Metropolitan Water Reclamation District of Greater Chicago

RESEARCH AND DEVELOPMENT DEPARTMENT

REPORT NO. 06-27

MONTHLY REPORT OF THE FULTON COUNTY

ENVIRONMENTAL PROTECTION SYSTEM

February 2006

MAY 2006

Protecting Our Water Environment

Metropolitan Water Reclamation District of Greater Chicago

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

Richard Lanyon
Director of Research & Development

312·751·5190

May 23, 2006

Mr. S. Alan Keller, P.E.
Manager, Permit Section
Illinois Environmental
Protection Agency
P.O. Box 19276
Springfield, IL 62794-9276

Dear Mr. Keller:

Attached for your information and use is the February 2006 monthly report of the Fulton County Environmental Protection System.

Very truly yours,

Richard Lanyon
Director
Research and Development

RL:AC:GT:spy
Attachment
cc w/enc.: Mr. Valdis Aistars, USEPA Region V
Mr. Ash Sajjad, USEPA Region V
Mr. Matthew Williams, USEPA Region V
IEPA Permit Section, Springfield
IEPA Surveillance Section, Peoria
Chairman of the Fulton County Board
Fulton County Board of Health
Fulton County Zoning Office

cc via MWRDGC web site:
Drs.: Granato
O'Connor
Cox
Lindo
Tian
Messrs.: Levy
Sobanski
Quintanilla
Ballowe
Ryzak
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ENVIRONMENTAL PROTECTION SYSTEM

REPORT FOR FULTON COUNTY, ILLINOIS

FEBRUARY 2006

Research and Development Department
G. Tian
A. Cox

May 2006

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FOREWORD

The data and information in this report fulfill the frequency of monitoring and the reporting requirements for the Land Application of Biosolids at the Fulton County Land Reclamation Project as specified in the Illinois Environmental Protection Agency Permit No. 2005-SC-5073 for February 2006.

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGMENT

Thanks are due to the staff of the Analytical Laboratories Division for assistance in conducting analyses and Ms. Sabina Yarn for typing this report.

DISCLAIMER

Mention of proprietary equipment and chemicals in this report does not constitute endorsement by the Metropolitan Water Reclamation District of Greater Chicago.

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FULTON COUNTY

DEWATERED BIOSOLIDS REPORT

February 2006

DEWATERED BIOSOLIDS REPORT

No dewatered biosolids were applied to fields during the month of February 2006. In addition, no supernatant was available for application to fields during this month. The last supernatant application was made in 1995, and the last biosolids application was made in 2004.

