Winnipeg

Water and Waste Department • Service des Eaux et des Déchets

January 23, 2008

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 2007. Included in this report are:

(a) details of the 2007 biosolids distribution and monitoring programs
(b) details of the proposed 2008 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 Rosser.

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, P.Eng.
Manager of Environmental Standards

RG:pr
Enclosure

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

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Winnipeg

Water and Waste Department • Service des Eaux et des Déchets

January 23, 2008

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 2007. Included in this report are:

(a) details of the 2007 biosolids distribution and monitoring programs
(b) details of the proposed 2008 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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Winnipeg

Water and Waste Department • Service des Eaux et des Déchets

January 23, 2008

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 2007. Included in this report are:

(a) details of the 2007 biosolids distribution and monitoring programs
(b) details of the proposed 2008 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

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Winnipeg

Water and Waste Department • Service des Eaux et des Déchets

January 23, 2008

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 2007. Included in this report are:

(a) details of the 2007 biosolids distribution and monitoring programs
(b) details of the proposed 2008 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, P.Eng.
Manager of Environmental Standards

RG:pr
Enclosure

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

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Mailing Address/Adresse Postale: 2230 Main Street • 2230 Rue, Main • Winnipeg • Manitoba R2V 4T8
tel/tél. (204) 986-4684 • fax/télec. (204) 339-2147 • www.winnipeg.ca

ENVIRONMENT ACT LICENCE #1089E RR

CITY OF WINNIPEG

ANNUAL COMPLIANCE REPORT:

FOR

BIOSOLIDS DEWATERING, TEMPORARY BIOSOLIDS STORAGE

AND

APPLICATION TO AGRICULTURAL LAND

2007

Submitted by: City of Winnipeg
Water & Waste Department

January, 2008

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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 2007 Biosolids Application Program (WINGRO) and also outlines the proposed program for the 2008 calendar year.

In 2007, the City produced 12,545 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 26.5%. The WINGRO program applied 73.0% of the annual biosolids production to farmland and deposited 27.0% at the Brady Road Landfill. The interim storage pad temporarily held 2.4% of the total annual biosolids produced in 2007.

The WINGRO biosolids application rate for the three fields completed in 2007 was 53.9 dry-tonnes per hectare on the 134.8 hectares to which biosolids were applied. For the 2008 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 2007 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 2007 Biosolids Land Application Program. The report also provides information on its proposed Biosolids Program for the twelve months starting January 1, 2008.

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

2007 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, 2007 to December 31, 2007 the City produced 12,545 dry-tonnes of mechanically-dewatered biosolids at its NEWPCC facility. Appendix I contains the

mechanical dewatering operating records for 2007. 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 26.5 ± 3.4% (*n* = 255).

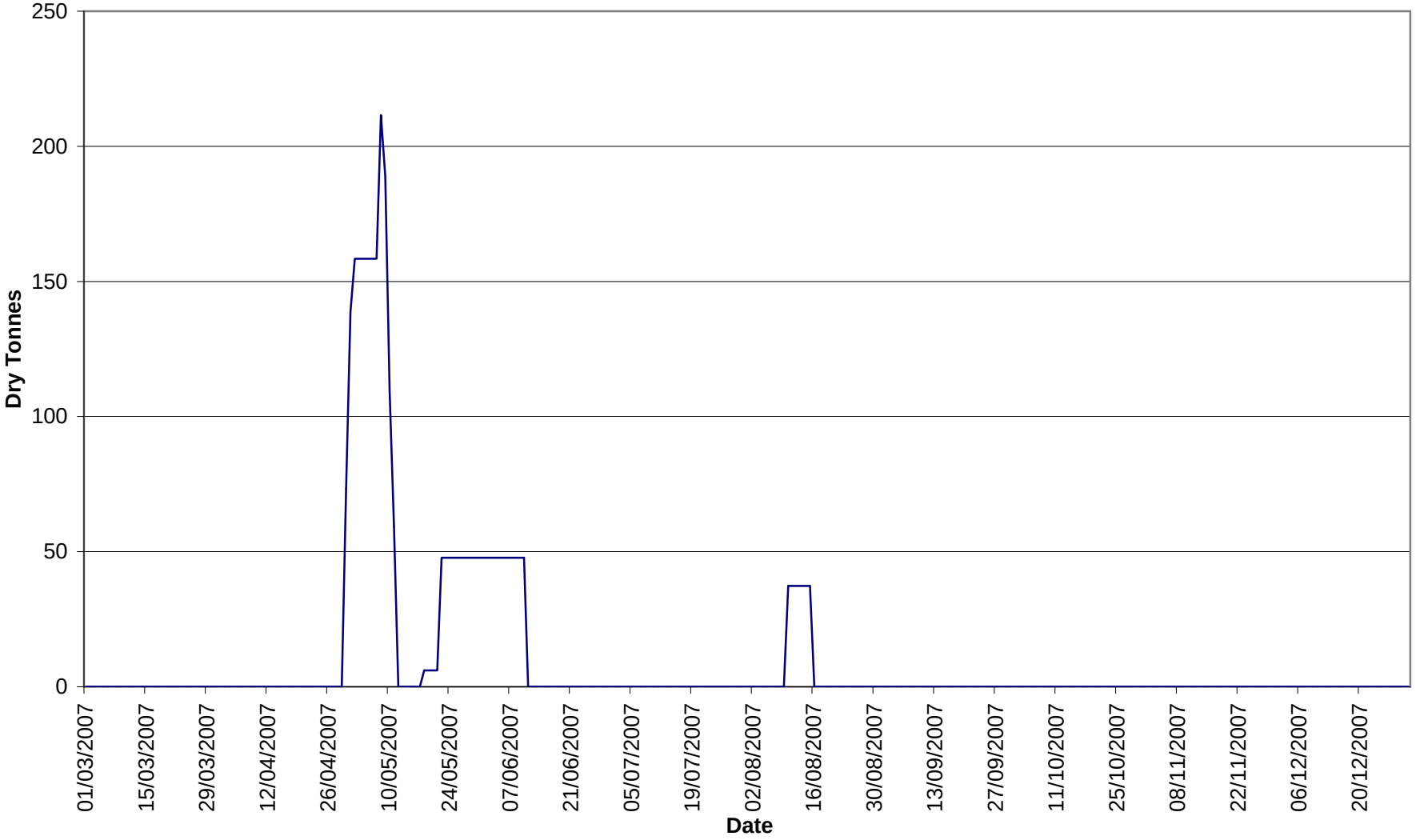
(b) Storage

"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 2007, the storage pad provided interim storage for 302.92 dry-tonnes of mechanically-dewatered biosolids. The tonnage processed through the interim holding pad represented 2.4% of the total mechanically-dewatered biosolids produced at the NEWPCC in 2007.

The interim holding pad was used for a total of 42 days in 2007 – 1 day in April, 25 days in May, 10 days in June, and 6 days in August. Figure 1 illustrates the amount of biosolids stored and the days the storage pad was used in 2007.

Figure 1: 2007
PAD INTERIM STORAGE of BIOSOLIDS



(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 (2007) — Appendix I
- Biosolids Quality, Ditchwater — Appendix II
- Background Solids for Applied Fields (2007) — Appendix III

No formal odour complaints associated with the WINGRO Program were received in 2007.

(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))

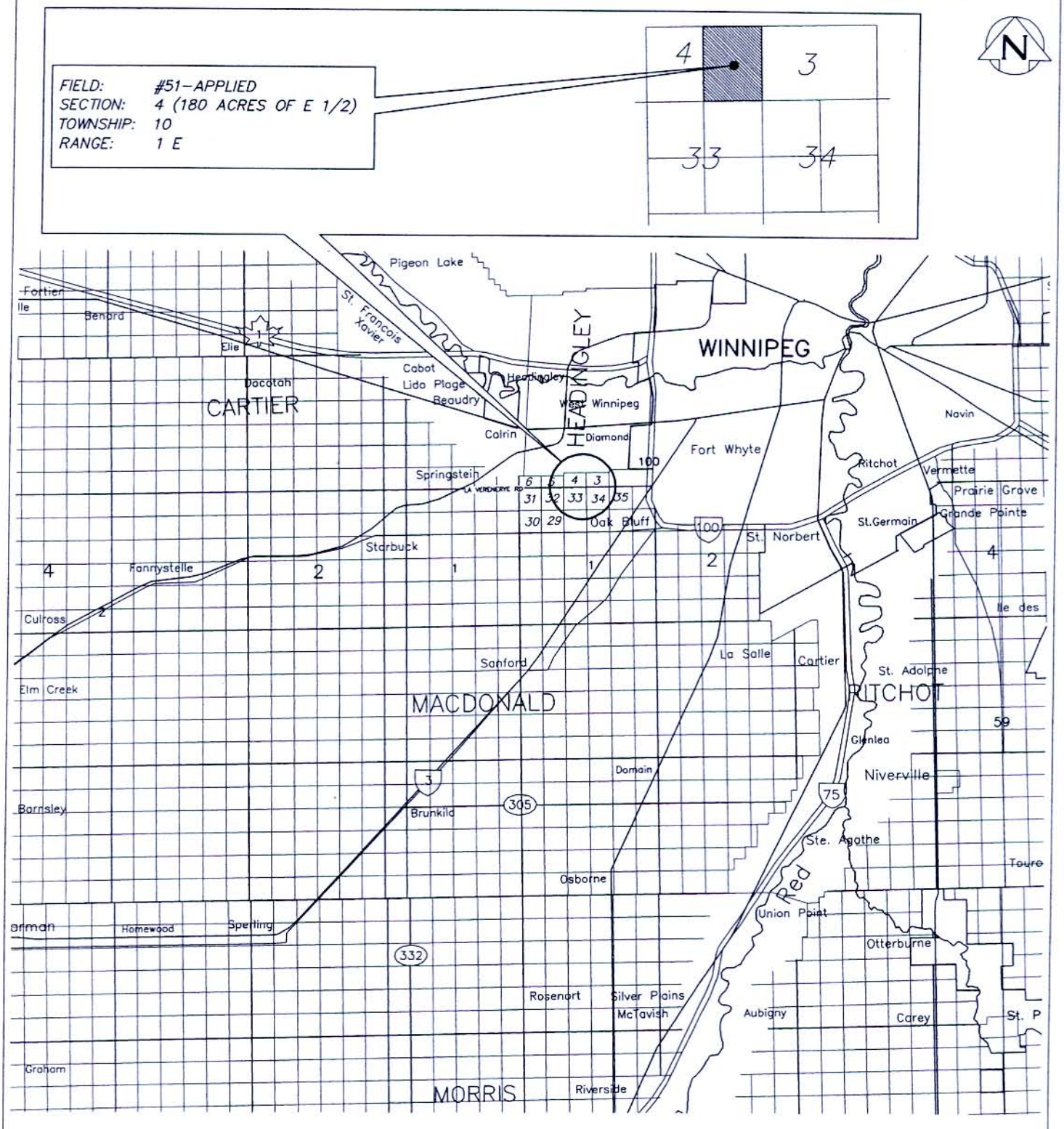
Of the 12,545 dry-tonnes of mechanically-dewatered biosolids produced at the NEWPCC from January 1, 2007 to December 31, 2007, 73.0% were re-cycled onto farmland through the WINGRO program, while 27.0% were disposed at the Brady Road Landfill. The City of Winnipeg's 2007 Biosolids Land Application Program (WINGRO) spread and incorporated digested, dewatered biosolids onto 5 parcels of land. A total of 7,359 dry-tonnes of dewatered biosolids were distributed on the four fields completed in 2007 at an average application rate of 53.9 dry-tonnes per hectare on the 134.8 hectares of land utilized. Biosolids application to one parcel was incomplete at December 31, 2007 and will be reported in the year that the application is completed. Table 1 provides a detailed summary of results, and Figures 2,3 and 4 show the locations where biosolids were applied to fields in 2007.

