Metropolitan Water Reclamation District of Greater Chicago

MONITORING AND RESEARCH DEPARTMENT

REPORT NO. 09-58

HANOVER PARK WATER RECLAMATION PLANT

FISCHER FARM MONITORING REPORT FOR

SECOND QUARTER 2009

SEPTEMBER 2009

Protecting Our Water Environment

Metropolitan Water Reclamation District of Greater Chicago

100 EAST ERIE STREET CHICAGO, ILLINOIS 60611-3154 312.751.5190

Louis Kollias, P.E., BCEE
Director of Monitoring and Research
louis.kollias@mwrd.org

September 4, 2009

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: Hanover Park Water Reclamation Plant – Illinois Environmental Protection Agency Permit No. 2007-SC- 2951, Monitoring Report for April, May, and June 2009

The attached report includes nine tables of the monitoring results for the Hanover Park Water Reclamation Plant Fischer Farm site for the second quarter of 2009.

Very truly yours,

Louis Kollias
Director
Monitoring and Research

LK:PL:kq
Enclosures
cc: Mr. Jay Patel, Manager, IEPA Region II - Des Plaines
Mr. Valdis Aistars, USEPA Region V
Mr. Ash Sajjad, USEPA Region V

Metropolitan Water Reclamation District of Greater Chicago

100 East Erie Street Chicago, Illinois 60611-2803 312-751-5600

HANOVER PARK WATER RECLAMATION PLANT
FISCHER FARM MONITORING REPORT

SECOND QUARTER 2009

Monitoring and Research
P. Lindo
A. Cox

SEPTEMBER 2009

TABLE OF CONTENTS

FOREWORD

The data and information in this report fulfill the frequency of monitoring and the reporting requirements for the Hanover Park Fischer Farm Site as specified in the Illinois Environmental Protection Agency Permit No. 2007-SC-2951 for the second quarter of 2009.

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENT

The assistance given by Ms. Minaxi Patel, Sanitary Chemist I, of the Environmental Monitoring and Research Division, and Mr. John Chavich, Sanitary Chemist IV, of the John E. Egan Analytical Laboratory Section, is greatly appreciated.

DISCLAIMER

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

HANOVER PARK WATER RECLAMATION PLANT FISCHER FARM REPORT FOR SECOND QUARTER OF 2009

During April, May, and June 2009, activities at the Hanover Park Water Reclamation Plant (WRP) Fischer Farm included well and field drainage water sampling, and flow measurements. These monitoring activities are required by the Illinois Environmental Protection Agency Operating Permit No. 2007-SC-2951. Fields and water monitoring locations are presented in Figure 1.

Water from each of the six monitoring wells was sampled twice monthly in April, May, and June. Analytical data for samples collected during the quarter are presented in Tables 1 through 6.

Drainage water (combined surface and subsurface) returned to the Hanover Park WRP from the farm fields was sampled twice per month in April, May, and June. Analytical data for these samples are presented in Table 7. The volumes of drainage water returned to the WRP during the second quarter were estimated as 11.67, 3.07, 11.52 million gallons in April, May, and June, respectively. The analytical data for the lagoon supernatant applied to Fischer Farm fields during the quarter are presented in Table 8. The volumes and dry weights applied are reported in Table 9.

FIGURE 1: FIELDS AND WELLS AT THE HANOVER PARK FISCHER FARM SITE OF THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