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FULTON COUNTY

WATER ANALYSIS REPORT

February 2006

WATER ANALYSIS REPORT

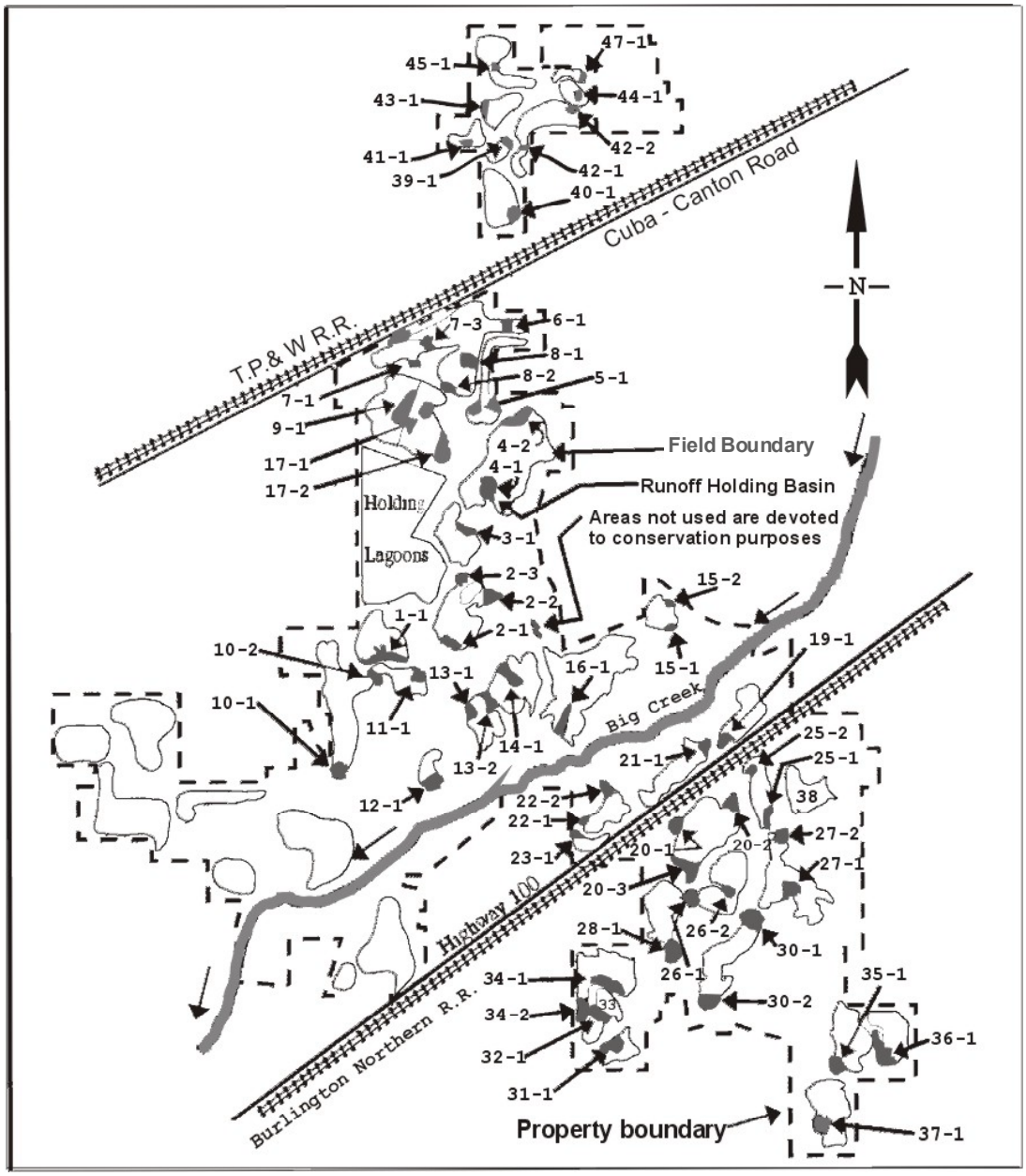
There was no water release and sampling in retention basins during this month. A site plan of farm field and retention basin locations is attached in Figure 1.

The surface water sites (streams, reservoirs, and SP sites) and wells were also not sampled during the month. A site plan of water monitoring locations is attached in Figure 2.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

