MONITORING AND RESEARCH DEPARTMENT

REPORT NO. 13-7

LAWNDALE AVENUE SOLIDS MANAGEMENT AREA

MONITORING REPORT FOR

FOURTH QUARTER 2012

March 2013

Protecting Our Water Environment

Metropolitan Water Reclamation District of Greater Chicago
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March 8, 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 October, November, and December 2012

The attached nine tables contain the monitoring data for the Lawndale Avenue Solids Management Area for October, November, and December 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 October 10, 2012

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

Table 3, Analysis of Water from Lysimeters L-1N Through L-9N at the Lawndale Avenue Solids Management Area Sampled on November 7, 2012

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

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

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

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

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

Table 9, Analysis of Monthly Composited Processed Digested Biosolids Removed from the Lawndale Avenue Solids Management Drying Area During December 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 October, November, and December.

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 OCTOBER 10, 2012

Parameter	Unit	Monitoring Well No.		
		M-11	M-12	M-13
pH[1]		6.5	7.5	7.6
EC	mS/m	71	92	102
Total Dissolved Solids	mg/L	698	884	1,346
Total Dissolved Organic Carbon	"	2	< 1	2
Cl^-	"	15	15	< 10
$SO_4^=$	"	198	351	632
TKN	"	< 1	< 1	< 1
NH_3-N	"	1	0.4	0.4
$NO_2 + NO_3$-N	"	< 0.15	< 0.15	< 0.15
Total P	"	< 0.10	< 0.10	< 0.10
Alkalinity as $CaCO_3$	"	360	307	340
Al	"	< 1.0	< 1.0	< 1.0
Ca	"	93	80	164
Cd	"	< 0.001	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005	< 0.005
Fe	"	0.4	< 0.1	< 0.1
Hg	µg/L	< 0.20	< 0.20	< 0.20
K	mg/L	8	10	10
Mg	"	44	37	77
Mn	"	0.015	0.003	0.011
Na	"	57	135	90
Ni	"	< 0.005	< 0.005	< 0.005
Pb	"	< 0.02	< 0.02	< 0.02
Zn	"	0.87	0.30	0.64
Static H_2O Elev.	ft	628	631	631

TABLE 1 (Continued): ANALYSIS OF WATER FROM MONITORING WELLS M-11 THROUGH M-15 AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON OCTOBER 10, 2012

Parameter	Unit	Monitoring Well No. M-14	Monitoring Well No. M-15
pH[1]		7.8	7.2
EC	mS/m	80	91
Total Dissolved Solids	mg/L	576	1,714
Total Dissolved Organic Carbon	"	< 1	2
Cl^-	"	< 10	< 10
$SO_4^=$	"	128	819
TKN	"	< 1	< 1
NH_3-N	"	0.3	0.6
$NO_2 + NO_3$-N	"	< 0.15	< 0.15
Total P	"	< 0.10	< 0.10
Alkalinity as $CaCO_3$	"	329	362
Al	"	< 1.0	< 1.0
Ca	"	74	232
Cd	"	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005
Fe	"	< 0.1	1
Hg	µg/L	< 0.20	< 0.20
K	mg/L	8	10
Mg	"	41	103
Mn	"	0.003	0.014
Na	"	42	63
Ni	"	< 0.005	< 0.005
Pb	"	< 0.02	< 0.02
Zn	"	0.36	1.1
Static H_2O Elev.	ft	619	NR[2]

[1]pH analyzed beyond recommended holding time of 15 minutes.
[2]No reading.

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

Parameter	Unit	Date Sampled			
		10/03/12		11/07/12	
		L-4N	L-6N	L-4N	L-6N
pH[1]		8.0	7.9	7.9	8.0
EC	mS/m	288	351	282	303
Total Dissolved Solids	mg/L	2,776	NA[2]	2,840	3,544
Total Dissolved Organic Carbon	"	5	50	4	66
Cl^-	"	NA[2]	NA[2]	35	68
$SO_4^=$	"	312	1,450	736	477
TKN	"	10	16	4	13
NH_3-N	"	8	12	3	11
$NO_2 + NO_3$-N	"	0.84	< 0.15	0.39	< 0.15
Total P	"	0.15	< 0.10	< 0.10	< 0.10
Alkalinity as $CaCO_3$	"	NA[2]	NA[2]	338	354
Al	"	< 1.0	< 1.0	< 1.0	< 1.0
Ca	"	584	717	537	663
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	"	4	37	3	35
Hg	µg/L	< 0.20	< 0.20	< 0.20	< 0.20
K	mg/L	5	5	5	5
Mg	"	124	144	111	137
Mn	"	0.533	0.905	0.517	0.824
Na	"	44	76	57	71
Ni	"	< 0.005	0.007	< 0.005	0.007
Pb	"	< 0.02	< 0.02	< 0.02	< 0.02
Zn	"	< 0.01	0.10	< 0.01	< 0.01

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

Parameter	Unit	Date Sampled 12/05/12 L-4N	L-6N
pH[1]		8.1	7.9
EC	mS/m	292	325
Total Dissolved Solids	mg/L	3,050	3,736
Total Dissolved Organic Carbon	"	10	68
Cl^-	"	34	172
$SO_4^=$	"	1,561	1,468
TKN	"	5	17
NH_3-N	"	5	13
$NO_2 + NO_3$-N	"	0.74	0.59
Total P	"	< 0.10	< 0.10
Alkalinity as $CaCO_3$	"	681	1,784
Al	"	< 1.0	< 2.0
Ca	"	605	742
Cd	"	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005
Fe	"	6	38
Hg	μg/L	< 0.20	< 0.20
K	mg/L	6	5
Mg	"	124	147
Mn	"	0.615	0.956
Na	"	55	80
Ni	"	< 0.005	0.012
Pb	"	< 0.02	< 0.02
Zn	"	0.02	0.05

[1]pH analyzed beyond recommended holding time of 15 minutes.
[2]No analysis.

