Winnipeg

Water and Waste Department • Service des eaux et des déchets

ENVIRONMENT ACT LICENCE #1089E RR

SOLIDS DEWATERING, TEMPORARY BIOSOLIDS STORAGE and APPLICATION TO AGRICULTURAL LAND

2010

Winnipeg

Water and Waste Department • Service des eaux et des déchets

January 28, 2011

Our Files: 040-17-08-23-01

Mr. Randy Webber
Regional Supervisor
Manitoba Conservation
Suite 160 – 123 Main Street
Winnipeg, Manitoba
R3C 1A5

Dear Mr. Webber:

RE: ANNUAL COMPLIANCE REPORT FOR ENVIRONMENT ACT LICENCE 1089E RR

Enclosed you will find our annual compliance report which details the City of Winnipeg's Biosolids Dewatering and Disposal Program for 2010. Included in this report are:

a) details of the 2010 biosolids distribution and monitoring programs
b) details of the proposed 2011 biosolids distribution programs.

You will note that we did not fully meet the requirements of Clause 5, " *The Licencee shall operate and maintain the mechanical dewatering equipment to achieve a level of at least 20 percent solids, by weight after the dewatering process."* Although the total solids in the biosolids averaged 23.7 percent in 2010, the dewatering equipment failed to achieve a total solids content in the biosolids of 20 percent by weight on 10 occasions. This was caused by a foaming issue that is experienced yearly over the winter months in the digesters which affected the quality of the biosolids. Several strategies are currently being implemented to minimize the impact of foaming and we hope to have it resolved in the near future.

As required under Clause 22 of the Licence, copies of this report are being sent to the Rural Municipalities of West St. Paul and Rosser.

If you have any questions concerning the annual report, I may be reached by telephone at 986-4807 or by e-mail at kkjartanson@winnipeg.ca.

Yours sincerely,

Original signed by

K.J.T. Kjartanson, P.Eng.
Manager of Environmental Standards

KJTK:rg
Enclosure

c: B.D. MacBride, P.Eng.
W.J. Borlase, P.Eng.
G. Fuga, P.Eng.
D. DeCraene

N:\Compliance Reporting\Biosolids\2010\Biosolids Randy Webber 2010.doc

Winnipeg

Water and Waste Department • Service des eaux et des déchets

January 28, 2011

Our Files: 040-17-08-23-01

Reeve and Council
Rural Municipality of Rosser
Box 131
Rosser, Manitoba
R0H 1E0

Dear Reeve and Council:

RE: ANNUAL COMPLIANCE REPORT FOR ENVIRONMENT ACT LICENCE 1089E RR

Enclosed you will find our annual compliance report which details the City of Winnipeg's Biosolids Dewatering and Disposal Program for 2010. Included in this report are:

a) details of the 2010 biosolids distribution and monitoring programs
b) details of the proposed 2011 biosolids distribution programs.

If you have any questions concerning the annual report, I may be reached by telephone at 986-4807 or by e-mail at kkjartanson@winnipeg.ca.

Yours sincerely,

Original signed by

K.J.T. Kjartanson, P.Eng.
Manager of Environmental Standards

KJTK:rg
Enclosure

c: B.D. MacBride, P.Eng.
W.J. Borlase, P.Eng.
G. Fuga, P.Eng.
D. DeCraene

N:\Compliance Reporting\Biosolids\2010\Biosolids Rosser 2010.doc

Environmental Standards Division • Division des normes environnementales
2230 Main Street • 2230, Rue Main • Winnipeg • Manitoba R2V 4T8
tel/tél. (204) 986-4684 • fax/télec. (204) 339-2147 • www.winnipeg.ca

Winnipeg

Water and Waste Department • Service des eaux et des déchets

January 28, 2011

Our Files: 040-17-08-23-01

Reeve and Council
Rural Municipality of West St. Paul
Box 27, Grp 31, RR1B
3350 Main Street
Winnipeg, Manitoba
R3C 4A3

Dear Reeve and Council:

RE: ANNUAL COMPLIANCE REPORT FOR ENVIRONMENT ACT LICENCE 1089E RR

Enclosed you will find our annual compliance report which details the City of Winnipeg's Biosolids Dewatering and Disposal Program for 2010. Included in this report are:

a) details of the 2010 biosolids distribution and monitoring programs
b) details of the proposed 2011 biosolids distribution programs.

If you have any questions concerning the annual report, I may be reached by telephone at 986-4807 or by e-mail at kkjartanson@winnipeg.ca.

Yours sincerely,

Original signed by

K.J.T. Kjartanson, P.Eng.
Manager of Environmental Standards

KJTK:rg
Enclosure

c: B.D. MacBride, P.Eng.
W.J. Borlase, P.Eng.
G. Fuga, P.Eng.
D. DeCraene

N:\Compliance Reporting\Biosolids\2010\Biosolids West St Paul 2010.doc

Environmental Standards Division • Division des normes environnementales
2230 Main Street • 2230, Rue Main • Winnipeg • Manitoba R2V 4T8
tel/tél. (204) 986-4684 • fax/télec. (204) 339-2147 • www.winnipeg.ca

Water and Waste Department • Service des eaux et des déchets

ENVIRONMENT ACT LICENCE #1089E RR

SOLIDS DEWATERING, TEMPORARY BIOSOLIDS STORAGE and APPLICATION TO AGRICULTURAL LAND

2010

Jenni Jones, B. Sc.
Laboratory Technician

Renée Grosselle, B. Sc.
Supervisor of Compliance Reporting Branch

Kelly Kjartanson, M. Sc., P. Eng.
Manager of Environmental Standards Division

TABLE OF CONTENTS

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

EXECUTIVE SUMMARY

Amended Environment Act Licence #1089E RR, issued on June 14, 2000, requires that the City of Winnipeg monitor its biosolids dewatering and disposal operations and submit an annual report to the regulating authority and various municipalities on or before the 31ST of January of each year.

This report summarizes the results of the City's 2010 Biosolids Application Program (WINGRO) and also outlines the proposed plan for the 2011 calendar year.

In 2010, the City produced 12,572 dry-tonnes of anaerobically digested, mechanically dewatered biosolids at its North End Water Pollution Control Centre (NEWPCC). The total solids concentration in the dewatered biosolids averaged 23.7%. The WINGRO program applied 48.3% of the annual biosolids production to farmland and deposited 51.7% at the Brady Road Landfill. The interim storage pad was not used in 2010.

The WINGRO biosolids application rate for the two fields completed in 2010 was 55.0 dry-tonnes per hectare on the 161.5 hectares to which biosolids were applied.

