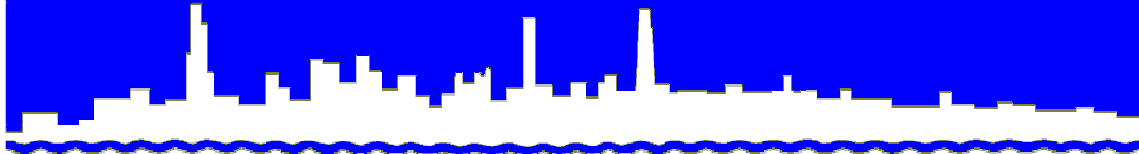


Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***RESEARCH AND DEVELOPMENT
DEPARTMENT***

REPORT NO. 06-26

CALUMET EAST SLUDGE DRYING AREA

FIRST QUARTER 2006

MAY 2006

Protecting Our Water Environment

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Louis Kollias, P.E., BCEE
Acting Director of Research and Development
312-751-5190

May 17, 2006

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: Calumet WRP - Solids Drying Area (East), Contract No. 85-273-2P, L170401, IEPA Permit No. 2005-AO-4281, Monitoring Data for January, February, and March 2006

The attached four tables contain the monitoring data for the Calumet Solids Drying Area (East) site for January, February, and March 2006 as required by IEPA Operating Permit No. 2005-AO-4281.

The data reported are as follows:

Table 1, Analysis of Water from Lysimeters L-1 through L-6 at the Calumet Water Reclamation Plant Solids Drying Area (East) Sampled on January 11, 2006

Table 2, Analysis of Water from Lysimeters L-1 through L-6 at the Calumet Water Reclamation Plant Solids Drying Area (East) Sampled on February 8, 2006

Table 3, Analysis of Water from Lysimeters L-1 through L-6 at the Calumet Water Reclamation Plant Solids Drying Area (East) Sampled on March 8, 2006

Table 4, Analysis of Monthly composited Biosolids Placed in the Calumet Water Reclamation Plant Solids Drying Area (East) During March 2006

Mr. S. Alan Keller

2

May 17, 2006

Subject: Calumet WRP - Solids Drying Area (East), Contract No. 85-273-2P, L170401, IEPA Permit No. 2005-AO-4281, Monitoring Data for January, February, and March 2006

No biosolids were placed in the drying area during January and February 2006. No biosolids were removed from the drying area during January, February, and March 2006.

Very truly yours,

Richard Lanyon
Director
Research and Development

RL:KK:spy
Attachment

cc w/att.: Sulski (IEPA)
Records Unit (IEPA)

cc via MWRDGC web site:

Quintanilla
Sharma
Kollias
Granato
Cox
Kumar
Dennison

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-6
 AT THE CALUMET WATER RECLAMATION PLANT
 SOLIDS DRYING AREA (EAST)
 SAMPLED ON JANUARY 11, 2006

Parameter	Units	Lysimeter No.		
		L-1N**	L-2	L-3
pH*		7.6	7.5	7.6
EC	mS/m	280	369	201
Total Dissolved Solids	mg/L	3,248	3,872	1,922
Total Dissolved Organic Carbon	"	11	NA	6
Cl ⁻	"	156	175	52.1
SO ₄	"	1,365	1,826	728
TKN	"	12.38	0.94	0.41
NH ₃ -N	"	3.05	<0.04	<0.02
Total P	"	0.05	<0.08	<0.04
NO ₂ +NO ₃ -N	"	0.01	0.33	0.025
Alkalinity as CaCO ₃	"	598	482	503
Al	"	<0.07	<0.14	<0.07
Ca	"	370	503	226
Cd	"	<0.0003	<0.0006	<0.0003
Cr	"	0.0010	<0.0014	<0.0007
Cu	"	<0.002	<0.004	<0.002
Fe	"	7.4	0.02	0.01
Hg	µg/L	<0.05	<0.1	<0.05
K	mg/L	11.8	6.1	2.6
Mg	"	229	258	146
Mn	"	0.278	0.003	0.001
Na	"	153	135	63.3
Ni	"	<0.002	0.004	0.003
Pb	"	<0.0009	0.0020	<0.0009
Zn	"	0.004	0.044	0.018

