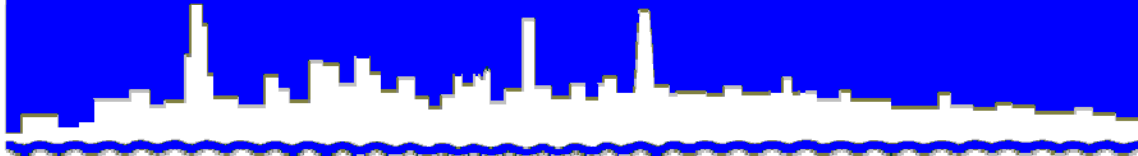


Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

*MONITORING AND RESEARCH
DEPARTMENT*

REPORT NO. 12-53

LAWNDALE AVENUE SOLIDS MANAGEMENT AREA

MONITORING REPORT FOR

THIRD QUARTER 2012

DECEMBER 2012

Metropolitan Water Reclamation District of Greater Chicago

100 East Erie Street

Chicago, Illinois 60611-3154

312.751.5190

Thomas C. Granato, Ph.D.

Director of Monitoring and Research Department

thomas.granato@mwr.org

December 21, 2012

Mr. S. Alan Keller, P.E.
Manager, Permit Section
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794 - 9276

Dear Mr. Keller:

Subject: Lawndale Avenue Solids Management Area - Stickney Water Reclamation Plant, Illinois Environmental Protection Agency Permit No. 2010-AO-0267, Monitoring Report for July, August, and September 2012

The attached nine tables contain the monitoring data for the Lawndale Avenue Solids Management Area for July, August, and September 2012 as required by Illinois Environmental Protection Agency (IEPA) Operating Permit No. 2010-AO-0267.

The data reported are as follows:

Table 1, Analysis of Water from Monitoring Wells M-11 Through M-15 at the Lawndale Avenue Solids Management Area Sampled on July 11, 2012

Table 2, Analysis of Water from Lysimeters L-4N and L-6N at the Lawndale Avenue Solids Management Area Sampled During July, August, and September 2012

Table 3, Analysis of Water from Lysimeters L-1N Through L-9N at the Lawndale Avenue Solids Management Area Sampled on July 11, 2012

Table 4, Analysis of Monthly Compositing Biosolids Placed in the Lawndale Avenue Solids Management Drying Area During July 2012

Table 5, Analysis of Monthly Compositing Biosolids Placed in the Lawndale Avenue Solids Management Drying Area During August 2012

Subject: Lawndale Avenue Solids Management Area - Stickney Water Reclamation Plant, Illinois Environmental Protection Agency Permit No. 2010-AO-0267, Monitoring Report for July, August, and September 2012

Table 6, Analysis of Monthly Composited Biosolids Placed in the Lawndale Avenue Solids Management Drying Area During September 2012

Table 7, Analysis of Monthly Composited Processed Digested Biosolids Removed from the Lawndale Avenue Solids Management Drying Area During July 2012

Table 8, Analysis of Monthly Composited Processed Digested Biosolids Removed from the Lawndale Avenue Solids Management Drying Area During August 2012

Table 9, Analysis of Monthly Composited Processed Digested Biosolids Removed from the Lawndale Avenue Solids Management Drying Area During September 2012

A new lysimeter L-7N-1 was installed in June 2010 as a replacement for L-7N. Biosolids were placed in the solids drying area and removed from the site during July, August, and September.

Very truly yours,

Thomas C. Granato, Ph.D.
Director
Monitoring and Research

TCG:PL:cm
Attachments

cc w/att: Mr. J. Patel, IEPA
Region 2 – Des Plaines
Records Unit, IEPA

TABLE 1: ANALYSIS OF WATER FROM MONITORING WELLS M-11 THROUGH M-15 AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON JULY 11, 2012

