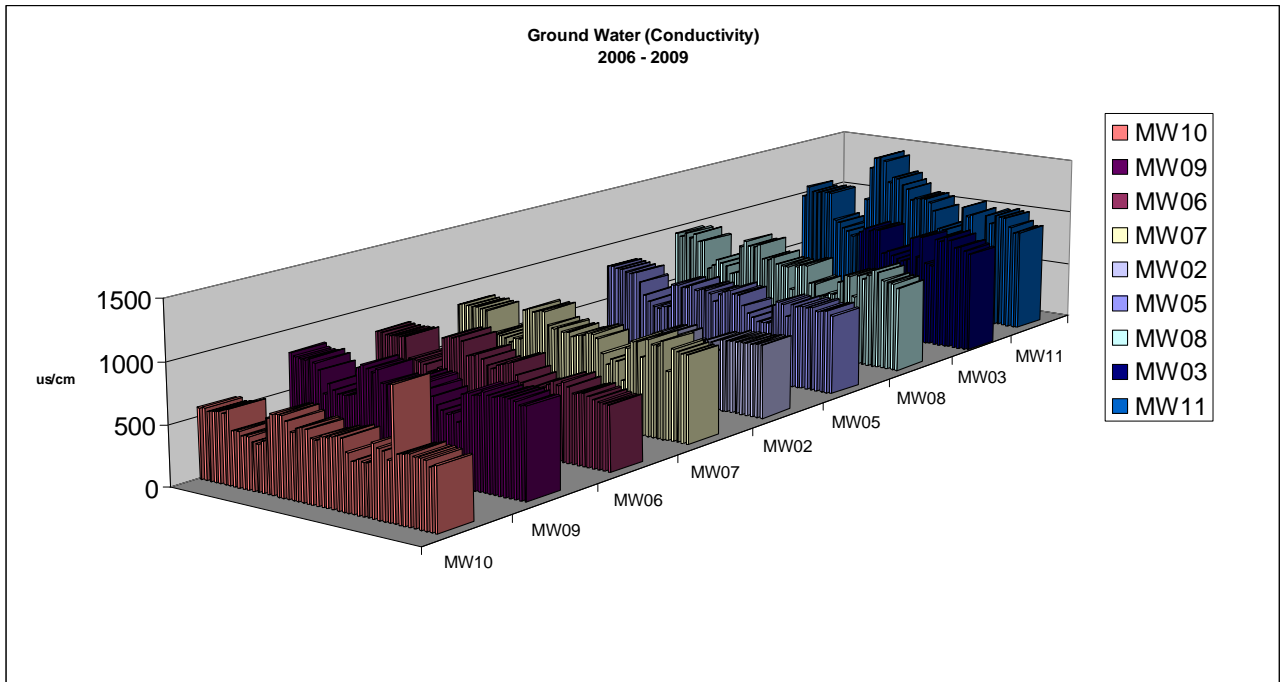


**Note:** Emission Limit Value = 350 mg/m<sup>2</sup>/day. There were no dust non-compliances or complaints of a dust nuisance during the reporting period.

