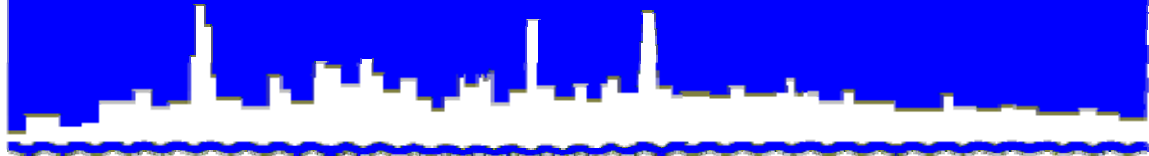


Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 09-41

***TUNNEL AND RESERVOIR PLAN
O'HARE CUP RESERVOIR WATER QUALITY MONITORING WELLS
2008 ANNUAL GROUNDWATER MONITORING REPORT***

JUNE 2009

Metropolitan Water Reclamation District of Greater Chicago

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June 24, 2009

Ms. Marcia Willhite, Chief
Bureau of Water
Illinois Environmental Protection Agency
P. O. Box 19276
Springfield, IL 62794-9276

Dear Ms. Willhite:

Subject: Tunnel and Reservoir Plan, O'Hare Cup Reservoir Water Quality Monitoring Wells, 2008 Annual Groundwater Monitoring Report

Enclosed are three copies of "Tunnel and Reservoir Plan, O'Hare Cup Reservoir Water Quality Monitoring Wells, 2008 Annual Groundwater Monitoring Report."

Very truly yours,

Louis Kollias
Director
Monitoring and Research

LK:HZ:lmf
Enclosure

cc w/enc: Ms. Sally K. Swanson (USEPA Region V—WC15J) (2)
Ms. Linda Sorn (COE) (2)
Mr. Jay Patel (IEPA Region 2—Des Plaines) (2)
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TUNNEL AND RESERVOIR PLAN
O'HARE CUP RESERVOIR WATER QUALITY MONITORING WELLS
2008 ANNUAL GROUNDWATER MONITORING REPORT

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INTRODUCTION

This report contains data for the year 2008 for the four water quality monitoring wells located on the perimeter of the O'Hare CUP Reservoir (Figure 1). The four water quality monitoring wells are QK-1, QK-2, QK-3, and QK-4. Well QK-1 is located on the northwest side, QK-2 on the northeast side, QK-3 on the southeast side, and QK-4 on the southwest side of the reservoir. Also shown in Figure 1 are locations of the nine private water supply wells within 1,000 feet of the reservoir. Please note that originally there were ten private water supply wells, but one was abandoned as of January 25, 1996, leaving only nine private water supply wells.

The Water Pollution Control Permit No. 1996-AB-3401 dated July 9, 1996, issued by the Illinois Environmental Protection Agency (IEPA) to construct and/or operate the O'Hare CUP Reservoir is subject to the following three special conditions:

Special Condition 1: If this project is located within a wetlands, the U. S. Army Corps of Engineers (COE) may require a permit for construction pursuant to Section 404 of the Clean Water Act.

Special Condition 2: The operational portion of this permit shall not become effective until the Permittee has received IEPA approval of a groundwater monitoring program for this site.

Special Condition 3: The operating reports associated with the groundwater monitoring program shall be submitted quarterly to the IEPA's Maywood Regional Office and Springfield Permit Section.

The groundwater monitoring plan for the O'Hare CUP Reservoir as summarized in the IEPA letter dated October 14, 1997, to Mr. Joseph D. Jacobazzi of the COE, Chicago District is as follows:

1. The establishment of existing background concentrations at the site by sampling the four (4) monitoring wells a minimum of six times over the period of 12 months. Parameters to be sampled will be all of the Class I Standards parameters, with the exception of radioactive compounds, and the Tunnel and Reservoir Plan (TARP) indicator parameters.
2. The establishment of existing background concentrations for the inorganic Class I Standards parameters and TARP indicator parameters for the ten private wells within 1,000 feet of the reservoir with a minimum of three sampling events.
3. After the establishment of existing background concentrations, the four monitoring wells at the site shall be sampled quarterly for the TARP indicator parameters. The results will be submitted to the IEPA in accordance with Special Condition 3 of Permit No. 1996-AB-3401.

4. Groundwater sampling of the TARP indicator parameters for event-based monitoring shall be conducted on a weekly basis following an event in which the reservoir is used to store combined sewage overflow from the TARP system. The weekly sampling frequency will continue until all sampling results indicate concentrations below the 95 percent confidence level established for the background concentrations. Event-based monitoring requirements will continue weekly for at least six weeks after the event.

