

Protecting Our Water Environment



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

***RESEARCH AND DEVELOPMENT
DEPARTMENT***

REPORT NO. 08-30

***LAWNDALE AVENUE SOLIDS MANAGEMENT AREA
MONITORING REPORT FOR
FIRST QUARTER 2008***

JUNE 2008

Metropolitan Water Reclamation District of Greater Chicago

100 EAST ERIE STREET CHICAGO, ILLINOIS 60611-3154 312-751-5600

Louis Kollias, P.E., BCEE
Director of Research and Development

June 5, 2008

312-751-5190

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 WRP, Contract No. 80-159-2P, IEPA Permit No. 2005-AO Monitoring Report for January, February, and March 2008

The attached four tables contain the monitoring data for the Lawndale Avenue Solids Management Area for January, February, and March 2008 as required by IEPA Operating Permit No. 2005-AO-4283. In a letter dated January 19, 2007, the IEPA granted permission to terminate the monitoring of lysimeters L-7 and L-8. Beginning October 2007, the IEPA granted permission to abandon the monitoring of lysimeters L-3, L-4, and L-5. Therefore, monitoring data for these lysimeters will not be included in this and subsequent reports.

The data reported are as follows:

Table 1, Analysis of Water from Monitoring Wells M-1 1 through M-15 at the Lawndale Avenue Solids Management Area Sampled on January 9, 2008

Table 2, Analysis of Water from Lysimeters L-1 through L-9N at the Lawndale Avenue Solids Management Area Sampled on January 2, 2008

Table 3, Analysis of Water from Lysimeters L-1 through L-9N at the Lawndale Avenue Solids Management Area Sampled on February 13, 2008

Table 4, Analysis of Water from Lysimeters L-1 through L-9N at the Lawndale Avenue Solids Management Area Sampled on March 13, 2008

Mr. S. Alan Keller

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June 5, 2008

Subject: Lawndale Avenue Solids Management Area - Stickney WRP, Contract
No. 80-159-2P, IEPA Permit No. 2005-AO-4283, Monitoring Report
for January, February, and March 2008

No biosolids were placed in or removed from the solids drying area during January, February,
and March 2008.

Very truly yours,

Louis Kollias
Director
Research and Development

LK:PL:kq

Attachments

cc w/att: Mr. Sulski, IEPA
Records Unit, IEPA
Stuba/Granato/Cox/Lindo/M. Patel

cc wo/att: Jamjun/Sharma/Garelli

TABLE 1: ANALYSIS OF WATER FROM MONITORING WELLS
M-11 THROUGH M-15 AT THE LAWNSDALE AVENUE
SOLIDS MANAGEMENT AREA SAMPLED ON JANUARY 9, 2008

Parameter	Unit	Monitoring Well No.				
		M-11	M-12	M-13	M-14	M-15
pH ¹		7.3	7.7	7.9	7.5	7.4
EC	mS/m	38	97	125	66	148
Total Dissolved Solids	mg/L	686	880	1,346	570	1,676
Total Diss. Org. Carbon	"	1	1	2	1	2
Cl ⁻	"	9	15	10	11	9
SO ₄ ⁼	"	181	332	588	119	759
TKN	"	1.5	0.59	0.70	0.50	0.70
NH ₃ -N	"	1.2	0.37	0.42	0.28	0.51
NO ₂ + NO ₃ -N	"	0.04	<0.02	<0.02	<0.02	<0.02
Total P	"	<0.05	<0.05	<0.05	<0.05	<0.05
Alkalinity as CaCO ₃	"	348	301	325	319	349
Al	"	0.017	<0.007	0.025	0.013	0.028
As	"	<0.01	<0.01	<0.01	<0.01	<0.01
B	"	1.24	1.75	1.47	1.32	1.15
Ca	"	88	81	161	73	232
Cd	"	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Cr	"	0.0006	0.0006	0.0006	0.0007	<0.0005
Cu	"	<0.002	<0.002	<0.002	<0.002	<0.002
Fe	"	0.269	0.017	0.008	0.043	0.550
Hg	μg/L	<0.05	<0.05	<0.05	<0.05	<0.05
K	mg/L	8	10	10	8	10
Mg	"	41.5	37.5	75.7	39.7	102
Mn	"	0.0208	0.0030	0.0083	0.0025	0.0094
Na	"	53	134	88	43	61
Ni	"	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Pb	"	0.005	0.004	<0.004	<0.004	<0.004
Se	"	<0.02	<0.02	<0.02	<0.02	<0.02
Zn	"	0.705	0.377	0.120	0.203	0.788
FC	MPN*	<1	<1	<1	<1	<1
Static H ₂ O Elev.	ft	628	632	629	623	605

