

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***RESEARCH AND DEVELOPMENT
DEPARTMENT***

REPORT NO. 04-2

ANNUAL BIOSOLIDS MANAGEMENT REPORT

FOR 2003

February 2004

**ANNUAL BIOSOLIDS MANAGEMENT REPORT
FOR 2003**

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Special thanks are given to Ms. Sabina Yarn 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.

FOREWARD

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 2003.

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February 18, 2004

Richard Lanyon
Director of Research & Development

312-751-5190

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

Dear Mr. Kuefler:

Subject: 2003 Reporting Requirements Under the 40
CFR Part 503 Regulations

The Metropolitan Water Reclamation District of Greater Chicago (District) herein submits the 2003 records required under the 40 CFR Part 503 Regulations at Section 503.18, titled "Annual Biosolids Management Report for 2003."

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 503.32a6, 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

Mr. Patrick Kuefler

2

February 18, 2004

Subject: 2003 Reporting Requirements Under the 40
CFR Part 503 Regulations

information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

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

Very truly yours,

Signed copy on file _

Richard Lanyon
Director
Research and Development

RL:TG:spy

Attachment

cc w/att.: Aistars (USEPA)
Bramscher (USEPA)
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INTRODUCTION

The Metropolitan Water Reclamation District of Greater Chicago (District) herein reports the 2003 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. 2002-SC-2188).
2. Hanover Park Fischer Farm Biosolids Application to Land Site (IEPA Permit No. 2002-SC-0672).
3. Controlled Solids Distribution Program (Biosolids Application to Land in the Chicago Area under IEPA Permit No. 2000-SC-0872).
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. 1999-SC-3932).

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 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 2003. 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 2003 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 aged for distribution at a later time.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1

2003 PRODUCTION AND USES OF SLUDGE AND BIOSOLIDS

Production And Use	Water Reclamation Plants						
	Stickney*	Calumet*	North Side	Egan	Hanover Park*	Kirie	Lemont
	-----Dry Tons-----						
Production**	131,779	32,440	40,985	6,545	854	7,420	316
Land Applied	86,321	37,866	0	4,332	950	0	0
Surface Disposal	0	0	0	0	0	0	0
Landfill (Total)	73,390	11,441	0	0	0	0	0
Co-disposal	3,056	869					
Daily cover	49,987	0					
Final Cover	20,347	10,572					
Incinerated	0	0	0	0	0	0	0
To Other WRPs for Further Processing	4,678	0	40,985	2,213	0	7,420	316
Other Uses	3***	0	0	0	0	0	0

* Differences between biosolids production and total use or disposal in 2003 were due to a net withdrawal out of storage lagoons, and processing of biosolids imported from other WRPs.

** Stickney, 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.

*** Used to seed digesters at Interstate Brands.

LEMONT WRP

The Lemont WRP, located in Lemont, Illinois, has a design capacity of 3.4 mgd. Wastewater reclamation processes include both primary (primary settling) and secondary (activated sludge process) treatment. In 2003, the Lemont WRP produced 316 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 WRP

The James C. Kirie WRP, located in Des Plaines, Illinois, has a design capacity of 72 mgd. Wastewater reclamation processes include grit tanks, secondary (activated sludge process), and tertiary (sand filtration) treatment. In 2003, the Kirie WRP produced 7,420 dry tons of solids (Table 1) which were sent via force main to the John E. Egan WRP for further treatment.

No final biosolids product is produced at this WRP.

NORTH SIDE WRP

The North Side WRP, located in Skokie, Illinois, has a design capacity of 333 mgd. Wastewater reclamation processes at the North Side WRP include primary (primary settling) and secondary (activated sludge process) treatment. In 2003, the North Side WRP produced 40,985 dry tons of solids (Table 1) that 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 WRP

The John E. Egan WRP, located in Schaumburg, Illinois, has a design 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 winter 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 2003, the total biosolids production at the John E. Egan WRP was 6,545 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 2003, none of the biosolids generated at the John E. Egan WRP were sent to landfills.

Biosolids Conveyed to Other WRPs for Further Processing

In 2003, 1,152 dry tons of biosolids were pumped to North Side WRP. Of this amount, 643 dry tons were conveyed to the

North Side WRP in centrifuge centrate and 509 dry tons were conveyed as liquid digested biosolids.

In 2003, 1,062 dry tons of centrifuge cake biosolids were trucked to the Lawndale Avenue Solids Management Area (managed by the Stickney WRP). Of this amount 757 dry tons were subsequently applied to farmland (see Stickney WRP section of this report) and 305 dry tons, which were conveyed late in the year, were placed in storage for the following application season.

Land Application of Centrifuge Cake Biosolids

In 2003, the John E. Egan WRP land applied a total of 4,331 dry tons of centrifuge cake biosolids to farmland under IEPA Permit No. 1999-SC-3932. A total of 1,418 dry tons were land applied through a contract with Synagro Midwest, Inc., and 2,913 dry tons were land applied through a contract with American Water Services, Inc. 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 2003 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 2), the Class B pathogen requirements of Section 503.32b2 (Tables 3 and 4), and the vector attraction reduction requirements of Section 503.33b10.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS
FROM THE JOHN E. EGAN WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2003

Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/dry kg -----											
02/15/03	45,165	4,648	4.1	6.6	880	0.63	21	57	49	<0.8	1,008
02/22/03	46,571	4,223	<1	6.8	839	N/A	23	59	54	<0.8	1,032
03/01/03	53,485	4,031	<1	6.8	851	N/A	23	60	52	2.7	1,042
03/08/03	78,714	17,202	<1	6.7	847	0.92	21	65	64	<0.8	1,025
03/15/03	57,960	3,964	1.2	4.9	794	N/A	23	71	57	<0.8	991
03/22/03	57,194	4,610	<1	6.8	856	0.05	21	61	53	<0.8	1,020
03/29/03	60,682	6,255	<1	6.6	848	N/A	23	66	53	<0.8	1,009
04/05/03	42,684	6,655	<1	5.7	846	0.80	24	67	59	<0.8	1,004
04/12/03	50,104	7,448	<1	5.5	868	0.37	23	66	51	<0.8	1,022
04/19/03	47,962	6,029	<1	5.1	868	N/A	22	66	56	<0.8	1,016
04/26/03	62,960	6,694	<1	5.0	891	N/A	23	68	59	<0.8	1,016
05/03/03	73,362	6,762	<1	5.3	844	N/A	23	72	60	<0.8	976
05/10/03	57,333	4,945	<1	4.9	883	0.45	24	66	58	<0.8	1,012
05/17/03	57,334	5,590	3.4	4.9	854	N/A	22	67	58	<0.8	938
05/24/03	50,673	6,111	<1	4.9	839	N/A	20	68	60	<0.8	940
05/31/03	37,694	5,802	3.3	4.8	804	N/A	19	64	56	<0.8	864
06/07/03	43,322	5,589	1.0	4.9	793	0.65	21	68	61	<0.8	844
06/14/03	47,314	7,678	<1	4.6	780	N/A	20	61	61	1.0	863
06/21/03	56,967	6,813	<1	4.5	805	N/A	20	67	67	<0.8	848
06/28/03	37,455	6,457	<1	4.8	813	N/A	20	62	61	1.2	860

