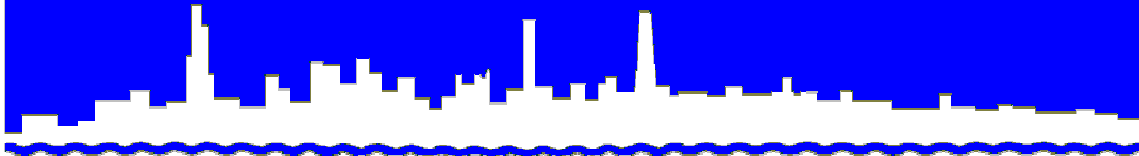


Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 10-59

LAWNDALE AVENUE SOLIDS MANAGEMENT AREA

MONITORING REPORT FOR

THIRD QUARTER 2010 - REVISED

DECEMBER 2010

Protecting Our Water Environment

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Louis Kollias, P.E., BCEE

Director of Monitoring and Research

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December 3, 2010

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-0265, Monitoring Report for July, August, and September 2010

The attached nine tables contain the monitoring data for the Lawndale Avenue Solids Management Area for July, August, and September 2010 as required by Illinois Environmental Protection Agency (IEPA) Operating Permit No. 2010-AO-0265.

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 14, 2010

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 2010

Table 3, Analysis of Water from Lysimeters L-1N Through L-9N at the Lawndale Avenue Solids Management Area Sampled on July 7, 2010

Table 4, Analysis of Monthly Composited Biosolids Placed in the Lawndale Avenue Solids Management Drying Area During July 2010

Table 5, Analysis of Monthly Composited Biosolids Placed in the Lawndale Avenue Solids Management Drying Area During August 2010

Subject: Lawndale Avenue Solids Management Area – Stickney Water Reclamation Plant, Illinois Environmental Protection Agency Permit No. 2010-AO-0265, Monitoring Report for July, August, and September 2010

Table 6, Analysis of Monthly Compositated Biosolids Placed in the Lawndale Avenue Solids Management Drying Area During September 2010

Table 7, Analysis of Monthly Compositated Processed Digested Biosolids Removed from the Lawndale Avenue Solids Management Drying Area During July 2010

Table 8, Analysis of Monthly Compositated Processed Digested Biosolids Removed from the Lawndale Avenue Solids Management Drying Area During August 2010

Table 9, Analysis of Monthly Compositated Processed Digested Biosolids Removed from the Lawndale Avenue Solids Management Drying Area During September 2010

Two new lysimeters, L-1N and L-2N, were installed at this site in September 2008 as replacements for L-1 and L-2, respectively. In June 2010, the IEPA terminated monitoring of the old lysimeters, including L-6. Data for these lysimeters will no longer be included in the quarterly report. No data are reported for L-7N because this lysimeter was removed during a site investigation in March 2010 as indicated in a letter of notification dated April 22, 2010, to the IEPA. A new lysimeter, L-7N-1, was installed in June 2010 as a replacement for L-7N.

Biosolids were placed in and removed from the solids drying area during July, August, and September 2010.

Very truly yours,

Louis Kollias
Director
Monitoring and Research

LK:PL:kq
Attachments

cc w/att: Mr. Sulski, IEPA
Records Unit, IEPA
Granato
O'Connor

TABLE 1: ANALYSIS OF WATER FROM MONITORING WELLS M-11
THROUGH M-15 AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT
AREA SAMPLED ON JULY 14, 2010