Until existing background confidence limits are established at each monitoring well, the event-based monitoring requirements will continue on a weekly basis for at least six weeks after the event. All samples from the monitoring wells will be compared to the Class I Standards until the 95 percent confidence levels have been determined for each parameter at each well. If the sampling reveals that the water quality has been impacted, sampling should continue on a weekly basis until there is no indication of groundwater being impacted.

5. A preventive response will be required if any of the detected contaminants exceed the levels specified in the Standards, Subsection 620.310(a)(3). The COE and Metropolitan Water Reclamation District of Greater Chicago (District) have the option to demonstrate that the O'Hare CUP Reservoir is not the source of contamination.
6. In the event that a Class I Standard is exceeded due to the storage of combined sewage in the reservoir, a groundwater management zone may be required.

Unless the concentrations which exceed Class I Standards are due to natural causes, the COE and/or District will be responsible for the remediation of groundwater contamination on site.

7. In the event that any of the Class I Standards are exceeded in any potable water supply well as a result of leakage from the O'Hare CUP Reservoir, an alternate water supply shall be supplied with either the COE or District bearing all costs as associated with providing the alternate water supply.

Out of the seven above items summarizing the groundwater monitoring plan for the O'Hare CUP Reservoir, the requirements under items 3 and 4 are to be fulfilled by the District. The remainder of the requirements set forth under items 1, 2, 5, 6, and 7 are to be fulfilled by the COE.

According to item 3 referred to above, the four water quality monitoring wells located on the perimeter of the O'Hare CUP Reservoir are to be sampled quarterly for the TARP water quality indicator parameters. The ten TARP water quality parameters to be analyzed are: chloride (Cl), fecal coliform (FC), sulfate (SO₄), ammonia nitrogen (NH₃-N), total organic carbon (TOC), total dissolved solids (TDS), hardness (Hard.), conductivity (Cond.), pH, and temperature (Temp.).

According to item 4, the sampling of the O'Hare CUP Reservoir water quality monitoring wells for the TARP indicator parameters for fill-event based monitoring shall be conducted on a weekly basis following a fill event in which the reservoir is used to store combined sewage overflow from the TARP system. The weekly sampling will continue for at least six weeks. The same ten TARP water quality parameters are to be analyzed for each weekly sample.

This report fulfills the requirements, as set forth under items 3 and 4 referred to above, which are to be completed by the District. In 2008, all four water quality monitoring wells were monitored quarterly as required under item 3 and weekly after each fill event of the six fill events experienced in 2008 as required under item 4.

MONITORING DATA

Quarterly Monitoring

Table 1 contains the 2008 data for ten TARP water quality indicator parameters obtained from samples collected on a quarterly basis from the four (QK-1, QK-2, QK-3, and QK-4) water quality monitoring wells located on the perimeter of the O'Hare CUP Reservoir. Water quality monitoring well QK-1 could not be sampled on July 21, 2008, because there was insufficient water in the well to collect a sample. Water quality monitoring wells QK-2 and QK-3 could not be sampled on April 9, 2008, because there was insufficient water in the wells to collect a sample. Water quality monitoring well QK-4 was sampled as required.

Table 2 contains summary statistics of the water quality parameters for the year 2008 quarterly samples for all four wells QK-1 through QK-4. The summary statistics include minimum, mean, maximum, standard deviation (Std. Dev.), median, and coefficient of variation (Coeff. Var.) for the values of the TARP water quality indicator parameters analyzed during 2008, except for FC. Geometric mean was calculated for FC, along with minimum, maximum, and median. Median values were calculated using the Microsoft[®] Excel function MEDIAN. In instances where an even number of samples were collected and analyzed, the reported median is the average of the two numbers in the middle of the series.

Fill Event Monitoring

The O'Hare CUP Reservoir experienced six fill events during 2008. They occurred on February 17, 2008, March 3, 2008, July 20, 2008, September 4, 2008, September 13-15, 2008, and December 29, 2008. Sampling of these events was conducted weekly according to item 4 requirements as described on page 2. According to this requirement, sampling of the TARP indicator parameters for fill event-based monitoring should be conducted on a weekly basis following a fill event for at least six weeks or until all sampling results indicated concentrations below the 95 percent confidence level for background concentration. If two fill events occurred within six weeks, the monitoring results were grouped together. Therefore, the monitoring data for the six fill events experienced in 2008 were compiled into four groups, which are presented in the following paragraphs.

