BORD NA MÓNA

BORD NA MÓNA ENERGY LIMITED

Office of Climate, Licensing & Resource Use
Environmental Protection Agency
PO Box 3000
Johnstown Castle Estate
Co Wexford.

Ref: 49-2/ Ash 085 EPA

November 13th 2007

Dear Mr Derham,

Following our telephone conservation and subsequent letter (ref 49-2/Ash 079) Bord na Mona wish to apply for a technical amendment of the conditions set out in Schedule B2 Emissions to Water, note 2 of Waste Licence W0049-02.

Attached are results of analysis carried out during two previous discharge events which took place with the special permission of the Agency.

1. The analysis includes pre and post discharge for on site pH monitoring during the two discharge events (See attached Graphs)
2. Laboratory analysis of Ammonia and pH are also attached (Report No 13700)
3. Assimilative Capacity calculations based on 95 percentile flow of the Figile River for Ammonia, Suspended Solids and COD.
4. Assimilative Capacity calculations based on flows at the confluence of the Daingean River for Ammonia, Suspended Solids and COD.
5. Environmental Monitoring Map. Note SW8 on report 13700 refers to half way between Lagoon discharge location and River Figile.

As the flow rates in the West – East Drain are normally of the range 10 – 20 litres / sec, it is not possible to comply with the conditions of Schedule B2 note 2.
As can be noted from the graphs attached, that without the required dilution, at no time did pH levels exceed 8.0 units during that discharge event
Laboratory analysis (Report No 13700) also shows pH units did not exceed 8.5 at the Figile (SW7) during those events.

LEABEG, TULLAMORE, CO. OFFALY, IRELAND.
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REGISTERED OFFICE: MAIN STREET, NEWBRIDGE, CO. KILDARE.
REGISTERED IN IRELAND NUMBER: 303287

It is our intention to initially treat the leachate contained in the lagoon by chemical means to achieve a pH value of < 10 and following on from this by the use of careful management, use both rainfall and water from the West – East drain to dilute future lesser amounts of leachate to a value of < 10 in preparation for discharge.
It is proposed that these discharge rates would be of the region 3.5 litres / sec.
The 95 percentile flow rate of the Figile River is 0.350 m^3 / sec and Dry Weather Flow of 0.17 m^3 / sec (OPW Hydrometrics). In all probability discharges would only be required during times of increased rainfall and subsequent 95 percentile flow.

It is believed that leachate generation will decrease as dust suppression only now takes place as required and not on a constant basis as was the case, which led to a constant draw down of leachate into the drainage layers and eventually the cell sumps.

Therefore we request that the condition set out in Schedule B2 in relation to pH be amended to values 6 – 10 and the requirement of 100 dilutions of note 2 be removed.
If you require any further information, I can be contacted at the numbers below.

Yours sincerely

Joe Ryan p.p.