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-6
 AT THE CALUMET WATER RECLAMATION PLANT
 SOLIDS DRYING AREA (EAST)
 SAMPLED ON JANUARY 11, 2006

Parameter	Units	Lysimeter No.		
		L-4	L-5	L-6
pH*		7.2	7.6	7.6
EC	mS/m	373	186	149
Total Dissolved Solids	mg/L	4,208	1,658	1,364
Total Dissolved Organic Carbon	"	3	<2	<2
Cl ⁻	"	525	210	14.9
SO ₄	"	1,466	509	580
TKN	"	1.58	0.97	0.23
NH ₃ -N	"	0.64	0.37	<0.02
Total P	"	<0.04	<0.04	<0.04
NO ₂ +NO ₃ -N	"	0.09	0.17	0.21
Alkalinity as CaCO ₃	"	365	249	275
Al	"	<0.07	<0.07	<0.07
Ca	"	492	190	163
Cd	"	<0.0003	<0.0003	<0.0003
Cr	"	<0.0007	<0.0007	<0.0007
Cu	"	<0.002	<0.002	<0.002
Fe	"	19.5	2.45	0.04
Hg	µg/L	<0.05	<0.05	<0.05
K	mg/L	6.1	3.7	3.4
Mg	"	266	93.1	84.2
Mn	"	0.140	0.047	0.028
Na	"	144	84.5	70.8
Ni	"	<0.002	<0.002	<0.002
Pb	"	<0.0009	<0.0009	0.0010
Zn	"	0.011	0.007	0.006

*pH was measured beyond the 15-minute holding time.

**L-1N was installed in May 2005. No sample was obtained from old lysimeter L-1.

NA = No Analysis; insufficient sample volume.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-6
 AT THE CALUMET WATER RECLAMATION PLANT
 SOLIDS DRYING AREA (EAST)
 SAMPLED ON FEBRUARY 8, 2006

Parameter	Units	Lysimeter No.		
		L-1N**	L-2	L-3
pH*		7.4	7.3	7.4
EC	mS/m	306	380	195
Total Dissolved Solids	mg/L	3,256	1,958	1,922
Total Dissolved Organic Carbon	"	11	<4	7
Cl ⁻	"	158	187	52
SO ₄	"	1,678	2,196	806
TKN	"	12.28	0.54	1.53
NH ₃ -N	"	3.09	<0.04	<0.02
Total P	"	<0.04	<0.08	<0.04
NO ₂ +NO ₃ -N	"	0.08	2.28	0.14
Alkalinity as CaCO ₃	"	560	480	519
Al	"	<0.07	<0.14	<0.07
Ca	"	386	544	238
Cd	"	<0.0003	<0.0006	0.0006
Cr	"	0.0010	<0.0014	0.0010
Cu	"	<0.002	0.008	<0.002
Fe	"	3.7	0.02	0.01
Hg	µg/L	<0.05	<0.1	<0.05
K	mg/L	10.9	6.4	2.3
Mg	"	217	248	137
Mn	"	0.309	0.005	0.001
Na	"	145	131	59.2
Ni	"	<0.002	<0.004	0.003
Pb	"	<0.0009	0.0040	<0.0009
Zn	"	0.006	0.046	0.030

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-6
 AT THE CALUMET WATER RECLAMATION PLANT
 SOLIDS DRYING AREA (EAST)
 SAMPLED ON FEBRUARY 8, 2006

Parameter	Units	Lysimeter No.		
		L-4	L-5	L-6
pH*				
EC	mS/m			
Total Dissolved Solids	mg/L			
Total Dissolved Organic Carbon	"	L	L	L
Cl ⁻	"	Y	Y	Y
SO ₄	"	S	S	S
		I	I	I
TKN	"	M	M	M
NH ₃ -N	"	E	E	E
Total P	"	T	T	T
NO ₂ +NO ₃ -N	"	E	E	E
Alkalinity as CaCO ₃	"	R	R	R
Al	"	F	F	F
Ca	"	R	R	R
Cd	"	O	O	O
Cr	"	Z	Z	Z
Cu	"	E	E	E
		N	N	N
Fe	"			
Hg	µg/L			
K	mg/L			
Mg	"			
Mn	"			
Na	"			
Ni	"			
Pb	"			
Zn	"			

*pH was measured beyond the 15-minute holding time.