Parameter ¹	Unit	Monitoring Well No.		
		M-11	M-12	M-13
pH ²		7.4	7.4	7.5
EC	mS/m	80	101	129
Total Dissolved Solids	mg/L	682	864	1,098
Total Dissolved Organic Carbon	"	2	1	2
Cl ⁻	"	15	15	15
SO ₄ ⁼	"	197	382	643
TKN	"	1	< 0.5	< 0.5
NH ₃ -N	"	1	0.4	0.2
NO ₂ + NO ₃ -N	"	< 0.04	0.05	< 0.04
Total P	"	< 0.10	< 0.10	< 0.10
Alkalinity as CaCO ₃	"	346	293	329
Al	"	< 0.040	< 0.040	0.049
As	"	< 0.050	< 0.050	< 0.050
B	"	1.3	1.8	1.5
Ca	"	96	87	166
Cd	"	< 0.003	< 0.003	< 0.003
Cr	"	< 0.003	< 0.003	< 0.003
Cu	"	< 0.008	< 0.008	< 0.008
Fe	"	0.114	< 0.025	0.305
Hg	μg/L	< 0.20	< 0.20	< 0.20
K	mg/L	9	10	10
Mg	"	44.5	39.5	76.7
Mn	"	0.021	0.006	0.020
Na	"	57	133	90
Ni	"	< 0.004	< 0.004	< 0.004
Pb	"	< 0.020	< 0.020	< 0.020
Se	"	< 0.10	< 0.10	< 0.10
Zn	"	1.21	0.985	3.57
Fecal coliform	MPN ³	1	1	1
Static H ₂ O Elev.	ft	628	632	627

TABLE 1 (Continued): ANALYSIS OF WATER FROM MONITORING WELLS M-11 THROUGH M-15 AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON JULY 14, 2010

Parameter ¹	Unit	Monitoring Well No.	
		M-14	M-15
pH ²		7.3	
EC	mS/m	79	
Total Dissolved Solids	mg/L	548	
Total Dissolved Organic Carbon	"	1	
Cl ⁻	"	15	
SO ₄ ⁼	"	128	
TKN	"	< 0.5	
NH ₃ -N	"	0.3	
NO ₂ + NO ₃ -N	"	< 0.04	
Total P	"	0.15	
Alkalinity as CaCO ₃	"	314	
Al	"	< 0.040	W
As	"	< 0.050	E
B	"	1.3	L
Ca	"	80	L
Cd	"	< 0.003	
Cr	"	< 0.003	I
Cu	"	< 0.008	N
Fe	"	< 0.025	A
Hg	μg/L	< 0.20	C
K	mg/L	8	C
			E
			S
Mg	"	41.8	S
Mn	"	0.004	I
Na	"	43	B
Ni	"	< 0.004	L
Pb	"	< 0.020	E
Se	"	< 0.10	
Zn	"	0.704	
Fecal coliform	MPN ³	1	
Static H ₂ O Elev.	ft	622	

¹Limit of quantitation (LOQ) instead of minimum detection limit (MDL) used as a reporting limit.

²pH analyzed beyond recommended holding time of 15 minutes.

³Most probable number.

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 2010

Parameter	Unit	Date Sampled			
		07/07/10		08/11/10	
		L-4N	L-6N	L-4N	L-6N
pH ¹		8.0	8.0	7.7	7.6
EC	mS/m	302	344	287	348
Total Dissolved Solids	mg/L	3,264	3,924	3,154	3,970
Total Dissolved Organic Carbon	"	6	49	7	60
Cl ⁻	"	21	92	23	90
SO ₄ ⁼	"	1,352	1,325	1,381	1,407
TKN	"	5	15	4	15
NH ₃ -N	"	4	12	4	12
NO ₂ + NO ₃ -N	"	0.64	0.08	0.47	0.14
Total P	"	< 0.10	< 0.10	0.13	0.12
Alkalinity as CaCO ₃	"	587	857	591	941
Al	"	0.102	0.103	0.109	0.190
As	"	< 0.050	< 0.050	< 0.050	< 0.050
B	"	0.10	0.13	0.12	0.23
Ca	"	595	659	586	718
Cd	"	< 0.003	< 0.003	< 0.003	0.007
Cr	"	< 0.003	< 0.003	0.008	0.017
Cu	"	< 0.008	< 0.008	< 0.008	< 0.008
Fe	"	5.26	32.9	5.22	32.7
Hg	μg/L	< 0.20	< 0.20	< 0.20	< 0.20
K	mg/L	5	5	5	5
Mg	"	113	143	106	150
Mn	"	0.644	0.698	0.631	0.802
Na	"	83	80	69	77
Ni	"	< 0.004	0.005	< 0.004	0.017
Pb	"	< 0.020	< 0.020	< 0.020	< 0.020
Se	"	< 0.100	< 0.100	< 0.100	< 0.100
Zn	"	< 0.015	< 0.015	< 0.015	0.029

