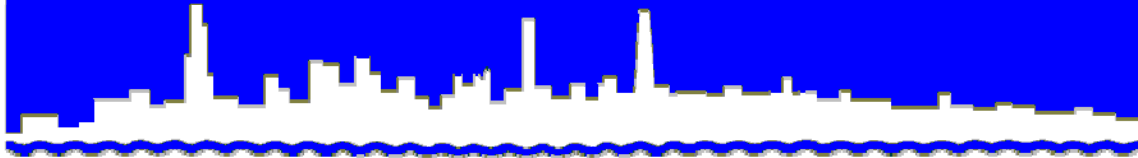


Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

*MONITORING AND RESEARCH
DEPARTMENT*

REPORT NO. 13-31

LAWNDALE AVENUE SOLIDS MANAGEMENT AREA

MONITORING REPORT FOR

SECOND QUARTER 2013

AUGUST 2013

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

312.751.5190 f: 312.751.5194
thomas.granato@mwrdr.org

August 22, 2013

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 April, May, and June 2013

The attached nine tables contain the monitoring data for the Lawndale Avenue Solids Management Area for April, May, and June 2013 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 April 15, 2013

Table 2, Analysis of Water from Lysimeters L-4N and L-6N at the Lawndale Avenue Solids Management Area Sampled During April, May, and June 2013

Table 3, Analysis of Water from Lysimeters L-1N Through L-9N at the Lawndale Avenue Solids Management Area Sampled on May 1, 2013

Table 4, Analysis of Monthly Composited Biosolids Placed in the Lawndale Avenue Solids Management Drying Area During April 2013

Table 5, Analysis of Monthly Composited Biosolids Placed in the Lawndale Avenue Solids Management Drying Area During May 2013

Subject: Lawndale Avenue Solids Management Area - Stickney Water Reclamation Plant, Illinois Environmental Protection Agency Permit No. 2010-AO-0267, Monitoring Report for April, May, and June 2013

Table 6, Analysis of Monthly Composited Biosolids Placed in the Lawndale Avenue Solids Management Drying Area During June 2013

Table 7, Analysis of Monthly Composited Processed Digested Biosolids Removed from the Lawndale Avenue Solids Management Drying Area During April 2013

Table 8, Analysis of Monthly Composited Processed Digested Biosolids Removed from the Lawndale Avenue Solids Management Drying Area During May 2013

Table 9, Analysis of Monthly Composited Processed Digested Biosolids Removed from the Lawndale Avenue Solids Management Drying Area During June 2013

Biosolids were placed in the solids drying area and removed from the site during April, May, and June.

Very truly yours,

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

TCG:PL:cm

Attachments

cc w/att: Mr. Patel, IEPA
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 APRIL 15, 2013

Parameter ¹	Unit	Monitoring Well No.		
		M-11	M-12	M-13
pH ¹		7.4	7.4	7.1
EC	mS/m	4	4	7
Total Dissolved Solids	mg/L	704	906	1,376
Total Dissolved Organic Carbon	"	2	2	2
Cl ⁻	"	16	14	< 10
SO ₄ ⁼	"	191	357	641
Alkalinity as CaCO ₃	"	351	303	338
TKN	"	< 1	< 1	< 1
NH ₃ -N	"	1	0.5	0.5
NO ₂ + NO ₃ -N	"	< 0.15	< 0.15	< 0.15
Total P	"	< 0.20	< 0.20	< 0.20
Al	"	< 1.0	< 1.0	< 1.0
Ca	"	46	87	173
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	10	12	12
Mg	"	12	43	89
Mn	"	0.015	0.003	0.006
Na	"	58	134	95
Ni	"	< 0.005	< 0.005	< 0.005
Pb	"	< 0.02	< 0.02	< 0.02
Zn	"	0.81	< 0.01	< 0.01

TABLE 1 (Continued): ANALYSIS OF WATER FROM MONITORING WELLS M-11 THROUGH M-15 AT THE LAWNSDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON APRIL 15, 2013

Parameter ¹	Unit	Monitoring Well No.	
		M-14	M-15
pH ¹		7.0	7.0
EC	mS/m	5	8
Total Dissolved Solids	mg/L	562	1,740
Total Dissolved Organic Carbon	"	< 1	< 1
Cl ⁻	"	< 10	< 10
SO ₄ ⁼	"	126	823
Alkalinity as CaCO ₃	"	331	361
TKN	"	< 1	< 1
NH ₃ -N	"	0.2	0.6
NO ₂ + NO ₃ -N	"	< 0.15	< 0.15
Total P	"	< 0.20	< 0.20
Al	"	< 1.0	< 1.0
Ca	"	79	246
Cd	"	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005
Fe	"	< 0.1	3
Hg	μg/L	< 0.20	< 0.20
K	mg/L	9	12
Mg	"	46	123
Mn	"	0.012	0.023
Na	"	38	52
Ni	"	< 0.005	< 0.005
Pb	"	< 0.02	< 0.02
Zn	"	1.4	3.6

¹pH analyzed beyond recommended holding time of 15 minutes.

