Winnipeg

Water and Waste Department • Service des Eaux et des Déchets

January 31, 2007

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

Mr. Cliff Lee, P.Eng.
Assistant Director, Red River Region
Manitoba Conservation
Suite 160 – 123 Main Street
Winnipeg, Manitoba
R3C 1A5

Dear Mr. Lee:

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 2006. Included in this report are:

(a) details of the 2006 biosolids distribution and monitoring programs
(b) details of the proposed 2007 biosolids distribution programs

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

If you have any questions concerning the annual report please call Mr. Dan DeCraene at 986-4797 or me at 986-4807.

Yours truly,

Original signed by K.J.T. Kjartanson

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

AAZ:pr
Enclosure

c: B.D. MacBride, P.Eng.
W.J. Borlase, P.Eng.
P.E.A. Lagassé, P.Eng.
D. DeCraene

Document1

Winnipeg

Water and Waste Department • Service des Eaux et des Déchets

January 31, 2007

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

Reeve and Council
Rural Municipality of Rosser
Box 131
Rosser, Manitoba
ROH 1EO

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 2006. Included in this report are:

(a) details of the 2006 biosolids distribution and monitoring programs
(b) details of the proposed 2007 biosolids distribution program

If you have any questions concerning the annual report please call Mr. Dan DeCraene at 986-4797 or me at 986-4807.

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D. DeCraene

Document3

Winnipeg

Water and Waste Department • Service des Eaux et des Déchets

January 31, 2007

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

Reeve and Council
Rural Municipality of Macdonald
161 Mandan Drive
P.O. Box 100
Sanford, Manitoba
ROG 2JO

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 2006. Included in this report are:

(a) details of the 2006 biosolids distribution and monitoring programs
(b) details of the proposed 2007 biosolids distribution program

If you have any questions concerning the annual report please call Mr. Dan DeCraene at 986-4797 or me at 986-4807.

Yours truly,

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

AAZ:pr
Enclosure

c: B.D. MacBride, P.Eng.
W.J. Borlase, P.Eng.
P.E.A. Lagassé, P.Eng.
D. DeCraene

Document2

Winnipeg

Water and Waste Department • Service des Eaux et des Déchets

January 31, 2007

Our File: 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 2006. Included in this report are:

(a) details of the 2006 biosolids distribution and monitoring programs
(b) details of the proposed 2007 biosolids distribution program

If you have any questions concerning the annual report please call Mr. Dan DeCraene at 986-4797 or me at 986-4807.

Yours truly,

Original signed by K.J.T. Kjartanson

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

AAZ:pr
Enclosure

c: B.D. MacBride, P.Eng.
W.J. Borlase, P.Eng.
P.E.A. Lagassé, P.Eng.
D. DeCraene

Document1

ENVIRONMENT ACT LICENCE #1089E RR

CITY OF WINNIPEG

ANNUAL COMPLIANCE REPORT:

FOR

BIOSOLIDS DEWATERING, TEMPORARY BIOSOLIDS STORAGE

AND

APPLICATION TO AGRICULTURAL LAND

2006

Submitted by: City of Winnipeg
Water & Waste Department

January 31, 2007

TABLE OF CONTENTS

CONTENTS

LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

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 2006 Biosolids Application Program (WINGRO) and also outlines the proposed program for the 2007 calendar year.

In 2006, the City produced 13,075 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 26.2%. The WINGRO program applied 85.9% of the annual biosolids production to farmland and deposited 14.1% at the Brady Road Landfill. The interim storage pad temporarily held 0.7% of the total annual biosolids produced in 2006.

The WINGRO biosolids application rate for the four fields completed in 2006 was 54.6 dry-tonnes per hectare on the 178.5 hectares to which biosolids were applied. For the 2007 application year, the City proposes to complete biosolids application to fields previously started and to utilize several new parcels of land. Approvals have been granted by the applicable Rural Municipalities; proposed lands will be sampled to ensure licence criteria are met and the application rate will not exceed 56 dry-tonnes per hectare.

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 2006 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 2006 Biosolids Land Application Program. The report also provides information on its proposed Biosolids Program for the twelve months starting January 1, 2007.

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

2006 BIOSOLIDS 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, 2006 to December 31, 2006 the City produced 13,075 dry-tonnes of mechanically-dewatered biosolids at its NEWPCC facility. Appendix I contains the

mechanical dewatering operating records for 2006. The data show that the dewatering equipment achieved a total solids content in the biosolids exceeding 20 percent by weight. For the period cited, total solids in the biosolids averaged 26.2 ± 3.2% (*n* = 252).

(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 2006, the storage pad provided interim storage for 94 dry-tonnes of mechanically-dewatered biosolids. The tonnage processed through the interim holding pad represented 0.7% of the total mechanically-dewatered biosolids produced at the NEWPCC in 2006.

The interim holding pad was used for a total of 12 days in 2006 – 3 days in September and 9 days in October.

(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)).

Appendices I, II and III 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:

- % Solids in Mechanically Dewatered Biosolids (2006) — Appendix I
- Biosolids Quality, Ditchwater — Appendix II
- Background Solids for Applied Fields (2006) — Appendix III

No formal odour complaints associated with the WINGRO Program were received in 2006.

(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 13,075 dry-tonnes of mechanically-dewatered biosolids produced at the NEWPCC from January 1, 2006 to December 31, 2006, 85.9% were re-cycled onto farmland through the WINGRO program, while 14.1% were disposed at the Brady Road Landfill. The City of Winnipeg's 2006 Biosolids Land Application Program (WINGRO) spread and incorporated digested, dewatered biosolids onto 5 parcels of land. A total of 9,755 dry-tonnes of dewatered biosolids were distributed on the four fields completed in 2006 at an average application rate of **54.6 dry-tonnes per hectare** on the 178.5 hectares of land utilized. Biosolids application to one parcel was incomplete at December 31, 2006 and will be reported in the year that the application is completed. Table 1 provides a detailed summary of results, and Figures 1,2 &3 show the locations where biosolids were applied to fields in 2006.

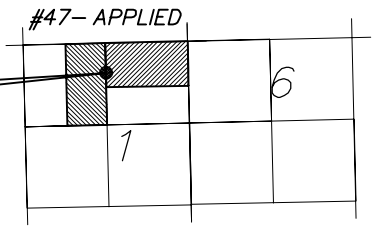
TABLE 1
2006 BIOSOLIDS PROGRAM
Land Application Summary

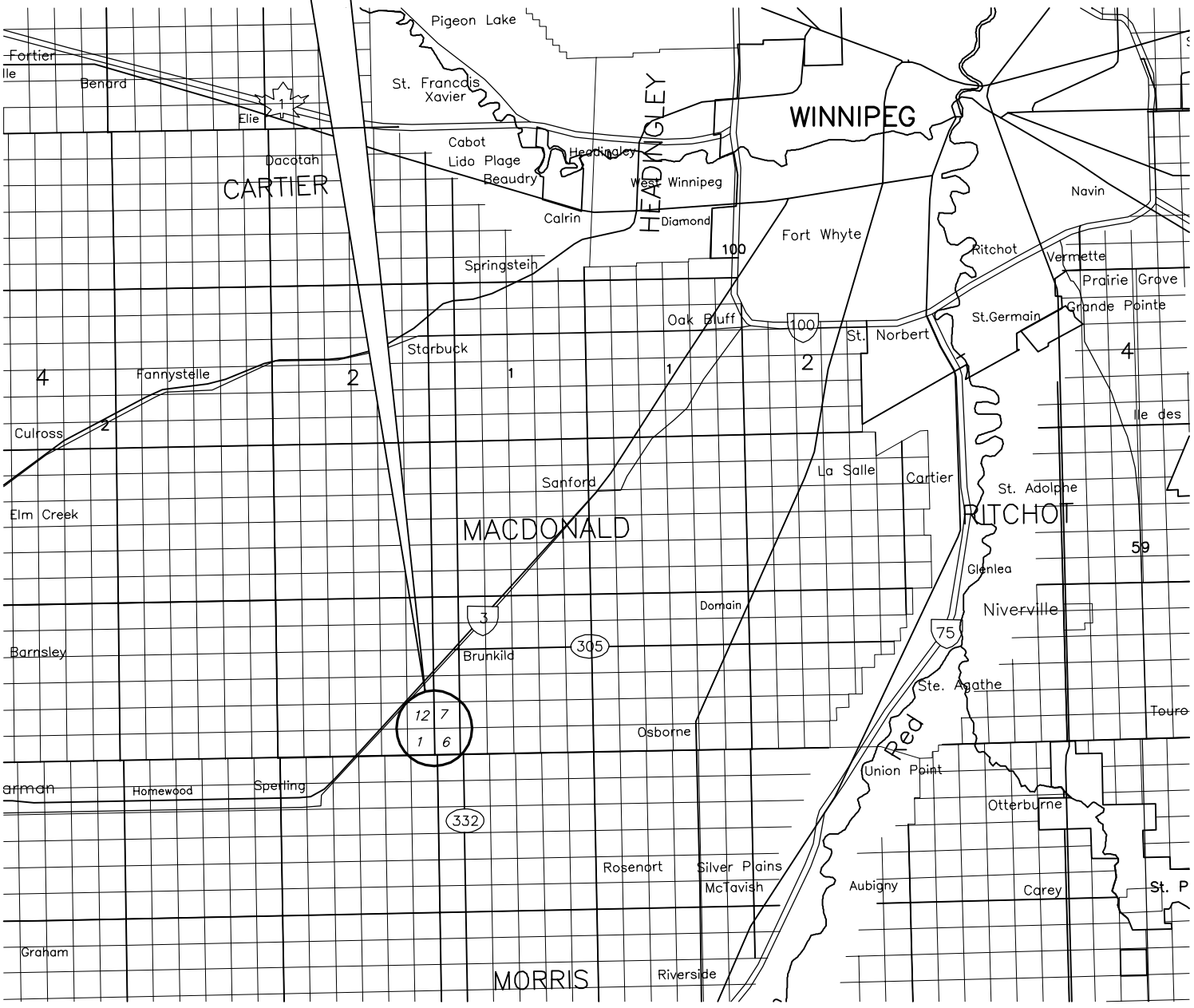
Field Number	Rural Municipality	Location Sec-Twnshp-Rge	Year Applied	Applied Area (ha)	Dry Solids Applied (tonnes)	Solids Loading Rate for Completed Field (dry tonnes/ha)
47	Macdonald	1-7-2W North	2005/06	62.8	3,421	54.5
48	Rosser	30-12-2W North East	2006	50.3	2,779	55.2
49	Rosser	34-12-2W South West	2006	34.7	1,894	54.6
50	Rosser	34-12-2W North West	2006	30.7	1,661	54.1
51*	Macdonald	4-10-1E East	(2006)	(34.3)	(1,907)	(55.6)
Totals For Completed Fields				178.5	9,755	
Weighted Average For Completed Fields						54.6

* When completed, this field will be included in future reports.

( ) Not Included in Totals

FIELD: #47–APPLIED
SECTION: 1 (NE 1/4) N HALF & (NW 1/4) E HALF
TOWNSHIP: 7
RANGE: 2 W



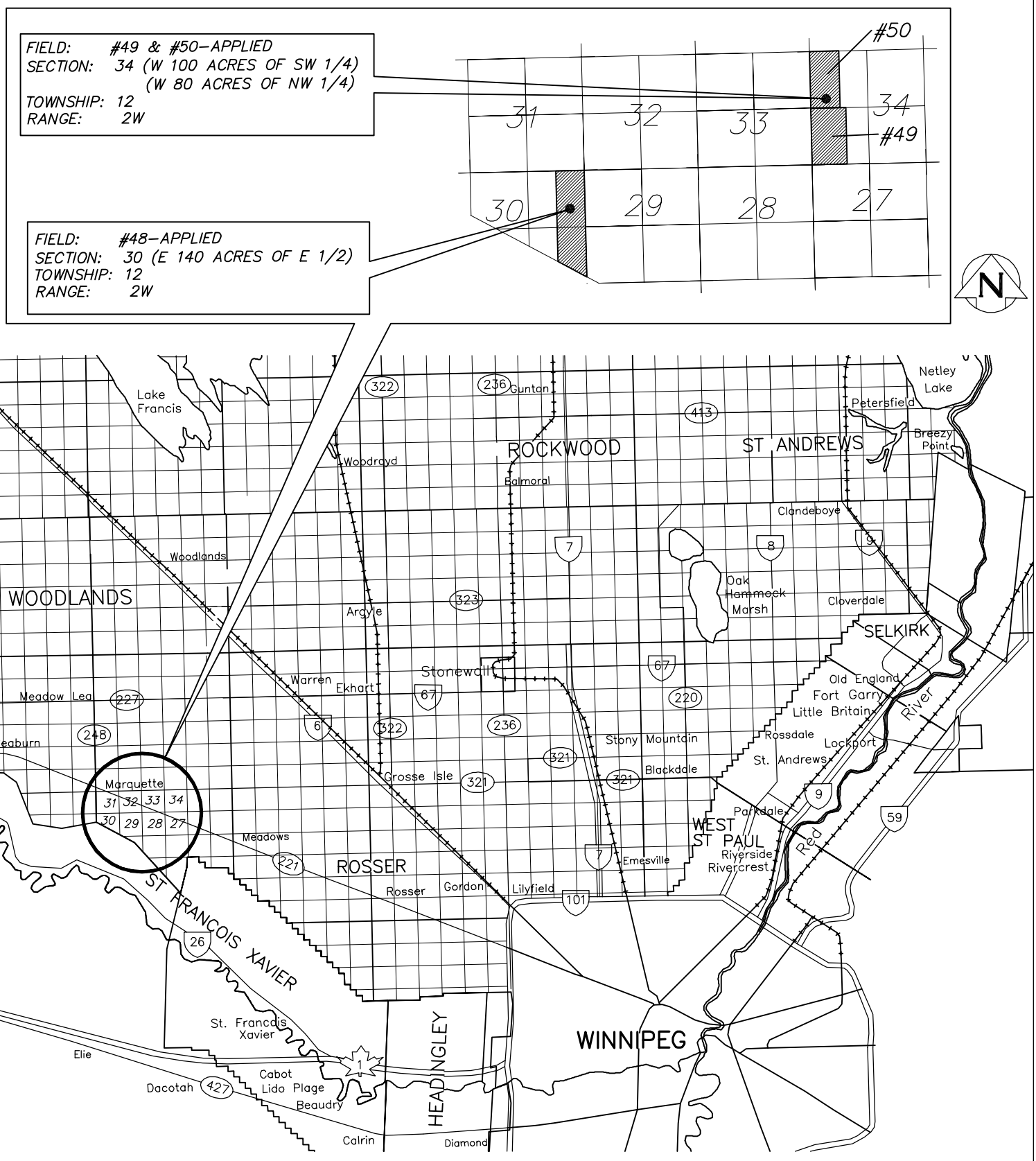


MUNICIPALITY OF MACDONALD

APPLIED FIELDS

CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

Figure 1.