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 2010

Parameter	Unit	Date Sampled	
		L-4N	L-6N
		09/01/10	
pH ¹		7.9	7.9
EC	mS/m	285	320
Total Dissolved Solids	mg/L	2,824	3,812
Total Dissolved Organic Carbon	"	6	64
Cl ⁻	"	19	66
SO ₄ ⁼	"	1,452	1,566
TKN	"	5	17
NH ₃ -N	"	4	11
NO ₂ + NO ₃ -N	"	0.68	4.9
Total P	"	< 0.10	< 0.10
Alkalinity as CaCO ₃	"	616	974
Al	"	0.112	0.119
As	"	< 0.050	< 0.050
B	"	0.13	0.25
Ca	"	593	747
Cd	"	< 0.003	< 0.003
Cr	"	0.008	0.010
Cu	"	< 0.008	< 0.008
Fe	"	5.97	39.8
Hg	μg/L	< 0.20	< 0.20
K	mg/L	5	5
Mg	"	104	152
Mn	"	0.655	1.00
Na	"	63	74
Ni	"	< 0.004	0.008
Pb	"	< 0.020	< 0.020
Se	"	< 0.100	< 0.100
Zn	"	< 0.015	< 0.015

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 7, 2010

Parameter	Unit	Lysimeter No.			
		L-1N	L-2N	L-3N	L-5N
pH ¹		8.2	8.2	8.0	8.0
EC	mS/m	184	190	255	584
Total Dissolved Solids	mg/L	1,916	1,380	2,164	5,584
Total Dissolved Organic Carbon	"	7	4	23	3
Cl ⁻	"	41	290	127	NA ²
SO ₄ ⁼	"	654	157	265	1,667
TKN	"	6	0.9	3	3
NH ₃ -N	"	6	0.3	1	2
NO ₂ + NO ₃ -N	"	0.10	1.5	0.24	0.24
Total P	"	< 0.10	< 0.10	0.38	< 0.10
Alkalinity as CaCO ₃	"	455	394	1,151	490
Al	"	0.063	< 0.040	0.111	0.107
As	"	< 0.050	< 0.050	< 0.050	< 0.050
B	"	0.56	0.19	0.06	0.26
Ca	"	224	125	365	570
Cd	"	< 0.003	< 0.003	< 0.003	< 0.003
Cr	"	< 0.003	< 0.003	< 0.003	< 0.003
Cu	"	< 0.008	< 0.008	< 0.008	< 0.008
Fe	"	0.913	0.037	10.6	9.14
Hg	µg/L	< 0.20	< 0.20	< 0.20	< 0.20
K	mg/L	14	2	2	19
Mg	"	109	67.2	137	244
Mn	"	0.043	0.065	0.653	0.252
Na	"	50	177	80	463
Ni	"	< 0.004	< 0.004	< 0.004	< 0.004
Pb	"	< 0.020	< 0.020	< 0.020	< 0.020
Se	"	< 0.100	< 0.100	< 0.100	< 0.100
Zn	"	< 0.015	< 0.015	< 0.015	< 0.015

TABLE 3 (Continued): ANALYSIS OF WATER FROM LYSIMETERS L-1N THROUGH L-9N AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON JULY 7, 2010