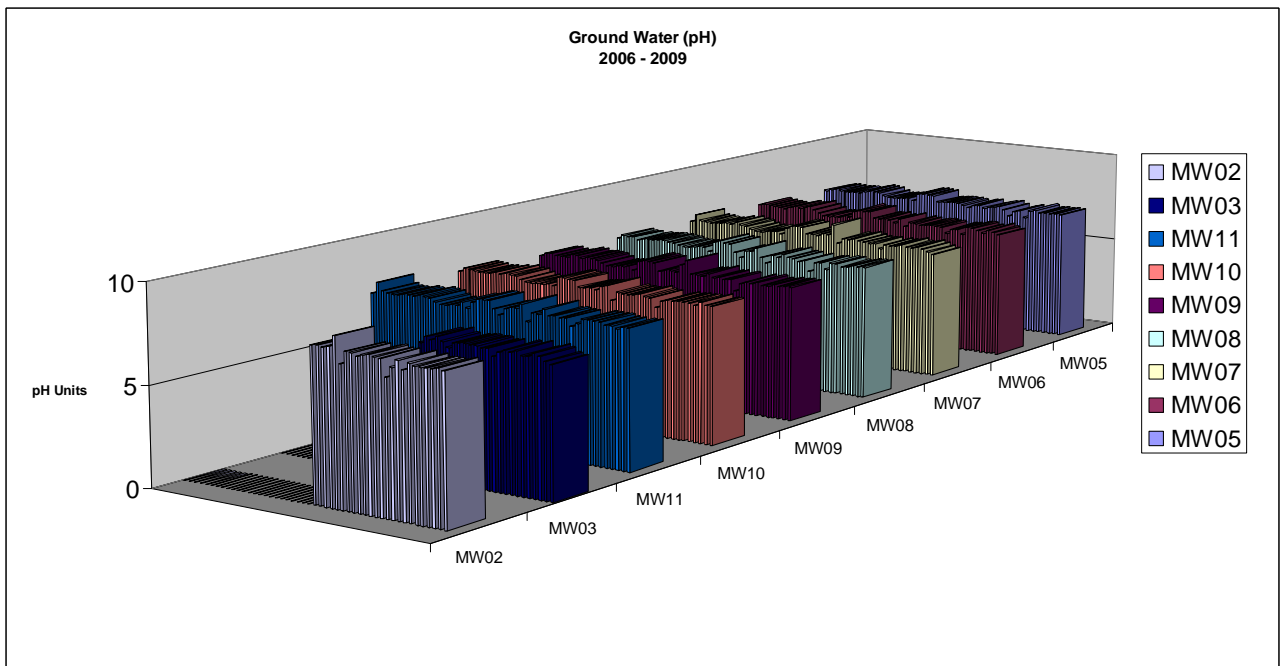
# **Appendix 2**

## **Water Monitoring Results**

## Ground Water.



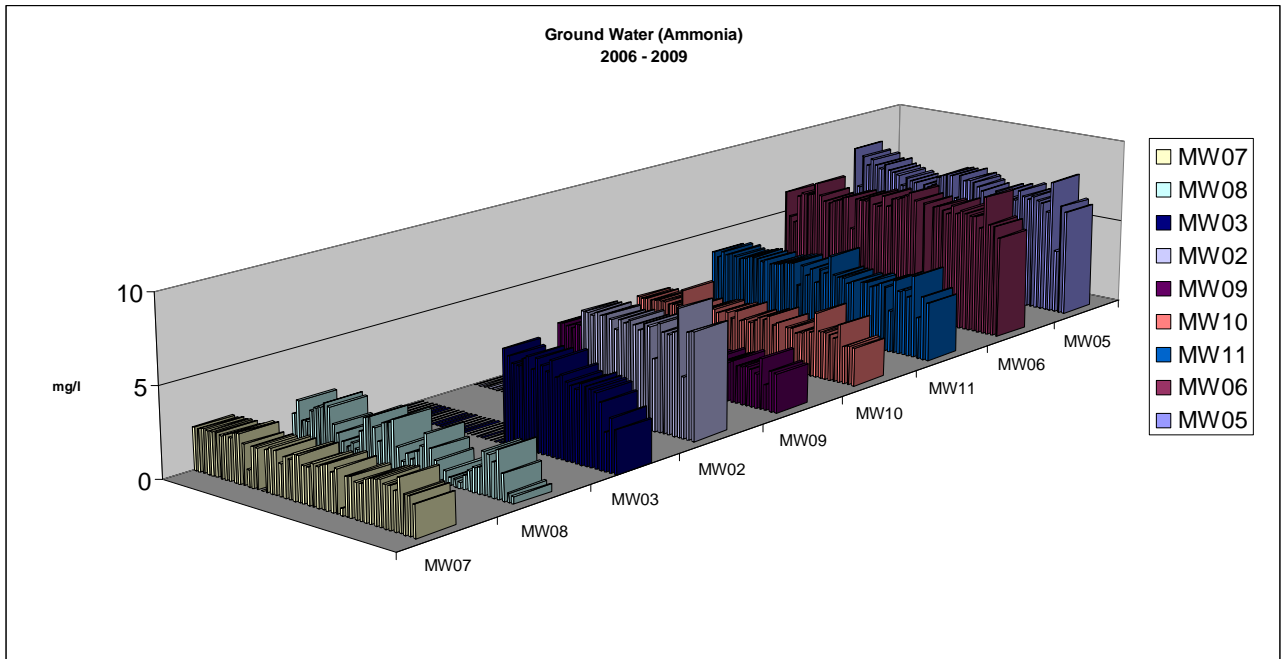
## Monthly Analysis



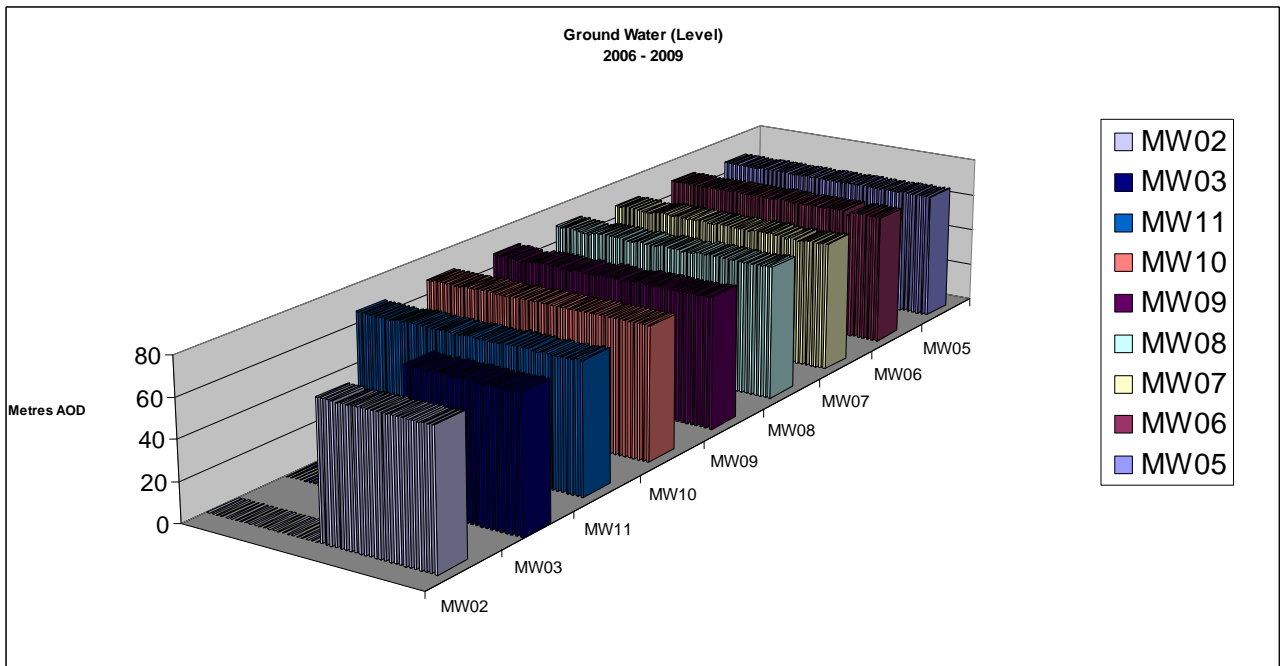
## Monthly Analysis



## Ground Water.

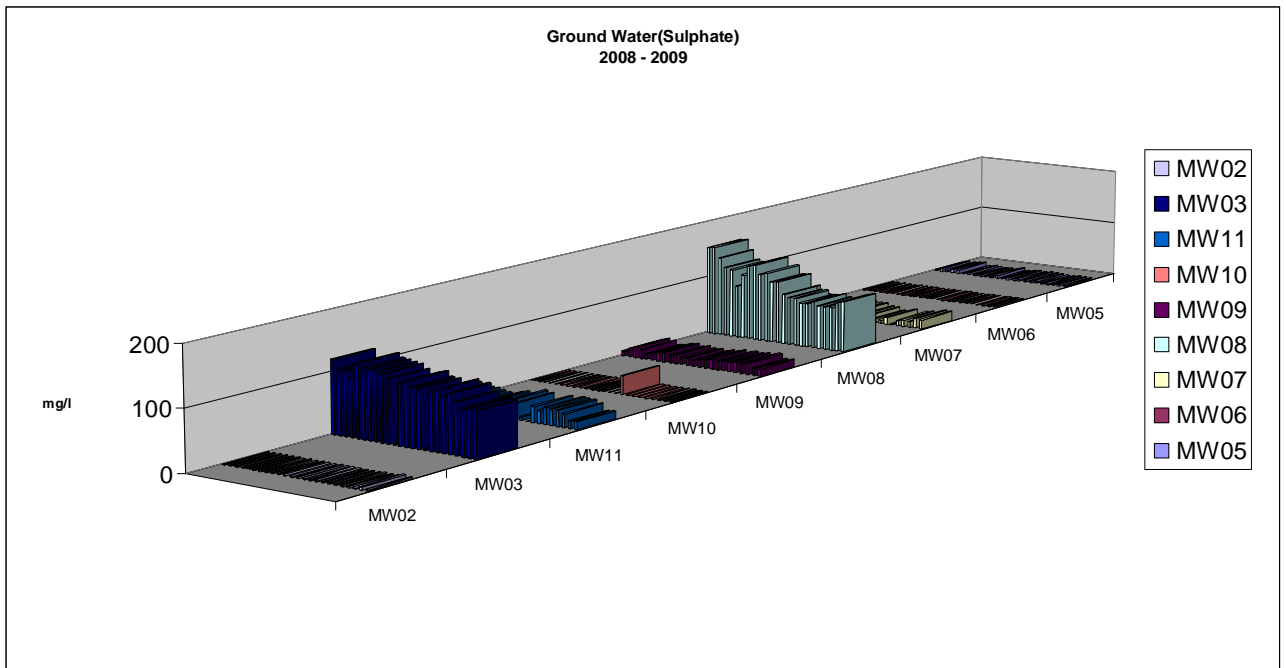


