

*Protecting Our Water Environment*



*Metropolitan Water Reclamation District of Greater Chicago*

***MONITORING AND RESEARCH  
DEPARTMENT***

***REPORT NO. 12-26***

***TUNNEL AND RESERVOIR PLAN***

***GLORIA ALITTO MAJEWSKI***

***CHICAGOLAND UNDERFLOW PLAN RESERVOIR***

***WATER QUALITY MONITORING WELLS***

***2011 ANNUAL GROUNDWATER MONITORING REPORT***

***July 2012***

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July 11, 2012

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, Gloria Alitto Majewski Chicagoland Underflow Plan Reservoir Water Quality Monitoring Wells, 2011 Annual Groundwater Monitoring Report

Enclosed are three copies of "Tunnel and Reservoir Plan, Gloria Alitto Majewski Chicagoland Underflow Plan Reservoir Water Quality Monitoring Wells, 2011 Annual Groundwater Monitoring Report."

Very truly yours,

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

TCG:DGM:lf

Enclosure

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TUNNEL AND RESERVOIR PLAN  
GLORIA ALITTO MAJEWSKI  
CHICAGOLAND UNDERFLOW PLAN RESERVOIR  
WATER QUALITY MONITORING WELLS  
2011 ANNUAL GROUNDWATER MONITORING REPORT

## TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES	ii
LIST OF FIGURES	ii
INTRODUCTION	1
MONITORING DATA	4
Quarterly Monitoring	4
Fill Event Monitoring	4
May 26, 2011, and May 28, 2011, Fill Events	4
July 23, 2011, Fill Event	5

## LIST OF TABLES

<u>Table No.</u>		<u>Page</u>
1	2011 Quarterly Groundwater Quality Data for the Gloria Alitto Majewski Chicagoland Underflow Plan Reservoir Water Quality Monitoring Wells QK-1 through QK-4	7
2	Summary Statistics of the 2011 Quarterly Sampling Data for the Gloria Alitto Majewski Chicagoland Underflow Plan Reservoir Water Quality Monitoring Wells QK-1, QK-2, QK-3, and QK-4	8
3	2011 Groundwater Quality Data for the Gloria Alitto Majewski Chicagoland Underflow Plan Reservoir Groundwater Quality Monitoring Wells QK-1 Through QK-4 After the Fill Events of May 26, 2011, and May 28, 2011	10
4	2011 Groundwater Quality Data for the Gloria Alitto Majewski Chicagoland Underflow Plan Reservoir Groundwater Quality Monitoring Wells QK-1 Through QK-4 After the Fill Event of July 23, 2011	12

## LIST OF FIGURES

<u>Figure No.</u>		<u>Page</u>
1	Location of Four Water Quality Monitoring Wells and Nine Private Wells Surrounding the Majewski CUP Reservoir	6

## INTRODUCTION

This report contains data for the year 2011 for the four water quality monitoring wells located on the perimeter of the Gloria Alitto Majewski Chicagoland Underflow Plan Reservoir (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 the 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. These wells are shown as W1X through W9X in Figure 1.

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 Reservoir is subject to the following three special conditions:

Special Condition 1: If this project is located within 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 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 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 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 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 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 (SO<sub>4</sub>), ammonia nitrogen (NH<sub>3</sub>-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 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 following a fill event. 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.



## MONITORING DATA

### Quarterly Monitoring

Table 1 contains the 2011 data for ten TARP water quality indicator parameters obtained from samples collected on a quarterly basis from the four water quality monitoring wells (QK-1, QK-2, QK-3, and QK-4) located on the perimeter of the Reservoir. Two quarterly sampling events occurred while the Reservoir was empty, and the other two quarterly sampling events occurred at the beginning of fill events. Water quality monitoring wells QK-1 and QK-2 could not be sampled on February 16, 2011, because frozen conditions blocked access to the wells, and on November 22, 2011, because there was insufficient water in each well to collect a sample. Groundwater quality monitoring wells QK-3 and QK-4 were sampled as required.