Enda McDonagh
Head of Environmental Engineering
Bord na Mona Energy Ltd
Tel + 353 57 9345911
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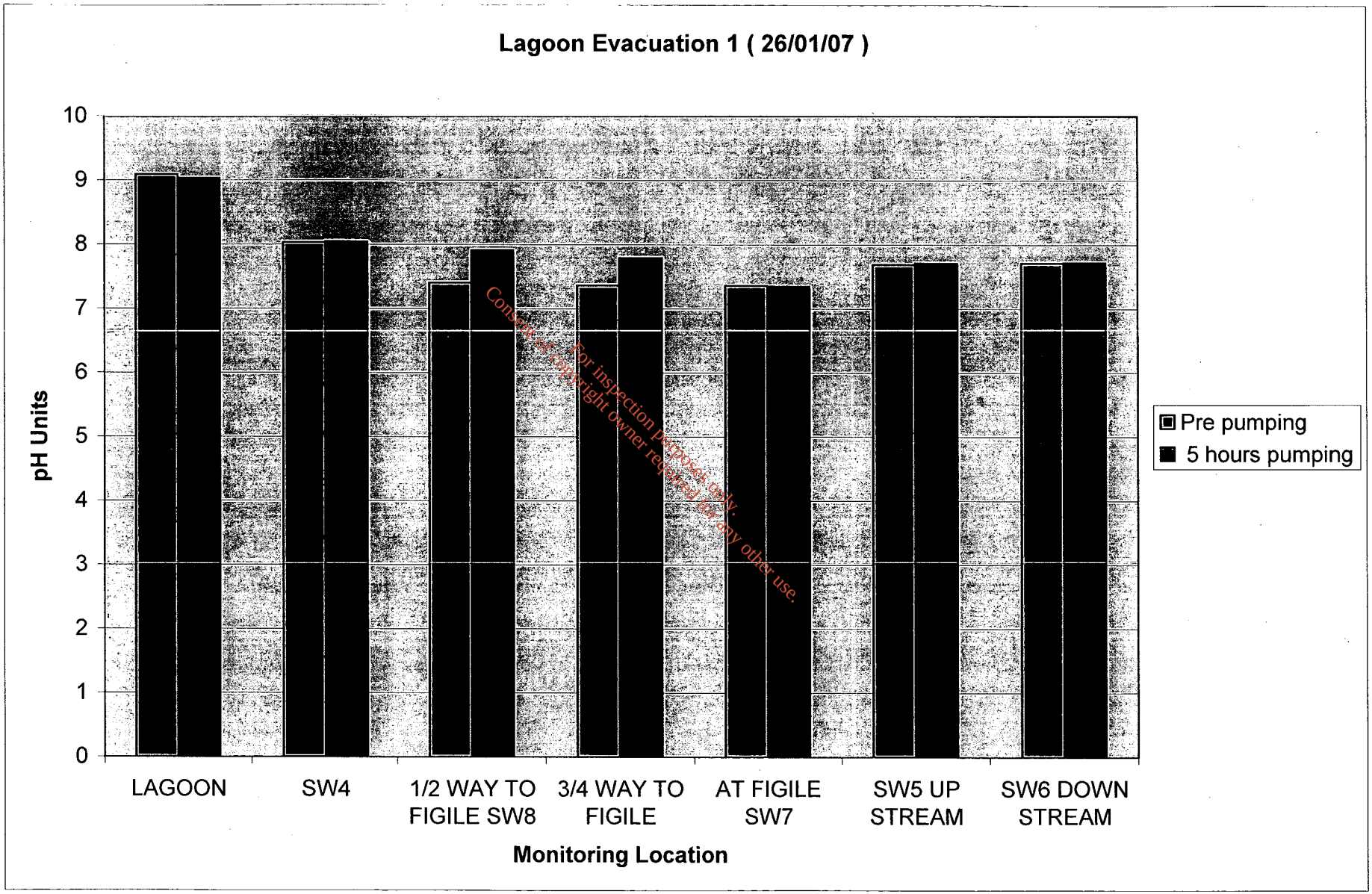