TABLE 3: ANALYSIS OF WATER FROM LYSIMETERS L-1N THROUGH L-9N AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON NOVEMBER 7, 2012

Parameter	Unit	Lysimeter No. L-1N	L-2N	L-3N	L-5N
pH[1]		8.1	8.3	8.1	8.1
EC	mS/m	176	216	200	504
Total Dissolved Solids	mg/L	1,520	1,552	1,968	4,480
Total Dissolved Organic Carbon	"	5	4	24	4
Cl^-	"	46	322	116	744
$SO_4^=$	"	192	207	145	775
TKN	"	2	< 1	2	2
NH_3-N	"	3	0.2	1	2
$NO_2 + NO_3$-N	"	< 0.15	< 0.15	< 0.15	0.33
Total P	"	< 0.10	< 0.10	0.36	< 0.10
Alkalinity as $CaCO_3$	"	388	258	387	236
Al	"	< 1.0	< 1.0	< 1.0	< 1.0
Ca	"	179	167	337	522
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	"	0.8	0.3	7	7
Hg	µg/L	< 0.20	< 0.20	< 0.20	< 0.20
K	mg/L	8	2	< 1	13
Mg	"	109	70	128	218
Mn	"	0.050	0.180	0.584	0.295
Na	"	62	193	74	366
Ni	"	< 0.005	0.008	< 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 NOVEMBER 7, 2012

Parameter	Unit	Lysimeter No. L-7N	L-8N	L-9N
pH[1]		8.5	8.2	8.1
EC	mS/m	151	230	239
Total Dissolved Solids	mg/L	1,096	1,552	2,060
Total Dissolved Organic Carbon	"	8	9	26
Cl^-	"	490	920	299
$SO_4^=$	"	20	72	153
TKN	"	< 1	< 1	2
NH_3-N	"	1.4	1.2	0.4
$NO_2 + NO_3$-N	"	< 0.15	< 0.15	0.27
Total P	"	< 0.10	< 0.10	< 0.10
Alkalinity as $CaCO_3$	"	978	574	563
Al	"	< 1.0	< 1.0	< 1.0
Ca	"	86	150	267
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	5
Hg	µg/L	< 0.20	< 0.20	< 0.20
K	mg/L	8	4	4
Mg	"	98	70	154
Mn	"	0.040	0.212	0.590
Na	"	68	232	97
Ni	"	< 0.005	0.012	< 0.005
Pb	"	< 0.02	< 0.02	< 0.02
Zn	"	< 0.01	< 0.01	< 0.01

[1]pH analyzed beyond recommended holding time of 15 minutes.

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

Parameter	Unit	Concentration[1]
pH		7.5
Total Solids	%	12.6
Total Volatile Solids[2]	"	42.4

[1]Values are the means of seven samples.

[2]Total volatile solids as a percentage of total solids.

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

Parameter	Unit	Concentration[1]
pH		7.6
Total Solids	%	13.5
Total Volatile Solids[2]	"	43.6

[1]Values are the means of 11 samples.

[2]Total volatile solids as a percentage of total solids.

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

Parameter	Unit	Concentration[1]
pH		7.4
Total Solids	%	10.8
Total Volatile Solids[2]	"	43.7

[1]Values are the means of seven samples.

[2]Total volatile solids as a percentage of total solids.

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

Parameter	Unit	Concentration[1]
pH		7.5
Total Solids	%	36.6
Total Volatile Solids[2]	"	36.8
TKN	mg/kg	26,808
NH_3-N	"	5,397
Total P	"	17,435
Al	"	15,951
Ca	"	54,604
Cd	"	5
Cr	"	140
Cu	"	358
Fe	"	16,515
Hg	"	0.85
K	"	3,040
Mg	"	27,063
Mn	"	441
Na	"	1,068
Ni	"	37
Pb	"	104
Zn	"	752

[1]Values are the means of 10 samples.

[2]Total volatile solids as a percentage of total solids.

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

Parameter	Unit	Concentration[1]
pH		7.2
Total Solids	%	38.4
Total Volatile Solids[2]	"	42.2
TKN	mg/kg	30,569
NH_3-N	"	4,567
Total P	"	23,276
Al	"	20,649
Ca	"	41,676
Cd	"	3
Cr	"	146
Cu	"	413
Fe	"	17,945
Hg	"	0.91
K	"	4,058
Mg	"	19,360
Mn	"	546
Na	"	1,316
Ni	"	40
Pb	"	110
Zn	"	824

[1]Values are the means of nine samples.

[2]Total volatile solids as a percentage of total solids.

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

Parameter	Unit	Concentration[1]
pH		7.8
Total Solids	%	39.7
Total Volatile Solids[2]	"	44.1
TKN	mg/kg	28,196
NH_3-N	"	4,452
Total P	"	17,578
Al	"	16,777
Ca	"	42,447
Cd	"	3
Cr	"	133
Cu	"	392
Fe	"	16,534
Hg	"	0.99
K	"	3,233
Mg	"	19,372
Mn	"	525
Na	"	1,108
Ni	"	38
Pb	"	103
Zn	"	776

[1]Values are the means of six samples.

[2]Total volatile solids as a percentage of total solids.