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS
FROM THE JOHN E. EGAN WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2003

Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/dry kg -----											
07/05/03	45,419	7,973	1.2	4.6	779	0.88	20	64	64	3.4	866
07/12/03	44,848	5,721	<1	4.8	809	1.15	20	59	62	<0.8	848
07/19/03	52,127	5,017	2.2	3.9	744	N/A	20	60	58	<0.8	834
07/26/03	47,354	5,641	<1	4.1	768	N/A	21	54	58	<0.8	852
08/02/03	57,762	4,815	<1	3.7	749	N/A	22	55	68	1.0	855
08/09/03	39,366	4,114	<1	3.8	740	0.63	24	58	63	<0.8	868
08/16/03	32,905	5,165	3.4	4.1	744	N/A	23	57	60	<0.8	836
08/23/03	41,544	4,382	<1	4.4	771	N/A	25	60	66	0.8	865
08/30/03	38,260	4,529	<1	4.0	764	N/A	25	56	68	<0.8	869
09/06/03	60,054	4,139	<1	5.0	727	N/A	25	55	70	<0.8	865
09/13/03	43,024	4,882	1.9	4.7	769	0.83	26	54	63	<0.8	921
09/20/03	40,090	4,324	<1	4.2	776	N/A	27	50	60	<0.8	887
09/27/03	70,331	6,932	<1	4.2	766	N/A	28	50	58	<0.8	916
10/04/03	48,629	5,087	2.4	3.8	787	N/A	27	53	59	<0.8	879
10/11/03	43,983	4,491	<1	4.4	826	1.01	30	49	53	<0.8	974
10/18/03	50,190	5,601	<1	4.2	819	N/A	30	52	55	<0.8	1,006
10/25/03	63,451	6,450	<1	4.4	862	N/A	30	56	56	<0.8	1,021
11/01/03	43,827	5,202	<1	4.6	835	N/A	29	64	66	2.5	1,021
11/08/03	45,615	4,353	1.4	4.5	835	1.29	28	61	56	<0.8	1,007
11/15/03	44,656	4,133	<1	4.2	838	N/A	27	64	54	<0.8	1,016
11/22/03	55,283	6,121	<1	4.5	831	N/A	27	64	53	<0.8	995

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS
FROM THE JOHN E. EGAN WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2003

Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/dry kg -----											
11/29/03	126,562	6,160	3.3	4.0	896	N/A	24	84	60	2.0	1,042
12/06/03	36,345	6,107	<1	4.4	831	N/A	25	58	54	<0.8	953
12/13/03	60,722	5,605	1.9	4.0	848	0.82	24	61	53	<0.8	942
12/20/03	50,329	7,719	<1	4.3	829	N/A	22	61	56	<0.8	914
12/27/03	54,649	7,273	<1	4.4	807	N/A	22	65	52	<0.8	886
Mean	52,223	5,857	0.7	4.8	816	0.80	24	61	59	0.3	941
Minimum	32,905	3,964	<1.0	3.7	727	0.05	19	49	49	<0.8	834
Maximum	126,562	17,202	4.1	6.8	896	1.29	30	84	70	3.4	1,042
503 Limit	NL	NL	41	39	1,500	17	75	420	300	100	2,800
MDL	0.1	0.04	1.0	0.2	0.6	0.06	0.4	0.4	0.6	0.8	2.0

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

NA = No analysis; required only once per month.

NL = No limit; not applicable

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 3

FECAL COLIFORM CONTENT OF BIOSOLIDS FROM DIGESTER D OF THE
JOHN E. EGAN WATER RECLAMATION PLANT APPLIED TO
FARMLAND IN 2003

Month	No. of Samples Collected	Fecal Coliform Content (No./g dry biosolids)	
		Geomtric Mean	Maximum
January	8	66,369	287,800
February	8	27,987	40,600
March	9	43,081	181,700
April	7	25,651	45,900

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 4

DIGESTER* TEMPERATURES AND DETENTION TIMES FOR BIOSOLIDS FROM
THE JOHN E. EGAN WATER RECLAMATION PLANT APPLIED
TO FARMLAND IN 2003

Month	Average Temperature -----°F-----	Average Detention Time --days--	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32b3** -----days-----
January	95	15.6	yes	15.1
February	98	33.2	yes	15.0
March	95	33.2	yes	15.0
April	96	34.2	yes	15.0
May	94	28.3	yes	16.1
June	95	27.9	yes	15.3
July	95	30.4	yes	15.0
August	96	32.4	yes	15.0
September	96	31.9	yes	15.0
October	96	33.3	yes	15.0
November	96	30.4	yes	15.0
December	94	29.2	yes	16.3

* Data are for primary Digester A and C and do not include additional digestion achieved in secondary Digesters B and D.

** For anaerobic digestion at average temperature achieved.

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.

In 2003, the John E. Egan WRP completed the renovation of their anaerobic digesters. During the completion of the project, compliance with the Part 503 Class B pathogen standards was achieved by analysis of fecal coliform as required at 503.32b2 (Table 3). Thereafter, the John E. Egan WRP met the Class B pathogen requirements in section 503.32b3 (Table 4).

The John E. Egan WRP did not have any additional requirement for reporting under Part 503 in 2003.

HANOVER PARK WRP

Treatment Plant and Biosolids Process Train Description

The Hanover Park WRP, located in Hanover Park, Illinois, has a design capacity 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. Lagooned, digested biosolids 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 contained on the plant grounds.

Land Application of Liquid Biosolids

In 2003, the total biosolids production at this WRP was 854 dry tons (Table 1). Land application of liquid biosolids at the Hanover Park Fischer Farm site in 2003 utilized 950 dry tons. The quantity of land applied biosolids surpassed the quantity of biosolids produced in 2003 due to land application of additional biosolids that were produced in previous years and stored in a lagoon. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is four times per year.

All Hanover Park WRP lagooned biosolids that were land applied in 2003 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 5), the Class B pathogen anaerobic digester time and temperature requirements of Section 503.32b3 (Table 6), and the vector attraction reduction requirements of Section 503.33b1 (Table 7). 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).

