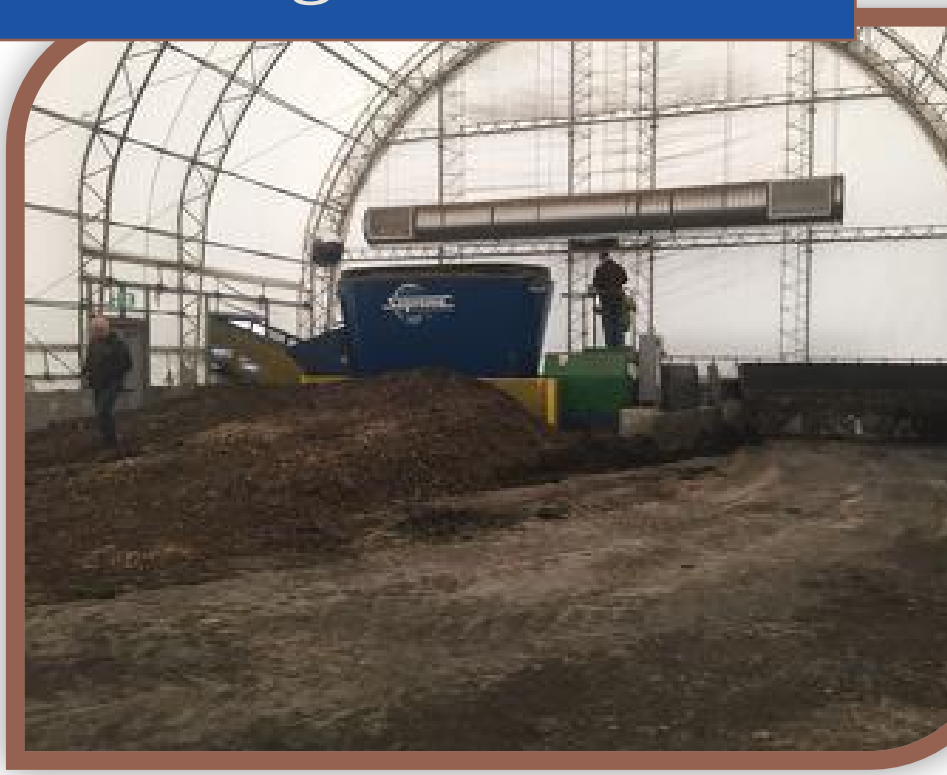
Winnipeg

Water and Waste Department
Environmental Standards Division

Biosolids Dewatering, Monitoring, and Disposal Programs



Environment Act Licence #1089E RR

2016

Water and Waste Department • Service des eaux et des déchets
Environmental Standards Division • Division des Normes Environnementales

January 31, 2017 Our File: 040-17-08-23-01

Manitoba Sustainable Development
Environmental Compliance and Enforcement Branch
1007 Century Street
Winnipeg, MB R3H 04W

Attention: Mr. Don Labossiere, Regional Director

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 2016. Included in this report are:

a) details of the 2016 biosolids distribution and monitoring programs
b) details of the proposed 2017 biosolids distribution program

If you have any questions concerning the annual report, I may be reached by telephone at 204-986-8359 or by e-mail at rgrosselle@winnipeg.ca.

Yours sincerely,

Original signed by:

R. Grosselle
Manager of Environmental Standards

Enclosure

cc: M.L. Geer, CPA, CA, Water and Waste Department (email)
G.K. Patton, P. Eng., Water and Waste Department (email)
C. Carroll, P. Eng., Water and Waste Department (email)
D. Doubleday, Water and Waste Department (email)
J. Hwang, P. Eng., Water and Waste Department (email)

2016 Biosolids Dewatering, Monitoring, and Disposal Programs

Heather Demchenko, B. Sc.
Compliance Reporting Technician

Nancy Crawford, B. Sc.
Compliance Reporting Branch Head

Renée Grosselle, B. Sc.
Manager of Environmental Standards Division

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 2016 Biosolids Dewatering, Monitoring, and Disposal Program and outlines the proposed plans for the 2017 calendar year.

The City of Winnipeg's Biosolids Master Plan (BMP) is a 30 year plan for dealing with biosolids; it received approval from Manitoba Sustainable Development (formerly Manitoba Conservation and Water Stewardship) in March 2016. A pilot compost program at Brady Road Resource Management Facility (BRRMF) and a pilot land application project are included in the BMP.