¹pH analyzed beyond recommended holding time of 15 minutes.

*MPN = Most probable number per 100 mL.

TABLE 2: ANALYSIS OF WATER FROM LYSIMETERS
L-1 THROUGH L-9N AT THE LAWNDALE AVENUE
SOLIDS MANAGEMENT AREA SAMPLED ON JANUARY 2, 2008

Parameter	Unit	Lysimeter No.				
		L-1	L-2	L-3N	L-4N	L-5N
pH ¹		7.6	8.0	7.7		
EC	mS/m	139	222	204		
Total Dissolved Solids	mg/L	1,568	2,464	1,904		
Total Diss. Org. Carbon	"	6	4	21		
Cl ⁻	"	53	452	143		
SO ₄ ⁼	"	548	545	242		
TKN	"	4.6	0.88	2.6		
NH ₃ -N	"	3.9	0.39	0.86	L	L
NO ₂ + NO ₃ -N	"	0.04	0.32	0.20	Y	Y
Total P	"	0.06	0.06	<0.05	S	S
Alkalinity as CaCO ₃	"	467	430	939	I	I
					M	M
Al	"	0.063	0.029	0.039	E	E
As	"	<0.01	<0.01	<0.01	T	T
B	"	0.480	0.326	0.088	E	E
Ca	"	220	246	343	R	R
Cd	"	<0.0004	<0.0004	<0.0004		
					F	F
Cr	"	<0.0005	<0.0005	0.0006	R	R
Cu	"	<0.002	<0.002	<0.002	O	O
Fe	"	4.31	0.045	4.67	Z	Z
Hg	µg/L	<0.05	<0.05	<0.05	E	E
K	mg/L	5	3	1	N	N
Mg	"	92.4	109	134		
Mn	"	0.0720	0.0267	0.7511		
Na	"	43	247	80		
Ni	"	<0.0004	<0.0004	<0.0004		
Pb	"	<0.004	<0.004	<0.004		
Se	"	<0.02	<0.02	<0.02		
Zn	"	0.006	0.004	0.002		

TABLE 2 (Continued): ANALYSIS OF WATER FROM LYSIMETERS
L-1 THROUGH L-9N AT THE LAWNSDALE AVENUE
SOLIDS MANAGEMENT AREA SAMPLED ON JANUARY 2, 2008

Parameter	Unit	Lysimeter No.				
		L-6	L-6N	L-7N	L-8N	L-9N
pH ¹						
EC	mS/m					
Total Dissolved Solids	mg/L					
Total Diss. Org. Carbon	"					
Cl ⁻	"					
SO ₄ ⁼	"					
TKN	"					
NH ₃ -N	"	L	L	L	L	L
NO ₂ + NO ₃ -N	"	Y	Y	Y	Y	Y
Total P	"	S	S	S	S	S
Alkalinity as CaCO ₃	"	I	I	I	I	I
		M	M	M	M	M
Al	"	E	E	E	E	E
As	"	T	T	T	T	T
B	"	E	E	E	E	E
Ca	"	R	R	R	R	R
Cd	"					
		F	F	F	F	F
Cr	"	R	R	R	R	R
Cu	"	O	O	O	O	O
Fe	"	Z	Z	Z	Z	Z
Hg	μg/L	E	E	E	E	E
K	mg/L	N	N	N	N	N
Mg	"					
Mn	"					
Na	"					
Ni	"					
Pb	"					
Se	"					
Zn	"					

¹pH analyzed beyond recommended holding time of 15 minutes.