February 17, 2008, and March 3, 2008, Fill Events. Table 3 contains water quality data for water quality monitoring wells QK-1 through QK-4 for the post fill event of February 17, 2008, and March 3, 2008. Sampling covered the period of February 19, 2008, through April 9, 2008.

All wells were sampled as required with the following exceptions. Water quality well QK-1 could not be sampled on February 19, 2008, February 27, 2008, March 12, 2008, March 19, 2008, or March 26, 2008, because there was insufficient water in the well to collect a sample. Water quality well QK-2 could not be sampled on February 19, 2008, February 27, 2008, March

12, 2008, March 26, 2008, or April 9, 2008, because there was insufficient water in the well to collect a sample. Water quality well QK-3 could not be sampled on February 19, 2008, February 27, 2008, March 31, 2008, or April 9, 2008, because there was insufficient water in the well to collect a sample. Water quality well QK-4 could not be sampled on February 19, 2008, because there was insufficient water in the well to collect a sample.

July 20, 2008, Fill Event. Table 4 contains water quality data for water quality monitoring wells QK-1 through QK-4 for the post fill event of July 20, 2008. Sampling covered the period of July 21, 2008, through August 27, 2008.

All wells were sampled as required with the following exceptions. Water quality monitoring well QK-1 could not be sampled on July 21, 2008, July 30, 2008, or August 20, 2008, because there was insufficient water in the well to collect a sample. Water quality monitoring well QK-2 could not be sampled on July 30, 2008, or August 20, 2008, because the access to the well was blocked, nor on August 13, 2008, or August 27, 2008, because there was insufficient water in the well to collect a sample. All samples were collected from water quality monitoring well QK-3 as scheduled. Water quality monitoring well QK-4 could not be sampled on August 20, 2008, because there was insufficient water in the well to collect a sample.

September 4, 2008, and September 13-15, 2008, Fill Events. Table 5 contains water quality data for water quality monitoring wells QK-1 through QK-4 for the post fill event of September 4, 2008, and September 13-15, 2008. Sampling covered the period of September 5, 2008, through October 8, 2008.

All wells were sampled as required with the following exceptions. Water quality monitoring well QK-1 could not be sampled on September 10, 2008, September 24, 2008, September 29, 2008, or October 8, 2008, because there was insufficient water in the well to collect a sample. Water quality monitoring well QK-2 could not be sampled on September 5, 2008, or September 10, 2008, because there was insufficient water in the well to collect a sample. All samples were collected from water quality monitoring wells QK-3 and QK-4 as scheduled.

December 29, 2008, Fill Event. Table 6 contains water quality data for water quality monitoring wells QK-1 through QK-4 for the post fill event of December 29, 2008. Sampling covered the period of December 30, 2008 through February 4, 2009.

All four water quality monitoring wells were sampled as required with the following exceptions. On January 7, 2009 water quality monitoring wells QK-1, QK-2, and QK-3 could not be sampled because there was insufficient water in each well to collect a sample. On January 14, 2009, January 22, 2009, January 28, 2009, and February 4, 2009, heavy snows blocked access to water quality monitoring wells QT-1, QT-2, QT-3, and QT-4 and no samples could be collected.