In 2016, the City produced 47,006 wet (12,817 dry) tonnes of anaerobically digested, mechanically-dewatered biosolids at its North End Water Pollution Control Centre (NEWPCC), with an average total solids concentration of 27.2%. Of those 47,006 wet tonnes of biosolids, approximately 1,849 wet (503 dry) tonnes were sent to the pilot biosolids composting facility; no biosolids were applied to agricultural land in 2016.

In 2017, we plan to continue disposing of biosolids at the BRRMF, with a goal of 20% diversion to the composting facility. A pilot land application program is scheduled for fall 2017, and an Environmental Act Licence Proposal will be submitted for a full-scale 3 year land application program.

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TABLES

APPENDICES

1.0 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 2016 Biosolids 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 2016 Biosolids Program. The report also provides information on its proposed Biosolids Program for the twelve months starting January 1, 2017.

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

2.0 2016 BIOSOLIDS APPLICATION PROGRAMS

(a) Dewatering

"The Licensee 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, 2016 to December 31, 2016 the City produced 47,006 wet tonnes of mechanically-dewatered biosolids at its NEWPCC facility. In 2016, the total solids in the biosolids averaged 27.2 ± 2.4% (n = 254). The dewatering equipment achieved total solids content in the biosolids of at least 20 percent by weight throughout 2016.

Appendix I contains the mechanical dewatering operating records for 2016.

(b) Storage

"The Licensee 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 Licensee 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 2016, the storage pad was not used to provide interim storage for mechanically-dewatered biosolids, 100% of the biosolids produced were deposited at the BRRMF.

(c) Monitoring Results

"The Licensee 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)).

Table 1 contains the results of analyses conducted on samples of biosolids in fulfillment of the monitoring requirements stipulated in Licence #1089E RR. Soil and surface water samples were not collected in 2016 because biosolids were not applied to any fields in 2015.

Appendix I contains the mechanical dewatering operating records for 2016.

We continue to monitor odours at the BRRMF on a weekly basis and follow up with any odour complaints; none of the 28 odour complaints reported in 2016 were attributed specifically to biosolids. The City continues to use strategies to help mitigate odours including:

- Covering biosolids quickly with soil or other wastes that do not cause odours
- Scheduling the arrival of biosolids at specific times of day when wind conditions are not likely to cause concern for odour
- Collecting and burning landfill gas to help mitigate buried biosolids odours
- Controlling storm water runoff to prevent generating leachate and ponding of water that causes odour
- Keeping a bio-filter on the biosolids compost facility
- Using compost near odour point sources to help control odour
- Using woodchips in biosolids trench to help mitigate odour when spreading biosolids, and
- Maintaining an odour monitoring program

The odour mitigation strategies for biosolids have largely been successful as we have had no complaints specifically pertaining to biosolids. Along with current strategies we are expanding the current landfill gas system as well as attaching current manholes to landfill gas system to further mitigate landfill odours.