Winnipeg

CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

MUNICIPALITY OF ROSSER

APPLIED FIELDS

Figure 2.

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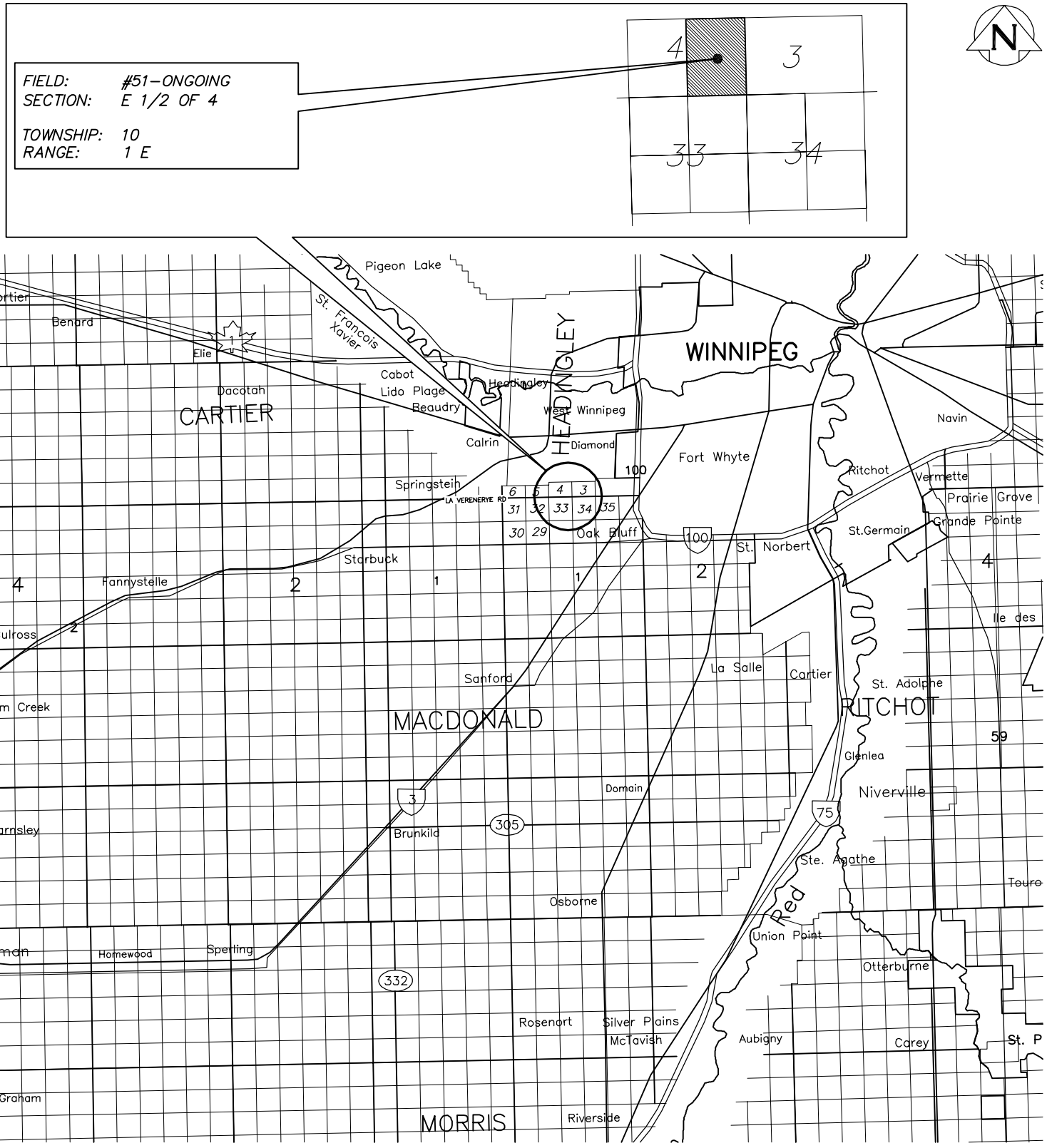


MUNICIPALITY OF MACDONALD

ONGOING FIELD

CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

Figure 3.

R:\DRAWINGS\SEWER\MISC\BIOSOLIDS_APPLICATION_FIGURES\WINGRO_for2006_REPORT\FIELD51_ONGOING_MACD.DWG PLOTTED: 2007 01 12

2007 PROPOSED BIOSOLIDS APPLICATION PROGRAMS

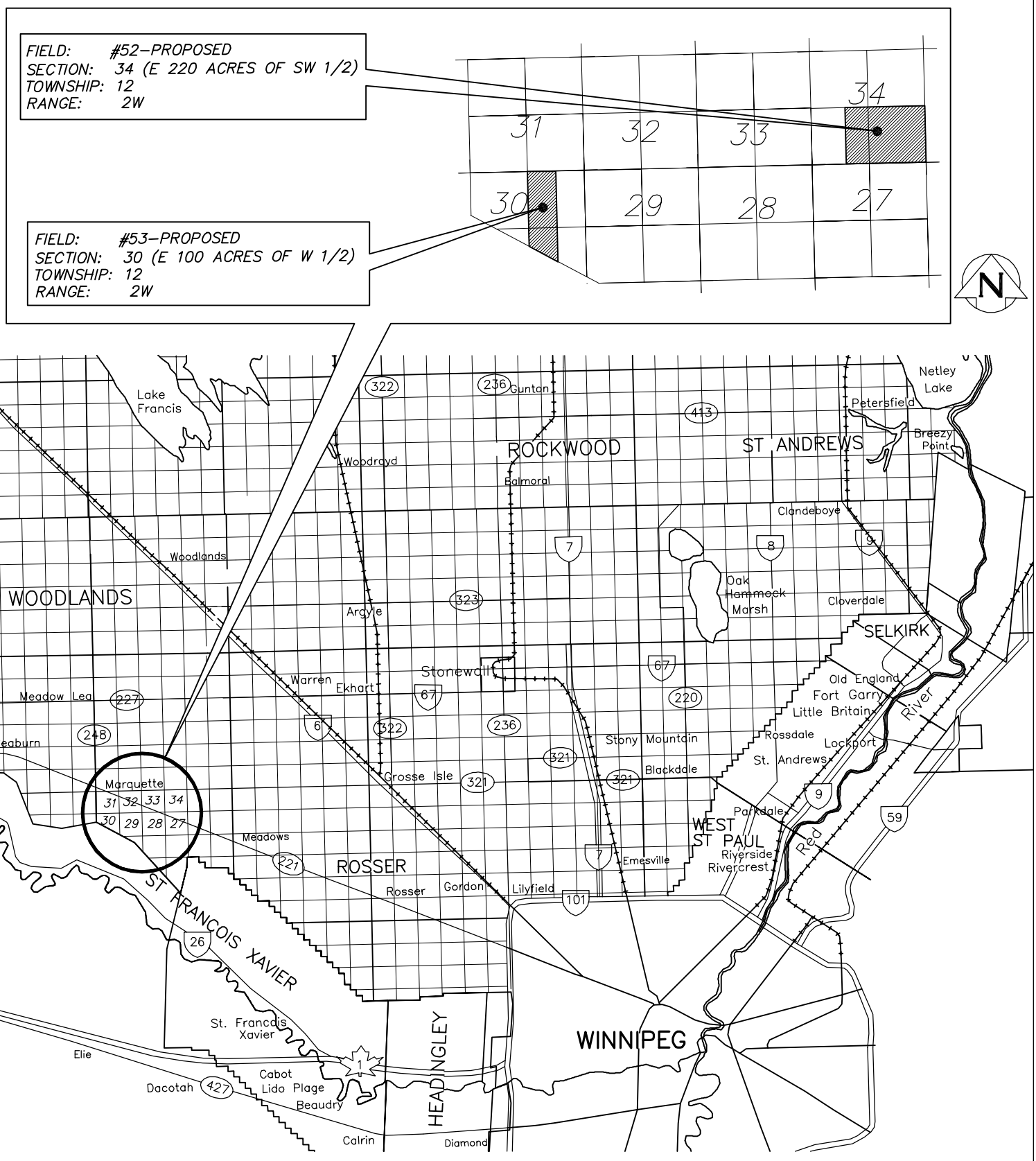
"details of the biosolids application program proposed to be carried out during the one-year period following the issuance of the report, including a description of the locations of the land on which application will be carried out, the proposed dates of application, and the proposed dry weight of biosolids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

In the 2007 WINGRO application year, which runs from January 1, 2007 to December 31, 2007, the City proposes to apply biosolids to several new parcels of land located in the R.M. of Rosser. Table 2 provides a description of these land parcels, and Figure 4 shows their locations. The new fields will be sampled in 2007 to ensure background soils meet licence criteria. Biosolids from the mechanical dewatering facility will be applied and incorporated into the proposed land parcels at a rate that will not exceed 56 dry- tonnes per hectare. The City also proposes to dispose biosolids at the Brady Road Landfill site on a limited, as required, basis.

TABLE 2
New Biosolids Application Areas Proposed For 2007

Land Parcel Identification Number	Description (Section-Township-Range)	Approximate Area (hectares)
52 P*	34-12-2W East 220 Acres of SW Half	220
53 P*	30-12-2W East 100 Acres of West Half	100

* Located in the Rural Municipality of Rosser



Winnipeg

CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

MUNICIPALITY OF ROSSER

PROPOSED FIELDS

Figure 4.

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APPENDIX I

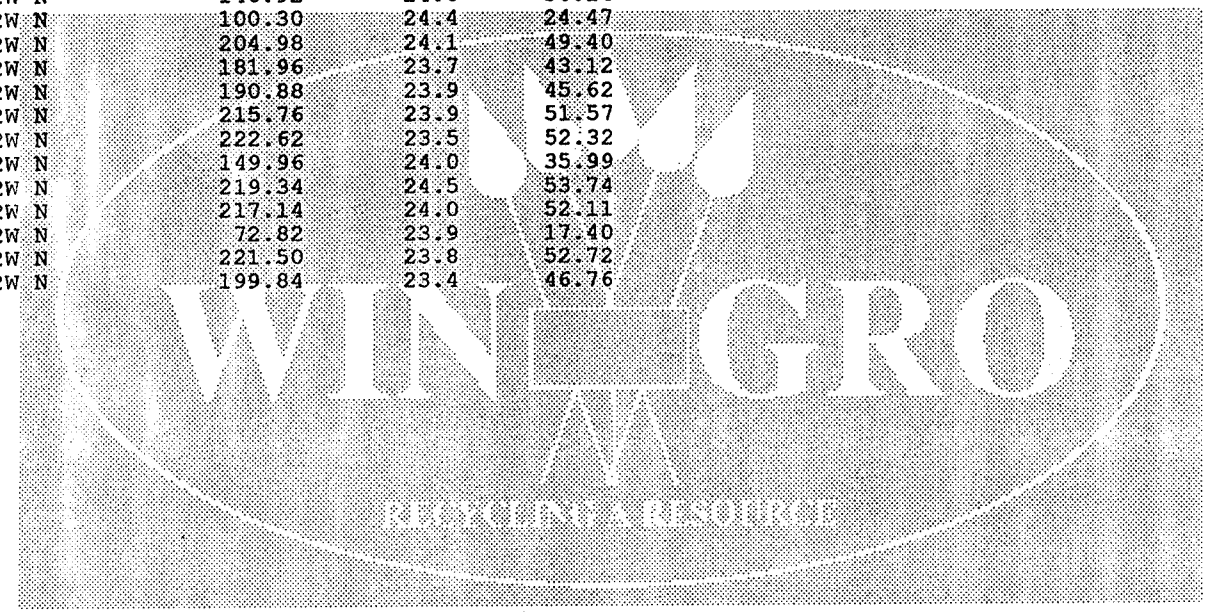
OPERATING RECORDS

for

MECHANICAL DEWATERING OF BIOSOLIDS

Monthly Hauling Report
For the Month 01/2006

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
03	NEWPCC	#47 1-7-2W N	261.02	23.2	60.56
04	NEWPCC	#47 1-7-2W N	264.28	22.9	60.52
05	NEWPCC	#47 1-7-2W N	179.16	25.3	45.33
06	NEWPCC	#47 1-7-2W N	122.34	25.1	30.71
09	NEWPCC	#47 1-7-2W N	214.14	24.5	52.46
10	NEWPCC	#47 1-7-2W N	212.80	24.4	51.92
11	NEWPCC	#47 1-7-2W N	186.72	24.5	45.75
12	NEWPCC	#47 1-7-2W N	118.42	24.3	28.78
13	NEWPCC	#47 1-7-2W N	146.92	24.6	36.14
16	NEWPCC	#47 1-7-2W N	100.30	24.4	24.47
17	NEWPCC	#47 1-7-2W N	204.98	24.1	49.40
18	NEWPCC	#47 1-7-2W N	181.96	23.7	43.12
19	NEWPCC	#47 1-7-2W N	190.88	23.9	45.62
20	NEWPCC	#47 1-7-2W N	215.76	23.9	51.57
23	NEWPCC	#47 1-7-2W N	222.62	23.5	52.32
24	NEWPCC	#47 1-7-2W N	149.96	24.0	35.99
25	NEWPCC	#47 1-7-2W N	219.34	24.5	53.74
26	NEWPCC	#47 1-7-2W N	217.14	24.0	52.11
27	NEWPCC	#47 1-7-2W N	72.82	23.9	17.40
30	NEWPCC	#47 1-7-2W N	221.50	23.8	52.72
31	NEWPCC	#47 1-7-2W N	199.84	23.4	46.76