## Monthly Analysis



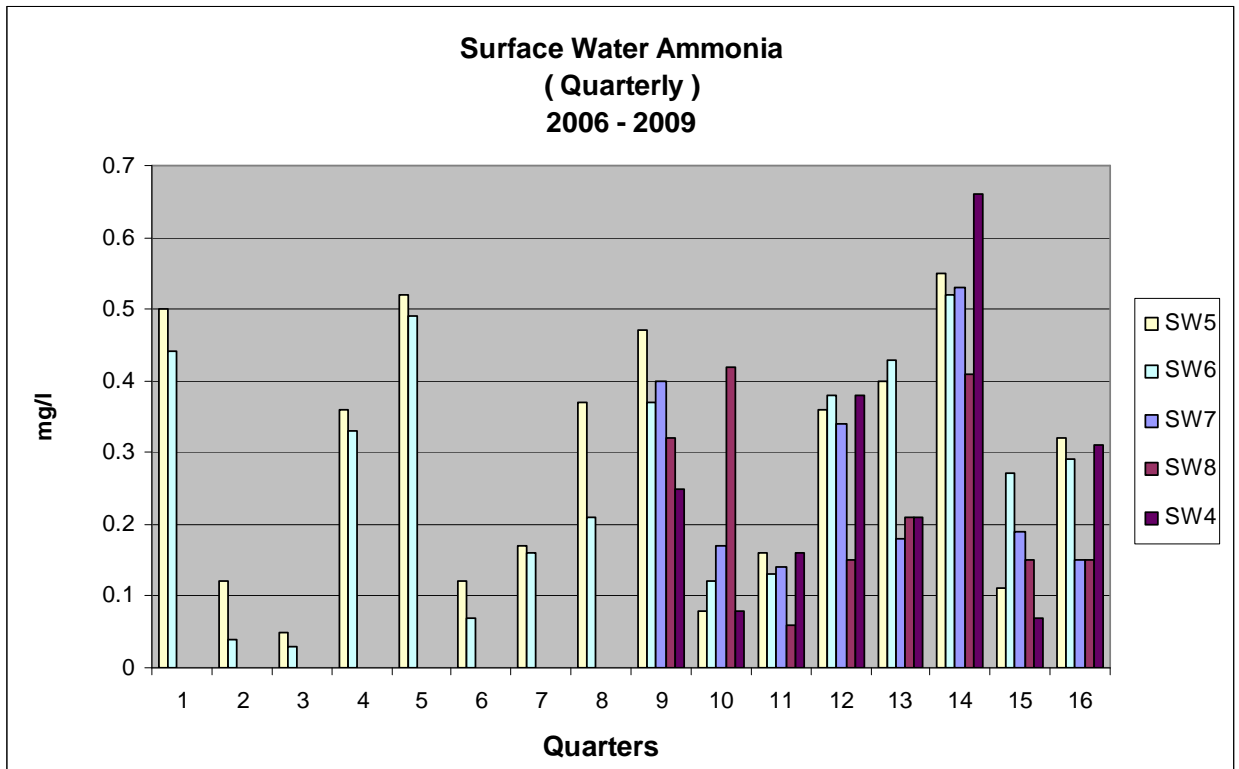
## Monthly Analysis

## Ground Water.

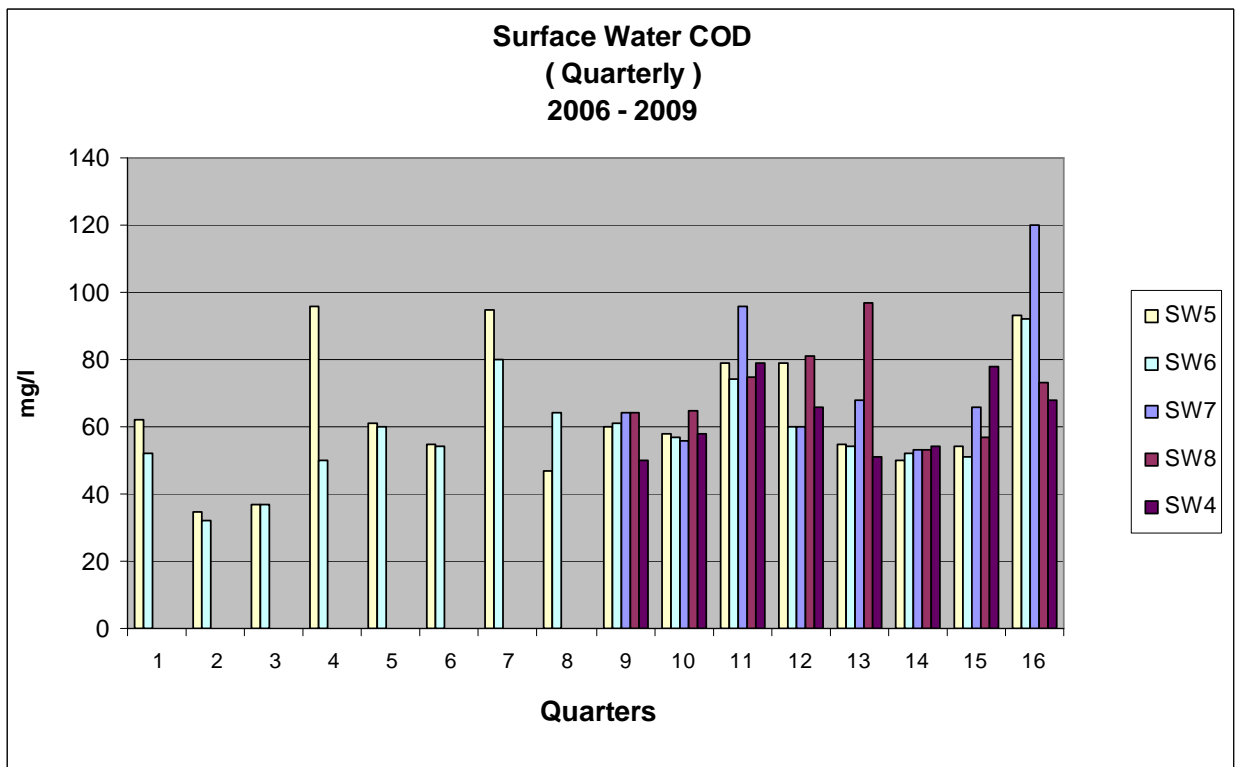


## Monthly Analysis

**SurfaceWater.**

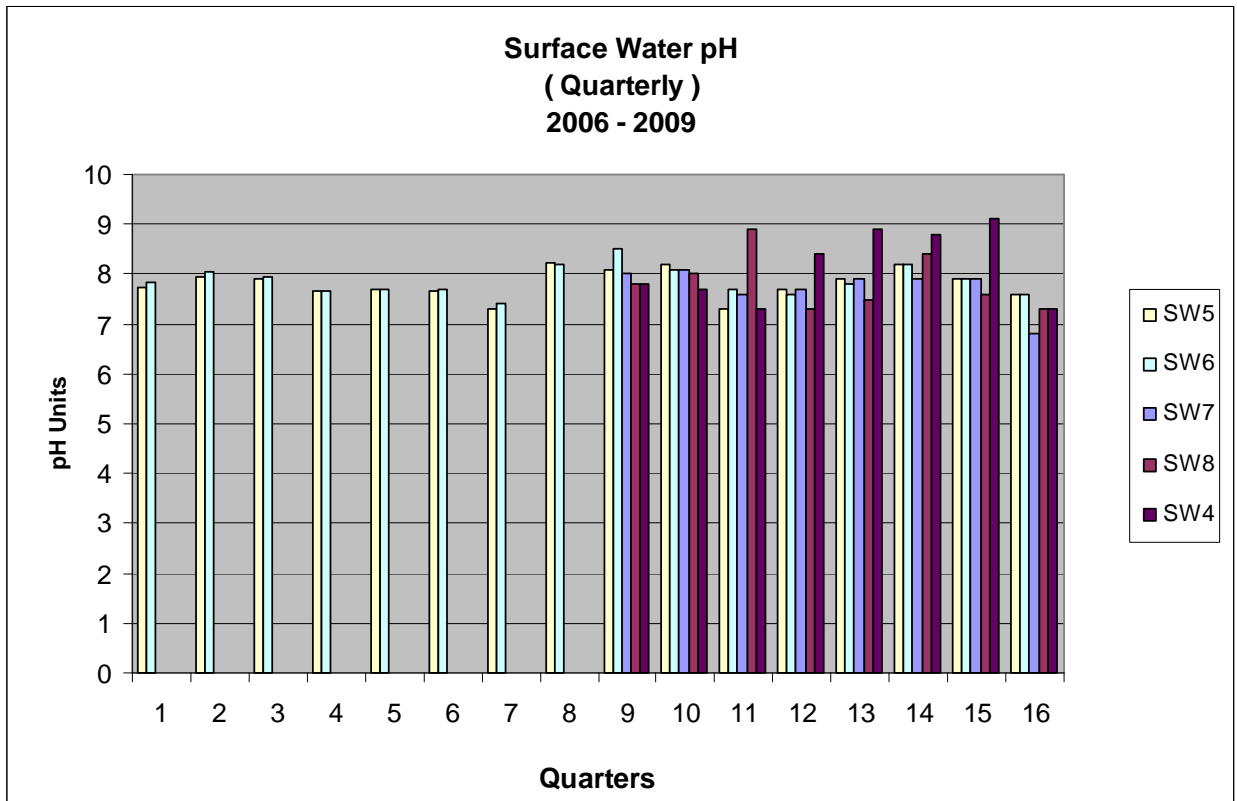


Quarterly Analysis

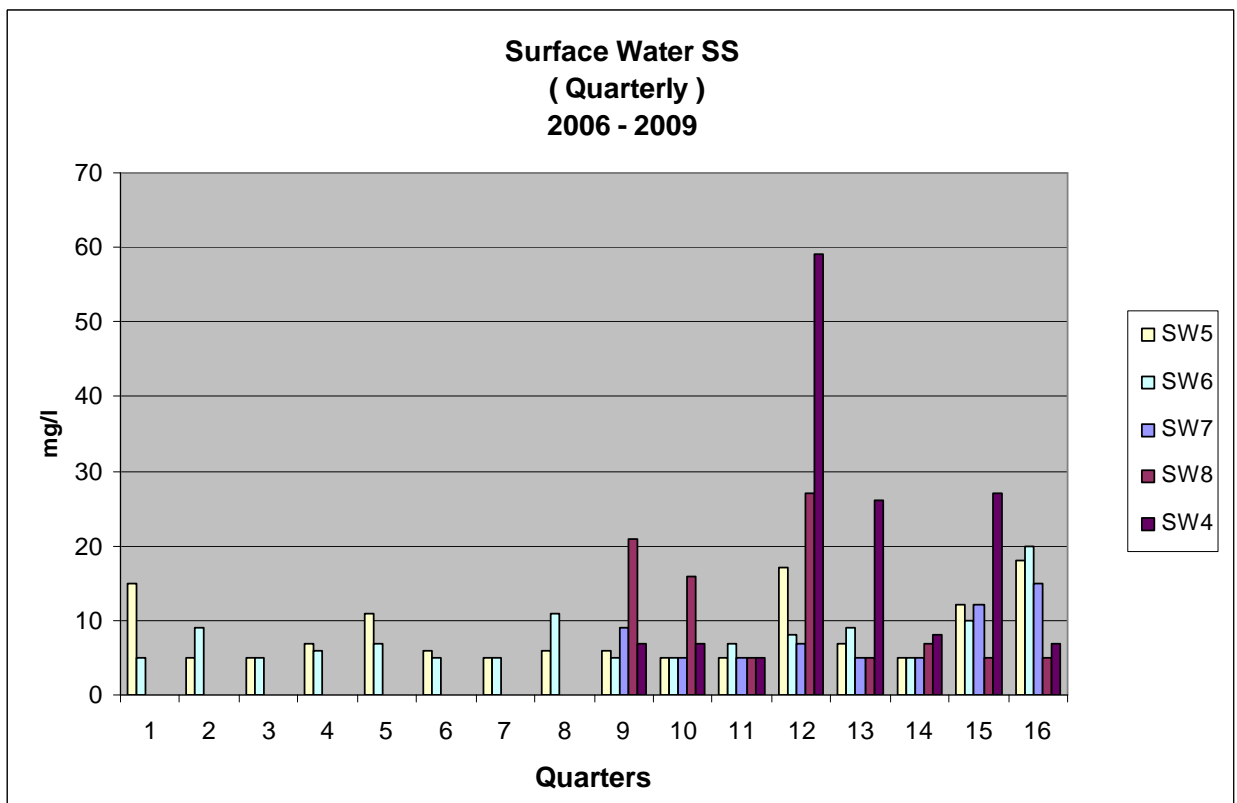