FIGURE 1

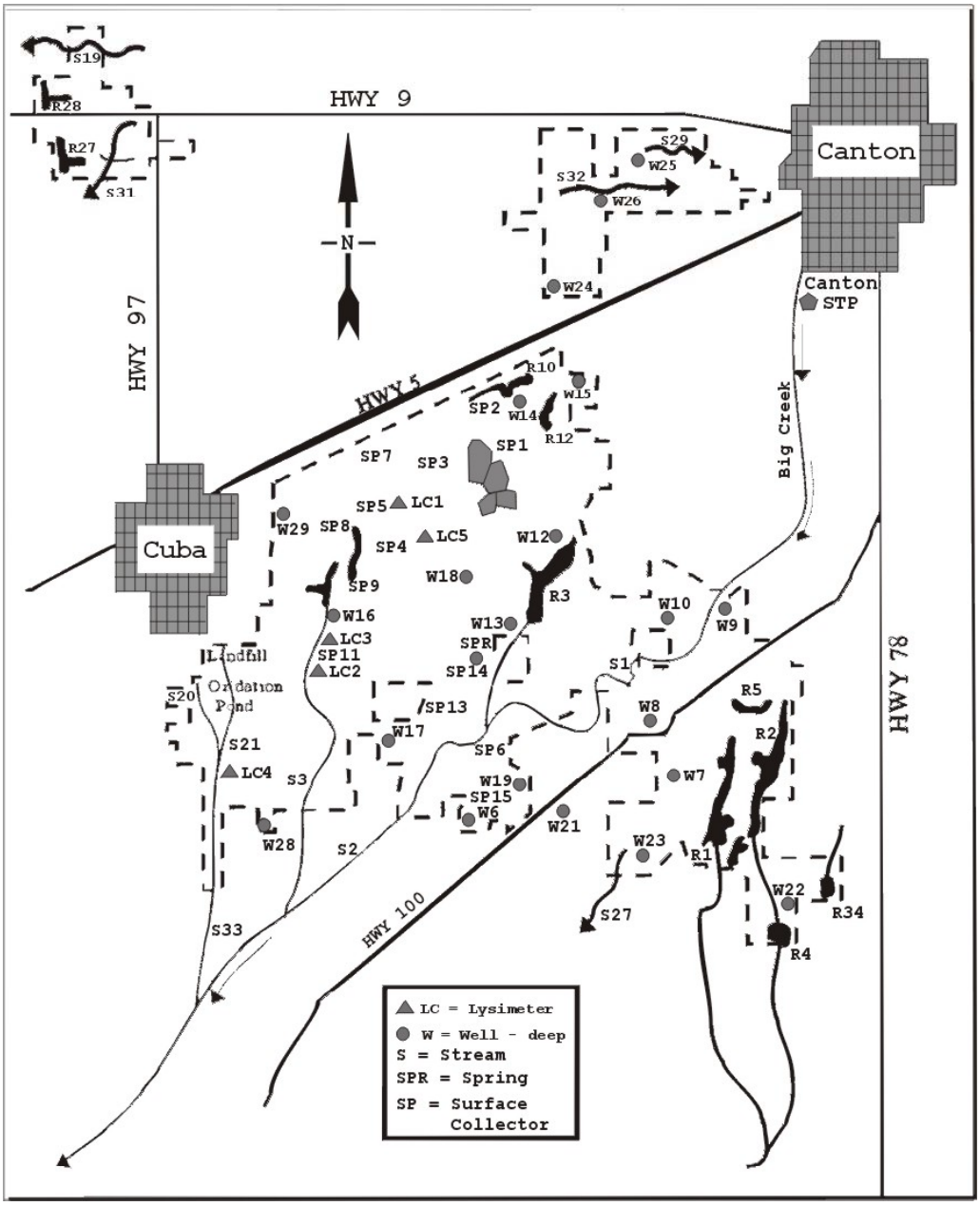
FARM FIELDS AND RUNOFF BASINS AT THE LAND RECLAMATION PROJECT AT FULTON COUNTY, ILLINOIS



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

FIGURE 2

WATER MONITORING LOCATIONS AT THE LAND RECLAMATION PROJECT AT FULTON COUNTY, ILLINOIS



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FULTON COUNTY

CLIMATOLOGICAL OBSERVATIONS

February 2006

CLIMATOLOGICAL OBSERVATIONS

The daily climatological observations for February 2006 are summarized in Table 1. The total precipitation recorded for the month was 0.59 inches.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1