Table 2 contains summary statistics of the TARP water quality indicator parameters for the year 2011 quarterly samples for wells QK-1 through QK-4. The summary statistics include minimum, mean, maximum, standard deviation (Stdv), median, and coefficient of variation (COV) for the values of the TARP water quality indicator parameters analyzed during 2011, except for FC. Geometric mean was calculated for FC, along with minimum, maximum, and median. The statistical analysis of the data was conducted using Microsoft® Excel functions.

### Fill Event Monitoring

The Reservoir experienced three fill events during 2011. They occurred on May 26, 2011, May 28, 2011, and July 23, 2011. Sampling was conducted weekly after these events 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 indicate concentrations below the 95 percent confidence level for background concentration.

**May 26, 2011, and May 28, 2011, Fill Events.** The post-fill sampling for these two events was combined, because the second fill event occurred within three days of the first. Table 3 contains water quality data for water quality monitoring wells QK-1 through QK-4 for the post-fill sampling for the fill events of May 26, 2011, and May 28, 2011. Sampling covered the period of May 27, 2011, through June 29, 2011.

Water quality monitoring well QK-1 could not be sampled on June 8, 2011, because of an equipment malfunction, and on June 15, 2011, June 22, 2011, and June 29, 2011, because there was insufficient water in the well to collect a sample. Water quality monitoring well QK-2 could not be sampled on June 1, 2011, and June 8, 2011, because the access road to the well was blocked, and on June 22, 2011, and June 29, 2011, because there was insufficient water in the well to collect a sample. Water quality monitoring well QK-3 could not be sampled on June 8, 2011, because of an equipment malfunction. Groundwater quality monitoring well QK-4 was sampled as required during the six weeks following the event.

**July 23, 2011, Fill Event.** Table 4 contains water quality data for water quality monitoring wells QK-1 through QK-4 for the post-fill sampling for the fill event of July 23, 2011. Sampling covered the period of July 25, 2011, through September 2, 2011.

All wells were sampled as required with the following exceptions. Water quality monitoring well QK-1 could not be sampled on August 3, 2011, because of an equipment malfunction. On August 9, 2011, there was just enough sample volume in water quality monitoring well QK-1 for conductivity, pH, and temperature measurements in the field, but insufficient sample for the remaining analyses. Water quality monitoring well QK-1 could not be sampled on August 17, 2011, August 22, 2011, and September 2, 2011, because there was insufficient water in the well to collect a sample. Water quality monitoring well QK-2 could not be sampled on August 9, 2011, August 17, 2011, and September 2, 2011, because there was insufficient water in the well to collect a sample. Water quality monitoring well QK-3 could not be sampled on August 3, 2011, because there was insufficient water in the well to collect a sample. Groundwater quality monitoring well QK-4 was sampled as required during the six weeks following the event.