**L-1N was installed in May 2005. No sample was obtained from old lysimeter L-1.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 3

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-6
 AT THE CALUMET WATER RECLAMATION PLANT
 SOLIDS DRYING AREA (EAST)
 SAMPLED ON MARCH 8, 2006

Parameter	Units	Lysimeter No.			
		L-1	L-1N**	L-2	L-3
pH*		7.4	7.5	7.5	7.5
EC	mS/m	421	317	186	412
Total Dissolved Solids	mg/L	5,190	3,252	3,852	1,798
Total Dissolved Organic Carbon	"	3	10	<4	7
Cl ⁻	"	172	156	173	49
SO ₄	"	2,221	1,513	1,959	719
TKN	"	10.98	12.41	1.74	0.76
NH ₃ -N	"	<0.02	2.72	<0.04	<0.02
Total P	"	1.79	<0.04	<0.08	<0.04
NO ₂ +NO ₃ -N	"	0.45	0.09	0.12	0.06
Alkalinity as CaCO ₃	"	551	542	452	510
Al	"	<0.07	<0.07	<0.14	<0.07
Ca	"	555	394	546	221
Cd	"	0.0005	<0.0003	<0.0006	0.0003
Cr	"	0.0050	0.0060	0.0080	0.0040
Cu	"	<0.002	<0.002	<0.004	<0.002
Fe	"	0.397	3.84	0.014	0.013
Hg	µg/L	<0.05	<0.05	0.10	<0.05
K	mg/L	10.8	11.2	5.8	2.4
Mg	"	335	236	258	143
Mn	"	0.046	0.346	0.017	0.002
Na	"	219	157	139	63.2
Ni	"	<0.002	<0.002	<0.004	<0.002
Pb	"	0.0020	0.0060	0.0140	0.0080
Zn	"	0.044	0.006	0.022	0.019

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 3 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-6
 AT THE CALUMET WATER RECLAMATION PLANT
 SOLIDS DRYING AREA (EAST)
 SAMPLED ON MARCH 8, 2006

Parameter	Units	Lysimeter No.		
		L-4	L-5	L-6
pH*		7.1	7.5	7.6
EC	mS/m	412	184	154
Total Dissolved Solids	mg/L	4,190	1,616	1,364
Total Dissolved Organic Carbon	"	3	<2	<2
Cl ⁻	"	530	215	15
SO ₄	"	1,622	543	637
TKN	"	1.64	0.88	0.37
NH ₃ -N	"	0.44	0.16	<0.02
Total P	"	<0.04	<0.04	<0.04
NO ₂ +NO ₃ -N	"	0.13	0.24	0.42
Alkalinity as CaCO ₃	"	348	239	269
Al	"	<0.07	<0.07	<0.07
Ca	"	509	201	167
Cd	"	0.0003	<0.0003	<0.0003
Cr	"	0.005	0.004	0.003
Cu	"	<0.002	<0.002	<0.002
Fe	"	18.4	1.18	0.05
Hg	µg/L	<0.05	<0.05	<0.05
K	mg/L	6.2	3.9	3.3
Mg	"	274	95.6	84.3
Mn	"	0.142	0.049	0.030
Na	"	151	88.2	72.2
Ni	"	<0.002	<0.002	<0.002
Pb	"	0.0050	0.0080	0.0070
Zn	"	0.014	0.007	0.008

*pH was measured beyond the 15-minute holding time.

**L-1N was installed in May 2005.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 4

ANALYSIS OF MONTHLY COMPOSITED BIOSOLIDS
PLACED IN THE CALUMET WATER RECLAMATION PLANT
SOLIDS DRYING AREA (EAST)
DURING MARCH 2006

Constituent	Units	Concentration
pH		8.2
Total Solids	%	18.8
Total Volatile Solids	%	52.6
TKN	mg/dry kg	9,611
NH ₃ -N	"	19
