Metropolitan Water Reclamation District of Greater Chicago

RESEARCH AND DEVELOPMENT DEPARTMENT

REPORT NO. 06-8

ENVIRONMENTAL PROTECTION SYSTEM

REPORT FOR FULTON COUNTY, ILLINOIS

NOVEMBER 2005

FEBRUARY 2006

March 3, 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 November 2005 monthly report of the Fulton County Environmental Protection System.

Very truly yours,

Richard Lanyon
Director
Research and Development

RL: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

Metropolitan Water Reclamation District of Greater Chicago
100 East Erie Street Chicago, IL 60611-2803 (312) 751-5600

ENVIRONMENTAL PROTECTION SYSTEM

REPORT FOR FULTON COUNTY, ILLINOIS

November 2005

Research and Development Department
G. Tian
A. Cox

March 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 November 2005.

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

November 2005

DEWATERED BIOSOLIDS REPORT

No dewatered biosolids were applied to fields during the month of November 2005. 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

November 2005

WATER ANALYSIS REPORT

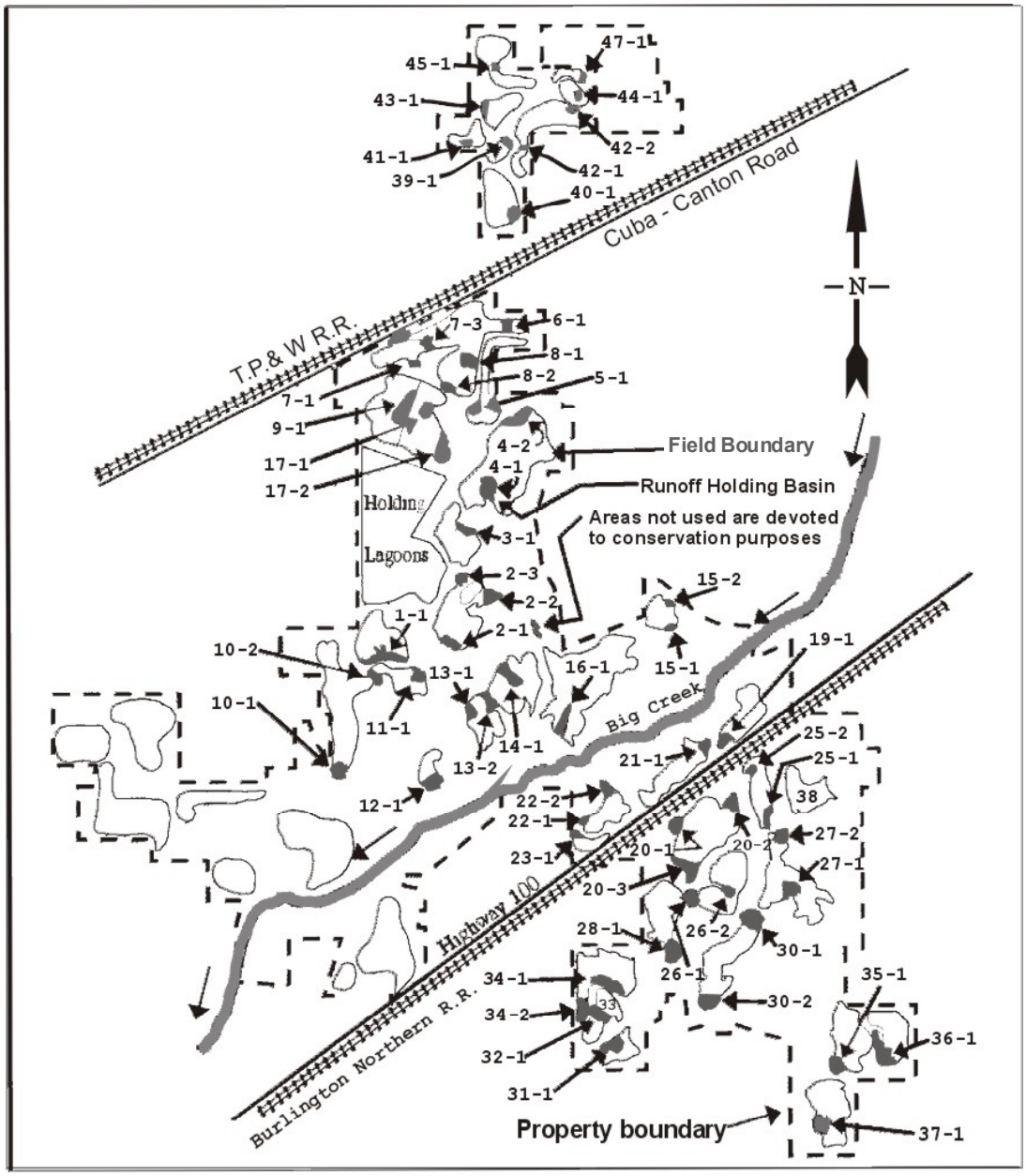
During the month, one basin (No. 3-1) was sampled on November 21, 2005 and released on November 23, 2005. A site plan of farm field and retention basin locations is attached in Figure 1. During the month, the total discharge from the one basin was 1.85 million gallons. Analytical data for water samples from the retention basin are presented in Table 1. A log of runoff basin discharge information is presented in Table 2.