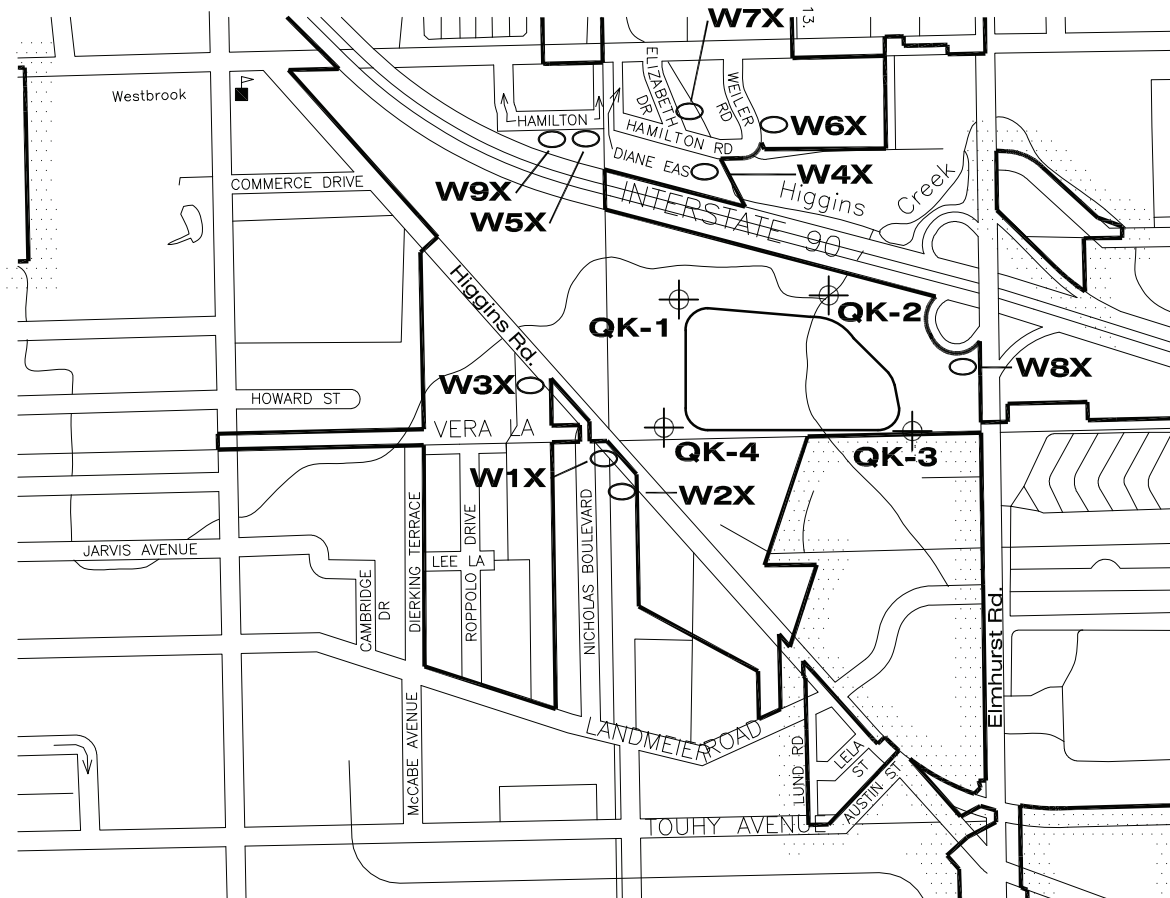


FIGURE 1

**LOCATION OF FOUR WATER QUALITY MONITORING WELLS AND NINE PRIVATE WELLS SURROUNDING THE MAJEWSKI CUP RESERVOIR**

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1: 2011 QUARTERLY GROUNDWATER QUALITY DATA FOR THE GLORIA ALITTO MAJEWSKI CHICAGOLAND UNDERFLOW PLAN RESERVOIR WATER QUALITY MONITORING WELLS QK-1 THROUGH QK-4

Well	Date of Sampling	Cl <sup>1</sup> mg/L	FC <sup>1,2</sup> CFU/100 mL	SO <sub>4</sub> <sup>1</sup> mg/L	NH <sub>3</sub> -N <sup>1</sup> mg/L	TOC <sup>1</sup> mg/L	TDS <sup>1</sup> mg/L	Hard. mg/L	Cond. <sup>2</sup> µmhos/cm	pH <sup>2</sup> unit	Temp. <sup>2</sup> °C
QK-1	2/16/11				Well could not be sampled <sup>3</sup>						
QK-1	5/27/11	20	<1	489	<0.10	<1.0	1,188	708	949	7.40	12.3
QK-1	7/25/11	37	>20,000	189	0.33	1.4	696	347	555	7.50	12.3
QK-1	11/22/11				Well could not be sampled <sup>3</sup>						
QK-2	2/16/11				Well could not be sampled <sup>3</sup>						
QK-2	5/27/11	<10	<1	486	0.11	1.0	956	505	825	7.58	12.5
QK-2	7/25/11	<10	<1	496	0.23	<1.0	1,150	497	801	7.68	13.1
QK-2	11/22/11				Well could not be sampled <sup>3</sup>						
QK-3	2/16/11	<10	<1	530	0.15	1.0	1,036	567	754	7.05	11.1
QK-3	5/27/11	44	850	279	0.52	1.1	804	478	690	7.38	13.3
QK-3	7/25/11	99	6,800	299	<0.10	1.1	1,144	528	650	7.09	13.8
QK-3	11/22/11	31	<1	399	0.43	1.0	924	536	555	6.85	12.1
QK-4	2/16/11	<10	<1	423	0.23	1.0	978	594	785	7.40	11.4
QK-4	5/27/11	48	<1	373	0.53	1.2	998	592	845	7.31	12.3
QK-4	7/25/11	79	3,500	238	0.51	<1.0	928	436	730	7.30	12.5
QK-4	11/22/11	46	<1	419	0.60	1.1	1,000	605	663	7.73	11.5