RECORD OF CLIMATOLOGICAL OBSERVATIONS FOR FEBRUARY 2006,
FULTON COUNTY, ILLINOIS, STATION SEQ, SEC.10, R3E, T6N

	Temperature °C			Precipitation		Wind		
				rain, melted snow	snow, sleet, hail	m/S	m/S	
Date	Max	Min	Avg	(inches & hundredths)	(inches & tenths)	Avg	Max	Dir
1	9.6	-2.4	4.4	0.00		3.3	11.6	W
2	8.9	-1.9	3.2	0.00		1.4	5.8	NE
3	7.1	-2.9	2.0	0.00		3.3	10.3	W
4	-2.6	-7.8	-5.6	0.00		4.9	12.1	W
5	3.2	-9.6	-4.2	0.00		3.5	10.3	W
6	4.7	-9.4	-2.8	0.00		3.3	10.7	W
7	2.9	-7.4	-2.1	0.00		1.9	8.5	W
8	3.3	-7.7	-1.6	0.00		1.9	9.4	NW
9	2.1	-11.0	-3.6	0.00		2.2	9.4	SE
10	7.0	-5.3	0.1	0.00		2.3	8.5	W
11	5.7	-4.3	-0.9	0.00		2.3	7.6	W
12	-2.4	-8.7	-5.4	0.00		3.8	11.2	W
13	9.1	-11.5	-1.9	0.00		4.5	17.0	SW
14	17.9	-5.3	6.2	0.00		3.3	12.1	SE
15	8.7	-0.7	3.9	0.10		3.8	11.6	N
16	4.3	-5.6	-0.3	0.49		4.6	16.5	W
17	-2.9	-16.9	-8.6	0.00		4.7	12.1	NW
18	-10.2	-20.0	-15.6	0.00		3.3	11.2	NW
19	-4.8	-17.0	-10.7	0.00		2.6	9.4	SW
20	2.6	-12.4	-5.3	0.00		3.0	11.2	S
21	9.9	-7.5	0.8	0.00		2.2	8.0	SW
22	11.3	-5.7	1.8	0.00		1.5	8.9	SE
23	10.4	-5.4	1.7	0.00		3.1	13.4	W
24	12.0	-5.9	3.0	0.00		4.0	13.0	SE
25	8.8	-9.3	0.7	0.00		3.4	11.2	NW
26	6.1	-11.3	-2.3	0.00		1.4	8.0	SW
27	17.5	-2.6	5.3	0.00		2.5	8.9	SE
28	11.1	-3.8	3.3	0.00		2.9	8.9	NE
Sum				0.59	0.0	Observer: Josh DeWees		
Avg	5.8	-7.8	-1.2			Station: R&D Lab		
Extreme	17.9	-20.0		0.49	0.0			