Quarterly Analysis

## Surface Water

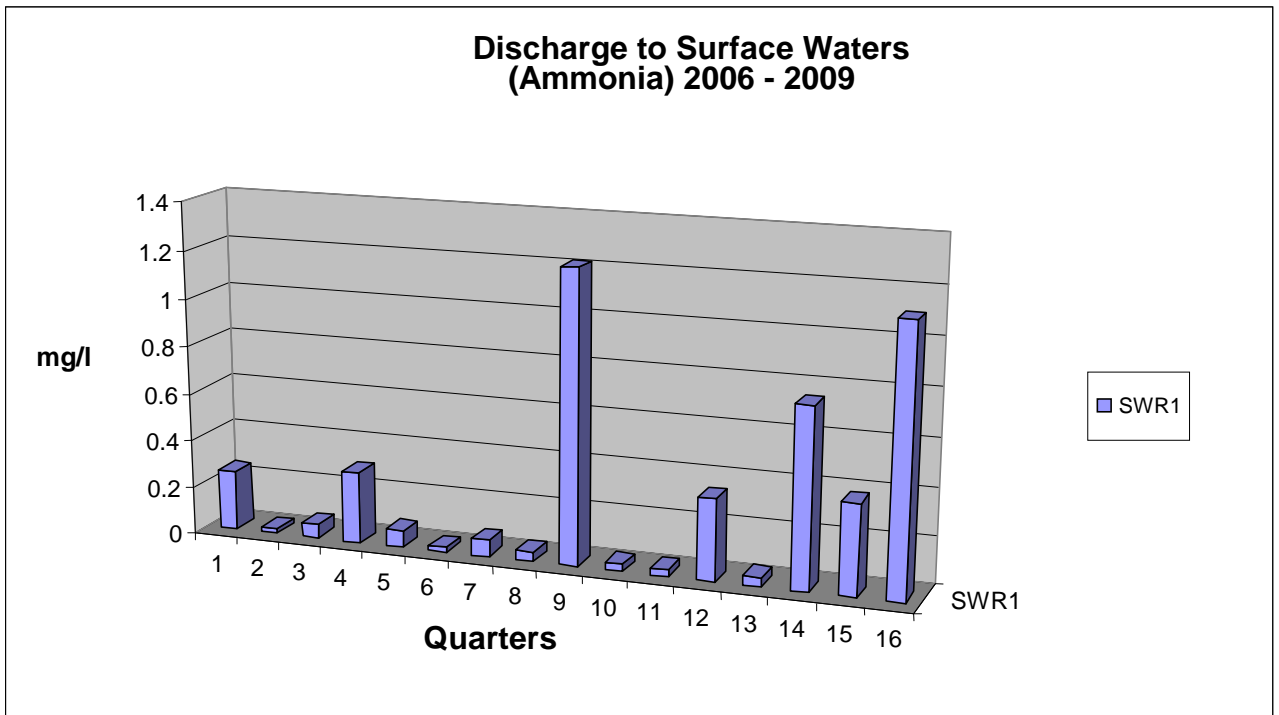


## Quarterly Analysis

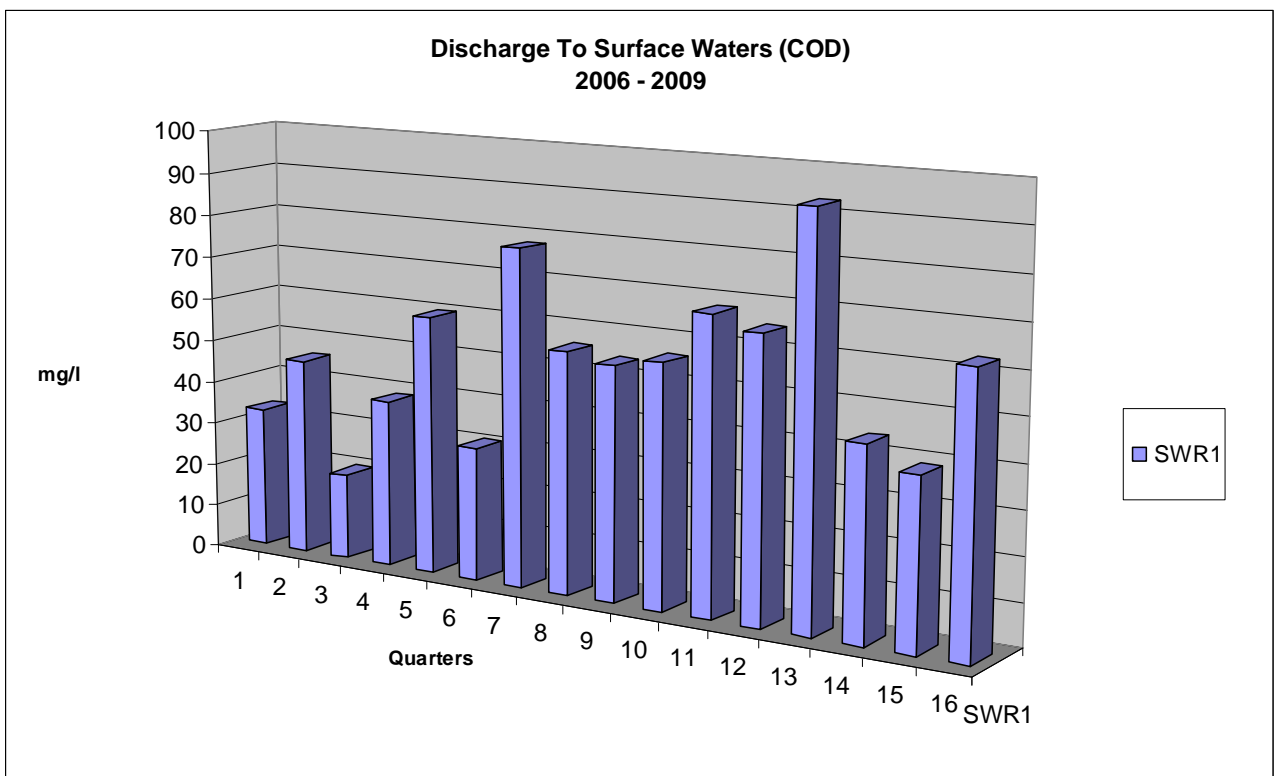


## Quarterly Analysis

**Discharges to Surface Waters.**

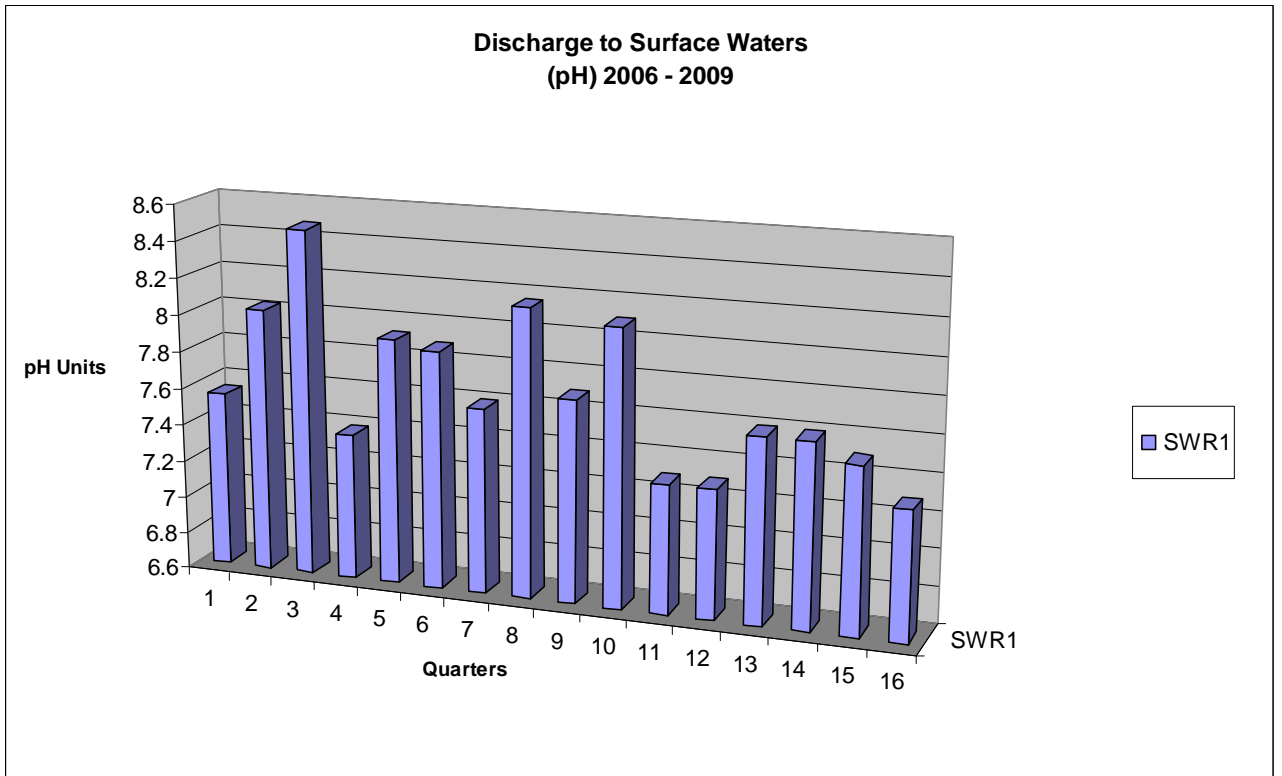


**Quarterly Analysis**

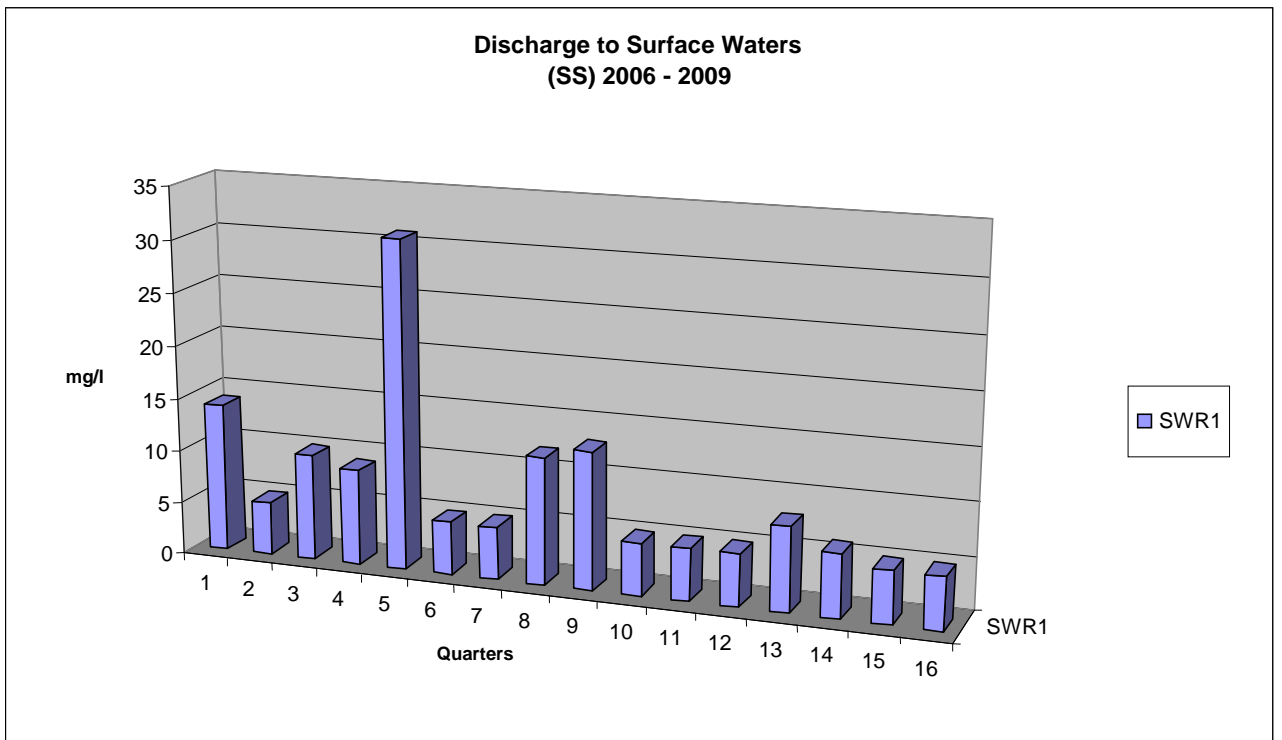