TABLE 1
2007 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)
51	Macdonald	4-10-1E East	2006/07	73.2	4,031	55.1
52	Rosser	27-12-2W North West	2007	17.8	915	51.4
53	Rosser	28-12-2W North East	2007	43.8	2,413	55.1
54*	Rosser	34-12-2W South East	(2007)	(45.7)	(2,481)	(54.3)
55*	Macdonald	33 -9-1E North East	(2007)	(18.1)	(1,042)	(55.1)
Totals For Completed Fields				134.8	7,359	
Weighted Average For Completed Fields						53.9

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

( ) Not Included in Totals



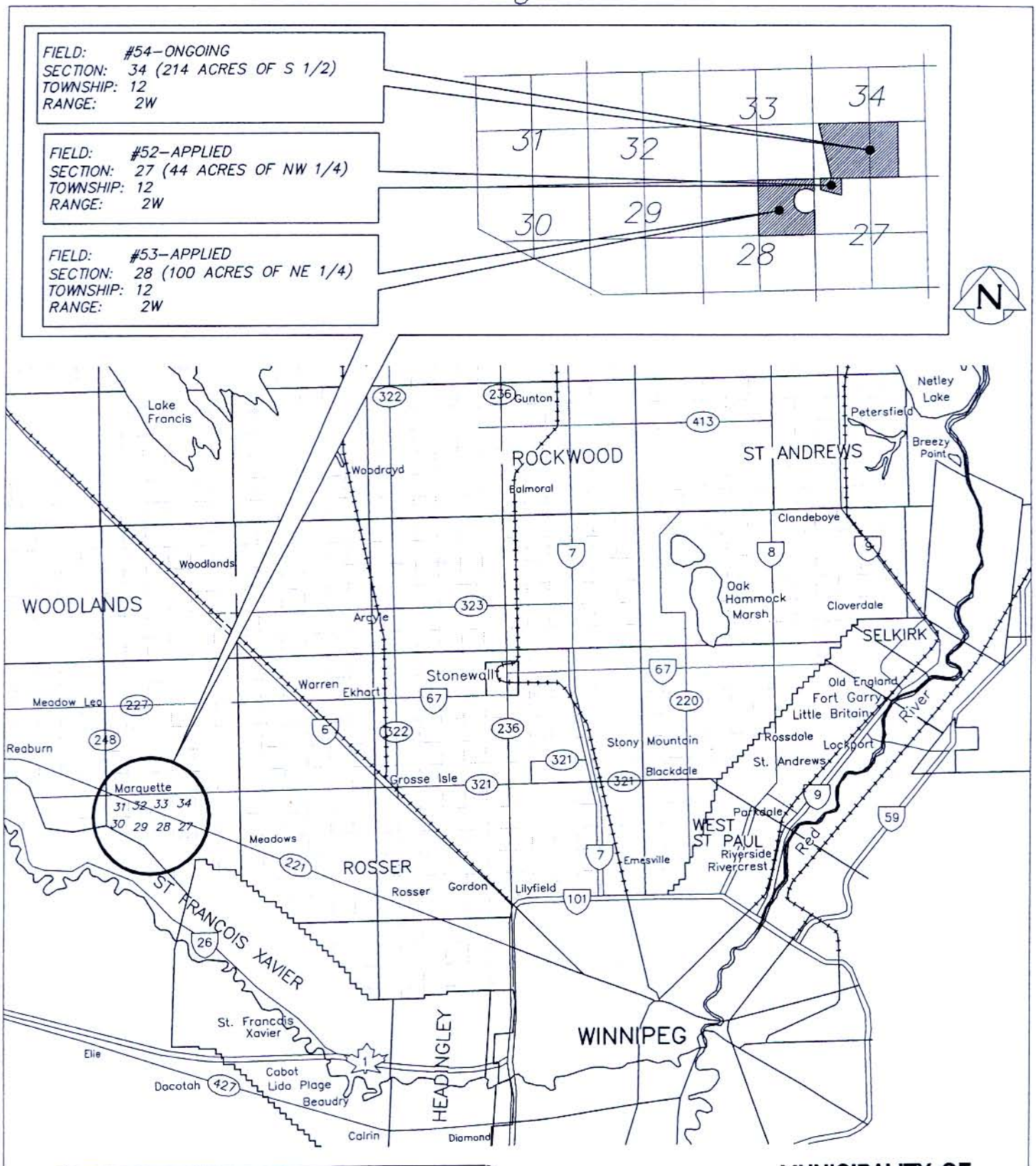
MUNICIPALITY OF MACDONALD

APPLIED FIELD

CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

Figure 2.

R:\DRAWINGS\SEWER\MISC\BIOSOLIDS_APPLICATION_FIGURES\WINGRO_for2007_REPORT\FIELD51_APPLIED_MACD.DWG PLOTTED: 2008 01 16



Winnipeg

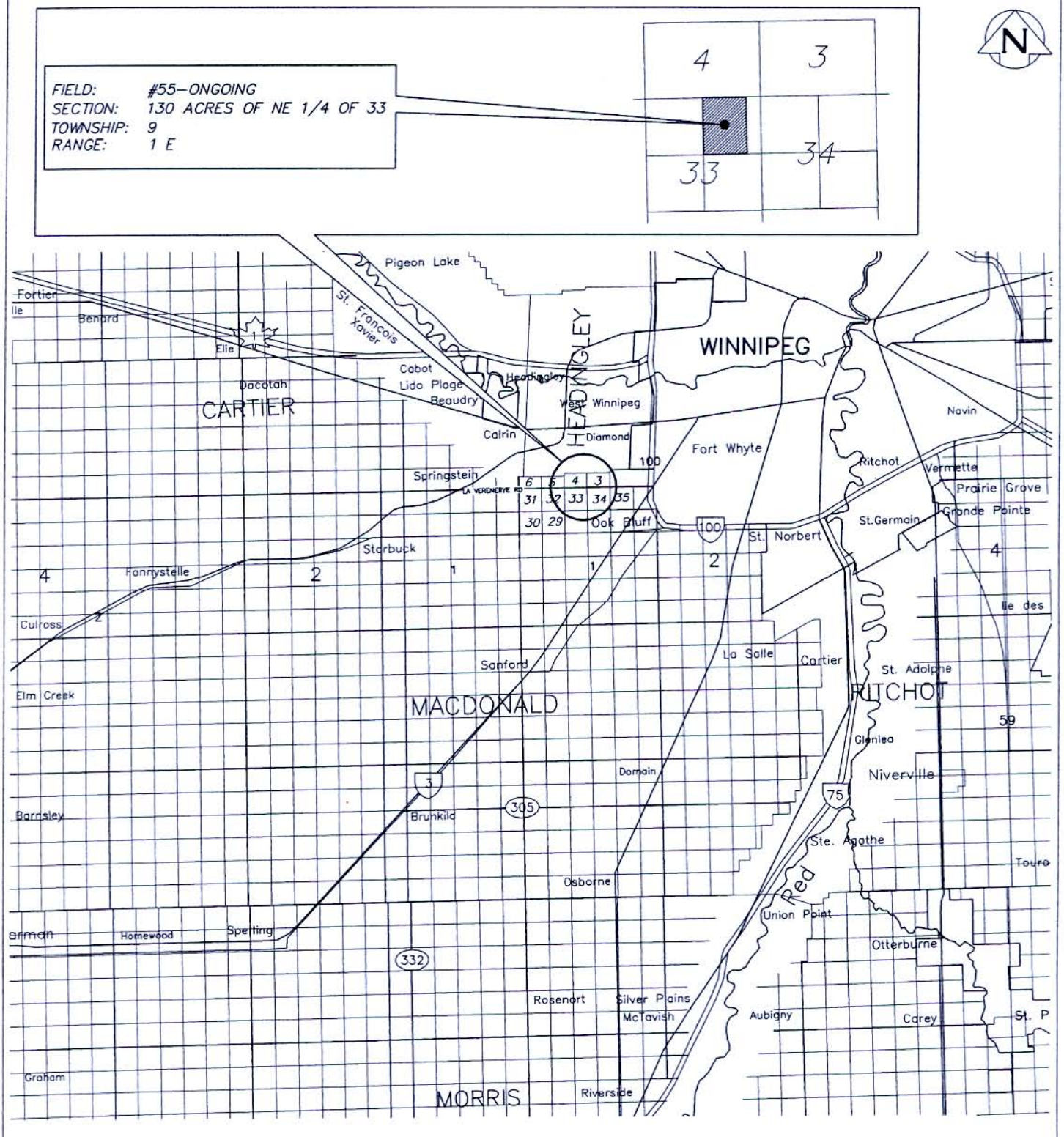
CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

MUNICIPALITY OF ROSSER

APPLIED FIELDS

Figure 3.