Parameter	Unit	Monitoring Well No.		
		M-11	M-12	M-13
pH ¹		7.2	7.4	7.5
EC	mS/m	42	40	72
Total Dissolved Solids	mg/L	728	892	1,448
Total Dissolved Organic Carbon	"	2	< 1	2
Cl ⁻	"	12	14	< 10
SO ₄ ⁼	"	182	347	618
TKN	"	< 1	< 1	< 1
NH ₃ -N	"	0.4	0.2	0.4
NO ₂ + NO ₃ -N	"	< 0.15	< 0.15	< 0.15
Total P	"	< 0.10	< 0.10	< 0.10
Alkalinity as CaCO ₃	"	352	306	330
Al	"	< 1.0	< 1.0	< 1.0
Ca	"	90	80	169
Cd	"	< 0.001	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005	< 0.005
Fe	"	< 0.1	< 0.1	< 0.1
Hg	μg/L	< 0.20	< 0.20	< 0.20
K	mg/L	9	10	10
Mg	"	44	37	79
Mn	"	0.056	0.005	0.008
Na	"	57	135	92
Ni	"	< 0.005	< 0.005	< 0.005
Pb	"	< 0.02	< 0.02	< 0.02
Zn	"	1.3	1.2	0.84
Fecal coliform	MPN ²	< 1	< 1	< 1
Static H ₂ O Elev.	ft	627	630	626

TABLE 1 (Continued): ANALYSIS OF WATER FROM MONITORING WELLS M-11 THROUGH M-15 AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON JULY 11, 2012

Parameter	Unit	Monitoring Well No.	
		M-14	M-15
pH ¹		7.2	7.3
EC	mS/m	45	81
Total Dissolved Solids	mg/L	576	1,708
Total Dissolved Organic Carbon	"	< 1	2
Cl ⁻	"	< 10	< 10
SO ₄ ⁼	"	130	828
TKN	"	< 1	< 1
NH ₃ -N	"	0.2	0.4
NO ₂ + NO ₃ -N	"	< 0.15	< 0.15
Total P	"	< 0.10	< 0.10
Alkalinity as CaCO ₃	"	326	362
Al	"	< 1.0	< 1.0
Ca	"	75	239
Cd	"	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005
Fe	"	< 0.1	0.2
Hg	μg/L	< 0.20	< 0.20
K	mg/L	8	10
Mg	"	41	107
Mn	"	0.004	0.032
Na	"	43	63
Ni	"	< 0.005	< 0.005
Pb	"	< 0.02	< 0.02
Zn	"	0.51	3.5
Fecal coliform	MPN ²	< 1	< 1
Static H ₂ O Elev.	ft	622	NR ³

¹pH analyzed beyond recommended holding time of 15 minutes.

²Most probable number per 100 mL.

³No reading.

TABLE 2: ANALYSIS OF WATER FROM LYSIMETERS L-4N
AND L-6N AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT
AREA SAMPLED DURING JULY, AUGUST, AND SEPTEMBER 2012

Parameter	Unit	Date Sampled			
		07/11/12		08/01/12	
		L-4N	L-6N	L-4N	L-6N
pH ¹		8.1	7.6	7.9	7.9
EC	mS/m	280	346	281	341
Total Dissolved Solids	mg/L	2,940	3,892	3,068	4,144
Total Dissolved Organic Carbon	"	4	63	6	62
Cl ⁻	"	20	80	22	133
SO ₄ ⁼	"	1,227	1,362	1,328	1,542
TKN	"	4	14	4	15
NH ₃ -N	"	3	11	4	13
NO ₂ + NO ₃ -N	"	0.43	< 0.15	0.31	0.21
Total P	"	< 0.10	< 0.10	< 0.10	< 0.10
Alkalinity as CaCO ₃	"	498	745	621	973
Al	"	< 1.0	< 1.0	< 1.0	< 1.0
Ca	"	541	671	575	681
Cd	"	< 0.001	< 0.001	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005	< 0.005	< 0.005
Fe	"	2	34	3	31
Hg	μg/L	< 0.20	< 0.20	< 0.20	< 0.20
K	mg/L	4	5	4	5
Mg	"	99	140	106	154
Mn	"	0.515	0.736	0.532	0.748
Na	"	49	73	45	105
Ni	"	< 0.005	0.007	< 0.005	0.007
Pb	"	< 0.02	< 0.02	< 0.02	< 0.02
Zn	"	< 0.01	< 0.01	< 0.01	0.04

TABLE 2 (Continued): ANALYSIS OF WATER FROM LYSIMETERS L-4N
AND L-6N AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT
AREA SAMPLED DURING JULY, AUGUST, AND SEPTEMBER 2012