**Quarterly Analysis**

## Discharges to Surface Waters.

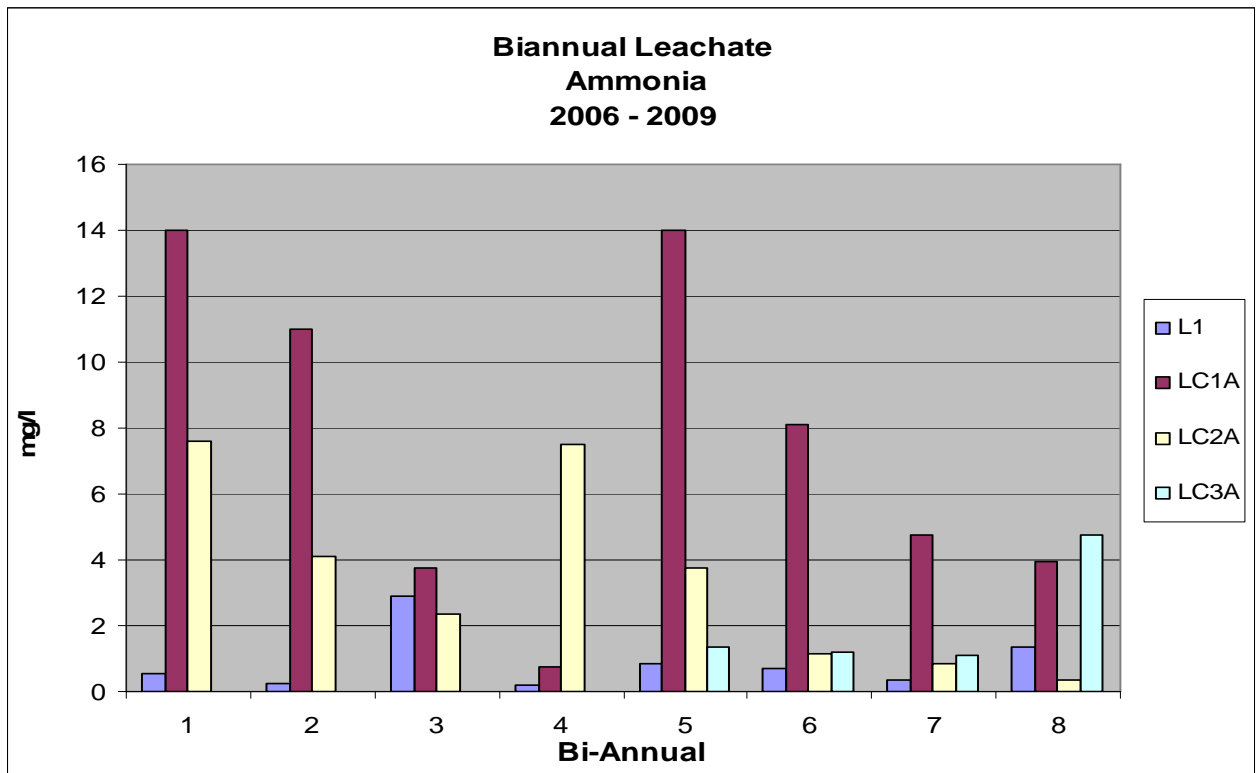


### Quarterly Analysis

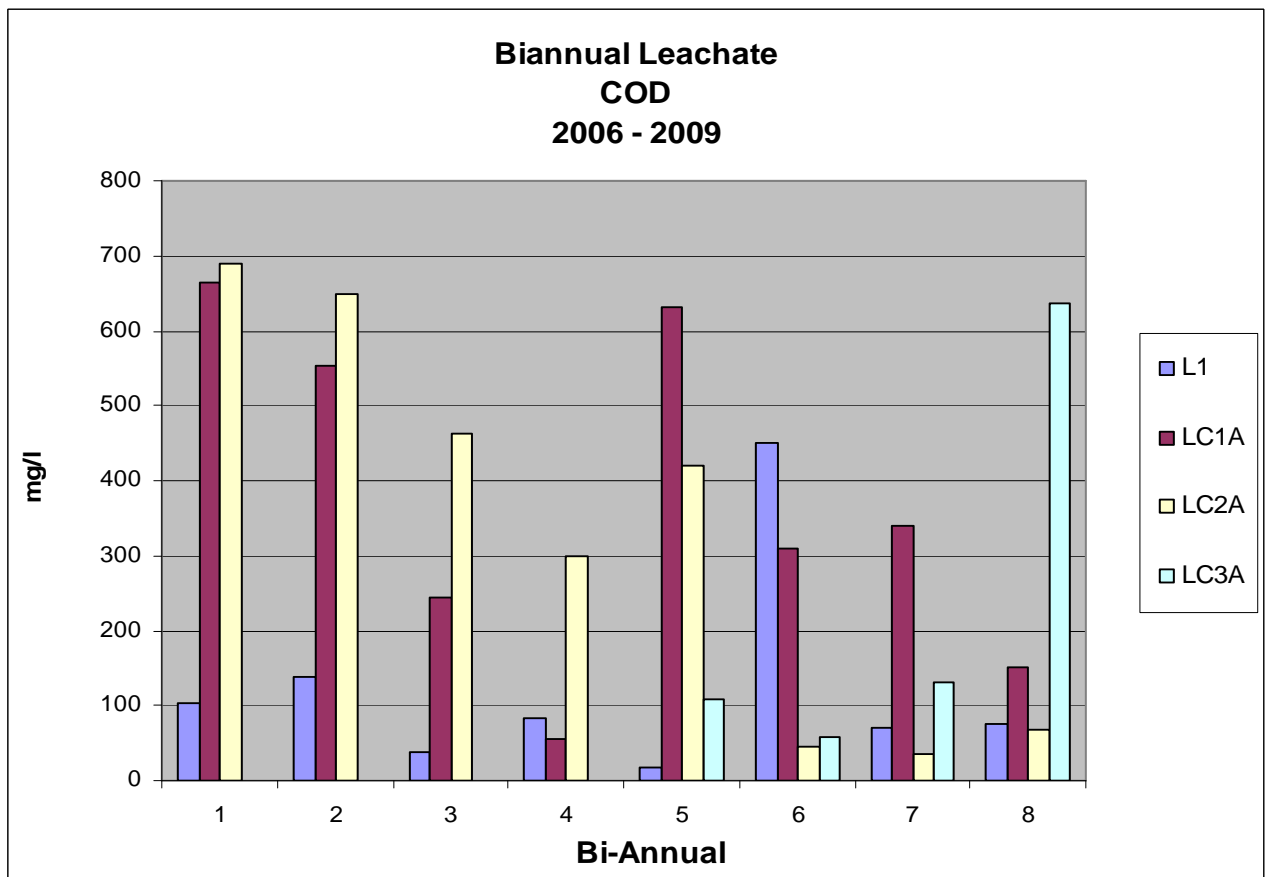


### Quarterly Analysis

**Leachate.**

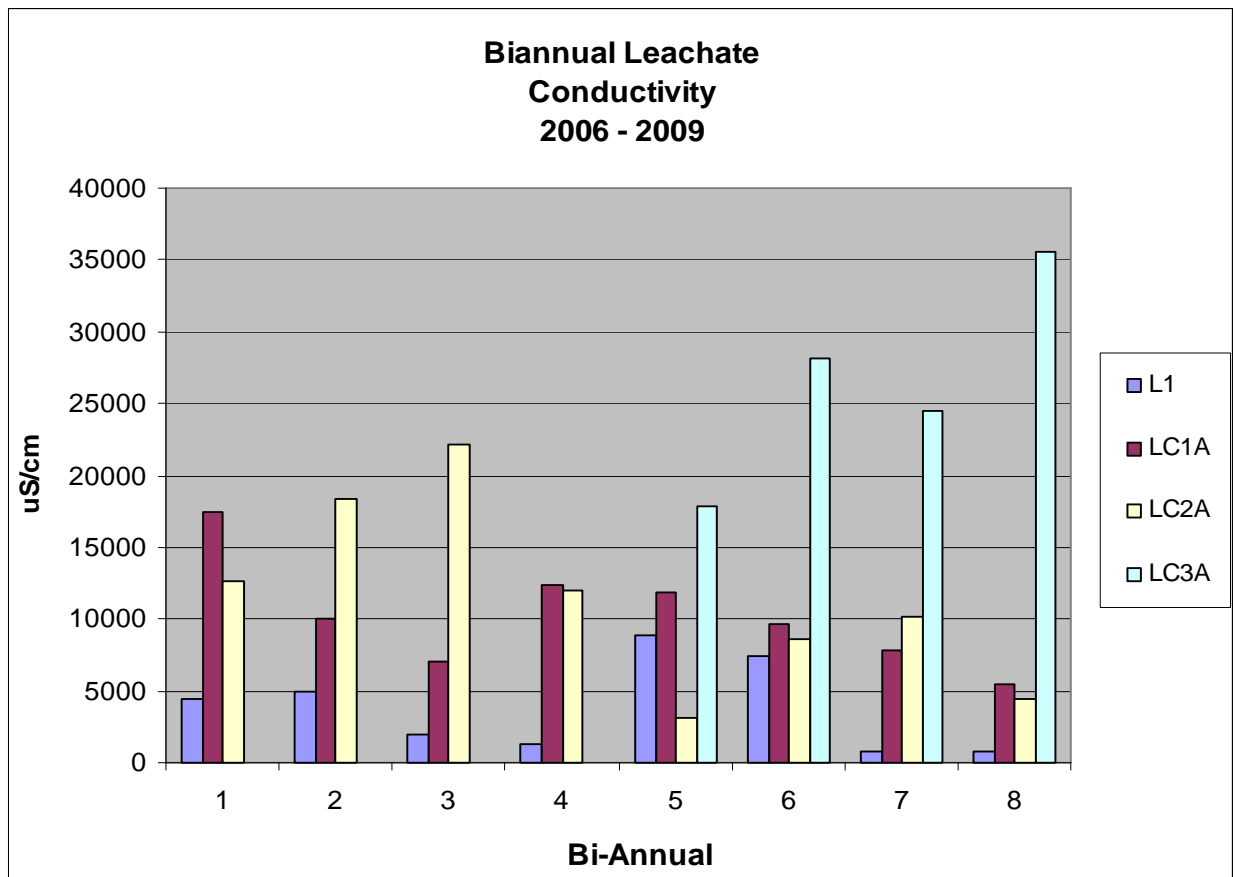
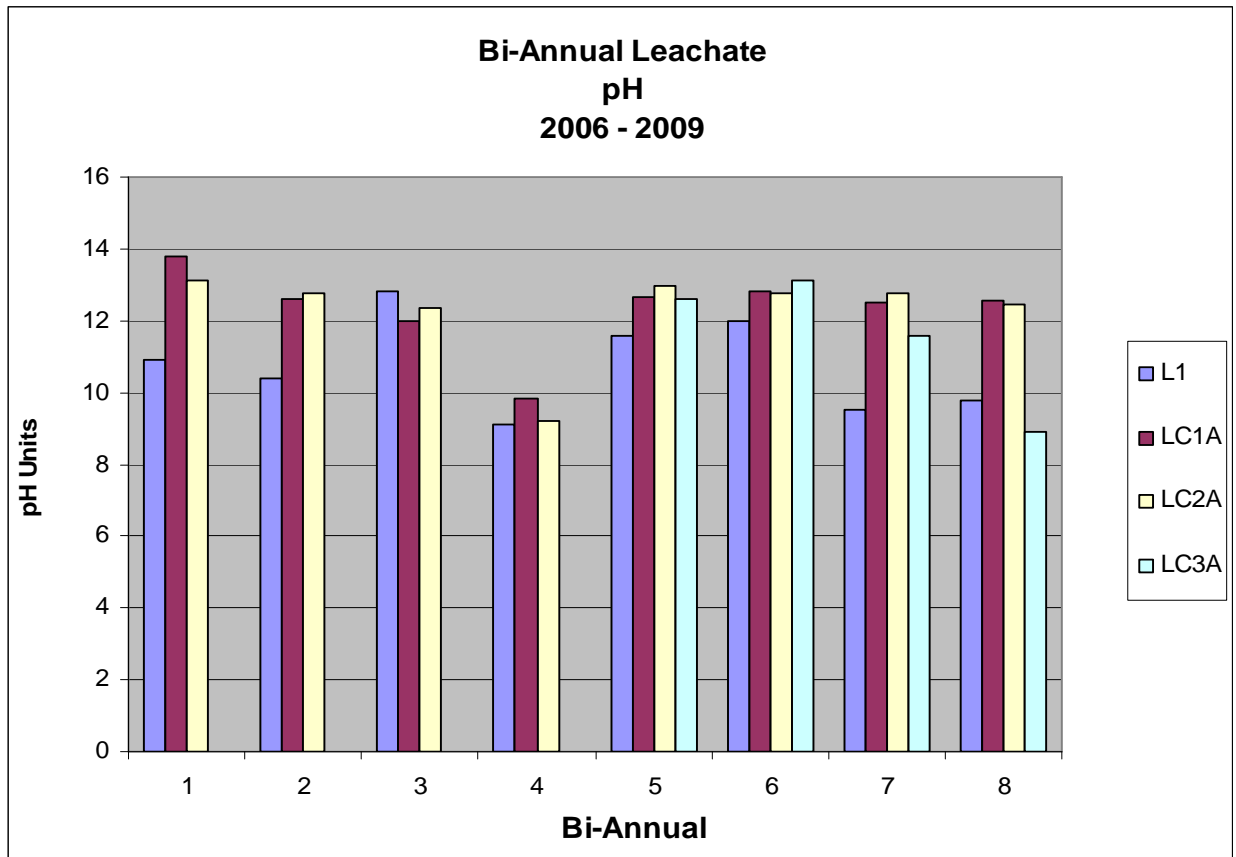