R:\DRAWINGS\SEWER\MISC\BIOSOLIDS_APPLICATION_FIGURES\WINGRO_for2007_REPORT\FIELD49_51_APPLIED_ROSSER.dwg PLOTTED: 2008 01 16



MUNICIPALITY OF MACDONALD

ONGOING FIELD

Winnipeg **CITY OF WINNIPEG**
WATER AND WASTE DEPARTMENT

Figure 4.

2008 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))

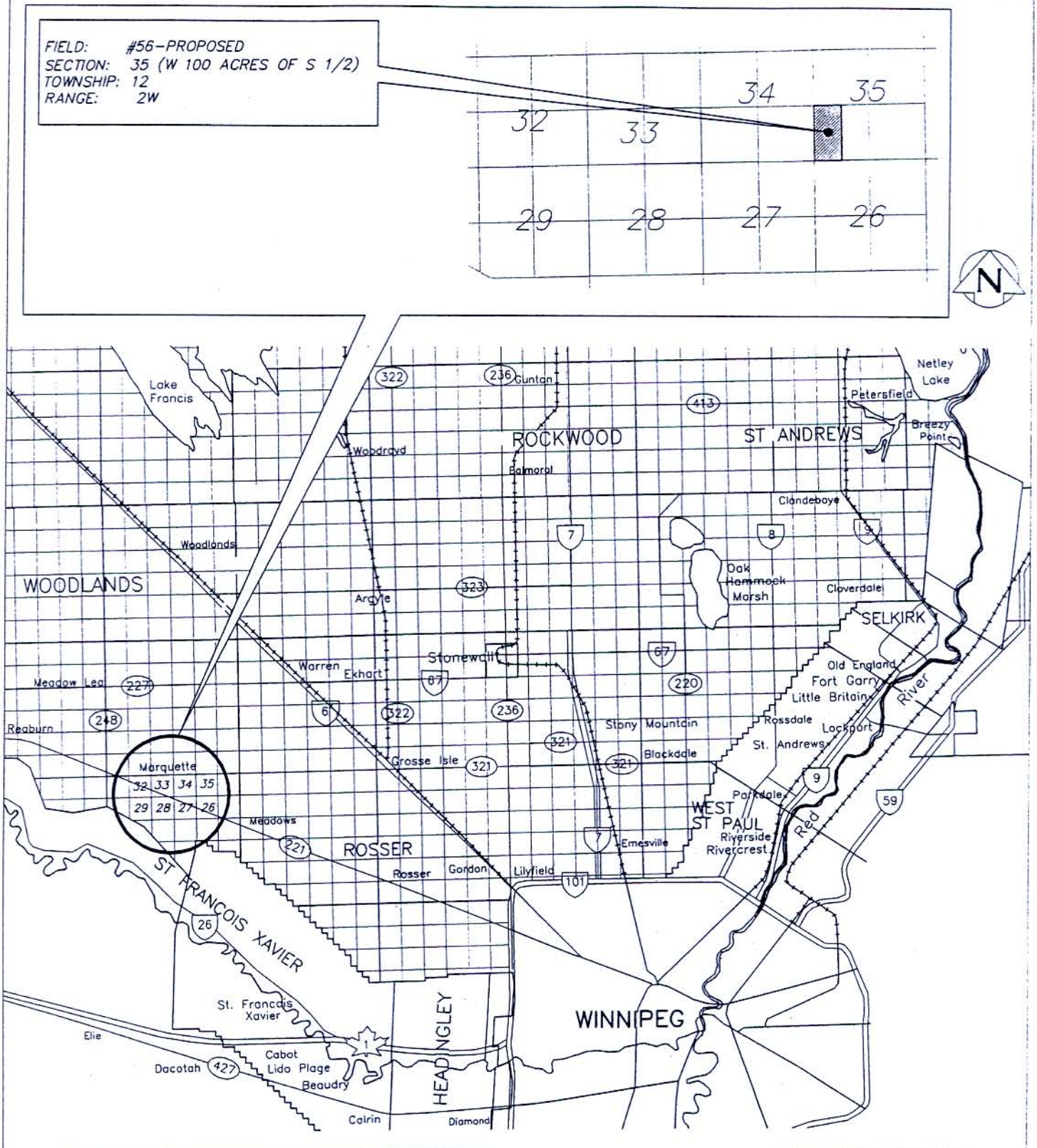
In the 2007 WINGRO application year, two new parcels of land were added to the program and are on-going in 2008. Table 2 provides a description of these on-going parcels of land and Figures 3 and 4 provides their locations.

In the 2008 WINGRO application year, which runs from January 1, 2008 to December 31, 2008, the City proposes to apply biosolids to a new parcel of land located in the R.M. of Rosser. Table 2 provides a description of this land parcel, and Figure 5 shows its location. The new field will be sampled in 2008 to ensure background soils meet licence criteria. Biosolids from the mechanical dewatering facility will be applied and incorporated into the proposed and on-going 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 2008

Land Parcel Identification Number	Rural Municipalities	Description (Section-Township-Range)	Approximate Area (hectares)
54 P*	Rosser	34-12-2W SE 1/4	160
55 P*	MacDonald	NE 33-9-1E NE 1/4	130
56 P	Rosser	35-12-2W West 100 Acres of S 1/2	100

*New parcel in 2007, on-going in 2008.



CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

MUNICIPALITY OF ROSSER

PROPOSED FIELDS

Figure 5.

R:\DRAWINGS\SEWER\MISC\BIOSOLIDS_APPLICATION_FIGURES\WINGRO_for2007_REPORT\FIELD55_PROPOSED_ROSSER.dwg PLOTTED: 2008 01 16

APPENDIX I

OPERATING RECORDS

for

MECHANICAL DEWATERING OF BIOSOLIDS

Monthly Hauling Report
For the Month 01/2007

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
02	NEWPCC	#51 4-10-1E E	238.09	21.9	52.14
03	NEWPCC	#51 4-10-1E E	311.94	24.0	74.87
04	NEWPCC	#51 4-10-1E E	209.16	23.4	48.94
05	NEWPCC	#51 4-10-1E E	208.56	22.8	47.55
08	NEWPCC	#51 4-10-1E E	209.99	22.1	46.41
09	NEWPCC	#51 4-10-1E E	203.60	24.4	49.68
10	NEWPCC	#51 4-10-1E E	200.58	22.9	45.93
11	NEWPCC	#51 4-10-1E E	101.92	23.2	23.65
12	NEWPCC	#51 4-10-1E E	102.60	24.0	24.63
15	NEWPCC	#51 4-10-1E E	201.60	23.3	46.97
16	NEWPCC	#51 4-10-1E E	229.46	21.7	49.79
17	NEWPCC	#51 4-10-1E E	153.46	21.0	32.23
18	NEWPCC	#51 4-10-1E E	200.88	21.9	43.99
19	NEWPCC	#51 4-10-1E E	103.98	23.2	24.12
22	NEWPCC	#51 4-10-1E E	229.46	22.8	52.32
23	NEWPCC	#51 4-10-1E E	154.02	21.8	33.58
24	NEWPCC	#51 4-10-1E E	152.68	20.5	31.30
25	NEWPCC	#51 4-10-1E E	103.37	22.0	22.74
26	NEWPCC	#51 4-10-1E E	152.26	21.9	33.35
29	NEWPCC	#51 4-10-1E E	229.12	22.5	51.56
30	NEWPCC	#51 4-10-1E E	152.30	22.4	34.12
31	NEWPCC	#51 4-10-1E E	152.22	22.9	34.86

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	4001.25	904.70	48.5	194060.625		904.70	
							904.70	

Monthly Hauling Report
For the Month 02/2007

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#51 4-10-1E E	77.68	22.8	17.71
02	NEWPCC	#51 4-10-1E E	100.82	22.8	22.99
05	NEWPCC	#51 4-10-1E E	203.10	22.7	46.10
06	NEWPCC	#51 4-10-1E E	154.08	22.6	34.82
07	NEWPCC	#51 4-10-1E E	127.37	22.7	28.91
08	NEWPCC	#51 4-10-1E E	151.28	22.8	34.49
09	NEWPCC	#51 4-10-1E E	67.22	23.7	15.93
12	NEWPCC	#51 4-10-1E E	55.68	20.0	11.14
13	NEWPCC	#51 4-10-1E E	50.63	21.8	11.04
14	NEWPCC	#51 4-10-1E E	151.66	21.6	32.76
15	NEWPCC	#51 4-10-1E E	141.04	21.3	30.04
16	NEWPCC	#51 4-10-1E E	152.30	20.7	31.53
19	NEWPCC	#51 4-10-1E E	306.40	22.1	67.71
20	NEWPCC	#51 4-10-1E E	226.46	23.5	53.22
21	NEWPCC	#51 4-10-1E E	58.02	22.5	13.06
22	NEWPCC	#51 4-10-1E E	106.42	22.5	23.95
23	NEWPCC	#51 4-10-1E E	72.78	23.7	17.25
26	NEWPCC	#51 4-10-1E E	204.52	22.8	46.63
27	NEWPCC	#51 4-10-1E E	155.64	23.5	36.58
28	NEWPCC	#51 4-10-1E E	152.94	25.0	38.24

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	2716.04	614.08	48.5	131727.940		614.08	
							614.08	