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5

NITROGEN AND METALS CONCENTRATIONS IN BIOSOLIDS APPLIED TO THE HANOVER PARK
FISCHER FARM IN 2003

Composite Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/dry kg -----											
04/12/03*	495,833	376,967	10	<0.5	131	0.33	2	13	5	5	348
04/19/03*	NRR	447,443	16	<0.4	141	0.42	2	14	5	5	236
04/26/03*	590,533	437,133	9	<0.4	121	0.32	2	14	6	<2	202
05/03/03*	394,333	349,011	<2.2	<0.4	82	0.33	2	9	4	<2	228
05/24/03*	458,000	409,142	17	<0.5	82	0.23	4	15	3	5	129
05/31/03*	367,636	261,891	12	<0.5	39	<0.04	7	14	3	5	71
06/07/03	107,500	29,058	5	2.8	811	0.95	11	36	43	2	694
06/14/03	73,810	24,697	3	2.2	846	1.65	12	36	39	5	763
08/23/03*	205,571	147,314	2	<0.3	33	0.06	2	16	2	2	52
08/30/03*	172,778	105,356	7	<0.3	29	0.50	2	18	<1.1	3	48
09/13/03*	238,750	154,075	6	<0.4	45	0.24	2	19	4	4	68
09/20/03*	256,389	202,033	8	<0.3	43	0.09	2	16	2	4	66
11/15/03*	466,000	337,867	12	0.6	109	0.66	4	16	5	5	190

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN BIOSOLIDS APPLIED TO THE HANOVER PARK
FISCHER FARM IN 2003

Composite Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	----- mg/dry kg -----										
11/19/03*	420,538	327,800	5	<0.5	102	0.81	4	15	5	7	200
11/22/03*	209,308	154,954	16	0.5	87	0.86	6	14	5	4	105
11/29/03	71,815	18,263	6	2.5	986	2.19	15	37	39	7	879
12/06/03	68,523	14,596	1	2.4	939	1.88	14	34	45	5	793
12/13/03	56,905	13,434	5	2.5	960	1.85	13	35	45	4	804
12/20/03	71,905	26,726	0.2	3.2	913	1.38	12	29	47	5	760
Minimum	56,905	13,434	<2.2	<0.3	29	<0.04	2	9	<1.1	<2	48
Mean**	262,563	201,987	7	1.1	342	0.77	6	21	16	4	349
Maximum	590,533	447,443	17	3.2	986	2.19	15	37	47	7	879
503 Limit	NL	NL	41	39	1,500	17.0	75	420	300	100	2,800

* Biosolids applied as supernatant

** For computing the mean, detection limit was used for non-detected values.

NRR = No reportable result

NL = No limit; not applicable

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 6

DIGESTER TEMPERATURES AND DETENTION TIMES FOR BIOSOLIDS FROM
THE HANOVER PARK WATER RECLAMATION PLANT APPLIED AT THE
FISCHER FARM IN 2003

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Dentention Time Required by 503.32b3*
	----°F----	--days--		-----days-----
January	95	26.8	yes	15.3
February	95	29.0	yes	15.0
March	95	27.8	yes	15.0
April	95	33.1	yes	15.0
May	95	37.9	yes	15.0
June	96	25.8	yes	15.0
July	96	25.0	yes	15.0
August	96	23.4	yes	15.0
September	95	22.3	yes	15.0
October	95	23.0	yes	15.0
November	95	32.1	yes	15.0
December	95	31.6	yes	15.0

* For anaerobic digestion at average temperature achieved.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 7

VOLATILE SOLIDS REDUCTION FOR BIOSOLIDS FROM THE HANOVER PARK
WATER RECLAMATION PLANT APPLIED AT THE FISCHER FARM IN 2003

Month	Digester Feed	Digester Draw	Lagoon Biosolids	Volatile Solids Reduction*
	---- % Total Volatile Solids ----			----- % -----
April	85.37	75.89	60.68	73.5
May	81.37	73.18	70.82	44.4
June	84.12	73.57	72.24	50.9
August	83.65	75.19	61.16	69.2
September	83.94	75.56	60.06	71.2
November	82.02	74.57	65.59	58.2
December	83.04	72.85	69.43	53.6

* Volatile solids reduction computed using digester feed and lagoon biosolids.

CALUMET WRP

Treatment Plant and Biosolids Process Train Description

The Calumet WRP, located in Chicago, Illinois, has a design capacity 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:

- a. Placed into lagoons for dewatering, aging and stabilization, and then transported to paved cells and air-dried prior to:
 1. Application to land as Exceptional Quality (EQ) biosolids under the District's Controlled Solids Distribution Permit.
 2. Use at local municipal solid waste landfills as final landfill cover.
 3. Application to land as EQ biosolids at the Fulton County, Illinois dedicated land application site.
 4. Application to farmland as EQ biosolids by a private contractor.

5. Disposal in local municipal solid waste landfills.
 - b. Dewatered by centrifuging to approximately 25 percent solids content, and then applied to farmland by a private contractor as a Class B cake.
 - c. 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.
 - d. 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:
 1. Application to land as EQ biosolids under the District's Controlled Solids Distribution Permit.
 2. Use at local municipal solid waste landfills as final landfill cover.
 3. Application to land as EQ biosolids at the Fulton County, Illinois, dedicated land application site.
 4. Application to farmland as EQ biosolids by a private contractor.

5. Disposal in local municipal solid waste landfills.

In 2003, the total biosolids production at the Calumet WRP was 32,440 dry tons (Table 1). The quantity of biosolids that were used and disposed of in 2003 exceeded the total production for the Calumet WRP due to processing of biosolids produced in previous years that were stored in lagoons.

Summary of Use and Disposal at Landfills

The Calumet WRP sent 11,441 dry tons of biosolids to landfills in 2003. Of this amount, 10,572 dry tons were used as final cover, and 869 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 2003, the Calumet WRP land applied 12,355 dry tons of centrifuge cake biosolids to farmland under IEPA Permit No. 1999-SC-3932 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 six times per year.

All Calumet WRP centrifuge cake biosolids that were land applied in 2003, met the pollutant concentration limits in Table 3 of Section 503.13 (Table 8), the Class B pathogen

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 8

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO FARM LAND IN 2003

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
-----mg/dry kg-----											
01/02/03	58,938	3,368	5	5	465	N/A	21	33	106	<2	1,210
01/07/03	52,892	3,884	6	5	473	0.40	19	33	98	<2	1,205
01/15/03	56,968	4,568	5	5	437	N/A	20	30	96	<2	1,102
01/21/03	57,587	6,342	5	5	447	N/A	19	30	93	<2	1,132
02/04/03	50,008	4,440	6	4	453	0.95	16	33	81	8	1,082
02/11/03	69,220	8,435	6	4	478	N/A	17	31	84	9	1,104
02/18/03	77,673	8,082	3	4	457	N/A	18	33	80	6	1,081
02/26/03	66,279	7,126	5	4	472	N/A	16	37	77	6	1,086
03/11/03	64,949	6,729	3	4	455	0.53	18	31	75	9	1,018
03/18/03	48,572	6,617	4	4	470	N/A	18	34	80	8	1,031
03/27/03	58,235	7,815	4	4	441	N/A	17	32	83	9	922
05/13/03	52,490	6,879	8	4	427	N/A	17	39	115	9	996
05/21/03	45,458	6,086	7	4	412	N/A	15	38	118	6	1,017

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 8 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO FARM LAND IN 2003