TABLE 2: ANALYSIS OF WATER FROM LYSIMETERS L-4N
AND L-6N AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT
AREA SAMPLED DURING APRIL, MAY, AND JUNE 2013

Parameter	Unit	Date Sampled			
		04/03/13		05/01/13	
		L-4N	L-6N ¹	L-4N	L-6N ¹
pH ²		7.9		7.9	
EC	mS/m	290		277	
Total Dissolved Solids	mg/L	2,924		2,840	
Total Dissolved Organic Carbon	"	6	L	5	L
			Y		Y
Cl ⁻	"	24	S	NA ³	S
SO ₄ ⁼	"	1,371	I	1,386	I
Alkalinity as CaCO ₃	"	462	M	NA ³	M
			E		E
TKN	"	4	T	4	T
NH ₃ -N	"	4	E	4	E
NO ₂ + NO ₃ -N	"	0.82	R	0.91	R
Total P	"	0.21		0.21	
			I		I
Al	"	< 1.0	N	< 1.0	N
Ca	"	503	A	516	A
Cd	"	< 0.001	C	< 0.001	C
Cr	"	< 0.005	C	< 0.005	C
Cu	"	0.007	E	< 0.005	E
			S		S
Fe	"	3	S	2	S
Hg	µg/L	< 0.20	I	< 0.20	I
K	mg/L	6	B	6	B
Mg	"	117	L	123	L
Mn	"	0.632	E	0.523	E
Na	"	67		60	
Ni	"	< 0.005		< 0.005	
Pb	"	< 0.02		< 0.02	
Zn	"	0.05		< 0.01	

TABLE 2 (Continued): ANALYSIS OF WATER FROM LYSIMETERS L-4N
AND L-6N AT THE LAWDALE AVENUE SOLIDS MANAGEMENT
AREA SAMPLED DURING APRIL, MAY, AND JUNE 2013

Parameter	Unit	Date Sampled	
		L-4N	L-6N
		06/05/13	
pH ²		7.9	7.9
EC	mS/m	278	259
Total Dissolved Solids	mg/L	2,732	2,540
Total Dissolved Organic Carbon	"	6	44
Cl ⁻	"	28	50
SO ₄ ⁼	"	1,245	953
Alkalinity as CaCO ₃	"	691	657
TKN	"	6	11
NH ₃ -N	"	5	9
NO ₂ + NO ₃ -N	"	0.72	0.23
Total P	"	< 0.20	< 0.20
Al	"	< 1.0	< 1.0
Ca	"	480	449
Cd	"	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005
Fe	"	0.2	18
Hg	μg/L	< 0.20	< 0.20
K	mg/L	8	4
Mg	"	121	103
Mn	"	0.457	0.579
Na	"	62	55
Ni	"	< 0.005	0.010
Pb	"	< 0.02	< 0.02
Zn	"	< 0.01	0.04

¹Gauge broken; Lysimeter could not hold vacuum.

²pH analyzed beyond recommended holding time of 15 minutes.

³No analysis; insufficient sample.

TABLE 3: ANALYSIS OF WATER FROM LYSIMETERS L-1N
THROUGH L-9N AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT
AREA SAMPLED ON MAY 1, 2013

Parameter	Unit	Lysimeter No.			
		L-1N	L-2N	L-3N	L-5N
pH ¹		8.1	8.0	7.9	7.9
EC	mS/m	169	176	231	511
Total Dissolved Solids	mg/L	1,552	1,280	1,816	4,698
Total Dissolved Organic Carbon	"	5	4	25	3
Cl ⁻	"	NA ²	NA ²	NA ²	NA ²
SO ₄ ⁼	"	668	236	155	1,741
Alkalinity as CaCO ₃	"	NA ²	NA ²	NA ²	NA ²
TKN	"	3	< 1	2	2
NH ₃ -N	"	3	< 0.1	1	2
NO ₂ + NO ₃ -N	"	< 0.15	7.4	0.17	0.34
Total P	"	< 0.2	0.5	< 0.2	0.5
Al	"	< 1.0	< 1.0	< 1.0	< 1.0
Ca	"	190	146	330	485
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	"	3	< 0.1	6	11
Hg	μg/L	< 0.20	< 0.20	< 0.20	< 0.20
K	mg/L	10	2	2	18
Mg	"	130	63	140	244
Mn	"	0.037	0.105	0.608	0.276
Na	"	56	155	82	322
Ni	"	< 0.005	0.009	< 0.005	< 0.005
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 LAWNDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON MAY 1, 2013

