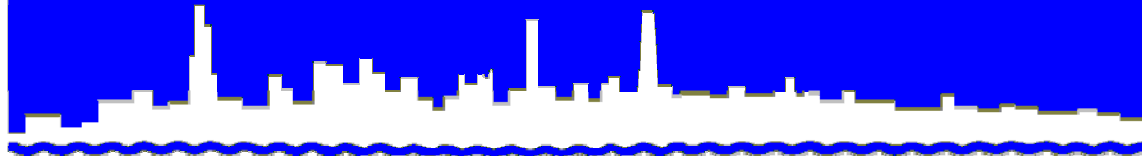


Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 09-04

HARLEM AVENUE SOLIDS MANAGEMENT AREA

MONITORING REPORT FOR

THIRD QUARTER 2008

JANUARY 2009

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

312-751-5190

January 13, 2009

Mr. S. Allan 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: Harlem Avenue Solids Management Area – Stickney Water Reclamation Plant, Contract No. 84-111-2P, IEPA Permit No. 2004-AO-2591, Monitoring Report for July, August, and September 2008

The attached eleven tables contain the monitoring data for the Harlem Avenue Solids Management Area (SMA) for July, August, and September 2008 as required by IEPA Operating Permit No. 2004-AO-2591.

The data reported are as follows:

Table 1, Analysis of Water Lysimeters L-1N-1 through L-3 at the Harlem Avenue SMA Sampled on July 1, 2008

Table 2, Analysis of Water from Lysimeters L-1N-1 through L-3 at the Harlem Avenue SMA Sampled on July 16, 2008

Table 3, Analysis Water from Lysimeters L-1N-1 through L-3 at the Harlem Avenue SMA Sampled on July 30, 2008

Table 4, Analysis Water from Lysimeters L-1N-1 through L-3 at the Harlem Avenue SMA Sampled on August 14, 2008

Table 5, Analysis Water from Lysimeters L-1N-1 through L-3 at the Harlem Avenue SMA Sampled on August 27, 2008

Table 6, Analysis Water from Lysimeters L-1N-1 through L-3 at the Harlem Avenue SMA Sampled on September 10, 2008

Subject: Harlem Avenue Solids Management Area – Stickney Water Reclamation Plant, Contract No. 84-111-2P, IEPA Permit No. 2004-AO-2591, Monitoring Report for July, August, and September 2008

Table 7, Analysis Water from Lysimeters L-1N-1 through L-3 at the Harlem Avenue SMA Sampled on September 24, 2008

Table 8, Analysis of Monthly Compositated Digested Biosolids Placed in the Harlem Avenue Solids Management Drying Area During July 2008

Table 9, Analysis of Monthly Compositated Digested Biosolids Placed in the Harlem Avenue Solids Management Drying Area During August 2008

Table 10, Analysis of Monthly Compositated Processed Digested Biosolids Removed in the Harlem Avenue Solids Management Drying Area During July 2008

Table 11, Analysis of Monthly Compositated Processed Digested Biosolids Removed in the Harlem Avenue Solids Management Drying Area During August 2008

Biosolids were placed in and removed from the solids drying area during July and August 2008.

Very truly yours,

Louis Kollias
Director
Monitoring and Research

LK:PL:kq
Attachments
cc: Mr. R. Sulski, IEPA
Records Unit, IEPA
Stuba/Granato/Cox/Lindo/M. Patel

TABLE 1: ANALYSIS¹ OF WATER FROM LYSIMETERS
L-1N-1 THROUGH L-3 AT THE HARLEM AVENUE
SOLIDS MANAGEMENT AREA SAMPLED ON JULY 1, 2008

Parameter	Unit	Lysimeter No.		
		L-1N-1	L-2	L-3
pH ²		7.4	7.2	7.3
EC	mS/m	271	298	238
Total Dissolved Solids	mg/L	1,528	2,460	1,916
Total Diss. Org. Carbon	"	40	3	6
Cl ⁻	"	102	304	136
SO ₄ ⁼	"	4	684	265
TKN	"	9	0.4	0.5
NH ₃ -N	"	5	<0.1	<0.1
NO ₂ + NO ₃ -N	"	0.5	0.4	0.5
Total P	"	<0.25	<0.25	<0.25
Alkalinity as CaCO ₃	"	1,335	500	930
Al	"	0.074	0.081	0.066
Ca	"	312	428	306
Cd	"	<0.002	<0.002	<0.002
Cr	"	<0.0025	<0.0025	<0.0025
Cu	"	<0.01	<0.01	<0.01
Fe	"	5.3	<0.02	<0.02
Hg	μg/L	<0.25	<0.25	<0.25
K	mg/L	4	<1	<1
Mg	"	197	107	130
Mn	"	0.384	0.072	0.451
Na	"	51	96	58
Ni	"	<0.002	<0.002	<0.002
Pb	"	<0.02	<0.02	<0.02
Zn	"	<0.01	<0.01	<0.01

¹Limit of quantitation (LOQ) instead of MDL was used as reporting limit.