The surface water sites (Streams, Reservoirs, and SP Sites) were sampled during the month. A site plan of water monitoring locations is attached in Figure 2. Analytical data of water samples from the surface water sites are presented in Tables 3 through 5.

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

TABLE 1

FULTON COUNTY LAND RECLAMATION PROJECT FIELD RUNOFF BASIN
DISCHARGE DATA NOVEMBER 2005

Basin No.	Sample Date	pH	TSS (mg/L)	BOD_5 (mg/L)	F. coli. per 100 mL	Discharge Date	Discharge Amount (MG)
3-1	11/21	8.1	17.0	4	10	11/23	1.85

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2

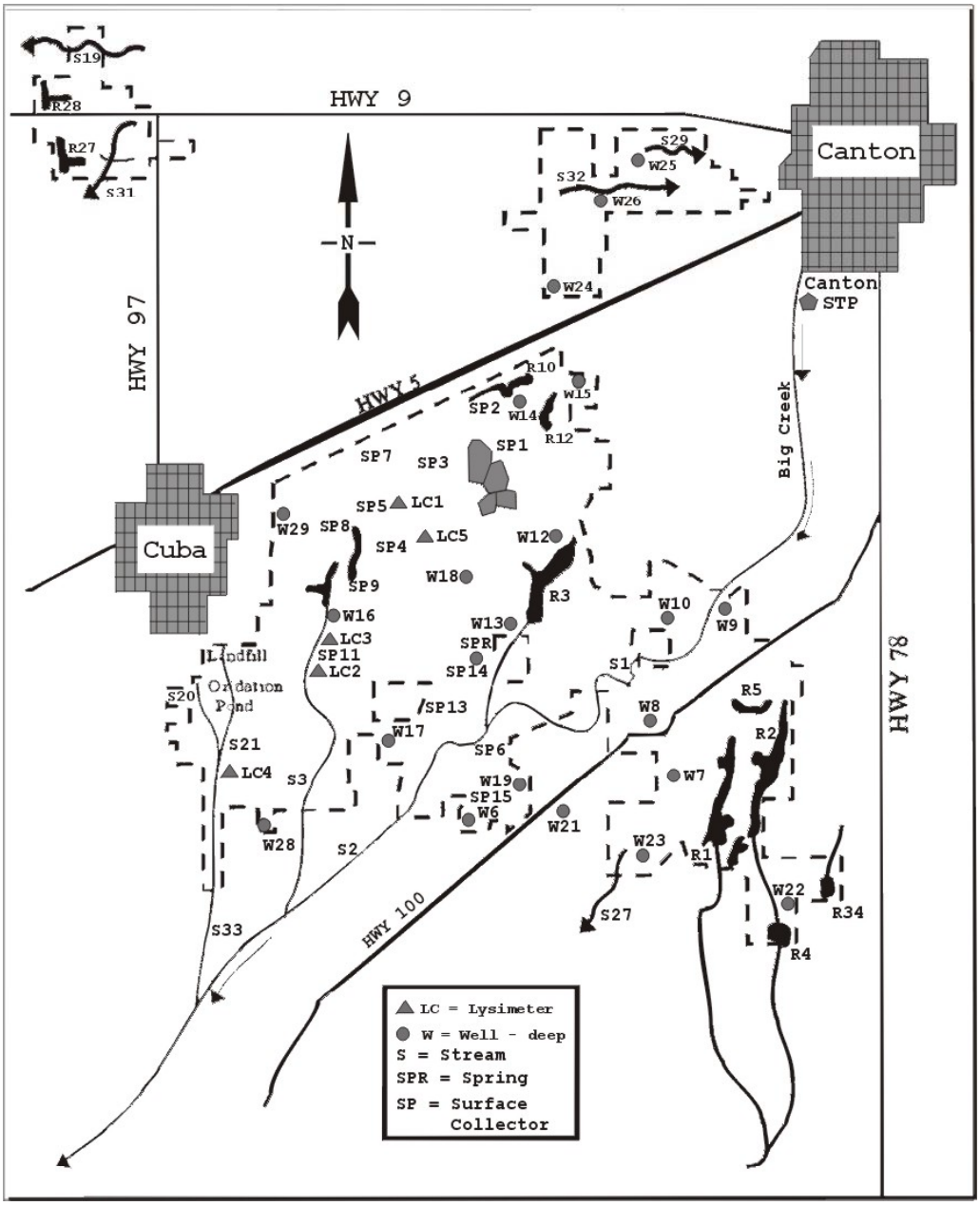
FIELD RUNOFF BASIN LOG AT THE FULTON COUNTY LAND RECLAMATION PROJECT
FOR NOVEMBER 2005