COMPLIANCE REPORT

Environment Act Licence #1089E was issued to the City of Winnipeg on February 21, 1989 and amended on April 28, 2000 (#1089E R) and on June 14, 2000 (#1089E RR). Licence #1089E RR sets limits, terms and conditions with which the City of Winnipeg must comply in the operation of its mechanical dewatering equipment, the temporary storage of biosolids, and with its disposal onto agricultural land. One of these conditions is that **"The applicant shall, on or before the 31st day of January of each year, submit to the Director, with a copy to the Rural Municipality of West St. Paul and to each Municipality in which biosolids have been disposed of, a report...".** In keeping with this requirement, the City of Winnipeg hereby submits this compliance report which contains information on its 2010 Biosolids Land Application Program.

Licence #1089E RR contains several clauses. This report presents results and/or comments for each of the clauses under which the City has generated pertinent information during the course of conducting its 2010 Biosolids Land Application Program. The report also provides information on its proposed Biosolids Program for the twelve months starting January 1, 2011.

The specific requirements of each clause are presented in **bold-faced type** followed by the City's comments.

2010 BIOSOLIDS APPLICATION PROGRAMS

(a) Dewatering

"The Licencee shall operate and maintain the mechanical dewatering equipment to achieve a level of at least 20 percent solids, by weight after the dewatering process." (Clause 5)

From January 1, 2010 to December 31, 2010 the City produced 12,572 dry-tonnes of mechanically-dewatered biosolids at its NEWPCC facility. Appendix I contains the mechanical dewatering operating records for 2010. In 2010, the total solids in the biosolids averaged 23.7 ± 2.5% (*n* = 250). However, the dewatering equipment failed to achieve a total solids content in the biosolids of 20 percent by weight on 10 occasions – 9 times in January and once in October. The occurrence in October was likely caused by a failure of one of the polymer feed pumps causing an interruption in the polymer being fed to one of the centrifuges for several hours. In January, the required 20 percent solids was not achieved due to a foaming issue that is experienced yearly over the winter months in the digesters. The foaming issue lead to erratic changes in density in the feed sludge going into the centrifuges, which in turn caused erratic variations in the quality of the biosolids. Several strategies are currently being implemented to minimize the impact of the foaming, including careful day to day monitoring of the digesters, sending skimmed grease from the primary clarifiers to landfill rather than to the digesters, and varying polymer dosage rates and mix concentrations, as well as experimenting with several different polymer types.

(b) Storage

"The Licencee shall only store biosolids at the temporary storage facility in circumstances when agricultural land is not accessible for direct biosolids disposal (Clause 6)" and "the Licencee shall ensure that the biosolids are removed from the temporary storage facility for application to agricultural land as soon as the agricultural land is available (Clause 7)."

In 2010, the storage pad was not used to provide interim storage for any mechanically-

dewatered biosolids. When agricultural land was not accessible the biosolids were disposed at the Brady Road Landfill. The WINGRO program deposited 51.7% of the annual biosolids production at the Brady Road Landfill. The large quantity of biosolids disposed at the landfill rather than applied to agricultural land was due to wet weather.

(c) Monitoring Results

"The Licencee shall conduct a monitoring program in accordance with Appendix "B" to this licence" (Clause 21) and present "the results of analysis of biosolids, soil, and surface water runoff, where the biosolids are applied as well as odour complaint investigations concerning biosolids storage and application" (Clause 22 (c)).

The following pages and Appendix I contain the results of analyses conducted on samples of biosolids, ditchwater and soils collected in fulfilment of the monitoring requirements stipulated in Licence #1089E RR.

These results include the following:

- Biosolids Quality	Table 1
- Ditchwater	Table 2, Figure 1
- Background Soils Results for Applied Fields	Table 3
- % Solids in Mechanically Dewatered Biosolids	Appendix I

No formal odour complaints associated with the WINGRO Program were received in 2010.

TABLE 1

2010 Biosolids Quality

Sample Number	Date Sampled *	Total Cd (mg/Kg-Cd)	Total Cr (mg/Kg-Cr)	Total Cu (mg/Kg-Cu)	Total Ni (mg/Kg-Ni)	Total Pb (mg/Kg-Pb)	Total Zn (mg/Kg-Zn)	Total P (mg/Kg-P)	NH3-N (mg/Kg-N)	TKN (mg/Kg-N)	pH (units)	Specific Conductance (dS/m)	Total Solids (%)
1	3-Jan-10	2.6	90.5	885	56.7	49.6	967	20,900	14,200	42,400	8.13	11.9	19.42
2	17-Jan-10	2.6	101	940	54.8	50.1	1,570	22,700	15,000	54,300	NR**	11.8	21.40
3	31-Jan-10	2.4	102	873	51.8	52.6	1,510	25,200	13,200	49,700	8.03	12.0	19.13
4	14-Feb-10	2.3	109	862	46.1	48.3	2,200	30,100	12,000	44,700	8.52	10.4	22.01
5	28-Feb-10	2.5	130	790	52.0	47.8	1,600	33,400	9,650	27,200	7.87	9.01	24.07
6	14-Mar-10	2.1	112	630	46.9	58.3	1,090	25,100	7,870	28,000	7.80	8.33	25.69
7	28-Mar-10	2.2	95.3	617	71.6	53.9	939	19,900	10,100	36,000	8.06	8.16	26.88
8	11-Apr-10	2.4	91.4	620	69.1	52.2	882	19,400	9,410	33,000	8.06	8.70	26.25
9	25-Apr-10	2.4	97.1	720	65.6	59.0	1,060	18,700	9,800	35,000	8.11	9.10	26.15
10	9-May-10	2.8	99.8	702	60.9	65.9	1,050	18,300	9,260	35,000	8.06	9.67	26.32
11	23-May-10	2.2	106	687	57.6	73.3	1,010	17,600	8,090	27,300	8.01	9.57	26.35
12	6-Jun-10	1.9	124	553	62.0	85.4	769	14,900	8,210	28,000	7.78	10.3	27.57
13	22-Jun-10	2.4	137	589	68.7	81.8	1,730	15,800	8,220	30,500	7.93	8.40	26.90
14	4-Jul-10	2.6	120	612	54.7	80.3	2,050	16,400	8,420	25,000	8.01	8.90	25.54
15	18-Jul-10	2.6	98.4	616	47.6	73.0	1,410	16,100	9,360	24,000	7.78	8.40	25.02
16	1-Aug-10	2.6	92.2	639	48.8	65.7	1,110	15,300	8,290	30,000	8.25	7.90	24.75
17	15-Aug-10	2.3	119	586	46.7	78.2	911	15,000	10,200	35,000	8.01	9.95	25.45
18	29-Aug-10	3.0	114	662	48.9	81.5	1,580	16,200	11,300	29,000	8.18	9.79	23.11
19	12-Sep-10	2.3	108	620	48.5	80.1	1,940	15,200	10,200	36,000	6.31***	11.6	22.86
20	25-Sep-10	2.7	91.8	644	47.3	70.2	1,450	16,000	11,500	26,000	6.38	10.9	22.35
21	10-Oct-10	2.9	92.6	693	50.7	73.7	1,380	16,800	11,900	27,000	6.07	11.9	21.64
22	24-Oct-10	3.8	100	739	43.9	72.6	1,630	16,200	10,300	30,300	6.53	11.6	22.62
23	6-Nov-10	4.1	99.1	757	47.4	68.9	1,730	17,900	11,000	31,600	6.52	12.5	22.42
24	21-Nov-10	2.7	101	719	41.3	55.5	1,300	17,000	12,100	28,300	6.58	11.5	22.15
25	4-Dec-10	3.5	103	899	43.1	55.3	1,450	18,200	12,900	28,800	6.48	11.3	21.93
26	18-Dec-10	4.0	96.9	914	44.5	56.4	1,490	16,900	10,700	32,900	6.76	10.6	23.40
Average:		2.7	105	714	53.0	65.0	1,377	19,046	10,507	32,885	7.58	10.16	23.9
Maximum:		4.1	137	940	71.6	85.4	2,200	33,400	15,000	54,300	8.52	12.5	27.6
Minimum:		1.9	91	553	41.3	47.8	769	14,900	7,870	24,000	6.07	7.90	19.1