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RECLAMATION OF COAL REFUSE PILES WITH BIOSOLIDS

February 2006

RECLAMATION OF COAL REFUSE PILES WITH BIOSOLIDS

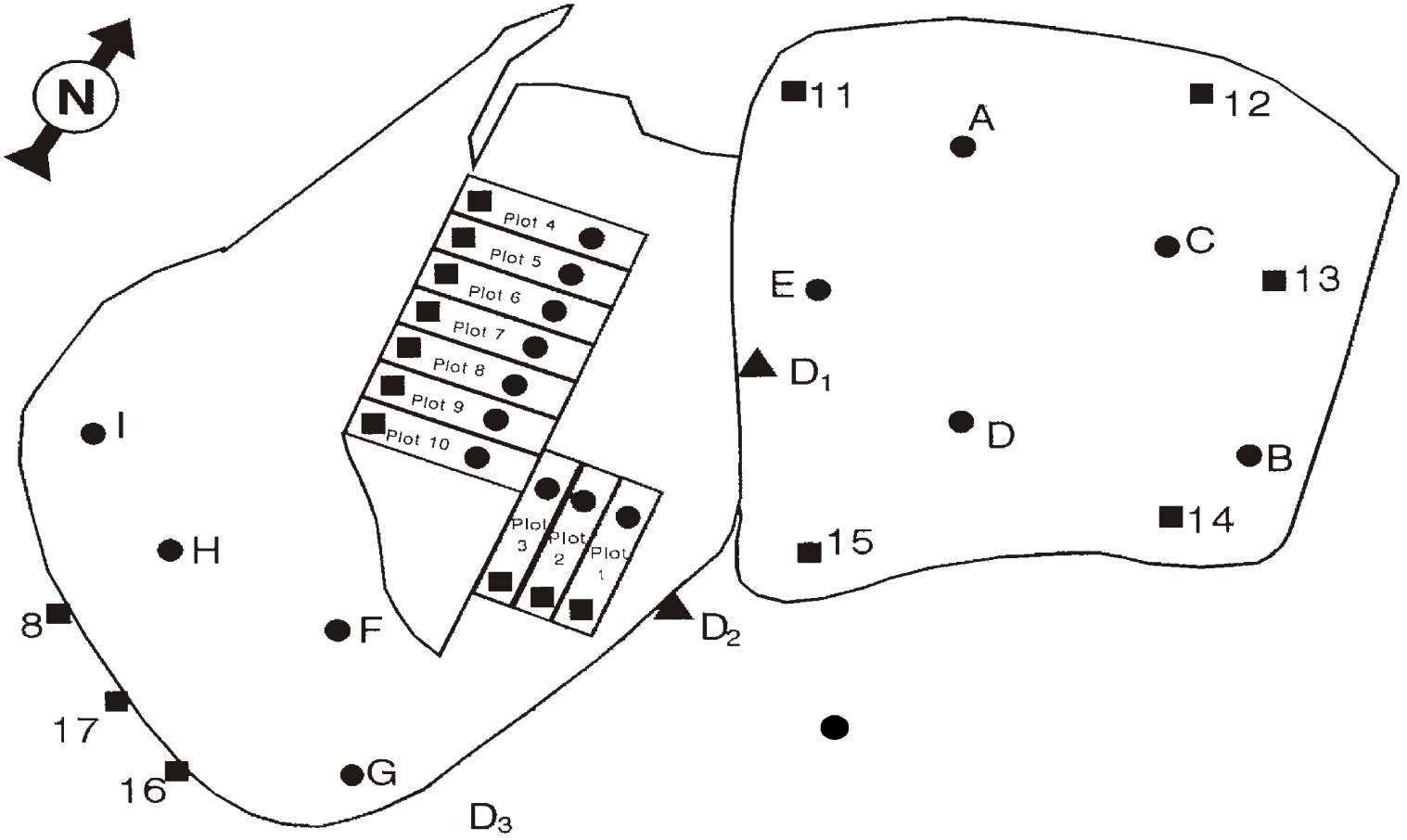
Lysimeters and drainage tiles at the St. David coal refuse pile reclamation site were sampled during the month. Locations for all lysimeter and drainage tile sampling sites are shown in Figure 3. Analytical data for lysimeter samples are presented in Table 2. There was no flow in the tile drains D1 and D2 at February's sampling. The analytical results for drainage tile samples are reported in Table 3.

Lysimeters at the Big Ten (Morgan Mine) and United Electric coal refuse pile sites were also sampled during the month. Analytical data for the Morgan Mine and United Electric coal refuse pile sites are listed in Tables 4 and 5, respectively.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

FIGURE 3

ST. DAVID COAL REFUSE PILE RECLAMATION SITE



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2

ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED ST. DAVID COAL REFUSE PILE SITE SAMPLED ON FEBRUARY 22, 2006

Constituent	Units	Lysimeter Designation 1	2	3	4
pH		7.8	|	|	|
E.C.	mS/m	430	|	|	|
Acidity*	mg/L	17	|	|	|
Alkalinity*	"	271	|	|	|
Total P	"	0.13			
			L	L	L
			Y	Y	Y
Cl^-	"	14	S	S	S
$SO_4^=$	"	2,765	I	I	I
NH_3-N	"	<0.02	M	M	M
NO_2+NO_3-N	"	35.9	E	E	E
Al	"	0.06	T	T	T
			E	E	E
			R	R	R
Cd	"	0.0610			
Cr	"	0.003	D	D	D
Cu	"	0.007	R	R	R
Fe	"	0.138	Y	Y	Y
Mn	"	0.111			
			|	|	|
			|	|	|
Ni	"	0.054	|	|	|
Pb	"	<0.003	|	|	|
Zn	"	7.38	|	|	|