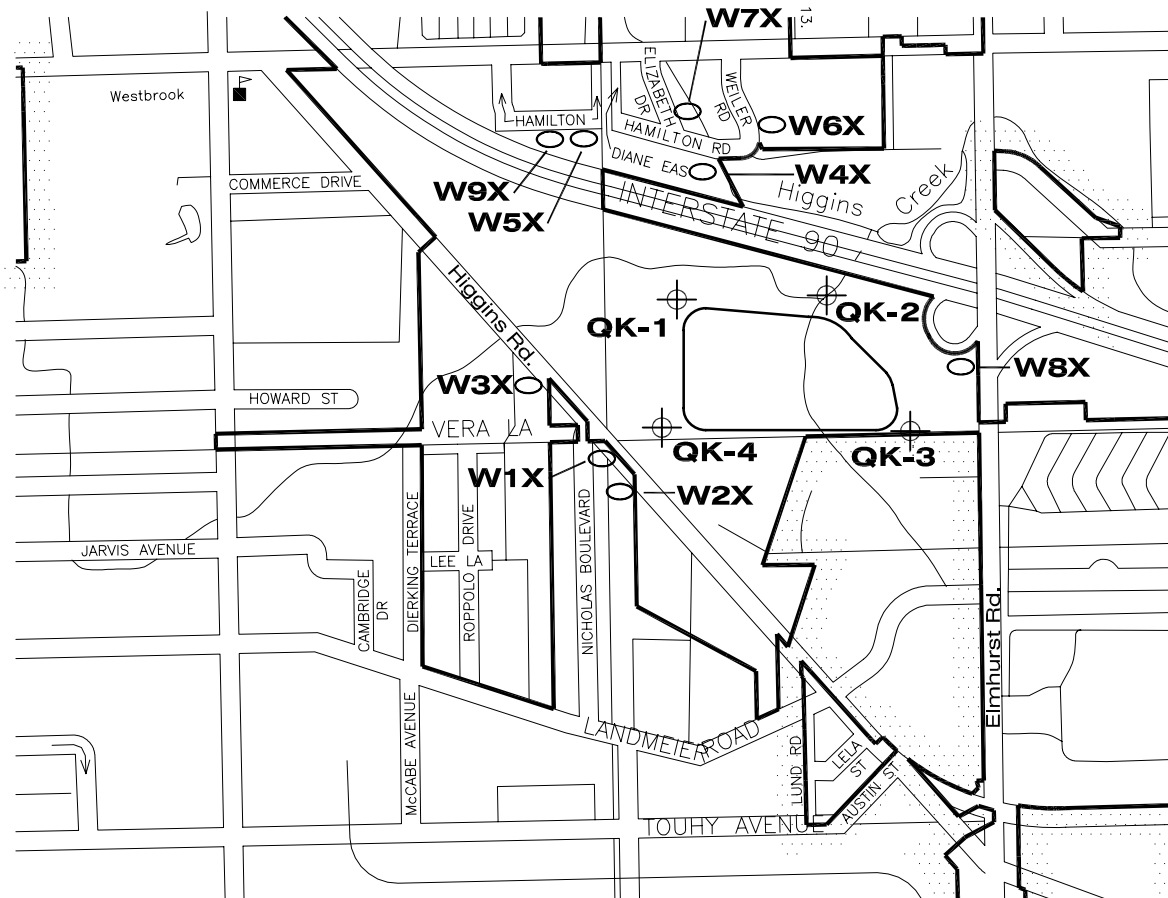


FIGURE 1

**LOCATION OF FOUR WATER QUALITY MONITORING WELLS
AND NINE PRIVATE WELLS**

METROPOLITAN WATER RECLAMATION
DISTRICT OF GREATER CHICAGO

TABLE 1: 2008 GROUNDWATER QUALITY DATA FOR O'HARE CUP RESERVOIR
WATER QUALITY MONITORING WELLS QK-1 THROUGH QK-4

Well	Date of Sampling	Cl ¹ mg/L	FC ^{1,2} cfu/100 mL	SO ₄ ¹ mg/L	NH ₃ -N ¹ mg/L	TOC mg/L	TDS ¹ mg/L	Hard. mg/L	Cond. ² µmhos/cm	pH ² unit	Temp. °C
QK-1	3/4/08	42	5,500	443	0.13	<1.0	996	558	502	7.5	12
QK-1	4/9/08	20	13	542	0.03	<1.0	1,128	644	902	7.6	11
QK-1	7/21/08				Well could not be sampled						
QK-1	12/30/08	311	20,000	186	0.43	1.2	1,100	390	816	7.0	11
QK-2	3/4/08	<10	<1	510	0.03	<1.0	910	434	610	7.6	12
QK-2	4/9/08				Well could not be sampled						
QK-2	7/21/08	<10	<1	517	0.11	<1.0	970	485	572	7.8	13
QK-2	12/30/08	<10	<10	512	0.23	<1.0	990	475	615	7.4	11
QK-3	3/4/08	41	100	329	0.15	<1.0	794	410	504	7.7	12
QK-3	4/9/08				Well could not be sampled						
QK-3	7/21/08	35	9	298	0.32	<1.0	806	430	392	7.8	12
QK-3	12/30/08	233	170	374	<0.02	1.2	1,306	660	692	7.6	10
QK-4	3/4/08	62	14	302	0.44	<1.0	866	486	602	7.6	12
QK-4	4/9/08	55	<1	311	0.50	<1.0	868	501	808	7.5	11
QK-4	7/21/08	57	<1	309	0.59	<1.0	890	499	592	8.0	13
QK-4	12/30/08	168	2,100	252	0.60	<1.0	1,468	455	664	7.7	11

¹The method detection limit (MDL) or limit of quantification (LOQ) is 10 mg/L for Cl (LOQ), 2.0 mg/L for SO₄ (LOQ), 0.02 mg/L for NH₃-N (MDL), 1.0 mg/L for TOC (LOQ), and 40 mg/L for TDS (LOQ). The detection limit for the FC analysis using the membrane filter method varies based on the actual sample volume analyzed.