TABLE 1

2016 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)	TN (mg/Kg-N)	pH (units)	Specific Conductance (dS/m)	Moisture (%)
1	27-Dec-15	1.8	109	591	56.9	43.6	2600	18,500	11,200	31,500	NA	6.18	11.9	75.3
2	10-Jan-16	2.5	100	684	72.5	48.3	2960	19,700	14,700	36,000	NA	6.06	13.2	74.6
3	24-Jan-16	1.9	95	457	50.6	32.4	1560	18,100	14,100	33,600	NA	6.15	12.3	74.0
4	8-Feb-16	2.4	122	463	59.5	33.6	1360	20,200	12,100	33,300	NA	6.17	11.9	74.0
5	21-Feb-16	2.5	112	497	52.5	39.9	1120	24,000	13,600	35,200	NA	5.90	11.2	73.9
6	6-Mar-16	2.6	111	422	41.4	30.4	2170	18,500	11,200	33,600	NA	5.87	10.1	71.6
7	20-Mar-16	1.5	84	370	38.4	50.0	1710	15,400	10,500	25,900	NA	5.84	8.6	69.0
8	3-Apr-16	1.3	83	435	44.1	45.9	1290	16,200	10,800	28,800	NA	6.03	10.1	69.6
9	17-Apr-16	1.6	84	431	40.7	55.5	1020	17,300	10,600	33,700	NA	6.04	9.6	70.6
10	1-May-16	4.1	102	645	47.1	56.9	969	18,800	11,700	36,100	NA	6.18	10.5	71.2
11	15-May-16	6.2	113	478	30.5	47.5	741	19,500	13,100	33,600	NA	6.05	10.7	72.4
12	29-May-16	2.7	67	435	31.7	42.0	632	15,400	11,100	28,100	NA	6.12	10.1	71.9
13	12-Jun-16	2.7	97	474	34.7	57.0	1440	15,500	11,400	NA	30,800	6.25	7.2	71.3
14	26-Jun-16	1.8	88	564	30.6	50.2	1520	15,200	11,300	NA	29,600	6.26	7.6	71.2
15	10-Jul-16	1.9	90	459	33.9	58.7	3480	16,900	9,890	NA	30,200	6.30	6.6	70.9
16	24-Jul-16	1.6	89	588	30.7	53.7	1530	15,500	13,200	NA	34,500	6.18	6.6	71.1
17	7-Aug-16	1.5	86	590	31.4	47.8	1270	15,100	12,500	NA	35,300	6.25	6.5	73.3
18	21-Aug-16	1.6	87	573	31.8	48.5	1190	16,700	12,300	NA	37,800	6.08	8.9	73.3
19	4-Sep-16	1.6	82	595	34.5	45.3	1160	17,700	13,200	NA	39,800	6.39	7.8	66.6
20	18-Sep-16	1.7	97	640	36.6	48.8	1140	16,100	13,100	NA	41,800	6.00	7.9	76.2
21	2-Oct-16	1.5	170	605	34.4	51.6	926	17,100	13,500	NA	41,600	6.10	11.9	76.7
22	16-Oct-16	2.2	185	566	30.0	47.3	886	16,500	13,000	NA	43,800	6.06	5.7	76.0
23	30-Oct-16	5.0	227	526	29.5	44.9	900	16,800	12,900	NA	39,000	6.94	8.0	75.2
24	13-Nov-16	4.1	164	583	36.8	45.1	1070	16,300	11,700	NA	42,000	6.03	7.2	74.8
25	27-Nov-16	2.2	99	442	37.5	41.0	765	17,000	10,600	NA	37,700	6.03	7.3	72.7
26	12-Dec-16	2.2	99	565	42.5	42.1	1520	17,700	10,200	NA	38,800	5.81	7.7	72.7
	Average:	2.4	109	526	40.0	46.5	1420	17,373	12,057	32,450	37,336	6.13	9.1	72.7
	Maximum:	6.2	227	684	72.5	58.7	3480	24,000	14,700	36,100	43,800	6.94	13.2	76.7
	Minimum:	1.3	67	370	29.5	30.4	632	15,100	9,890	25,900	29,600	5.81	5.7	66.6

*** Indicates starting date for year 2016 biweekly composite samples**

NA: not analysed due to lab error

(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 47,006 wet tonnes of mechanically-dewatered biosolids produced at the NEWPCC from January 1, 2016 to December 31, 2016, 100% were disposed at the BRRMF.

As outlined in the BMP, 1,849 wet (503 dry) tonnes of biosolids were diverted to the pilot compost facility, with the final product being used as a soil for landfill top cover. In 2016, only 4% of biosolids were composted due to equipment malfunctions and cold weather related shut-downs. We plan to continue composting the biosolids, with a goal of 20% diversion to the composting facility.

In August 2016, Request for Proposal (RFP) 619-2016 for biosolids land application was posted; Phase I and II of the RFP were awarded in December 2016.

3.0 2017 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 2017, the City plans to continue to dispose the majority of its biosolids at the BRRMF.

The pilot biosolids compost facility was initially approved to run from May 2015 to May 2017, however, due to the challenges experienced in 2016, the City will be requesting a 1-year extension of the program to May 2018. Finished compost will continue to be used as a soil for landfill top cover in 2017.

Phase I of RFP 619-2016 is scheduled to begin in February 2017 and Phase II will begin in October 2017. Phase I involves public engagement, followed by the submission of a proposal for an Environment Act licence for a full-scale, 3 year land application program; Phase II involves a pilot test for land application of approximately 5,000 wet tonnes of biosolids. The pilot test for land application does not involve the use of the temporary storage facility.