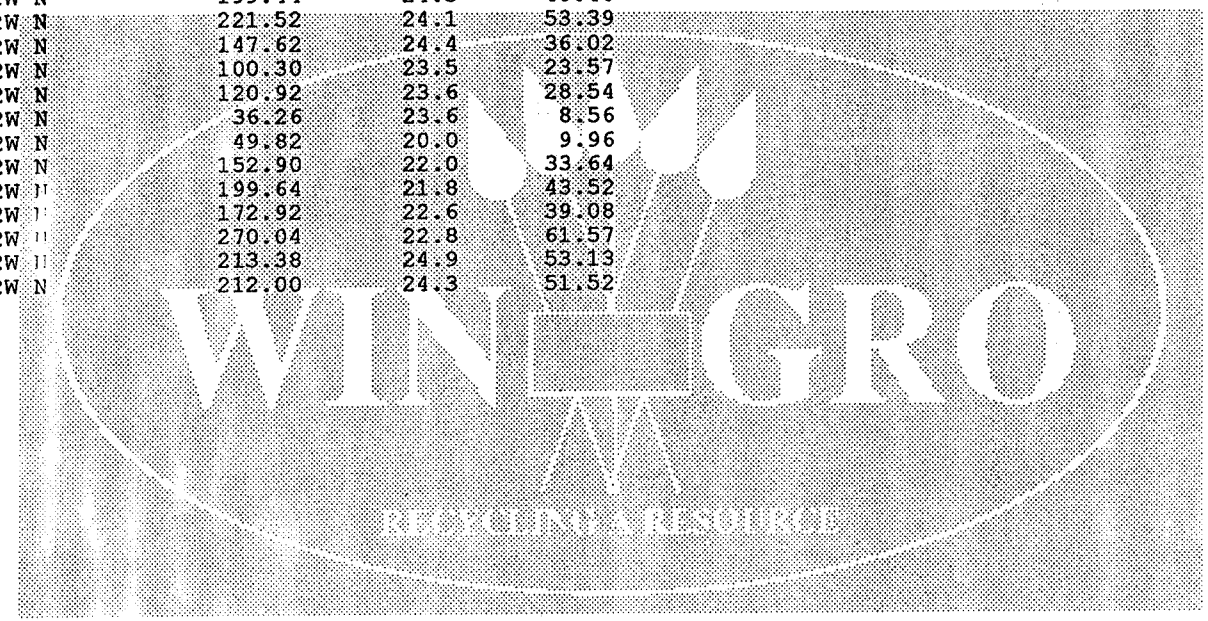


Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#47 1-7-2W N	3902.90	937.39	85.0	331746.500		937.39	
							937.39	

Monthly Hauling Report
For the Month 02/2006

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#47 1-7-2W N	216.24	23.5	50.82
02	NEWPCC	#47 1-7-2W N	100.02	23.2	23.20
03	NEWPCC	#47 1-7-2W N	142.42	23.0	32.76
06	NEWPCC	#47 1-7-2W N	222.10	24.3	53.97
07	NEWPCC	#47 1-7-2W N	221.84	23.3	51.69
08	NEWPCC	#47 1-7-2W N	99.48	23.0	22.88
09	NEWPCC	#47 1-7-2W N	144.30	23.2	33.48
10	NEWPCC	#47 1-7-2W N	96.88	23.2	22.48
13	NEWPCC	#47 1-7-2W N	199.44	24.3	48.46
14	NEWPCC	#47 1-7-2W N	221.52	24.1	53.39
15	NEWPCC	#47 1-7-2W N	147.62	24.4	36.02
16	NEWPCC	#47 1-7-2W N	100.30	23.5	23.57
17	NEWPCC	#47 1-7-2W N	120.92	23.6	28.54
18	NEWPCC	#47 1-7-2W N	36.26	23.6	8.56
20	NEWPCC	#47 1-7-2W N	49.82	20.0	9.96
21	NEWPCC	#47 1-7-2W N	152.90	22.0	33.64
22	NEWPCC	#47 1-7-2W N	199.64	21.8	43.52
23	NEWPCC	#47 1-7-2W N	172.92	22.6	39.08
24	NEWPCC	#47 1-7-2W N	270.04	22.8	61.57
27	NEWPCC	#47 1-7-2W N	213.38	24.9	53.13
28	NEWPCC	#47 1-7-2W N	212.00	24.3	51.52

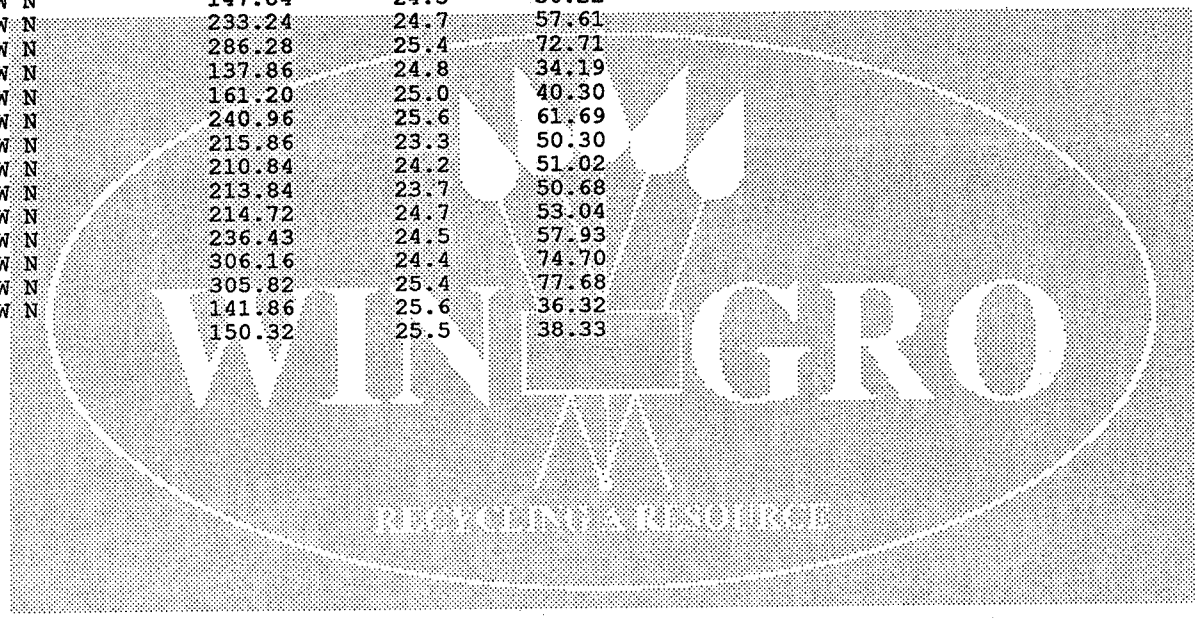


Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#47 1-7-2W N	3340.04	782.23	85.0	283903.400		782.23	
							782.23	

Monthly Hauling Report
For the Month 03/2006

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#47 1-7-2W N	71.94	24.4	17.55
02	NEWPCC	#47 1-7-2W N	150.96	24.4	36.84
03	NEWPCC	#47 1-7-2W N	194.10	24.4	47.36
06	NEWPCC	#47 1-7-2W N	213.52	22.8	48.68
07	NEWPCC	#47 1-7-2W N	149.48	21.4	31.99
08	NEWPCC	#47 1-7-2W N	170.20	21.5	36.59
09	NEWPCC	#47 1-7-2W N	146.04	23.4	34.17
10	NEWPCC	#47 1-7-2W N	224.08	23.8	53.33
13	NEWPCC	#47 1-7-2W N	147.84	24.5	36.22
14	NEWPCC	#47 1-7-2W N	233.24	24.7	57.61
15	NEWPCC	#47 1-7-2W N	286.28	25.4	72.71
16	NEWPCC	#47 1-7-2W N	137.86	24.8	34.19
17	NEWPCC	#47 1-7-2W N	161.20	25.0	40.30
20	NEWPCC	#47 1-7-2W N	240.96	25.6	61.69
21	NEWPCC	#47 1-7-2W N	215.86	23.3	50.30
22	NEWPCC	#47 1-7-2W N	210.84	24.2	51.02
23	NEWPCC	#47 1-7-2W N	213.84	23.7	50.68
24	NEWPCC	#47 1-7-2W N	214.72	24.7	53.04
27	NEWPCC	#47 1-7-2W N	236.43	24.5	57.93
28	NEWPCC	#47 1-7-2W N	306.16	24.4	74.70
29	NEWPCC	#47 1-7-2W N	305.82	25.4	77.68
30	NEWPCC	#47 1-7-2W N	141.86	25.6	36.32
31	NEWPCC	#2 0-0-	150.32	25.5	38.33

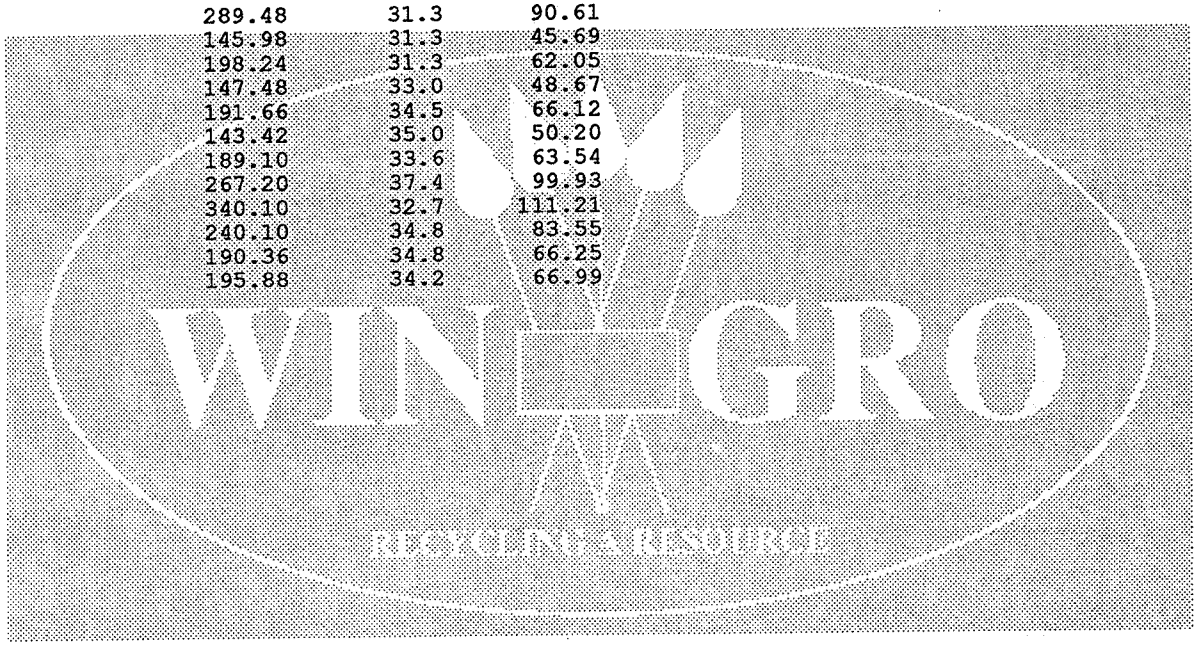


Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#2 0-0-	150.32						
NEWPCC	#47 1-7-2W N	4373.23	1060.90	85.0	371724.550		1060.90	
							1060.90	