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
-----mg/dry kg-----											
05/27/03	42,119	6,924	7	4	384	0.42	15	38	123	4	976
06/03/03	39,970	6,292	8	4	375	0.34	14	34	128	4	990
06/10/03	42,996	5,893	7	4	389	N/A	16	36	132	8	1,095
06/17/03	42,457	5,744	8	4	378	N/A	12	37	128	5	978
06/24/03	30,412	4,740	7	4	373	N/A	13	38	138	4	958
07/01/03	30,462	6,099	8	4	353	1.60	13	39	129	4	922
07/09/03	35,833	5,395	8	4	415	N/A	16	40	132	6	1,103
07/15/03	38,532	4,579	8	4	393	N/A	16	38	130	4	1,095
07/22/03	31,884	3,846	8	5	374	N/A	16	44	135	6	1,142
07/29/03	29,644	3,104	8	4	387	N/A	17	48	152	5	1,141
08/05/03	34,499	4,391	8	4	367	0.26	14	42	158	4	1,157
08/12/03	34,197	3,696	10	4	367	N/A	15	45	161	6	1,197
08/22/03	29,835	3,402	8	4	355	N/A	13	36	156	2	1,084

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 8 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO FARM LAND IN 2003

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
-----mg/dry kg-----											
08/26/03	32,383	3,295	5	3	258	N/A	9	27	114	3	783
09/02/03	32,581	3,610	8	4	352	0.34	16	41	155	6	1,139
09/09/03	30,667	3,167	8	4	341	N/A	17	36	153	4	1,125
09/16/03	30,860	3,201	8	4	376	N/A	17	47	160	4	1,220
09/23/03	33,384	3,162	8	5	380	N/A	19	39	156	7	1,129
09/30/03	28,372	2,581	8	4	369	N/A	18	36	145	6	1,071
10/07/03	36,403	3,170	9	4	385	0.81	18	40	143	5	1,130
10/16/03	36,945	3,039	8	4	413	N/A	19	38	148	5	1,155
10/23/03	40,212	3,388	9	4	410	N/A	18	35	136	5	1,060
10/28/03	42,050	2,947	9	4	416	N/A	18	42	131	5	1,149
11/04/03	43,917	3,038	7	4	403	0.64	19	34	130	4	1,035
11/11/03	44,615	3,103	9	4	411	N/A	20	37	128	5	1,022
11/18/03	49,940	3,449	8	4	406	N/A	21	37	124	5	1,031

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 8 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO FARM LAND IN 2003

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
-----mg/dry kg-----											
11/25/03	46,230	4,675	8	4	412	N/A	19	33	121	5	998
12/02/03	47,881	4,547	8	5	418	0.72	20	39	134	5	1,066
12/09/03	41,665	5,557	7	5	390	N/A	17	39	132	5	1,006
12/16/03	45,191	4,021	9	5	409	N/A	19	39	139	6	1,038
12/23/03	50,868	5,996	9	6	413	N/A	18	39	142	6	1,047
12/30/03	37,370	5,556	3	3	249	N/A	9	23	58	6	544
Minimum	28,372	2,581	3	3	249	0.26	9	23	58	<2	544
Mean*	43,859	4,800	7	4	400	0.64	17	37	123	6	1,057
Maximum	77,673	8,435	10	6	478	1.60	21	48	161	9	1,220
503 Limit	NL	NL	41	39	1,500	17.0	75	420	300	100	2,800

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

N/A = No analysis.

NL = No limit; not applicable.

anaerobic digester time and temperature requirements of Section 503.32b3 (Table 9), and the vector attraction reduction requirements of Section 503.33b10. Table 8 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 2003, the Calumet WRP land applied a total of 25,511 dry tons of air-dried EQ biosolids. Of this amount, 20,276 dry tons were trucked to the District's Fulton County, Illinois, site for land application under IEPA Permit No. 2002-SC-2188, and 5,235 dry tons were land applied under the Controlled Solids Distribution Program under IEPA Permit No. 2000-SC-0872 for maintenance of golf courses, landscaping, nurseries, and construction of recreation fields. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is 12 times per year.

An exception to this frequency of monitoring was granted, effective March 1, 2000, by USEPA Region V, for compliance with Class A pathogen standards. The Calumet WRP biosolids that are land applied are required to be monitored only six times per year for compliance with Class A pathogen standards

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 9

DIGESTER* TEMPERATURES AND DETENTION TIMES FOR CENTRIFUGE CAKE BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2003

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32b3**
	-----°F-----	--days--		-----days-----
January	97	21.7	yes	15.0
February	97	25.6	yes	15.0
March	97	22.6	yes	15.0
April	97	23.3	yes	15.0
May	97	21.7	yes	15.0
June	97	23.8	yes	15.0
July	97	22.4	yes	15.0
August	96	22.0	yes	15.0
September	97	21.9	yes	15.0
October	96	23.9	yes	15.0
November	97	21.9	yes	15.0
December	96	25.4	yes	15.0

* Temperatures 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.

** For anaerobic digestion at average temperature achieved.

in Part 503 (Appendix II). Subsequent to this, 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). This 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 2003.

All Calumet WRP EQ biosolids that were land applied in 2003 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).

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 10

NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METALS CONCENTRATIONS FOR AIR-DRIED BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO LAND IN 2003

Sample Date	TVS												
	TKN	NH ₃ -N	TVS*	Reduction	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	--- mg/dry	kg---	-----%		----- mg/dry kg -----								
05/7	10,200	20	45.6	51.5	13	8	445	0.54	22	38	184	20	1,807
05/28-29	13,099	505	43.8	54.8	10	8	410	1.05	19	37	173	17	1,657
06/02	13,273	325	46.3	49.7	12	8	430	1.17	21	41	182	20	1,752
06/09	8,329	258	47.1	48.0	12	7	432	0.90	20	36	175	16	1,663
06/11	12,071	768	47.5	47.3	12	8	443	0.99	21	36	181	19	1,706
06/16-19	10,989	945	47.0	48.2	13	8	436	0.79	23	37	187	17	1,745
06/16-20	9,699	211	34.5	69.3	13	10	323	0.66	17	38	202	10	1,441
06/19	7,414	208	23.9	81.7	11	10	212	0.81	11	36	180	6	884
06/19-20	10,865	840	46.0	50.3	11	7	423	0.77	19	36	182	17	1,646
06/20	15,802	503	46.6	49.2	13	7	426	1.04	20	36	177	16	1,683
06/23	12,664	2,940	45.3	51.7	12	8	427	0.30	21	38	188	19	1,752
06/23-24	6,338	153	23.9	81.6	13	11	218	0.84	12	38	184	7	955
06/23-26	9,543	423	30.5	74.4	12	11	257	0.27	13	38	207	11	1,133
06/23-27	10,882	1,256	46.0	50.4	12	8	427	0.31	20	39	188	16	1,702
06/23-27	4,516	1,315	49.5	42.8	12	8	452	0.98	22	42	192	18	1,851
06/26-27	10,061	131	46.7	48.9	12	8	439	0.30	21	38	185	19	1,729

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 10 (Continued)

NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METALS CONCENTRATIONS FOR AIR-DRIED BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO LAND IN 2003