A Notice of Alteration for the BRRMF licence was submitted to Manitoba Sustainable Development for biosolids use in topsoil fabrication. The City proposes to divert approximately 1,000 wet tonnes for this landfill top soil demonstration. The mixing will take place in late February 2017, and spreading and seeding of the material will occur in spring 2017. Monitoring of the soil and surface water quality, vegetation germination, and biomass will be conducted twice annually over 2017 and 2018. The results will be provided to Manitoba Sustainable Development (MSD) in two reports - an interim report in 2017 and a final report at the end of 2018.

APPENDIX 1
OPERATING RECORDS FOR
MECHANICAL DEWATERING OF BIOSOLIDS

2016 Biosolids Management Program

January			2016			
Date	Wet Cake	% Total Solids	Dry Cake	Loads to Landfill	Loads to Compost	Loads Total
1						
2						
3						
4	217.18	25.7	55.82	8	0	8
5	217.00	25.4	55.12	9	0	9
6	137.74	25.1	34.57	6	0	6
7	107.20	24.9	26.69	5	0	5
8	129.50	24.9	32.25	5	0	5
9	48.96	25.3	12.39	2	0	2
10						
11	70.30	25.3	17.79	3	0	3
12	177.36	25.5	45.23	7	0	7
13	122.46	25.5	31.23	5	0	5
14	129.66	25.7	33.32	5	0	5
15	141.22	26.0	36.72	6	0	6
16						
17						
18	194.14	24.5	47.56	8	0	8
19	120.66	25.0	30.17	5	0	5
20	196.62	24.7	48.57	8	0	8
21	143.16	26.2	37.51	6	0	6
22	95.74	26.1	24.99	4	0	4
23						
24						
25	225.48	26.1	58.85	9	0	9
26	197.96	26.0	51.47	6	2	8
27	147.96	25.7	38.03	6	0	6
28	170.36	25.5	43.44	7	0	7
29	120.00	25.3	30.36	5	0	5
30	188.98	25.5	48.19	8	0	8
31						
TOTAL	3299.64	25.5	840.24	133	2	135
NOTES:						

2016 Biosolids Management Program

February			2016			
Date	Wet Cake	% Total Solids	Dry Cake	Loads to Landfill	Loads to Compost	Loads Total
1	195.28	24.9	48.62	8	0	8
2	145.26	25.4	36.90	6	0	6
3	144.94	25.4	36.81	6	0	6
4	98.00	26.0	25.48	4	0	4
5	189.92	26.4	50.14	8	0	8
6						
7						
8	197.52	25.1	49.58	8	0	8
9	193.84	23.7	45.94	8	0	8
10	87.94	29.3	25.77	4	0	4
11	92.10	26.7	24.59	4	0	4
12	235.32	26.6	62.60	10	0	10
13						
14						
15	245.26	26.4	64.75	10	0	10
16	144.00	26.1	37.58	6	0	6
17	138.46	24.7	34.20	6	0	6
18	139.40	25.3	35.27	6	0	6
19	99.46	25.9	25.76	4	0	4
20						
21						
22	246.20	25.9	63.77	10	0	10
23	229.60	26.0	59.70	9	0	9
24	161.00	26.0	41.86	6	0	6
25						
26	52.40	26.4	13.83	2	0	2
27						
28						
29	222.50	26.4	58.74	9	0	9
TOTAL	3258.40	25.9	841.88	134	0	134

NOTES:

2016 Biosolids Management Program

March			2016			
Date	Wet Cake	% Total Solids	Dry Cake	Loads to Landfill	Loads to Compost	Loads Total
1	195.60	26.8	52.42	8	0	8
2	246.78	25.9	63.92	10	0	10
3	249.12	27.3	68.01	10	0	10
4	104.26	27.1	28.25	4	0	4
5						
6						
7	258.94	26.0	67.32	10	0	10
8	277.78	24.9	69.17	11	0	11
9	254.80	26.0	66.25	10	0	10
10	178.80	28.0	50.06	7	0	7
11	151.98	28.9	43.92	6	0	6
12						
13						
14	252.74	29.4	74.31	10	0	10
15	224.06	29.9	66.99	9	0	9
16	253.68	29.9	75.85	10	0	10
17	199.48	31.2	62.24	8	0	8
18	148.56	29.8	44.27	6	0	6
19						
20						
21	250.72	31.3	78.48	10	0	10
22	246.80	32.8	80.95	10	0	10
23	244.08	32.5	79.33	10	0	10
24	167.16	32.2	53.83	7	0	7
25						
26	172.28	31.4	54.10	7	0	7
27						
28	193.72	30.9	59.86	8	0	8
29	242.68	30.5	74.02	10	0	10
30	222.54	30.9	68.76	9	0	9
31	246.26	30.2	74.37	10	0	10
TOTAL	4982.82	29.3	1456.68	200	0	200
NOTES:						