Monthly Hauling Report
For the Month 04/2006

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#2 0-0-	145.74	27.0	39.35
03	NEWPCC	#2 0-0-	273.72	28.0	76.64
04	NEWPCC	#2 0-0-	247.96	28.8	71.41
05	NEWPCC	#2 0-0-	240.90	29.5	71.07
06	NEWPCC	#2 0-0-	191.54	29.7	56.89
07	NEWPCC	#2 0-0-	97.68	29.7	29.01
10	NEWPCC	#2 0-0-	247.80	31.3	77.56
11	NEWPCC	#2 0-0-	194.50	31.3	60.88
12	NEWPCC	#2 0-0-	289.48	31.3	90.61
13	NEWPCC	#2 0-0-	145.98	31.3	45.69
17	NEWPCC	#2 0-0-	198.24	31.3	62.05
18	NEWPCC	#2 0-0-	147.48	33.0	48.67
19	NEWPCC	#2 0-0-	191.66	34.5	66.12
20	NEWPCC	#2 0-0-	143.42	35.0	50.20
21	NEWPCC	#2 0-0-	189.10	33.6	63.54
24	NEWPCC	#2 0-0-	267.20	37.4	99.93
25	NEWPCC	#2 0-0-	340.10	32.7	111.21
26	NEWPCC	#2 0-0-	240.10	34.8	83.55
27	NEWPCC	#2 0-0-	190.36	34.8	66.25
28	NEWPCC	#2 0-0-	195.88	34.2	66.99

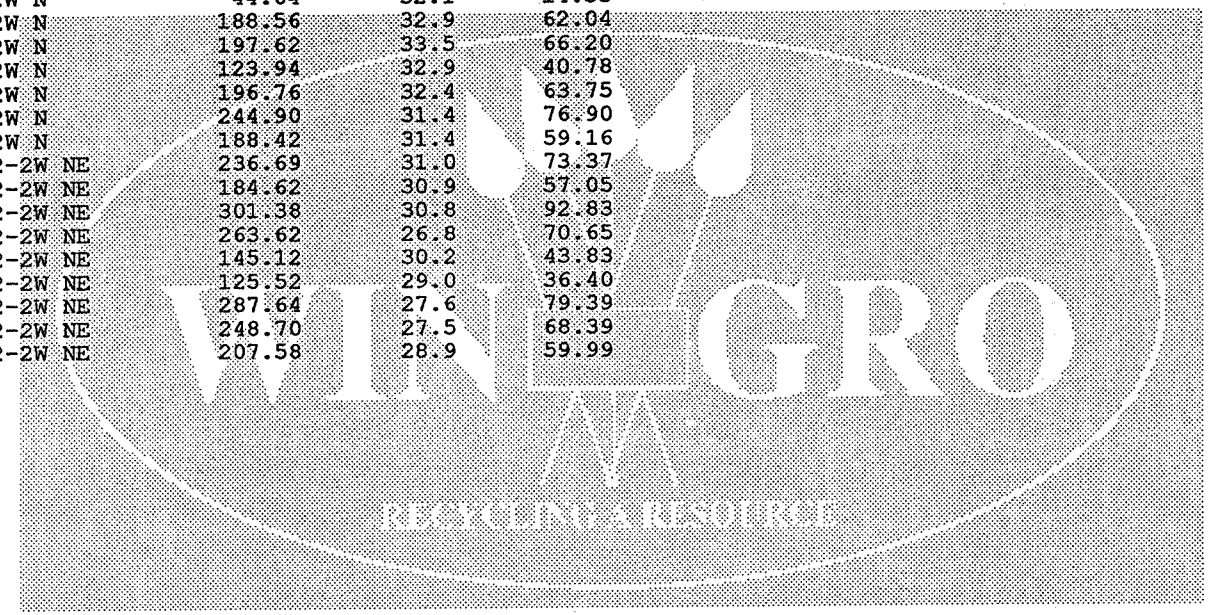


Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#2 0-0-	4178.84						

Monthly Hauling Report
For the Month 05/2006

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#2 0-0-	245.39	34.9	85.64
02	NEWPCC	#2 0-0-	194.98	33.9	66.10
03	NEWPCC	#2 0-0-	195.16	32.7	63.82
04	NEWPCC	#2 0-0-	149.56	34.5	51.60
05	NEWPCC	#2 0-0-	240.58	33.6	80.84
08	NEWPCC	#2 0-0-	145.24	32.8	47.64
09	NEWPCC	#2 0-0-	145.62	32.5	47.33
10	NEWPCC	#2 0-0-	97.70	32.1	31.36
10	NEWPCC	#47 1-7-2W N	44.64	32.1	14.33
11	NEWPCC	#47 1-7-2W N	188.56	32.9	62.04
12	NEWPCC	#47 1-7-2W N	197.62	33.5	66.20
13	NEWPCC	#47 1-7-2W N	123.94	32.9	40.78
15	NEWPCC	#47 1-7-2W N	196.76	32.4	63.75
16	NEWPCC	#47 1-7-2W N	244.90	31.4	76.90
17	NEWPCC	#47 1-7-2W N	188.42	31.4	59.16
19	NEWPCC	#48 30-12-2W NE	236.69	31.0	73.37
20	NEWPCC	#48 30-12-2W NE	184.62	30.9	57.05
23	NEWPCC	#48 30-12-2W NE	301.38	30.8	92.83
24	NEWPCC	#48 30-12-2W NE	263.62	26.8	70.65
25	NEWPCC	#48 30-12-2W NE	145.12	30.2	43.83
26	NEWPCC	#48 30-12-2W NE	125.52	29.0	36.40
29	NEWPCC	#48 30-12-2W NE	287.64	27.6	79.39
30	NEWPCC	#48 30-12-2W NE	248.70	27.5	68.39
31	NEWPCC	#48 30-12-2W NE	207.58	28.9	59.99

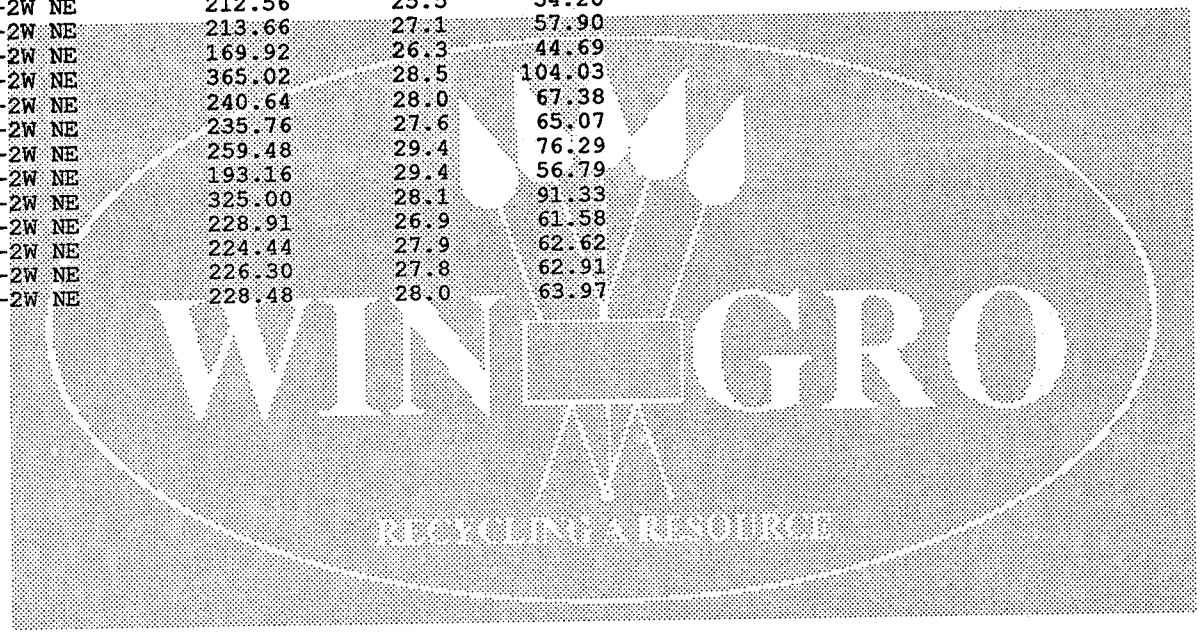


Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#2 0-0-	1414.23						
NEWPCC	#47 1-7-2W N	1184.84	383.16	85.0	100711.400		383.16	
NEWPCC	#48 30-12-2W NE	2000.87	581.90	63.0	126054.810		581.90	
							965.06	

Monthly Hauling Report
For the Month 06/2006

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#48 30-12-2W NE	248.86	26.0	64.70
02	NEWPCC	#48 30-12-2W NE	145.40	27.5	39.99
05	NEWPCC	#48 30-12-2W NE	340.08	26.6	90.46
06	NEWPCC	#48 30-12-2W NE	125.38	29.0	36.36
07	NEWPCC	#48 30-12-2W NE	249.64	26.6	66.41
08	NEWPCC	#48 30-12-2W NE	212.78	25.4	54.05
09	NEWPCC	#48 30-12-2W NE	169.76	28.1	47.70
13	NEWPCC	#48 30-12-2W NE	79.68	25.5	20.32
14	NEWPCC	#48 30-12-2W NE	212.56	25.5	54.20
15	NEWPCC	#48 30-12-2W NE	213.66	27.1	57.90
16	NEWPCC	#48 30-12-2W NE	169.92	26.3	44.69
19	NEWPCC	#48 30-12-2W NE	365.02	28.5	104.03
20	NEWPCC	#48 30-12-2W NE	240.64	28.0	67.38
21	NEWPCC	#48 30-12-2W NE	235.76	27.6	65.07
22	NEWPCC	#48 30-12-2W NE	259.48	29.4	76.29
23	NEWPCC	#48 30-12-2W NE	193.16	29.4	56.79
26	NEWPCC	#48 30-12-2W NE	325.00	28.1	91.33
27	NEWPCC	#48 30-12-2W NE	228.91	26.9	61.58
28	NEWPCC	#48 30-12-2W NE	224.44	27.9	62.62
29	NEWPCC	#48 30-12-2W NE	226.30	27.8	62.91
30	NEWPCC	#48 30-12-2W NE	228.48	28.0	63.97

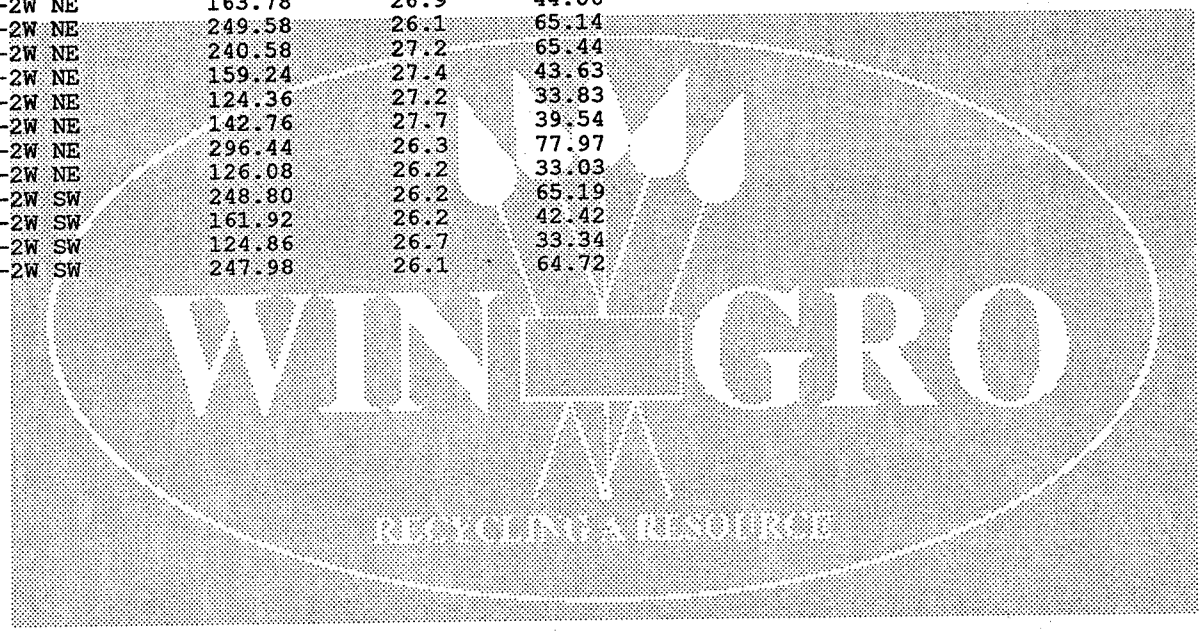


Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#48 30-12-2W NE	4694.91	1288.75	63.0	295779.330		1288.75	---------
							1288.75	

Monthly Hauling Report
For the Month 07/2006

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
04	NEWPCC	#48 30-12-2W NE	370.55	28.8	106.72
05	NEWPCC	#48 30-12-2W NE	243.90	28.9	70.49
06	NEWPCC	#48 30-12-2W NE	202.94	29.0	58.85
07	NEWPCC	#48 30-12-2W NE	163.40	28.8	47.06
10	NEWPCC	#48 30-12-2W NE	249.20	27.0	67.28
11	NEWPCC	#48 30-12-2W NE	250.22	27.2	68.06
12	NEWPCC	#48 30-12-2W NE	218.72	25.6	55.99
13	NEWPCC	#48 30-12-2W NE	121.28	25.8	31.29
14	NEWPCC	#48 30-12-2W NE	163.78	26.9	44.06
17	NEWPCC	#48 30-12-2W NE	249.58	26.1	65.14
18	NEWPCC	#48 30-12-2W NE	240.58	27.2	65.44
19	NEWPCC	#48 30-12-2W NE	159.24	27.4	43.63
20	NEWPCC	#48 30-12-2W NE	124.36	27.2	33.83
21	NEWPCC	#48 30-12-2W NE	142.76	27.7	39.54
24	NEWPCC	#48 30-12-2W NE	296.44	26.3	77.97
25	NEWPCC	#48 30-12-2W NE	126.08	26.2	33.03
26	NEWPCC	#49 34-12-2W SW	248.80	26.2	65.19
27	NEWPCC	#49 34-12-2W SW	161.92	26.2	42.42
28	NEWPCC	#49 34-12-2W SW	124.86	26.7	33.34
31	NEWPCC	#49 34-12-2W SW	247.98	26.1	64.72