Parameter	Unit	Date Sampled	
		09/05/12	
		L-4N	L-6N
pH ¹		8.0	7.9
EC	mS/m	289	343
Total Dissolved Solids	mg/L	3,016	3,728
Total Dissolved Organic Carbon	"	6	57
Cl ⁻	"	26	156
SO ₄ ⁼	"	1,471	1,418
TKN	"	3	12
NH ₃ -N	"	2	12
NO ₂ + NO ₃ -N	"	1.2	0.50
Total P	"	< 0.10	< 0.20
Alkalinity as CaCO ₃	"	558	1,808
Al	"	< 1.0	< 2.0
Ca	"	591	690
Cd	"	< 0.001	< 0.002
Cr	"	< 0.005	< 0.010
Cu	"	< 0.005	< 0.010
Fe	"	2	31
Hg	μg/L	< 0.20	< 0.40
K	mg/L	5	4
Mg	"	127	144
Mn	"	0.518	0.758
Na	"	41	72
Ni	"	< 0.005	< 0.010
Pb	"	< 0.02	< 0.04
Zn	"	0.04	0.06

¹pH analyzed beyond recommended holding time of 15 minutes.

TABLE 3: ANALYSIS OF WATER FROM LYSIMETERS L-1N
THROUGH L-9N AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT
AREA SAMPLED ON JULY 11, 2012

Parameter	Unit	Lysimeter No.			
		L-1N	L-2N	L-3N	L-5N
pH ¹		8.0	8.3	7.8	8.1
EC	mS/m	184	184	212	526
Total Dissolved Solids	mg/L	1,812	1,472	2,008	5,456
Total Dissolved Organic Carbon	"	5	4	23	3
Cl ⁻	"	15	228	144	762
SO ₄ ⁼	"	677	233	338	1,685
TKN	"	3	< 1	2	2
NH ₃ -N	"	3	< 0.1	0.8	2
NO ₂ + NO ₃ -N	"	< 0.15	1.8	0.24	0.47
Total P	"	< 0.10	< 0.10	0.14	< 0.10
Alkalinity as CaCO ₃	"	418	394	1,003	472
Al	"	< 1.0	< 1.0	< 1.0	< 1.0
Ca	"	196	142	325	537
Cd	"	< 0.001	< 0.001	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005	< 0.005	< 0.005
Fe	"	1	< 0.1	6	5
Hg	μg/L	< 0.20	< 0.20	< 0.20	< 0.20
K	mg/L	9	2	< 1	14
Mg	"	111	60	129	225
Mn	"	0.049	0.137	0.571	0.429
Na	"	50	157	81	382
Ni	"	< 0.005	0.007	< 0.005	0.006
Pb	"	< 0.02	< 0.02	< 0.02	< 0.02
Zn	"	< 0.01	< 0.01	< 0.01	< 0.01

TABLE 3 (Continued): ANALYSIS OF WATER FROM LYSIMETERS L-1N THROUGH L-9N AT THE LAWDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON JULY 11, 2012

Parameter	Unit	Lysimeter No.		
		L-7N	L-8N	L-9N
pH ¹		8.1	7.4	8.4
EC	mS/m	158	253	269
Total Dissolved Solids	mg/L	1,256	1,792	2,536
Total Dissolved Organic Carbon	"	6	3	26
Cl ⁻	"	243	519	290
SO ₄ ⁼	"	26	194	210
TKN	"	< 1	< 1	2
NH ₃ -N	"	1	0.5	0.6
NO ₂ + NO ₃ -N	"	< 0.15	0.35	0.46
Total P	"	< 0.10	< 0.10	< 0.10
Alkalinity as CaCO ₃	"	479	332	819
Al	"	< 1.0	< 1.0	< 1.0
Ca	"	93	137	275
Cd	"	< 0.001	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005	< 0.005
Fe	"	< 0.1	0.3	0.2
Hg	μg/L	< 0.20	< 0.20	< 0.20
K	mg/L	8	6	4
Mg	"	98	56	161
Mn	"	0.037	0.207	0.829
Na	"	68	274	102
Ni	"	< 0.005	< 0.005	< 0.005
Pb	"	< 0.02	< 0.02	< 0.02
Zn	"	< 0.01	< 0.01	< 0.01

¹pH analyzed beyond recommended holding time of 15 minutes.