²Unfiltered samples, all others were filtered through 0.45 µm membrane.

TABLE 2: SUMMARY STATISTICS OF THE 2008 QUARTERLY SAMPLING DATA FOR O'HARE CUP RESERVOIR WATER QUALITY MONITORING WELLS QK-1 THROUGH QK-4

Parameter ¹		Well Number			
		QK-1	QK-2	QK-3	QK-4
Cl mg/L	Minimum	20	10	35	55
	Mean	124	10	103	86
	Maximum	311	10	233	168
	Std. Dev.	162	0	113	55
	Median	42	10	41	60
	Coeff. Var. (%)	130	0	109	64
FC cfu/100 mL	Minimum	13	1	9	1
	Geo. Mean	1,127	2	53	13
	Maximum	20,000	10	170	2,100
	Median	5,500	1	100	8
SO ₄ mg/L	Minimum	186	510	298	252
	Mean	390	513	334	293
	Maximum	542	517	374	311
	Std. Dev.	184	4	38	28
	Median	443	512	329	305
	Coeff. Var. (%)	47	1	11	9
NH ₃ -N mg/L	Minimum	0.03	0.03	0.02	0.44
	Mean	0.20	0.12	0.16	0.53
	Maximum	0.43	0.23	0.32	0.60
	Std. Dev.	0.21	0.10	0.15	0.08
	Median	0.13	0.11	0.15	0.55
	Coeff. Var. (%)	105.85	81.62	92.11	14.33
TOC mg/L	Minimum	1.0	1.0	1.0	1.0
	Mean	1.1	1.0	1.1	1.0
	Maximum	1.2	1.0	1.2	1.0
	Std. Dev.	0.1	0.0	0.1	0.0
	Median	1.0	1.0	1.0	1.0
	Coeff. Var. (%)	10.8	0.0	10.8	0.0

TABLE 2 (Continued): SUMMARY STATISTICS OF THE 2008 QUARTERLY SAMPLING DATA FOR O'HARE CUP RESERVOIR WATER QUALITY MONITORING WELLS QK-1 THROUGH QK-4

Parameter ¹	Well Number				
	QK-1	QK-2	QK-3	QK-4	
TDS mg/L	Minimum	996	910	794	866
	Mean	1,075	957	969	1,023
	Maximum	1,128	990	1,306	1,468
	Std. Dev.	70	42	292	297
	Median	1,100	970	806	879
	Coeff. Var. (%)	6	4	30	29
Hard. mg/L	Minimum	390	434	410	455
	Mean	531	465	500	485
	Maximum	644	485	660	501
	Std. Dev.	129	27	139	21
	Median	558	475	430	493
	Coeff. Var. (%)	24	6	28	4
Cond. µmhos/cm	Minimum	502	572	392	592
	Mean	740	599	529	667
	Maximum	902	615	692	808
	Std. Dev.	211	24	152	100
	Median	816	610	504	633
	Coeff. Var. (%)	28	4	29	15
pH unit	Minimum	7.00	7.40	7.60	7.50
	Mean	7.37	7.60	7.70	7.70
	Maximum	7.60	7.80	7.80	8.00
	Std. Dev.	0.32	0.20	0.10	0.22
	Median	7.50	7.60	7.70	7.65
	Coeff. Var. (%)	4.36	2.63	1.30	2.81

¹For purposes of statistical evaluation, any value less than the appropriate method detection limit (MDL) or limit of quantification (LOQ) was set equal to the value of the MDL or LOQ.

TABLE 3: 2008 GROUNDWATER QUALITY DATA FOR O'HARE CUP RESERVOIR
WATER QUALITY MONITORING WELLS QK-1 THROUGH QK-4
FEBRUARY 17, 2008, AND MARCH 3, 2008, FILL EVENTS