<sup>1</sup>The limit of quantification is 10 mg/L for Cl, 15 mg/L for SO<sub>4</sub>, 0.10 mg/L for NH<sub>3</sub>-N, 1.0 mg/L for TOC, and 60 mg/L for TDS.

The detection limit for the FC analysis using the membrane filter method varies based on the actual sample analyzed.

<sup>2</sup>Unfiltered samples analyzed; all other samples were filtered through a 0.45-µm membrane prior to analysis.

<sup>3</sup>Well could not be sampled due to reasons provided in the text of the report.

TABLE 2: SUMMARY STATISTICS OF THE 2011 QUARTERLY SAMPLING DATA FOR THE GLORIA ALITTO MAJEWSKI CHICAGOLAND UNDERFLOW PLAN RESERVOIR WATER QUALITY MONITORING WELLS QK-1, QK-2, QK-3, AND QK-4

Parameter <sup>1</sup>		Well Number			
		QK-1	QK-2	QK-3	QK-4
Cl mg/L	Minimum	20	10	10	10
	Mean	29	10	46	46
	Maximum	37	10	99	79
	Stdv	12	0	38	28
	Median	29	10	38	47
	COV	42	0	83	62
FC CFU/100 mL	Minimum	1	1	1	1
	Geo. Mean	141	1	49	8
	Maximum	20,000	1	6,800	3,500
	Median	10,001	1	426	1
SO <sub>4</sub> mg/L	Minimum	189	486	279	238
	Mean	339	491	377	363
	Maximum	489	496	530	423
	Stdv	212	7	115	86
	Median	339	491	349	396
	COV	63	1	30	24
NH <sub>3</sub> -N mg/L	Minimum	0.10	0.11	0.10	0.23
	Mean	0.22	0.17	0.30	0.47
	Maximum	0.33	0.23	0.52	0.60
	Stdv	0.16	0.08	0.21	0.16
	Median	0.22	0.17	0.29	0.52
	COV	75.64	49.91	68.80	34.86
TOC mg/L	Minimum	1.0	1.0	1.0	1.0
	Mean	1.2	1.0	1.1	1.1
	Maximum	1.4	1.0	1.1	1.2
	Stdv	0.3	0	0.1	0.1
	Median	1.2	1.0	1.1	1.1
	COV	23.6	0	5.5	8.9

TABLE 2 (Continued): SUMMARY STATISTICS OF THE 2011 QUARTERLY SAMPLING DATA FOR THE GLORIA ALITTO MAJEWSKI CHICAGOLAND UNDERFLOW PLAN RESERVOIR WATER QUALITY MONITORING WELLS QK-1, QK-2, QK-3, AND QK-4

Parameter <sup>1</sup>	Well Number				
	QK-1	QK-2	QK-3	QK-4	
TDS mg/L	Minimum	696	956	804	928
	Mean	942	1,053	977	976
	Maximum	1,188	1,150	1,144	1,000
	Stdv	348	137	146	34
	Median	942	1,053	980	988
	COV	37	13	15	3
	Hard. mg/L	Minimum	347	497	478
Mean		528	501	527	557
Maximum		708	505	567	605
Stdv		255	6	37	81
Median		528	501	532	593
COV		48	1	7	14
Cond. µmhos/cm		Minimum	555	801	555
	Mean	752	813	662	756
	Maximum	949	825	754	845
	Stdv	279	17	83	78
	Median	752	813	670	758
	COV	37	2	13	10
	pH unit	Minimum	7.40	7.58	6.85
Mean		7.45	7.63	7.09	7.44
Maximum		7.50	7.68	7.38	7.73
Stdv		0.07	0.07	0.22	0.20
Median		7.45	7.63	7.07	7.36
COV		0.95	0.93	3.08	2.71

<sup>1</sup>For the purpose of statistical evaluation, any value less than the appropriate limit of quantification (LOQ) was set equal to the value of the LOQ. Any FC concentration less than or greater than the appropriate detection limit was set equal to the detection limit.

