

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 09-10

ANNUAL BIOSOLIDS MANAGEMENT REPORT FOR

2008

FEBRUARY 2009

Protecting Our Water Environment

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February 17, 2009

Mr. Patrick Kuefler
Chief of Enforcement Section 2
USEPA – Region V
Water Enforcement and Compliance
Assurance Branch (WC-15J)
77 West Jackson Boulevard
Chicago, IL 60604-3590

Dear Mr. Kuefler:

Subject: 2008 Reporting Requirements Under the 40 CFR Part 503 Regulations

The Metropolitan Water Reclamation District of Greater Chicago (District) herein submits the 2008 records required under the 40 CFR Part 503 Regulations at Section 503.18, titled “Annual Biosolids Management Report for 2008.”

We believe this report satisfies the reporting requirements under the 40 CFR Part 503 Regulations.

Certification Statement Required for Record Keeping

“I certify under penalty of law, that the information that will be used to determine compliance with the Class A pathogen requirements, Class B pathogen requirements, vector attraction reduction requirements, management practices, site restrictions, and requirements to obtain information as described in Sections 503.32a5, 503.32a6, 503.32a8, 503.32b2, 503.32b3, 503.33b1, 503.33b9, 503.13, 503.14, and 503.16 for the District’s land application sites was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment.”

Mr. Patrick Kuefler

2

February 17, 2009

Subject: 2008 Reporting Requirements Under the 40 CFR Part 503
Regulations

If you have any questions, please telephone me at (312) 751-5190.

Very truly yours,

Louis Kollias
Director
Monitoring and Research

LK:AC:kq

Attachment

cc w/att.: Aistars (USEPA)
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**ANNUAL BIOSOLIDS MANAGEMENT REPORT
FOR 2008**

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ACKNOWLEDGEMENT

The assistance of the following individuals is greatly appreciated: Mr. Daniel Collins, Principal Civil Engineer, Lawndale Avenue Solids Management Area; Mr. Raphael Frost, Senior Civil Engineer, Calumet Solids Management Area; Ms. Katarzyna Lai, Assistant Engineer of Treatment Plant Operations I, John E. Egan Water Reclamation Plant (WRP); Robert Podgorny, Engineering Technician IV, Hanover Park WRP; Dr. Geeta Rijal, Microbiologist IV, Analytical Microbiology and Biomonitoring Section; Mr. John Chavich, Sanitary Chemist IV, John E. Egan Analytical Laboratory Section; Mr. Tom Liston, Assistant Director of Monitoring and Research, Analytical Laboratory Division; Ms. Ellice Durham, Sanitary Chemist IV, Stickney Analytical Laboratory Section; and Dr. Heng Zhang, Research Scientist III, Wastewater Treatment Technology Research Section.

Special thanks are given to Ms. Kathleen Quinlan for the typing of this report.

DISCLAIMER

Mention of proprietary equipment and chemicals in this report does not constitute endorsement by the Metropolitan Water Reclamation District of Greater Chicago.

FOREWORD

The data and information in this report fulfill the frequency of monitoring and the reporting requirements for Biosolids Management by the Metropolitan Water Reclamation District of Greater Chicago as specified in the United States Environmental Protection Agency's (USEPA) 40 CFR Part 503 Regulations for 2008.

INTRODUCTION

The Metropolitan Water Reclamation District of Greater Chicago (District) herein reports the 2008 records required under the 40 CFR Part 503 Regulations at Section 503.18.

The District has four Illinois Environmental Protection Agency (IEPA) permitted biosolids management programs that must comply with Part 503. These programs are as follows:

1. Fulton County Dedicated Biosolids Application to Land Site (IEPA Permit No. 2005-SC-5073).
2. Hanover Park Fischer Farm Biosolids Application to Land Site (IEPA Permit Nos. 2002-SC-0672 and 2007-SC-2951).
3. Controlled Solids Distribution Program (Biosolids Application to Land in the Chicago Area under IEPA Permit No. 2005-SC-3793).
4. Land Application to Farmland (Application of biosolids from Calumet, Stickney, and John E. Egan Water Reclamation Plants (WRPs) to farmland under IEPA Permit No. 2004-SC-0701).

The 40 CFR Part 503 Regulations require that the District report certain data. In the following sections, we have prepared a short description of the sludge processing and biosolids management operations at the District's seven water reclamation plants (WRPs). The Lemont, James C. Kirie, and North Side WRPs do not produce a final biosolids product, while the Calumet, Stickney, John E. Egan, and Hanover Park WRPs produced final biosolids products that were used beneficially or disposed of in 2008. In addition, we also discuss the uses for these biosolids, outline the data reporting requirements under the 40 CFR Part 503 Regulations, and present the required monitoring data in summary tables. The 2008 production and final disposition of sludges and biosolids generated by the District are summarized in [Table 1](#). It should be noted that the total biosolids production in any given year may not equal the amount of the final biosolids product distributed, since biosolids may be distributed from production inventory from a previous year, or biosolids produced in a given year may be stored or aged for distribution at a later time.

TABLE 1: 2008 PRODUCTION AND USES OF SLUDGE AND BIOSOLIDS

Production and Use	Water Reclamation Plants						
	Stickney ¹	Calumet ¹	North Side	Egan ¹	Hanover Park ¹	Kirie	Lemont
	----- Dry Tons -----						
Production ²	120,586	28,489	44,687	8,672	852	8,449	336
Land Applied	86,742	21,649	0	7,728	1,075	0	0
Surface Disposal	0	0	0	0	0	0	0
Landfill (Total)	54,787	20,177	0	0	0	0	0
Co-disposal	1,367	601					
Daily cover	26,451	0					
Final Cover	26,969	19,576					
Incinerated	0	0	0	0	0	0	0
To Other WRPs ³	0	0	44,687	3,375	0	8,449	336
Other	14,045 ⁴	0	0	10 ⁵	0	0	0

¹Differences between biosolids production and total use or disposal in 2008 were due to a net withdrawal or storage in lagoons or drying areas, and processing of biosolids imported from other WRPs.

²Stickney, Calumet, Egan, and Hanover Park produce biosolids while North Side, Kirie, and Lemont produce undigested sludge. Figures represent total solids generated at the end of each plant's processing train including those imported from other plants for further processing.

³For further processing or storage.

⁴Sent to pelletizing facility owned and operated by Metropolitan Biosolids Management, LLC, Stickney, Illinois, under Contract No. 98-RFP-10.

⁵Trucked to Interstate Brands Corp., Schiller Park, Illinois, for seeding digesters.

LEMONT WATER RECLAMATION PLANT

The Lemont WRP, located in Lemont, Illinois, has a design average flow of 3.4 mgd. Wastewater reclamation processes include both primary (primary settling) and secondary (activated sludge process) treatment. In 2008, the Lemont WRP produced 336 dry tons of solids (Table 1), which were gravity concentrated and transported to the Stickney WRP for further processing.

No final biosolids product is produced at this WRP.

JAMES C. KIRIE WATER RECLAMATION PLANT

The James C. Kirie WRP, located in Des Plaines, Illinois, has a design average flow of 72 mgd. Wastewater reclamation processes include grit tanks, secondary (activated sludge process), and tertiary (sand filtration) treatment. In 2008, the James C. Kirie WRP produced 8,449 dry tons of solids (Table 1), which were sent via force main to the John E. Egan WRP for further processing.

No final biosolids product is produced at this WRP.

NORTH SIDE WATER RECLAMATION PLANT

The North Side WRP, located in Skokie, Illinois, has a design average flow of 333 mgd. Wastewater reclamation processes at the North Side WRP include primary (primary settling) and secondary (activated sludge process) treatment. In 2008, the North Side WRP produced 44,687 dry tons of solids (Table 1), which were sent via pipeline to the Stickney WRP for further treatment. This total includes solids generated from water reclamation at the North Side WRP and biosolids conveyed from the John E. Egan WRP.

No final biosolids product is produced at this WRP.

JOHN E. EGAN WATER RECLAMATION PLANT

Treatment Plant and Biosolids Process Train Description

The John E. Egan WRP, located in Schaumburg, Illinois, has a design average flow of 30 mgd. Wastewater reclamation processes include primary (primary settling), secondary (activated sludge process), and tertiary (sand filtration) treatment. All solids managed at the John E. Egan WRP are anaerobically digested. During some winters or when the centrifuges are not operating, liquid digested biosolids are sent via sewers to the North Side WRP. Centrifuge centrate containing biosolids are also sent via sewers to the North Side WRP.

In 2008, the total biosolids production at the John E. Egan WRP was 8,672 dry tons ([Table 1](#)). This total includes biosolids generated from processing of sludge originating at the John E. Egan WRP as well as the sludge that was imported from the James C. Kirie WRP for further processing.

Summary of Use and Disposal at Landfills

In 2008, none of the biosolids generated at the John E. Egan WRP were sent to landfills.

Biosolids Conveyed to Other Water Reclamation Plants for Further Processing

In 2008, 654 dry tons of biosolids were pumped as centrifuge centrate to North Side WRP. In addition, 2,721 dry tons of centrifuge cake biosolids were trucked to the Harlem Avenue Solids Management Area of which 937 dry tons were stored until the 2009 land application season.

Land Application of Centrifuge Cake Biosolids

In 2008, the John E. Egan WRP land applied a total of 7,728 dry tons of centrifuge cake biosolids to farmland under IEPA Permit No. 2004-SC-0701 through a contract with Stewart Spreading, Inc. This total consists of 5,444 dry tons trucked directly from the John E. Egan WRP and 2,284 dry tons that was stored (500 dry tons in 2007 and 1,784 dry tons in 2008) at the Harlem Avenue Solids Management Area before being land applied. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is six times per year.

All John E. Egan WRP centrifuge cake biosolids that were land applied in 2008 met the pollutant concentration limits in Table 3 of Section 503.13 ([Table 2](#)), the Class B pathogen requirements of Section 503.32b2 ([Table 3](#)), and the vector attraction reduction requirements of Section 503.33b10. [Table 2](#) also shows the biosolids nitrogen concentration data that were used by the land applier to compute the agronomic loading rates at the farmland sites.

The John E. Egan WRP did not have any additional requirement for reporting under Part 503 in 2008.