Well	Date of Sampling	Cl ¹ mg/L	FC ^{1,2} cfu/100 mL	SO ₄ ¹ mg/L	NH ₃ -N ¹ mg/L	TOC mg/L	TDS ¹ mg/L	Hard. mg/L	Cond. ² µmhos/cm	pH ² unit	Temp. °C
QK-1	2/19/08										
QK-1	2/27/08										
QK-1	3/4/08	42	5,500	443	0.13	<1.0	996	558	502	7.5	12
QK-1	3/12/08										
QK-1	3/19/08										
QK-1	3/26/08										
QK-1	3/31/08	22	45	563	0.02	<1.0	1,130	668	1,049	7.3	11
QK-1	4/9/08	20	13	542	0.03	<1.0	1,128	644	902	7.6	11
QK-2	2/19/08										
QK-2	2/27/08										
QK-2	3/4/08	<10	<1	510	0.03	<1.0	910	434	610	7.6	12
QK-2	3/12/08										
QK-2	3/19/08	<10	<1	487	0.03	<1.0	952	471	854	8.1	11
QK-2	3/26/08										
QK-2	3/31/08	<10	1	519	<0.02	<1.0	836	473	851	7.8	11
QK-2	4/9/08										
QK-3	2/19/08										
QK-3	2/27/08										
QK-3	3/4/08	41	100	329	0.15	<1.0	794	410	504	7.7	12
QK-3	3/12/08	17	150	391	0.34	<1.0	804	409	476	7.6	11
QK-3	3/19/08	18	13	402	0.36	<1.0	824	433	800	7.2	11
QK-3	3/26/08	16	4	331	0.34	<1.0	860	425	803	7.5	11

TABLE 3 (Continued): 2008 GROUNDWATER QUALITY DATA FOR O'HARE CUP RESERVOIR
WATER QUALITY MONITORING WELLS QK-1 THROUGH QK-4
FEBRUARY 17, 2008, AND MARCH 3, 2008, FILL EVENTS

Well	Date of Sampling	Cl ¹ mg/L	FC ^{1,2} cfu/100 mL	SO ₄ ¹ mg/L	NH ₃ -N ¹ mg/L	TOC mg/L	TDS ¹ mg/L	Hard. mg/L	Cond. ² µmhos/cm	pH ² unit	Temp. °C
QK-3	3/31/08										
QK-3	4/9/08										
QK-4	2/19/08										
QK-4	2/27/08	44	<1	337	0.61	<1.0	802	534	946	7.4	11
QK-4	3/4/08	62	14	302	0.44	<1.0	866	486	602	7.6	12
QK-4	3/12/08	58	<1	306	0.45	<1.0	890	538	471	7.7	12
QK-4	3/19/08	46	<1	338	0.36	<1.0	956	554	945	7.2	11
QK-4	3/26/08	45	<1	416	0.42	<1.0	932	551	945	7.3	11
QK-4	3/31/08	46	1	348	0.44	<1.0	932	566	914	7.0	11
QK-4	4/9/08	55	<1	311	0.50	<1.0	868	501	808	7.5	11

¹The method detection limit (MDL) or limit of quantification (LOQ) is 10 mg/L for Cl (LOQ), 2.0 mg/L for SO₄ (LOQ), 0.02 mg/L for NH₃-N (MDL), 1.0 mg/L for TOC (LOQ), and 40 mg/L for TDS (LOQ). The detection limit for the FC analysis using the membrane filter method varies based on the actual sample volume analyzed.

²Unfiltered samples, all others were filtered through 0.45 µm membrane.

TABLE 4: 2008 GROUNDWATER QUALITY DATA FOR O'HARE CUP RESERVOIR
WATER QUALITY MONITORING WELLS QK-1 THROUGH QK-4
JULY 20, 2008, FILL EVENT

Well	Date of Sampling	Cl ¹ mg/L	FC ^{1,2} cfu/100 mL	SO ₄ ¹ mg/L	NH ₃ -N ¹ mg/L	TOC mg/L	TDS ¹ mg/L	Hard. mg/L	Cond. ² µmhos/cm	pH ² unit	Temp. °C
QK-1	7/21/08										
QK-1	7/30/08										
QK-1	8/6/08	16	<1	542	0.04	<1.0	1,192	667	150	7.6	15
QK-1	8/13/08	21	3	545	0.03	<1.0	1,076	598	702	7.4	13
QK-1	8/20/08										
QK-1	8/27/08	17	<1	551	0.04	<1.0	1,202	622	1,167	7.6	14
12 QK-2	7/21/08	<10	<1	517	0.11	<1.0	970	485	572	7.8	13
QK-2	7/30/08										
QK-2	8/6/08	<10	<1	509	0.07	<1.0	952	495	1,233	7.5	15
QK-2	8/13/08										
QK-2	8/20/08										
QK-2	8/27/08										
QK-3	7/21/08	35	9	298	0.32	<1.0	806	430	391	7.8	12
QK-3	7/30/08	35	43	256	0.35	<1.0	710	416	598	7.7	14
QK-3	8/6/08	36	5	261	0.46	<1.0	710	417	1,091	7.6	13
QK-3	8/13/08	36	13	259	0.49	<1.0	726	404	576	7.4	13
QK-3	8/20/08	35	<1	229	0.51	<1.0	728	410	520	7.2	14
QK-3	8/27/08	34	<1	272	0.25	<1.0	864	417	856	7.3	14
QK-4	7/21/08	57	<1	309	0.59	<1.0	890	499	592	8.0	13
QK-4	7/30/08	54	<1	334	0.38	<1.0	842	507	581	7.7	14
QK-4	8/6/08	45	<1	327	0.29	<1.0	924	521	1,330	7.8	13