Basin No.	Date Opened	Time Opened	Date Closed	Time Closed	Opening Stage (feet)	Closing Stage (feet)	Time Open (Hours)	Volume Released (MG)	Release Type	Reason Closed	R & D Dept OK	R & D Dept Sample
3-1	11/23	12:31 PM	11/27	11:45 PM	3.00	0.50	107.23	1.85	Regular	Rain	Yes	Yes

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

FIGURE 2

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



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 3

FULTON COUNTY LAND RECLAMATION PROJECT SPRING AND STREAM DATA
NOVEMBER 2005

Stream Number	Sample Date	Total P	NH_3-N	NO_2-N	NO_3-N	Cd	Cu	Hg
		mg/L						µg/L
Spring	11/29	0.05	0.00	0.000	0.036	0.0000	0.016	0.00
S 1	11/29	1.08	0.18	0.000	1.31	0.0000	0.016	0.00
S 2	11/29	1.89	0.35	0.000	4.09	0.0000	0.013	0.00
S 3	11/29	0.08	0.00	0.000	0.063	0.0000	0.009	0.00
S20	11/29	1.21	0.00	0.000	22.0	0.0000	0.026	0.00
S21	11/29	0.10	1.35	0.000	0.303	0.0000	0.012	0.00
S29	11/29	0.13	0.10	0.000	0.457	0.0000	0.011	0.00
S27	Stream Dry							
S32	11/29	0.16	0.00	0.000	0.060	0.0000	0.005	0.00
S33	11/29	0.92	0.04	0.000	10.6	0.0000	0.011	0.00
MDL*		0.04	0.02	0.150	0.005	0.0004	0.003	0.05

*MDL = Method detection limit of laboratory; values less than these are reported as zeros.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 4

FULTON COUNTY LAND RECLAMATION PROJECT RESERVOIR DATA
NOVEMBER 2005

Reservoir Number	Sample Date	Total P	NH_3-N	NO_2-N	NO_3-N	Cd	Cu	Hg
		---------- mg/L ----------						µg/L
R 1	11/29	0.14	0.48	0.000	0.131	0.0000	0.013	0.00
R 2	11/29	0.19	0.19	0.000	0.128	0.0000	0.000	0.00
R 3	11/29	0.09	0.19	0.000	0.065	0.0000	0.015	0.00
R 4	11/29	0.15	0.33	0.000	14.6	0.0000	0.010	0.00
R 5	11/29	0.07	0.23	0.000	0.055	0.0000	0.011	0.00
R10	11/29	0.06	0.13	0.000	0.043	0.0000	0.017	0.00
R12	11/29	0.15	0.54	0.000	0.031	0.0000	0.021	0.00
R34	11/29	0.46	0.04	0.000	2.14	0.0000	0.015	0.00
MDL*		0.04	0.02	0.150	0.005	0.0004	0.003	0.05