Sample Date	TKN		NH ₃ -N		TVS		As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry	kg	mg/dry	kg	TVS*	Reduction %									
06/30	19,504	2,999	43.5	55.2	12	11	222	0.61	12	39	194	7	993		
06/30-7/02	6,802	43	23.6	81.9	12	11	222	0.61	12	39	194	7	993		
06/30-7/03	15,263	931	45.6	51.2	11	8	441	0.41	22	43	186	17	1,788		
07/01-03	14,791	2,181	45.6	26.4	12	8	455	0.29	22	39	191	20	1,849		
07/01-03	7,384	1,343	26.7	68.0	11	11	304	0.62	13	36	204	10	1,302		
07/07-09	14,403	3,004	45.1	27.7	11	8	438	1.73	22	41	185	17	1,818		
07/08	11,965	948	43.8	31.6	11	8	424	0.67	20	41	188	16	1,764		
07/08-11	5,306	61	23.7	72.7	12	17	232	0.63	12	40	272	7	1,057		
07/09-12	17,107	2,993	44.6	29.3	11	8	444	0.74	23	41	187	17	1,797		
07/14	11,615	3,234	29.0	64.1	10	11	310	0.80	17	44	176	10	1,261		
07/14-18	6,901	413	47.1	21.6	11	11	338	1.04	17	44	201	12	1,478		
07/14	6,024	24	35.6	51.4	12	17	271	1.41	12	45	282	7	1,215		
07/30	11,116	3,777	45.1	27.7	9	6	474	0.69	16	56	151	6	1,105		
08/05-06	11,553	20	39.3	44.6	11	9	454	0.80	17	42	203	15	1,839		
08/06	10,426	19	39.6	43.8	11	8	472	1.07	20	40	195	16	1,874		
08/07-08	6,104	25	22.7	74.9	11	7	437	1.21	24	62	176	18	1,643		
08/07-08	17,123	2,967	39.9	43.2	11	7	430	0.83	21	40	184	18	1,708		

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 10 (Continued)

NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METALS CONCENTRATIONS FOR AIR-DRIED BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO LAND IN 2003

Sample Date	TKN		NH ₃ -N		TVS		Reduction							
	mg/dry	kg	mg/dry	kg	TVS*	%	As	Cd	Cu	Hg	Mo	Ni	Pb	Se
08/08	12,018	1,153	38.3	46.8	9	7	373	0.66	16	34	165	14	1,444	
08/14-15	22,388	2,595	42.0	37.9	10	6	354	1.18	18	34	165	13	1,417	
08/15	12,187	790	28.6	65.6	11	13	351	1.05	12	42	227	9	1,574	
08/25-26	15,307	3,102	40.8	41.0	10	8	396	0.35	19	37	188	16	1,587	
08/26-28	23,029	4,318	43.1	35.1	9	6	466	0.74	18	57	157	3	1,133	
08/27	14,455	2,665	34.8	54.3	9	9	270	0.52	14	31	150	10	1,129	
08/29	12,074	482	33.9	56.0	10	10	304	0.57	17	37	182	12	1,297	
09/08	11,604	919	29.0	72.6	10	11	292	0.35	16	39	183	11	1,182	
09/10-11	10,780	815	42.7	50.0	10	8	437	0.87	22	41	187	17	1,641	
09/11-13	11,564	1,766	28.6	73.1	10	11	290	0.32	16	41	177	9	1,194	
09/12	15,629	1,026	29.6	71.9	9	7	420	0.36	22	37	172	17	1,547	
09/15-17	16,912	2,859	32.6	67.6	10	7	515	0.67	20	89	166	4	1,231	
09/15-20	11,904	1,694	39.7	55.9	12	11	305	1.01	16	40	180	10	1,205	
09/16-17	12,865	2,121	36.4	61.8	11	11	337	0.87	19	41	189	13	1,369	
09/17-20	12,710	1,329	42.3	50.9	11	8	428	1.58	22	40	184	18	1,622	
09/22	7,227	1,107	32.7	67.5	10	10	294	0.86	16	38	170	11	1,207	
09/22	16,741	1,513	41.2	53.1	10	8	422	1.16	22	38	186	17	1,585	

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 10 (Continued)

NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METALS CONCENTRATIONS FOR AIR-DRIED BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO LAND IN 2003

Sample Date	TKN		NH ₃ -N		TVS		As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry	kg	mg/dry	kg	%	%									
09/22-25	14,800	631	42.8	49.9	11	8	435	0.58	24	41	191	18	1,735		
09/23-24	15,161	959	41.5	52.5	10	8	436	1.17	23	41	192	17	1,723		
09/23-24	10,998	435	29.0	72.7	10	10	277	0.30	14	36	163	11	1,102		
09/27	14,510	2,794	29.2	72.4	11	11	295	0.82	17	40	177	10	1,190		
09/27	23,601	4,463	43.0	49.5	10	7	538	0.98	22	66	164	5	1,241		
09/29-10/1	12,641	2	33.3	66.6	11	11	299	0.49	16	43	176	11	1,190		
09/29-10/1	12,695	10	30.1	71.2	9	10	258	0.52	14	36	154	10	1,008		
10/01	20,040	3,547	44.1	62.2	12	7	511	0.62	21	63	163	3	1,211		
10/01	16,334	2,057	42.0	65.3	9	7	515	0.58	18	63	160	5	1,160		
10/02	16,292	1,079	43.1	63.8	10	7	485	0.58	20	64	159	4	1,146		
10/02-03	11,439	0.1	44.0	62.3	9	7	481	1.11	19	61	155	4	1,130		
10/06-08	15,611	852	42.1	65.2	8	7	471	1.38	17	58	150	4	1,035		
10/06-10	15,703	1,035	42.4	64.8	9	7	494	1.21	17	59	154	5	1,096		
10/06-11	9,756	439	41.9	65.4	10	11	256	0.79	13	36	176	9	1,013		
10/07	14,282	646	41.4	66.2	9	7	487	1.39	16	57	157	3	1,088		
10/09	11,278	1,569	32.6	76.9	12	12	335	0.80	18	38	195	13	1,323		
10/09	12,784	281	59.5	29.8	10	8	424	0.85	21	35	179	16	1,629		

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METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 10 (Continued)

NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METALS CONCENTRATIONS FOR AIR-DRIED BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO LAND IN 2003

Sample Date	TKN		NH ₃ -N		TVS		As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry	kg	mg/dry	kg	%	Reduction									
10/09	21,447	5,180	42.5	64.6	10	7	523	1.22	21	63	166	4	1,257		
10/09	15,860	2,612	50.5	51.2	8	6	492	1.21	17	57	151	4	1,138		
10/10	15,338	920	41.9	65.5	8	7	494	0.96	18	65	159	3	1,101		
10/13-21	11,301	634	29.8	79.7	11	11	271	0.73	16	46	184	9	1,094		
10/13-21	19,108	1,656	42.8	64.1	9	7	482	0.93	20	64	155	4	1,133		
10/20-21	20,717	173	42.6	64.6	9	7	465	1.09	17	57	152	3	1,087		
10/20-21	17,845	1,607	43.2	63.7	8	6	436	0.55	17	56	140	3	1,009		
10/22	14,644	375	33.5	75.8	11	12	347	0.58	18	39	199	12	1,421		
10/29	13,585	2,098	30.9	78.6	11	12	309	0.59	16	40	184	11	1,256		
10/29	14,201	3,308	29.3	80.2	7	10	267	0.39	16	36	153	8	1,069		
10/29	12,662	134	32.2	77.3	11	11	314	0.40	16	39	180	11	1,256		
Minimum	4,516	0.1	22.7	21.6	7	6	212	0.27	11	31	140	3	884		
Mean	13,117	1,353	38.9	57.7	11	9	387	0.79	18	44	180	11	1,382		
Maximum	23,601	5,180	59.5	81.9	13	17	538	1.73	24	89	282	20	1,874		
503 Limit	NL	NL	NL	38	41	39	1,500	17.0	75	420	300	100	2,800		