TABLE 4: ANALYSIS OF MONTHLY COMPOSITED BIOSOLIDS
 PLACED IN THE LAWNSDALE AVENUE SOLIDS MANAGEMENT DRYING AREA
 DURING JULY 2012

Parameter	Unit	Concentration ¹
pH		7.6
Total Solids	%	14.7
Total Volatile Solids ²	"	42.8

¹ Values are the means of 14 samples.

² Total volatile solids as a percentage of total solids.

TABLE 5: ANALYSIS OF MONTHLY COMPOSITED BIOSOLIDS
 PLACED IN THE LAWNSDALE AVENUE SOLIDS MANAGEMENT DRYING AREA
 DURING AUGUST 2012

Parameter	Unit	Concentration ¹
pH		7.8
Total Solids	%	14.2
Total Volatile Solids ²	"	44.7

¹Values are the means of 14 samples.

²Total volatile solids as a percentage of total solids.

TABLE 6: ANALYSIS OF MONTHLY COMPOSITED BIOSOLIDS
PLACED IN THE LAWNSDALE AVENUE SOLIDS MANAGEMENT DRYING AREA
DURING SEPTEMBER 2012

Parameter	Unit	Concentration ¹
pH		7.6
Total Solids	%	12.5
Total Volatile Solids ²	"	44.0

¹Values are the means of 20 samples.

²Total volatile solids as a percentage of total solids.

TABLE 7: ANALYSIS OF MONTHLY COMPOSITED PROCESSED DIGESTED BIOSOLIDS REMOVED FROM THE LAWNSDALE AVENUE SOLIDS MANAGEMENT DRYING AREA DURING JULY 2012

Parameter	Unit	Concentration ¹
pH		7.6
Total Solids	%	52.5
Total Volatile Solids ²	"	40.8
TKN	mg/kg	25,239
NH ₃ -N	"	5,259
Total P	"	17,945
Al	"	17,896
Ca	"	37,006
Cd	"	4
Cr	"	143
Cu	"	415
Fe	"	16,463
Hg	"	0.99
K	"	3,286
Mg	"	19,306
Mn	"	474
Na	"	1,185
Ni	"	40
Pb	"	113
Zn	"	814

¹Values are the means of 21 samples.

²Total volatile solids as a percentage of total solids.

TABLE 8: ANALYSIS OF MONTHLY COMPOSITED PROCESSED DIGESTED
 BIOSOLIDS REMOVED FROM THE LAWNSDALE AVENUE SOLIDS
 MANAGEMENT DRYING AREA DURING AUGUST 2012

Parameter	Unit	Concentration ¹
pH		7.3
Total Solids	%	47.0
Total Volatile Solids ²	"	41.5
TKN	mg/kg	24,552
NH ₃ -N	"	5,060
Total P	"	18,132
Al	"	18,468
Ca	"	43,198
Cd	"	3
Cr	"	133
Cu	"	380
Fe	"	16,970
Hg	"	0.91
K	"	3,539
Mg	"	20,430
Mn	"	477
Na	"	920
Ni	"	38
Pb	"	106
Zn	"	774

¹Values are the means of nine samples.

²Total volatile solids as a percentage of total solids.

TABLE 9: ANALYSIS OF MONTHLY COMPOSITED PROCESSED DIGESTED
 BIOSOLIDS REMOVED FROM THE LAWNSDALE AVENUE SOLIDS
 MANAGEMENT DRYING AREA DURING SEPTEMBER 2012

Parameter	Unit	Concentration ¹
pH		7.6
Total Solids	%	36.1
Total Volatile Solids ²	"	42.6
TKN	mg/kg	29,341
NH ₃ -N	"	5,715
Total P	"	22,386
Al	"	17,565
Ca	"	40,409
Cd	"	3
Cr	"	146
Cu	"	421
Fe	"	17,198
Hg	"	0.87
K	"	2,841
Mg	"	18,617
Mn	"	491
Na	"	1,073
Ni	"	42
Pb	"	120
Zn	"	858

¹Values are the means of 11 samples.

²Total volatile solids as a percentage of total solids.