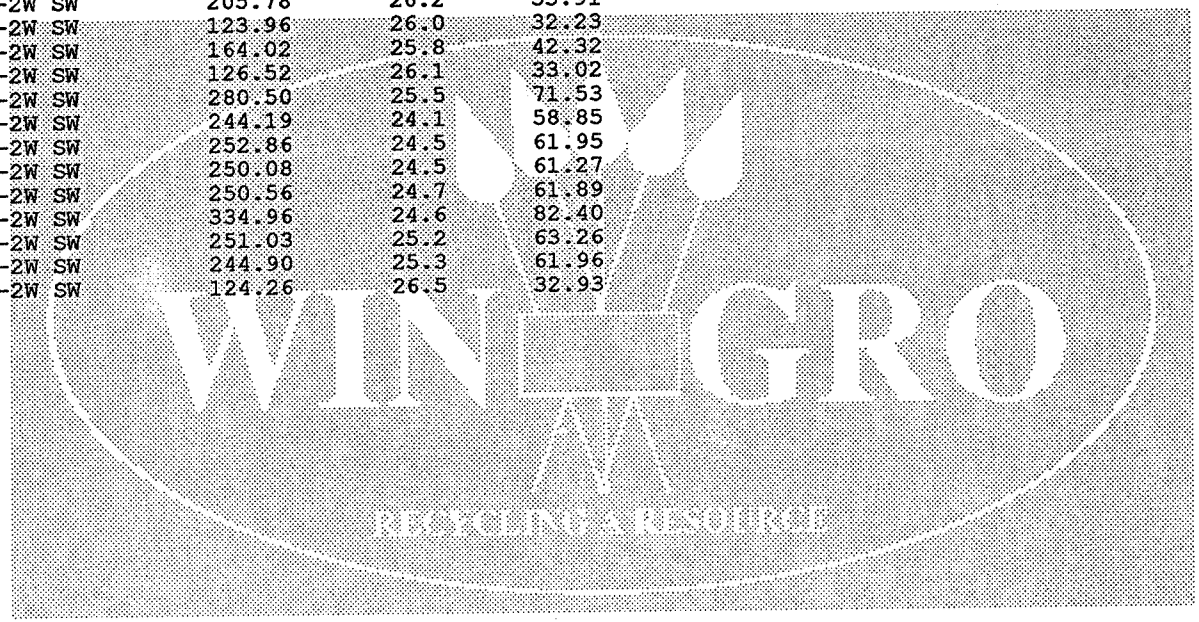


Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#48 30-12-2W NE	3323.03	908.38	63.0	209350.890		908.38	
NEWPCC	#49 34-12-2W SW	783.56	205.67	55.0	43095.800		205.67	
							1114.05	

Monthly Hauling Report
For the Month 08/2006

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#49 34-12-2W SW	247.93	23.8	59.01
02	NEWPCC	#49 34-12-2W SW	187.80	23.4	43.94
03	NEWPCC	#49 34-12-2W SW	206.00	23.6	48.62
04	NEWPCC	#49 34-12-2W SW	162.78	24.0	39.07
09	NEWPCC	#49 34-12-2W SW	106.16	24.9	26.43
10	NEWPCC	#49 34-12-2W SW	206.82	22.9	47.36
11	NEWPCC	#49 34-12-2W SW	141.94	23.5	33.36
14	NEWPCC	#49 34-12-2W SW	299.26	24.6	73.62
15	NEWPCC	#49 34-12-2W SW	205.78	26.2	53.91
16	NEWPCC	#49 34-12-2W SW	123.96	26.0	32.23
17	NEWPCC	#49 34-12-2W SW	164.02	25.8	42.32
18	NEWPCC	#49 34-12-2W SW	126.52	26.1	33.02
21	NEWPCC	#49 34-12-2W SW	280.50	25.5	71.53
22	NEWPCC	#49 34-12-2W SW	244.19	24.1	58.85
23	NEWPCC	#49 34-12-2W SW	252.86	24.5	61.95
24	NEWPCC	#49 34-12-2W SW	250.08	24.5	61.27
25	NEWPCC	#49 34-12-2W SW	250.56	24.7	61.89
28	NEWPCC	#49 34-12-2W SW	334.96	24.6	82.40
29	NEWPCC	#49 34-12-2W SW	251.03	25.2	63.26
30	NEWPCC	#49 34-12-2W SW	244.90	25.3	61.96
31	NEWPCC	#49 34-12-2W SW	124.26	26.5	32.93

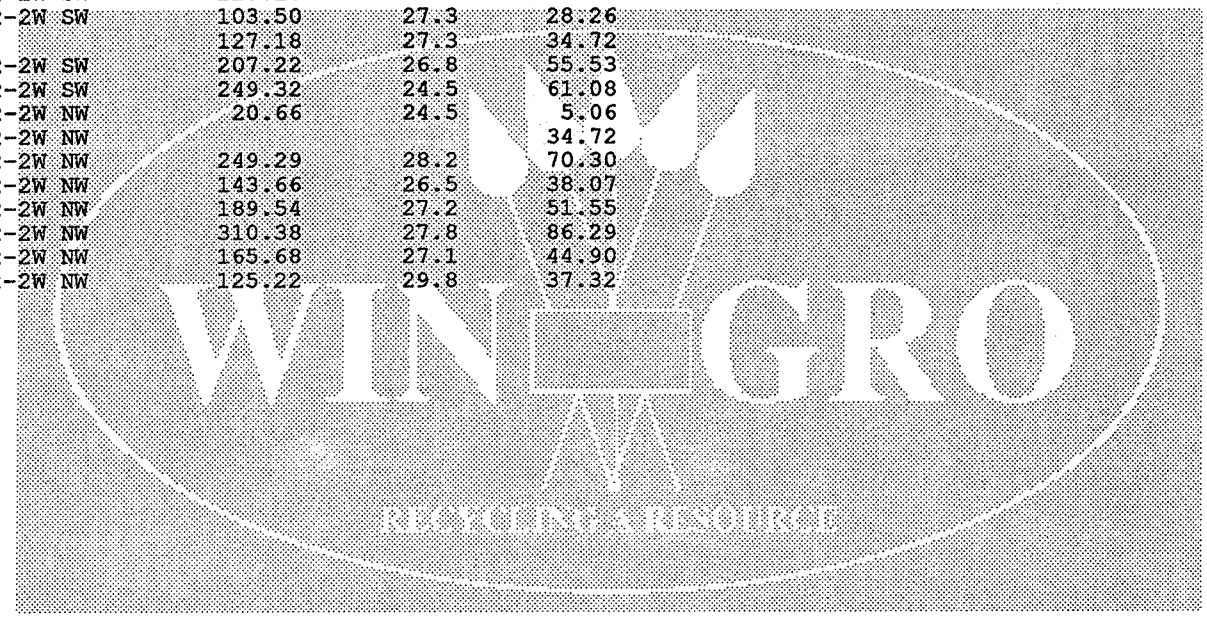


Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#49 34-12-2W SW	4412.31	1088.92	55.0	242677.050		1088.92	
							1088.92	

Monthly Hauling Report
For the Month 09/2006

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#49 34-12-2W SW	206.56	24.8	51.23
05	NEWPCC	#49 34-12-2W SW	314.21	24.1	75.73
06	NEWPCC	#49 34-12-2W SW	209.76	25.3	53.07
07	NEWPCC	#49 34-12-2W SW	144.64	25.6	37.03
08	NEWPCC	#49 34-12-2W SW	166.72	26.0	43.35
11	NEWPCC	#49 34-12-2W SW	300.45	27.7	83.23
12	NEWPCC	#49 34-12-2W SW	163.24	26.8	43.75
13	NEWPCC	#49 34-12-2W SW	125.96	27.2	34.26
14	NEWPCC	#49 34-12-2W SW	123.18	26.5	32.64
15	NEWPCC	#49 34-12-2W SW	103.50	27.3	28.26
18	NEWPCC	#1 0-0-	127.18	27.3	34.72
19	NEWPCC	#49 34-12-2W SW	207.22	26.8	55.53
20	NEWPCC	#49 34-12-2W SW	249.32	24.5	61.08
20	NEWPCC	#50 34-12-2W NW	20.66	24.5	5.06
20	Beds	#50 34-12-2W NW			34.72
21	NEWPCC	#50 34-12-2W NW	249.29	28.2	70.30
22	NEWPCC	#50 34-12-2W NW	143.66	26.5	38.07
25	NEWPCC	#50 34-12-2W NW	189.54	27.2	51.55
26	NEWPCC	#50 34-12-2W NW	310.38	27.8	86.29
27	NEWPCC	#50 34-12-2W NW	165.68	27.1	44.90
28	NEWPCC	#50 34-12-2W NW	125.22	29.8	37.32

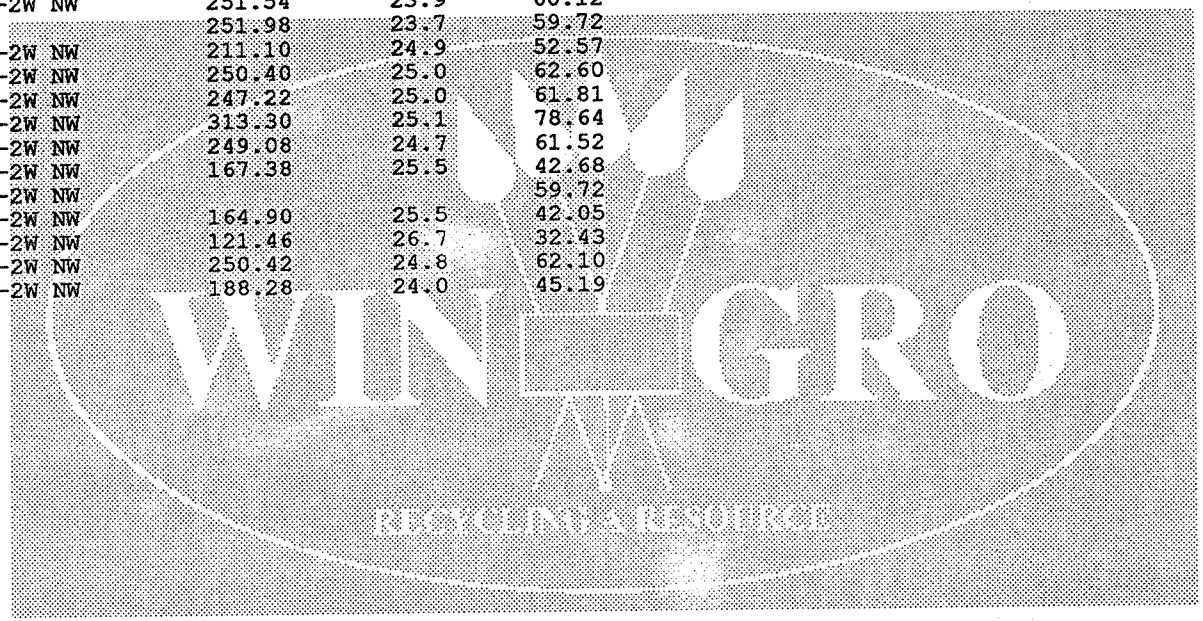


Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#1 0-0-		34.72					
NEWPCC	#49 34-12-2W SW	2314.76	599.15	55.0	127311.800		599.15	
NEWPCC	#50 34-12-2W NW	1204.43	333.48	55.0	66243.650		333.48	
Beds	#50 34-12-2W NW		34.72	47.5		1649.200	34.72	
							967.35	

Monthly Hauling Report
For the Month 10/2006

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
03	NEWPCC	#50 34-12-2W NW	166.18	25.5	42.38
04	NEWPCC	#50 34-12-2W NW	165.86	24.6	40.80
05	NEWPCC	#50 34-12-2W NW	123.02	25.2	31.00
06	NEWPCC	#50 34-12-2W NW	126.64	25.4	32.17
10	NEWPCC	#50 34-12-2W NW	387.97	23.8	92.34
11	NEWPCC	#50 34-12-2W NW	184.04	23.6	43.43
12	NEWPCC	#50 34-12-2W NW	166.50	24.6	40.96
13	NEWPCC	#50 34-12-2W NW	248.62	24.6	61.16
16	NEWPCC	#50 34-12-2W NW	251.54	23.9	60.12
17	NEWPCC	#1 0-0-	251.98	23.7	59.72
18	NEWPCC	#50 34-12-2W NW	211.10	24.9	52.57
19	NEWPCC	#50 34-12-2W NW	250.40	25.0	62.60
20	NEWPCC	#50 34-12-2W NW	247.22	25.0	61.81
23	NEWPCC	#50 34-12-2W NW	313.30	25.1	78.64
24	NEWPCC	#50 34-12-2W NW	249.08	24.7	61.52
25	NEWPCC	#50 34-12-2W NW	167.38	25.5	42.68
25	Beds	#50 34-12-2W NW			59.72
26	NEWPCC	#50 34-12-2W NW	164.90	25.5	42.05
27	NEWPCC	#50 34-12-2W NW	121.46	26.7	32.43
30	NEWPCC	#50 34-12-2W NW	250.42	24.8	62.10
31	NEWPCC	#50 34-12-2W NW	188.28	24.0	45.19