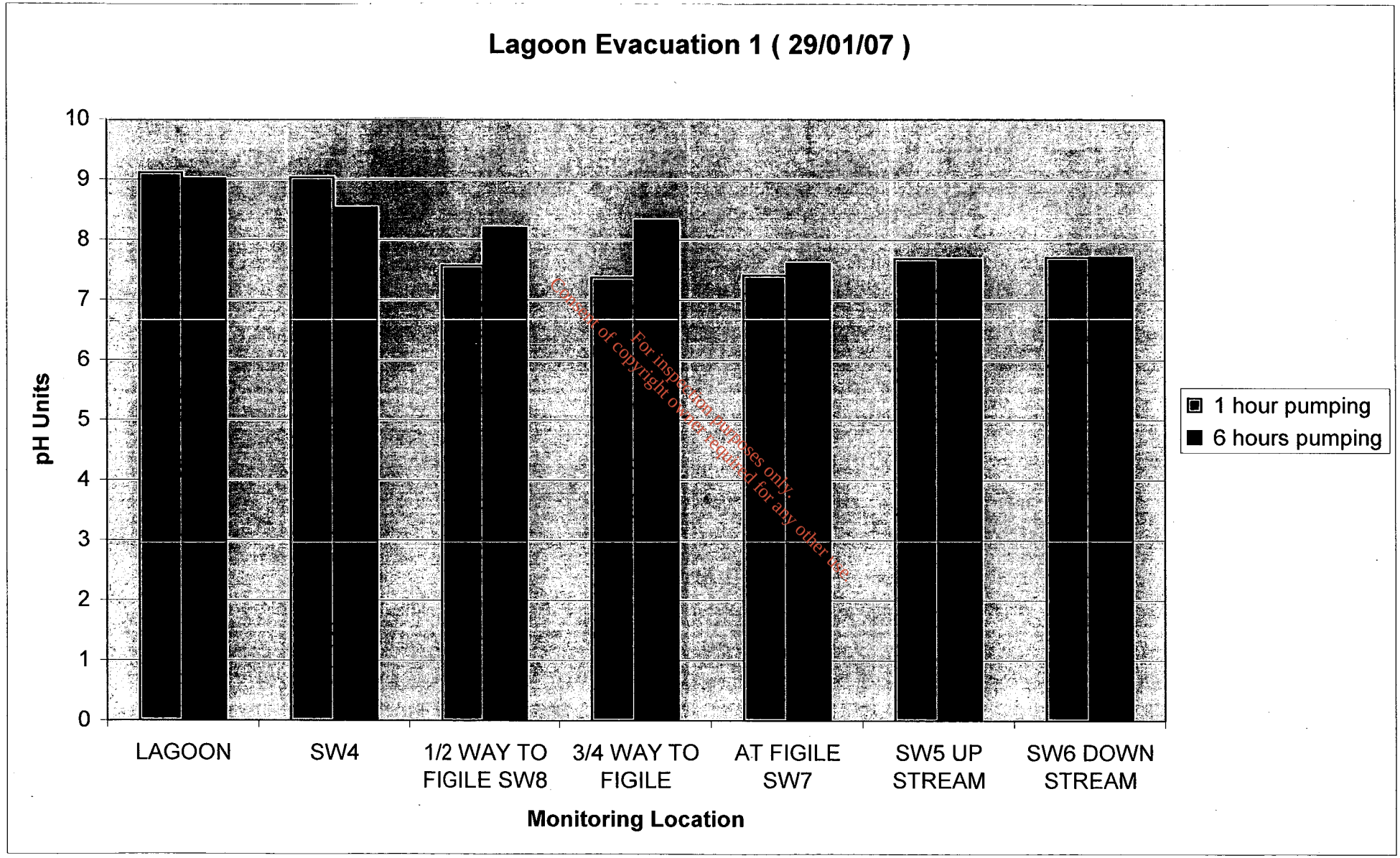

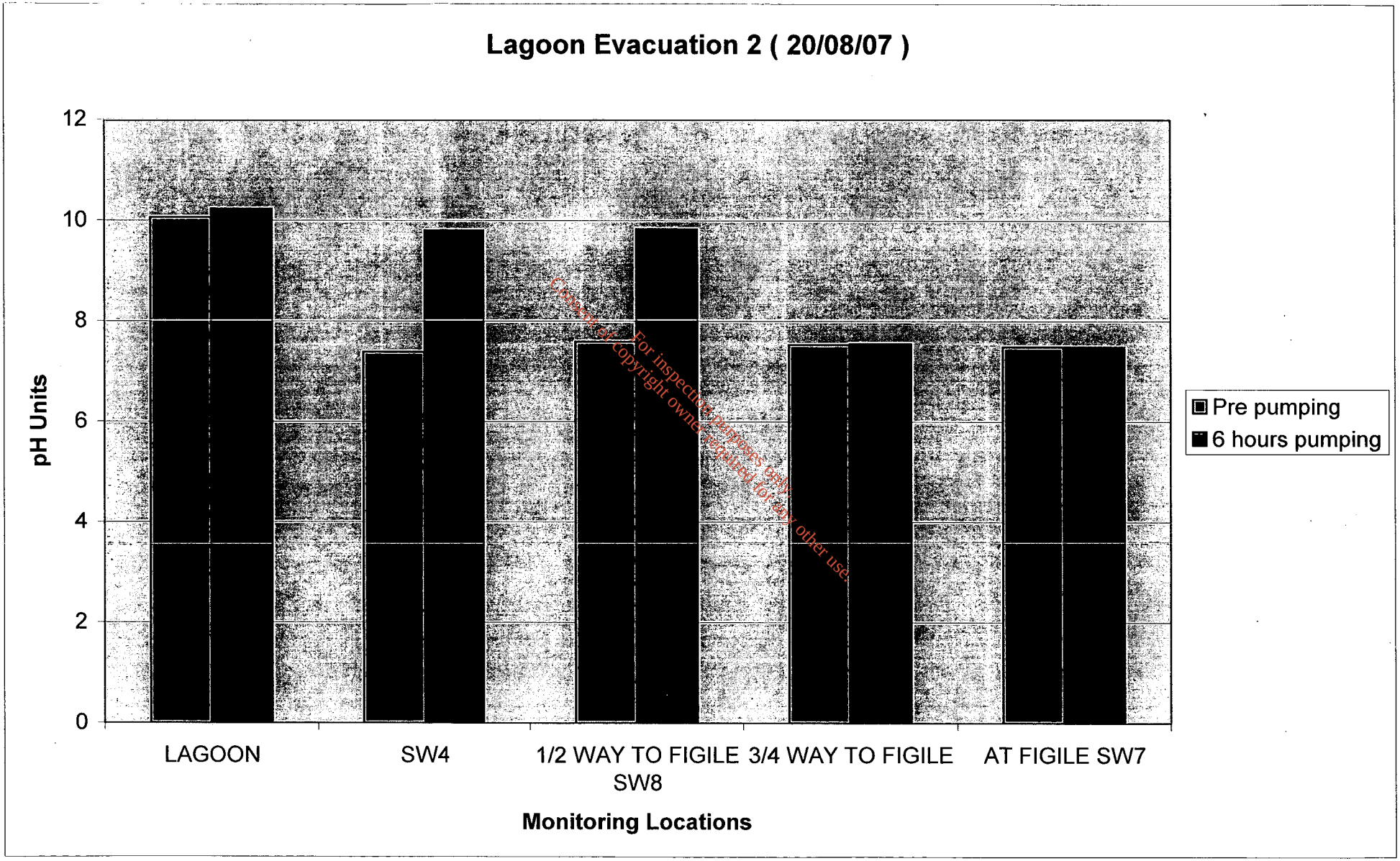

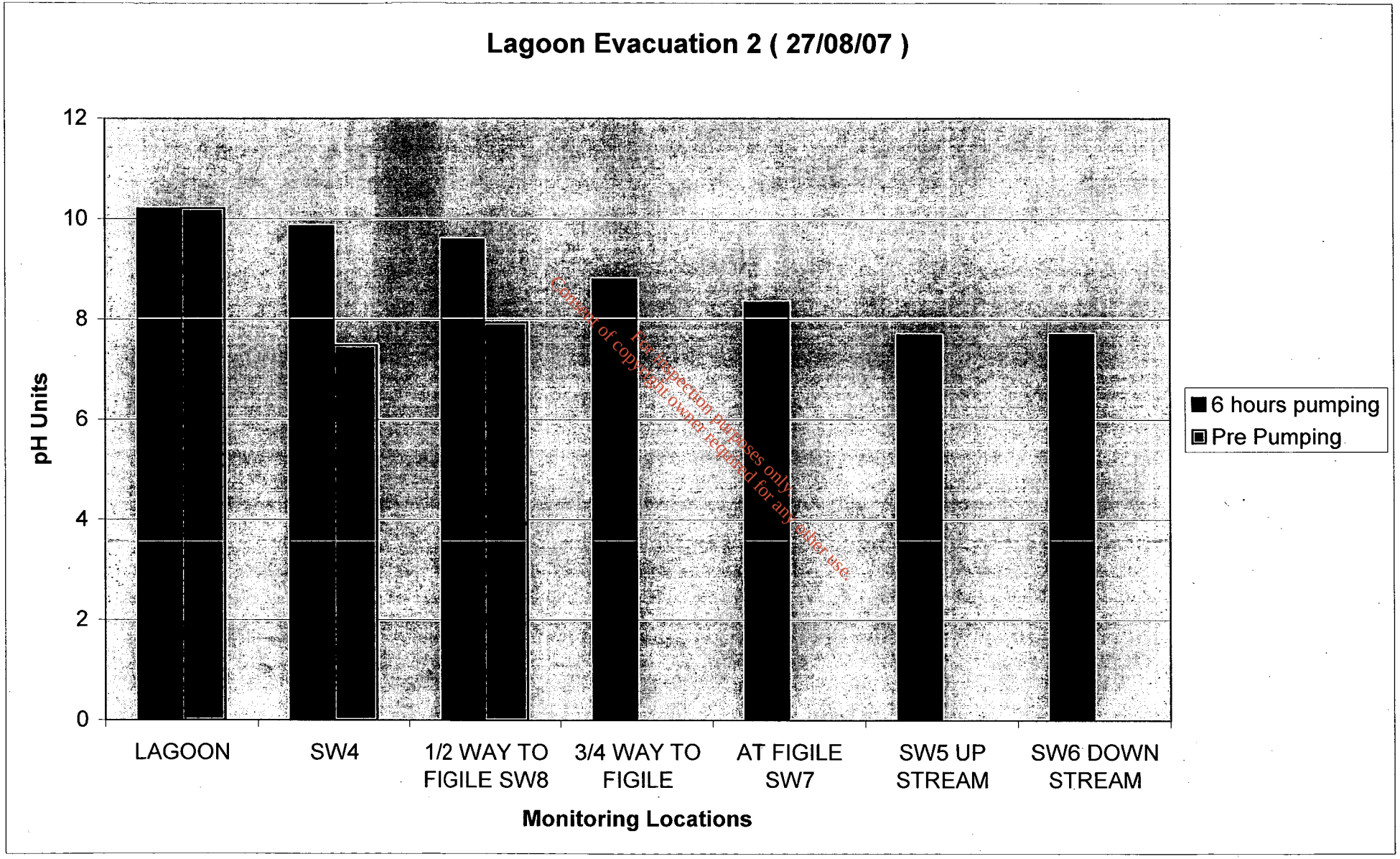

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Analysis Report

Project Code : 07-11928
Report Date : 07-Sep-2007

Report Unique ID: 13700
Commen. Date: 28/08/2007

Customer: **Mr. Mick Mulhall**
Bord na Mona Energy,
Bord na Mona
Ballykillen
Edenderry
Co. Offaly

Contact Details:
michael.mulhall@bnm.ie
joe.ryan@bnm.ie
Natalie.Duncan@bnm.ie

C.O.C.

Approved by : Sophie Kearon
Environmental Scientist

Sample Number : 114215 Client ID: SW5 28/8/07
Sample Type:Grab Sample Received: 28/08/2007 Condition: Good

Analysis	Component	Specification	Result	Units
Ammonia	*NH3-N	-	0.09	mg/l
pH	*pH	-	7.8	pH units

Sample Number : 114216 Client ID: SW6 28/8/07
Sample Type:Grab Sample Received: 28/08/2007 Condition: Good

Analysis	Component	Specification	Result	Units
Ammonia	*NH3-N	-	0.16	mg/l
pH	*pH	-	7.6	pH units

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Analysis Report

Project Code : 07-11928

Report Unique ID: 13700

C.O.C.