*MDL = Method detection limit of laboratory; values less than these are reported as zeros.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5

FULTON COUNTY LAND RECLAMATION PROJECT SURFACE WATERS - PUTNAM TOWNSHIP DISTRICT PROPERTY (WESTERN SECTION) NOVEMBER 2005

Surface Water	Sample Date	Total P	NH_3-N	NO_2-N	NO_3-N	Cd	Cu	Hg
		---------- mg/L ----------						µg/L
SP 6	11/29	0.08	0.000	NA*	0.181	0.0000	0.003	0.00
SP 14	11/29	0.06	0.000	0.000	0.349	0.0000	0.010	0.00
MDL**		0.04	0.02	0.150	0.005	0.0004	0.003	0.05

* NA = No analysis due to the sample loss.

**MDL = Method detection limit of laboratory; values less than these are reported as zeros.

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FULTON COUNTY

CLIMATOLOGICAL OBSERVATIONS

November 2005

CLIMATOLOGICAL OBSERVATIONS

The daily climatological observations for November 2005 are summarized in Table 6. The total precipitation recorded for the month was 2.26 inches.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 6

RECORD OF CLIMATOLOGICAL OBSERVATIONS FOR NOVEMBER 2005,
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	15.4	0.8	7.9	0.00		2.5	8.9	S
2	21.9	2.9	12.4	0.00		2.9	9.8	SW
3	23.7	8.9	15.9	0.00		4.0	13.0	SE
4	22.8	9.4	14.7	0.00		1.9	9.4	S
5	21.4	9.3	14.6	0.34		2.2	12.1	NE
6	13.7	4.7	9.2	0.24		4.0	16.5	SW
7	19.8	4.6	11.2	0.00		2.9	10.7	SE
8	21.7	8.7	15.3	0.00		1.8	8.0	E
9	19.6	3.5	11.7	0.00		5.7	15.6	W
10	12.6	-2.4	5.0	0.00		2.1	8.0	SW
11	20.5	1.6	9.7	0.00		2.5	8.5	SE
12	17.9	6.3	12.2	0.15		5.0	17.0	SE
13	18.4	2.9	10.5	0.00		5.7	17.0	SW
14	7.9	1.1	4.4	0.09		2.2	8.0	NE
15	8.0	1.6	5.3	0.19		4.4	17.9	NE
16	1.7	-8.0	-2.8	0.00		7.8	20.1	SW
17	2.3	-10.9	-5.4	0.00		2.5	9.4	SW
18	10.6	-3.4	2.0	0.00		2.9	9.4	S
19	14.6	-0.3	6.0	0.00		3.4	12.1	S
20	8.4	-0.1	5.0	0.00		1.3	5.4	NW
21	12.8	-0.3	6.1	0.00		3.6	9.8	SW
22	8.2	-1.9	2.8	0.00		2.4	8.0	W
23	14.8	2.7	7.6	0.00		5.5	17.9	W
24	4.6	-9.6	-3.2	0.00		5.4	16.5	NW
25	-1.3	-9.6	-4.8	0.00		3.0	11.2	SE
26	13.5	-3.3	4.7	0.00		3.1	8.5	SE
27	13.9	8.4	10.9	0.21		5.2	13.4	E
28	13.4	1.6	8.8	1.04		7.0	18.8	S
29	1.6	-2.8	-1.8	0.00		6.7	15.6	SW
30	3.6	-5.8	-2.6	0.00		2.7	13.0	W
Sum	388.0	20.6	193.3	2.26	0.0	Observer: Josh DeWees		
Avg	12.9	0.7	6.4			Station: R&D Lab		
Extreme	23.7	-10.9		1.04	0.0			