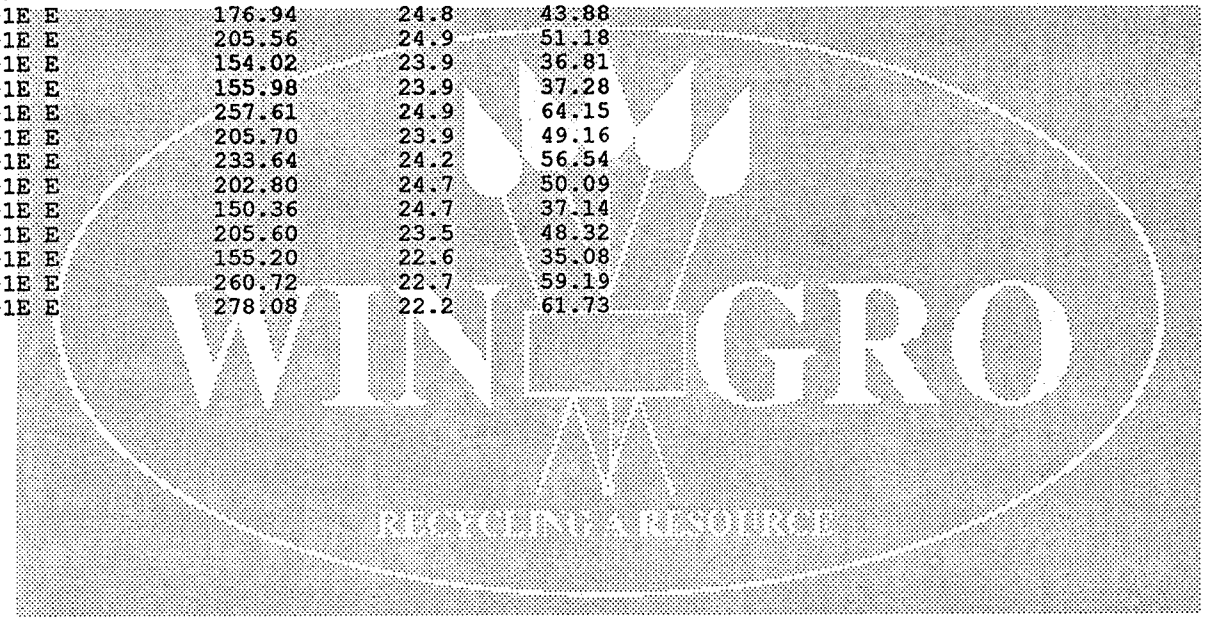


Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#1 0-0-		59.72					
NEWPCC	#50 34-12-2W NW	3983.91	985.94	55.0	219115.050		985.94	
Beds	#50 34-12-2W NW		59.72	47.5		2836.700	59.72	
							1045.66	

Monthly Hauling Report
For the Month 11/2006

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#50 34-12-2W NW	231.94	23.6	54.74
02	NEWPCC	#50 34-12-2W NW	166.22	23.8	39.56
03	NEWPCC	#50 34-12-2W NW	206.92	23.3	48.21
06	NEWPCC	#50 34-12-2W NW	309.50	23.9	73.97
07	NEWPCC	#50 34-12-2W NW	122.82	24.8	30.46
08	NEWPCC	#51 4-10-1E E	100.88	23.6	23.81
09	NEWPCC	#51 4-10-1E E	149.74	23.6	35.34
10	NEWPCC	#51 4-10-1E E	204.12	26.0	53.07
14	NEWPCC	#51 4-10-1E E	342.07	24.7	84.49
15	NEWPCC	#51 4-10-1E E	176.94	24.8	43.88
16	NEWPCC	#51 4-10-1E E	205.56	24.9	51.18
17	NEWPCC	#51 4-10-1E E	154.02	23.9	36.81
18	NEWPCC	#51 4-10-1E E	155.98	23.9	37.28
20	NEWPCC	#51 4-10-1E E	257.61	24.9	64.15
21	NEWPCC	#51 4-10-1E E	205.70	23.9	49.16
22	NEWPCC	#51 4-10-1E E	233.64	24.2	56.54
23	NEWPCC	#51 4-10-1E E	202.80	24.7	50.09
24	NEWPCC	#51 4-10-1E E	150.36	24.7	37.14
27	NEWPCC	#51 4-10-1E E	205.60	23.5	48.32
28	NEWPCC	#51 4-10-1E E	155.20	22.6	35.08
29	NEWPCC	#51 4-10-1E E	260.72	22.7	59.19
30	NEWPCC	#51 4-10-1E E	278.08	22.2	61.73

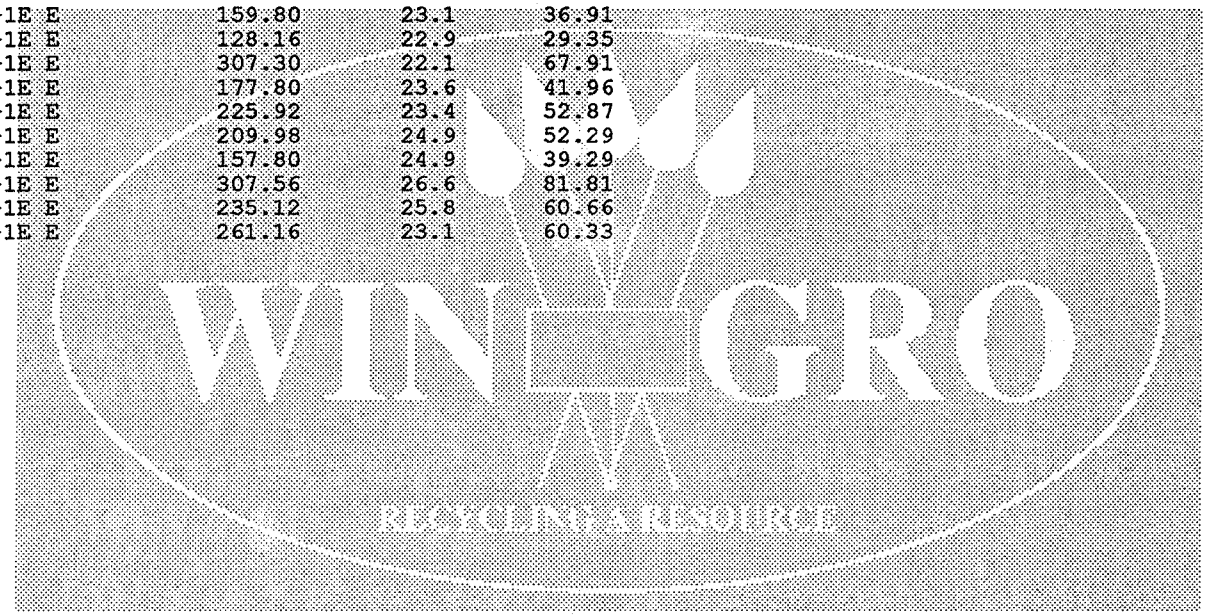


Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#50 34-12-2W NW	1037.40	246.94	55.0	57057.000		246.94	
NEWPCC	#51 4-10-1E E	3439.02	827.25	48.5	166792.470		827.25	
							1074.19	

Monthly Hauling Report
For the Month 12/2006

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#51 4-10-1E E	206.26	22.5	46.41
04	NEWPCC	#51 4-10-1E E	312.49	22.1	69.06
05	NEWPCC	#51 4-10-1E E	208.16	22.3	46.42
06	NEWPCC	#51 4-10-1E E	101.82	22.4	22.81
07	NEWPCC	#51 4-10-1E E	104.52	23.7	24.77
08	NEWPCC	#51 4-10-1E E	129.50	24.4	31.60
11	NEWPCC	#51 4-10-1E E	257.66	24.4	62.87
12	NEWPCC	#51 4-10-1E E	155.08	24.4	37.84
13	NEWPCC	#51 4-10-1E E	152.84	24.4	37.29
14	NEWPCC	#51 4-10-1E E	159.80	23.1	36.91
15	NEWPCC	#51 4-10-1E E	128.16	22.9	29.35
18	NEWPCC	#51 4-10-1E E	307.30	22.1	67.91
19	NEWPCC	#51 4-10-1E E	177.80	23.6	41.96
20	NEWPCC	#51 4-10-1E E	225.92	23.4	52.87
21	NEWPCC	#51 4-10-1E E	209.98	24.9	52.29
22	NEWPCC	#51 4-10-1E E	157.80	24.9	39.29
27	NEWPCC	#51 4-10-1E E	307.56	26.6	81.81
28	NEWPCC	#51 4-10-1E E	235.12	25.8	60.66
29	NEWPCC	#51 4-10-1E E	261.16	23.1	60.33



Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#51 4-10-1E E	3798.93	902.45	48.5	184248.105		902.45	
							902.45	

APPENDIX II

BIOSOLIDS & DITCHWATER

MONITORING RESULTS

FOR 2006

Table II (a)