TABLE 3: 2011 GROUNDWATER QUALITY DATA FOR THE GLORIA ALITTO MAJEWSKI CHICAGOLAND UNDERFLOW PLAN RESERVOIR GROUNDWATER QUALITY MONITORING WELLS QK-1 THROUGH QK-4 AFTER THE FILL EVENTS OF MAY 26, 2011, AND MAY 28, 2011

Well	Date of Sampling	Cl <sup>1</sup> mg/L	FC <sup>1,2</sup> CFU/100 mL	SO <sub>4</sub> <sup>1</sup> mg/L	NH <sub>3</sub> -N <sup>1</sup> mg/L	TOC <sup>1</sup> mg/L	TDS <sup>1</sup> mg/L	Hard. mg/L	Cond. <sup>2</sup> µmhos/cm	pH <sup>2</sup> unit	Temp. <sup>2</sup> °C
QK-1	5/27/11	20	<1	489	<0.10	<1.0	1,188	708	949	7.40	12.3
QK-1	6/1/11	43	3,600	456	0.39	1.3	1,166	707	853	7.36	13.4
QK-1	6/8/11				Well could not be sampled <sup>3</sup>						
QK-1	6/15/11				Well could not be sampled <sup>3</sup>						
QK-1	6/22/11				Well could not be sampled <sup>3</sup>						
QK-1	6/29/11				Well could not be sampled <sup>3</sup>						
10 QK-2	5/27/11	<10	<1	486	0.11	1.0	956	505	825	7.58	12.5
QK-2	6/1/11				Well could not be sampled <sup>3</sup>						
QK-2	6/8/11				Well could not be sampled <sup>3</sup>						
QK-2	6/15/11	<10	<1	528	0.10	<1.0	1192	566	1,133	7.35	14.4
QK-2	6/22/11				Well could not be sampled <sup>3</sup>						
QK-2	6/29/11				Well could not be sampled <sup>3</sup>						
QK-3	5/27/11	44	850	279	0.52	1.1	804	478	690	7.38	13.3
QK-3	6/1/11	146	1,000	438	<0.10	1.6	1,594	802	1,005	6.90	15.0
QK-3	6/8/11				Well could not be sampled <sup>3</sup>						
QK-3	6/15/11	44	260	392	0.46	<1.0	830	411	1,013	7.22	15.2
QK-3	6/22/11	37	500	237	0.59	<1.0	790	423	595	7.25	16.2
QK-3	6/29/11	38	110	229	0.58	1.2	824	424	745	7.32	11.7
QK-4	5/27/11	48	<1	373	0.53	1.2	998	592	845	7.31	12.3
QK-4	6/1/11	60	2	425	0.34	1.2	1,086	619	845	7.46	14.6
QK-4	6/8/11	47	<1	394	0.36	6.2	1,058	594	1,055	7.24	15.8

TABLE 3 (Continued): 2011 GROUNDWATER QUALITY DATA FOR THE GLORIA ALITTO MAJEWSKI CHICAGOLAND UNDERFLOW PLAN RESERVOIR GROUNDWATER QUALITY MONITORING WELLS QK-1 THROUGH QK-4 AFTER THE FILL EVENTS OF MAY 26, 2011, AND MAY 28, 2011

Well	Date of Sampling	Cl <sup>1</sup> mg/L	FC <sup>1,2</sup> CFU/100 mL	SO <sub>4</sub> <sup>1</sup> mg/L	NH <sub>3</sub> -N <sup>1</sup> mg/L	TOC <sup>1</sup> mg/L	TDS <sup>1</sup> mg/L	Hard. mg/L	Cond. <sup>2</sup> µmhos/cm	pH <sup>2</sup> unit	Temp. <sup>2</sup> °C
QK-4	6/15/11	44	<1	408	0.41	1.0	1,106	589	1,201	7.27	14.6
QK-4	6/22/11	39	<1	428	0.51	1.0	1,050	595	925	7.26	14.4
QK-4	6/29/11	41	<1	411	0.47	1.1	1,128	611	1,115	7.38	13.4

<sup>1</sup>The limit of quantification is 10 mg/L for Cl, 15 mg/L for SO<sub>4</sub>, 0.10 mg/L for NH<sub>3</sub>-N, 1.0 mg/L for TOC, and 60 mg/L for TDS. The detection limit for the FC analysis using the membrane filter method varies based on the actual sample analyzed.