**Bi-annual Analysis**



**Bi-annual Analysis**

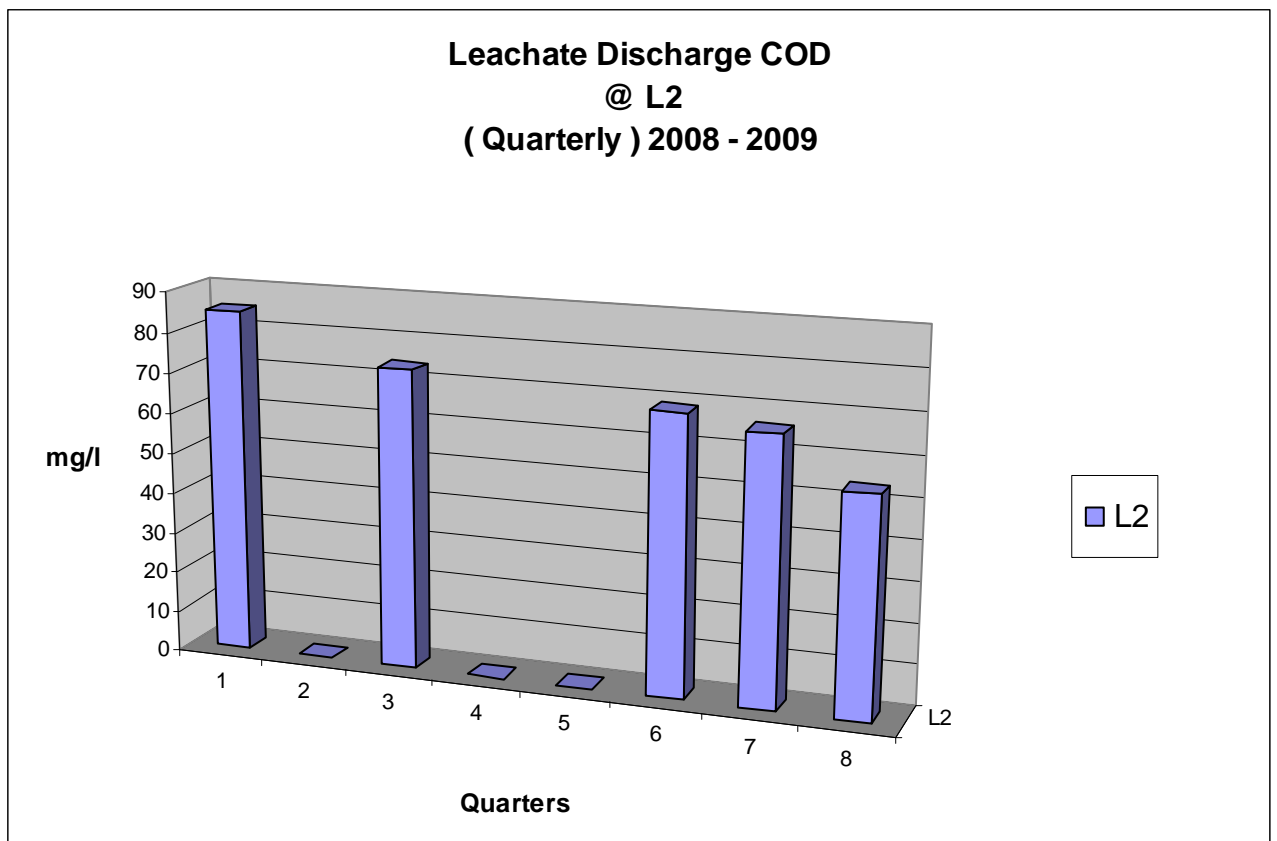
**Leachate.**



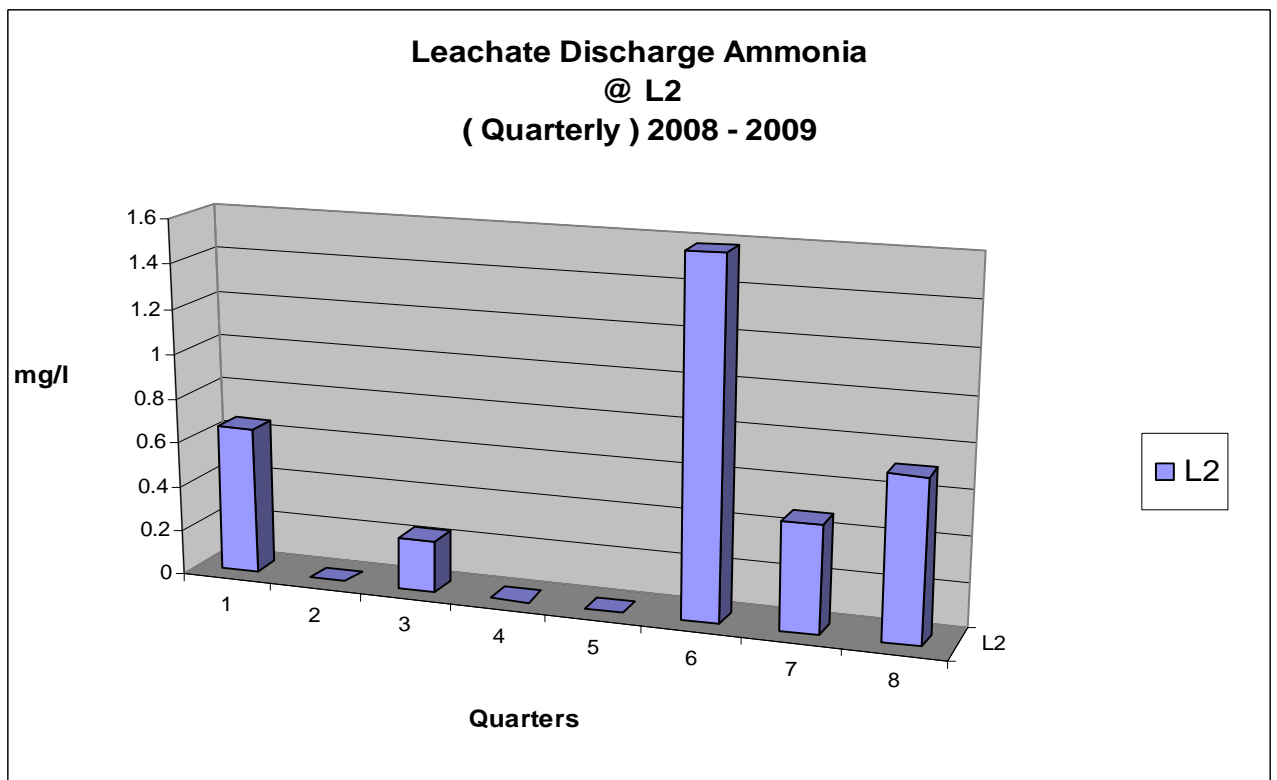
**Bi-annual Analysis**



## Leachate Discharges L2.

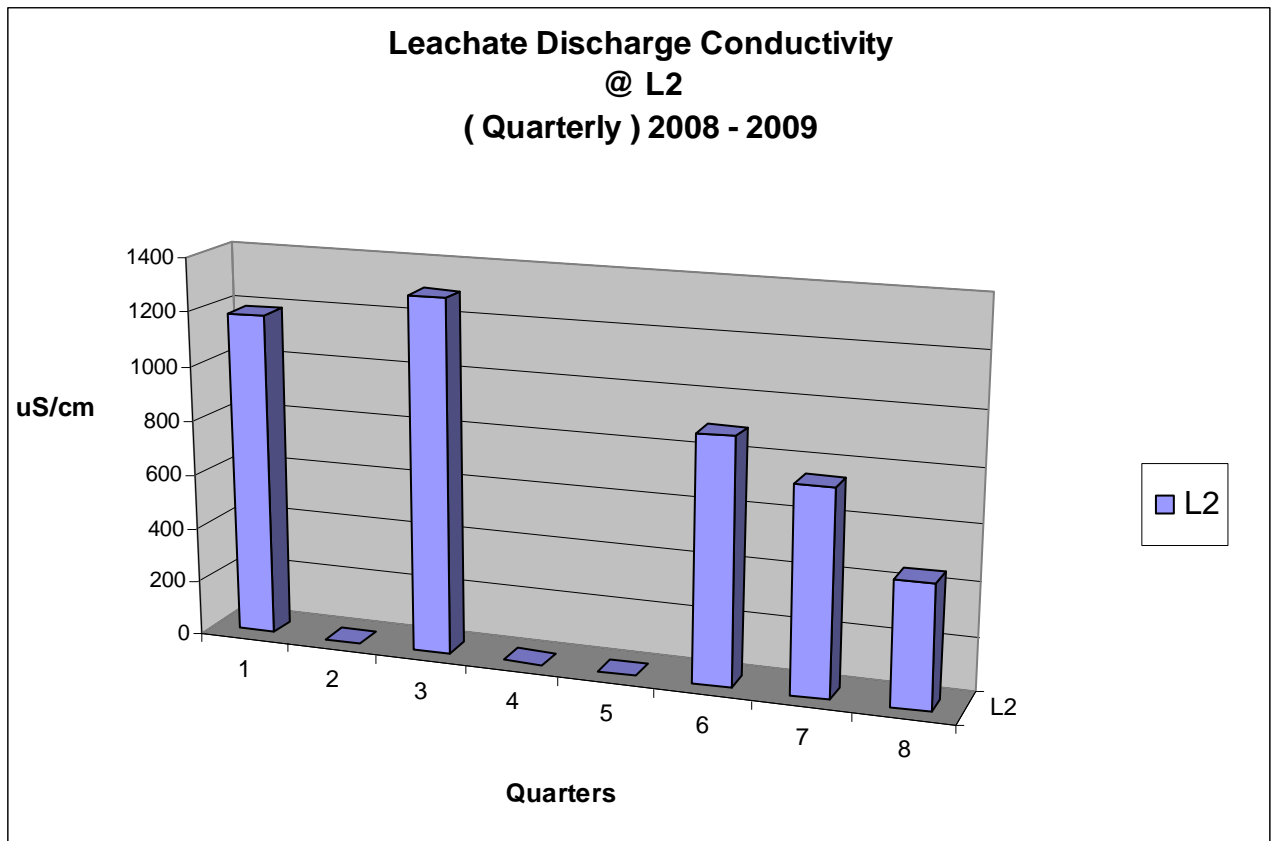


## Quarterly Analysis

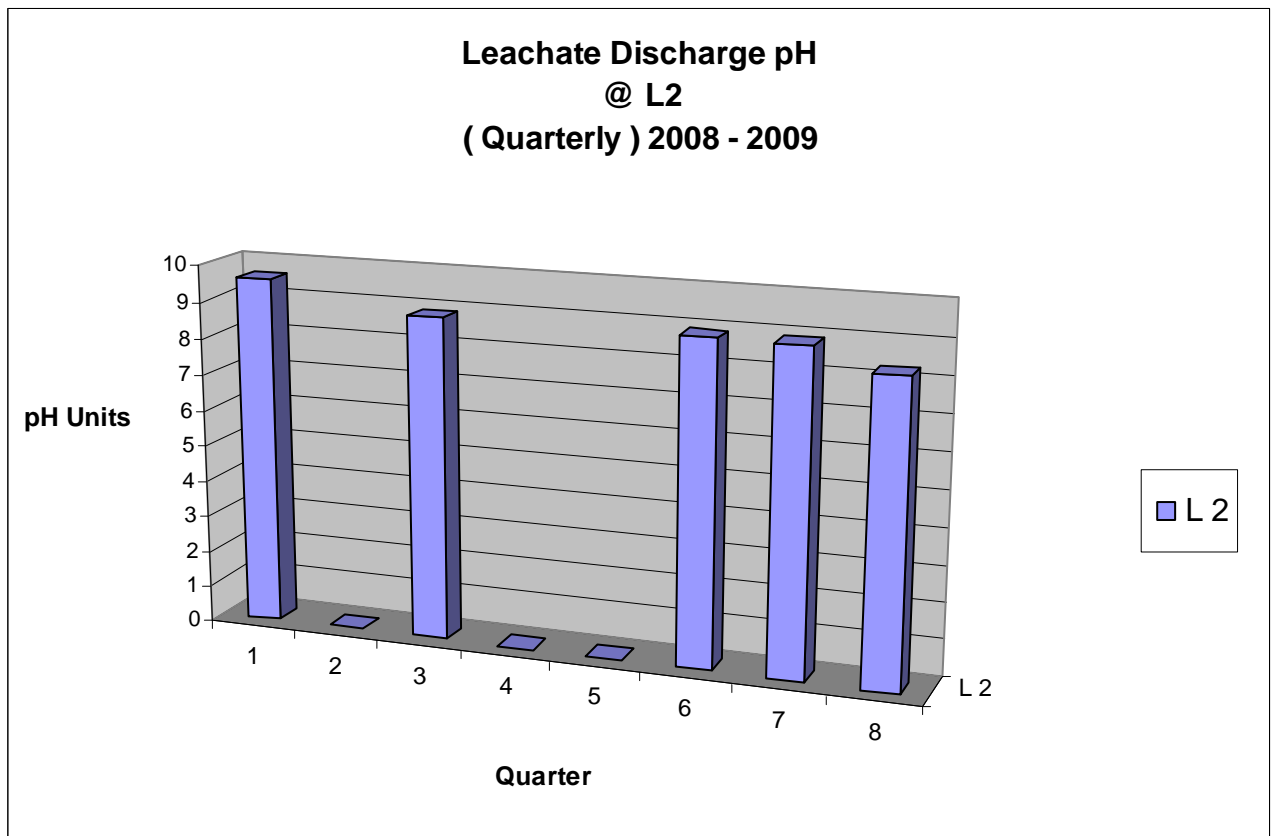


## Quarterly Analysis

### Leachate Discharges L2.

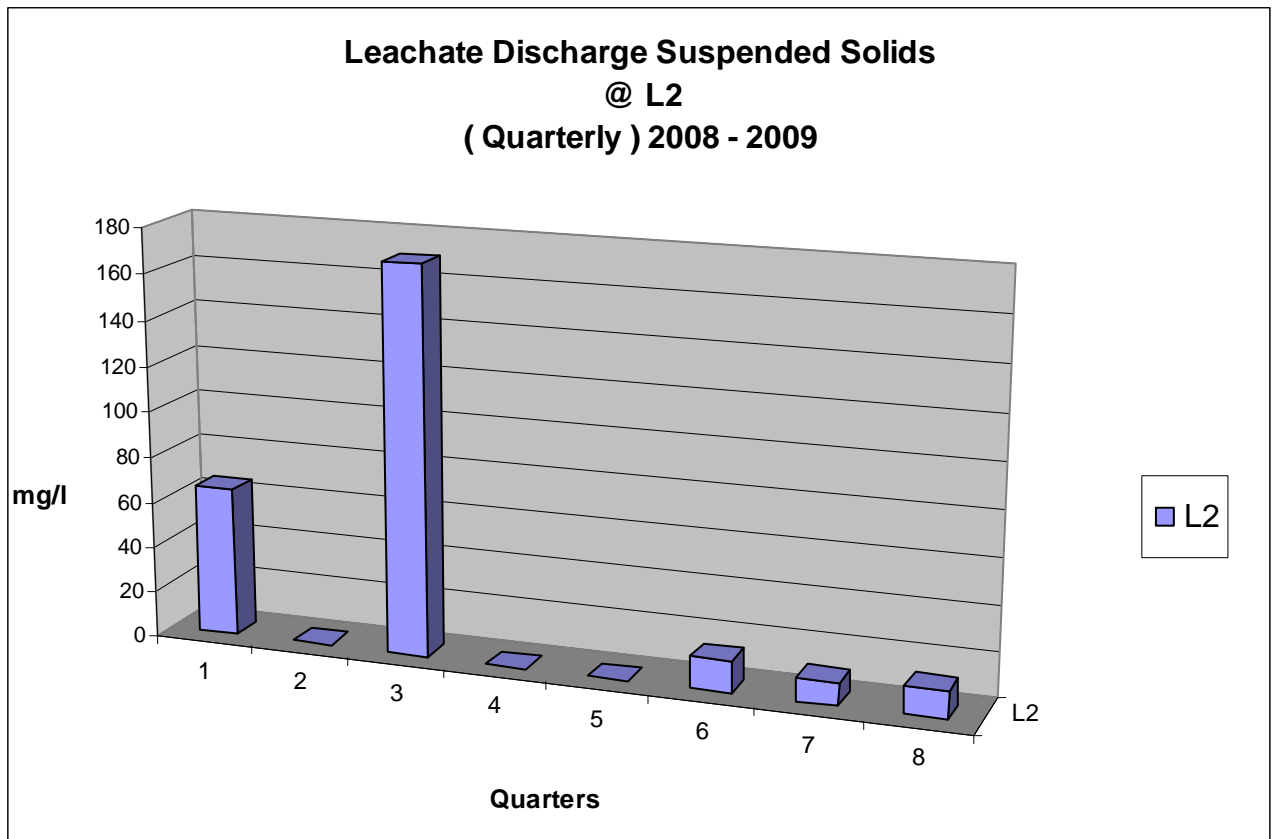