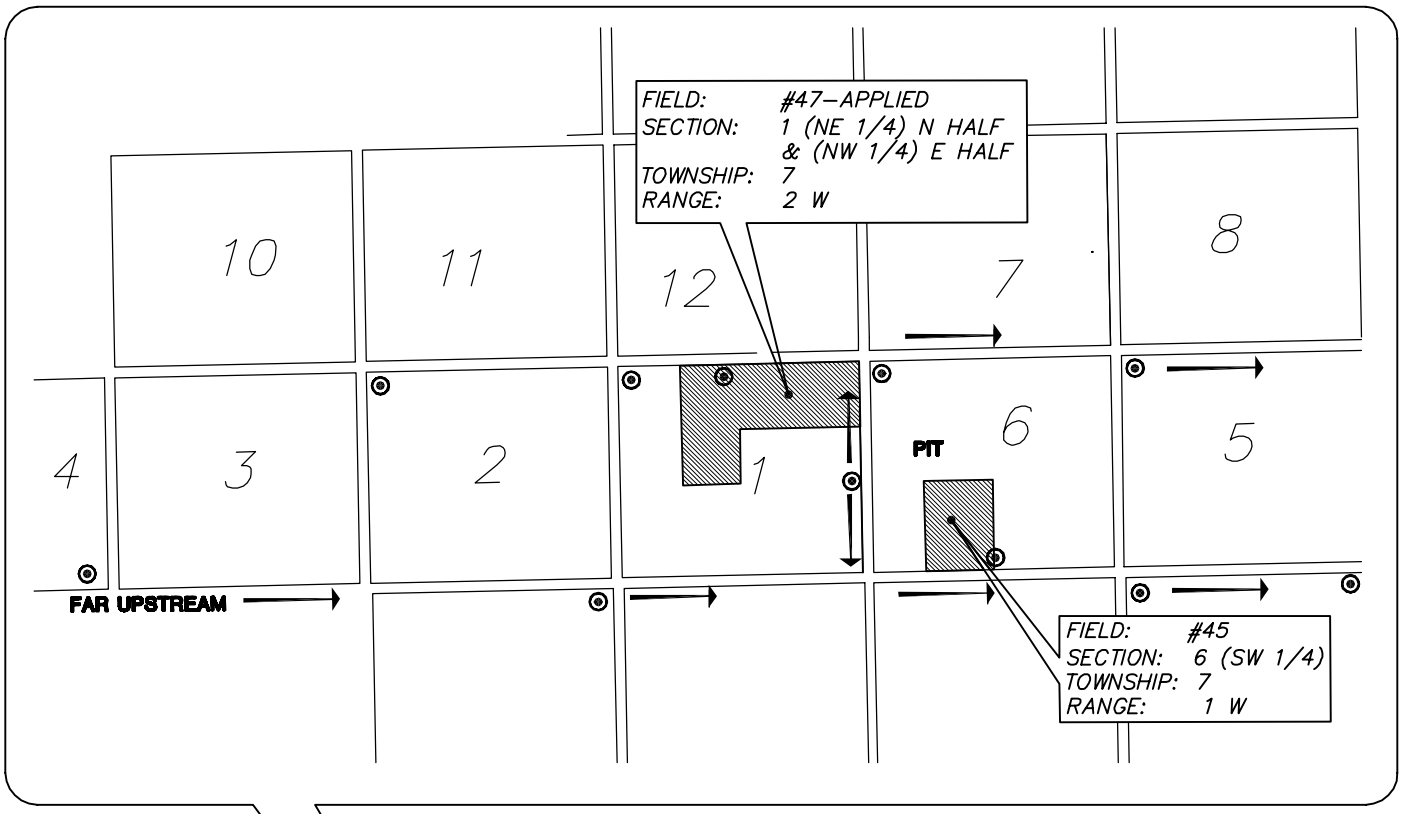
2006 Biosolids Quality

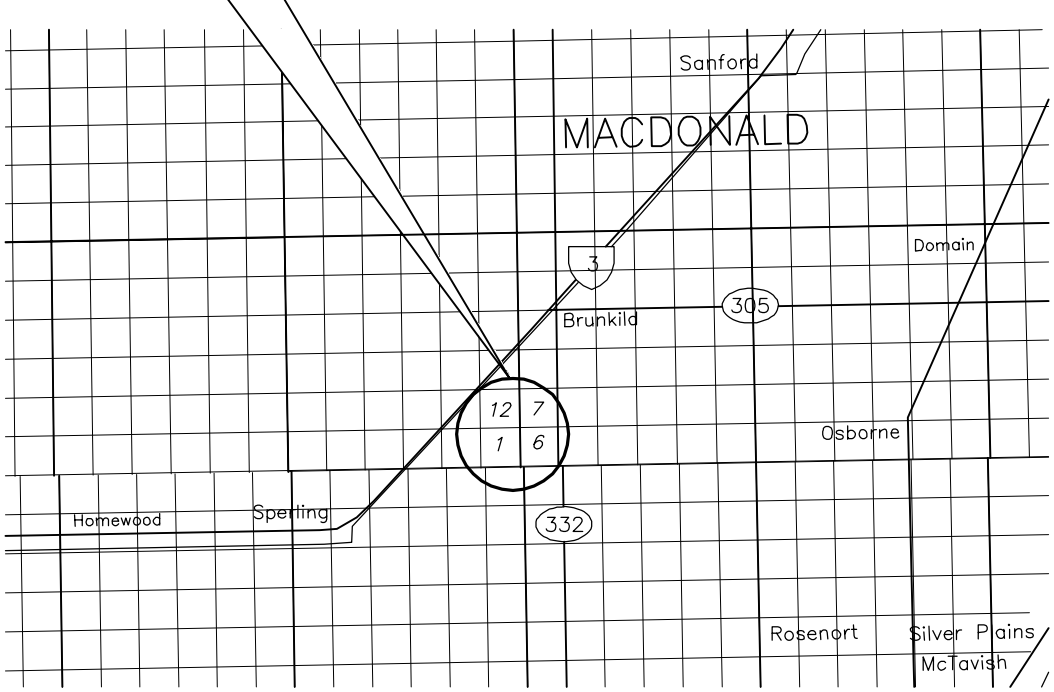
Sample Number	Date Sampled *	Total Cd (mg/Kg-Cd)	Total Cr (mg/Kg-Cr)	Total Cu (mg/Kg-Cu)	Total Ni (mg/Kg-Ni)	Total Pb (mg/Kg-Pb)	Total Zn (mg/Kg-Zn)	Total P (mg/Kg-P)	NH3-N (mg/Kg-N)	TKN (mg/Kg-N)	pH (units)	Specific Conductance (dS/m)	Total Solids (%)
1	25-Dec-05	6.0	134	1,050	49.1	126	1,880	15,700	11,800	37,300	8.33	10.50	24.6
2	08-Jan-06	5.0	129	1,050	59.9	108	1,410	16,400	12,800	41,000	8.42	9.80	24.5
3	22-Jan-06	5.1	128	1,090	52.7	99	1,190	16,900	11,900	42,900	8.56	9.17	24.2
4	05-Feb-06	10.1	125	1,090	52.5	82	1,040	16,300	12,100	39,700	8.49	10.10	24.4
5	19-Feb-06	11.2	123	1,230	54.9	79	1,010	17,100	11,000	42,800	8.59	9.13	24.3
6	05-Mar-06	12.7	128	1,310	53.5	77	970	17,600	11,800	43,400	8.83	9.43	23.2
7	19-Mar-06	11.0	135	1,090	64.1	83	1,240	16,200	10,200	40,000	8.49	8.44	24.7
8	02-Apr-06	5.6	100	810	54.8	110	1,620	11,800	7,120	28,700	8.84	5.95	30.6
9	16-Apr-06	4.1	86	710	53.7	98	1,020	9,820	8,930	24,400	8.79	5.89	33.6
10	30-Apr-06	3.4	114	790	53.1	94	840	11,700	8,930	30,500	8.24	6.51	33.8
11	14-May-06	4.1	120	860	52.7	86	860	13,100	9,540	36,300	8.42	7.66	31.5
12	28-May-06	11.5	260	910	46.1	96	1,040	13,700	9,630	38,800	8.33	7.47	27.1
13	11-Jun-06	12.8	280	910	47.9	100	1,040	9,930	8,800	26,300	8.44	6.61	27.6
14	25-Jun-06	11.0	220	1,040	51.0	110	1,020	13,500	8,870	34,900	8.48	7.76	28.5
15	09-Jul-06	7.7	210	1,030	50.3	110	1,020	14,700	9,250	35,800	8.35	8.08	26.9
16	23-Jul-06	7.3	200	1,100	52.5	100	1,070	14,600	9,760	38,300	8.53	8.86	25.8
17	06-Aug-06	7.0	150	1,070	46.0	100	1,030	14,200	9,820	37,700	8.52	8.49	25.7
18	20-Aug-06	13.7	150	1,240	52.8	120	2,680	14,600	9,730	35,200	8.44	6.74	24.8
19	03-Sep-06	11.0	140	1,200	49.0	100	2,300	15,000	10,100	37,200	8.42	9.47	25.8
20	17-Sep-06	9.4	140	1,200	46.3	110	2,140	15,100	10,000	40,700	8.39	6.96	26.2
21	01-Oct-06	7.1	140	1,270	48.5	110	1,600	15,000	11,600	38,500	8.47	9.71	25.0
22	15-Oct-06	6.4	160	1,230	47.3	110	1,360	16,800	12,100	42,100	8.47	9.68	24.2
23	29-Oct-06	6.4	170	1,230	55.8	120	1,240	17,000	12,300	41,300	8.47	8.84	24.0
24	12-Nov-06	6.3	150	1,100	65.0	95	1,300	16,500	11,700	41,700	8.44	9.65	24.5
25	26-Nov-06	6.7	130	1,200	51.0	88	1,200	17,000	11,700	42,500	8.39	9.20	23.3
26	10-Dec-06	6.3	120	1,100	70.0	90	1,100	17,200	11,000	43,800	8.37	9.82	23.7
Average:		8.0	152	1,073	53.1	100	1,316	14,902	10,480	37,762	8.48	8.46	26.3
Maximum:		13.7	280	1,310	70.0	126	2,680	17,600	12,800	43,800	8.84	10.50	33.8
Minimum:		3.4	86	710	46.0	77	840	9,820	7,120	24,400	8.24	5.89	23.2

*** Indicates starting date for year 2006 biweekly composite samples**

Ditchwater Sampling Locations

Number	Description	
1	Far upstream North side	Field #47
2	Upstream North side	Field #47
3	Flow off of / onto field North side	Field #47
4	Downstream North side	Field #47
5	Far Downstream North side	Field #47
6	Far Upstream South side @ Hwy #3	Field #45
7	Upstream South side	Field #45
8	Flow off of / onto field South side	Field #45
9	Downstream South side @ Hwy #332	Field #45
10	Far Downstream South Side	Field #45
11	Pit: ditch immediately adjacent to Biosolids Loading Pit	





LEGEND:

FLOW DIRECTION

SAMPLING LOCATION

CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

MUNICIPALITY OF MACDONALD

DITCHWATER SAMPLING LOCATIONS

Figure 5

Winnipeg

Table II (b)

2006 Ditchwater Sampling Results

Field # 45, 47 -

Sampling point	Sample	Date	NH3+ mg/l N	NO3-NO2 mg/l N	TKN mg/l N	T.Phos mg/l P	Conductivity umhos/cm	Total Coliform MPNU/100ml	Fecal Coliform MPNU/100ml
Far Upsteam (1)	L375695-1	April 3,2006	0.544	3.02	1.5	0.560	393	1500	23
	L376132-1	April 4,2006	0.373	5.65	1.5	0.443	181	230	<3
North side	L376599-1	April 5,2006	0.348	3.56	1.8	0.552	153	2300	<3
Field #47	L377003-1	April 6,2006	0.364	4.14	1.4	0.526	152	1500	<3
	L377282-1	April 7,2006	0.262	5.62	2.3	0.704	198	930	<3
	L377903-1	April 10,2006	0.070	6.39	1.4	0.517	257	1500	3
	L378276-1	April 11,2006	0.106	7.91	1.5	0.519	300	2300	9
	L378278-1	April 12,2006	0.081	8.01	1.7	0.507	357	430	15
	L379022-1	April 13,2006	0.067	7.05	1.6	0.461	426	380	4
Upstream (2)	L375695-2	April 3,2006	0.362	4.05	1.3	0.453	185	430	4
	L376132-2	April 4,2006	0.351	5.16	1.4	0.458	175	150	<3
North side	L376599-2	April 5,2006	0.256	3.55	1.2	0.525	162	230	4
Field #47	L377003-2	April 6,2006	0.314	4.12	1.3	0.509	171	4300	<3
	L377282-2	April 7,2006	0.242	5.60	2.2	0.673	201	230	<3
	L377903-2	April 10,2006	0.069	5.48	1.6	0.561	258	750	<3
	L378276-2	April 11,2006	0.125	7.39	1.7	0.533	301	4300	7
	L378278-2	April 12,2006	0.078	7.64	1.7	0.502	346	93	4
	L379022-2	April 13,2006	0.070	6.80	1.6	0.474	414	9300	<3
Flow Off Field (3)	L375695-3	April 3,2006	3.700	4.26	8.0	0.883	223	4300	23
	L376132-3	April 4,2006	0.388	5.22	1.4	0.454	176	430	<3
North side	L376599-3	April 5,2006	0.237	3.67	1.2	0.528	165	750	<3
Field #47	L377003-3	April 6,2006	0.293	4.11	1.4	0.523	170	4300	4
	L377282-3	April 7,2006	0.250	5.66	2.2	0.702	201	4300	4
	L377903-3	April 10,2006	0.078	5.53	1.4	0.579	260	930	<3
	L378276-3	April 11,2006	0.108	7.36	1.5	0.536	297	3800	9
	L378278-3	April 12,2006	0.078	7.18	1.5	0.488	339	230	4
	L379022-3	April 13,2006	0.100	6.86	1.6	0.452	416	4300	9

Winnipeg

Table II (b)

2006 Ditchwater Sampling Results

Field # 45, 47 -

Sampling point	Sample	Date	NH3+ mg/l N	NO3-NO2 mg/l N	TKN mg/l N	T.Phos mg/l P	Conductivity umhos/cm	Total Coliform MPNU/100ml	Fecal Coliform MPNU/100ml
Downstream (4)	L375695-4	April 3,2006	4.940	4.45	10.1	1.030	230	4300	150
	L376132-4	April 4,2006	0.464	5.01	1.6	0.454	174	9300	230
North side	L376599-4	April 5,2006	0.547	3.67	1.6	0.551	170	2300	21
Field #47	L377003-4	April 6,2006	3.220	4.20	7.5	0.988	216	4300	380
	L377282-4	April 7,2006	1.840	5.51	5.5	1.060	233	2900	1500
	L377903-4	April 10,2006	2.630	4.85	8.2	1.040	292	2300	430
	L378276-4	April 11,2006	0.831	6.64	2.7	2.700	319	46000	9300
	L378278-4	April 12,2006	0.266	6.92	1.9	0.558	342	1500	930
	L379022-4	April 13,2006	0.517	6.83	2.3	0.612	428	2100	2100
Far Downstream (5)	L375695-5	April 3,2006	6.110	3.80	13.2	1.170	242	4300	230
	L376132-5	April 4,2006	1.040	4.82	2.7	0.504	182	2300	230
North side	L376599-5	April 5,2006	0.561	3.67	1.4	0.546	172	7500	15
Field #47	L377003-5	April 6,2006	2.060	4.03	4.4	0.846	207	24000	430
	L377282-5	April 7,2006	2.210	5.30	5.6	1.100	241	9300	9300
	L377903-5	April 10,2006	2.870	4.70	5.7	1.010	301	930	230
	L378276-5	April 11,2006	1.300	5.37	3.4	0.591	319	1500	930
	L378278-5	April 12,2006	0.565	5.99	2.6	0.544	347	1500	380
	L379022-5	April 13,2006	0.237	6.72	1.8	0.528	424	2100	430
Far Upsteam (6)	L375695-6	April 3,2006	0.276	7.81	3.0	0.655	304	9300	9
	L376132-6	April 4,2006	0.278	4.88	1.5	0.364	185	4300	9
South side	L376599-6	April 5,2006	0.258	4.84	1.3	0.394	181	1600	43
Field #45	L377003-6	April 6,2006	0.230	4.88	2.2	0.716	311	46000	4
	L377282-6	April 7,2006	0.175	4.45	3.2	0.786	246	4300	4
	L377903-6	April 10,2006	0.139	4.71	2.0	0.687	279	1500	9
	L378276-6	April 11,2006	0.144	6.96	2.0	0.617	296	2300	21
	L378278-6	April 12,2006	0.134	5.47	1.7	0.603	362	150	23
	L379022-6	April 13,2006	0.093	4.38	1.3	0.559	386	230	15

Winnipeg

Table II (b)

