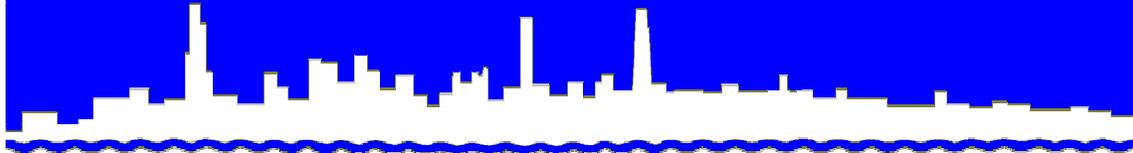


Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***RESEARCH AND DEVELOPMENT
DEPARTMENT***

REPORT NO. 06-4

CALUMET EAST SLUDGE DRYING AREA

FOURTH QUARTER 2005

FEBRUARY 2006

February 7, 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 October, November, and December 2005

The attached five tables contain the monitoring data for the Calumet Solids Drying Area (East) site for October, November, and December 2005 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 October 5, 2005

Table 2, Analysis of Water from Lysimeters L-1 through L-6 at the Calumet Water Reclamation Plant Solids Drying Area (East) Sampled on November 2, 2005

Table 3, Analysis of Water from Lysimeters L-1 through L-6 at the Calumet Water Reclamation Plant Solids Drying Area (East) Sampled on December 14, 2005

Table 4, Analysis of Monthly Compositated Processed Biosolids Removed from the Calumet Water Reclamation Plant Solids Drying Area (East) During October 2005

Mr. S. Alan Keller

2

February 7, 2006

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

Table 5, Analysis of Monthly Compositated Processed Biosolids Removed from the Calumet Water Reclamation Plant Solids Drying Area (East) During November 2005

No biosolids were placed in the drying area during October, November, and December 2005. No biosolids were removed from the drying area during December.

Very truly yours,

Richard Lanyon
Director
Research and Development

RL:GT:spy
Enclosures
cc w/enc.:

Sulski (IEPA)
Records Unit (IEPA)
Quintanilla
Sharma
Kollias
Granato
Cox
Tian
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 OCTOBER 5, 2005

Parameter	Units	Lysimeter No.		
		L-1N	L-2	L-3
pH*		7.5	7.4	7.5
EC	mS/m	289	417	186
Total Dissolved Solids	mg/L	2,844	4,400	1,764
Total Dissolved Organic Carbon	"	13	6	6
Cl ⁻	"	145	<0.6	46.4
SO ₄ ⁼	"	1,184	2,266	678
TKN	"	10.8	0.60	0.27
NH ₃ -N	"	3.23	<0.04	<0.02
Total P	"	0.04	0.08	0.04
NO ₂ +NO ₃ -N	"	0.015	0.210	0.013
Alkalinity as CaCO ₃	"	562	486	479
Al	"	<0.07	<0.14	<0.07
Ca	"	290	536	196
Cd	"	0.0015	0.0030	0.0013
Cr	"	<0.0007	<0.0014	<0.0007
Cu	"	<0.002	0.010	<0.002
Fe	"	3.38	0.012	0.011
Hg	µg/L	<0.06	0.32	0.08
K	mg/L	12.2	6.4	2.3
Mg	"	195	263	125
Mn	"	0.271	0.006	0.002
Na	"	151	145	56.0
Ni	"	<0.002	0.008	<0.002
Pb	"	<0.0009	<0.0018	<0.0009
Zn	"	0.008	NRR	0.037