* TVS = Total Volatile Solids.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 10 (Continued)

NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METALS CONCENTRATIONS FOR AIR-DRIED BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO LAND IN 2003

Sample	TVS												
Date	TKN	NH ₃ -N	TVS*	Reduction	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	---	mg/dry kg---	-----	%-----	-----	-----	-----	-----	mg/dry kg	-----	-----	-----	-----

NL = No limit; not applicable.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 11

DATA FOR MONITORING PART 503 CLASS A PATHOGEN COMPLIANCE
AT THE CALUMET WATER RECLAMATION PLANT FOR 2003

Sample Date	Lagoon Source	Total Solids -----%-----	Fecal Coliform* ---No./g---
04/29/03	9	58.30	67
05/06/03	9	87.70	43
05/20/03	9	60.00	32
05/20/03	8	77.20	30
05/20/03	9	52.00	45
05/20/03	9	78.70	24
05/27/03	8	90.30	42
05/27/03	8	77.40	58
05/27/03	8	76.90	76
05/29/03	9	67.00	43
05/29/03	9	60.00	48
05/29/03	9	62.00	160
08/05/03	9	69.00	130
08/07/03	9	64.90	770
08/21/03	9	69.50	200
08/27/03	9	80.40	47
08/27/03	9	76.40	50
08/27/03	9	85.60	33
08/27/03	30	77.00	37
09/18/03	9	67.80	55
09/18/03	9	72.30	87
09/23/03	(LASMA)**	60.00	63

* Beginning August 1, 2002 the Calumet WRP EQ Processing Trains met Class A standards at Section 503.32a8 and required only Fecal Coliform analysis at the time of use.

** LASMA: Lawndale Avenue Solids Management Area

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 12

SUMMARY OF RESULTS OF ADDITIONAL ANAEROBIC DIGESTION TESTS FOR VOLATILE SOLIDS
REDUCTION FOLLOWING OPTION 2 OF SECTION 503.33(b)

Test Start Date	Before Test		After Test		Volatile Solids Reduction	
	TS*	TVS	TS	TVS	By Equation**	By Mass
----- % -----						
3/21/03	1.92	64.4	1.75	61.0	13.6	14.0
4/18/03	2.25	57.9	2.14	55.4	10.0	9.0
5/9/03	2.36	57.5	2.23	54.8	10.4	9.7
5/23/03	2.73	55.3	2.50	51.0	15.8	15.4
6/13/03	2.96	48.6	2.82	44.4	15.5	12.8
7/11/03	2.89	49.8	2.85	47.4	9.5	6.4
8/8/03	3.77	40.2	3.65	39.9	1.4	4.0
8/29/03	3.75	40.8	3.62	37.9	11.4	10.4
9/12/03	3.15	43.0	3.03	40.9	8.5	8.6
10/10/03	2.45	45.9	2.35	43.6	9.2	9.3
11/13/03	1.87	53.2	1.76	50.4	10.7	11.1
12/19/03	2.32	53.6	2.13	49.6	15.0	14.9

* TS = Total Solids content, TVS = Total Volatile Solids content

** The Van Kleeck Equation was used in calculations.

STICKNEY WRP

Treatment Plant and Biosolids Process Train Description

The Stickney WRP, located in Stickney, Illinois, has a design capacity 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:

- a. Placed into lagoons for dewatering, aging, and stabilization, and then transported to paved cells and air-dried prior to:
 1. Application to land as EQ biosolids under the District's Controlled Solids Distribution Permit.
 2. Use at local municipal solid waste landfills as final landfill cover.
 3. Application to land as EQ biosolids at the Fulton County, Illinois, dedicated land application site.
 4. Application to farmland as EQ biosolids by a private contractor.

5. Disposal in local municipal solid waste landfills.
- b. Dewatered by centrifuging to approximately 25 percent solids content, and then applied to land by a private contractor as a Class B cake.
 - c. Dewatered by centrifuging to approximately 25 percent solids content, transported to paved cells, and air-dried prior to use as daily landfill cover.
 - d. 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:
 1. Application to land as EQ biosolids under the District's Controlled Solids Distribution Permit.
 2. Use at local municipal solid waste landfills as final landfill cover.
 3. Application to land as EQ biosolids at the Fulton County, Illinois, dedicated land application site.
 4. Application to farmland as EQ biosolids by a private contractor.

5. Disposal in local municipal solid waste
landfills.

In 2003, the total biosolids production at the Stickney WRP was 131,779 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 were used and disposed of in 2003 was 159,714 dry tons. This total is greater than the total 2003 production for the Stickney WRP due to a net withdrawal of biosolids from lagoon storage.

Summary of Use and Disposal at Landfills

The Stickney WRP sent 73,390 dry tons of biosolids to landfills in 2003. Of this amount, 49,987 dry tons were used as daily cover, 20,347 dry tons were used as final cover, and 3,056 dry tons were co-disposed with municipal solid waste. These practices are exempt from the Part 503 Regulations and require no further reporting.

Biosolids Conveyed to Other WRPs for Further Processing

In 2003, 4,678 dry tons of biosolids were trucked to the Calumet WRP for drying and distribution to land application

and landfill final cover sites. These biosolids are included in the quantities reported for the Calumet WRP.

Land Application of Centrifuge Cake Biosolids

In 2003, the Stickney WRP land applied 67,634 dry tons of centrifuge cake biosolids to farmland under IEPA Permit No. 1999-SC-3932 through a contract with Synagro Midwest, Inc. This included 757 dry tons of centrifuge cake that was transported from the John E. Egan WRP to the Lawndale 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 2003 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 2003, the Stickney WRP land applied a total of 18,687

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 13

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS
FROM THE STICKNEY WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2003

Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/dry kg -----											
01/01/03	54,952	3,815	N/A	3	373	N/A	18	55	96	N/A	650
01/03/03	55,992	2,854	10	3	376	0.90	18	55	115	2	721
02/06/03	73,319	5,368	7	4	439	0.70	20	74	89	2	697
02/20/03	61,945	5,546	N/A	3	415	N/A	19	64	73	N/A	657
03/06/03	82,895	9,016	4	3	415	0.58	19	59	68	2	608
03/13/03	71,783	12,345	8	3	409	0.72	19	56	91	6	681
03/13/03	83,186	14,197	5	3	417	0.67	19	54	69	6	614
03/20/03	66,892	8,253	N/A	3	379	N/A	17	52	85	N/A	622
03/26/03	42,468	15,966	10	4	410	1.01	17	53	142	5	820
04/10/03	50,428	7,281	8	4	382	0.77	16	59	127	3	738
04/10/03	77,990	17,441	<0.9	5	768	0.82	25	55	52	<0.7	931
05/08/03	43,728	5,389	9	3	329	1.01	14	64	136	1	701
05/13/03	51,256	6,444	9	4	381	0.57	13	60	134	1	826
05/15/03	59,939	14,294	<0.9	3	395	0.52	15	56	84	<0.7	729
05/15/03	51,000	5,939	2	4	359	0.55	13	62	129	<0.7	787
05/22/03	46,105	5,882	N/A	5	357	N/A	12	58	135	N/A	781
06/02/03	41,785	11,895	9	5	396	0.67	13	46	206	1	963

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 13 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS
FROM THE STICKNEY WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2003

Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/dry kg -----											
06/02/03	41,462	9,092	10	4	390	0.72	14	72	207	1	963
06/05/03	47,646	4,614	10	4	339	0.39	12	65	143	2	721
06/19/03	46,240	5,248	N/A	2	274	N/A	12	38	141	N/A	714
07/10/03	44,510	6,005	9	4	379	0.95	17	58	150	2	807
07/11/03	42,725	7,154	10	4	469	1.53	19	66	176	2	991
07/11/03	47,218	15,528	10	4	501	1.15	18	70	113	3	857
07/11/04	32,321	6,286	12	5	544	1.01	19	75	224	3	1,196
07/24/03	33,926	3,875	N/A	4	395	N/A	18	59	161	N/A	821
08/07/03	38,396	3,332	11	4	373	0.34	15	61	163	3	765
08/14/03	36,013	4,954	11	4	381	0.62	15	62	162	4	847
08/14/03	34,387	8,872	11	4	390	0.26	16	57	163	3	877
08/21/03	41,122	3,523	N/A	4	371	N/A	18	68	168	N/A	832
09/04/03	40,388	2,890	10	5	455	0.44	18	68	168	1	883
09/15/03	36,375	6,918	9	5	432	0.52	15	55	191	1	1,024
09/15/03	43,695	13,332	11	5	426	0.45	23	64	155	2	921
09/18/03	35,685	2,819	N/A	4	419	N/A	21	63	159	N/A	892
10/09/03	31,081	3,288	N/A	2	283	0.51	13	38	101	N/A	580
10/16/03	35,719	5,933	7	5	455	0.55	14	59	189	2	1,007

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 13 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS
FROM THE STICKNEY WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2003

Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/dry kg -----											
10/16/03	48,357	14,491	8	4	395	0.43	13	60	155	<0.7	856
10/23/03	51,739	3,126	7	4	423	0.77	23	52	137	1	869
11/06/03	47,877	2,555	6	4	407	0.50	21	63	140	1	866
11/20/03	63,799	4,180	8	3	368	N/A	19	49	131	N/A	752
12/04/03	59,753	4,412	8	3	397	1.22	19	48	140	<0.7	764
12/18/03	52,584	6,201	N/A	3	345	1.27	17	49	132	N/A	738
Minimum	31,081	2,555	<1	2	274	0.26	12	38	52	<1	580
Mean*	49,968	7,331	8	4	405	0.72	17	58	137	2	806
Maximum	83,186	17,441	12	5	768	1.53	25	75	224	6	1,196
503 Limit	NL	NL	41	39	1,500	17.0	75	420	300	100	2,800

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

N/A = No analysis.

NL = No limit; not applicable.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 14

DIGESTER TEMPERATURES AND DETENTION TIMES FOR CENTRIFUGE CAKE BIOSOLIDS FROM THE STICKNEY WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2003

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required By 503.32b3*
	-----°F-----	--days--		-----days-----
January	97	21.0	yes	15.0
February	97	23.5	yes	15.0
March	97	22.3	yes	15.0
April	97	21.9	yes	15.0
May	97	24.3	yes	15.0
June	96	18.2	yes	15.0
July	97	23.9	yes	15.0
August	98	21.0	yes	15.0
September	99	24.7	yes	15.0
October	97	23.7	yes	15.0
November	97	26.1	yes	15.0
December	97	33.2	yes	15.0

* For anaerobic digestion at average temperature achieved.

dry tons of air-dried EQ biosolids through the District's Controlled Solids Distribution Program under IEPA Permit No. 2000-SC-0872 for landscaping and construction of recreation fields. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is 12 times per year.

An exception to this frequency of monitoring was granted, effective March 1, 2000, by USEPA Region V, for compliance with Class A pathogen standards. The Stickney WRP biosolids that are land applied are required to be monitored only six times per year for compliance with Class A pathogen standards in Part 503 (Appendix II). Subsequent to this, 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 PFRP. This PFRP equivalency took effect on August 1, 2002 (Appendix III) and on this basis, all EQ biosolids produced by the Stickney WRP met the Part 503 Class A pathogen requirements of 503.32a8 in 2003.

All Stickney WRP EQ biosolids that were land applied in 2003 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 15), the Class A pathogen limits of Section 503.32a8 (Table 16), and the vector attraction reduction requirements of Section 503.33b1 (Table 15). Management

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 15

NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METALS CONCENTRATIONS
FOR AIR-DRIED BIOSOLIDS FROM THE STICKNEY WATER RECLAMATION PLANT
APPLIED TO LAND IN 2003

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Sample Date	TKN	NH3-N	TVS* TVS Reduction	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg	mg/dry kg	%					mg/dry kg				
07/26-31	10,359	2,580	36.5 57.6	9	6	440	0.57	15	61	178	<0.7	1,063
07/26-31	10,439	2,540	34.8 60.7	9	6	430	0.63	15	63	179	1	1,065
07/26-31	14,829	1,917	35.2 59.8	11	34	557	0.92	16	93	290	<0.7	1,562
07/26-31	10,256	1,996	35.1 60.1	11	33	579	0.83	16	98	284	<0.7	1,605
8/5-8	7,698	850	18.3 82.4	6	12	273	1.16	9	54	125	<0.7	714
8/21-23	22,832	2,349	44.1 37.8**	7	7	492	0.58	17	70	151	3	1,189
9/4-5	19,467	5,998	42.5 48.3	6	7	468	0.23	16	60	159	1	1,071
09/05	12,995	1,181	41.4 50.6	7	6	511	1.52	14	69	176	<0.7	1,060
09/12	20,791	3,669	44.5 43.7	7	8	481	0.44	17	62	155	3	1,078
09/15	15,676	4,219	45.1 42.4	8	7	477	0.43	18	62	149	1	1,164
9/24-26	13,976	4,883	45.3 42.1	8	7	509	0.25	16	60	146	3	1,201
09/30	15,302	5,759	45.9 40.6	7	7	486	0.33	19	63	149	3	1,164

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 15 (Continued)

NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METALS CONCENTRATIONS
FOR AIR-DRIED BIOSOLIDS FROM THE STICKNEY WATER RECLAMATION PLANT
APPLIED TO LAND IN 2003