*** Indicates starting date for year 2010 biweekly composite samples**

**** No result due to a laboratory error**

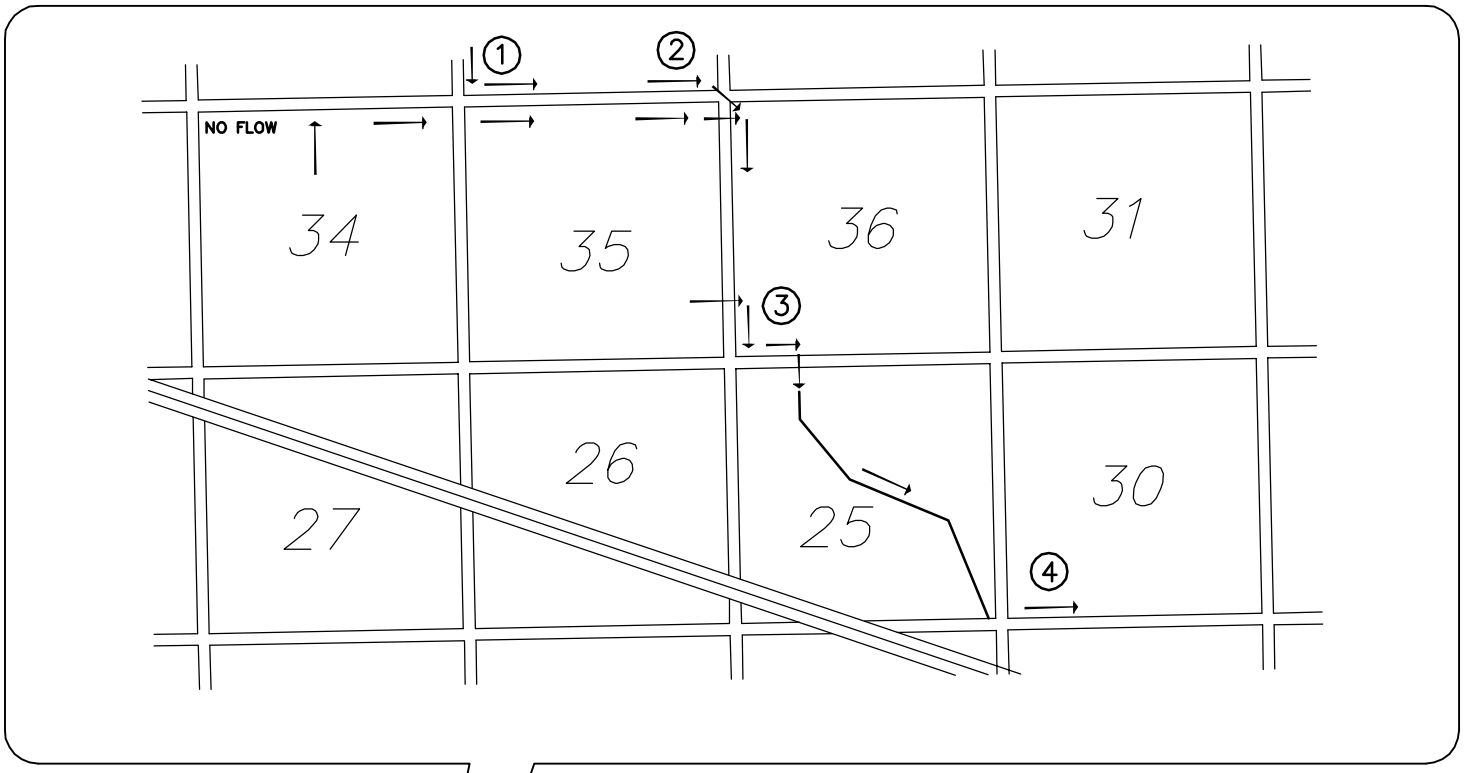
***** Began using a new procedure for pH analysis that is more appropriate for biosolids than the procedure previously used**