Monthly Hauling Report
For the Month 03/2007

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#51 4-10-1E E	99.26	24.6	24.42
02	NEWPCC	#51 4-10-1E E	153.74	24.5	37.67
05	NEWPCC	#51 4-10-1E E	225.90	24.2	54.67
06	NEWPCC	#51 4-10-1E E	154.42	25.2	38.92
07	NEWPCC	#51 4-10-1E E	100.30	26.3	26.38
08	NEWPCC	#51 4-10-1E E	78.20	27.1	21.19
09	NEWPCC	#51 4-10-1E E	153.92	26.2	40.33
12	NEWPCC	#51 4-10-1E E	279.08	25.3	70.61
13	NEWPCC	#51 4-10-1E E	179.90	25.3	45.51
14	NEWPCC	#51 4-10-1E E	175.02	24.8	43.41
15	NEWPCC	#51 4-10-1E E	153.52	27.2	41.76
16	NEWPCC	#51 4-10-1E E	226.30	28.3	64.04
19	NEWPCC	#51 4-10-1E E	279.08	27.7	77.31
20	NEWPCC	#51 4-10-1E E	203.34	27.7	56.32
21	NEWPCC	#51 4-10-1E E	101.58	27.0	27.43
22	NEWPCC	#51 4-10-1E E	201.40	27.8	55.99
23	NEWPCC	#51 4-10-1E E	202.72	28.0	56.76
26	NEWPCC	#2 0-0-	252.18	28.0	70.61
27	NEWPCC	#2 0-0-	250.82	28.9	72.49
28	NEWPCC	#2 0-0-	149.04	30.4	45.31
29	NEWPCC	#2 0-0-	148.10	30.4	45.02
30	NEWPCC	#2 0-0-	123.78	31.3	38.74

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-	923.92						
NEWPCC	#51 4-10-1E E	2967.68	782.70	48.5	143932.480		782.70	
							782.70	

Monthly Hauling Report
For the Month 04/2007

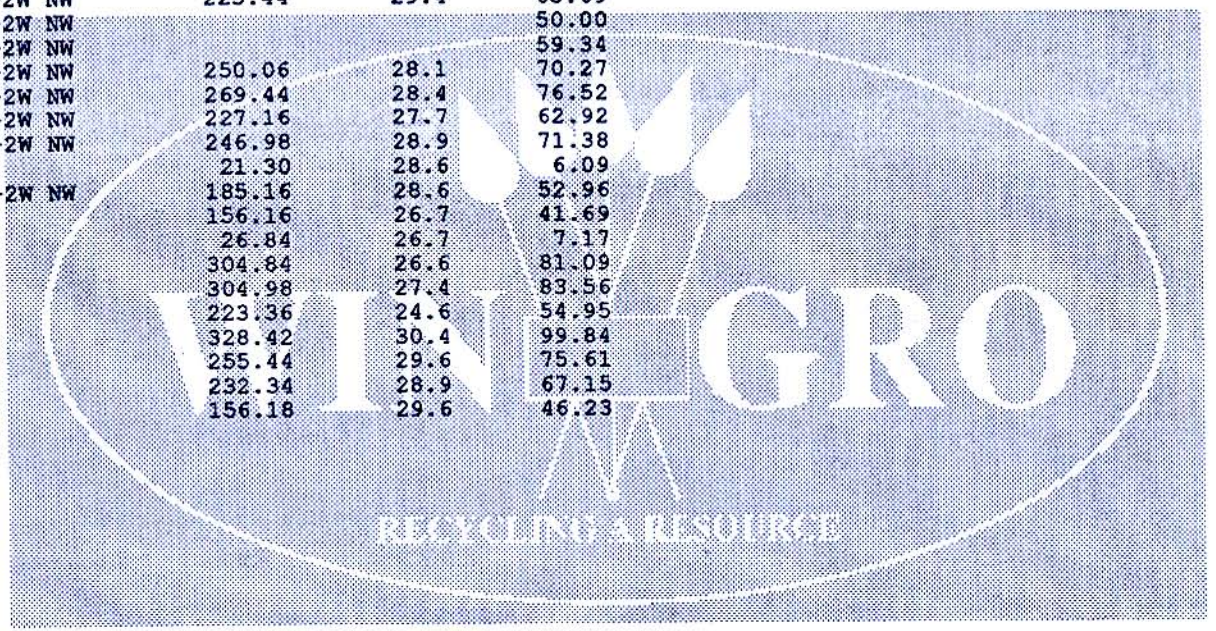
Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
02	NEWPCC	#2 0-0-	193.40	33.0	63.82
03	NEWPCC	#2 0-0-	244.83	33.7	82.51
04	NEWPCC	#2 0-0-	297.60	33.9	100.89
05	NEWPCC	#2 0-0-	175.92	33.9	59.64
09	NEWPCC	#2 0-0-	243.18	33.4	81.22
10	NEWPCC	#2 0-0-	151.32	32.8	49.63
11	NEWPCC	#2 0-0-	253.02	33.5	84.76
12	NEWPCC	#2 0-0-	256.44	33.3	85.40
13	NEWPCC	#2 0-0-	153.06	33.8	51.74
16	NEWPCC	#2 0-0-	377.90	32.8	123.95
17	NEWPCC	#2 0-0-	177.76	32.1	57.06
18	NEWPCC	#2 0-0-	178.66	33.0	58.96
19	NEWPCC	#2 0-0-	222.66	33.2	73.92
20	NEWPCC	#2 0-0-	177.20	32.4	57.41
23	NEWPCC	#2 0-0-	273.52	35.1	96.01
24	NEWPCC	#2 0-0-	176.44	31.3	55.23
25	NEWPCC	#2 0-0-	74.72	32.5	24.28
26	NEWPCC	#2 0-0-	77.32	30.4	23.51
27	NEWPCC	#2 0-0-	204.82	28.3	57.97
30	NEWPCC	#1 0-0-	255.58	28.7	73.35

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-		73.35					
NEWPCC	#2 0-0-	3909.77						
							---------	---------

Monthly Hauling Report
For the Month 05/2007

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#1 0-0-	225.22	29.0	65.31
02	NEWPCC	#1 0-0-	67.96	29.0	19.71
08	NEWPCC	#1 0-0-	180.22	29.5	53.17
09	NEWPCC	#1 0-0-	20.90	29.9	6.25
09	NEWPCC	#52 27-12-2W NW	145.80	29.9	43.59
09	Beds	#52 27-12-2W NW			28.92
10	NEWPCC	#52 27-12-2W NW	244.10	29.6	72.25
10	Beds	#52 27-12-2W NW			79.53
11	NEWPCC	#52 27-12-2W NW	223.44	29.4	65.69
11	Beds	#52 27-12-2W NW			50.00
12	Beds	#52 27-12-2W NW			59.34
14	NEWPCC	#52 27-12-2W NW	250.06	28.1	70.27
15	NEWPCC	#52 27-12-2W NW	269.44	28.4	76.52
16	NEWPCC	#52 27-12-2W NW	227.16	27.7	62.92
17	NEWPCC	#52 27-12-2W NW	246.98	28.9	71.38
18	NEWPCC	#1 0-0-	21.30	28.6	6.09
18	NEWPCC	#52 27-12-2W NW	185.16	28.6	52.96
22	NEWPCC	#1 0-0-	156.16	26.7	41.69
22	NEWPCC	#2 0-0-	26.84	26.7	7.17
23	NEWPCC	#2 0-0-	304.84	26.6	81.09
24	NEWPCC	#2 0-0-	304.98	27.4	83.56
25	NEWPCC	#2 0-0-	223.36	24.6	54.95
28	NEWPCC	#2 0-0-	328.42	30.4	99.84
29	NEWPCC	#2 0-0-	255.44	29.6	75.61
30	NEWPCC	#2 0-0-	232.34	28.9	67.15
31	NEWPCC	#2 0-0-	156.18	29.6	46.23



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-		192.22					
NEWPCC	#2 0-0-	1832.40						
NEWPCC	#52 27-12-2W NW	1792.14	515.58	52.5	94087.350		515.58	
Beds	#52 27-12-2W NW		217.79	44.5		9691.655	217.79	
							733.37	

Monthly Hauling Report
For the Month 06/2007

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#2 0-0-	129.80	28.8	37.38
04	NEWPCC	#2 0-0-	12.01	30.2	3.63
04	NEWPCC	#52 27-12-2W NW	206.31	30.2	62.31
05	NEWPCC	#52 27-12-2W NW	270.76	29.0	78.52
06	NEWPCC	#52 27-12-2W NW	145.48	28.1	40.88
11	NEWPCC	#53 28-12-2E NE	163.68	27.6	45.18
11	Beds	#53 28-12-2E NE			47.79
12	NEWPCC	#53 28-12-2E NE	40.98	27.6	11.31
14	NEWPCC	#2 0-0-	254.46	27.1	68.96
15	NEWPCC	#2 0-0-	356.83	29.2	104.20
15	NEWPCC	#53 28-12-2E NE	40.34	29.2	11.78
18	NEWPCC	#53 28-12-2E NE	310.00	27.3	84.63
19	NEWPCC	#53 28-12-2E NE	61.20	27.4	16.77
20	NEWPCC	#53 28-12-2E NE	230.60	28.5	65.72
21	NEWPCC	#53 28-12-2E NE	371.92	29.6	110.09
22	NEWPCC	#53 28-12-2E NE	206.68	29.5	60.97
26	NEWPCC	#2 0-0-	412.52	25.3	104.37
27	NEWPCC	#2 0-0-	254.94	31.0	79.03
28	NEWPCC	#2 0-0-	253.86	33.6	85.30
29	NEWPCC	#2 0-0-	303.46	32.2	97.71

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-	1977.88						
NEWPCC	#52 27-12-2W NW	622.55	181.71	52.5	32683.875		181.71	
NEWPCC	#53 28-12-2E NE	1425.40	406.45	53.5	76258.900		406.45	
Beds	#53 28-12-2E NE		47.79	45.5		2174.445	47.79	
							635.94	