Sample Date	TKN	NH3-N	TVS		As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
			TVS*	Reduction									
--- mg/dry kg ---		-----%-----		----- mg/dry kg -----									
10/01	7,509	1,640	36.9	59.7	6	5	549	1.38	18	67	171	<0.7	1,107
49 10/1-2	19,293	4,289	44.7	44.1	5	6	460	1.00	21	61	143	<0.7	1,161
10/02	24,343	5,424	42.6	48.7	3	6	450	1.08	20	63	155	<0.7	1,137
10/03	16,312	4,003	43.5	46.9	3	7	491	1.05	23	63	165	1	1,237
10/07	7,322	3,299	43.1	47.6	3	6	477	1.38	21	59	149	2	1,167
10/9	13,503	1,410	35.3	62.3	5	5	530	1.98	17	69	171	<0.7	1,099
10/22-23	15,013	3,094	42.7	48.6	3	6	450	1.08	20	63	155	<0.7	1,137
10/24	18,117	3,820	42.1	49.9	3	6	431	1.50	20	55	145	1	1,071
10/27-31	21,425	4,260	43.2	47.5	3	6	436	1.61	21	60	146	<0.7	1,077
11/12-14	16,311	4,630	38.8	61.3	6	7	530	0.95	23	64	173	1	1,240
11/14	22,769	6,772	37.3	63.7	4	5	465	0.98	23	60	155	<0.7	1,108
11/25	15,095	2,893	36.5	64.9	5	7	460	1.26	22	57	154	<0.7	1,098
11/25	25,676	5,692	38.3	62.1	5	7	482	1.07	22	62	165	<0.7	1,109

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 15 (Continued)

NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METALS CONCENTRATIONS
FOR AIR-DRIED BIOSOLIDS FROM THE STICKNEY WATER RECLAMATION PLANT
APPLIED TO LAND IN 2003

Sample Date	TKN	NH3-N	TVS* Reduction	TVS Reduction	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	---	mg/dry kg	---	-----%	-----	-----	-----	-----	mg/dry kg	-----	-----	-----	-----
Minimum	7,322	850	18.3	37.8	3	5	273	0.23	9	54	125	<1	714
Mean***	15,892	3,567	39.7	53.3	6	9	477	0.97	18	65	168	1	1,147
Maximum	25,676	6,772	45.9	82.4	11	34	579	1.98	23	98	290	3	1,605
503 Limit	NL	NL	NL	38.0	41	39	1,500	17.0	75	420	300	100	2,800

* TVS = Total Volatile Solids.

** Biosolids did not meet vector attraction reduction requirements in Section 503.33b1, but they were managed in accordance with requirements in 503.33b10.

*** In calculating the mean, values less than the detectable level were considered as the detectable level.

NL = No limit; not applicable.

METROPOLITAN WATER RECLAMTION DISTRICT OF GREATER CHICAGO

TABLE 16

DATA FOR MONITORING PART 503 CLASS A PATHOGEN COMPLIANCE AT
THE STICKNEY WATER RECLAMATION PLANT FOR 2003

Sample Date	Lagoon Source	Total Solids	Fecal Coliform*
		-----%-----	-----No./g-----
06/03/03	21 & 22	55.3	52
06/09/03	21	64.7	8
06/10/03	21	63.1	80
06/17/03	22	73.4	39
06/17/03	21 & 22	79.5	36
08/05/03	21	69.7	110
08/05/03	30	66.8	43
08/19/03	30	79.6	36
09/18/03	30	80.0	85
09/18/03	30	70.9	71
09/30/03	30	63.0	110
09/30/03	30	63.3	120
10/02/03	30	69.2	41
10/14/03	30	75.6	38
10/16/03	30	61.9	61
10/30/03	30	56.3	51

* Beginning August 1, 2002 the Stickney WRP EQ Processing Trains met Class A standard at Section 503.32a8 and required only Fecal Coliform analysis at the time of use.

practices complied with Section 503.14, as previously described in a letter to Mr. Michael J. Mikulka dated January 28, 1994 (Appendix I).

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 2003 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 WRP

A total of 73,390 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 2003.

A total of 3,051 dry tons were co-disposed at Land and Lakes River Bend Prairie Landfill at 801 E. 138th St., Dolton, Illinois, and 5 dry tons were co-disposed at the Allied Waste Industries Environtech Landfill at Morris, Illinois.

A total of 39,771 dry tons were used as daily cover at the Waste Management of North America, Inc., CID Recycling and Disposal Facility in Calumet City, Illinois, and 10,216 dry tons were used as daily cover at Land and Lakes River Bend Prairie Landfill.

A total of 10,419 dry tons of biosolids were used as a final vegetative cover at the Paxton I landfill located at 12201 S. Oglesby Avenue in Chicago, Illinois, and 9,928 dry tons were used as a final vegetative cover at Allied Waste Industries' Environtech Landfill.

Calumet WRP

A total of 11,441 dry tons of biosolids from the Calumet WRP were co-disposed or used as a final vegetative cover at nonhazardous waste landfills in 2003.

A total of 869 dry tons of biosolids from the Calumet WRP were co-disposed with municipal solid waste at Land and Lakes

River Bend Prairie Landfill at 801 E. 138th St., Dolton, Illinois.

A total of 10,572 dry tons of biosolids were used as a final vegetative cover at the Paxton I landfill located at 12201 S. Oglesby Avenue in Chicago, Illinois.

John E. Egan WRP

The John E. Egan WRP did not send any biosolids to landfills in 2003.

APPENDIX I

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



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

Thomas S. Fuller
President
Frank E. Gardner
Vice President
Nancy Drew Sheehan
Chairman, Committee on Finance
Joseph E. Gardner
Gloria Ajitto Majewski
Kathleen Therese Meany
Terrence J. O'Brien
Patricia Young
Harry "Bus" Yourell

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.

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.

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.

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

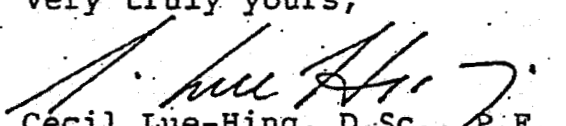
Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

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.

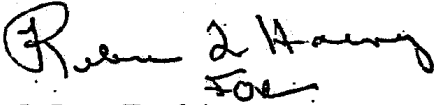
After a review of the District's biosolids data, and in consideration of the District's commendable effort to characterize pathogen quality of more than 1,000 samples, the following is our response to your request.

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 RECLAMATION DISTRICT
00 JAN 18 PM 1:59
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.

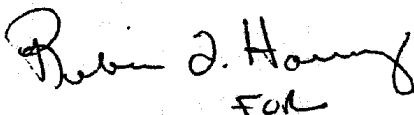
Our review of the MWRDGC's biosolids data submitted for 1994 to 2001 indicates Class A biosolids were produced at the Stickney and Calumet plants as they operated their respective low-and high-solids sludge processing trains (SPTs) according to codified protocols delineated in Attachment B of Mr. Lanyon's 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