Parameter	Unit	Lysimeter No.		
		L-7N-1	L-8N	L-9N
pH ¹		7.9	8.3	8.2
EC	mS/m	17	248	258
Total Dissolved Solids	mg/L	132	1,720	2,112
Total Dissolved Organic Carbon	"	2	3	24
Cl ⁻	"	18	467	225
SO ₄ ⁼	"	8	277	289
TKN	"	0.8	0.9	2
NH ₃ -N	"	0.2	0.7	0.4
NO ₂ + NO ₃ -N	"	< 0.04	0.15	0.53
Total P	"	< 0.10	< 0.10	< 0.10
Alkalinity as CaCO ₃	"	39	290	926
Al	"	< 0.040	0.046	0.070
As	"	< 0.050	< 0.050	< 0.050
B	"	0.06	0.18	0.17
Ca	"	6	159	262
Cd	"	< 0.003	< 0.003	< 0.003
Cr	"	< 0.003	< 0.003	< 0.003
Cu	"	< 0.008	< 0.008	< 0.008
Fe	"	< 0.025	0.726	0.144
Hg	μg/L	< 0.20	< 0.20	< 0.20
K	mg/L	3	6	5
Mg	"	10.6	62.6	146
Mn	"	0.002	0.203	0.095
Na	"	7	280	129
Ni	"	< 0.004	< 0.004	< 0.004
Pb	"	< 0.020	< 0.020	< 0.020
Se	"	< 0.100	< 0.100	< 0.100
Zn	"	0.034	< 0.015	< 0.015

¹pH analyzed beyond recommended holding time of 15 minutes.

²No analysis.

TABLE 4: ANALYSIS OF MONTHLY COMPOSITED BIOSOLIDS
 PLACED IN THE LAWNSDALE AVENUE SOLIDS MANAGEMENT DRYING AREA
 DURING JULY 2010

Parameter	Unit	Concentration ¹
pH		7.7
Total Solids	%	15.7
Total Volatile Solids ²	"	42.0

¹Values are the means of eight samples.

²Total 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 2010

Parameter	Unit	Concentration ¹
pH		7.9
Total Solids	%	18.1
Total Volatile Solids ²	"	45.5

¹Values are the means of five 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 2010

Parameter	Unit	Concentration ¹
pH		7.9
Total Solids	%	18.9
Total Volatile Solids ²	"	42.1

¹Values are the means of eight 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 2010

Parameter	Unit	Concentration ¹
pH		6.5
Total Solids	%	68.6
Total Volatile Solids ²	"	37.3
TKN	mg/kg	19,539
NH ₃ -N	"	2,035
Total P	"	21,061
Al	"	20,247
Ca	"	36,997
Cd	"	4
Cr	"	158
Cu	"	453
Fe	"	16,397
Hg	"	1.2
K	"	2,154
Mg	"	18,043
Mn	"	520
Na	"	662
Ni	"	40
Pb	"	128
Zn	"	916

¹Values are the means of 17 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 2010

Parameter	Unit	Concentration ¹
pH		7.1
Total Solids	%	54.5
Total Volatile Solids ²	"	39.0
TKN	mg/kg	26,311
NH ₃ -N	"	5,111
Total P	"	17,805
Al	"	19,406
Ca	"	37,243
Cd	"	3
Cr	"	152
Cu	"	433
Fe	"	15,791
Hg	"	1.1
K	"	2,247
Mg	"	18,095
Mn	"	515
Na	"	812
Ni	"	40
Pb	"	133
Zn	"	918

¹Values are the means of 23 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 2010

Parameter	Unit	Concentration ¹
pH		7.5
Total Solids	%	46.9
Total Volatile Solids ²	"	42.6
TKN	mg/kg	32,485
NH ₃ -N	"	7,328
Total P	"	21,146
Al	"	19,664
Ca	"	39,711
Cd	"	3
Cr	"	154
Cu	"	428
Fe	"	16,461
Hg	"	1.1
K	"	2,734
Mg	"	18,631
Mn	"	549
Na	"	1,088
Ni	"	40
Pb	"	127
Zn	"	947

¹Values are the means of 17 samples.

²Total volatile solids as a percentage of total solids.