Monthly Hauling Report
For the Month 07/2007

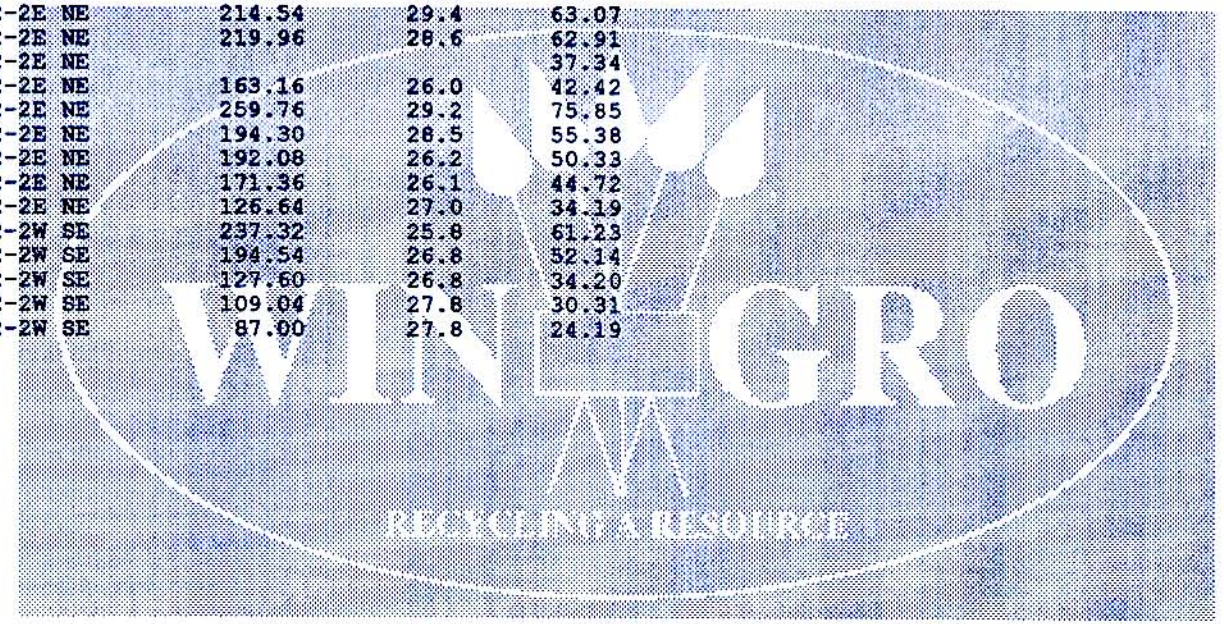
Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
03	NEWPCC	#2 0-0-	406.14	33.4	135.65
04	NEWPCC	#2 0-0-	228.98	32.7	74.88
05	NEWPCC	#2 0-0-	180.22	31.6	56.95
06	NEWPCC	#2 0-0-	100.46	31.3	31.44
06	NEWPCC	#53 28-12-2E NE	21.80	31.3	6.82
09	NEWPCC	#53 28-12-2E NE	398.52	33.6	133.90
10	NEWPCC	#53 28-12-2E NE	68.24	31.4	21.43
11	NEWPCC	#53 28-12-2E NE	310.58	36.0	111.81
12	NEWPCC	#53 28-12-2E NE	204.62	27.9	57.09
13	NEWPCC	#53 28-12-2E NE	204.24	28.4	58.01
16	NEWPCC	#53 28-12-2E NE	333.26	28.1	93.65
17	NEWPCC	#53 28-12-2E NE	247.94	28.9	71.65
18	NEWPCC	#53 28-12-2E NE	188.24	28.8	54.21
19	NEWPCC	#53 28-12-2E NE	122.54	30.0	36.76
20	NEWPCC	#53 28-12-2E NE	166.72	29.6	49.35
23	NEWPCC	#53 28-12-2E NE	249.02	30.0	74.71
24	NEWPCC	#53 28-12-2E NE	248.28	30.3	75.23
25	NEWPCC	#53 28-12-2E NE	148.88	30.2	44.96
26	NEWPCC	#53 28-12-2E NE	125.92	29.4	37.02
27	NEWPCC	#53 28-12-2E NE	207.26	28.3	58.65
30	NEWPCC	#53 28-12-2E NE	248.22	28.3	70.25
31	NEWPCC	#53 28-12-2E NE	145.26	29.5	42.85

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-	915.80						
NEWPCC	#53 28-12-2E NE	3639.54	1098.35	53.5	194715.390		1098.35	
							1098.35	

Monthly Hauling Report
For the Month 08/2007

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#53 28-12-2E NE	126.38	29.4	37.16
02	NEWPCC	#53 28-12-2E NE	150.82	29.2	44.04
03	NEWPCC	#53 28-12-2E NE	187.48	29.4	55.12
07	NEWPCC	#53 28-12-2E NE	274.10	29.3	80.31
08	NEWPCC	#53 28-12-2E NE	167.64	27.9	46.77
09	NEWPCC	#53 28-12-2E NE	190.40	29.4	55.98
10	NEWPCC	#1 0-0-	130.12	28.7	37.35
10	NEWPCC	#53 28-12-2E NE	22.14	28.7	6.35
13	NEWPCC	#53 28-12-2E NE	232.16	29.4	68.26
14	NEWPCC	#53 28-12-2E NE	214.54	29.4	63.07
16	NEWPCC	#53 28-12-2E NE	219.96	28.6	62.91
16	Beds	#53 28-12-2E NE			37.34
17	NEWPCC	#53 28-12-2E NE	163.16	26.0	42.42
20	NEWPCC	#53 28-12-2E NE	259.76	29.2	75.85
21	NEWPCC	#53 28-12-2E NE	194.30	28.5	55.38
22	NEWPCC	#53 28-12-2E NE	192.08	26.2	50.33
23	NEWPCC	#53 28-12-2E NE	171.36	26.1	44.72
24	NEWPCC	#53 28-12-2E NE	126.64	27.0	34.19
27	NEWPCC	#54 34-12-2W SE	237.32	25.8	61.23
28	NEWPCC	#54 34-12-2W SE	194.54	26.8	52.14
29	NEWPCC	#54 34-12-2W SE	127.60	26.8	34.20
30	NEWPCC	#54 34-12-2W SE	109.04	27.8	30.31
31	NEWPCC	#54 34-12-2W SE	87.00	27.8	24.19



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-		37.35					
NEWPCC	#53 28-12-2E NE	2892.92	822.86	53.5	154771.220		822.86	
Beds	#53 28-12-2E NE		37.34	45.5		1698.970	37.34	
NEWPCC	#54 34-12-2W SE	755.50	202.06	52.5	39663.750		202.06	
							---	---
							1062.26	

Monthly Hauling Report
For the Month 09/2007

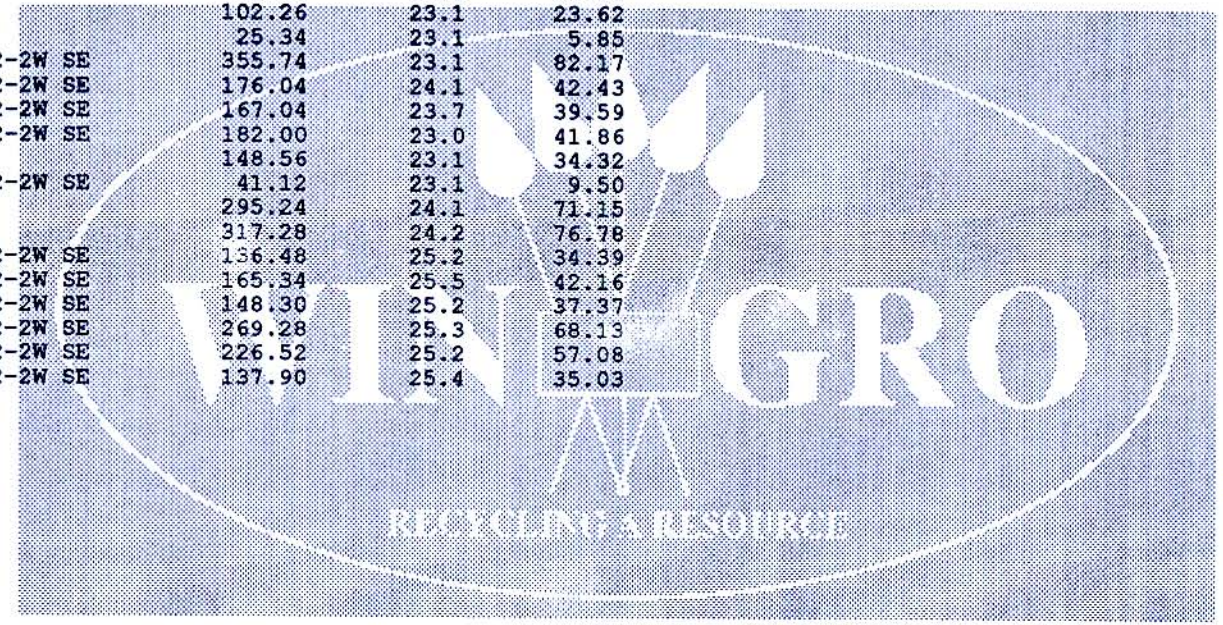
Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
04	NEWPCC	#54 34-12-2W SE	148.54	27.7	41.14
05	NEWPCC	#54 34-12-2W SE	62.64	26.0	16.29
06	NEWPCC	#54 34-12-2W SE	62.96	26.0	16.37
07	NEWPCC	#54 34-12-2W SE	125.90	24.9	31.35
10	NEWPCC	#54 34-12-2W SE	258.70	24.8	64.16
11	NEWPCC	#54 34-12-2W SE	171.78	22.6	38.82
12	NEWPCC	#54 34-12-2W SE	107.12	25.8	27.64
13	NEWPCC	#54 34-12-2W SE	213.40	25.1	53.56
14	NEWPCC	#54 34-12-2W SE	106.50	24.4	25.99
17	NEWPCC	#54 34-12-2W SE	258.40	24.9	64.34
18	NEWPCC	#54 34-12-2W SE	239.02	24.5	58.56
19	NEWPCC	#54 34-12-2W SE	216.58	24.4	52.84
20	NEWPCC	#54 34-12-2W SE	192.70	24.2	46.63
21	NEWPCC	#54 34-12-2W SE	154.42	24.4	37.68
24	NEWPCC	#54 34-12-2W SE	280.98	23.9	67.15
25	NEWPCC	#54 34-12-2W SE	258.86	25.0	64.72
26	NEWPCC	#54 34-12-2W SE	172.44	25.4	43.80
27	NEWPCC	#54 34-12-2W SE	85.86	25.4	21.81
28	NEWPCC	#54 34-12-2W SE	216.20	25.1	54.27

Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#54 34-12-2W SE	3333.00	827.12	52.5	174982.500		827.12	
							827.12	

Monthly Hauling Report
For the Month 10/2007

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#54 34-12-2W SE	299.22	25.2	75.40
02	NEWPCC	#54 34-12-2W SE	276.86	25.2	69.77
03	NEWPCC	#54 34-12-2W SE	131.82	25.5	33.61
04	NEWPCC	#54 34-12-2W SE	152.28	24.6	37.46
05	NEWPCC	#54 34-12-2W SE	149.86	24.6	36.87
09	NEWPCC	#2 0-0-	151.16	23.4	35.37
10	NEWPCC	#2 0-0-	216.64	23.4	50.69
11	NEWPCC	#2 0-0-	341.26	23.9	81.56
12	NEWPCC	#2 0-0-	249.40	23.2	57.86
14	NEWPCC	#2 0-0-	102.26	23.1	23.62
15	NEWPCC	#2 0-0-	25.34	23.1	5.85
15	NEWPCC	#54 34-12-2W SE	355.74	23.1	82.17
16	NEWPCC	#54 34-12-2W SE	176.04	24.1	42.43
17	NEWPCC	#54 34-12-2W SE	167.04	23.7	39.59
18	NEWPCC	#54 34-12-2W SE	182.00	23.0	41.86
19	NEWPCC	#2 0-0-	148.56	23.1	34.32
19	NEWPCC	#54 34-12-2W SE	41.12	23.1	9.50
22	NEWPCC	#2 0-0-	295.24	24.1	71.15
23	NEWPCC	#2 0-0-	317.28	24.2	76.78
24	NEWPCC	#54 34-12-2W SE	136.48	25.2	34.39
25	NEWPCC	#54 34-12-2W SE	165.34	25.5	42.16
26	NEWPCC	#54 34-12-2W SE	148.30	25.2	37.37
29	NEWPCC	#54 34-12-2W SE	269.28	25.3	68.13
30	NEWPCC	#54 34-12-2W SE	226.52	25.2	57.08
31	NEWPCC	#54 34-12-2W SE	137.90	25.4	35.03

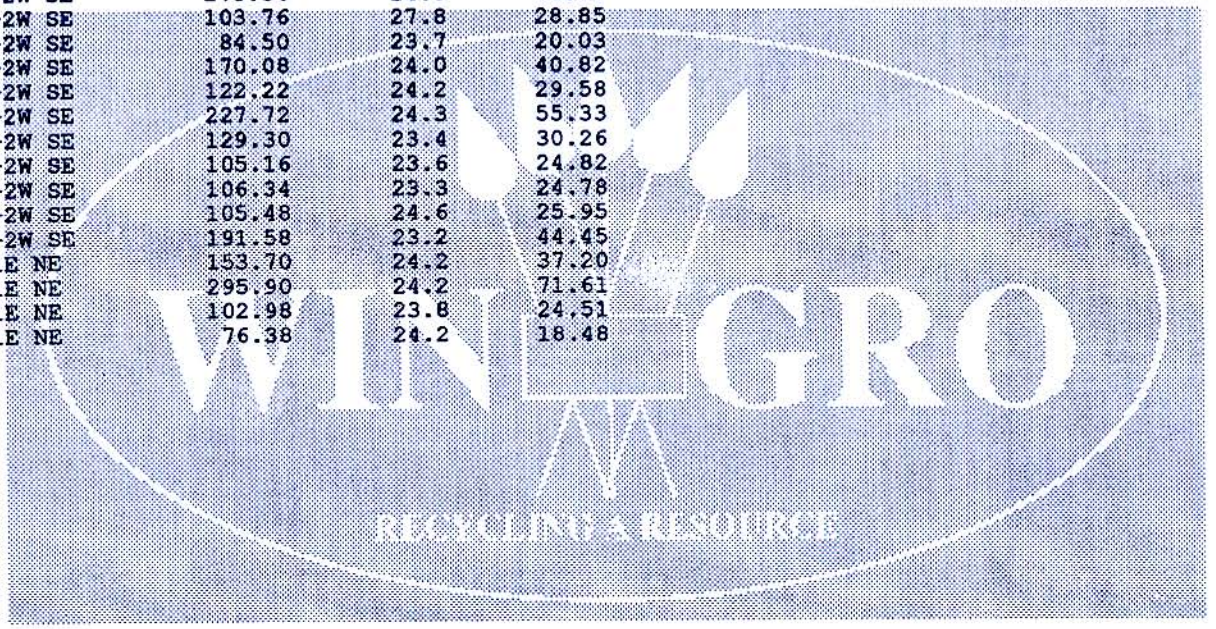


Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#2 0-0-	1847.14						
NEWPCC	#54 34-12-2W SE	3015.80	742.82	52.5	158329.500		742.82	
							742.82	

Monthly Hauling Report
For the Month 11/2007

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
01	NEWPCC	#54 34-12-2W SE	104.20	25.3	26.36
02	NEWPCC	#54 34-12-2W SE	167.74	25.1	42.10
05	NEWPCC	#54 34-12-2W SE	255.18	24.6	62.78
06	NEWPCC	#54 34-12-2W SE	248.90	23.6	58.74
07	NEWPCC	#54 34-12-2W SE	87.02	24.9	21.67
08	NEWPCC	#54 34-12-2W SE	82.60	24.7	20.40
09	NEWPCC	#54 34-12-2W SE	89.54	24.6	22.03
12	NEWPCC	#54 34-12-2W SE	251.60	24.7	62.14
13	NEWPCC	#54 34-12-2W SE	275.56	24.8	68.34
14	NEWPCC	#54 34-12-2W SE	103.76	27.8	28.85
15	NEWPCC	#54 34-12-2W SE	84.50	23.7	20.03
16	NEWPCC	#54 34-12-2W SE	170.08	24.0	40.82
17	NEWPCC	#54 34-12-2W SE	122.22	24.2	29.58
19	NEWPCC	#54 34-12-2W SE	227.72	24.3	55.33
20	NEWPCC	#54 34-12-2W SE	129.30	23.4	30.26
21	NEWPCC	#54 34-12-2W SE	105.16	23.6	24.82
22	NEWPCC	#54 34-12-2W SE	106.34	23.3	24.78
23	NEWPCC	#54 34-12-2W SE	105.48	24.6	25.95
26	NEWPCC	#54 34-12-2W SE	191.58	23.2	44.45
27	NEWPCC	#55 33-9-1E NE	153.70	24.2	37.20
28	NEWPCC	#55 33-9-1E NE	295.90	24.2	71.61
29	NEWPCC	#55 33-9-1E NE	102.98	23.8	24.51
30	NEWPCC	#55 33-9-1E NE	76.38	24.2	18.48



Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#54 34-12-2W SE	2908.48	709.41	52.5	152695.200		709.41	
NEWPCC	#55 33-9-1E NE	628.96	151.80	48.5	30504.560		151.80	
							861.21	

Monthly Hauling Report
For the Month 12/2007

Day	Source	Destination	Wet Weight (T)	Solids (%)	Dry Weight (T)
03	NEWPCC	#55 33-9-1E NE	253.02	23.8	60.22
04	NEWPCC	#55 33-9-1E NE	151.64	24.0	36.39
05	NEWPCC	#55 33-9-1E NE	189.60	24.2	45.88
06	NEWPCC	#55 33-9-1E NE	172.36	24.5	42.23
07	NEWPCC	#55 33-9-1E NE	101.00	24.4	24.65
10	NEWPCC	#55 33-9-1E NE	353.22	23.4	82.65
11	NEWPCC	#55 33-9-1E NE	149.74	24.1	36.09
12	NEWPCC	#55 33-9-1E NE	128.80	23.8	30.66
13	NEWPCC	#55 33-9-1E NE	50.74	23.9	12.13
14	NEWPCC	#55 33-9-1E NE	205.74	24.0	49.38
17	NEWPCC	#55 33-9-1E NE	256.84	24.3	62.41
18	NEWPCC	#55 33-9-1E NE	203.16	24.4	49.57
19	NEWPCC	#55 33-9-1E NE	103.10	24.4	25.16
20	NEWPCC	#55 33-9-1E NE	129.48	24.5	31.72
21	NEWPCC	#55 33-9-1E NE	153.40	24.0	36.82
24	NEWPCC	#55 33-9-1E NE	366.20	23.4	85.69
27	NEWPCC	#55 33-9-1E NE	328.08	22.8	74.80
28	NEWPCC	#55 33-9-1E NE	101.98	23.8	24.27
31	NEWPCC	#55 33-9-1E NE	346.64	22.8	79.03

Summary

Source	Destination	Wet Weight (T)	Dry Weight (T)	Distance (km)	Wet Rate (Tkm)	Dry Rate (Tkm)	Spread (T)	Incorporated (T)
NEWPCC	#55 33-9-1E NE	3744.74	889.75	48.5	181619.890		889.75	
							889.75	

