

*Protecting Our Water Environment*



***Metropolitan Water Reclamation District of Greater Chicago***

*MONITORING AND RESEARCH  
DEPARTMENT*

***REPORT NO. 16-31***

***HANOVER PARK WATER RECLAMATION PLANT***

***FISCHER FARM MONITORING REPORT FOR***

***SECOND QUARTER 2016***

***August 2016***

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**Metropolitan Water Reclamation District of Greater Chicago**

100 East Erie Street Chicago, Illinois 60611-3154 f: 312.751.5194 312.751.5190

**THOMAS C. GRANATO, Ph.D., BCES**

Director of Monitoring and Research

thomas.granato@mwrdd.org

August 23, 2016

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. 2012-SC-2255, Monitoring Report for April, May, and June 2016

The attached tables contain the monitoring data for the Hanover Park Water Reclamation Plant (WRP) Fischer Farm site for April, May, and June 2016 as required by Illinois Environmental Protection Agency (IEPA) Operating Permit No. 2012-SC-2255. Analytical data for well water samples collected during the quarter are presented in Tables 1 and 2.

Drainage water (combined surface and subsurface) returned to the Hanover Park WRP from the farm fields was sampled in April, May, and June 2016, and data for these samples are presented in Table 3. The volumes of drainage water returned to the WRP during the second quarter were estimated as 3.3, 11, and 5.3 million gallons in April, May, and June, respectively. The analytical data for lagoon supernatant applied to Fischer Farm fields in May and June are presented in Tables 4 and 5. Field and water monitoring locations are presented in Figure 1. The data reported are as follows:

Table 1 Analysis of Water From Monitoring Well W-7 at the Hanover Park Fischer Farm Site Sampled during April, May, and June 2016.

Table 2 Analysis of Water From Monitoring Wells W-3, W-5, W-6, and W-8 at the Hanover Park Fischer Farm Site Sampled on May 17, 2016.

Table 3 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 2016.

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Table 4, Analysis of Lagoon Supernatant Applied to Fields at the Hanover Park Fischer Farm Site During May 2016.

Table 5, Analysis of Lagoon Supernatant Applied to Fields at the Hanover Park Fischer Farm Site During June 2016.

Figure 1 Map of Fields and Wells at the Hanover Park Fischer Farm Site of the Metropolitan Water Reclamation District of Greater Chicago.

Very truly yours,

Thomas C. Granato, Ph.D., BCES  
Director  
Monitoring and Research

TCG:HZ:DB:cm

Attachments

cc/att: Mr. J. Patel, Manager, IEPA – Des Plaines  
Mr. V. Aistars, USEPA, Region 5  
Mr. P. Kuefler, USEPA, Region 5  
Ms. D. Coolidge  
Dr. H. Zhang  
Dr. A. Cox  
Dr. G. Tian  
Dr. D. Brose

TABLE 1: ANALYSIS OF WATER FROM MONITORING WELL W-7 AT THE HANOVER PARK FISCHER FARM SITE SAMPLED DURING APRIL, MAY, AND JUNE 2016

| Parameter                           | Unit               | Date Sampled |         |         |         |        |         |
|-------------------------------------|--------------------|--------------|---------|---------|---------|--------|---------|
|                                     |                    | 4/12/16      | 4/19/16 | 5/17/16 | 5/31/16 | 6/7/16 | 6/28/16 |
| pH <sup>1</sup>                     |                    | 7.2          | 7.2     | 7.2     | 7.4     | 7.3    | 7.2     |
| EC                                  | mS m <sup>-1</sup> | 171          | 152     | 179     | 167     | 159    | 171     |
| Cl <sup>-</sup>                     | mg L <sup>-1</sup> | 54           | 50      | 45      | 48      | 47     | 47      |
| SO <sub>4</sub> <sup>2-</sup>       | "                  | 249          | 244     | 232     | 258     | 256    | 267     |
| Alkalinity as CaCO <sub>3</sub>     | "                  | 743          | 738     | 728     | 716     | 708    | 688     |
| TKN                                 | "                  | 42           | 41      | 45      | 42      | 47     | 52      |
| NH <sub>3</sub> -N                  | "                  | 41           | 40      | 44      | 44      | 45     | 48      |
| NO <sub>2</sub> +NO <sub>3</sub> -N | "                  | <0.15        | <0.15   | <0.15   | <0.15   | <0.15  | <0.15   |
| Total P                             | "                  | 0.45         | 0.48    | 0.49    | 0.46    | 0.59   | 0.47    |
| Cd                                  | "                  | <0.001       | 0.001   | <0.001  | <0.001  | <0.001 | <0.001  |
| Cr                                  | "                  | <0.005       | <0.005  | <0.005  | <0.005  | <0.005 | <0.005  |
| Cu                                  | "                  | <0.005       | <0.005  | <0.005  | <0.005  | <0.005 | <0.005  |
| Fe                                  | "                  | 5.0          | 4.9     | 5.6     | 5.1     | 4.6    | 4.7     |
| Mn                                  | "                  | 0.058        | 0.056   | 0.066   | 0.065   | 0.055  | 0.062   |
| Ni                                  | "                  | <0.005       | <0.005  | <0.005  | <0.005  | <0.005 | <0.005  |
| Zn                                  | "                  | 0.072        | 0.131   | 0.097   | 0.203   | 0.076  | 0.163   |

<sup>1</sup>pH analyzed beyond recommended holding time of 15 minutes.