TABLE 2: NITROGEN AND METAL CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS GENERATED AT THE JOHN E. EGAN WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2008

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
-----mg/kg-----											
1/5/08	37,601	6,466	<1	4	744	NA	19	75	42	<0.8	976
1/12/08	38,833	6,228	<1	4	718	1.3	17	72	39	<0.8	912
1/19/08	46,040	6,825	<1	4	686	NA	14	67	38	<0.8	841
1/26/08	16,794	3,831	<1	4	729	NA	15	71	36	<0.8	883
2/2/08	35,728	6,398	<1	3	651	NA	16	68	35	<0.8	870
2/9/08	10,113	2,362	<1	3	679	0.61	15	67	37	<0.8	848
2/16/08	42,068	6,669	2	3	744	NA	14	65	35	1.8	820
2/23/08	23,604	3,952	<1	3	696	NA	15	70	36	<0.8	834
3/1/08	30,721	4,411	<1	4	667	NA	14	65	39	<0.8	800
3/4/08	50,200	7,227	<1	2	556	1.0	15	63	45	<0.8	694
3/8/08	19,795	4,337	<1	3	678	1.0	14	66	41	<0.8	827
3/15/08	15,262	3,148	<1	3	624	NA	11	62	40	<0.8	804
3/22/08	43,771	5,671	<1	3	626	NA	12	64	42	<0.8	809
3/29/08	41,443	5,665	<1	3	593	NA	13	66	44	<0.8	743
4/5/08	19,408	3,720	<1	3	622	NA	13	66	41	<0.8	772
4/12/08	10,381	2,083	<1	3	628	1.2	14	67	39	<0.8	763
4/19/08	16,137	2,797	<1	3	617	NA	13	62	46	<0.8	774
4/26/08	24,830	3,301	<1	2	645	NA	13	65	41	<0.8	758
5/3/08	11,464	2,846	<1	3	633	NA	13	59	40	<0.8	726
5/5/08	49,628	12,028	<1	2	514	0.99	17	64	46	<0.8	695
5/10/08	42,009	4,379	<1	2	684	0.90	13	55	42	<0.8	733

TABLE 2 (Continued): NITROGEN AND METAL CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS GENERATED AT THE JOHN E. EGAN WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2008

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
-----mg/kg-----											
5/17/08	37,666	4,315	<1	2	711	NA	13	53	42	<0.8	738
5/24/08	45,341	7,402	3	3	674	NA	12	51	40	<0.8	759
5/31/08	23,338	3,729	3	3	686	NA	13	54	39	<0.8	767
6/7/08	34,135	4,036	<1	3	673	1.0	13	53	40	<0.8	765
6/14/08	24,492	3,498	<1	3	639	NA	13	52	40	<0.8	779
6/21/08	22,061	5,947	<1	3	625	NA	12	53	39	<0.8	798
6/28/08	19,641	4,015	<1	3	584	NA	11	48	36	<0.8	725
7/5/08	19,293	4,037	<1	3	583	NA	13	52	38	<0.8	788
7/12/08	20,304	3,314	<1	3	577	0.71	14	50	36	<0.8	787
7/19/08	20,090	3,765	<1	3	552	NA	13	49	38	<0.8	750
7/26/08	22,360	6,077	<1	3	581	NA	15	51	37	<0.8	818
8/2/08	20,885	4,349	<1	3	608	NA	15	52	38	<0.8	844
8/9/08	25,817	4,637	<1	2	582	1.0	15	50	39	<0.8	825
8/23/08	36,502	4,777	<1	3	601	NA	16	51	42	<0.8	853
8/30/08	29,066	4,614	<1	3	601	NA	17	49	44	<0.8	897
9/6/08	22,782	2,538	<1	3	616	NA	17	45	46	<0.8	865
9/13/08	27,388	2,547	<1	3	602	1.5	16	46	47	<0.8	844
9/20/08	21,425	4,342	<1	3	605	NA	17	49	49	<0.8	932
9/27/08	14,570	2,064	<1	3	610	NA	16	46	47	<0.8	840
10/4/08	6,437	1,617	<1	3	618	NA	18	52	49	<0.8	953
10/11/08	9,334	2,528	<1	3	586	1.2	17	52	47	<0.8	900
10/18/08	14,506	3,205	<1	3	541	NA	16	49	49	<0.8	844

TABLE 2 (Continued): NITROGEN AND METAL CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS GENERATED AT THE JOHN E. EGAN WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2008

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
-----mg/kg-----											
10/25/08	66,900	5,590	<1	3	580	NA	14	49	49	<0.8	909
11/1/08	5,537	2,689	<1	3	607	NA	14	49	46	<0.8	933
11/8/08	28,795	4,767	<1	4	598	1.1	14	52	47	<0.8	902
11/15/08	12,643	11,464	<1	4	602	NA	14	51	47	<0.8	896
11/22/08	27,344	5,586	<1	3	549	NA	13	47	44	<0.8	854
11/29/08	32,892	6,464	<1	3	550	NA	13	46	46	<0.8	879
12/6/08	31,377	9,845	<1	3	611	NA	14	47	44	<0.8	917
12/13/08	36,941	16,593	<1	3	621	1.2	14	47	43	<0.8	927
12/20/08	20,797	4,115	<1	3	628	NA	14	47	42	<0.8	921
12/27/08	28,719	5,517	<1	3	637	NA	14	48	42	<0.8	889
Minimum	5,537	1,617	<1	2	514	614	11	45	35	<0.8	694
Mean ¹	27,218	4,990	<1	3	626	1,066	14	56	42	<0.8	830
Maximum	66,900	16,593	3	4	744	1,518	19	75	49	<0.8	976
503 Limit	NL	NL	41	39	1,500	17	75	420	300	100	2,800

¹In calculating the means, values less than the detection limit were considered as the detection limit.

NA= No Analysis.

NL = No Limit.

TABLE 3: DIGESTER¹ TEMPERATURES AND DETENTION TIMES FOR BIOSOLIDS GENERATED AT THE JOHN E. EGAN WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2008

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32b ²
	°F	Days		Days
January	96	22.4	yes	15.0
February	98	25.6	yes	15.0
March	98	24.9	yes	15.0
April	97	24.0	yes	15.0
May	98	24.0	yes	15.0
June	98	27.3	yes	15.0
July	98	27.7	yes	15.0
August	97	25.8	yes	15.0
September	98	26.1	yes	15.0
October	97	27.3	yes	15.0
November	98	30.4	yes	15.0
December	97	31.1	yes	15.0

¹Data are for primary Digesters A and C and do not reflect additional digestion achieved in secondary Digesters B and D.

²For anaerobic digestion at average temperature achieved.

HANOVER PARK WATER RECLAMATION PLANT

Treatment Plant and Biosolids Process Train Description

The Hanover Park WRP, located in Hanover Park, Illinois, has a design average flow of 12 mgd. Wastewater reclamation processes at this WRP include primary (primary settling), secondary (activated sludge process), and tertiary (sand filtration) treatment. All solids produced at the Hanover Park WRP are anaerobically digested and stored in lagoons. The digested biosolids stored in the lagoons are then applied by injection at an on-site farm, formerly the Fischer Farm. All of the biosolids produced by the Hanover Park WRP are land applied at the Fischer Farm, which is located on the plant grounds.

In 2008, the total biosolids production at this WRP was 852 dry tons (Table 1).

Land Application of Liquid Biosolids

In 2008, the Hanover Park WRP land applied a total of 1,075 dry tons of biosolids at the Hanover Park Fischer Farm site under the IEPA Permit No. 2007-SC-2951. This included liquid biosolids and supernatant stored in a lagoon. The quantity of land applied biosolids was higher than the quantity of biosolids produced in 2008 due to net removal of biosolids that were stored in a lagoon. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is six times per year.

All Hanover Park WRP lagooned biosolids that were land applied in 2008 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 4), the Class B pathogen anaerobic digester time and temperature requirements of Section 03.32b3 (Table 5), and the vector attraction reduction requirements of Section 503.33b1 (Table 6). Management practices at this land application site complied with Section 503.14 as previously described in a letter to Mr. Michael J. Mikulka dated January 28, 1994 (Appendix I).

TABLE 4: NITROGEN AND METAL CONCENTRATIONS IN BIOSOLIDS GENERATED AT THE HANOVER PARK WATER RECLAMATION PLANT APPLIED TO FISCHER FARM SITE IN 2008

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
-----mg/kg-----											
04/30/08	403,333	389,833	33	<0.5	106	0.02	3	22	5	11	121
05/03/08	363,192	350,346	28	<0.5	88	0.02	3	18	4	8	100
05/10/08	390,083	367,708	33	<0.5	97	0.02	2	23	6	11	108
05/17/08	427,778	438,833	39	<0.7	62	0.02	4	22	3	8	78
06/21/08	290,591	242,636	17	<0.5	36	0.02	2	20	3	5	49
06/28/08	253,542	209,792	14	<0.5	31	0.02	2	18	4	5	42
07/05/08	243,150	208,700	20	<0.6	34	0.02	3	22	4	<3	45
07/19/08	237,429	211,786	14	<0.4	48	0.01	2	18	2	<2	67
07/26/08	449,036	210,464	14	<0.4	111	0.01	3	20	4	<2	106
08/02/08	236,357	194,357	17	<0.4	149	0.21	2	21	4	<2	138
08/23/08	355,583	366,000	18	<0.5	100	0.02	<2	23	3	<3	111
08/30/08	219,818	187,545	21	<0.5	25	0.02	<2	20	<2	<3	32
09/06/08	373,750	333,833	16	<0.5	70	0.02	<2	23	<2	3	88
09/13/08	193,750	192,450	25	<0.6	25	0.02	<2	23	3	5	32
10/18/08	372,688	362,625	30	<0.8	60	0.03	3	25	4	5	76
10/25/08	184,500	161,750	19	<0.8	21	0.03	<3	19	<3	<4	26
11/01/08	332,778	306,278	23	<0.7	53	0.02	4	23	4	<3	67
11/01/08 ¹	65,698	13,972	5	2	1,244	1.91	13	47	36	5	944
Minimum	65,698	13,972	5	<0.4	21	0.01	<2	18	<2	<2	26
Mean ²	299,614	263,828	21	1	131	0.13	3	23	5	5	124
Maximum	449,036	438,833	39	2	1,244	2	13	47	36	11	944
503 Limit	NL	NL	41	39	1,500	17.0	75	420	300	100	2,800

¹Biosolids applied as liquid biosolids and as supernatant on all other dates.