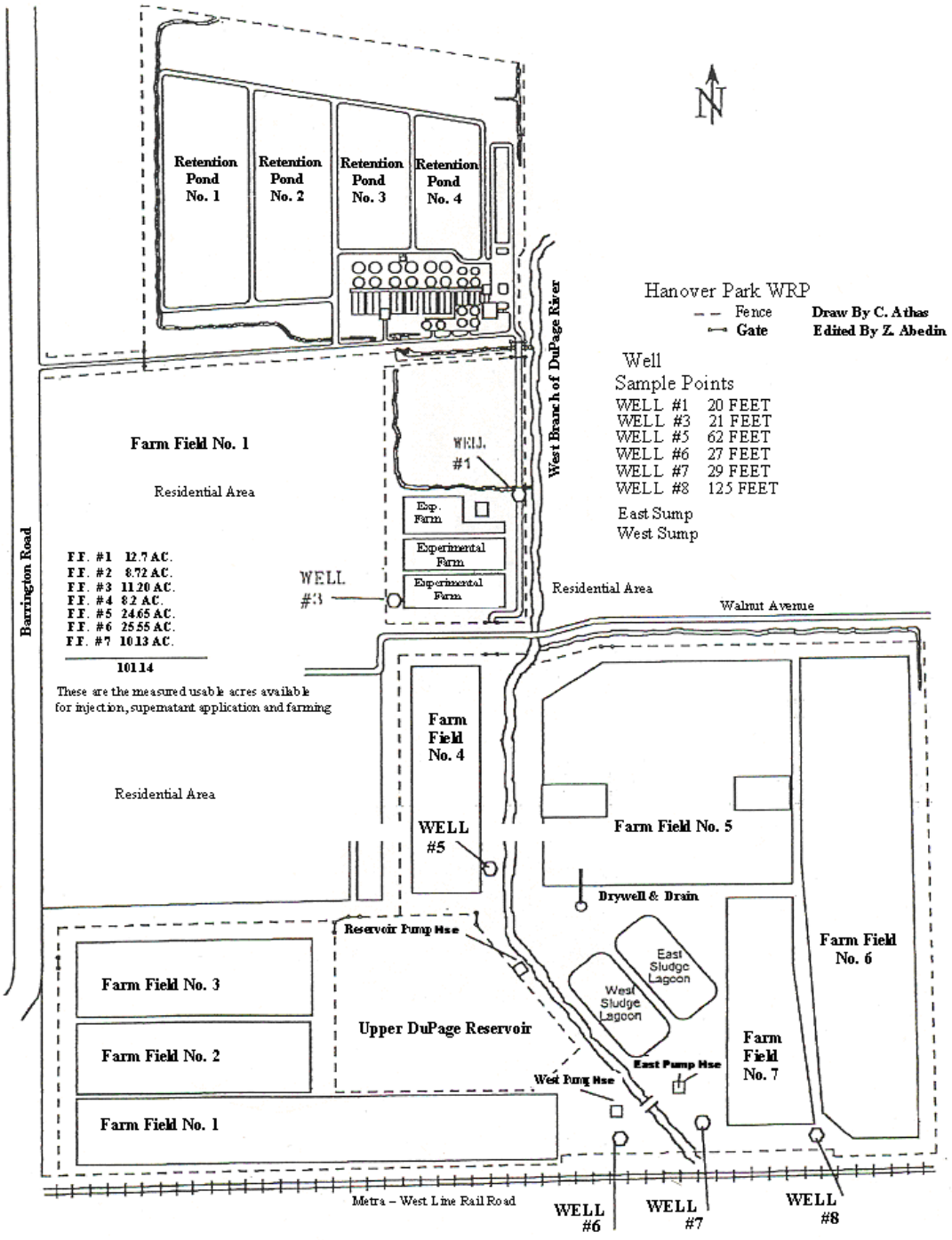

TABLE 1: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON APRIL 14, 2009

Parameter	Unit	Well 1	3	5	6	7	8
pH[1]		|	7.7	7.6	7.5	7.2	8.1
EC	mS/m		92	78	94	132	66
Cl^-	mg/L	W	21	15	47	55	7.0
$SO_4^=$	"	E	162	98	142	250	61
Alkalinity[2]	"	L	347	316	313	425	296
		L					
TKN	"		0.20	0.31	0.37	6.6	0.31
NH_3-N	"	I	<0.03	0.28	0.16	6.6	0.42
$NO_2 + NO_3$-N	"	N	0.03	<0.02	0.03	0.03	0.03
Total P	"	A	<0.02	<0.02	0.12	<0.02	0.10
		C					
Cd	"	C	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Cr	"	E	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	"	S	0.0013	0.0041	0.0041	<0.0005	0.0019
Fe	"	S	0.645	1.61	2.63	4.20	1.63
Mn	"	I	0.0043	0.0164	0.0424	0.0579	0.0540
Ni	"	B	0.0023	0.0025	0.0025	0.0024	0.0025
Zn	"	L	0.0114	0.0030	0.0037	0.0404	0.0038
		E					
Fecal Coliform	MPN		<1	<1	<1	<1	<1

[1]Samples analyzed beyond recommended holding time of 15 minutes.
[2]As $CaCO_3$.
MPN = Most probable number/100 mL.