TABLE 3: ANALYSIS OF WATER FROM LYSIMETERS
L-1 THROUGH L-9N AT THE LAWNDALE AVENUE
SOLIDS MANAGEMENT AREA SAMPLED ON FEBRUARY 13, 2008

Parameter	Unit	Lysimeter No.				
		L-1	L-2	L-3N	L-4N	L-5N
pH ¹		7.4		7.4		
EC	mS/m	144		204		
Total Dissolved Solids	mg/L	1,318		1,634		
Total Diss. Org. Carbon	"	6		20		
Cl ⁻	"	49		144		
SO ₄ ⁼	"	534		226		
TKN	"	4.2		2.7		
NH ₃ -N	"	3.4	L	0.86	L	L
NO ₂ + NO ₃ -N	"	0.03	Y	0.30	Y	Y
Total P	"	<0.05	S	<0.05	S	S
Alkalinity as CaCO ₃	"	458	I	1,056	I	I
			M		M	M
Al	"	0.066	E	0.045	E	E
As	"	<0.01	T	<0.01	T	T
B	"	0.457	E	0.083	E	E
Ca	"	215	R	342	R	R
Cd	"	<0.0004		<0.0004		
			F		F	F
Cr	"	<0.0005	R	<0.0005	R	R
Cu	"	<0.002	O	<0.002	O	O
Fe	"	2.46	Z	3.67	Z	Z
Hg	μg/L	<0.05	E	<0.05	E	E
K	mg/L	6	N	1	N	N
Mg	"	93.2		132		
Mn	"	0.0703		0.7525		
Na	"	43		76		
Ni	"	<0.0004		0.0006		
Pb	"	<0.004		<0.004		
Se	"	<0.02		<0.02		
Zn	"	0.008		0.008		

TABLE 3 (Continued): ANALYSIS OF WATER FROM LYSIMETERS
L-1 THROUGH L-9N AT THE LAWNSDALE AVENUE
SOLIDS MANAGEMENT AREA SAMPLED ON FEBRUARY 13, 2008

Parameter	Unit	Lysimeter No.				
		L-6	L-6N	L-7N	L-8N	L-9N
pH ¹					7.8	7.6
EC	mS/m				216	205
Total Dissolved Solids	mg/L				1,596	1,676
Total Diss. Org. Carbon	"				6	24
Cl ⁻	"				483	189
SO ₄ ⁼	"				236	301
TKN	"				2.8	2.2
NH ₃ -N	"	L	L	L	1.9	0.54
NO ₂ + NO ₃ -N	"	Y	Y	Y	0.25	0.30
Total P	"	S	S	S	<0.05	<0.05
Alkalinity as CaCO ₃	"	I	I	I	495	962
		M	M	M		
Al	"	E	E	E	0.035	0.037
As	"	T	T	T	<0.01	<0.01
B	"	E	E	E	0.191	0.181
Ca	"	R	R	R	183	203
Cd	"				0.0004	0.0005
		F	F	F		
Cr	"	R	R	R	<0.0005	<0.0005
Cu	"	O	O	O	<0.002	<0.002
Fe	"	Z	Z	Z	0.256	0.392
Hg	μg/L	E	E	E	<0.05	<0.05
K	mg/L	N	N	N	5	6
Mg	"				81.0	116
Mn	"				0.2631	0.2547
Na	"				237	234
Ni	"				0.0034	0.0012
Pb	"				<0.004	<0.004
Se	"				<0.02	<0.02
Zn	"				0.014	0.010

¹pH analyzed beyond recommended holding time of 15 minutes.