2016 Biosolids Management Program

April	2016					
Date	Wet Cake	% Total Solids	Dry Cake	Loads to Landfill	Loads to Compost	Loads Total
1	137.86	29.4	40.53	6	0	6
2						
3						
4	221.38	29.3	64.86	9	0	9
5	223.18	29.2	65.17	9	0	9
6	195.78	31.1	60.89	8	0	8
7	174.16	29.0	50.51	7	0	7
8	139.24	31.1	43.30	6	0	6
9						
10						
11	202.26	30.8	62.30	8	0	8
12	198.46	30.4	60.33	8	0	8
13	146.38	32.3	47.28	6	0	6
14	187.82	32.7	61.42	8	0	8
15	99.72	31.6	31.51	4	0	4
16						
17						
18	250.60	31.0	77.69	10	0	10
19	202.48	30.4	61.55	8	0	8
20	238.38	30.6	72.94	10	0	10
21	180.70	32.1	58.00	8	0	8
22	146.92	30.1	44.22	6	0	6
23						
24						
25	253.54	29.9	75.81	10	0	10
26	254.46	29.2	74.30	10	0	10
27	255.58	28.0	71.56	10	0	10
28	149.72	27.5	41.17	6	0	6
29	97.62	28.5	27.82	4	0	4
30						
31						
TOTAL	3956.24	30.2	1193.18	161	0	161
NOTES:						

2016 Biosolids Management Program

May	2016					
Date	Wet Cake	% Total Solids	Dry Cake	Loads to Landfill	Loads to Compost	Loads Total
1						
2	151.82	30.0	45.55	6	0	6
3	148.32	29.0	43.01	6	0	6
4	149.98	27.7	41.54	6	0	6
5	145.66	28.7	41.80	6	0	6
6	212.02	27.6	58.52	9	0	9
7						
8						
9	200.50	28.1	56.34	8	0	8
10	242.36	28.0	67.86	10	0	10
11	102.94	28.0	28.82	4	0	4
12	195.08	28.0	54.62	6	2	8
13	143.34	27.9	39.99	3	3	6
14						
15						
16	151.54	27.5	41.67	6	0	6
17	252.38	28.7	72.43	10	0	10
18	187.16	29.0	54.28	8	0	8
19	135.82	27.8	37.76	6	0	6
20	140.62	27.7	38.95	6	0	6
21						
22						
23	204.12	27.6	56.34	8	0	8
24	247.24	27.4	67.74	9	1	10
25	179.46	27.6	49.53	5	3	8
26						
27	150.42	26.3	39.56	4	2	6
28						
29						
30	254.70	26.6	67.75	10	0	10
31	250.66	27.0	67.68	10	0	10
TOTAL	3846.14	27.9	1071.76	146	11	157
NOTES:						

2016 Biosolids Management Program

June	2016					
Date	Wet Cake	% Total Solids	Dry Cake	Loads to Landfill	Loads to Compost	Loads Total
1	187.58	26.6	49.90	8	0	8
2	139.74	26.8	37.45	6	0	6
3	95.56	27.3	26.09	4	0	4
4						
5						
6	248.62	28.2	70.11	7	3	10
7	246.86	29.0	71.59	9	1	10
8	297.74	28.3	84.26	12	0	12
9	246.86	27.9	68.87	10	0	10
10	245.14	28.0	68.64	10	0	10
11						
12						
13	251.58	27.5	69.18	10	0	10
14	289.64	28.7	83.13	9	3	12
15	288.98	26.5	76.58	9	3	12
16	336.42	27.9	93.86	14	0	14
17	136.74	29.1	39.79	6	0	6
18						
19						
20	251.12	29.5	74.08	10	0	10
21	249.10	29.8	74.23	10	0	10
22	248.62	29.1	72.35	10	0	10
23	245.74	28.4	69.79	10	0	10
24	153.84	29.6	45.54	6	0	6
25						
26						
27	252.78	28.9	73.05	7	3	10
28	253.00	28.1	71.09	7	3	10
29	242.52	30.6	74.21	10	0	10
30	190.22	31.4	59.73	8	0	8
31						
TOTAL	5098.40	28.5	1453.53	192	16	208
NOTES:						