2006 Ditchwater Sampling Results

Field # 45, 47 -

Sampling point	Sample	Date	NH3+ mg/l N	NO3-NO2 mg/l N	TKN mg/l N	T.Phos mg/l P	Conductivity umhos/cm	Total Coliform MPNU/100ml	Fecal Coliform MPNU/100ml
Upstream (7)		April 3,2006	ns	ns	ns	ns	ns	ns	ns
		April 4,2006	ns	ns	ns	ns	ns	ns	ns
South side		April 5,2006	ns	ns	ns	ns	ns	ns	ns
Field #45		April 6,2006	ns	ns	ns	ns	ns	ns	ns
		April 7,2006	ns	ns	ns	ns	ns	ns	ns
	L377903-7	April 10,2006	0.110	4.51	1.8	0.697	284	4300	9
	L378276-7	April 11,2006	0.096	4.01	1.6	0.579	291	2300	43
	L378278-7	April 12,2006	0.129	5.66	1.7	0.563	363	930	23
	L379022-7	April 13,2006	0.080	5.09	1.7	0.581	397	230	23
Flow Off Field (8)	L375695-7	April 3,2006	15.100	2.25	30.2	2.070	243	230	<3
	L376132-7	April 4,2006	5.380	7.48	10.0	1.020	276	2100	38
South side	L376599-7	April 5,2006	10.200	5.27	17.9	1.480	301	930	9
Field #45	L377003-7	April 6,2006	16.800	4.60	31.9	2.110	348	930	<3
	L377282-7	April 7,2006	13.500	4.58	21.9	2.320	335	430	21
	L377903-8	April 10,2006	13.900	2.53	23.6	1.920	371	93	<3
	L378276-8	April 11,2006	13.400	2.09	18.9	1.890	379	150	<3
	L378278-8	April 12,2006	13.300	1.74	22.2	2.000	447	46000	<3
	L379022-8	April 13,2006	5.260	3.13	11.2	1.080	637	15000	4
Downstream (9)	L375695-8	April 3,2006	0.294	3.63	1.4	0.382	166	430	<3
	L376132-8	April 4,2006	0.396	2.91	1.6	0.446	164	9300	<3
South side	L376599-8	April 5,2006	2.530	4.37	4.8	0.835	226	2300	<3
Field #45	L377003-8	April 6,2006	0.339	6.11	1.9	0.590	324	9300	93
	L377282-8	April 7,2006	0.247	4.33	2.0	0.697	248	930	15
	L377903-9	April 10,2006	1.720	4.46	6.4	0.850	298	2300	<3
	L378276-9	April 11,2006	1.770	4.78	3.8	0.759	302	4300	4
	L378278-9	April 12,2006	4.180	4.92	7.9	0.962	371	93	23
	L379022-9	April 13,2006	0.457	6.28	2.1	0.615	431	4300	14

Winnipeg

Table 11 (b)

2006 Ditchwater Sampling Results

Field # 45, 47 -

Sampling point	Sample	Date	NH3+ mg/l N	NO3-NO2 mg/l N	TKN mg/l N	T.Phos mg/l P	Conductivity umhos/cm	Total Coliform MPNU/100ml	Fecal Coliform MPNU/100ml
Far Downstream (10)	L375695-9	April 3,2006	0.582	6.70	1.9	0.379	184	4300	<3
	L376132-9	April 4,2006	0.616	6.77	2.0	0.379	189	9300	<3
South side	L376599-9	April 5,2006	0.495	6.31	1.4	0.364	185	930	4
Field #45	L377003-9	April 6,2006	0.240	6.03	1.8	0.520	283	15000	9
	L377282-9	April 7,2006	0.273	4.27	1.9	0.622	249	930	43
	L377903-10	April 10,2006	0.997	4.60	2.7	0.758	279	1500	4
	L378276-10	April 11,2006	1.580	4.99	3.7	0.739	304	750	<3
	L378278-10	April 12,2006	2.700	5.21	5.6	0.873	341	210	3
	L379022-10	April 13,2006	0.305	6.15	2.2	0.756	377	930	4
Pit (11)	L375695-10	April 3,2006	0.608	7.25	2.4	1.360	245	4300	930
	L376132-10	April 4,2006	2.970	8.16	8.2	1.390	271	2900	93
	L376599-10	April 5,2006	16.500	4.03	35.3	2.610	358	24000	9300
	L377003-10	April 6,2006	3.950	6.32	9.6	1.420	272	110000	9
	L377282-10	April 7,2006	3.180	5.25	7.6	1.600	311	4300	<3
	L377903-11	April 10,2006	7.380	3.71	11.4	1.900	349	930	230
	L378276-11	April 11,2006	5.780	1.55	11.2	2.330	478	>110000	46000
	L378278-11	April 12,2006	5.500	0.55	9.5	2.300	446	15000	230
	L379022-11	April 13,2006	6.710	0.08	11.7	3.420	558	4300	750

APPENDIX III

BACKGROUND SOIL ANALYTICAL RESULTS FOR

APPLIED FIELDS (2006)

TABLE III
2006 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)
#47	17.1	0.5	0.36	30.0	11.2	9.4	46.0	57.4	7.8	76.2	3.2	42.3
#48	25.2	19.0	0.33	27.0	13.4	99.0	35.8	47.4	7.7	71.7	9.8	39.7
#49	22.0	20.0	0.26	27.0	11.8	88.0	35.1	48.3	7.7	70.3	8.8	35.7
#50	22.0	10.0	0.22	22.0	9.9	71.0	32.4	42.3	7.8	79.0	7.0	31.5
#51	28.8	12.0	0.25	34.0	13.4	110.0	45.5	57.1	8.0	82.7	1.8	42.8

Regulated Parameter:

NOTES: (1) Soil sample depth is 0 to15 cm for all parameters except NO_3N where sample depth is 0 to 60 cm.
(2) Fields #47, #48, #49 and #50 were completed in 2006.
(3) Field #51 is ongoing in 2007.

* Based on Soil Density = 1200 Dry kg/m3

** Sodium Bicarbonate Extractable Phosphorus

APPLICATION REPORT

Parcel Number: **47**

Location:
Sec/Twn/Rng: **1- 7-2W**
Quarter: **N**
Municipality: **MACDONALD**

Date of Application: **07/10/2005**
Hectares: **60**
Distance (km): **85.0**
Bed Dist (km): **73.0**

Active: **Y**
Completed: **Y**
Suitable: **Y**

Stubble: **Y**
Suitable: **Y**
Reply: **Y**

Memo: **North 80 acres of NE 1/4 and east 80 acres of NW 1/4.**

OWNER:
Name:
Address:

Phone:

FARMER:
Name:
Address:

Phone:

ACTIVE DATA

Area (ha)		Sludge (T)	
Available:	**62.8**	Wet (NEWPCC):	**13848.58**
Covered:	**62.8**	Dry (NEWPCC):	**3421.05**
		Dry (Beds):	
		Dry (Total):	**3421.05**
Rate:	**54.5** (T/ha)	Incorporated:	**3421.06**

Memo:

BACKGROUND SOIL TEST

Test Date **28/09/19**

			Cation Exchange	**42.3**	meq NH4/100g
Slope	**<3**	%	Copper	**30.0**	mg/kg
SCE Phosphorus	**.5**	mg/kg	Zinc	**9.4**	mg/kg
Nitrate Nitrogen	**17.1**	kg/ha	Cadmium	**.36**	mg/kg
pH	**7.8**		Chromium	**57.4**	mg/kg
Moisture	**23.8**	%	Lead	**11.2**	mg/kg
Conductivity	**3.2**	dS/m	Nickel	**46.0**	mg/kg

APPLICATION REPORT

Parcel Number: **48**

Location:		Date of Application:	**28/11/2005**
Sec/Twn/Rng:	**30-12-2W**	Hectares:	**50**
Quarter:	**NE**	Distance (km):	**63.0**
Municipality:	**ROSSER**	Bed Dist (km):	**55.0**

Active:	**Y**	Stubble:	**N**
Completed:	**Y**	Suitable:	**Y**
Suitable:	**Y**	Reply:	**Y**

Memo: **East half of east half. The distance for May 06 was 69.5 km via W arren. In June the trucks started taking Hwy 221 through Marquett e with a distance of 63 km.**

OWNER:
Name:
Address:

Phone:

FARMER:
Name:
Address:

Phone:

ACTIVE DATA

	Area (ha)		Sludge (T)
Available:	**50.3**	Wet (NEWPCC):	**10018.81**
Covered:	**50.3**	Dry (NEWPCC):	**2779.03**
		Dry (Beds):	
		Dry (Total):	**2779.03**
Rate:	**55.2** (T/ha)	Incorporated:	**2779.02**

Memo:

BACKGROUND SOIL TEST

Test Date	**12/05/19**				
			Cation Exchange	**39.7**	meq NH4/100g
Slope	**<3**	%	Copper	**27.0**	mg/kg
SCE Phosphorus	**19.0**	mg/kg	Zinc	**99.0**	mg/kg
Nitrate Nitrogen	**25.2**	kg/ha	Cadmium	**.33**	mg/kg
pH	**7.7**		Chromium	**47.4**	mg/kg
Moisture	**28.3**	%	Lead	**13.4**	mg/kg
Conductivity	**9.8**	dS/m	Nickel	**35.8**	mg/kg

APPLICATION REPORT

Parcel Number: **49**

Location:
Sec/Twn/Rng: **34-12-2W**
Quarter: **SW**
Municipality: **ROSSER**

Date of Application: **13/04/1906**
Hectares: **35**
Distance (km): **55.0**
Bed Dist (km): **47.0**

Active: **Y**
Completed: **Y**
Suitable: **Y**

Stubble: **N**
Suitable: **Y**
Reply: **Y**

Memo:

OWNER:
Name:
Address:

Phone:

FARMER:
Name:
Address:

Phone:

ACTIVE DATA

Area (ha)		Sludge (T)	
Available:	**34.7**	Wet (NEWPCC):	**7510.63**
Covered:	**34.7**	Dry (NEWPCC):	**1893.73**
		Dry (Beds):	
		Dry (Total):	**1893.73**
Rate:	**54.6** (T/ha)	Incorporated:	**1893.76**

Memo:

BACKGROUND SOIL TEST

Test Date **12/05/19**

			Cation Exchange	**35.7**	meq NH4/100g
Slope	**<3**	%	Copper	**27.0**	mg/kg
SCE Phosphorus	**20.0**	mg/kg	Zinc	**88.0**	mg/kg
Nitrate Nitrogen	**22.0**	kg/ha	Cadmium	**0.26**	mg/kg
pH	**7.7**		Chromium	**48.3**	mg/kg
Moisture	**29.7**	%	Lead	**11.8**	mg/kg
Conductivity	**8.8**	dS/m	Nickel	**35.1**	mg/kg

APPLICATION REPORT

Parcel Number: **50**

Location:		Date of Application:	**28/11/1905**
Sec/Twn/Rng:	**34-12-2W**	Hectares:	**33**
Quarter:	**NW**	Distance (km):	**55.0**
Municipality:	**ROSSER**	Bed Dist (km):	**47.5**

Active:	**Y**	Stubble:	**N**
Completed:	**Y**	Suitable:	**Y**
Suitable:	**Y**	Reply:	**Y**

Memo: **West 80 acres.**

OWNER:
Name:
Address:

Phone:

FARMER:
Name:
Address:

Phone:

ACTIVE DATA

Area (ha)		Sludge (T)	
Available:	**30.7**	Wet (NEWPCC):	**6225.74**
Covered:	**30.7**	Dry (NEWPCC):	**1566.36**
		Dry (Beds):	**94.44**
		Dry (Total):	**1660.80**
Rate:	**54.1** (T/ha)	Incorporated:	**1660.80**

Memo:

BACKGROUND SOIL TEST

Test Date	**28/08/19**				
			Cation Exchange	**31.5**	meq NH4/100g
Slope	**<3**	%	Copper	**22.0**	mg/kg
SCE Phosphorus	**10.0**	mg/kg	Zinc	**71.0**	mg/kg
Nitrate Nitrogen	**22.0**	kg/ha	Cadmium	**0.22**	mg/kg
pH	**7.8**		Chromium	**42.3**	mg/kg
Moisture	**21.0**	%	Lead	**9.9**	mg/kg
Conductivity	**7.0**	dS/m	Nickel	**32.4**	mg/kg

APPLICATION REPORT

Parcel Number: **51**

Location:
Sec/Twn/Rng: **4-10-1E**
Quarter: **E**
Municipality: **MACDONALD**

Date of Application: **08/09/2006**
Hectares: **73**
Distance (km): **48.5**
Bed Dist (km): **40.5**

Active: **Y**
Completed: **N**
Suitable: **Y**

Stubble: **Y**
Suitable: **Y**
Reply: **Y**

Memo: **East half**

OWNER:
Name:
Address:

Phone:

FARMER:
Name:
Address:

Phone:

ACTIVE DATA

	Area (ha)		Sludge (T)
Available:	**73.0**	Wet (NEWPCC):	**7997.14**
Covered:	**34.3**	Dry (NEWPCC):	**1906.91**
		Dry (Beds):	
		Dry (Total):	**1906.91**
Rate:	**55.6** (T/ha)	Incorporated:	

Memo:

BACKGROUND SOIL TEST

Test Date **08/07/19**

			Cation Exchange	**42.8**	meq NH4/100g
Slope	**<3**	%	Copper	**34.0**	mg/kg
SCE Phosphorus	**12.0**	mg/kg	Zinc	**110.0**	mg/kg
Nitrate Nitrogen	**28.8**	kg/ha	Cadmium	**0.25**	mg/kg
pH	**8.0**		Chromium	**57.1**	mg/kg
Moisture	**17.3**	%	Lead	**13.4**	mg/kg
Conductivity	**1.8**	dS/m	Nickel	**45.4**	mg/kg

Appendix III Footnote:
Personal information in the Biosolids ‘Application Reports’ included in Appendix III has been excluded pursuant to the Manitoba Freedom of Information and Protection of Privacy Act (FIPPA).

APPENDIX IV

CORRESPONDENCE AND OTHER INFORMATION

Appendix IV Footnote:
Appendix IV 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).