TABLE 4 (Continued): 2008 GROUNDWATER QUALITY DATA FOR O'HARE CUP RESERVOIR
WATER QUALITY MONITORING WELLS QK-1 THROUGH QK-4
JULY 20, 2008, FILL EVENT

Well	Date of Sampling	Cl ¹ mg/L	FC ^{1,2} cfu/100 mL	SO ₄ ¹ mg/L	NH ₃ -N ¹ mg/L	TOC mg/L	TDS ¹ mg/L	Hard. mg/L	Cond. ² µmhos/cm	pH ² unit	Temp. °C
QK-4	8/13/08	44	<1	315	0.34	<1.0	894	519	556	7.6	12
QK-4	8/20/08				Well could not be sampled						
QK-4	8/27/08	35	<1	338	0.29	<1.0	1,062	538	1,041	7.4	13

¹The method detection limit (MDL) or limit of quantification (LOQ) is 10 mg/L for Cl (LOQ), 2.0 mg/L for SO₄ (LOQ), 0.02 mg/L for NH₃-N (MDL), 1.0 mg/L for TOC (LOQ), and 40 mg/L for TDS (LOQ). The detection limit for the FC analysis using the membrane filter method varies based on the actual sample volume analyzed.

²Unfiltered samples, all others were filtered through 0.45 µm membrane.

TABLE 5: 2008 GROUNDWATER QUALITY DATA FOR O'HARE CUP RESERVOIR
WATER QUALITY MONITORING WELLS QK-1 THROUGH QK-4
SEPTEMBER 4, 2008, AND SEPTEMBER 13-15, 2008, FILL EVENTS

Well	Date of Sampling	Cl ¹ mg/L	FC ^{1,2} cfu/100 mL	SO ₄ ¹ mg/L	NH ₃ -N ¹ mg/L	TOC mg/L	TDS ¹ mg/L	Hard. mg/L	Cond. ² µmhos/cm	pH ² unit	Temp. °C
QK-1	9/5/08	28	<1	495	0.07	<1.0	1,024	594	970	7.5	13
QK-1	9/10/08				Well could not be sampled						
QK-1	9/15/08	30	>60,000	128	0.18	1.1	520	251	512	7.7	12
QK-1	9/24/08				Well could not be sampled						
QK-1	9/29/08				Well could not be sampled						
QK-1	10/8/08				Well could not be sampled						
14 QK-2	9/5/08				Well could not be sampled						
QK-2	9/10/08				Well could not be sampled						
QK-2	9/15/08	<10	9	565	0.17	<1.0	1,026	509	830	7.4	13
QK-2	9/24/08	<10	<1	574	<0.02	<1.0	1,204	599	633	7.9	13
QK-2	9/29/08	<10	<1	628	0.06	<1.0	1,158	620	1,500	7.7	13
QK-2	10/8/08	<10	18	636	0.02	<1.0	1,164	545	1,466	7.9	12
QK-3	9/5/08	36	31	251	0.45	<1.0	728	416	678	7.6	12
QK-3	9/10/08	35	22	265	0.19	<1.0	770	392	1,087	7.9	13
QK-3	9/15/08	72	760	340	0.02	<1.0	1,046	554	728	7.6	13
QK-3	9/24/08	42	950	323	0.35	<1.0	876	472	638	8.0	13
QK-3	9/29/08	37	57	276	0.44	<1.0	742	412	1,117	7.0	12
QK-3	10/8/08	38	34	262	0.46	<1.0	758	388	1,040	7.6	12
QK-4	9/5/08	45	<1	330	0.43	<1.0	888	546	855	7.4	12
QK-4	9/10/08	56	<1	276	0.42	<1.0	904	494	939	7.2	13
QK-4	9/15/08	61	6,000	212	0.49	<1.0	820	406	795	7.5	12