²In computing the mean, values less than the detection limit were considered as the detection limit.

NL = No Limit.

TABLE 5: DIGESTER TEMPERATURES AND DETENTION TIMES FOR BIOSOLIDS
 GENERATED AT THE HANOVER PARK WATER RECLAMATION PLANT
 APPLIED TO THE FISCHER FARM SITE IN 2008

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32b3 ¹
	°F	Days		Days
January	96	29.9	yes	15.0
February	97	41.2	yes	15.0
March	94	39.1	yes	16.7
April	97	31.8	yes	15.0
May	97	43.6	yes	15.0
June	96	31.6	yes	15.0
July	96	26.1	yes	15.0
August	96	33.8	yes	15.0
September	96	33.7	yes	15.0
October	96	31.3	yes	15.0
November	96	17.5	yes	15.0
December	96	21.3	yes	15.0

TABLE 6: VOLATILE SOLIDS REDUCTION FOR BIOSOLIDS GENERATED
AT THE HANOVER PARK WATER RECLAMATION PLANT
APPLIED TO THE FISCHER FARM SITE IN 2008

Month	Digester Feed	Digester Draw	Lagoon Biosolids	Volatile Solids Reduction ¹
	----- Total Volatile Solids -----			----- % -----
April	85.3	72.6	51.5	81.6
May	85.0	72.3	50.9	81.7
June	85.9	74.0	61.5	73.9
July	86.3	77.5	70.6	61.8
August	83.3	74.1	44.1	84.2
September	80.8	73.6	48.4	77.7
October	82.1	71.4	34.3	88.6
November	85.4	74.6	64.3	69.3

¹Volatile solids reduction computed using digester feed and lagoon biosolids data, and only for the months that biosolids were applied to the fields.

CALUMET WATER RECLAMATION PLANT

Treatment Plant and Biosolids Process Train Description

The Calumet WRP, located in Chicago, Illinois, has a design average flow of 354 mgd. Wastewater reclamation processes at this WRP include primary (primary settling) and secondary (activated sludge process) treatment. All solids produced at the Calumet WRP are anaerobically digested. Calumet WRP biosolids are then:

1. Placed into lagoons for dewatering, aging and stabilization, and then transported to paved cells and air-dried prior to:
 - a) Application to land as Exceptional Quality (EQ) biosolids under the District's Controlled Solids Distribution Permit.
 - b) Use at local municipal solid waste landfills as final landfill cover.
 - c) Disposal in local municipal solid waste landfills.
2. Dewatered by centrifuging to approximately 25 percent solids content, and then applied to farmland by a private contractor as a Class B cake.
3. Dewatered by centrifuging to approximately 25 percent solids content, and then transported to paved cells and air-dried prior to use as daily landfill cover.
4. Dewatered by centrifuging to approximately 25 percent solids content, placed into lagoons for aging and stabilization, and transported to paved cells and air-dried prior to:
 - a) Application to land as EQ biosolids under the District's Controlled Solids Distribution Permit.
 - b) Use at local municipal solid waste landfills as final landfill cover.

In 2008, the total biosolids production at the Calumet WRP was 28,489 dry tons (Table 1). The quantity of biosolids that were used and disposed of in 2008 (41,826 dry tons) was higher than the total production for the Calumet WRP due to net removal of biosolids stored in lagoons or on drying cells.

Summary of Use and Disposal at Landfills

In 2008, the Calumet WRP sent 20,177 dry tons of biosolids to landfills. Of this amount, 19,576 dry tons were used as final cover and 601 dry tons were co-disposed with municipal solid wastes. This practice is exempt from the Part 503 Regulations and requires no further reporting.

Land Application of Centrifuge Cake Biosolids

In 2008, the Calumet WRP land applied 16,672 dry tons of centrifuge cake biosolids to farmland under IEPA Permit No. 2004-SC-0701 through a contract with Synagro Midwest, Inc. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is twelve times per year.

All Calumet WRP centrifuge cake biosolids that were land applied in 2008, met the pollutant concentration limits in Table 3 of Section 503.13 (Table 7), the Class B pathogen anaerobic digester time and temperature requirements of Section 503.32b3 (Table 8), and the vector attraction reduction requirements of Section 503.33b10. Table 7 also contains the biosolids nitrogen concentration data that were utilized by the land applier to compute the agronomic loading rates at the farmland sites.

Land Application of Aged, Air-Dried Biosolids

In 2007, the Calumet WRP land applied a total of 4,977 dry tons of air-dried EQ biosolids through the District's Controlled Solids Distribution Program under IEPA Permit No. 2005-SC-3743 for maintenance of golf courses, recreation fields, landscaping, nurseries, and construction of recreation fields. The quantities of biosolids utilized by each site under the Controlled Solids Distribution Program and how they were used are shown in Table 9. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is six times per year.

The USEPA Region V designated, on a site-specific basis for the Calumet and Stickney WRPs, two of the District's biosolids processing trains as equivalent to a Process to Further Reduce Pathogens (PFRP). The PFRP equivalency took effect on August 1, 2002 (Appendix III), and on this basis, all EQ biosolids produced by the Calumet WRP met the Part 503 Class A pathogen requirements of 503.32a8 in 2008.

All Calumet WRP EQ biosolids that were land applied in 2008 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 10), the Class A pathogen limits of Section 503.32a8 (Table 11), and the vector attraction reduction requirements of Section 503.33b1 (Table 10) or Section 503.33b2 (Table 12). Management practices complied with Section 503.14 as previously described in a letter to Mr. Michael J. Mikulka dated January 28, 1994 (Appendix I).

TABLE 7: NITROGEN AND METAL CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2008

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/kg -----											
7/16/08	35,116	5,193	9	5	459	1.0	16	41	112	5	1,092
7/23/08	61,705	8,280	8	3	434	1.2	16	37	94	4	1,232
8/1/08	52,255	9,636	8	4	428	1.2	14	43	80	2	1,127
8/14/08	32,983	6,093	8	4	360	0.87	12	41	94	3	984
9/30/08	37,884	5,551	9	3	397	0.89	15	41	100	6	1,130
10/8/08	32,347	5,284	9	3	397	1.4	16	38	108	3	1,165
10/14/08	27,248	3,069	10	6	447	1.3	18	42	118	5	1,093
10/14/08	34,220	4,434	9	4	405	1.4	18	39	118	3	1,174
10/22/08	39,627	6,647	10	4	412	1.0	16	39	123	5	1,195
10/22/08	31,427	1,954	11	4	452	1.0	18	45	126	4	1,153
10/22/08	34,675	3,098	11	4	456	1.9	17	43	121	5	1,168
11/20/08	32,883	5,365	11	4	409	0.80	17	39	116	5	1,150
11/25/08	38,502	6,430	11	4	393	0.94	16	37	112	4	1,116
Minimum	27,248	1,954	8	3	360	0.80	12	37	80	2	984
Mean ¹	37,759	5,464	10	4	419	1.2	16	40	109	4	1,137
Maximum	61,705	9,636	11	6	459	1.9	18	45	126	6	1,232
503 Limit	NL	NL	41	39	1,500	17	75	420	300	100	2,800

¹In calculating the mean, values less than the detection limit were considered as the detection limit.
NL = No Limit.

TABLE 8: DIGESTER¹ TEMPERATURES AND DETENTION TIMES FOR CENTRIFUGE CAKE BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2008

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32b3 ²
	---- °F ----	--- days ---		--- days ---
January	96	24.4	yes	15.0
February	96	25.0	yes	15.0
March	96	23.0	yes	15.0
April	96	23.9	yes	15.0
May	99	26.3	yes	15.0
June	98	23.9	yes	15.0
July	96	24.0	yes	15.0
August	96	24.7	yes	15.0
September	96	22.3	yes	15.0
October	97	28.5	yes	15.0
November	96	26.6	yes	15.0
December	96	25.3	yes	15.0

¹Temperatures and detention times are for primary digesters 1 through 8 at the Calumet WRP. All biosolids exiting these primary digesters also received additional processing in secondary digesters 9 through 12.

²For anaerobic digestion at average temperature achieved.

TABLE 9: QUANTITIES OF CALUMET WATER RECLAMATION PLANT AIR-DRIED BIOSOLIDS UTILIZED BY EACH SITE UNDER THE CONTROLLED SOLIDS DISTRIBUTION PROGRAM IN 2008

User	Location	Quantity (dry tons)
Bartlett Park District, Bartlett	Koehler Fields	13.5
Bensenville Park District, Bensenville	White Pines Golf Course	157.6
Blue Island Park District, Village of Blue Island	Memorial, Stan's, and York Parks	208.2
Chicago Park District, Chicago ¹	Park 23, 8700 – 8900 Streets south	1,104.2
Coyote Run Golf Course, Flossmoor	Golf Course	140.5
Evergreen Park High School, Evergreen Park	School athletic fields	28.1
Frankfort Park District, Frankfort	Founders Park	132.9
Frankfort Square Park District, Frankfort	Hilder Walker Park	166.6
Glenwoodie Golf Course, Chicago Heights	Golf Course	14.9
Golden Gate Community, Chicago ¹	Landscape	9.4
Highlands Country Club, Westchester ¹	Golf Course	1,818.4
Indian Lakes Resort, Bloomingtondale	Golf Course	50.3
Leyden High School East, Northlake	School athletic fields	48.8
Leyden High School West, Northlake	School athletic fields	143.7

TABLE 9 (Continued): QUANTITIES OF CALUMET WATER RECLAMATION PLANT BIOSOLIDS UTILIZED BY EACH SITE UNDER THE CONTROLLED SOLIDS DISTRIBUTION PROGRAM IN 2008

User	Location	Quantity (dry tons)
Metropolitan Water Reclamation District of Greater Chicago, Chicago ¹	Native Landscaping Research, Stickney WRP	16.5
Oak Forest High School, Oak Forest	School athletic fields	28.8
Oak Lawn Park District, Oak Lawn	Sullivan Park	49.5
Park District of Tinley Park, Tinley Park	Towne Point Park	80.0
Reavis High School, Burbank	School athletic fields	81.8
Richards High School, Oak Lawn ¹	School athletic fields	145.4
Rizzi Associates, Naperville ¹	Landscape	27.5
Summit Park District, Summit	Legion Park ¹ and Main Park	268.8
Tinley Park High School, Tinley Park	School athletic fields	48.0
Village of Steger	Veteran's Park	67.0
West Chicago Park District, West Chicago	Reed-Keppler Park	81.5
Woodridge Park District, Woodridge	Cypress Cove Park	44.8
Total		4,976.7

¹Biosolids were used as soil amendment; all others used as nutrient source for turf growth.