TABLE 2: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON APRIL 21, 2009

Parameter	Unit	Well 1	Well 3	Well 5	Well 6	Well 7	Well 8
pH[1]		|	7.7	7.7	7.6	7.3	7.9
EC	mS/m		91	78	95	132	68
Cl^-	mg/L	W	20	15	44	56	8.0
$SO_4^=$	"	E	162	98	145	254	67
Alkalinity[2]	"	L	346	328	323	433	304
		L					
TKN	"		0.40	0.35	0.36	6.6	0.25
NH_3-N	"	I	<0.03	0.29	0.21	6.2	0.40
$NO_2 + NO_3$-N	"	N	<0.02	<0.02	<0.02	<0.02	<0.02
Total P	"	A	<0.02	<0.02	0.09	<0.02	0.06
		C					
Cd	"	C	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Cr	"	E	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	"	S	0.0026	0.0287	0.0037	0.0015	0.0048
Fe	"	S	0.571	5.98	3.38	4.68	2.29
Mn	"	I	0.0121	0.0399	0.0519	0.0609	0.0675
Ni	"	B	0.0020	0.0040	0.0034	0.0011	0.0016
Zn	"	L	0.0092	0.0080	0.0051	0.0323	0.0063
		E					
Fecal Coliform	MPN		<1	<1	<1	<1	200

[1]Samples analyzed beyond recommended holding time of 15 minutes.
[2]As $CaCO_3$.
MPN = Most probable number/100 mL.

TABLE 3: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON MAY 12, 2009

Parameter	Unit	Well 1	Well 3	Well 5	Well 6	Well 7	Well 8
pH[1]		|	7.8	7.7	7.5	7.2	8.0
EC	mS/m		89	77	92	133	66
Cl^-	mg/L	W	18	15	35	54	8.0
$SO_4^=$	"	E	146	97	134	249	65
Alkalinity[2]	"	L	350	328	333	451	307
		L					
TKN	"		0.21	0.20	0.14	6.1	0.37
NH_3-N	"	I	<0.03	0.27	0.14	6.1	0.35
$NO_2 + NO_3$-N	"	N	<0.02	<0.02	<0.02	<0.02	<0.02
Total P	"	A	<0.02	<0.02	0.15	0.06	0.05
		C					
Cd	"	C	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Cr	"	E	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	"	S	0.0012	0.0092	0.0023	0.0016	0.0025
Fe	"	S	0.458	2.51	2.67	4.53	1.92
Mn	"	I	0.1215	0.0243	0.0388	0.0608	0.0605
Ni	"	B	0.0016	0.0020	0.0027	0.0022	0.0017
Zn	"	L	0.0086	0.0034	0.0538	0.1372	0.0019
		E					
Fecal Coliform	MPN		<1	<1	<1	<1	<1

[1]Samples analyzed beyond recommended holding time of 15 minutes.
[2]As $CaCO_3$.
MPN = Most probable number/100 mL.

TABLE 4: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON MAY 19, 2009

Parameter	Unit	Well 1	3	5	6	7	8
pH[1]		|	8.1	8.0	7.8	7.6	8.2
EC	mS/m		90	78	90	132	68
Cl^-	mg/L	W	18	15	35	55	8.0
$SO_4^=$	,,	E	148	94	134	246	64
Alkalinity[2]	,,	L	348	306	313	431	301
		L					
TKN	,,		0.31	0.34	0.27	6.3	0.47
NH_3-N	,,	I	<0.03	0.26	0.13	6.0	0.35
$NO_2 + NO_3$-N	,,	N	0.06	0.04	0.03	<0.02	<0.02
Total P	,,	A	<0.02	<0.02	0.10	<0.02	0.05
		C					
Cd	,,	C	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Cr	,,	E	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	,,	S	0.0016	0.0178	0.0024	<0.0005	0.0025
Fe	,,	S	0.447	2.43	2.90	4.60	2.11
Mn	,,	I	0.0407	0.0232	0.0401	0.0596	0.0609
Ni	,,	B	0.0012	0.0039	0.0016	0.0010	<0.0007
Zn	,,	L	0.0071	0.0085	0.0045	0.0356	0.0032
		E					
Fecal Coliform	MPN		<1	<1	<1	<1	<1

[1]Samples analyzed beyond recommended holding time of 15 minutes.
[2]As $CaCO_3$.
MPN = Most probable number/100 mL.