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED ST. DAVID COAL REFUSE PILE SITE SAMPLED ON FEBRUARY 22, 2006

Constituent	Units	Lysimeter Designation 5	6	7	8
pH		|	|	|	|
E.C.	mS/m	|	|	|	|
Acidity*	mg/L	|	|	|	|
Alkalinity*	"	|	|	|	|
Total P	"				
		L	L	L	L
		Y	Y	Y	Y
Cl^-	"	S	S	S	S
$SO_4^=$	"	I	I	I	I
NH_3-N	"	M	M	M	M
NO_2+NO_3-N	"	E	E	E	E
Al	"	T	T	T	T
		E	E	E	E
		R	R	R	R
Cd	"				
Cr	"	D	D	D	D
Cu	"	R	R	R	R
Fe	"	Y	Y	Y	Y
Mn	"				
		|	|	|	|
		|	|	|	|
Ni	"	|	|	|	|
Pb	"	|	|	|	|
Zn	"	|	|	|	|

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED ST. DAVID COAL REFUSE PILE SITE SAMPLED ON FEBRUARY 22, 2006

Constituent	Units	Lysimeter Designation 9	10	A	B
pH		|	|	6.5	|
E.C.	mS/m	|	|	280	|
Acidity*	mg/L	|	|	26	|
Alkalinity*	"	|	|	41	|
Total P	"			0.27	
		L	L		L
		Y	Y		Y
Cl^-	"	S	S	14	S
$SO_4^=$	"	I	I	2,120	I
NH_3-N	"	M	M	1.12	M
NO_2+NO_3-N	"	E	E	1.28	E
Al	"	T	T	0.57	T
		E	E		E
		R	R		R
Cd	"			0.0039	
Cr	"	D	D	0.008	D
Cu	"	R	R	0.007	R
Fe	"	Y	Y	13.0	Y
Mn	"			2.01	
		|	|		|
Ni	"	|	|	0.027	|
Pb	"	|	|	<0.003	|
Zn	"	|	|	0.877	|

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED ST. DAVID COAL REFUSE PILE SITE SAMPLED ON FEBRUARY 22, 2006

Constituent	Units	Lysimeter Designation C	D	E	F
pH		|	2.3	|	|
E.C.	mS/m	|	100	|	|
Acidity*	mg/L	|	25,000	|	|
Alkalinity*	"	|	<1	|	|
Total P	"		1.51		
		L		L	L
		Y		Y	Y
Cl^-	"	S	<0.3	S	S
$SO_4^=$	"	I	1,361	I	I
NH_3-N	"	M	0.30	M	M
NO_2+NO_3-N	"	E	0.68	E	E
Al	"	T	420	T	T
		E		E	E
		R		R	R
Cd	"		2.92		
Cr	"	D	3.17	D	D
Cu	"	R	2.52	R	R
Fe	"	Y	3,843	Y	Y
Mn	"		35.0		
		|		|	|
		|		|	|
Ni	"	|	3.22	|	|
Pb	"	|	<0.003	|	|
Zn	"	|	181	|	|

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED ST. DAVID COAL REFUSE PILE SITE SAMPLED ON FEBRUARY 22, 2006

Constituent	Units	Lysimeter Designation G	H	I
pH		|	7.7	7.3
E.C.	mS/m	|	260	340
Acidity*	mg/L	|	<4	44
Alkalinity*	"	|	272	356
Total P	"		0.29	0.18
		L		
		Y		
Cl^-	"	S	14	13
$SO_4^=$	"	I	1,613	2,239
NH_3-N	"	M	<0.02	2.34
NO_2+NO_3-N	"	E	0.71	2.03
Al	"	T	0.37	0.07
		E		
		R		
Cd	"		<0.0002	0.0067
Cr	"	D	0.006	0.006
Cu	"	R	0.018	0.010
Fe	"	Y	3.41	19.6
Mn	"		0.727	9.69
		|		
		|		
Ni	"	|	0.007	0.123
Pb	"	|	<0.003	<0.003
Zn	"	|	0.130	1.11

*As calcium carbonate.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 3

FULTON COUNTY LAND RECLAMATION PROJECT ST. DAVID COAL REFUSE PILE SITE DRAINAGE TILE WATER ANALYSIS FOR FEBRUARY 2006

		Tile Drain		
		D1	D2	D3
Constituent	Units	2/22	2/22	2/22
pH		NO	NO	6.7
Total Suspended Solids	mg/L	FLO	FLO	70.0
Total Fe	mg/L	W	W	NS