Sample Number : 114217 Client ID: SW7 28/8/07

Sample Type:Grab Sample Received: 28/08/2007 Condition: Good

Analysis	*Component*	*Specification*	*Result*	*Units*
Ammonia	*NH3-N	-	0.08	mg/l
pH	*pH	-	8.5	pH units

Sample Number : 114218 Client ID: SW8 28/8/07

Sample Type:Grab Sample Received: 28/08/2007 Condition: Good

Analysis	*Component*	*Specification*	*Result*	*Units*
Ammonia	*NH3-N	-	0.29	mg/l
pH	*pH	-	9.9	pH units

Methods of Analysis

Analysis Name:	**Method:**
Ammonia	G/67 Based on APHA 2005,21st Edition,4500-NH3 and bluebook Ammonia in waters 1981
pH	G/05 Based on APHA,2005,21st Edition,Method 4500 H+B

Notes

* = INAB accredited test ** = subcontracted test *** = outside accredited range

Conditions

1. Reports shall not be reproduced except in full, without the expressed approval of Bord Na Mona Technical Services Analytical Laboratory
2. Results contained in this report relate only to the items tested.
3. All Comments concerning this report or its contents should be forwarded to the Laboratory Manager

Bord na Móna Environmental Ltd., Technical Services Analytical Laboratory.
Main St., Newbridge, Co. Kildare, Ireland.
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The proposal is to discharge 50 l/s to the Figile River at a point 1km upstream of the confluence of the Daingean River. The discharge is leachate from the Lagoon contained on site and the following are the results of analysis of the leachate prior to discharge from the East-West drain to the Figile river.

PARAMETER	PRIOR TO DISCHARGE (SW7)
Ammonia mg/l	0.083
Suspended Solids mg/l	6.917
COD mg/l	32.417

Table 1: - Results of analysis of leachate prior to discharge

The following are the results of analysis of the receiving waters just upstream of the discharge (SW5);

PARAMETER	Q1	Q2	Q3	Q4	MEAN
Ammonia mg/l	0.5	0.12	0.05	0.36	**0.2575**
Suspended Solids mg/l	15	5	5	7	**8**
COD mg/l	62	32	37	96	**56.75**

Table 2: - Results of analysis of SW 5

Assimilative Capacity calculations form a link between receiving water quality standards and the quality of effluent to be discharged, since these calculations indicate the total amount of waste which may be accommodated safely at a discharge location. Calculations are normally based on an assessment of potential increases in background concentrations in the receiving waterway for parameters being targeted. The individual parametric levels are assessed in accordance with their normal background concentrations found in the stream against proposed discharge concentrations from the treatment facility. All calculations will be based on the following:

$$\text{Conc. Increase} = \frac{Q_D C_D + Q_B C_B}{Q_{D+B}}$$

Where: Q_D = Maximum Discharge flow per day

C_D = Parameter Concentration in Discharge

Q_B = Background flow conditions
C_B = Parameter Background Concentration
Q_{D+B} = Total flow in System

Assimilative Capacity Calculations Based On Flows at Confluence Of Daingean River

Q_D The proposed discharge is 50l/sec = 4,320 m^3/day
Q_B The background flow is 16.7m3/sec = 1,442,880 m^3 /day
Q_{D+B} The Total flow in the system = 1,447,200 m^3/day