### Quarterly Analysis

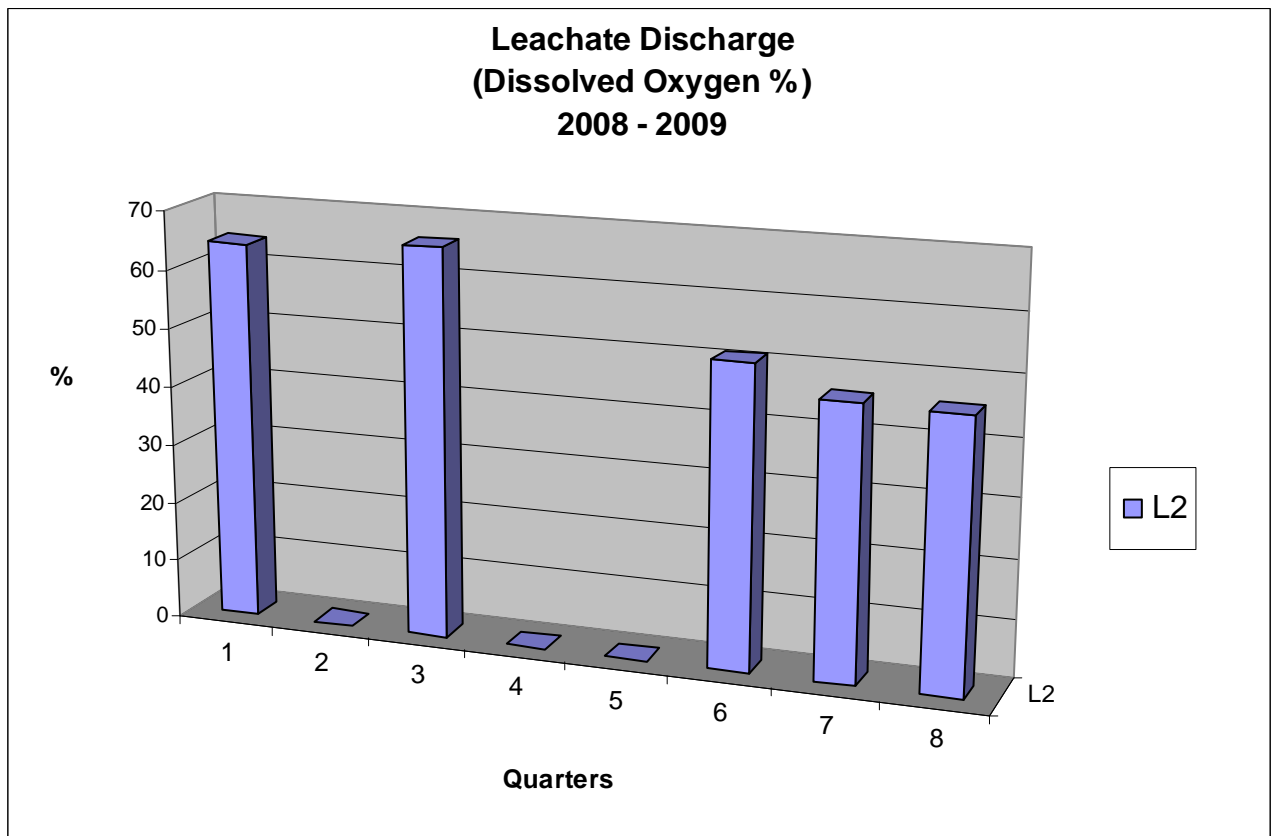


### Quarterly Analysis

### Leachate Discharges L2.

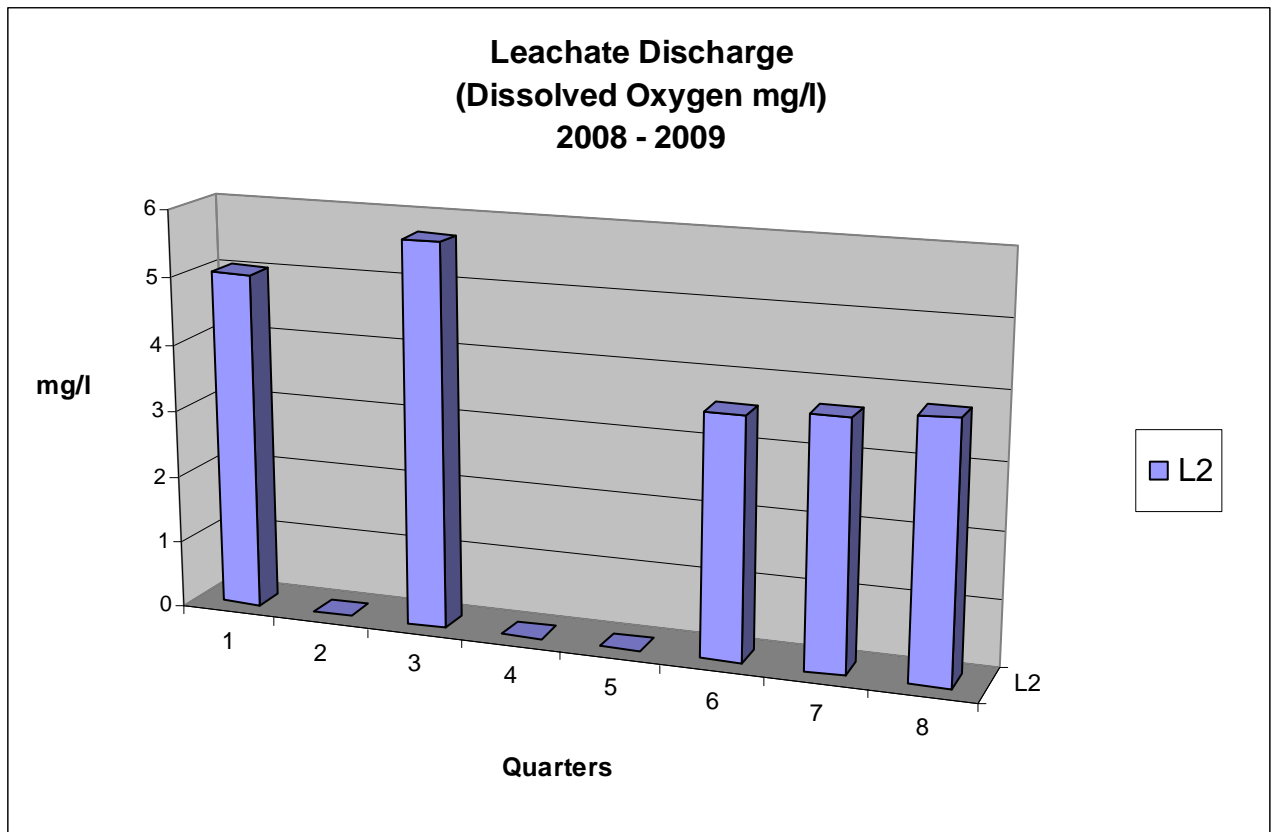


### Quarterly Analysis



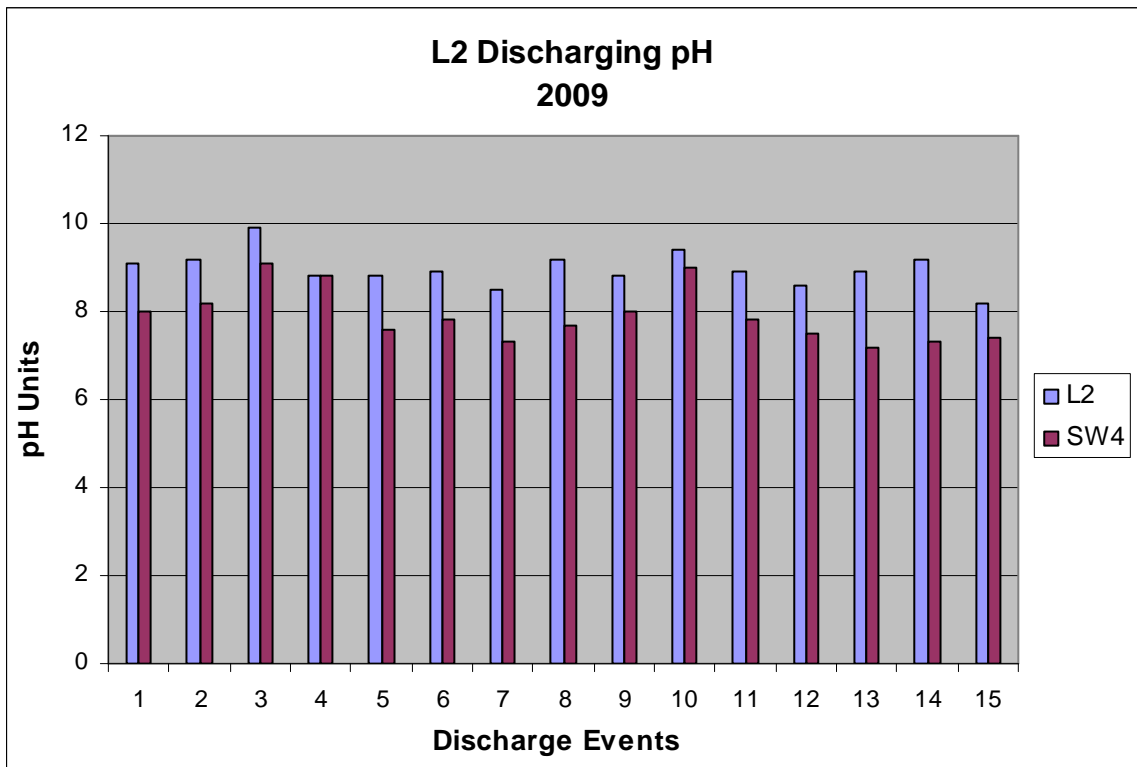
### Quarterly Analysis

## Leachate Discharges L2.

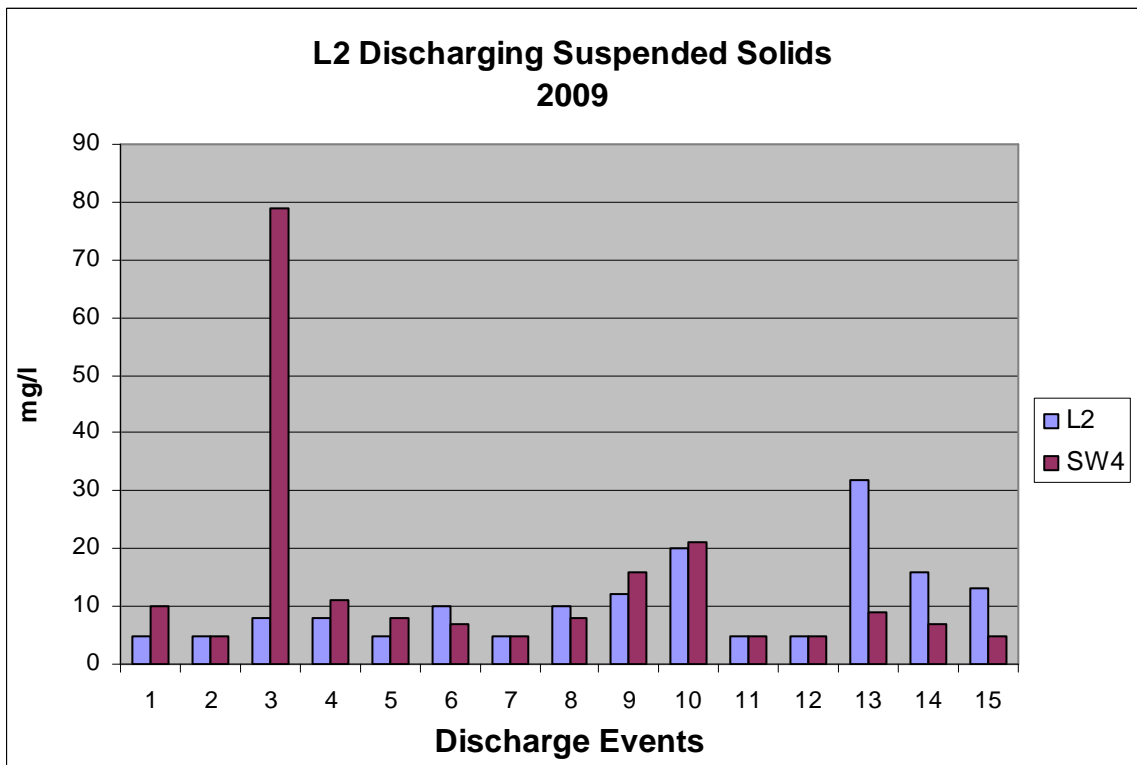


Quarterly Analysis

**Additional Leachate Discharges L2.**



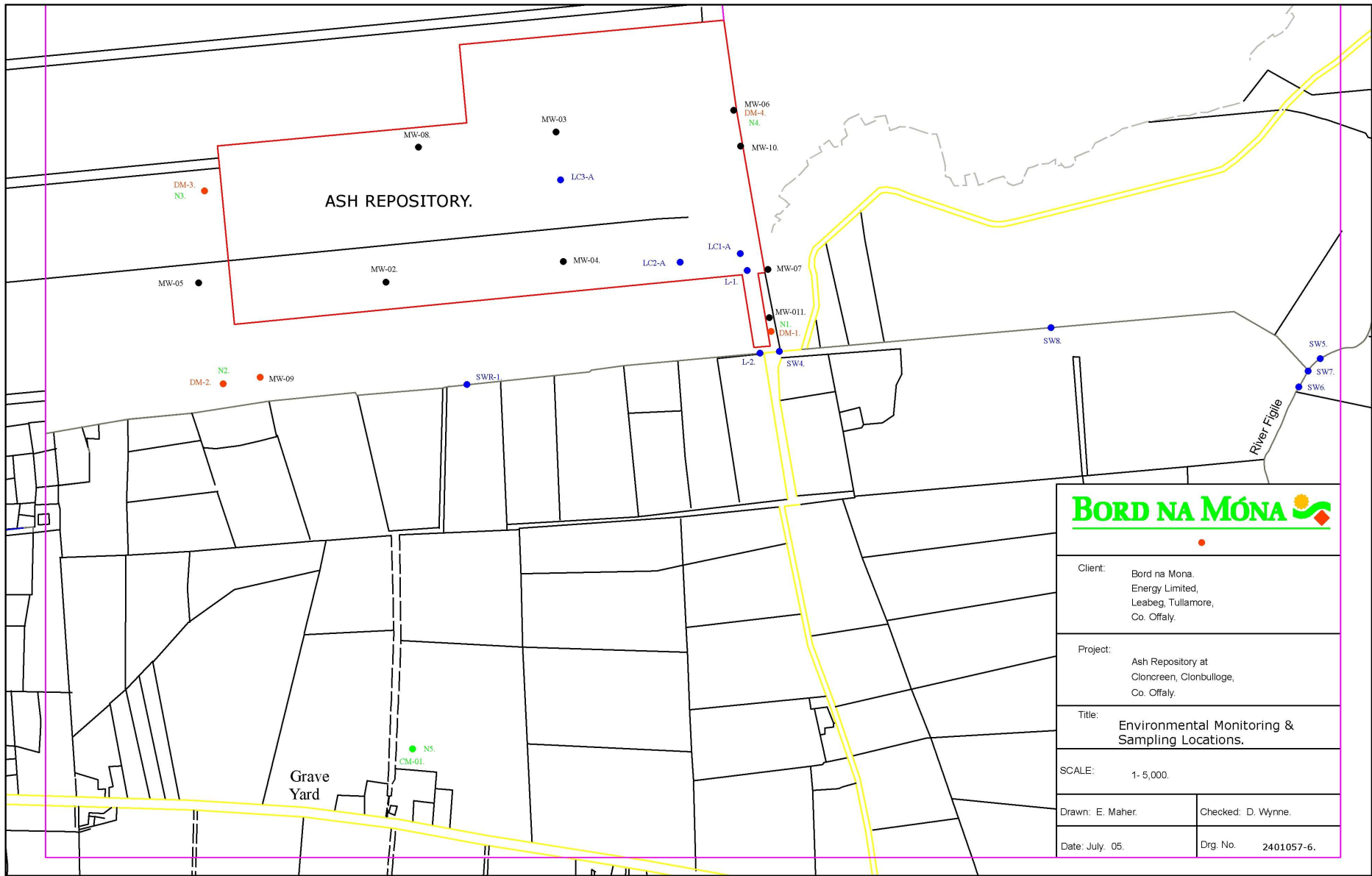
As per discharge event.



As per discharge event.

# **Appendix 3**

## **Monitoring Locations**



Client: Bord na Mona Energy Limited, Leabeg, Tullamore, Co. Offaly.

Project: Ash Repository at Cloncreen, Clonbulloge, Co. Offaly.

Title: Environmental Monitoring & Sampling Locations.

SCALE: 1-5,000.

Drawn: E. Maher. Checked: D. Wynne.

Date: July 05. Drg. No. 2401057-6.

# **Appendix 4**

## **AER PRTR DATA**