Parameter	Unit	Lysimeter No.		
		L-7N-1	L-8N	L-9N
pH ¹		8.4	8.1	8.0
EC	mS/m	131	248	264
Total Dissolved Solids	mg/L	936	NA ²	NA ²
Total Dissolved Organic Carbon	"	7	3	27
Cl ⁻	"	NA ²	NA ²	NA ²
SO ₄ ⁼	"	9	192	208
Alkalinity as CaCO ₃	"	NA ²	NA ²	NA ²
TKN	"	2	< 1	2
NH ₃ -N	"	1	< 0.1	0.9
NO ₂ + NO ₃ -N	"	< 0.15	0.85	< 0.15
Total P	"	< 0.2	< 0.2	< 0.2
Al	"	< 1.0	< 1.0	< 1.0
Ca	"	78	144	264
Cd	"	< 0.001	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005	< 0.005
Fe	"	0.3	2	9
Hg	μg/L	< 0.20	< 0.20	< 0.20
K	mg/L	7	8	5
Mg	"	104	58	176
Mn	"	0.020	0.198	0.585
Na	"	61	284	108
Ni	"	< 0.005	< 0.005	< 0.005
Pb	"	< 0.02	< 0.02	< 0.02
Zn	"	0.02	0.03	< 0.01

¹pH analyzed beyond recommended holding time of 15 minutes.

²No analysis; insufficient sample.

TABLE 4: ANALYSIS OF MONTHLY COMPOSITED BIOSOLIDS
 PLACED IN THE LAWNSDALE AVENUE SOLIDS MANAGEMENT DRYING AREA
 DURING APRIL 2013

Parameter	Unit	Concentration ¹
pH		7.3
Total Solids	%	9.4
Total Volatile Solids ²	"	45.5

¹ Values are the means of three 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 MAY 2013

Parameter	Unit	Concentration ¹
pH		7.2
Total Solids	%	10.5
Total Volatile Solids ²	"	43.4

¹Values are the means of 19 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 JUNE 2013

Parameter	Unit	Concentration ¹
pH		7.3
Total Solids	%	11.4
Total Volatile Solids ²	"	42.1

¹Values are the means of five 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 APRIL 2013

Parameter	Unit	Concentration ¹
pH		7.5
Total Solids	%	17.5
Total Volatile Solids ²	"	48.5
TKN	mg/kg	36,378
NH ₃ -N	"	7,993
Total P	"	22,519
Al	"	17,017
Ca	"	41,230
Cd	"	3
Cr	"	133
Cu	"	406
Fe	"	16,186
Hg	"	1.1
K	"	3,385
Mg	"	19,425
Mn	"	460
Na	"	1,757
Ni	"	45
Pb	"	103
Zn	"	807

¹Values are the means of four 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 MAY 2013

Parameter	Unit	Concentration ¹
pH		7.6
Total Solids	%	32.3
Total Volatile Solids ²	"	44.3
TKN	mg/kg	35,599
NH ₃ -N	"	6,668
Total P	"	22,845
Al	"	17,179
Ca	"	38,866
Cd	"	3
Cr	"	130
Cu	"	416
Fe	"	16,089
Hg	"	0.85
K	"	3,015
Mg	"	17,696
Mn	"	458
Na	"	1,157
Ni	"	44
Pb	"	99
Zn	"	762

¹ Values are the means of seven samples.

² Total 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 JUNE 2013

Parameter	Unit	Concentration ¹
pH		7.3
Total Solids	%	41.3
Total Volatile Solids ²	"	41.8
TKN	mg/kg	30,703
NH ₃ -N	"	4,940
Total P	"	22,132
Al	"	18,806
Ca	"	39,054
Cd	"	3
Cr	"	136
Cu	"	400
Fe	"	16,432
Hg	"	0.99
K	"	3,255
Mg	"	17,944
Mn	"	503
Na	"	1,168
Ni	"	40
Pb	"	108
Zn	"	771

¹Values are the means of nine samples.

²Total volatile solids as a percentage of total solids.