2016 Biosolids Management Program

July			2016			
Date	Wet Cake	% Total Solids	Dry Cake	Loads to Landfill	Loads to Compost	Loads Total
1						
2						
3						
4	202.24	29.3	59.26	8	0	8
5	256.68	28.0	71.87	7	3	10
6	190.84	29.7	56.68	7	1	8
7	141.76	29.1	41.25	6	0	6
8	24.06	28.8	6.93	1	0	1
9						
10						
11	154.98	28.3	43.86	6	0	6
12	97.50	29.2	28.47	4	0	4
13	75.84	27.6	20.93	3	0	3
14	25.00	29.8	7.45	1	0	1
15	151.52	29.7	45.00	6	0	6
16						
17						
18	253.02	29.0	73.38	10	0	10
19	151.00	29.0	43.79	6	0	6
20	148.12	29.0	42.95	6	0	6
21	197.34	29.0	57.23	8	0	8
22	216.84	29.0	62.88	9	0	9
23						
24						
25	200.74	29.0	58.21	5	3	8
26	245.24	29.0	71.12	7	3	10
27	136.26	29.0	39.52	5	1	6
28	94.14	29.0	27.30	4	0	4
29	142.62	29.0	41.36	6	0	6
30						
31						
TOTAL	3105.74	29.0	899.44	115	11	126
NOTES:						

2016 Biosolids Management Program

August			2016			
Date	Wet Cake	% Total Solids	Dry Cake	Loads to Landfill	Loads to Compost	Loads Total
1						
2	239.45	28.7	68.72	10	0	10
3	249.46	28.1	70.10	10	0	10
4	143.22	30.9	44.25	6	0	6
5	197.56	28.8	56.90	8	0	8
6	51.06	28.2	14.40	2	0	2
7						
8	150.84	27.5	41.48	6	0	6
9	146.54	31.4	46.01	6	0	6
10	199.66	28.1	56.10	8	0	8
11	118.14	25.0	29.54	2	3	5
12	144.40	27.9	40.29	5	1	6
13						
14						
15	199.48	31.6	63.04	5	3	8
16	142.96	26.5	37.88	4	2	6
17	173.60	34.1	59.20	7	0	7
18	202.40	28.1	56.87	8	0	8
19	51.00	28.2	14.38	2	0	2
20						
21						
22	208.00	29.7	61.78	8	0	8
23	204.00	38.1	77.72	8	0	8
24	150.00	26.3	39.45	6	0	6
25	147.64	26.8	39.57	6	0	6
26	121.08	26.4	31.97	5	0	5
27						
28						
29	175.04	29.3	51.29	3	4	7
30	200.42	27.7	55.52	7	1	8
31	200.67	29.4	59.00	8	0	8
TOTAL	3816.62	29.0	1115.45	140	14	154

NOTES:

2016 Biosolids Management Program

September			2016			
Date	Wet Cake	% Total Solids	Dry Cake	Loads to Landfill	Loads to Compost	Loads Total
1	142.12	25.8	36.67	3	3	6
2	117.80	27.5	32.40	3	2	5
3						
4						
5						
6	250.60	26.8	67.16	10	0	10
7	223.96	25.6	57.33	9	0	9
8	200.34	26.1	52.29	8	0	8
9	171.19	25.3	43.31	7	0	7
10						
11						
12	146.30	25.2	36.87	6	0	6
13	195.26	26.2	51.16	8	0	8
14	185.10	25.8	47.76	8	0	8
15	214.54	24.9	53.42	6	3	9
16	91.28	24.9	22.73	3	1	4
17						
18						
19	198.00	24.6	48.71	5	3	8
20	193.24	24.3	46.96	6	2	8
21	127.24	23.7	30.16	5	0	5
22	150.98	23.3	35.18	6	0	6
23	254.64	23.7	60.35	10	0	10
24						
25						
26	127.28	23.7	30.17	5	0	5
27	204.02	23.9	48.76	8	0	8
28	256.06	24.4	62.48	10	0	10
29	201.58	24.1	48.58	8	0	8
30	172.62	23.9	41.26	7	0	7
31						
TOTAL	3824.15	24.9	953.68	141	14	155
NOTES:						