²pH analyzed beyond recommended holding time of 15 minutes.

TABLE 2: ANALYSIS¹ OF WATER FROM LYSIMETERS
L-1N-1 THROUGH L-3 AT THE HARLEM AVENUE
SOLIDS MANAGEMENT AREA SAMPLED ON JULY 16, 2008

Parameter	Unit	Lysimeter No.		
		L-1N-1	L-2	L-3
pH ²		7.3	7.1	7.2
EC	mS/m	268	270	244
Total Dissolved Solids	mg/L	1,868	2,208	1,896
Total Diss. Org. Carbon	"	37	2	6
Cl ⁻	"	96	277	103
SO ₄ ⁼	"	10	702	270
TKN	"	9	0.4	0.6
NH ₃ -N	"	5	<0.1	<0.1
NO ₂ + NO ₃ -N	"	<0.1	<0.1	0.2
Total P	"	<0.25	<0.25	<0.25
Alkalinity as CaCO ₃	"	<15	442	994
Al	"	0.053	0.063	0.060
Ca	"	303	405	337
Cd	"	<0.002	<0.002	<0.002
Cr	"	<0.0025	<0.0025	<0.0025
Cu	"	<0.01	<0.01	<0.01
Fe	"	13	<0.02	<0.02
Hg	μg/L	<0.25	<0.25	<0.25
K	mg/L	4	<1	<1
Mg	"	186	100	144
Mn	"	0.374	0.014	0.441
Na	"	48	86	43
Ni	"	<0.002	<0.002	<0.002
Pb	"	<0.02	<0.02	<0.02
Zn	"	<0.01	<0.01	<0.01

¹Limit of quantitation (LOQ) instead of MDL was used as reporting limit.

²pH analyzed beyond recommended holding time of 15 minutes.

TABLE 3: ANALYSIS¹ OF WATER FROM LYSIMETERS
L-1N-1 THROUGH L-3 AT THE HARLEM AVENUE
SOLIDS MANAGEMENT AREA SAMPLED ON JULY 30, 2008

Parameter	Unit	Lysimeter No.		
		L-1N-1	L-2	L-3
pH ²		7.5	7.0	7.3
EC	mS/m	270	292	251
Total Dissolved Solids	mg/L	1,692	2,764	2,104
Total Diss. Org. Carbon	"	39	2	6
Cl ⁻	"	94	291	103
SO ₄ ⁼	"	9	741	257
TKN	"	8	0.4	0.7
NH ₃ -N	"	5	<0.1	<0.1
NO ₂ + NO ₃ -N	"	<0.1	<0.1	0.2
Total P	"	<0.25	<0.25	<0.25
Alkalinity as CaCO ₃	"	1,345	471	1,011
Al	"	0.051	0.054	0.057
Ca	"	312	439	337
Cd	"	<0.002	<0.002	<0.002
Cr	"	<0.0025	<0.0025	<0.0025
Cu	"	<0.01	<0.01	<0.01
Fe	"	9.1	<0.02	0.03
Hg	μg/L	<0.25	<0.25	<0.25
K	mg/L	4	<1	<1
Mg	"	186	106	143
Mn	"	0.366	0.023	0.413
Na	"	48	91	43
Ni	"	<0.002	<0.002	<0.002
Pb	"	<0.02	<0.02	<0.02
Zn	"	<0.01	<0.01	<0.01

¹Limit of quantitation (LOQ) instead of MDL was used as reporting limit.

²pH analyzed beyond recommended holding time of 15 minutes.

TABLE 4: ANALYSIS¹ OF WATER FROM LYSIMETERS
L-1N-1 THROUGH L-3 AT THE HARLEM AVENUE
SOLIDS MANAGEMENT AREA SAMPLED ON AUGUST 14, 2008