TABLE 10: NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METAL CONCENTRATIONS IN AIR-DRIED BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO LAND IN 2008

Sample Date	TKN	NH ₃ -N	TSV ¹		As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
			TVS ¹	Reduction									
----- mg/dry kg-----		-----%-----		-----mg/dry kg-----									
03/24/08	12,487	47	26	69.7	11	4	288	0.82	12	39	96	2	680
05/21/08	12,008	36	26	80.7	10	5	307	0.94	12	38	94	2	720
05/29/08	12,595	43	28	79.0	11	5	310	0.84	11	38	97	1	733
06/18-19/08	14,927	33	25	79.3	10	4	312	0.92	11	36	90	2	662
06/30-07/02/08	14,864	98	32	70.3	10	5	389	1.22	15	43	121	0	869
07/10/08	18,860	335	38	66.5	11	5	441	1.36	17	38	127	5	1,091
07/23/08	13,809	75	26	80.7	10	7	302	0.89	13	36	105	3	813
07/31/08	20,758	617	38	65.6	12	6	430	1.20	17	42	137	0	1,088
08/13/08	13,915	19	30	70.9	9	5	293	0.84	11	38	98	0	708
08/16/08	18,041	689	34	65.5	10	5	396	1.09	15	39	112	1	959
08/22/08	17,072	1,520	42	50.6	11	4	494	1.14	19	40	122	4	1,114
08/25-27/08	27,526	2,611	44	46.5	11	4	484	0.94	17	39	121	5	1,196
08/26/08	26,855	805	44	48.2	1	0.5	385	1.00	4	12	15	2	404
09/30/08	23,108	513	40	48.4	9	4	438	2.78	15	39	112	4	1,070
09/30-10/02/08	25,322	660	55	20.7	11	4	461	1.32	15	38	120	4	1,127
10/06-07/08	24,819	913	41	55.3	9	4	462	1.45	17	43	120	5	1,109
10/16-17/08	27,422	1,269	41	56.1	11	4	471	0.85	16	43	123	5	1,165
10/17/08	26,059	1,273	39	59.0	11	4	456	1.51	17	43	123	5	1,147
10/17-18/08	28,588	3,115	40	56.8	11	4	479	1.47	16	43	125	5	1,183
10/23/08	28,608	1,627	41	54.9	8	4	441	1.05	15	38	112	4	1,050
10/27-31/08	25,295	2,356	40	57.3	11	4	480	1.15	16	39	123	8	1,161
11/03/08	21,121	4,135	42	70.8	11	4	481	1.18	17	42	129	5	1,224
11/05-06/08	25,289	4,153	39	73.6	11	5	478	1.19	16	43	127	6	1,198
Minimum	12,008	19	25	21	1	0.5	288	0.82	4	12	15	0	404
Mean	20,841	1,171	37	62	10	4	412	1.2	15	39	111	3	977
Maximum	28,608	4,153	55	81	12	7	494	2.8	19	43	137	8	1,224
503 Limit	NL	NL	NL	38	41	39	1,500	17	75	420	300	100	2,800

¹TVS = Total Volatile Solids.

NL = No Limit.

TABLE 11: DATA FOR MONITORING PART 503 CLASS A PATHOGEN COMPLIANCE AT THE CALUMET WATER RECLAMATION PLANT IN 2008

Sample Date	Lagoon Source	Total Solids	Fecal Coliform
		---- % ----	---- MPN ¹ /g ----
3/18/2008	3	80.3	36
5/13/2008	14	64.8	59
5/14/2008	3	66.4	43
5/14/2008	6	62.7	16
5/20/2008	14	60.0	48
5/28/2008	14	65.1	77
7/01/2008	14	94.2	30
7/01/2008	14	84.0	45
8/13/2008	19	77.9	49
8/20/2008	19	86.9	78
9/04/2008	19	83.4	8
9/25/2008	19	82.8	120
9/30/2008	19	76.7	76
10/07/2008	19	73.9	39
10/14/2008	19	65.5	44
10/14/2008	19	64.1	45
10/21/2008	19	61.0	470
10/30/2008	19	70.3	97

¹MPN = Most Probable Number.

TABLE 12: SUMMARY OF RESULTS OF ADDITIONAL ANAEROBIC DIGESTION TESTS FOR VOLATILE SOLIDS REDUCTION AT THE CALUMET WATER RECLAMATION PLANT FOLLOWING OPTION 2 OF SECTION 503.33(b)

Test Start Date	Before Test		After Test		Volatile Solids Reduction	
	TS ¹	TVS ¹	TS	TVS	By Equation ²	By Mass
	----- % -----					
01/10/08	1.46	55.42	1.39	53.61	7.0	7.9
02/07/08	2.18	51.86	2.04	49.32	9.7	11.4
03/13/08	2.15	51.89	2.03	48.54	12.5	11.5
04/04/08 ³	2.31	55.76	2.10	50.31	19.7	18.0
05/08/08	2.47	51.58	2.35	48.95	10.0	9.8
05/22/08	2.42	52.00	2.35	47.98	14.9	10.3
06/19/08	2.48	50.76	2.33	47.17	13.4	12.8
07/16/08	2.45	53.02	2.24	48.65	16.0	15.8
08/07/08	2.35	51.14	2.24	48.84	8.8	8.9
08/21/08	2.52	50.45	2.33	46.15	15.8	15.6
09/18/08	1.98	51.44	1.82	48.51	11.1	13.3
09/24/08	2.71	48.76	2.55	46.47	8.8	10.5
10/02/08	2.86	48.08	2.70	45.95	8.2	10.0
11/13/08	2.33	50.48	2.37	47.63	10.8	4.2
12/11/09	2.11	57.26	1.96	53.31	14.8	13.4

¹TS = Total Solids content; TVS = Total Volatile Solids content.

²The Van Kleeck Equation was used in calculations.

³According to Table 10, volatile solids reduction greater than 38 percent achieved in April.

STICKNEY WATER RECLAMATION PLANT

Treatment Plant and Biosolids Process Train Description

The Stickney WRP, located in Stickney, Illinois, has a design average flow of 1,200 mgd. Wastewater reclamation processes include primary (Imhoff and primary settling) and secondary (activated sludge process) treatment. All solids produced at this WRP are anaerobically digested. Stickney WRP biosolids are then:

1. Placed into lagoons for dewatering, aging, and stabilization, and then transported to paved cells and air-dried prior to:
 - a) Application to land as EQ biosolids under the District's Controlled Solids Distribution Permit.
 - b) Use at local municipal solid waste landfills as final landfill cover.
 - c) Disposal in local municipal solid waste landfills.
2. Dewatered by centrifuging to approximately 25 percent solids content, and then applied to land by a private contractor as a Class B cake.
3. Dewatered by centrifuging to approximately 25 percent solids content, transported to paved cells, and air-dried prior to use as daily landfill cover.
4. Dewatered by centrifuging to approximately 25 percent solids content, and conveyed to Metropolitan Biosolids Management, LLC under Contract 98-RFP-10 for further processing.
5. Dewatered by centrifuging to approximately 25 percent solids content, placed into lagoons for aging and stabilization, and transported to paved cells and air-dried prior to:
 - a) Application to land as EQ biosolids under the District's Controlled Solids Distribution Permit.
 - b) Use at local municipal solid waste landfills as final landfill cover.
 - c) Disposal in local municipal solid waste landfills.

In 2008, the total biosolids production at the Stickney WRP was 120,586 dry tons (Table 1). This total includes biosolids generated from processing of sludge originating at the Stickney WRP as well as the sludge that was imported from the North Side and Lemont WRPs for further processing. The quantity of biosolids that was used and disposed of (155,574 dry tons) was more than the total 2008 production for the Stickney WRP due to a net removal of biosolids from lagoons and drying cells.

Summary of Use and Disposal at Landfills

In 2008, the Stickney WRP sent 54,787 dry tons of biosolids to landfills. Of this amount, 26,451 dry tons were used as daily cover, 26,969 dry tons were used as final cover, and 1,367 dry tons were co-disposed with municipal solid waste. These practices are exempt from the Part 503 Regulations and require no further reporting.

Land Application of Centrifuge Cake Biosolids

In 2008, the Stickney WRP land applied a total of 71,671 dry tons of centrifuge cake biosolids to farmland under IEPA Permit No. 2004-SC-0701. This includes 71,637 utilized through contracts with Synagro Midwest, Inc. and Stewart Spreading, Inc., and 34 dry tons utilized on experimental fields at the District's Fulton County land reclamation site. The total does not include the 2,284 dry tons of centrifuge cake biosolids that was transported from the John E. Egan WRP to the Harlem Avenue Solids Management Area, prior to being applied to farmland by Synagro Midwest, Inc. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is 12 times per year.

All Stickney WRP centrifuge cake biosolids that were land applied in 2008 met the pollutant concentration limits in Table 3 of Section 503.13 ([Table 13](#)), the Class B pathogen anaerobic digester time and temperature requirements of Section 503.32b3 ([Table 14](#)), and the vector attraction reduction requirements of Section 503.33b10. [Table 13](#) also contains the biosolids nitrogen concentration data that were used by the land applier to compute the agronomic loading rates at the farmland sites.