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 OCTOBER 5, 2005

Parameter	Units	Lysimeter No.		
		L-4	L-5	L-6
pH*		7.1	7.5	7.6
EC	mS/m	410	187	144
Total Dissolved Solids	mg/L	4,670	1,816	1,380
Total Dissolved Organic Carbon	"	4	<2	<2
Cl ⁻	"	525	218	14.0
SO ₄ ⁼	"	1,512	569	612
TKN	"	1.20	0.56	0.45
NH ₃ -N	"	0.68	0.38	0.32
Total P	"	0.05	0.05	0.06
NO ₂ +NO ₃ -N	"	0.114	0.197	NRR
Alkalinity as CaCO ₃	"	349	235	257
Al	"	<0.07	<0.07	<0.07
Ca	"	471	187	148
Cd	"	0.0017	0.0013	0.0017
Cr	"	<0.0007	<0.0007	<0.0007
Cu	"	<0.002	<0.002	<0.002
Fe	"	21.4	2.63	0.79
Hg	µg/L	0.08	0.08	0.11
K	mg/L	6.1	3.6	3.3
Mg	"	265	89.0	75.4
Mn	"	0.136	0.052	0.040
Na	"	146	83.3	66.3
Ni	"	<0.002	<0.002	<0.002
Pb	"	<0.0009	<0.0009	<0.0009
Zn	"	0.038	0.011	0.013

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

NRR = No reportable result.

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 NOVEMBER 2, 2005

Parameter	Units	Lysimeter No.		
		L-1N	L-2	L-3
pH*		7.7	7.8	7.7
EC	mS/m	331	391	182
Total Dissolved Solids	mg/L	3,030	4,016	1,924
Total Dissolved Organic Carbon	"	12	NA	NA
Cl ⁻	"	158	173	54.2
SO ₄ ⁼	"	1,395	NA	749
TKN	"	11.4	0.54	0.32
NH ₃ -N	"	3.45	<0.04	<0.02
Total P	"	0.08	<0.08	<0.04
NO ₂ +NO ₃ -N	"	0.022	0.526	0.353
Alkalinity as CaCO ₃	"	607	442	491
Al	"	0.10	0.18	0.09
Ca	"	328	506	229
Cd	"	<0.0003	<0.0006	<0.0003
Cr	"	0.0010	<0.0014	<0.0007
Cu	"	<0.002	<0.004	<0.002
Fe	"	6.38	0.030	0.022
Hg	µg/L	<0.06	<0.12	<0.06
K	mg/L	12.3	6.0	2.6
Mg	"	211	246	141
Mn	"	0.241	0.004	0.002
Na	"	151	132	61.3
Ni	"	<0.002	0.004	0.002
Pb	"	<0.0009	<0.0018	<0.0009
Zn	"	0.005	NRR	NRR

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 NOVEMBER 2, 2005

Parameter	Units	Lysimeter No.		
		L-4	L-5	L-6
pH*		7.3	7.7	7.9
EC	mS/m	415	206	150
Total Dissolved Solids	mg/L	4,574	1,768	1,374
Total Dissolved Organic Carbon	"	3	<2	<2
Cl ⁻	"	549	219	16.2
SO ₄ ⁼	"	1,772	576	664
TKN	"	1.51	0.53	0.33
NH ₃ -N	"	0.53	0.38	0.29
Total P	"	<0.04	<0.04	<0.04
NO ₂ +NO ₃ -N	"	0.080	0.219	0.230
Alkalinity as CaCO ₃	"	365	250	282
Al	"	0.14	0.08	<0.07
Ca	"	560	210	177
Cd	"	<0.0003	<0.0003	<0.0003
Cr	"	<0.0007	<0.0007	<0.0007
Cu	"	<0.002	<0.002	<0.002
Fe	"	21.8	2.46	0.87
Hg	µg/L	<0.06	<0.06	<0.06
K	mg/L	6.7	3.9	3.6
Mg	"	290	97.9	88.2
Mn	"	0.143	0.051	0.037
Na	"	157	89.0	73.7
Ni	"	<0.002	<0.002	<0.002
Pb	"	<0.0009	<0.0009	0.002
Zn	"	NRR	NRR	NRR

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

NA = No Analysis; insufficient sample volume.

NRR = No reportable result.