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FULTON COUNTY

RECLAMATION OF COAL REFUSE PILES WITH BIOSOLIDS

November 2005

RECLAMATION OF COAL REFUSE PILES WITH BIOSOLIDS

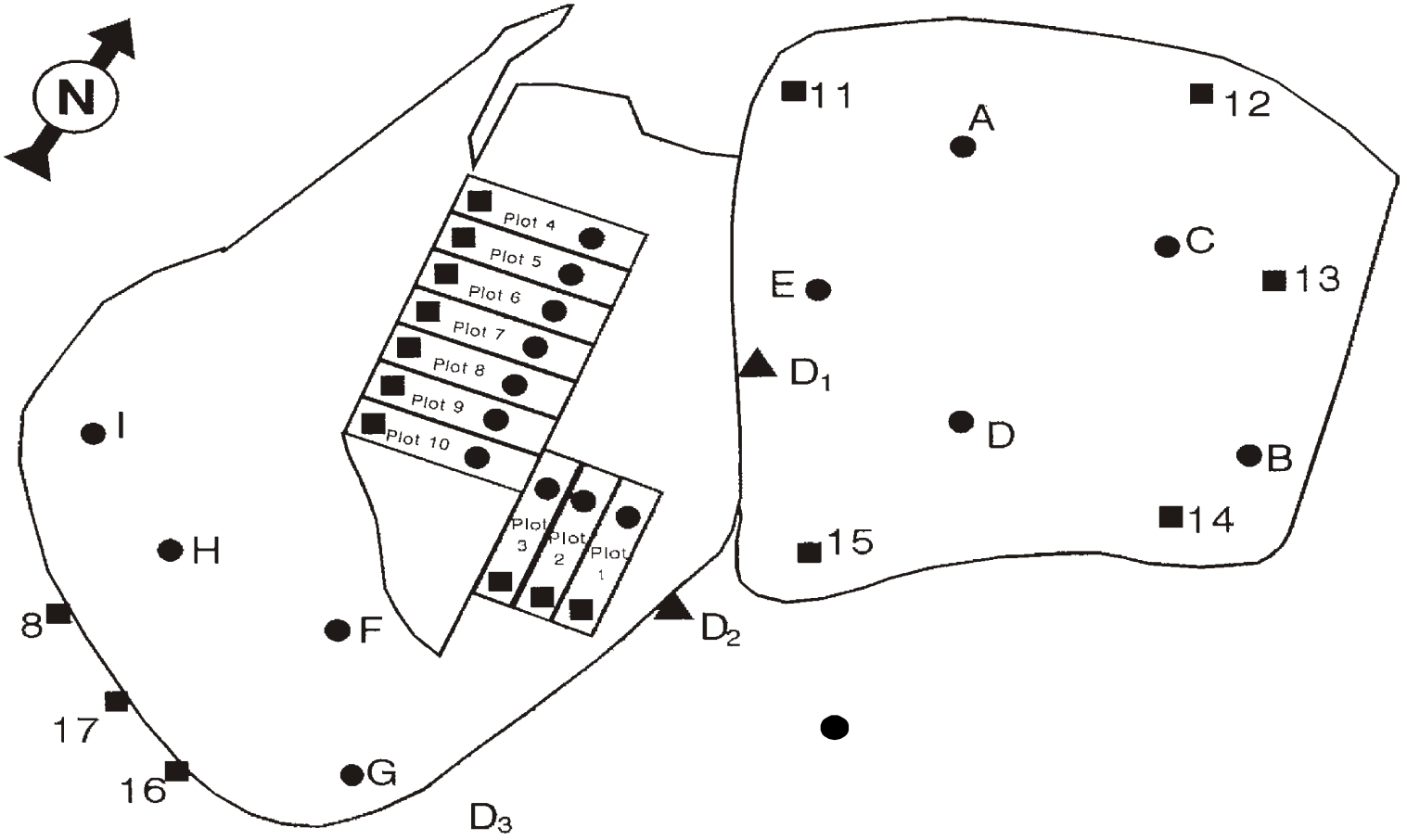
Lysimeters and drainage tiles at the St. David coal refuse pile reclamation site were sampled during the month. Locations for all lysimeters and drainage tile sampling sites are shown in Figure 3. Analytical data for lysimeter samples are presented in Table 7. The analytical results for drainage tile samples are reported in Table 8. There was no flow in the tile drains D1 and D2 at November's sampling.