Land Application of Aged, Air-Dried Biosolids

In 2008, the Stickney WRP land applied a total of 15,071 dry tons of air-dried EQ biosolids through the District's Controlled Solids Distribution Program under IEPA Permit No. 2005-SC-3793 for construction and maintenance of golf courses and recreation fields. The quantities of biosolids utilized by each site under the program and how they were used are shown in [Table 15](#). In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is twelve times per year, except for pathogen monitoring, which is required six times per year as described in a letter to Mr. Richard Lanyon dated January 12, 2000 ([Appendix II](#)).

These air-dried biosolids at the Stickney WRP were not generated by the PFRP equivalent processing train. Therefore, the biosolids were tested for Class A compliance in accordance with Section 503.32a5.

All Stickney EQ biosolids that were land applied in 2008 met the pollutant concentration limits in Table 3 of Section 503.13 ([Table 16](#)), the Class A pathogen limits of Section 503.32a5 ([Table 17](#)), and the vector attraction reduction requirements of Section 503.33b1 ([Table 16](#)) or Section 503.33b2 ([Table 12](#)). Management practices complied with Section 503.14 as previously described in a letter to Mr. Michael J. Mikulka dated January 28, 1994 ([Appendix I](#)).

TABLE 13: NITROGEN AND METAL CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2008

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
-----mg/kg-----											
01/08/08	49,863	7,138	<5	3	380	0.70	14	37	95	4	773
02/05/08	40,283	6,163	<5	3	373	0.73	14	43	101	<4	771
03/03/08	47,419	8,160	<5	3	360	0.41	11	37	105	5	747
03/04/08	47,485	8,853	<5	3	385	0.48	11	39	105	5	771
04/01/08	45,696	8,035	<5	3	362	0.69	12	37	101	<4	776
04/15-16/08	41,505	9,856	<5	3	357	0.73	13	39	106	<4	878
05/05/08	35,528	7,930	<5	3	341	0.95	13	37	104	<4	798
05/05-10/08	54,515	12,565	<5	2	585	0.88	18	69	46	<4	762
05/06/08	41,079	5,023	<5	3	329	0.91	11	33	103	<4	786
05/06/08	47,865	11,186	<5	3	359	0.78	12	38	111	<4	865
05/15-17/08	46,283	11,817	<5	3	369	0.81	12	39	108	<4	829
05/19-24/08	35,513	8,473	<5	3	385	0.70	13	43	113	<4	831
05/27-30/08	56,248	12,737	<5	3	380	0.62	14	42	118	<4	808
05/27-30/08	49,137	10,803	<5	3	395	1.00	16	40	106	<4	827
06/02-03/08	27,068	13,653	<5	3	380	0.78	11	40	106	<4	748
06/02-03/08	23,579	9,920	<5	3	394	0.80	12	38	110	<4	756
06/03/08	44,370	5,506	<5	3	343	0.77	10	36	109	<4	787
06/03/08	37,990	9,481	<5	3	388	0.97	13	40	116	<4	798
06/13/08	25,229	12,267	<5	3	398	0.71	12	39	107	<4	772
06/18/08	37,825	6,409	5	4	392	1.02	15	49	127	<4	911
07/07/08	36,883	4,391	<5	3	378	0.83	12	35	132	<4	821
08/04/08	41,780	11,807	<5	4	438	1.04	15	48	133	<4	919
08/05/08	36,055	4,377	<5	3	417	0.84	13	42	151	<4	945
08/11/08	37,164	9,779	<5	4	392	0.86	13	42	118	<4	824
08/12-15/08	39,712	7,156	<5	4	411	0.86	12	43	129	<4	893
08/18-22/08	43,622	9,526	<5	3	380	0.88	11	38	130	<4	840
08/18-23/08	47,918	11,245	<5	3	393	0.95	13	43	111	<4	795

TABLE 13 (continued): NITROGEN AND METAL CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2008

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/kg -----											
08/25-27/08	49,574	13,258	<5	3	410	0.81	13	44	115	<4	822
08/25-29/08	41,187	9,820	<5	3	408	1.13	12	41	142	<4	898
08/27-29/08	45,791	9,651	<5	3	375	0.90	12	37	113	<4	775
09/02/08	33,697	3,245	<5	<0.4	375	0.76	14	38	146	<4	870
09/02-03/08	34,488	7,295	<5	3	361	1.12	18	49	135	<4	835
09/02-03/08	37,989	10,225	<5	3	369	1.05	14	42	126	<4	805
09/11/08	40,792	11,682	<5	3	376	1.06	14	44	118	<4	791
09/18/08	28,338	4,966	<5	3	386	0.86	13	37	144	<4	871
09/22-23/08	38,881	9,422	<5	3	366	0.99	13	43	128	<4	807
09/22-23/08	33,544	6,801	<5	3	376	1.13	14	44	146	<4	855
09/23-27/08	35,788	8,094	<5	3	389	1.05	14	43	147	<4	858
09/29/08	37,950	10,633	<5	3	387	1.03	15	37	145	<4	849
10/01-03/08	43,721	10,639	<5	3	379	0.83	13	37	150	14	855
10/04/08	37,289	9,166	<5	3	369	0.92	15	39	153	15	862
10/06-11/08	35,673	6,722	<5	3	383	1.05	14	39	151	14	880
10/07/08	40,159	4,194	<5	3	380	0.61	14	38	138	<4	833
10/13-18/08	37,473	8,932	<5	3	425	1.17	13	37	157	11	880
10/20-23/08	39,786	10,481	<5	3	399	1.34	13	38	162	11	881
10/29-31/08	39,882	9,371	<5	3	402	1.08	14	41	146	12	856
10/29-31/08	41,438	10,576	<5	4	405	1.12	15	43	155	13	919
11/01/08	38,611	9,803	<5	3	412	1.02	13	40	149	13	917
11/01/08	38,522	8,273	<5	3	405	0.94	14	39	145	15	885
11/03-06/08	38,194	10,257	<5	5	430	1.04	18	47	161	17	986
11/03-08/08	38,737	11,567	<5	4	407	1.22	16	45	156	13	928
11/06/08	41,915	3,972	<5	2	376	0.78	16	38	125	<4	820
11/18-21/08	45,309	13,330	<5	4	423	0.98	17	47	154	15	940
11/26/08	45,249	6,887	<5	3	405	0.83	17	41	118	14	785

TABLE 13 (continued): NITROGEN AND METAL CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2008

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/kg -----											
11/26-28/08	41,753	12,624	<5	4	427	1.28	16	45	163	10	961
12/02/08	44,515	4,032	<5	3	394	0.85	18	42	108	<4	764
Minimum	23,579	3,245	<5	<0.4	329	0.41	10	33	46	<4	747
Mean ¹	40,426	8,932	5	3	390	0.90	14	41	127	6	840
Maximum	56,248	13,653	5	5	585	1.34	18	69	163	17	986
503 Limit	NL	NL	41	39	1,500	17	75	420	300	100	2,800

¹In calculating the mean, values less than the detection limit were considered as the detectable limit.
 NL = No Limit.

TABLE 14: DIGESTER TEMPERATURES AND DETENTION TIMES FOR CENTRIFUGE CAKE BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2008

Month	Average Temperature ---- °F ----	Average Retention Time --- days ---	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32b3 ¹ --- days ---
January	97	21.4	yes	15.0
February	97	22.7	yes	15.0
March	97	20.2	yes	15.0
April	97	20.8	yes	15.0
May	95	21.4	yes	15.0
June	97	24.7	yes	15.0
July	98	26.7	yes	15.0
August	98	26.4	yes	15.0
September	98	36.3	yes	15.0
October	98	30.7	yes	15.0
November	98	32.1	yes	15.0
December	97	22.4	yes	15.0

¹For anaerobic digestion at average temperature achieved.

TABLE 15: QUANTITIES OF STICKNEY WATER RECLAMATION PLANT BIOSOLIDS UTILIZED BY EACH SITE UNDER THE CONTROLLED SOLIDS DISTRIBUTION PROGRAM IN 2008

User	Location	Quantity (dry tons)
Blue Island Park District, Village of Blue Island	Centennial Park	285.7
Chicago Park District, Chicago	Park 23, 8700 – 8900 Streets south	754.2
Cook County Forest Preserve District, River Forest ¹	Miller Meadows Forest Preserve	4,041.7
Frankfort SD 157-C, Frankfort	Hickory Creek Middle School recreation fields	72.6
Highlands Country Club, Westchester ¹	Golf course	8,397.1
Joliet County Club, Joliet	Golf course	35.6
Lakepoint Club Corp./DBA Cinder Ridge, Wilmington	Golf course	428.7
Leyden High School West, Northlake	School recreation fields	73.3
Metropolitan Water Reclamation District of Greater Chicago, Chicago ¹	Landscaping at Northside WRP	63.2
Midlothian Park District, Midlothian	Memorial Park	39.4
Morgan Park High School, Chicago	Morgan Park HS	98.9
Proviso Township High School, Hillside	School recreation fields	26.2
Reavis High School, Burbank	School recreation fields	136.7

TABLE 15 (Continued): QUANTITIES OF STICKNEY WATER RECLAMATION PLANT BIOSOLIDS UTILIZED BY EACH SITE UNDER THE CONTROLLED SOLIDS DISTRIBUTION PROGRAM IN 2008

User	Location	Quantity (dry tons)
St. Charles Park District, St. Charles	Campton Hills Park, Eastside Sports Complex	265.0
St. Xavier University, Chicago	Athletic fields	70.4
Summit Park District, Village of Summit	Main Park	86.0
Village of Romeoville	Volunteer Park	166.9
Woodridge Park District, Woodridge	Cypress Cove Park	29.6
Total		15,071.2

Biosolids were used as soil amendment; all others used as nutrient source for turf growth.