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 DECEMBER 14, 2005

Parameter	Units	Lysimeter No.		
		L-1N	L-2	L-3
pH*		7.8	7.7	
EC	mS/m	281	349	
Total Dissolved Solids	mg/L	3,038	4,134	
Total Dissolved Organic Carbon	"	12	NA	L
Cl ⁻	"	159	177	Y
SO ₄ ⁼	"	1,379	NA	S
				I
TKN	"	11.4	0.68	M
NH ₃ -N	"	3.11	<0.02	E
Total P	"	0.04	0.04	T
NO ₂ +NO ₃ -N	"	0.133	0.057	E
Alkalinity as CaCO ₃	"	590	442	R
Al	"	<0.07	0.08	F
Ca	"	325	502	R
Cd	"	<0.0003	0.0003	O
Cr	"	<0.0007	<0.0007	Z
Cu	"	<0.002	<0.002	E
				N
Fe	"	2.97	0.306	
Hg	µg/L	<0.06	<0.06	
K	mg/L	11.4	6.0	
Mg	"	210	242	
Mn	"	0.327	0.022	
Na	"	146	132	
Ni	"	<0.002	0.006	
Pb	"	<0.0009	<0.0009	
Zn	"	0.006	NRR	

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 DECEMBER 14, 2005

Parameter	Units	Lysimeter No.		
		L-4	L-5	L-6
pH*		7.4	7.8	
EC	mS/m	393	177	
Total Dissolved Solids	mg/L	4,118	1,650	
Total Dissolved Organic Carbon	"	3	<2	L
Cl ⁻	"	551	223	Y
SO ₄ ⁼	"	1,679	616	S
				I
TKN	"	1.21	0.62	M
NH ₃ -N	"	0.65	0.34	E
Total P	"	0.04	0.05	T
NO ₂ +NO ₃ -N	"	0.082	0.237	E
Alkalinity as CaCO ₃	"	356	249	R
Al	"	<0.07	<0.07	F
Ca	"	328	195	R
Cd	"	<0.0003	<0.0003	O
Cr	"	<0.0007	<0.0007	Z
Cu	"	<0.002	<0.002	E
				N
Fe	"	3.01	2.39	
Hg	µg/L	<0.06	<0.06	
K	mg/L	11.5	3.7	
Mg	"	210	95.6	
Mn	"	0.328	0.046	
Na	"	146	85.1	
Ni	"	<0.002	<0.002	
Pb	"	<0.0009	<0.0009	
Zn	"	0.007	0.010	

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

NA = No Analysis; insufficient sample volume.

NRR = No reportable result.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 4

ANALYSIS OF MONTHLY COMPOSITED PROCESSED BIOSOLIDS
 REMOVED FROM THE CALUMET WATER RECLAMATION PLANT
 SOLIDS DRYING AREA (EAST)
 DURING OCTOBER 2005

Constituent	Units	Concentration
pH		6.3
Total Solids	%	36.8
Total Volatile Solids	%	48.1
TKN	mg/dry kg	30,348
NH ₃ -N	"	.
Total P	"	22,024
Al	"	12,143
As	"	8.4
Ca	"	43,668
Cd	"	4.7
Cr	"	85
Cu	"	442
Fe	"	28,452
Hg	"	1.99
K	"	2,159
Mg	"	13,265
Mo	"	21.1
Mn	"	726
Na	"	909
Ni	"	35.5
Pb	"	112
Se	"	9.7
Zn	"	1,169

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5

ANALYSIS OF MONTHLY COMPOSITED PROCESSED BIOSOLIDS
 REMOVED FROM THE CALUMET WATER RECLAMATION PLANT
 SOLIDS DRYING AREA (EAST)
 DURING NOVEMBER 2005

Constituent	Units	Concentration
pH		6.9
Total Solids	%	63.2
Total Volatile Solids	%	41.0
TKN	mg/dry kg	15,749
NH ₃ -N	"	980
Total P	"	21,883
Al	"	13,422
As	"	7.0
Ca	"	49,316
Cd	"	7.7
Cr	"	118
Cu	"	441
Fe	"	27,960
Hg	"	1.57
K	"	2,493
Mg	"	15,042
Mo	"	12.7
Mn	"	779
Na	"	772
Ni	"	35.5
Pb	"	141
Se	"	13.4
Zn	"	1,404