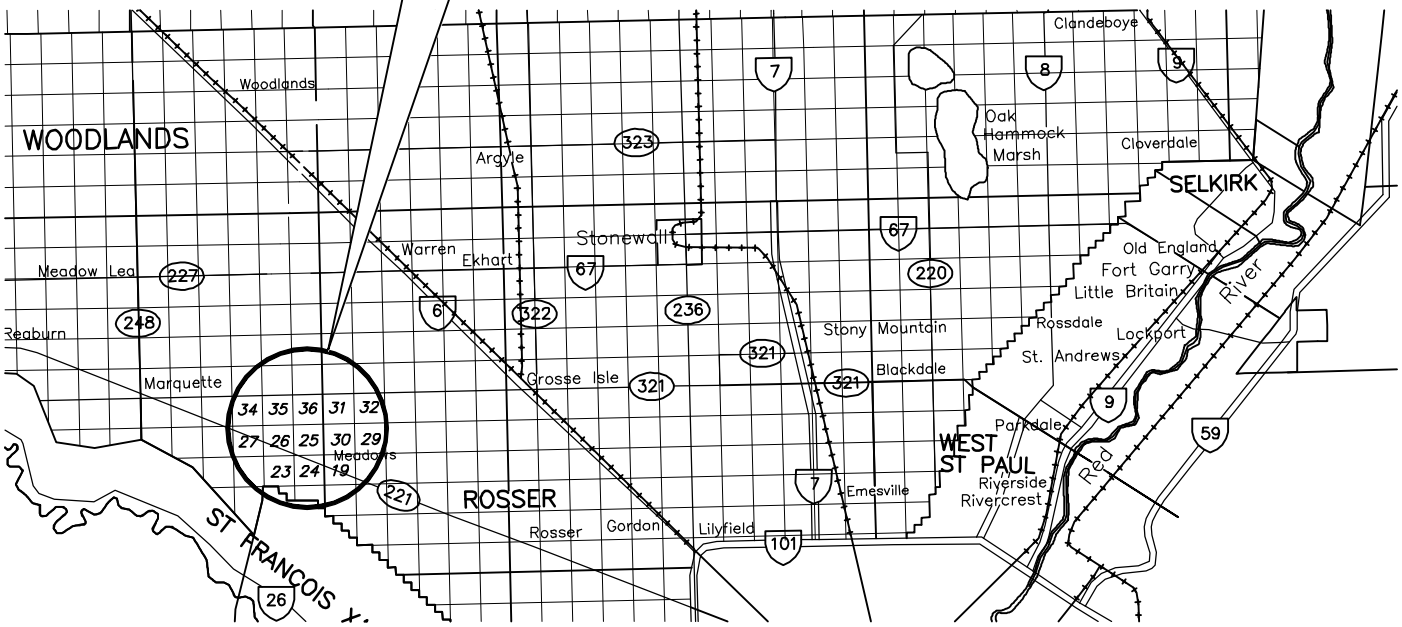
TABLE 2

2010 Ditchwater Sampling Results

Fields # 60 and 61 – 34-12-2W

Sample Location	Sample Number	Date	NH_3^+ mg/L N	NO_3-NO_2 mg/L N	TKN mg/L N	Total Phosphorus mg/L P	Conductivity umhos/cm	Total Coliform MPNU/100 mL	Fecal Coliform MPNU/100 mL
1 - Far Upstream	253825	March 18/10	0.247	3.87	<2	1.3	403	3500	160
	254905	March 30/10	0.480	1.12	4	1.2	622	3500	<2
	255068	April 1/10	1.16	0.623	2	1.5	756	7900	13
2 - Upstream	253823	March 18/10	0.644	3.99	<2	1.3	494	3300	13
	254903	March 30/10	0.179	0.518	<2	<0.3	103	1300	<2
	255066	April 1/10	0.034	0.589	<2	1.4	756	940	4
	260780	June 3/10	0.058	0.759	<2	0.8	566	380	4
	260781	June 3/10	<0.003	0.570	<2	0.3	1030	24000	<2
3 - Downstream	253820	March 18/10	0.933	7.46	<2	1.2	365	54000	130
	254900	March 30/10	0.018	0.551	<2	0.6	269	2800	4
	255063	April 1/10	0.016	7.70	2	1.2	765	46	<2
	260777	June 3/10	0.384	0.761	<2	0.3	1000	110000	150
4 - Far Downstream	253821	March 18/10	0.249	6.53	2	1.3	517	9400	26
	254901	March 30/10	0.025	0.123	4	0.8	518	5400	2
	255064	April 1/10	0.025	1.32	<2	1.1	569	3500	2
	260778	June 3/10	0.173	1.36	<2	0.7	721	21000	750





LEGEND:

- → FLOW DIRECTION
- ① FAR UPSTREAM
- ② UPSTREAM
- ③ OFF FIELD
- ④ DOWNSTREAM

Winnipeg

CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

MUNICIPALITY OF ROSSER

DITCHWATER SAMPLING LOCATIONS

Figure 1.

TABLE 3
2010 BIOSOLIDS LAND APPLICATION PROGRAM
BACKGROUND SOILS RESULTS FOR APPLIED FIELDS

	Nutrients		Metals									
Field Number	NO3-N* (kg/ha)	SOD** PHOS (mg/kg)	CADMIUM (mg/kg)	COPPER (mg/kg)	LEAD (mg/kg)	ZINC (mg/kg)	NICKEL (mg/kg)	CHROMIUM (mg/kg)	pH	% SOLIDS	CONDUCTIVITY (ds/m)	CATION EXCHANGE CAPACITY (meqNH4/100g)
#60	22.4	39.0	0.40	24.0	11.2	74.0	31.0	32.0	8.1	75.8	1.0	56.7
#61	18.0	14.9	0.40	25.0	12.9	76.0	31.0	33.0	8.1	76.0	1.3	59.8

Regulated Parameter:

Licence requirements:

NO3-N = <67 kg/ha

SOD PHOS = <60 mg/kg

pH = >6.0 units

NOTES: (1) Soil sample depth is 0 to 15 cm for all parameters except NO_3N where sample depth is 0 to 60 cm.

(2) Fields #60 and #61 were completed in 2010.

* Based on Soil Density = 1200 Dry kg/m3

** Sodium Bicarbonate Extractable Phosphorus

(d) Distribution Program

"details of the biosolids distribution program carried out during the previous calendar year, including the description of the location of the land on which the biosolids were applied and the dry weight of biosolids distributed per hectare." (Clause 22 (a))

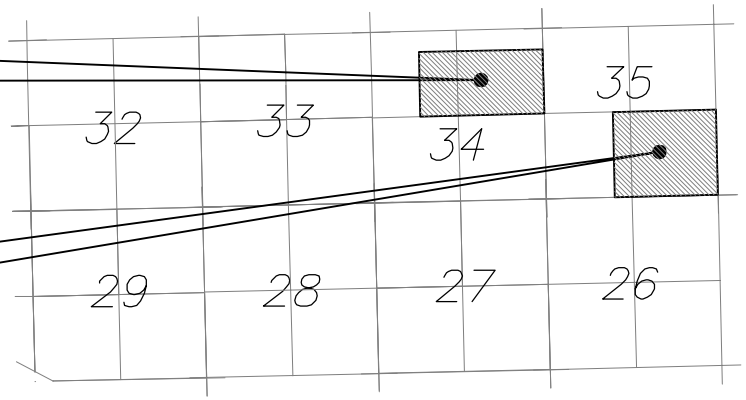
Of the 12,572 dry-tonnes of mechanically-dewatered biosolids produced at the NEWPCC from January 1, 2010 to December 31, 2010, 48.3% were re-cycled onto farmland through the WINGRO program, while 51.7% were disposed at the Brady Road Landfill. The large quantity of biosolids disposed at the landfill was due to wet weather. The City of Winnipeg's 2010 Biosolids Land Application Program (WINGRO) spread and incorporated digested, dewatered biosolids onto 2 parcels of land. A total of 6,075 dry-tonnes of dewatered biosolids were distributed on the two fields completed in 2010 at an average application rate of 55.0 dry-tonnes per hectare on the 161.5 hectares of land utilized. Table 4 provides a detailed summary of the results and Figure 2 shows the locations where biosolids applications were completed in 2010.