TABLE 16: NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METAL CONCENTRATIONS FOR AIR-DRIED BIOSOLIDS FROM THE STICKNEY WATER RECLAMATION PLANT APPLIED TO LAND IN 2008

Sample Date	TKN	NH ₃ -N	TVS ¹	TVS ¹ Reduction	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	--- mg/dry kg -----		----- % -----		----- mg/dry kg-----								
07/23/08	25,315	2,308	40.7	41.4	<5	4	444	0.97	14	49	138	<4	926
07/25/08	19,704	2,466	38.8	45.8	<5	4	433	0.86	15	52	134	<4	905
07/25-26/08	11,472	1,584	37.7	48.3	<5	4	417	1.22	15	52	131	<4	861
07/25-26/08	15,264	1,573	37.2	49.3	<5	4	441	1.29	15	49	130	<4	898
07/28-29/08	19,229	2,001	39.1	45.1	<5	4	439	1.17	15	48	131	<4	892
07/28-29/08	24,285	2,528	39.0	45.4	<5	4	417	1.22	16	49	134	<4	877
07/29/08	21,633	2,269	36.4	51.0	<5	4	428	1.14	16	52	137	<4	896
07/31/08	28,439	2,932	38.4	46.8	<5	4	425	1.07	16	50	130	<4	882
07/31/08	26,690	2,656	38.4	46.7	<5	4	432	1.24	15	51	133	<4	875
08/04/08	22,494	2,189	35.6	48.9	<5	4	416	0.99	16	47	135	<4	866
08/07-08/08	24,927	3,294	34.5	51.3	<5	4	430	1.17	14	47	140	<4	933
08/11/08	20,100	1,607	35.9	48.4	<5	4	411	1.13	16	47	133	<4	868
08/11/08	23,350	2,078	32.3	56.0	<5	4	369	0.98	17	40	120	<4	797
08/11/08	28,971	3,101	35.3	49.6	<5	4	427	0.98	17	48	137	<4	903
08/13/08	26,417	1,828	38.1	43.2	<5	4	459	0.96	16	53	148	<4	984
08/14/08	26,565	1,683	36.2	47.6	<5	4	403	0.97	16	47	131	<4	841
08/15/08	10,027	1,586	35.9	48.3	<5	4	430	1.11	15	48	142	<4	927
08/16/08	21,516	2,718	36.5	47.0	<5	4	416	0.93	14	48	128	<4	882
08/20/08	19,948	1,944	35.6	49.0	<5	4	410	1.04	17	47	132	<4	854
08/21-22/08	15,720	1,823	35.6	48.9	<5	4	449	1.15	17	51	142	<4	960
08/27-28/08	16,100	2,090	35.7	48.8	<5	4	427	0.88	15	49	136	<4	864
08/18-19/08	26,737	4,088	35.5	49.3	<5	4	427	1.08	14	48	137	<4	929

TABLE 16 (continued): NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METAL CONCENTRATIONS FOR AIR-DRIED BIOSOLIDS FROM THE STICKNEY WATER RECLAMATION PLANT APPLIED TO LAND IN 2008

Sample Date	TKN	NH ₃ -N	TVS ¹ Reduction	TVS ¹ Reduction	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	---- mg/dry kg -----		-----%-----										----- mg/dry kg-----
09/03/08	20,045	3,859	41.8	41.2	<5	4	397	1.07	18	49	161	<4	910
09/29/08	19,206	333	38.2	49.4	<5	4	414	1.48	17	48	152	<4	925
10/01-02/08	21,967	434	41.0	42.1	<5	4	424	1.28	17	48	153	13	963
10/07/08	16,082	2,714	41.8	40.0	<5	4	434	1.36	16	48	168	11	1,007
10/13/08	23,976	2,815	39.3	45.9	<5	4	436	1.18	14	49	146	15	927
10/13-18/08	18,893	2,616	39.1	46.4	<5	4	441	1.23	14	48	163	14	1,007
10/21/08	27,633	3,705	39.2	46.3	<5	4	446	1.07	14	50	150	12	961
11/04/08	26,040	3,343	40.5	57.0	<5	3	412	1.19	16	48	143	16	902
33 11/06/08	21,589	1,686	40.1	57.7	<5	4	410	1.18	14	49	149	14	897
Minimum	10,027	333	32.3	40.0	<5	3	369	0.9	14	40	120	<4	797
Mean ²	21,624	2,318	37.7	47.8	5	4	425	1.1	15	49	140	6	907
Maximum	28,971	4,088	41.8	57.7	<5	4	459	1.5	18	53	168	16	1,007
503 Limit	NL	NL	NL	38	41	39	1,500	17	75	420	300	100	2,800

¹TVS = Total Volatile Solids.

²In calculating the mean, values less than the detection limit were considered as the detection limit.

NL = No Limit.

TABLE 17: MICROBIOLOGICAL ANALYSIS FOR AIR-DRIED BIOSOLIDS
FROM THE STICKNEY WATER RECLAMATION PLANT
APPLIED TO LAND IN 2008

Sample Date	Lagoon Source	Total Solids	Fecal Coliform	Helminth Ova	Enteric Virus
		%	----MPN ¹ /g----	No./4g	PFU ² /4g
04/17/08	25	42.73	--	<0.0800	<0.8000
05/29/08	25	67.75	560	--	--
04/29/08	25	43.61	--	<0.0800	<0.8000
05/29/08	25	76.61	250	--	--
05/27/08	28	29.05	--	<0.0800	<0.8000
06/26/08	28	71.46	95	--	--
05/27/08	28	25.78	--	<0.0800	<0.8000
07/01/08	28	86.31	8	--	--
06/10/08	28	27.07	--	<0.0800	<0.8000
7/9/2008	28	81.01	72	--	--
06/17/08	28	22.65	--	<0.0800	<0.8000
07/30/08	28	69.94	41	--	--
07/31/08	28	79.50	36	<0.0800	<0.8000
07/31/08	28	67.50	--	<0.0800	<0.8000
08/13/08	28	93.23	1	--	--

¹MPN = Most Probable Number.

²PFU = Plaque-Forming Unit.

Centrifuge Cake Biosolids to Pelletizing Facility

In 2008, the Stickney WRP sent 14,045 dry tons of centrifuge cake biosolids to the pelletizing facility owned and operated by Metropolitan Biosolids Management, LLC, Stickney, Illinois, under Contract No. 98-RFP-10. Metropolitan Biosolids Management is responsible for final utilization, and the monitoring and report requirements of these biosolids.

DISTRICT BIOSOLIDS DISTRIBUTED TO LANDFILLS UNDER 40 CFR PARTS 258 AND 261

Biosolids from two of the District's WRPs (Stickney and Calumet) were sent to landfills in 2008 for co-disposal with municipal solid waste, use as daily cover, and use as final cover. Biosolids going to these landfills are either processed to meet the requirements of AS 95-4, AS 98-5, and AS 03-02 (Adjusted Standards) approved by the Illinois Pollution Control Board for biosolids used as a final vegetative cover, or they are centrifuged and air-dried to various end points, and analyzed as specified in 40 CFR Part 261 to establish the nonhazardous nature of this material for biosolids used as daily cover and co-disposed. Analytical results, including TCLP constituents, PCB, cyanide, sulfide, and paint filter test, are submitted to the landfill company to satisfy the requirements of their IEPA permit. District biosolids have always met the requirements of 40 CFR Parts 258 and 261, and the Illinois nonhazardous waste landfill regulations (Title 35, Subtitle G, Chapter I, Subchapter h, Part 810).

Stickney Water Reclamation Plant

In 2008, a total of 54,787 dry tons of biosolids from the Stickney WRP were co-disposed, used as daily cover with municipal solid waste, or used as a final vegetative cover at nonhazardous waste landfills in 2008.

A total of 1,367 dry tons of biosolids were co-disposed, 26,451 dry tons used as daily cover, and 25,823 dry tons used as final cover at Land and Lakes River Bend Prairie Landfill, Dolton, Illinois.

A total of 1,146 dry tons of biosolids were used as landfill final cover at Paxton 1 Landfill, Chicago, Illinois.

Calumet Water Reclamation Plant

In 2008, a total of 20,177 dry tons of biosolids from the Calumet WRP were co-disposed, or used as final cover.

A total of 601 dry tons of biosolids from the Calumet WRP were co-disposed with municipal solid waste and 8,266 dry tons used as final cover at Land and Lakes River Bend Prairie Landfill, Dolton, Illinois.

A total of 2,903 dry tons were used as final cover at Heartland Landfill, Hodgkins, Illinois, 7,993 dry tons were used at CID Landfill, Chicago, Illinois, and 415 dry tons at Paxton 1 Landfill, Chicago, Illinois.

APPENDIX I

BIOSOLIDS MANAGEMENT PROGRAMS OF THE METROPOLITAN WATER
RECLAMATION DISTRICT OF GREATER CHICAGO UNDER
40 CFR PART 503

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Metropolitan Water Reclamation District of Greater Chicago

100 EAST ERIE STREET CHICAGO, ILLINOIS 60611 312 / 751-5600

Cecil Lue-Hing
Director of R & D
 312 / 751-5190

January 28, 1994

Mr. Michael J. Mikulka
 Chief of Compliance Section
 United States Environmental
 Protection Agency
 Region V
 77 West Jackson Boulevard
 Chicago, Illinois 60604-3590

Dear Mr. Mikulka:

Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

The Metropolitan Water Reclamation District of Greater Chicago (District) has three sludge management programs that employ sewage sludge applications to land under the 40 CFR Part 503 Regulations. These programs are the Fulton County, Illinois land application site, the Hanover Park Fischer Farm at the Hanover Park Water Reclamation Plant, and the Controlled Solids Distribution Program. The District feels that it is important to define its interpretation of the 40 CFR Part 503 Regulations with respect to each of these programs.

On July 22, 1993, we sent Mr. John Colletti, then Acting Sludge Coordinator, a letter (copy attached) expressing our concerns regarding compliance monitoring, record keeping and reporting under 40 CFR Part 503 for each of these programs.

The District believes that its existing sludge management programs are conservative, and that monitoring and environmental protection measures far exceed the requirements of the Part 503 Regulations. This letter is designed to inform you of the conservative nature of these sludge management programs, and the fact that they are in complete compliance with the spirit and specific language of the Part 503 Regulations.

January 28, 1994

Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

Fulton County Illinois Site

The District considers the application of sewage sludge at its Fulton County, Illinois site to be under "Land Application" section (subpart B) of the Part 503 Regulations. Sewage sludge is applied at rates approved by the Illinois Environmental Protection Agency (IEPA) for reclamation of disturbed strip-mine spoils. Under the current permit with the IEPA (Permit No. 1993-SC-4294 issued December 3, 1993), sewage sludge is being applied at an agronomic rate to supply nutrients for productive crop yields.