Ammonia

C_D is given as 0.083mg/l
C_B is given as 0.2575 mg/l

Therefore the concentration increase in Ammonia is as follows;

$$\frac{4320(0.083) + 1{,}442880(0.2575)}{1{,}447{,}200}$$

= 0.2569 mg/l in the receiving waters after the discharge

Suspended Solids

C_D is given as 6.917 mg/l
C_B is given as 8mg/l

Therefore the concentration increase in Suspended Solids is as follows;

$$\frac{4320(6.917) + 1{,}442880(8.0)}{1{,}447{,}200}$$

= 7.996 mg/l in the receiving waters after the discharge

COD

C_D is given as 32.417 mg/l
C_B is given as 57.5 mg/l

Therefore the concentration increase in COD is as follows;

$$\frac{4320(32.417) + 1{,}442880(57.5)}{1{,}447{,}200}$$

= 57.4 mg/l in the receiving waters after the discharge

Assimilative Capacity Calculations Based On 95 Percentile Flows Of Figile River

Q_D The proposed discharge is 50l/sec = 4,320 m^3/day
Q_B The background flow is 0.35m3/sec = 30,240 m^3 /day
Q_{D+B} The Total flow in the system = 34,560 m^3/day

Ammonia

C_D is given as 0.083mg/l
C_B is given as 0.2575 mg/l

Therefore the concentration increase in Ammonia is as follows;

$$\frac{4320(0.083) + 30,240(0.2575)}{34,560}$$

= 0.2356 mg/l in the receiving waters after the discharge

Suspended Solids

C_D is given as 6.917 mg/l
C_B is given as 8mg/l

Therefore the concentration increase in Suspended Solids is as follows;

$$\frac{4320(6.917) + 30,240(8.0)}{34,560}$$

= 7.864 mg/l in the receiving waters after the discharge

COD

C_D is given as 32.417 mg/l
C_B is given as 57.5 mg/l

Therefore the concentration increase in COD is as follows;

$$\frac{4320(32.417) + 30,240(57.5)}{34,560}$$

= 54.36 mg/l in the receiving waters after the discharge

TABLE 3: EFFECTS OF PROPOSED DISCHARGE ON THE RECEIVING WATERS				
Parameter	**Background concentration in stream[Note1] (mg/l)**	**Concentration in Proposed Wastewater discharge (mg/l)**	**'New'[Note 2] concentration in stream after discharge (mg/l)**	**Water Quality Standard[Note3] (mg/l)**
Ammonia	0.2575	0.083	0.2569	0.77
Suspended Solids	8	6.917	7.996	25
COD	56.75	32.417	57.4	40

Note 1: Average from all four sampling events,

Note 2: 'New' indicates the proposed discharge concentration and the background concentration combined.

Note 3: Water Quality Standard = European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. 293 of 1988).

TABLE 4: EFFECTS OF PROPOSED DISCHARGE ON THE RECEIVING WATERS BASED ON 95 PERCENTILE FLOWS				
Parameter	**Background concentration in stream[Note1] (mg/l)**	**Concentration in Proposed Wastewater discharge (mg/l)**	**'New'[Note 2] concentration in stream after discharge (mg/l)**	**Water Quality Standard[Note3] (mg/l)**
Ammonia	0.2575	0.083	0.2356	0.77
Suspended Solids	8	6.917	7.864	25
COD	56.75	32.417	54.36	40