TABLE 5 (Continued): 2008 GROUNDWATER QUALITY DATA FOR O'HARE CUP RESERVOIR
WATER QUALITY MONITORING WELLS QK-1 THROUGH QK-4
SEPTEMBER 4, 2008, AND SEPTEMBER 13-15, 2008, FILL EVENTS

Well	Date of Sampling	Cl ¹ mg/L	FC ^{1,2} cfu/100 mL	SO ₄ ¹ mg/L	NH ₃ -N ¹ mg/L	TOC mg/L	TDS ¹ mg/L	Hard. mg/L	Cond. ² µmhos/cm	pH ² unit	Temp. °C
QK-4	9/24/08	48	540	293	0.18	<1.0	842	466	466	8.2	12
QK-4	9/29/08	34	500	350	0.36	<1.0	930	504	1,300	7.4	12
QK-4	10/8/08	34	200	417	0.43	<1.0	1,028	583	1,388	7.5	12

¹The method detection limit (MDL) or limit of quantification (LOQ) is 10 mg/L for Cl (LOQ), 2.0 mg/L for SO₄ (LOQ), 0.02 mg/L for NH₃-N (MDL), 1.0 mg/L for TOC (LOQ), and 40 mg/L for TDS (LOQ). The detection limit for the FC analysis using the membrane filter method varies based on the actual sample volume analyzed.

²Unfiltered samples, all others were filtered through 0.45 µm membrane.

TABLE 6: 2008 GROUNDWATER QUALITY DATA FOR O'HARE CUP RESERVOIR
WATER QUALITY MONITORING WELLS QK-1 THROUGH QK-4
DECEMBER 29, 2008, FILL EVENT

Well	Date of Sampling	Cl ¹ mg/L	FC ^{1,2} cfu/100 mL	SO ₄ ¹ mg/L	NH ₃ -N ¹ mg/L	TOC mg/L	TDS ¹ mg/L	Hard. mg/L	Cond. ² µmhos/cm	pH ² unit	Temp. °C
QK-1	12/30/08	311	20,000	186	0.43	1.2	1,100	390	816	7.0	11
QK-1	1/7/09				Well could not be sampled						
QK-1	1/14/09				Well could not be sampled						
QK-1	1/22/09				Well could not be sampled						
QK-1	1/28/09				Well could not be sampled						
QK-1	2/4/09				Well could not be sampled						
QK-2	12/30/08	<10	<10	512	0.23	<1.0	990	475	615	7.4	11
QK-2	1/7/09				Well could not be sampled						
QK-2	1/14/09				Well could not be sampled						
QK-2	1/22/09				Well could not be sampled						
QK-2	1/28/09				Well could not be sampled						
QK-2	2/4/09				Well could not be sampled						
QK-3	12/30/08	233	170	374	<0.02	1.2	1,306	660	692	7.6	10
QK-3	1/7/09				Well could not be sampled						
QK-3	1/14/09				Well could not be sampled						
QK-3	1/22/09				Well could not be sampled						
QK-3	1/28/09				Well could not be sampled						
QK-3	2/4/09				Well could not be sampled						
QK-4	12/30/08	168	2,100	252	0.60	<1.0	1,468	455	664	7.7	11
QK-4	1/7/09	61	5,000	346	0.65	1	934	517	506	7.8	10
QK-4	1/14/09				Well could not be sampled						

TABLE 6 (Continued): 2008 GROUNDWATER QUALITY DATA FOR O'HARE CUP RESERVOIR
WATER QUALITY MONITORING WELLS QK-1 THROUGH QK-4
DECEMBER 29, 2008, FILL EVENT

Well	Date of Sampling	Cl ¹ mg/L	FC ^{1,2} cfu/100 mL	SO ₄ ¹ mg/L	NH ₃ -N ¹ mg/L	TOC mg/L	TDS ¹ mg/L	Hard. mg/L	Cond. ² µmhos/cm	pH ² unit	Temp. °C
QK-4	1/22/09										Well could not be sampled
QK-4	1/28/09										Well could not be sampled
QK-4	2/4/09										Well could not be sampled

¹The method detection limit (MDL) or limit of quantification (LOQ) is 10 mg/L for Cl (LOQ), 2.0 mg/L for SO₄ (LOQ), 0.02 mg/L for NH₃-N (MDL), 1.0 mg/L for TOC (LOQ), and 40 mg/L for TDS (LOQ). The detection limit for the FC analysis using the membrane filter method varies based on the actual sample volume analyzed.

²Unfiltered samples, all others were filtered through 0.45 µm membrane.