TABLE 2: ANALYSIS OF WATER FROM MONITORING WELLS W-3, W-5, W-6,  
AND W-8 AT THE HANOVER PARK FISCHER FARM SITE SAMPLED  
ON MAY 17, 2016

| Parameter                           | Unit               | Monitoring Well No. |        |        |        |
|-------------------------------------|--------------------|---------------------|--------|--------|--------|
|                                     |                    | W-3                 | W-5    | W-6    | W-8    |
| pH <sup>1</sup>                     |                    | 7.7                 | 7.7    | 7.6    | 8.0    |
| EC                                  | mS m <sup>-1</sup> | 88                  | 78     | 84     | 64     |
| Cl <sup>-</sup>                     | mg L <sup>-1</sup> | 14                  | 16     | 24     | 8.0    |
| SO <sub>4</sub> <sup>2-</sup>       | "                  | 111                 | 101    | 118    | 72     |
| Alkalinity as CaCO <sub>3</sub>     | "                  | 385                 | 318    | 311    | 293    |
| TKN                                 | "                  | <1.0                | <1.0   | <1.0   | <1.0   |
| NH <sub>3</sub> -N                  | "                  | 0.25                | 0.52   | 0.28   | 0.41   |
| NO <sub>2</sub> +NO <sub>3</sub> -N | "                  | <0.15               | <0.15  | <0.15  | <0.15  |
| Total P                             | "                  | <0.10               | <0.10  | <0.10  | <0.10  |
| Cd                                  | "                  | <0.001              | <0.001 | <0.001 | <0.001 |
| Cr                                  | "                  | <0.005              | <0.005 | <0.005 | <0.005 |
| Cu                                  | "                  | 0.006               | 0.008  | <0.005 | <0.005 |
| Fe                                  | "                  | 3.1                 | 2.5    | 2.3    | 0.925  |
| Mn                                  | "                  | 0.296               | 0.023  | 0.036  | 0.032  |
| Ni                                  | "                  | <0.005              | <0.005 | <0.005 | <0.005 |
| Zn                                  | "                  | 0.034               | <0.010 | <0.010 | <0.010 |

<sup>1</sup>pH analyzed beyond recommended holding time of 15 minutes.

TABLE 3: 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 2016

| Date       | Sump | NH <sub>3</sub> -N             | TSS <sup>1</sup> | BOD <sub>5</sub> |
|------------|------|--------------------------------|------------------|------------------|
|            |      | ----- mg L <sup>-1</sup> ----- |                  |                  |
| 04/12/2016 | East | 3.6                            | 4.0              | <2.0             |
| 04/12/2016 | West | <0.10                          | 5.0              | <2.0             |
| 04/19/2016 | East | 12                             | <4.0             | 4.0              |
| 04/19/2016 | West | 0.18                           | 7.0              | <2.0             |
| 05/17/2016 | East | 5.3                            | 9.0              | 7.0              |
| 05/17/2016 | West | <0.10                          | <4.0             | <2.0             |
| 05/31/2016 | East | 1.6                            | <4.0             | <2.0             |
| 05/31/2016 | West | <0.10                          | <4.0             | <2.0             |
| 06/07/2016 | East | 1.8                            | 8.0              | <2.0             |
| 06/07/2016 | West | <0.10                          | 9.0              | <2.0             |
| 06/28/2016 | East | 2.9                            | <4.0             | <2.0             |
| 06/28/2016 | West | 2.5                            | <4.0             | <2.0             |

<sup>1</sup>Total suspended solids.

TABLE 4: ANALYSIS OF LAGOON SUPERNATANT APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING MAY 2016

| Constituent                        | Unit               | Concentration <sup>1</sup> |
|------------------------------------|--------------------|----------------------------|
| pH                                 |                    | 8.1                        |
| Total Solids                       | %                  | 0.13                       |
| Total Volatile Solids <sup>2</sup> | "                  | 56                         |
| Volatile Acids <sup>3</sup>        | mg L <sup>-1</sup> | 6.0                        |
| TKN                                | "                  | 546                        |
| NH <sub>3</sub> -N                 | "                  | 521                        |
| Total P                            | "                  | 39                         |
| Cd                                 | "                  | <0.001                     |
| Cr                                 | "                  | <0.005                     |
| Cu                                 | "                  | 0.078                      |
| Mn                                 | "                  | 0.252                      |
| Ni                                 | "                  | 0.023                      |
| Pb                                 | "                  | <0.020                     |
| Zn                                 | "                  | 0.086                      |

<sup>1</sup>One sample.

<sup>2</sup>Total volatile solids as a percentage of total solids.

<sup>3</sup>As acetic acid.

TABLE 5: ANALYSIS OF LAGOON SUPERNATANT APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING JUNE 2016

| Constituent                        | Unit               | Concentration <sup>1</sup> |
|------------------------------------|--------------------|----------------------------|
| pH                                 |                    | 8.0                        |
| Total Solids                       | %                  | 0.14                       |
| Total Volatile Solids <sup>2</sup> | "                  | 58                         |
| Volatile Acids <sup>3</sup>        | mg L <sup>-1</sup> | 6.0                        |
| TKN                                | "                  | 620                        |
| NH <sub>3</sub> -N                 | "                  | 520                        |
| Total P                            | "                  | 56                         |
| Cd                                 | "                  | <0.001                     |
| Cr                                 | "                  | <0.005                     |
| Cu                                 | "                  | 0.065                      |
| Mn                                 | "                  | 0.261                      |
| Ni                                 | "                  | 0.024                      |
| Pb                                 | "                  | <0.020                     |
| Zn                                 | "                  | 0.096                      |

<sup>1</sup>Mean of two samples.

<sup>2</sup>Total volatile solids as a percentage of total solids.

<sup>3</sup>As acetic acid.



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