NS = No Sample. Inadvertently, an aliquot of the sample was not reserved for analysis.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 4

ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED MORGAN MINE COAL REFUSE PILE SITE SAMPLED ON FEBRUARY 22, 2006

Constituent	Units	Lysimeter Designation 1	2	3
pH		7.3	7.4	|
E.C.	mS/m	310	350	|
Acidity*	mg/L	26	31	|
Alkalinity*	"	160	302	|
Total P	"	0.15	0.15	
				L
				Y
Cl^-	"	20	31	S
$SO_4^=$	"	2,237	2,337	I
NH_3-N	"	0.27	0.12	M
NO_2+NO_3-N	"	0.16	2.34	E
Al	"	0.64	0.09	T
				E
				R
Cd	"	0.0021	<0.0002	
Cr	"	0.004	0.003	D
Cu	"	0.004	0.004	R
Fe	"	1.99	1.78	Y
Mn	"	2.83	0.51	
				|
				|
Ni	"	0.097	0.011	|
Pb	"	<0.003	<0.003	|
Zn	"	0.836	0.102	|

*As calcium carbonate.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5

ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED UNITED ELECTRIC COAL REFUSE PILE SITE SAMPLED ON FEBRUARY 22, 2006

Constituent	Units	Lysimeter Designation 6	7	8	9	10
pH		|	7.7	7.5	7.6	7.6
E.C.	mS/m	|	330	280	400	330
Acidity*	mg/L	|	22	12	29	28
Alkalinity*	"	|	241	118	309	315
Total P	"		0.22	0.20	0.18	0.15
		L				
		Y				
Cl^-	"	S	1	25	34	25
$SO_4^=$	"	I	1,908	2,039	2,501	2,252
NH_3-N	"	M	<0.02	0.08	<0.02	<0.02
NO_2+NO_3-N	"	E	56.7	12.5	50.8	4.19
Al	"	T	<0.05	0.11	<0.05	<0.05
		E				
		R				
Cd	"		0.0069	0.0224	0.0004	<0.0002
Cr	"	D	0.003	0.004	0.003	0.004
Cu	"	R	0.032	0.053	0.026	0.019
Fe	"	Y	0.100	0.084	0.117	0.135
Mn	"		0.027	0.197	0.055	0.513
		|				
		|				
Ni	"	|	0.022	0.090	0.039	0.023
Pb	"	|	<0.003	<0.003	<0.003	<0.003
Zn	"	|	0.261	1.95	0.443	0.268

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED UNITED ELECTRIC COAL REFUSE PILE SITE SAMPLED ON FEBRUARY 22, 2006

Constituent	Units	Lysimeter Designation 6	7	8	9	10
pH		|	7.9	7.6	7.7	|
E.C.	mS/m	|	310	550	470	|
Acidity*	mg/L	|	16	52	52	|
Alkalinity*	"	|	288	805	423	|
Total P	"		0.26	0.15	0.14	
		L				L
		Y				Y
Cl^-	"	S	18	94	80	S
$SO_4^=$	"	I	2,078	2,913	2,831	I
NH_3-N	"	M	1.58	14.2	<0.02	M
NO_2+NO_3-N	"	E	21.7	2.75	7.75	E
Al	"	T	<0.05	<0.05	<0.05	T
		E				E
		R				R
Cd	"		<0.0002	<0.0002	<0.0002	
Cr	"	D	0.005	0.005	0.003	D
Cu	"	R	0.023	0.007	0.006	R
Fe	"	Y	0.222	3.35	0.160	Y
Mn	"		0.332	7.19	0.506	
		|				|
		|				|
Ni	"	|	0.010	0.042	0.015	|
Pb	"	|	<0.003	<0.003	<0.003	|
Zn	"	|	0.034	0.031	0.072	|

*As calcium carbonate.