APPENDIX II

BIOSOLIDS & DITCHWATER

MONITORING RESULTS

FOR 2007

TABLE 3

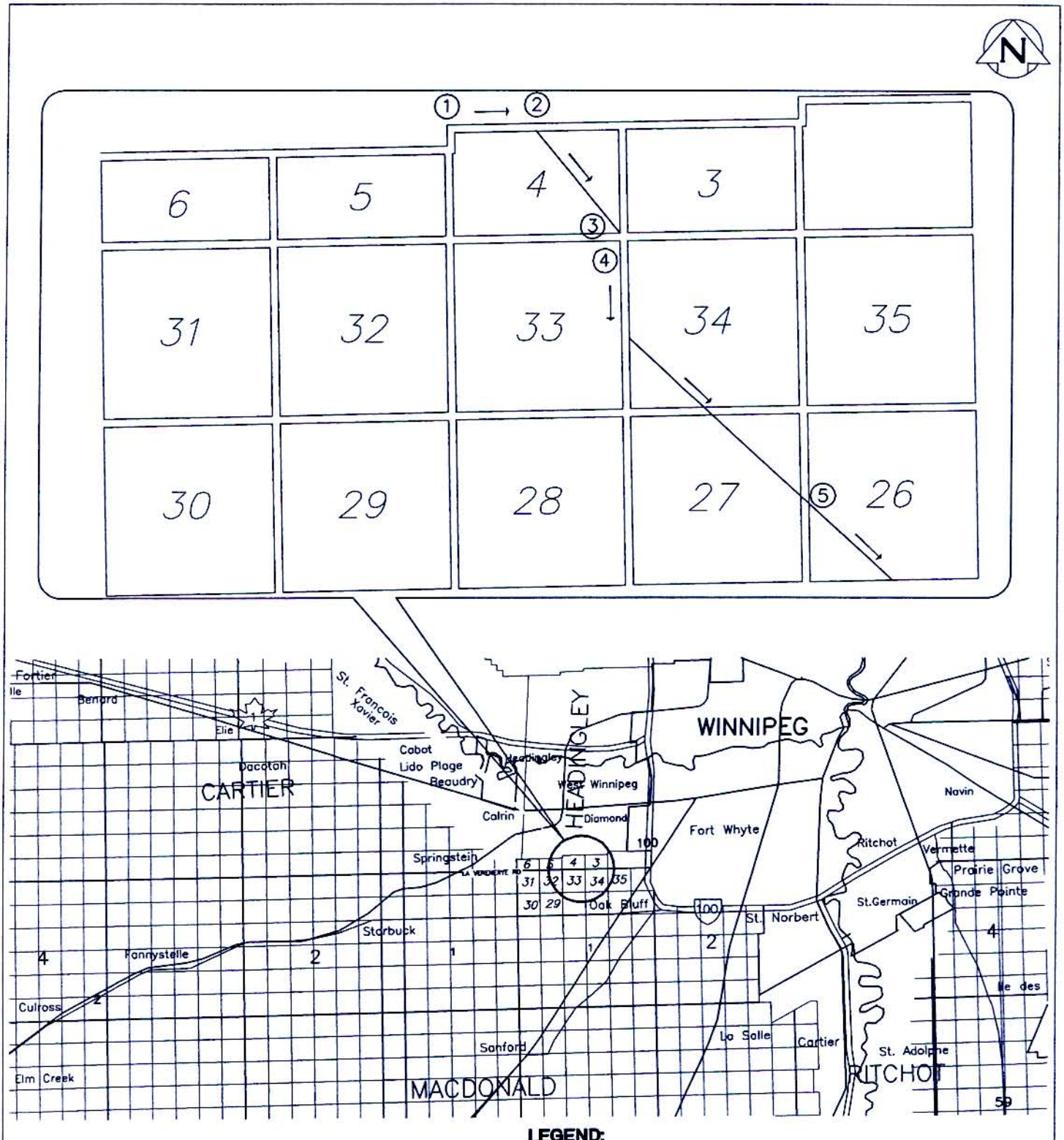
2007 Biosolids Quality

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	24-Dec-06	4.6	104.0	826	55.1	87.1	1050	14,400	11,400	40,000	8.49	8.09	23.37
2	07-Jan-07	3.5	89.1	820	40.0	72.6	941	16,300	11,700	46,500	8.39	9.08	23.14
3	21-Jan-07	4.0	111.0	1030	70.4	71.8	1060	17,800	13,100	53,500	8.3	9.68	22.50
4	04-Feb-07	2.9	106.0	921	63.5	62.3	842	18,200	10,900	52,400	8.10	10.70	22.62
5	18-Feb-07	2.3	88.4	861	41.0	54.4	717	17,400	12,900	50,100	8.01	11.40	23.96
6	04-Mar-07	2.1	82.7	860	43.8	57.8	730	17,000	12,000	42,500	8.72	9.59	26.37
7	18-Mar-07	1.8	78.7	697	39.5	64.6	665	14,300	10,500	39,600	8.43	7.44	28.07
8	01-Apr-07	1.8	75.3	609	56.4	85.0	643	11,700	7,850	33,000	8.46	6.06	34.61
9	15-Apr-07	2.9	70.7	572	50.6	66.1	553	10,200	9,110	28,800	8.63	7.91	32.48
10	29-Apr-07	2.9	80.8	785	50.3	74.4	1410	12,700	9,740	33,300	8.60	8.19	29.46
11	13-May-07	3.9	127.0	830	47.3	83.9	1680	14,100	8,570	35,100	NA	8.77	28.64
12	27-May-07	2.7	140.0	825	57.3	85.3	1060	14,500	8,140	36,200	8.00	7.56	29.46
13	10-Jun-07	2.2	118.0	918	55.4	85.5	908	14,300	9,970	37,200	8.36	7.87	28.53
14	24-Jun-07	2.0	96.6	884	46.0	89.9	721	12,100	8,990	31,200	8.45	7.63	32.00
15	08-Jul-07	2.0	87.0	915	41.2	85.6	718	13,700	8,420	36,100	8.29	8.02	29.33
16	22-Jul-07	1.9	83.2	810	39.7	79.9	786	13,900	7,770	33,000	8.40	8.20	29.27
17	05-Aug-07	1.6	71.5	654	41.6	70.6	809	12,600	9,750	31,500	8.63	8.91	28.84
18	19-Aug-07	2.5	91.0	808	60.6	78.4	915	14,600	8,600	37,700	8.67	8.95	27.11
19	02-Sep-07	3.7	82.9	798	54.7	76.8	825	16,100	8,620	40,900	8.45	9.10	25.51
20	16-Sep-07	4.4	133.0	913	48.9	72.7	1150	16,600	8,480	42,200	8.59	9.23	24.83
21	30-Sep-07	3.8	112.0	806	43.8	71.6	1480	17,200	10,300	41,900	8.41	9.04	24.20
22	14-Oct-07	0.3	32.8	85.6	29.3	22.8	161	16,300	9,510	37,800	8.50	10.40	24.72
23	28-Oct-07	1.9	280.0	498	23.3	47.6	961	16,400	9,320	43,900	8.56	9.74	24.91
24	11-Nov-07	3.7	418.0	1020	68.5	70.5	1360	20,100	9,070	54,500	NR	10.70	24.46
25	25-Nov-07	2.8	222.0	774	52.8	55.0	813	17,400	10,200	46,700	8.83	9.89	24.57
26	09-Dec-07	3.6	214.0	944	64.8	68.2	926	17,400	9,790	46,900	8.59	10.60	24.79
	Average:	2.8	123	787	49.5	71	919	15,281	9,796	40,481	8.45	8.95	26.8
	Maximum:	4.6	418	1,030	70.4	90	1,680	20,100	13,100	54,500	8.83	11.40	34.6
	Minimum:	0.3	33	86	23.3	23	161	10,200	7,770	28,800	8.00	6.06	22.5

*** Indicates starting date for year 2007 biweekly composite samples**

(1) NR - not recorded or no result; NA - not analyzed

rg: 01/08/08



LEGEND:

- FLOW DIRECTION
- (1) FAR UPSTREAM
- (2) UPSTREAM
- (3) OFF FIELD
- (4) DOWNSTREAM
- (5) FAR DOWNSTREAM

Winnipeg

CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

MUNICIPALITY OF MACDONALD

DITCHWATER SAMPLING LOCATIONS

Figure 6.

R:\DRAWINGS\SEWER\MISC\BIOSOLIDS_APPLICATION_FIGURES\WINGRO_for2007_REPORT\FIELD51_DITCHWAT_MACD.DWG PLOTTED: 2008 01 16

2007 Ditchwater Sampling Results

Field # 51 -

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 Upstream		March 30 /07	NS	NS	NS	NS	NS	NS	NS
		April 02 / 07	NS	NS	NS	NS	NS	NS	NS
		April 10 / 07	NS	NS	NS	NS	NS	NS	NS
		April 11 / 07	NS	NS	NS	NS	NS	NS	NS
		April 12 / 07	NS	NS	NS	NS	NS	NS	NS
		April 13 / 07	NS	NS	NS	NS	NS	NS	NS
	L495689-1	April 16 / 07	0.053	0.154	0.7	0.319	186	930	<3
	L496175-1	April 17 /07	0.009	0.012	0.7	0.363	189	2300	<3
Upstream		March 30 / 07	NS	NS	NS	NS	NS	NS	NS
		April 02 / 07	NS	NS	NS	NS	NS	NS	NS
		April 10 / 07	NS	NS	NS	NS	NS	NS	NS
		April 11 / 07	NS	NS	NS	NS	NS	NS	NS
		April 12 / 07	NS	NS	NS	NS	NS	NS	NS
		April 13 / 07	NS	NS	NS	NS	NS	NS	NS
	L495689-2	April 16 / 07	0.048	0.076	0.7	0.36	225	15000	4
	L496175-2	April 17 /07	0.036	0.069	0.5	0.266	203	24000	<3
Standing water @ field	L491597-1	March 30 / 07	18.6	1.92	34.0	3.10	287	46000	1500
	L491771-1	April 02 / 07	32.4	1.13	59.8	6.89	401	110000	2900
	L493984-1	April 10 / 07	12.5	0.157	23.5	2.89	233	21000	43
	L494519-1	April 11 / 07	25.8	<0.005	43.7	6.29	377	4300	2300
	L494943-1	April 12 / 07	29.5	0.013	49.0	7.22	411	>110000	1500
	L495344-1	April 13 / 07	28.5	0.017	49.8	8.34	431	>110000	230
	L495689-3	April 16 / 07	14.2	0.273	28.7	5.70	345	24000	24000
	L496175-3	April 17 /07	10.0	0.234	17.3	3.33	406	46000	46000
Downstream		March 30 /07	NS	NS	NS	NS	NS	NS	NS
		April 02 / 07	NS	NS	NS	NS	NS	NS	NS
		April 10 / 07	NS	NS	NS	NS	NS	NS	NS
		April 11 / 07	NS	NS	NS	NS	NS	NS	NS
		April 12 / 07	NS	NS	NS	NS	NS	NS	NS
		April 13 / 07	NS	NS	NS	NS	NS	NS	NS
	L495689-4	April 16 / 07	0.86	0.18	1.9	0.511	192	24000	1500