2016 Biosolids Management Program

October			2016			
Date	Wet Cake	% Total Solids	Dry Cake	Loads to Landfill	Loads to Compost	Loads Total
1						
2						
3	153.90	22.9	35.24	6	0	6
4	253.38	23.7	60.05	10	0	10
5	255.98	23.9	61.18	10	0	10
6	198.64	24.1	47.87	8	0	8
7	102.90	24.5	25.21	4	0	4
8						
9						
10						
11	257.98	25.3	65.27	9	1	10
12	177.78	23.0	40.89	7	0	7
13	279.60	23.0	64.31	11	0	11
14	200.22	23.2	46.45	8	0	8
15						
16						
17	255.14	23.8	60.72	10	0	10
18	203.68	23.2	47.25	8	0	8
19	149.46	23.9	35.72	6	0	6
20	172.30	23.3	40.15	7	0	7
21	148.98	23.1	34.41	6	0	6
22						
23						
24	177.92	23.0	40.92	7	0	7
25	202.20	24.4	49.34	8	0	8
26	152.50	24.4	37.21	6	0	6
27	172.94	25.5	44.10	7	0	7
28	101.44	25.0	25.36	4	0	4
29						
30						
31	202.56	25.3	51.25	8	0	8
TOTAL	3819.50	23.9	912.91	150	1	151
NOTES:						

2016 Biosolids Management Program

November			2016			
Date	Wet Cake	% Total Solids	Dry Cake	Loads to Landfill	Loads to Compost	Loads Total
1	252.44	24.5	61.85	10	0	10
2	176.02	24.3	42.77	7	0	7
3	96.78	25.2	24.39	1	3	4
4	122.14	25.5	31.15	5	0	5
5	50.86	25.5	12.97	2	0	2
6						
7	203.66	24.5	49.90	7	1	8
8	255.30	25.7	65.61	7	3	10
9	203.08	24.6	49.96	8	0	8
10	152.30	24.3	37.01	6	0	6
11						
12						
13						
14	260.30	24.7	64.29	10	0	10
15	256.66	25.0	64.17	10	0	10
16	255.96	24.1	61.69	10	0	10
17	205.66	23.8	48.95	8	0	8
18	152.78	25.1	38.35	6	0	6
19						
20						
21	253.66	26.4	66.97	7	3	10
22	149.60	26.0	38.90	4	2	6
23	202.58	24.9	50.44	8	0	8
24	172.66	26.0	44.89	7	0	7
25	101.26	25.8	26.13	4	0	4
26						
27						
28	253.46	26.5	67.17	10	0	10
29	203.90	26.4	53.83	8	0	8
30	202.06	25.6	51.73	8	0	8
31						
TOTAL	4183.12	25.2	1053.09	153	12	165

NOTES:

2016 Biosolids Management Program

December			2016			
Date	Wet Cake	% Total Solids	Dry Cake	Loads to Landfill	Loads to Compost	Loads Total
1	173.98	28.2	49.06	7	0	7
2	145.02	29.2	42.35	6	0	6
3						
4						
5	254.18	27.3	69.39	10	0	10
6	76.14	28.1	21.40	3	0	3
7	178.54	27.8	49.63	7	0	7
8	249.40	27.7	69.08	10	0	10
9	149.42	27.1	40.49	6	0	6
10						
11						
12	229.94	25.0	57.49	9	0	9
13	203.74	25.2	51.34	8	0	8
14	203.62	26.3	53.55	8	0	8
15	191.86	27.8	53.34	8	0	8
16	45.94	28.2	12.96	2	0	2
17						
18						
19	254.90	26.3	67.04	10	0	10
20	204.00	26.6	54.26	8	0	8
21	150.24	27.3	41.02	6	0	6
22	196.54	27.5	54.05	8	0	8
23	126.20	24.9	31.42	5	0	5
24						
25						
26						
27	255.36	26.5	67.67	10	0	10
28	177.52	26.5	47.04	7	0	7
29	177.64	26.5	47.07	7	0	7
30	170.56	26.5	45.20	7	0	7
31						
TOTAL	3814.74	27.0	1024.85	152	0	152
NOTES:						