TABLE 4: ANALYSIS OF WATER FROM LYSIMETERS
L-1 THROUGH L-9N AT THE LAWNDALE AVENUE
SOLIDS MANAGEMENT AREA SAMPLED ON MARCH 13, 2008

Parameter	Unit	Lysimeter No.				
		L-1	L-2	L-3N	L-4N	L-5N
pH ¹		7.5	7.7	7.5	7.5	7.6
EC	mS/m	156	250	231	318	552
Total Dissolved Solids	mg/L	1,432	2,432	1,562	3,136	5,056
Total Diss. Org. Carbon	"	7	3	21	9	3
Cl ⁻	"	46	448	167	80	811
SO ₄ ⁼	"	539	605	256	1,499	NA
TKN	"	4.8	0.95	2.5	7.9	3.8
NH ₃ -N	"	4.0	0.41	0.83	5.7	2.7
NO ₂ + NO ₃ -N	"	0.16	0.19	0.37	0.66	0.33
Total P	"	<0.05	<0.05	<0.05	<0.05	<0.05
Alkalinity as CaCO ₃	"	461	446	859	668	484
Al	"	0.055	0.061	0.061	0.083	0.076
As	"	<0.01	<0.01	<0.01	<0.01	<0.01
B	"	0.497	0.231	0.101	0.154	0.305
Ca	"	232	263	367	585	531
Cd	"	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Cr	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Cu	"	<0.002	<0.002	<0.002	<0.002	<0.002
Fe	"	2.15	0.247	3.39	6.38	4.40
Hg	μg/L	<0.05	<0.05	<0.05	<0.05	<0.05
K	mg/L	6	3	2	7	22
Mg	"	98.9	111	140	160	258
Mn	"	0.0730	0.0088	0.7406	0.9434	0.2725
Na	"	45	258	96	140	448
Ni	"	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Pb	"	0.007	0.005	<0.004	<0.004	<0.004
Se	"	<0.02	<0.02	<0.02	<0.02	<0.02
Zn	"	0.006	0.005	0.008	0.015	0.015

TABLE 4 (Continued): ANALYSIS OF WATER FROM LYSIMETERS
L-1 THROUGH L-9N AT THE LAWNDALE AVENUE
SOLIDS MANAGEMENT AREA SAMPLED ON MARCH 13, 2008

Parameter	Unit	Lysimeter No.				
		L-6	L-6N	L-7N	L-8N	L-9N
pH ¹		7.9	7.4	7.8	7.9	7.9
EC	mS/m	278	326	240	232	234
Total Dissolved Solids	mg/L	2,852	3,222	1,168	1,822	1,696
Total Diss. Org. Carbon	"	NA	46	12	6	23
Cl ⁻	"	312	84	128	457	233
SO ₄ ⁼	"	NA	NA	200	238	296
TKN	"	1.0	18	2.4	2.5	2.3
NH ₃ -N	"	0.60	12	1.5	1.9	0.84
NO ₂ + NO ₃ -N	"	1.2	0.39	0.18	0.31	0.68
Total P	"	<0.10	0.05	<0.05	<0.05	0.10
Alkalinity as CaCO ₃	"	440	793	434	487	818
Al	"	0.090	0.079	0.036	0.045	0.052
As	"	<0.02	<0.01	<0.01	<0.01	<0.01
B	"	0.278	0.190	0.281	0.219	0.196
Ca	"	325	624	154	189	232
Cd	"	<0.0008	<0.0004	<0.0004	<0.0004	<0.0004
Cr	"	0.0010	<0.0005	<0.0005	0.0005	0.0009
Cu	"	<0.004	<0.002	<0.002	<0.002	<0.002
Fe	"	1.12	18.5	1.80	0.529	0.397
Hg	μg/L	<0.10	<0.05	<0.05	<0.05	<0.05
K	mg/L	11	8	7	6	6
Mg	"	155	149	69.7	83.8	125
Mn	"	0.0530	0.5105	0.1003	0.2636	0.3043
Na	"	153	74	53	237	239
Ni	"	<0.0008	0.0054	0.0012	<0.0004	0.0007
Pb	"	0.011	<0.004	0.005	0.006	<0.004
Se	"	<0.04	<0.02	<0.02	<0.02	<0.02
Zn	"	0.013	0.024	0.007	0.007	0.006

¹pH analyzed beyond recommended holding time of 15 minutes.

NA = No analysis; insufficient sample.