All lysimeters at the Big Ten (Morgan Mine) coal refuse pile site were dry at the time of sampling in November (Table 9). Lysimeters at the United Electric coal refuse pile site were sampled during the month. Analytical data for these lysimeters are listed in Table 10.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

FIGURE 3

ST. DAVID COAL REFUSE PILE RECLAMATION SITE



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 7

ANALYSIS OF WATER FROM LYSIMETERS AT THE RECLAIMED ST. DAVID COAL REFUSE PILE SITE SAMPLED ON NOVEMBER 15, 2005

Constituent	Units	Lysimeter Designation 1	2	3	4
pH		6.3	|	|	|
E.C.	mS/m	320	|	|	|
Acidity*	mg/L	68	|	|	|
Alkalinity*	"	143	|	|	|
Total P	"	0.05			
			L	L	L
			Y	Y	Y
Cl^-	"	12	S	S	S
$SO_4^=$	"	2,222	I	I	I
NH_3-N	"	3.52	M	M	M
NO_2+NO_3-N	"	0.30	E	E	E
Al	"	0.18	T	T	T
			E	E	E
			R	R	R
Cd	"	0.0008			
Cr	"	<0.004	D	D	D
Cu	"	<0.002	R	R	R
Fe	"	106	Y	Y	Y
Mn	"	4.53			
			|	|	|
			|	|	|
Ni	"	0.130	|	|	|
Pb	"	<0.002	|	|	|
Zn	"	2.40	|	|	|

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 7 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS AT THE RECLAIMED ST. DAVID COAL REFUSE PILE SITE SAMPLED ON NOVEMBER 15, 2005

Constituent	Units	Lysimeter Designation 5	6	7	8
pH		7.9	|	|	|
E.C.	mS/m	250	|	|	|
Acidity*	mg/L	4	|	|	|
Alkalinity*	"	149	|	|	|
Total P	"	0.05			
			L	L	L
			Y	Y	Y
Cl^-	"	6.6	S	S	S
$SO_4^=$	"	1,602	I	I	I
NH_3-N	"	<0.02	M	M	M
NO_2+NO_3-N	"	4.14	E	E	E
Al	"	0.07	T	T	T
			E	E	E
			R	R	R
Cd	"	0.0172			
Cr	"	<0.004	D	D	D
Cu	"	0.013	R	R	R
Fe	"	0.071	Y	Y	Y
Mn	"	0.003			
			|	|	|
			|	|	|
Ni	"	0.017	|	|	|
Pb	"	<0.002	|	|	|
Zn	"	0.92	|	|	|

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 7 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS AT THE RECLAIMED ST. DAVID COAL REFUSE PILE SITE SAMPLED ON NOVEMBER 15, 2005

Constituent	Units	Lysimeter Designation 9	10	A	B
pH		|	|	6.9	|
E.C.	mS/m	|	|	240	|
Acidity*	mg/L	|	|	14	|
Alkalinity*	"	|	|	14	|
Total P	"			0.08	
		L	L		L
		Y	Y		Y
Cl^-	"	S	S	12	S
$SO_4^=$	"	I	I	1,636	I
NH_3-N	"	M	M	0.33	M
NO_2+NO_3-N	"	E	E	3.822	E
Al	"	T	T	<0.07	T
		E	E		E
		R	R		R
Cd	"			<0.0004	
Cr	"	D	D	<0.004	D
Cu	"	R	R	0.005	R
Fe	"	Y	Y	5.5	Y
Mn	"			2.07	
		|	|		|
		|	|		|
Ni	"	|	|	0.024	|
Pb	"	|	|	<0.002	|
Zn	"	|	|	0.55	|

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 7 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS AT THE RECLAIMED
ST. DAVID COAL REFUSE PILE SITE SAMPLED ON
NOVEMBER 15, 2005

Constituent	Units	Lysimeter Designation			
		C	D	E	F
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 7 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS AT THE RECLAIMED
ST. DAVID COAL REFUSE PILE SITE SAMPLED ON
NOVEMBER 15, 2005