TABLE 5: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON JUNE 2, 2009

Parameter	Unit	Well 1	3	5	6	7	8
pH[1]		|	7.8	7.7	7.6	7.3	8.0
EC	mS/m		91	78	90	137	67
Cl^-	mg/L	W	19	15	32	53	8.0
$SO_4^=$	,,	E	139	94	126	242	63
Alkalinity[2]	,,	L	337	317	322	462	303
		L					
TKN	,,		0.25	0.37	0.22	7.3	0.46
NH_3-N	,,	I	0.07	0.29	0.17	7.0	0.37
$NO_2 + NO_3$-N	,,	N	0.05	<0.02	<0.02	<0.02	<0.02
Total P	,,	A	<0.02	<0.02	0.09	0.03	0.04
		C					
Cd	,,	C	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Cr	,,	E	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	,,	S	0.0026	0.0122	0.0046	0.0009	0.0048
Fe	,,	S	0.434	1.71	2.48	4.73	2.13
Mn	,,	I	0.0127	0.0165	0.0384	0.0618	0.0622
Ni	,,	B	0.0025	<0.0007	0.0020	0.0016	0.0015
Zn	,,	L	0.0088	0.0035	0.0078	0.0477	0.0058
		E					
Fecal Coliform	MPN		<1	<1	<1	<1	<1

[1]Samples analyzed beyond recommended holding time of 15 minutes.
[2]As $CaCO_3$.
MPN = Most probable number/100 mL.

TABLE 6: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON JUNE 16, 2009

Parameter	Unit	Well 1	Well 3	Well 5	Well 6	Well 7	Well 8
pH[1]			7.7	7.6	7.5	7.1	8.0
EC	mS/m		92	79	89	142	67
Cl^-	mg/L		19	15	27	52	7.0
$SO_4^=$	"		145	94	127	245	62
Alkalinity[2]	"		343	340	342	508	315
TKN	"		0.50	0.43	0.25	8.8	0.51
NH_3-N	"		0.21	0.39	0.16	8.3	0.43
$NO_2 + NO_3$-N	"		<0.02	<0.02	<0.02	<0.02	<0.02
Total P	"		<0.02	<0.02	0.06	0.04	<0.02
Cd	"		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Cr	"		<0.002	<0.002	<0.002	<0.002	<0.002
Cu	"		0.0012	0.0127	0.0089	<0.0005	0.0023
Fe	"		1.81	2.58	7.48	4.94	1.96
Mn	"		0.3976	0.0241	0.0716	0.0626	0.0562
Ni	"		0.0036	0.0016	0.0028	0.0030	0.0008
Zn	"		0.0085	0.0046	0.0059	0.0344	0.0050
Fecal Coliform	MPN		<1	<1	<1	<1	<1

[1]Samples analyzed beyond recommended holding time of 15 minutes.
[2]As $CaCO_3$.
MPN = Most probable number/100 mL.

TABLE 7: ANALYSIS OF COMBINED SURFACE AND SUBSURFACE DRAINAGE FROM THE FISCHER FARM SITE RETURNED TO THE HANOVER PARK WATER RECLAMATION PLANT DURING APRIL, MAY, AND JUNE 2009

Date	Sump	NH_3-N	TSS[1]	BOD_5
		..... mg/L		
04/14/09	East	46	21	20
04/14/09	West	33	16	NA
04/21/09	East	4.2	11	9
04/21/09	West	3.7	7	9
05/12/09	East	8.3	9	4
05/12/09	West	0.05	4	<2
05/19/09	East	32	8	9
05/19/09	West	0.9	3	3
06/02/09	East	81	18	19
06/02/09	West	3.7	10	8
06/16/09	East	58	24	26
06/16/09	West	9.5	11	11

[1]Total Suspended Solids.
NA = No analysis.

TABLE 8: ANALYSIS OF LAGOON SUPERNATANT APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING THE APRIL AND MAY 2009

Parameter	Unit	Concentration[1]
pH		8.1
TS	%	0.1
TVS[2]	,,	65.2
TKN	mg/kg	414,637
NH_3-N	,,	426,819
Volatile Acids[3]	,,	9,936
Total P	,,	33,235
As	,,	26
Cd	,,	<0.58
Cr	,,	<2.9
Cu	,,	127
Hg	,,	0.25
Mn	,,	261
Mo	,,	4.3
Ni	,,	28
Pb	,,	5.7
Se	,,	4.7
Zn	,,	136

[1]Values are the means of three samples.
[2]Total volatile solids as a percentage of total solids.
[3]As acetic acid.

TABLE 9: VOLUMES AND DRY WEIGHTS OF LAGOON SUPERNATANT APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING APRIL AND JUNE 2009

Field	Date	Biosolids Type	Volume (Gallons)	Dry Weight (Tons)
2	04/10/09	Supernatant	150,000	0.94
5	04/09/09	,,	230,000	1.25
5	04/23/09	,,	220,000	0.83
5	06/29/09	,,	250,000	1.15
Total			850,000	4.17