	L496175-4	April 17 /07	4.25	0.175	6.8	1.36	273	46000	9300
Far Downstream		March 30 /07	NS	NS	NS	NS	NS	NS	NS
		April 02 / 07	NS	NS	NS	NS	NS	NS	NS
		April 10 / 07	NS	NS	NS	NS	NS	NS	NS
		April 11 / 07	NS	NS	NS	NS	NS	NS	NS
		April 12 / 07	NS	NS	NS	NS	NS	NS	NS
		April 13 / 07	NS	NS	NS	NS	NS	NS	NS
	L495689-5	April 16 / 07	3.12	0.236	5.2	0.894	235	2900	2300
	L496175-5	April 17 /07	2.09	0.424	3.5	0.76	256	4300	43

APPENDIX III

BACKGROUND SOIL ANALYTICAL RESULTS FOR

APPLIED FIELDS (2007)

TABLE 4

2007 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 (units)	% SOLIDS	CONDUCTIVITY (ds/m)	CATION EXCHANGE CAPACITY (meqNH4/100g)
#51	28.8	12.0	0.25	34.0	13.4	110.0	45.4	57.1	8.0	82.7	1.8	42.8
#52	7.2	26.0	0.30	27.0	12.5	94.0	38.4	50.2	7.8	72.3	4.8	37.8
#53	31.5	51.0	0.39	28.0	14.5	95.0	47.9	47.1	7.3	77.0	3.6	47.1
#54	40.0	2.3	0.32	28.0	13.4	90.0	35.5	49.5	7.3	80.1	5.5	43.2
#55	16.0	23.0	0.32	35.0	14.9	111.0	45.9	59.1	7.4	79.6	0.5	51.3

Regulated Parameter:

Licence requirements:

NO3-N = <67 Kg/ha

SOD PHOS = <60 mg/Kg

pH = >6.0 units

* Based on Soil Density = 1200 Dry kg/m3

** Sodium Bicarbonate Extractable Phosphorus

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 #51, #52, and #53 were completed in 2007.

(3) Fields #54 and #55 are ongoing.

APPLICATION REPORT

Parcel Number: **51**

Location:		Date of Application:	**08/09/2006**
Sec/Twn/Rng:	**4-10-1E**	Hectares:	**73**
Quarter:	**E**	Distance (km):	**48.5**
Municipality:	**MACDONALD**	Bed Dist (km):	**40.5**

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

Memo: **East half**

OWNER:
Name:
Address:

Phone:

FARMER:
Name:
Address:

Phone:

ACTIVE DATA

Area (ha)		Sludge (T)	
Available:	**73.2**	Wet (NEWPCC):	**16922.92**
Covered:	**73.2**	Dry (NEWPCC):	**4031.18**
		Dry (Beds):	
		Dry (Total):	**4031.18**
Rate:	**55.1** (T/ha)	Incorporated:	**4031.18**

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

APPLICATION REPORT

Parcel Number: **52**

Location:		Date of Application:	**07/05/2007**
Sec/Twn/Rng:	**27-12-2W**	Hectares:	**18**
Quarter:	**NW**	Distance (km):	**52.5**
Municipality:	**ROSSER**	Bed Dist (km):	**44.5**

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

Memo: **11.9 hectares is owned by** Personal information **and 5.9 hectares is owned by** Personal informa Personal information **. Prior to June 1 the distance was NEWPCC 60.0, Beds 52.0. As of June 1 the distance was NEWPCC 52.5, Beds 44.5.**

OWNER:
Name: Personal information included in this Bioso ids report has been excluded p
Address:

Phone:

FARMER:
Name:
Address:

Phone:

ACTIVE DATA

	Area (ha)		Sludge (T)
Available:	**17.8**	Wet (NEWPCC):	**2414.69**
Covered:	**17.8**	Dry (NEWPCC):	**697.29**
		Dry (Beds):	**217.79**
		Dry (Total):	**915.08**
Rate:	**51.4** (T/ha)	Incorporated:	**915.08**

Memo:

BACKGROUND SOIL TEST

Test Date	**25/04/19**				
			Cation Exchange	**37.8**	meq NH4/100g
Slope	**<3**	%	Copper	**27.0**	mg/kg
SCE Phosphorus	**26.0**	mg/kg	Zinc	**94.0**	mg/kg
Nitrate Nitrogen	**7.2**	kg/ha	Cadmium	**.30**	mg/kg
pH	**7.8**		Chromium	**50.2**	mg/kg
Moisture	**27.7**	%	Lead	**12.5**	mg/kg
Conductivity	**4.8**	dS/m	Nickel	**38.4**	mg/kg

APPLICATION REPORT

Parcel Number: **53**

Location:		Date of Application:	**01/08/1907**
Sec/Twn/Rng:	**28-12-2E**	Hectares:	**44**
Quarter:	**NE**	Distance (km):	**53.5**
Municipality:	**ROSSER**	Bed Dist (km):	**45.5**

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

Memo:

OWNER:
Name:
Address:

Phone:

FARMER:
Name:
Address:

Phone:

ACTIVE DATA

Area (ha)		Sludge (T)	
Available:	**43.8**	Wet (NEWPCC):	**7957.86**
Covered:	**43.8**	Dry (NEWPCC):	**2327.66**
		Dry (Beds):	**85.13**
		Dry (Total):	**2412.79**
Rate:	**55.1** (T/ha)	Incorporated:	**2412.79**

Memo:

BACKGROUND SOIL TEST

Test Date	**18/05/19**				
			Cation Exchange	**47.1**	meq NH4/100g
Slope	**<3**	%	Copper	**28.0**	mg/kg
SCE Phosphorus	**51.0**	mg/kg	Zinc	**95.0**	mg/kg
Nitrate Nitrogen	**31.5**	kg/ha	Cadmium	**0.39**	mg/kg
pH	**7.3**		Chromium	**47.1**	mg/kg
Moisture	**23.0**	%	Lead	**14.5**	mg/kg
Conductivity	**3.6**	dS/m	Nickel	**47.9**	mg/kg

APPLICATION REPORT

Parcel Number: **54**

Location:		Date of Application:	**24/08/2007**
Sec/Twn/Rng:	**34-12-2W**	Hectares:	**86**
Quarter:	**SE**	Distance (km):	**52.5**
Municipality:	**ROSSER**	Bed Dist (km):	**44.5**

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

Memo: **SE 1/4 and east 70 acres of SW 1/4.**

OWNER:
Name:
Address:

Personal information included in this Bioso ids report has been excluded

Phone:

FARMER:
Name:
Address:

Phone:

ACTIVE DATA

Area (ha)		Sludge (T)	
Available:	**86.5**	Wet (NEWPCC):	**10012.78**
Covered:	**45.7**	Dry (NEWPCC):	**2481.41**
		Dry (Beds):	
		Dry (Total):	**2481.41**
Rate:	**54.3** (T/ha)	Incorporated:	**2481.44**

Memo:

BACKGROUND SOIL TEST

Test Date **09/08/19**

			Cation Exchange	**43.2**	meq NH4/100g
Slope	**<3**	%	Copper	**28.0**	mg/kg
SCE Phosphorus	**2.3**	mg/kg	Zinc	**90.0**	mg/kg
Nitrate Nitrogen	**40.0**	kg/ha	Cadmium	**.32**	mg/kg
pH	**7.3**		Chromium	**49.5**	mg/kg
Moisture	**19.9**	%	Lead	**13.4**	mg/kg
Conductivity	**5.5**	dS/m	Nickel	**35.5**	mg/kg

APPLICATION REPORT

Parcel Number: **55**

Location:		Date of Application:	**17/09/1907**
Sec/Twn/Rng:	**33- 9-1E**	Hectares:	**49**
Quarter:	**NE**	Distance (km):	**48.5**
Municipality:	**MACDONALD**	Bed Dist (km):	**40.5**

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

Memo:

OWNER:
Name: Personal information included in this Biosolids report has been excluded pursu
Address:

Phone:

FARMER:
Name:
Address:

Phone:

ACTIVE DATA

Area (ha)		Sludge (T)	
Available:	**49.1**	Wet (NEWPCC):	**4373.70**
Covered:	**18.9**	Dry (NEWPCC):	**1041.55**
		Dry (Beds):	
		Dry (Total):	**1041.55**
Rate:	**55.1** (T/ha)	Incorporated:	

Memo:

BACKGROUND SOIL TEST

Test Date	**17/09/19**				
			Cation Exchange	**51.3**	meq NH4/100g
Slope	**<3**	%	Copper	**35.0**	mg/kg
SCE Phosphorus	**23.0**	mg/kg	Zinc	**111.0**	mg/kg
Nitrate Nitrogen	**16.0**	kg/ha	Cadmium	**.32**	mg/kg
pH	**7.4**		Chromium	**59.1**	mg/kg
Moisture	**20.4**	%	Lead	**14.9**	mg/kg
Conductivity	**.5**	dS/m	Nickel	**45.9**	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).