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

*As calcium carbonate.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 8

FULTON COUNTY LAND RECLAMATION PROJECT ST. DAVID COAL REFUSE PILE SITE DRAINAGE TILE WATER ANALYSIS FOR NOVEMBER 2005

Constituent	Units	Tile Drain D1	Tile Drain D2	Tile Drain D3 11/15
pH		NO	NO	6.8
Total Suspended Solids	mg/L	FLO	FLO	48.0
Total Fe	mg/L	W	W	16.3

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 9

ANALYSIS OF WATER FROM LYSIMETERS AT THE RECLAIMED MORGAN MINE COAL REFUSE PILE SITE SAMPLED ON NOVEMBER 15, 2005

Constituent	Units	Lysimeter Designation 1	2	3
pH		|	|	|
E.C.	mS/m	|	|	|
Acidity*	mg/L	|	|	|
Alkalinity*	"	|	|	|
Total P	"			
		L	L	L
		Y	Y	Y
Cl^-	"	S	S	S
$SO_4^=$	"	I	I	I
NH_3-N	"	M	M	M
NO_2+NO_3-N	"	E	E	E
Al	"	T	T	T
		E	E	E
		R	R	R
Cd	"			
Cr	"	D	D	D
Cu	"	R	R	R
Fe	"	Y	Y	Y
Mn	"			
		|	|	|
		|	|	|
Ni	"	|	|	|
Pb	"	|	|	|
Zn	"	|	|	|

*As calcium carbonate.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 10

ANALYSIS OF WATER FROM LYSIMETERS AT THE RECLAIMED UNITED ELECTRIC COAL REFUSE PILE SITE SAMPLED ON NOVEMBER 15, 2005

Constituent	Units	Lysimeter Designation 1	2	3	4	5
pH		|	|	|	|	7.6
E.C.	mS/m	|	|	|	|	320
Acidity*	mg/L	|	|	|	|	34
Alkalinity*	"	|	|	|	|	329
Total P	"					0.07
		L	L	L	L	
		Y	Y	Y	Y	
Cl^-	"	S	S	S	S	24
$SO_4^=$	"	I	I	I	I	2,081
NH_3-N	"	M	M	M	M	0.03
NO_2+NO_3-N	"	E	E	E	E	0.62
Al	"	T	T	T	T	0.08
		E	E	E	E	
		R	R	R	R	
Cd	"					<0.0004
Cr	"	D	D	D	D	<0.004
Cu	"	R	R	R	R	0.022
Fe	"	Y	Y	Y	Y	0.070
Mn	"					0.160
		|	|	|	|	
		|	|	|	|	
Ni	"	|	|	|	|	0.018
Pb	"	|	|	|	|	<0.002
Zn	"	|	|	|	|	0.172

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 10 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS AT THE RECLAIMED UNITED ELECTRIC COAL REFUSE PILE SITE SAMPLED ON NOVEMBER 15, 2005

Constituent	Units	Lysimeter Designation 6	7	8	9	10
pH		|	7.8	7.4	|	|
E.C.	mS/m	|	300	540	|	|
Acidity*	mg/L	|	16	85	|	|
Alkalinity*	"	|	295	641	|	|
Total P	"		0.15	0.07		
		L			L	L
		Y			Y	Y
Cl^-	"	S	13	94	S	S
$SO_4^=$	"	I	1,823	3,824	I	I
NH_3-N	"	M	0.03	8.47	M	M
NO_2+NO_3-N	"	E	10.2	7.89	E	E
Al	"	T	0.09	<0.07	T	T
		E			E	E
		R			R	R
Cd	"		<0.0004	<0.0004		
Cr	"	D	<0.004	0.004	D	D
Cu	"	R	0.042	0.011	R	R
Fe	"	Y	0.176	6.27	Y	Y
Mn	"		0.182	7.88		
		|			|	|
		|			|	|
Ni	"	|	0.016	0.047	|	|
Pb	"	|	<0.002	<0.002	|	|
Zn	"	|	0.023	0.025	|	|

*As calcium carbonate.