Sewage sludge applied at the site will contain metal concentrations below the pollutant limits established in Table 3 of Part 503.13, subsection b(3) of the regulations. As a result, the Part 503 cumulative pollutant limits in Table 4 of Part 503.13 subsection b(4) will not apply to future applications of sewage sludge at the Fulton County site.

Sewage sludge applied at the Fulton County site will far exceed the Class B pathogen requirements by conservatively achieving operating temperature and detention times in excess of the Part 503 anaerobic digester operating requirements (§503.32b3).

The Part 503 vector attraction reduction requirements will be easily met since the District consistently reduces the volatile solids content of the Fulton County sludge far greater than the required 38 percent (§503.33b1).

The Part 503 Regulations do not specify what kind of crop can be grown under land application. Crops typically grown at the site are corn, winter wheat, and hay. Corn and winter wheat grown on sludge application fields are sold for ethanol production, and animal feed. Hay grown on application fields receiving supernatant from on-site lagoons containing sewage sludge is currently harvested three times per year, as specified under the existing IEPA permit. This hay is used as animal feed or mulch for project reclamation activities.

Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

The Class B pathogen requirements for the supernatant application field where hay is grown will be met by ensuring that supernatant application ceases 30 days before hay crop harvesting.

The Part 503 Regulations do not specify what kind of surface water protection system is required for land application. The permitting authority, on a case-by-case basis, may impose more stringent requirements when necessary to protect the public health and the environment. Sewage sludge application fields at the Fulton County site are bermed, and have runoff retention basins designed to capture all runoff.

Waters released from the 65 retention basins at the site must, and do meet standards specified in the existing IEPA discharge permit for pH, total suspended solids, fecal coliforms, and biochemical oxygen demand. Although not required in the Part 503 Regulations, these restrictions show that District operations at the Fulton County site are designed to minimize contamination of surface waters.

Supernatant application fields at the site are not bermed. However, supernatant application in the fields is controlled so that it does not contaminate indigenous ponds and strip-mined reservoirs. Although such restrictions are not required in the Part 503 Regulations, they prevent contamination of waters used by wildlife and water fowl.

The Class B pathogen requirements in the Part 503 Regulations dictate that public access to application fields be limited. The District will comply with the Class B pathogen requirement for restricted public access by a combination of fencing, posted signs, locked gates, and security guards. These measures are conservative and far exceed the public access requirements in the Part 503 Regulations.

The Part 503 Regulations prohibit the adverse modification or destruction of endangered species or their critical habitat. The District has no evidence to indicate that sludge applications have affected the habitat of wildlife species at the site.

January 28, 1994

Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

The Part 503 Regulations do not specifically prohibit bulk sewage sludge application to flooded, frozen, or snow covered lands. The regulations state, however, that any sludge applied to these lands may not enter surface waters or wet lands. The District does not apply sewage sludge to floodplains, frozen, or snow covered ground at the Fulton County site. The site permit with the IEPA prohibits applying sewage sludge under these conditions.

The Part 503 Regulations state that bulk sewage sludge may not be applied within 10 meters of a surface water body unless authorized by a permit. The District does not apply sewage sludge within 10 meters of the waters of the state. The District's IEPA permit specifies that sludge shall not be applied to land which lies within 200 feet (61 meters) of surface waters.

The Part 503 Regulations require that the land application of bulk sewage sludge may not exceed the agronomic rate for the particular agricultural, forest or public contact site. In some cases the permitting authority may specifically authorize the application of sludge to a reclamation site at an annual rate that exceeds the agronomic rate. The District is currently applying sewage sludge at an application rate of 57 dry tons per acre per year on bermed sludge application fields, and 25 dry tons per acre per year on nonbermed fields. Technical justification for the sludge application rate of 57 dry tons per acre per year is given in the attachment entitled "Fulton County." This application rate is approved under the IEPA permit.

Hanover Park Fischer Farm

The District considers the application of sewage sludge at its Hanover Park Fischer Farm site to fall under the "Land Application" section (subpart B) of the Part 503 Regulations. Sewage sludge is applied at a rate of 20 dry tons per acre per year as specified in the IEPA permit (Permit No. 1992-SC-0942 issued August 18, 1992) for the site.

Sewage sludge applied at the site is far below the pollutant concentration limits established in Table 3 of Part 503.13, subsection b(3) of the regulations for metals.

January 28, 1994

Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

Sewage sludge applied at the Hanover Park Fischer Farm site conservatively meets the Class B pathogen requirements by either fecal coliform analysis (§503.32b2), or by meeting the Part 503 anaerobic digester operating temperature and detention time requirements (§503.32b3).

The District will ensure that the Part 503 vector attraction reduction requirements are met by electing to sub-surface inject all sludge applied to the site.

The Part 503 Regulations do not specify what kind of crop can be grown under land application. A straw crop is currently being grown at the site, with the straw removed and the grain left in the field.

The Part 503 Regulations do not state what type of surface and groundwater protection system is required. All fields at the site are bermed and all surface water is collected. The entire site is endowed with an extensive system of drainage tile, which collects all the soil percolate. The runoff and percolate are returned to the water reclamation plant for tertiary treatment.

The District's sludge application to land program at the Hanover Park Water Reclamation Plant far exceed any surface water and groundwater protection requirement specified in the Part 503 Regulations.

The Part 503 Class B pathogen requirements limit public access to the sludge application fields. The District operations at Hanover Park far exceed the Part 503 requirements since the entire site is fenced with locked gates and security guards.

The Part 503 Regulations prohibit the adverse modification or destruction of endangered species or their critical habitat. The District has no evidence that sludge applications have affected the habitat of wildlife species at the site.

The Part 503 Regulations do not prohibit bulk sewage sludge application to flooded, frozen, or snow covered lands.

Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

The regulations state, however, that any sludge applied to these lands may not enter surface waters or wetlands. The District does not apply sewage sludge to floodplains, frozen, or snow covered ground at the Hanover Park Fischer Farm. The site IEPA permit prohibits the application of sewage sludge under these conditions.

The Part 503 Regulations state that bulk sewage sludge may not be applied within 10 meters of a surface water body unless authorized by a permit. The District does not apply sewage sludge within 10 meters of the waters of the state. The site application fields are bermed and surface runoff is collected and returned to the plant for tertiary treatment. This management practice far exceeds the Part 503 requirements.

The Part 503 Regulations require that the land application of bulk sewage sludge may not exceed the agronomic rate for the particular agricultural, forest, or public contact site. The District is applying sewage sludge at an annual application rate of 20 dry tons per acre. Technical justification for this application rate is given in the attachment entitled "Hanover Park," and is approved under the IEPA permit.

Controlled Solids Distribution

The District has a sludge management program called the Controlled Solids Distribution Program. Sewage sludge under this program is given away for beneficial use at selected sites for landscaping and soil enrichment. The application of sewage sludge under this program is covered by IEPA Permit No. 1990-SC-1100.

Through the District's efforts to reduce the metals in the sludge with a vigorous industrial waste control program, the District's sewage sludge will be well below the metal limits specified in Part 503.13, subsection b(3), (Table 3). The anaerobic digesters producing sewage sludge for the District's Controlled Solids Distribution Program have detention times and operating temperatures which easily satisfy the Part 503 Class B pathogen requirements. The sewage sludge

Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

destined for the Controlled Solids Distribution Program receives extensive treatment to reduce its volatile solids content, which far exceed the 38 percent volatile solids reduction requirement of the Part 503 vector attraction reduction requirements.

The Part 503 Regulations for land application of sewage sludge do not specify what kind of vegetation can be grown at sites receiving sludge. The District requires that only nonfood chain vegetation be grown at all sites receiving sludge under the Controlled Solids Distribution Program. This far exceeds the Part 503 requirements.

The Part 503 Regulations under 503.32(b) for Class B pathogen reduction requires that public access be restricted for one year if the site has a high potential for public exposure, and public access be restricted for 30 days at a site with a low potential for public exposure. The District will post signs and/or other means to restrict public access to these sites.

The Part 503 Regulations prohibit the adverse modification or destruction of endangered species or their critical habitat. The District has no evidence that endangered species are present in areas receiving sewage sludge under the Controlled Solids Distribution Program.

The Part 503 Regulations do not prohibit bulk sewage sludge application to flooded, frozen, or snow covered lands. The regulations state, however, that any sludge application to these lands may not enter surface waters or wetlands. The District does not apply sewage sludge to floodplains, frozen, or snow covered ground at sites receiving sludge under its Controlled Solids Distribution Program. The District's IEPA permit prohibits these activities.

The Part 503 Regulations has a specific management practice that bulk sewage sludge may not be applied within 10 meters of a surface water body unless authorized by a permit. The District does not apply sewage sludge within 10 meters of the waters of the state. The District's IEPA permit is more restrictive in that it specifies that sludge cannot be applied to land which lies within 200 feet (61 meters) of surface waters.

January 28, 1994

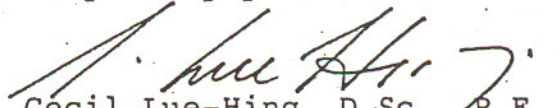
Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

The Part 503 Regulations require that the land application of bulk sewage sludge may not exceed the agronomic rate for a particular agricultural, forest, or public contact site. In some instances, the permitting authority for a reclamation site may specifically authorize the application of sludge at an annual rate that exceeds the agronomic rate. At these sites, sewage sludge will either be applied at an agronomic application rate, or a reclamation rate depending upon the needs of the site. The District's current permit with the IEPA allows for a higher application rate related to site needs. Under the Part 503 Regulations, as noted in the attachment entitled "Fulton County," the permitting authority may authorize a variance from the agronomic rate by permit. The District has received this variance from the IEPA in its current permit for the Controlled Solids Distribution Program.

The above mentioned sludge management programs are an important part of the District's operations and planning requirements for future sludge management activities. As described, the District feels that these programs comply with the requirements described in the Part 503 Regulations.

If you require additional information or have questions, don't hesitate to telephone me at (312) 751-5190.