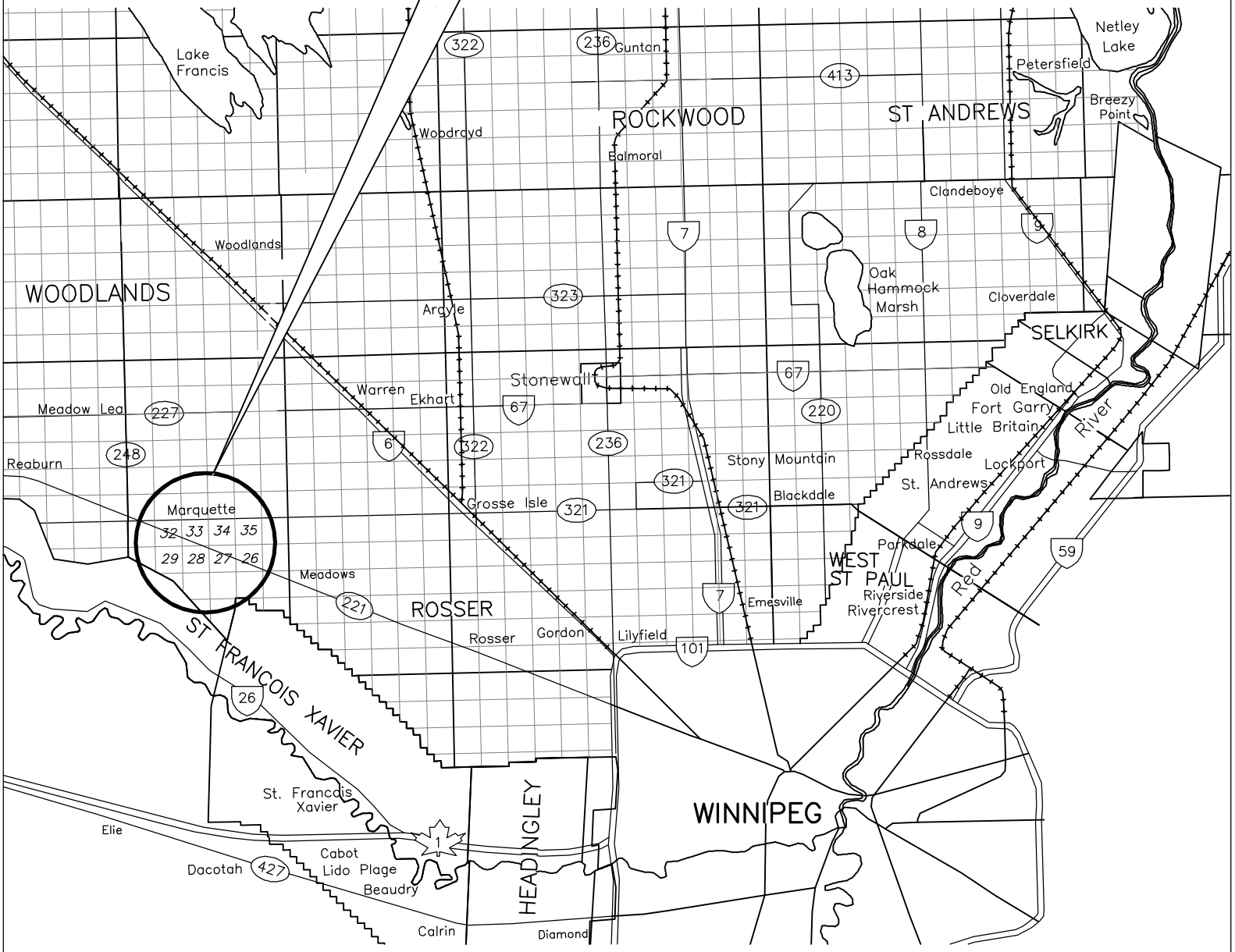
TABLE 4
2010 BIOSOLIDS PROGRAM
Land Application Summary

Field Number	Rural Municipality	Location Sec-Twnshp-Rge	Year Applied	Applied Area (ha)	Dry Solids Applied (tonnes)	Solids Loading Rate for Completed Field (dry tonnes/ha)
60	Rosser	34-12-2W North	2009/10	83.5	4,593	55.0
61	Rosser	35-12-2W South East	2009/10	78.0	4,293	55.0
Totals For Completed Fields				161.5	8,886	
Weighted Average For Completed Fields						55.0

FIELD: #60–APPLIED
SECTION: 34 (150 ACRES OF N 1/2)
TOWNSHIP: 12
RANGE: 2W

FIELD: #61–APPLIED
SECTION: 35 (190 ACRES OF S 1/2)
TOWNSHIP: 12
RANGE: 2W





Winnipeg
CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

MUNICIPALITY OF ROSSER

APPLIED FIELDS

Figure 2.

2011 PROPOSED BIOSOLIDS APPLICATION PROGRAMS

“details of the biosolids application program proposed to be carried out during the one-year period following the issuance of the report, including a description of the locations of the land on which application will be carried out, the proposed dates of application, and the proposed dry weight of biosolids per hectare of agricultural land”. (Clause 22 (b))

In the 2011 WINGRO application year, which runs from January 1, 2011 to December 31, 2011, the City plans no land application at the present time. The City plans to dispose of biosolids at the Brady Road Landfill.

APPENDIX I

OPERATING RECORDS

for

MECHANICAL DEWATERING OF BIOSOLIDS

Monthly Hauling Report
For the Month 01/2010

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
04	NEWPCC	#61 35-12-2W SE	295.02	17.8	52.51
05	NEWPCC	#61 35-12-2W SE	314.04	18.5	58.10
06	NEWPCC	#61 35-12-2W SE	164.60	17.8	29.30
07	NEWPCC	#61 35-12-2W SE	62.76	18.8	11.80
08	NEWPCC	#61 35-12-2W SE	174.76	19.8	34.60
11	NEWPCC	#61 35-12-2W SE	261.12	18.8	49.09
12	NEWPCC	#61 35-12-2W SE	174.14	19.6	34.13
13	NEWPCC	#61 35-12-2W SE	129.86	20.6	26.75
14	NEWPCC	#61 35-12-2W SE	127.32	20.5	26.10
15	NEWPCC	#61 35-12-2W SE	177.32	20.4	36.17
18	NEWPCC	#61 35-12-2W SE	252.96	19.7	49.83
19	NEWPCC	#61 35-12-2W SE	172.48	20.4	35.19
20	NEWPCC	#61 35-12-2W SE	247.70	20.4	50.53
21	NEWPCC	#61 35-12-2W SE	103.64	19.9	20.62
22	NEWPCC	#61 35-12-2W SE	108.52	20.0	21.70
25	NEWPCC	#61 35-12-2W SE	17.50	20.0	3.50
26	NEWPCC	#61 35-12-2W SE	192.12	20.0	38.42
27	NEWPCC	#61 35-12-2W SE	273.36	20.5	56.04
28	NEWPCC	#61 35-12-2W SE	314.66	20.1	63.25
29	NEWPCC	#61 35-12-2W SE	294.12	20.5	60.30

Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#61 35-12-2W SE	3858.00	757.94	52.5	202545.000		757.94	
							757.94	

Monthly Hauling Report
For the Month 02/2010

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#61 35-12-2W SE	211.76	21.2	44.89
02	NEWPCC	#61 35-12-2W SE	231.08	20.2	46.68
03	NEWPCC	#61 35-12-2W SE	250.54	20.6	51.61
04	NEWPCC	#61 35-12-2W SE	130.72	21.2	27.71
05	NEWPCC	#61 35-12-2W SE	155.88	20.4	31.80
08	NEWPCC	#61 35-12-2W SE	254.92	20.1	51.24
09	NEWPCC	#61 35-12-2W SE	248.32	20.7	51.40
10	NEWPCC	#61 35-12-2W SE	106.58	20.8	22.17
11	NEWPCC	#61 35-12-2W SE	128.30	21.4	27.46
12	NEWPCC	#61 35-12-2W SE	146.06	21.8	31.84
16	NEWPCC	#61 35-12-2W SE	233.22	20.9	48.74
17	NEWPCC	#61 35-12-2W SE	220.16	21.1	46.45
18	NEWPCC	#61 35-12-2W SE	231.08	21.2	48.99
19	NEWPCC	#61 35-12-2W SE	248.12	21.4	53.10
20	NEWPCC	#61 35-12-2W SE	187.18	22.2	41.56
21	NEWPCC	#61 35-12-2W SE	246.76	22.2	54.78
22	NEWPCC	#61 35-12-2W SE	222.14	23.1	51.31
23	NEWPCC	#61 35-12-2W SE	162.96	22.7	36.99
25	NEWPCC	#61 35-12-2W SE	38.00	20.0	7.60

Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#61 35-12-2W SE	3653.78	776.33	52.5	191823.450		776.33	
							776.33	

Monthly Hauling Report
For the Month 03/2010

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#61 35-12-2W SE	186.64	20.3	37.89
02	NEWPCC	#61 35-12-2W SE	351.12	22.7	79.70
03	NEWPCC	#61 35-12-2W SE	347.02	23.3	80.85
04	NEWPCC	#61 35-12-2W SE	191.04	24.0	45.85
05	NEWPCC	#61 35-12-2W SE	191.40	24.6	47.08
08	NEWPCC	#61 35-12-2W SE	282.02	24.8	69.94
09	NEWPCC	#61 35-12-2W SE	224.84	24.2	54.41
10	NEWPCC	#61 35-12-2W SE	172.96	24.3	42.03
11	NEWPCC	#61 35-12-2W SE	148.22	24.4	36.17
12	NEWPCC	#61 35-12-2W SE	149.32	25.5	38.08
15	NEWPCC	#61 35-12-2W SE	324.48	25.2	81.77
16	NEWPCC	#61 35-12-2W SE	222.04	26.6	59.06
17	NEWPCC	#61 35-12-2W SE	241.81	25.5	61.66
18	NEWPCC	#2 0-0-	173.56	21.5	37.32
19	NEWPCC	#2 0-0-	367.22	23.5	86.30
22	NEWPCC	#2 0-0-	217.46	25.5	55.45
23	NEWPCC	#2 0-0-	218.70	27.2	59.49
24	NEWPCC	#2 0-0-	346.22	26.0	90.02
25	NEWPCC	#2 0-0-	291.02	28.3	82.36
26	NEWPCC	#2 0-0-	249.54	26.1	65.13
29	NEWPCC	#2 0-0-	373.36	26.9	100.43
30	NEWPCC	#2 0-0-	248.12	27.7	68.73
31	NEWPCC	#2 0-0-	244.64	26.0	63.61

Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#2 0-0-	2729.84						
NEWPCC	#61 35-12-2W SE	3032.91	734.50	52.5	159227.775		734.50	
							734.50	

Monthly Hauling Report
For the Month 04/2010

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#2 0-0-	123.90	26.2	32.46
05	NEWPCC	#2 0-0-	269.76	27.5	74.19
06	NEWPCC	#2 0-0-	151.68	29.3	44.44
07	NEWPCC	#2 0-0-	275.40	27.7	76.29
08	NEWPCC	#2 0-0-	216.44	27.2	58.87
09	NEWPCC	#2 0-0-	292.58	27.1	79.29
12	NEWPCC	#2 0-0-	249.88	27.5	68.72
13	NEWPCC	#2 0-0-	246.84	25.4	62.70
14	NEWPCC	#2 0-0-	169.28	25.1	42.49
15	NEWPCC	#2 0-0-	221.34	25.5	56.44
16	NEWPCC	#2 0-0-	121.74	25.5	31.04
19	NEWPCC	#2 0-0-	146.46	28.2	41.30
19	NEWPCC	#61 35-12-2W SE	21.36	28.2	6.02
20	NEWPCC	#61 35-12-2W SE	272.20	25.1	68.32
21	NEWPCC	#61 35-12-2W SE	251.36	26.7	67.11
22	NEWPCC	#61 35-12-2W SE	109.64	24.4	26.75
23	NEWPCC	#61 35-12-2W SE	118.94	26.0	30.93
26	NEWPCC	#61 35-12-2W SE	277.20	25.8	71.52
27	NEWPCC	#61 35-12-2W SE	265.84	25.8	68.59
28	NEWPCC	#61 35-12-2W SE	173.96	25.4	44.19
29	NEWPCC	#61 35-12-2W SE	135.84	26.1	35.45
30	NEWPCC	#61 35-12-2W SE	112.60	25.5	28.71

Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#2 0-0-	2485.30						
NEWPCC	#61 35-12-2W SE	1738.94	447.59	52.5	91294.350		447.59	
							447.59	