Note 1: Average from all four sampling events

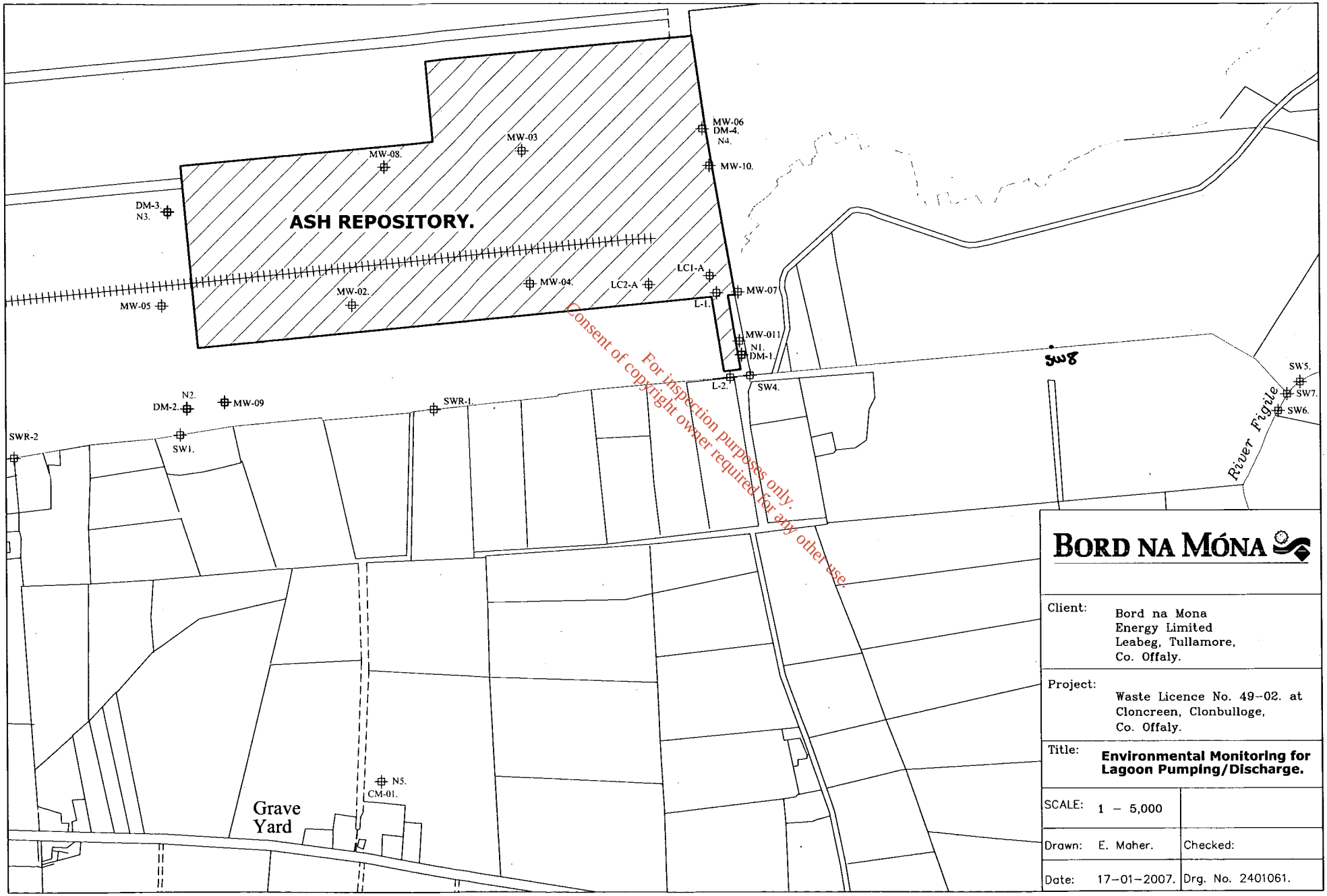
Note 2: 'New' indicates the proposed discharge concentration and the background concentration combined.

Note 3: Water Quality Standard = European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. 293 of 1988).

Comments

As can be seen from the calculations above, the assimilative capacity calculations show that the discharge from the lagoons will not have any appreciable impact on the receiving waters based on the data supplied for the physico-chemical analysis of SW5 (upstream) and of SW7 (leachate just prior to discharge). This is during both the 95 percentile flow conditions and also the measured flow conditions of the 16/1/07 at the confluenece with the Daingean River.

This is primarily due to the fact that the concentrations of the parameters that the assimilative capacity calculations are based upon, are, in each case, lower in the proposed discharge than they are in the upstream water samples.



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Client:	Bord na Mona Energy Limited Leabeg, Tullamore, Co. Offaly.
Project:	Waste Licence No. 49–02. at Cloncreen, Clonbulloge, Co. Offaly.
Title:	**Environmental Monitoring for Lagoon Pumping/Discharge.**
SCALE: 1 – 5,000	
Drawn: E. Maher.	Checked:
Date: 17–01–2007.	Drg. No. 2401061.