Parameter	Unit	Lysimeter No.		
		L-1N-1	L-2	L-3
pH ²		7.6	7.2	7.3
EC	mS/m	271	271	245
Total Dissolved Solids	mg/L	1,656	2,608	2,088
Total Diss. Org. Carbon	"	39	2	6
Cl ⁻	"	95	293	102
SO ₄ ⁼	"	3	735	268
TKN	"	9	0.4	0.4
NH ₃ -N	"	5	<0.1	<0.1
NO ₂ + NO ₃ -N	"	<0.1	<0.1	0.3
Total P	"	<0.25	<0.25	<0.25
Alkalinity as CaCO ₃	"	1,390	461	987
Al	"	0.059	0.073	0.059
Ca	"	309	416	331
Cd	"	<0.002	<0.002	<0.002
Cr	"	<0.0025	<0.0025	<0.0025
Cu	"	<0.01	<0.01	<0.01
Fe	"	13	<0.02	<0.02
Hg	μg/L	<0.25	<0.25	<0.25
K	mg/L	4	<1	<1
Mg	"	183	103	141
Mn	"	0.386	0.012	0.415
Na	"	47	87	41
Ni	"	<0.002	<0.002	<0.002
Pb	"	<0.02	<0.02	<0.02
Zn	"	<0.01	<0.01	<0.01

¹Limit of quantitation (LOQ) instead of MDL was used as reporting limit.

²pH analyzed beyond recommended holding time of 15 minutes.

TABLE 5: ANALYSIS¹ OF WATER FROM LYSIMETERS
L-1N-1 THROUGH L-3 AT THE HARLEM AVENUE
SOLIDS MANAGEMENT AREA SAMPLED ON AUGUST 27, 2008

Parameter	Unit	Lysimeter No.		
		L-1N-1	L-2	L-3
pH ²		7.4	7.0	7.2
EC	mS/m	252	247	250
Total Dissolved Solids	mg/L	1,040	2,768	2,116
Total Diss. Org. Carbon	"	28	4	9
Cl ⁻	"	47	276	90
SO ₄ ⁼	"	<2	630	229
TKN	"	5	2	1
NH ₃ -N	"	3	<0.1	0.4
NO ₂ + NO ₃ -N	"	<0.1	0.4	0.3
Total P	"	<0.25	<0.25	<0.25
Alkalinity as CaCO ₃	"	708	426	1,104
Al	"	0.038	0.064	0.054
Ca	"	155	394	322
Cd	"	<0.002	<0.002	<0.002
Cr	"	<0.0025	<0.0025	<0.0025
Cu	"	<0.01	<0.01	<0.01
Fe	"	4.2	<0.02	<0.02
Hg	μg/L	<0.25	<0.25	<0.25
K	mg/L	2	<1	<1
Mg	"	92	97	146
Mn	"	0.191	0.006	0.415
Na	"	23	80	37
Ni	"	<0.002	0.006	<0.002
Pb	"	<0.02	<0.02	<0.02
Zn	"	<0.01	<0.01	<0.01

¹Limit of quantitation (LOQ) instead of MDL was used as reporting limit.

²pH analyzed beyond recommended holding time of 15 minutes.

TABLE 6: ANALYSIS¹ OF WATER FROM LYSIMETERS
L-1N-1 THROUGH L-3 AT THE HARLEM AVENUE
SOLIDS MANAGEMENT AREA SAMPLED ON SEPTEMBER 10, 2008

Parameter	Unit	Lysimeter No.		
		L-1N-1	L-2	L-3
pH ²		7.6	7.2	7.4
EC	mS/m	226	268	226
Total Dissolved Solids	mg/L	1,564	2,568	2,120
Total Diss. Org. Carbon	"	34	2	7
Cl ⁻	"	105	290	97
SO ₄ ⁼	"	25	690	267
TKN	"	10	0.5	0.5
NH ₃ -N	"	7	<0.1	<0.1
NO ₂ + NO ₃ -N	"	<0.1	<0.1	0.2
Total P	"	<0.25	<0.25	<0.25
Alkalinity as CaCO ₃	"	1,163	429	1,041
Al	"	<0.035	0.135	0.039
Ca	"	267	403	325
Cd	"	<0.002	<0.002	<0.002
Cr	"	<0.0025	<0.0025	<0.0025
Cu	"	<0.01	<0.01	<0.01
Fe	"	0.91	<0.02	0.05
Hg	μg/L	<0.25	<0.25	<0.25
K	mg/L	4	<1	<1
Mg	"	157	98	142
Mn	"	0.323	0.008	0.283
Na	"	50	80	37
Ni	"	<0.002	<0.002	<0.002
Pb	"	<0.02	<0.02	<0.02
Zn	"	<0.01	<0.01	<0.01

¹Limit of quantitation (LOQ) instead of MDL was used as reporting limit.

²pH analyzed beyond recommended holding time of 15 minutes.