Monthly Hauling Report
For the Month 05/2010

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
03	NEWPCC	#2 0-0-	146.46	24.4	35.74
04	NEWPCC	#2 0-0-	217.42	26.1	56.75
05	NEWPCC	#2 0-0-	217.04	26.3	57.08
06	NEWPCC	#2 0-0-	145.32	26.2	38.07
07	NEWPCC	#2 0-0-	129.28	27.5	35.55
10	NEWPCC	#2 0-0-	220.14	26.8	59.00
11	NEWPCC	#2 0-0-	218.30	26.6	58.07
12	NEWPCC	#61 35-12-2W SE	245.60	24.8	60.91
13	NEWPCC	#61 35-12-2W SE	203.70	26.3	53.57
14	NEWPCC	#61 35-12-2W SE	208.20	25.3	52.68
17	NEWPCC	#61 35-12-2W SE	267.08	27.0	72.11
18	NEWPCC	#61 35-12-2W SE	291.22	27.3	79.50
19	NEWPCC	#61 35-12-2W SE	209.26	23.9	50.01
20	NEWPCC	#61 35-12-2W SE	258.98	23.8	61.64
21	NEWPCC	#61 35-12-2W SE	125.96	26.0	32.75
25	NEWPCC	#2 0-0-	147.88	24.6	36.38
26	NEWPCC	#2 0-0-	222.40	24.6	54.71
27	NEWPCC	#2 0-0-	324.88	24.8	80.57
28	NEWPCC	#2 0-0-	296.46	24.9	73.82
31	NEWPCC	#2 0-0-	301.94	22.3	67.33

Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#2 0-0-	2587.52						
NEWPCC	#61 35-12-2W SE	1810.00	463.17	52.5	95025.000		463.17	
							463.17	

Monthly Hauling Report
For the Month 06/2010

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#2 0-0-	203.46	23.6	48.02
02	NEWPCC	#2 0-0-	148.26	23.7	35.14
03	NEWPCC	#2 0-0-	173.42	26.8	46.48
04	NEWPCC	#2 0-0-	250.16	26.7	66.79
07	NEWPCC	#2 0-0-	222.96	25.6	57.08
08	NEWPCC	#2 0-0-	272.86	27.2	74.22
09	NEWPCC	#2 0-0-	246.44	27.0	66.54
10	NEWPCC	#2 0-0-	247.00	28.1	69.41
11	NEWPCC	#2 0-0-	200.52	27.6	55.34
14	NEWPCC	#2 0-0-	248.26	27.2	67.53
15	NEWPCC	#2 0-0-	176.88	28.4	50.24
16	NEWPCC	#2 0-0-	252.92	28.5	72.08
17	NEWPCC	#2 0-0-	175.68	29.5	51.83
18	NEWPCC	#2 0-0-	153.18	28.0	42.89
21	NEWPCC	#2 0-0-	202.12	28.0	56.59
22	NEWPCC	#2 0-0-	202.78	26.8	54.35
23	NEWPCC	#2 0-0-	251.62	26.8	67.44
24	NEWPCC	#2 0-0-	270.56	27.3	73.86
25	NEWPCC	#2 0-0-	269.42	26.0	70.05
28	NEWPCC	#2 0-0-	172.96	26.7	46.18
29	NEWPCC	#2 0-0-	220.66	26.6	58.70
30	NEWPCC	#2 0-0-	340.92	26.6	90.68

Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#2 0-0-	4903.04						
							---------	---------

Monthly Hauling Report
For the Month 07/2010

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#2 0-0-	389.78	26.6	103.68
05	NEWPCC	#2 0-0-	314.84	25.6	80.60
06	NEWPCC	#2 0-0-	238.00	25.1	59.74
07	NEWPCC	#2 0-0-	268.66	27.0	72.54
08	NEWPCC	#2 0-0-	248.38	26.4	65.57
09	NEWPCC	#2 0-0-	170.54	26.1	44.51
12	NEWPCC	#61 35-12-2W SE	267.94	26.0	69.66
13	NEWPCC	#61 35-12-2W SE	186.34	28.0	52.18
14	NEWPCC	#61 35-12-2W SE	187.06	24.2	45.27
15	NEWPCC	#61 35-12-2W SE	186.34	24.4	45.47
16	NEWPCC	#61 35-12-2W SE	141.68	24.4	34.57
19	NEWPCC	#61 35-12-2W SE	247.52	25.0	61.88
20	NEWPCC	#61 35-12-2W SE	287.58	25.8	74.19
21	NEWPCC	#61 35-12-2W SE	283.94	25.4	72.12
22	NEWPCC	#61 35-12-2W SE	164.74	25.9	42.67
23	NEWPCC	#61 35-12-2W SE	182.76	24.8	45.32
26	NEWPCC	#61 35-12-2W SE	246.36	24.6	60.60
27	NEWPCC	#61 35-12-2W SE	302.33	24.1	72.86
28	NEWPCC	#61 35-12-2W SE	180.30	25.0	45.07
29	NEWPCC	#61 35-12-2W SE	219.82	24.5	53.86
30	NEWPCC	#61 35-12-2W SE	205.22	24.8	50.89

Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#2 0-0-	1630.20						
NEWPCC	#61 35-12-2W SE	3289.93	826.62	52.5	172721.325		826.62	
							826.62	

Monthly Hauling Report
For the Month 08/2010

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
03	NEWPCC	#60 34-12-2W N	124.06	24.2	30.02
03	NEWPCC	#61 35-12-2W SE	183.46	24.2	44.40
04	NEWPCC	#60 34-12-2W N	183.44	24.1	44.21
05	NEWPCC	#60 34-12-2W N	306.66	24.3	74.52
06	NEWPCC	#60 34-12-2W N	284.72	25.1	71.47
09	NEWPCC	#60 34-12-2W N	346.56	25.3	87.68
10	NEWPCC	#60 34-12-2W N	224.32	25.0	56.08
11	NEWPCC	#60 34-12-2W N	142.62	25.6	36.51
12	NEWPCC	#60 34-12-2W N	162.98	24.3	39.60
13	NEWPCC	#60 34-12-2W N	160.68	23.3	37.44
16	NEWPCC	#2 0-0-	142.36	25.2	35.88
17	NEWPCC	#2 0-0-	233.88	25.2	58.94
18	NEWPCC	#2 0-0-	149.54	25.3	37.83
19	NEWPCC	#2 0-0-	101.16	25.2	25.49
20	NEWPCC	#2 0-0-	104.90	25.6	26.85
23	NEWPCC	#60 34-12-2W N	241.30	26.6	64.19
24	NEWPCC	#60 34-12-2W N	202.64	25.8	52.28
25	NEWPCC	#60 34-12-2W N	107.72	26.2	28.22
26	NEWPCC	#60 34-12-2W N	118.48	25.4	30.10
27	NEWPCC	#60 34-12-2W N	164.56	24.7	40.65
30	NEWPCC	#60 34-12-2W N	307.94	24.0	73.90
31	NEWPCC	#2 0-0-	150.60	22.4	33.73

Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#2 0-0-	882.44						
NEWPCC	#60 34-12-2W N	3078.68	766.86	52.5	161630.700		766.86	
NEWPCC	#61 35-12-2W SE	183.46	44.40	52.5	9631.650		44.40	
							---	---
							811.26	