Very truly yours,


Cecil Lue-Hing, D.Sc., P.E.
Director
Research and Development

CLH:RIP:ns
Attachments
cc: Dalton
O'Connor
DiVita
Murray
Alan Keller, IEPA
Tim Kluge, IEPA
Ken Rogers, IEPA
Ash Sajjad, USEPA
Bill Tong, USEPA

APPENDIX II

REDUCTION IN FREQUENCY OF MONITORING FOR PATHOGENS
IN BIOSOLIDS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

WN-16J

JAN 12 2000

Dr. Dick Lanyon
Director, Research and Development
Metropolitan Water Reclamation District
of Greater Chicago
100 East Erie Street
Chicago, Illinois 60611-2803

Re: Reduction in Frequency of Monitoring for Pathogens in Biosolids

Dear Dr. Lanyon:

This is in response to verbal and written requests, regarding the referenced matter, that were made by your predecessor Dr. Cecil Lue-Hing, and Dr. Tata Prakasam, the District's Research Manager, to John Colletti and Ash Sajjad of the Regional Biosolids Team. Specifically, the District requested reduction in the frequency of monitoring for pathogens in biosolids generated at the District's Calumet and Stickney waste water treatment plants from 12 times per year to 4 times per year for reporting these data to the U.S. Environmental Protection Agency (U.S. EPA) as required by 40 Code of Federal Regulations (CFR) part 503.

Further, Dr. Lue-Hing in his June 15, 1999, letter to John Colletti referenced the biosolids pathogen data that the District collected from over 1,000 discreet samples. This was done during a period of 4 years from 1994 until 1998, as a part of the District's application to the National Pathogen Equivalency Recommendation Committee (PERC) for certification of the District's biosolids processing trains as equivalent to a Process for further Reduction of Pathogens (PFRP). As you may know, because the District's biosolids process to reduce pathogens is not listed under 40 CFR part 503, the District sought equivalency determination from the PERC. The PERC'S recommendation along with the Region's approval is necessary for the District to obtain PFRP equivalency.

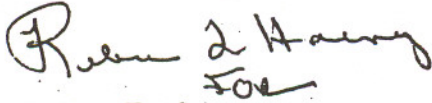
After a review of the District's biosolids data, and in consideration of the District's commendable effort to characterize pathogen quality of more than 1,000 samples, the following is our response to your request:

To provide relief from the analytical burden of analyzing biosolids for pathogens 12 times per year, the U.S. EPA, Region 5, approves reducing the frequency of monitoring to 6 times per year. The reduced frequency of monitoring is effective March 1, 2000, and is renewable on a yearly basis.

MET WATER RECLAM DIST
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R&D - IWB

If you have any questions about this matter, please contact Ash Sajjad, Regional Biosolids expert at (312) 886-6112.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Jo Lynn Traub".

Jo Lynn Traub
Director, Water Division

cc: Dr. Tata Prakasam, MWRDGC

APPENDIX III

DESIGNATION OF SITE-SPECIFIC EQUIVALENCY TO PFRP FOR DISTRICT
BIOSOLIDS PROCESSING TRAINS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUN 20 2002

REPLY TO THE ATTENTION OF:

WN-16J

Mr. Jack Farnan
General Superintendent
Metropolitan Water Reclamation
District of Greater Chicago
100 East Erie Street
Chicago, Illinois 60611

REF: Mr. Richard Lanyon's November 30, 2001, Letter Request for Site-specific Equivalency Certification for the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) Biosolids Processing Trains at the Stickney and Calumet Waste Water Treatment Plants.

Dear Mr. Farnan:

We acknowledge receipt of the referenced letter request along with attachments A through I. This request conforms with the requirements of the Federal rules for the use and disposal of biosolids codified at 40 CFR part 503. These rules designate the Regional permitting authority to be responsible for determining equivalency, and require generators of biosolids to formally seek an equivalency certification of their process to further reduce pathogens (PFRP) from the permitting authority. To be equivalent, a treatment process must be able to consistently reduce pathogens to levels comparable to the other PFRP processes listed in part 503, Appendix B.

The granting of a site-specific equivalency designation by the Regional permitting authority—based on a thorough review of the adequacy of the process trains to consistently reduce pathogens in biosolids as indicated by the pathogen data, and in consultation with the Pathogen equivalency Committee (PEC)—certifies the biosolids generated by using a PFRP equivalent process is Class A with respect to pathogens. The pathogen standards are specified in section 503.32(a)(7)(i). However, the granting of a site-specific equivalency is limited to the set of process and operating conditions in use at the Stickney and Calumet waste water treatment plants at the time of the application for equivalency designation (Appendix B of the November 30, 2001, Letter Request), and as described by MWRDGC in its application for equivalency submitted to the PEC. The PEC is an US Environmental Protection Agency resource to provide technical assistance and recommendations to Regional permitting authorities regarding pathogen reduction equivalency in implementing the part 503 standards for use and disposal of biosolids.

We are familiar with the MWRDGC's request for equivalency because our biosolids team members participated in numerous phone conversations and meetings with the PEC and Dr. Prakasam Tata of your staff, and both were extremely helpful in explaining and clarifying various issues related to the subject.

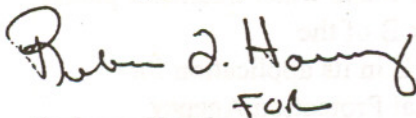
Our review of the MWRDGC's biosolids data submitted for 1994 to 2001 indicates Class A biosolids were produced at the Stickney and Calumet plants as they operated their respective low-and high-solids sludge processing trains (SPTs) according to codified protocols delineated in Attachment B of Mr. Lanyon's letter request, dated November 30, 2001. The part 503 rules for PFRP equivalency require that enteric viruses and viable helminth ova are reduced to below detection level. The pathogen data obtained from actual measurements and the statistical treatment of that data by MWRDGC indicated reductions of greater than two logs. We appreciate the MWRDGC's effort in analyzing 1,400 discreet samples of biosolids for pathogens, and the professionalism and patience displayed by Dr. Prakasam Tata of your staff in responding to our queries pertaining to this matter.

In consideration of the quality of data provided for our review, the consistent achievement of a Class A product, we are pleased to grant a conditional site-specific certification of equivalency to the MWRDGC's SPTs at Stickney and Calumet waste water treatment plants for a period of two years effective August 1, 2002 to July 30, 2004, provided the following conditions are met.

- 1) The Stickney and Calumet plants must operate at all times according to the codified process and operating protocols referred to in the letter request dated November 30, 2001.
- 2) Monitor biosolids (treated sludge) at Stickney and Calumet plants once per month for the first year and subsequently, once every other month for enteric viruses and helminth ova, and certify the MWRDGC is in compliance with Class A standards and report the results semi-annually to the attention of Mr. Valdis Aistars, Mail Drop WC-15J, 77 West Jackson, Chicago, Illinois 60604.

We appreciate MWRDGC's ongoing efforts to improve the quality of its biosolids. If you have any further questions about this matter, please contact Ash Sajjad of my staff at 312-886-6112.

Sincerely yours,


FOR

Jo Lynn Traub
Director, Water Division

cc: Dick Lanyon, MWRDGC
Dr. Prakasam Tata, MWRDGC ✓
Dr. James Smith Jr., ORD, Cincinnati



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

JUL 14 2008

WN-16J

Louis Kollias, Director
Research and Development
Metropolitan Water Reclamation
District of Greater Chicago
100 East Erie Street
Chicago, Illinois 60611-3154

Re: April 21, 2008, Request for Renewal of Site-specific Equivalency Determination for the Metropolitan Water Reclamation District of Greater Chicago (MWRD) Biosolids Processing Trains at the Stickney and Calumet Water Reclamation Plants

Dear Mr. Kollias:

We have received the above-referenced request on April 24, 2008, along with microbiological analyses of biosolids generated by MWRD between August 2002 and October 2007. We appreciate your interest in seeking renewal of MWRD's equivalency certification. The following discussion highlights the regulatory requirements of establishing equivalency, memorializes past Agency decisions, and provides Region 5's decision on your equivalency renewal request.

Biosolids are a product of wastewater treatment and are suitable for beneficial reuse in agriculture and other applications, subject to conformance with the Federal biosolids rules at 40 CFR Part 503 (503 Rules) addressing disease-causing organisms (pathogens) in biosolids. The 503 Rules establish requirements for classifying biosolids as either Class A, or Class B product with respect to pathogens. Class A requirements are met by treating the sewage sludge to reduce pathogens below detection levels, while the Class B requirements rely on a combination of treatment and site restrictions to reduce pathogens and potential exposure to pathogens. The 503 Rules provide a series of options for meeting the specific requirements for the two classes of biosolids.

One of the Class A options is to treat the sewage sludge by a process equivalent to a process listed in the 503 Rules, Appendix B. To be equivalent, a sewage sludge treatment process must be able to consistently reduce pathogens to levels comparable

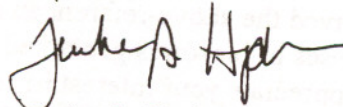
with the processes listed in Appendix B. Under the 503 rules, the Regional permitting authority (in this case, the U.S. Environmental Protection Agency Region 5) is responsible for determining equivalency. MWRD's sewage sludge processing trains differ from those listed in Appendix B. In March 1998, MWRD submitted an equivalency application to EPA's Pathogen Equivalency Committee (PEC) and the Region for approval. The Region and the PEC reviewed MWRD's initial request, and granted a site-specific and conditional equivalency certification in June 2002, for a period of two years. Subsequently, the Region granted two 2-year extensions, in effect until July 31, 2008.

We have reviewed your most recent renewal request. Based on the microbiological data provided to us, I am approving your equivalency renewal request for a period of two years, until August 1, 2010. This approval is subject to all the conditions that were included in the initial approval and all subsequent extensions.

We note that MWRD data show a reduction in fecal coliform concentrations in stored biosolids relative to initial concentrations. This finding is contrary to what we would expect based on observations elsewhere. Given the national interest in the subject of regrowth of fecal coliform with the storage of biosolids, we plan to review future data collected by MWRD in order to better understand this phenomenon.

If you have any further questions about this matter, please contact Mr. Ash Sajjad of my staff, at 312-886-6112.

Sincerely,



Tinka G. Hyde
Acting Director, Water Division

cc: Richard Lanyon, MWRDGC
Dr. Thomas Granato, MWRDGC