TABLE 7: ANALYSIS¹ OF WATER FROM LYSIMETERS
L-1N-1 THROUGH L-3 AT THE HARLEM AVENUE
SOLIDS MANAGEMENT AREA SAMPLED ON SEPTEMBER 24, 2008

Parameter	Unit	Lysimeter No.		
		L-1N-1	L-2	L-3
pH ²		7.2	6.9	7.1
EC	mS/m	265	308	254
Total Dissolved Solids	mg/L	1,760	2,656	1,860
Total Diss. Org. Carbon	"	40	3	5
Cl ⁻	"	91	282	134
SO ₄ ⁼	"	5	806	325
TKN	"	8	0.6	0.5
NH ₃ -N	"	5	<0.1	<0.1
NO ₂ + NO ₃ -N	"	<0.1	0.9	0.3
Total P	"	<0.25	<0.25	<0.25
Alkalinity as CaCO ₃	"	1,317	485	860
Al	"	0.076	0.100	0.080
Ca	"	285	434	311
Cd	"	<0.002	<0.002	<0.002
Cr	"	<0.0025	<0.0025	<0.0025
Cu	"	<0.01	<0.01	<0.01
Fe	"	6.1	<0.02	<0.02
Hg	μg/L	<0.25	<0.25	<0.25
K	mg/L	3	<1	<1
Mg	"	168	107	123
Mn	"	0.370	0.112	0.366
Na	"	43	90	52
Ni	"	<0.002	<0.002	<0.002
Pb	"	<0.02	<0.02	<0.02
Zn	"	<0.01	<0.01	<0.01

¹Limit of quantitation (LOQ) instead of MDL was used as reporting limit.

²pH analyzed beyond recommended holding time of 15 minutes.

TABLE 8: ANALYSIS¹ OF MONTHLY COMPOSITED DIGESTED
 BIOSOLIDS PLACED IN THE HARLEM AVENUE
 SOLIDS MANAGEMENT DRYING AREA DURING JULY 2008

Parameter	Unit	Concentration
pH		8.3
Total Solids	%	21.7
Total Volatile Solids ²	%	46.2
TKN	mg/kg	41,143
NH ₃ -N	„	11,792

¹Limit of quantitation (LOQ) instead of MDL was used as reporting limit. Values are the means of three samples.

²Total volatile solids as a percentage of total solids.

TABLE 9: ANALYSIS¹ OF MONTHLY COMPOSITED DIGESTED
BIOSOLIDS PLACED IN THE HARLEM AVENUE
SOLIDS MANAGEMENT DRYING AREA DURING AUGUST 2008

Parameter	Unit	Concentration
pH		8.1
Total Solids	%	23.3
Total Volatile Solids ²	%	47.5
TKN	mg/kg	38,439
NH ₃ -N	"	13,333

¹Limit of quantitation (LOQ) instead of MDL was used as reporting limit. Values are the means of two samples.

²Total volatile solids as a percentage of total solids.

TABLE 10: ANALYSIS¹ OF MONTHLY COMPOSITED PROCESSED DIGESTED BIOSOLIDS REMOVED FROM THE HARLEM AVENUE SOLIDS MANAGEMENT DRYING AREA DURING JULY 2008

Parameter	Unit	Concentration
pH		7.5
Total Solids	%	77.8
Total Volatile Solids ²	%	41.4
TKN	mg/kg	28,844
NH ₃ -N	"	4,910
Total P	"	23,878
Al	"	18,021
As	"	<20
Ca	"	41,143
Cd	"	4
Cr	"	174
Cu	"	421
Fe	"	16,717
Hg	"	0.95
K	"	2,635
Mg	"	18,280
Mn	"	559
Mo	"	15
Na	"	<800
Ni	"	50
Pb	"	131
Se	"	<28.57
Zn	"	896

¹Limit of quantitation (LOQ) instead of MDL was used as reporting limit. Values are the means of two samples.

²Total volatile solids as a percentage of total solids.

TABLE 11: ANALYSIS¹ OF MONTHLY COMPOSITED PROCESSED DIGESTED BIOSOLIDS REMOVED FROM THE HARLEM AVENUE SOLIDS MANAGEMENT DRYING AREA DURING AUGUST 2008

Parameter	Unit	Concentration
pH		7.2
Total Solids	%	48.5
Total Volatile Solids ²	%	42.0
TKN	mg/kg	33,594
NH ₃ -N	"	7,091
Total P	"	18,262
Al	"	18,516
As	"	<20
Ca	"	39,144
Cd	"	4
Cr	"	154
Cu	"	408
Fe	"	16,812
Hg	"	0.96
K	"	2,652
Mg	"	17,222
Mn	"	577
Mo	"	13
Na	"	<800
Ni	"	45
Pb	"	124
Se	"	<28.57
Zn	"	855

¹Limit of quantitation (LOQ) instead of MDL was used as reporting limit. Values are the means of six samples.

²Total volatile solids as a percentage of total solids.