Monthly Hauling Report
For the Month 09/2010

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#2 0-0-	174.54	22.9	39.97
02	NEWPCC	#2 0-0-	275.70	20.3	55.97
03	NEWPCC	#2 0-0-	199.00	23.1	45.97
07	NEWPCC	#2 0-0-	222.44	22.7	50.50
08	NEWPCC	#2 0-0-	244.94	22.7	55.60
09	NEWPCC	#2 0-0-	246.40	24.0	59.14
10	NEWPCC	#2 0-0-	127.80	24.0	30.67
13	NEWPCC	#2 0-0-	218.10	23.1	50.38
14	NEWPCC	#2 0-0-	121.76	25.1	30.56
15	NEWPCC	#2 0-0-	99.16	24.1	23.90
16	NEWPCC	#2 0-0-	97.10	23.2	22.53
17	NEWPCC	#2 0-0-	250.34	22.7	56.83
20	NEWPCC	#2 0-0-	152.54	22.2	33.86
21	NEWPCC	#2 0-0-	208.08	20.0	41.62
22	NEWPCC	#2 0-0-	242.76	20.8	50.49
23	NEWPCC	#2 0-0-	240.88	22.8	54.92
24	NEWPCC	#2 0-0-	194.14	21.2	41.16
27	NEWPCC	#2 0-0-	200.24	22.4	44.85
28	NEWPCC	#2 0-0-	171.74	22.2	38.13
29	NEWPCC	#2 0-0-	298.70	22.5	67.21
30	NEWPCC	#2 0-0-	294.58	22.3	65.69

Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#2 0-0-	4280.94						
							---------	---------

Monthly Hauling Report
For the Month 10/2010

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#2 0-0-	224.70	23.4	52.58
04	NEWPCC	#2 0-0-	246.32	24.8	61.09
05	NEWPCC	#2 0-0-	268.96	21.7	58.37
06	NEWPCC	#2 0-0-	223.10	22.2	49.53
07	NEWPCC	#2 0-0-	195.80	21.7	42.49
08	NEWPCC	#2 0-0-	171.24	21.7	37.16
12	NEWPCC	#2 0-0-	296.64	21.9	64.96
13	NEWPCC	#2 0-0-	220.64	22.5	49.65
14	NEWPCC	#2 0-0-	168.68	21.6	36.44
15	NEWPCC	#2 0-0-	173.58	21.0	36.45
15	NEWPCC	#60 34-12-2W N	20.82	21.0	4.37
18	NEWPCC	#60 34-12-2W N	203.76	20.4	41.57
19	NEWPCC	#60 34-12-2W N	219.00	22.2	48.62
20	NEWPCC	#60 34-12-2W N	308.68	21.9	67.60
21	NEWPCC	#60 34-12-2W N	218.88	20.5	44.87
22	NEWPCC	#60 34-12-2W N	211.48	19.0	40.18
25	NEWPCC	#60 34-12-2W N	278.56	20.6	57.38
27	NEWPCC	#2 0-0-	246.88	20.5	50.61
28	NEWPCC	#2 0-0-	270.90	20.8	56.35
29	NEWPCC	#2 0-0-	225.08	22.0	49.52

Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#2 0-0-	2932.52						
NEWPCC	#60 34-12-2W N	1461.18	304.60	52.5	76711.950		304.60	
							304.60	

Monthly Hauling Report
For the Month 11/2010

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#2 0-0-	217.34	22.4	48.68
02	NEWPCC	#2 0-0-	268.92	23.4	62.93
03	NEWPCC	#2 0-0-	147.04	22.6	33.23
04	NEWPCC	#2 0-0-	145.18	22.5	32.67
05	NEWPCC	#2 0-0-	200.98	23.0	46.22
08	NEWPCC	#2 0-0-	195.94	22.7	44.48
09	NEWPCC	#2 0-0-	243.64	22.9	55.79
10	NEWPCC	#2 0-0-	195.18	22.1	43.14
12	NEWPCC	#2 0-0-	218.98	22.3	48.83
15	NEWPCC	#2 0-0-	221.12	22.5	49.75
16	NEWPCC	#2 0-0-	217.92	22.7	49.47
17	NEWPCC	#2 0-0-	295.88	22.1	65.39
18	NEWPCC	#2 0-0-	186.68	21.6	40.32
19	NEWPCC	#2 0-0-	232.36	21.4	49.73
22	NEWPCC	#2 0-0-	180.04	21.8	39.25
23	NEWPCC	#2 0-0-	182.54	22.5	41.07
24	NEWPCC	#2 0-0-	135.46	22.8	30.89
25	NEWPCC	#2 0-0-	202.80	23.0	46.64
26	NEWPCC	#2 0-0-	181.28	22.4	40.61
29	NEWPCC	#60 34-12-2W N	202.02	21.5	43.44

Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#2 0-0-	3869.28						
NEWPCC	#60 34-12-2W N	202.02	43.44	52.5	10606.050		43.44	
							43.44	

Monthly Hauling Report
For the Month 12/2010

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#60 34-12-2W N	246.74	20.1	49.60
02	NEWPCC	#60 34-12-2W N	150.12	21.8	32.73
03	NEWPCC	#60 34-12-2W N	83.70	21.8	18.25
06	NEWPCC	#60 34-12-2W N	243.62	21.9	53.35
07	NEWPCC	#60 34-12-2W N	241.90	21.4	51.77
08	NEWPCC	#60 34-12-2W N	181.44	20.5	37.20
09	NEWPCC	#60 34-12-2W N	220.94	21.1	46.62
10	NEWPCC	#60 34-12-2W N	182.26	21.7	39.55
13	NEWPCC	#60 34-12-2W N	156.96	22.5	35.32
14	NEWPCC	#60 34-12-2W N	257.26	22.5	57.89
15	NEWPCC	#60 34-12-2W N	217.68	22.3	48.54
16	NEWPCC	#60 34-12-2W N	84.34	23.3	19.65
17	NEWPCC	#60 34-12-2W N	167.54	22.0	36.86
20	NEWPCC	#60 34-12-2W N	245.62	22.2	54.53
21	NEWPCC	#60 34-12-2W N	185.42	23.0	42.65
22	NEWPCC	#60 34-12-2W N	227.66	23.6	53.73
23	NEWPCC	#60 34-12-2W N	240.04	23.4	56.17
28	NEWPCC	#60 34-12-2W N	390.66	23.6	92.20
29	NEWPCC	#60 34-12-2W N	205.58	23.9	49.13
30	NEWPCC	#60 34-12-2W N	149.46	22.8	34.08

Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#60 34-12-2W N	4078.94	909.79	52.5	214144.350		909.79	
							909.79	

APPENDIX II

CORRESPONDENCE AND OTHER INFORMATION

Appendix II Footnote:
Appendix II includes correspondence and other information. Because of the personal information contained in these documents, they have been excluded from publication pursuant to the Manitoba Freedom of Information and Protection of Privacy Act (FIPPA).