<sup>2</sup>Unfiltered samples analyzed; all other samples were filtered through a 0.45-µm membrane prior to analysis.

<sup>3</sup>Well could not be sampled due to reasons provided in text of the report.



TABLE 4: 2011 GROUNDWATER QUALITY DATA FOR THE GLORIA ALITTO MAJEWSKI CHICAGOLAND UNDERFLOW  
 PLAN RESERVOIR GROUNDWATER QUALITY MONITORING WELLS QK-1 THROUGH QK-4  
 AFTER THE FILL EVENT OF JULY 23, 2011

Well	Date of Sampling	Cl <sup>1</sup> mg/L	FC <sup>1,2</sup> CFU/100 mL	SO <sub>4</sub> <sup>1</sup> mg/L	NH <sub>3</sub> -N <sup>1</sup> mg/L	TOC <sup>1</sup> mg/L	TDS <sup>1</sup> mg/L	Hard. mg/L	Cond. <sup>2</sup> µmhos/cm	pH <sup>2</sup> unit	Temp. <sup>2</sup> °C
QK-1	7/25/11	37	>20,000	189	0.33	1.4	696	347	555	7.50	12.3
QK-1	8/3/11				Well could not be sampled <sup>3</sup>						
QK-1	8/9/11				Insufficient sample volume <sup>4</sup>			917		7.71	15.2
QK-1	8/17/11				Well could not be sampled <sup>3</sup>						
QK-1	8/22/11				Well could not be sampled <sup>3</sup>						
QK-1	9/2/11				Well could not be sampled <sup>3</sup>						
QK-2	7/25/11	<10	<1	496	0.23	<1.0	1,150	497	801	7.68	13.1
QK-2	8/3/11	<10	<1	552	<0.10	1.0	1,344	598	1,080	7.30	14.7
QK-2	8/9/11				Well could not be sampled <sup>3</sup>						
QK-2	8/17/11				Well could not be sampled <sup>3</sup>						
QK-2	8/22/11	<10	<1	559	0.11	1.1	1,262	545	702	7.93	20.1
QK-2	9/2/11				Well could not be sampled <sup>3</sup>						
QK-3	7/25/11	99	6,800	299	<0.10	1.1	1,144	528	650	7.09	13.8
QK-3	8/3/11				Well could not be sampled <sup>3</sup>						
QK-3	8/9/11	45	400	259	0.51	1.1	834	441	808	7.23	15.5
QK-3	8/17/11	43	300	251	0.52	<1.0	778	420	792	7.53	15.5
QK-3	8/22/11	43	440	246	0.53	1.0	984	413	808	7.56	13.6
QK-3	9/2/11	43	200	255	0.53	1.0	776	413	963	7.44	15.3
QK-4	7/25/11	79	3,500	238	0.51	<1.0	928	436	730	7.30	12.5
QK-4	8/3/11	35	600	364	0.67	1.2	1,174	529	772	7.35	14.5
QK-4	8/9/11	45	260	422	0.57	1.2	1,010	537	787	7.11	14.3

TABLE 4 (Continued): 2011 GROUNDWATER QUALITY DATA FOR THE GLORIA ALITTO MAJEWSKI CHICAGOLAND UNDERFLOW PLAN RESERVOIR GROUNDWATER QUALITY MONITORING WELLS QK-1 THROUGH QK-4 AFTER THE FILL EVENT OF JULY 23, 2011

Well	Date of Sampling	Cl <sup>1</sup> mg/L	FC <sup>1,2</sup> CFU/100 mL	SO <sub>4</sub> <sup>1</sup> mg/L	NH <sub>3</sub> -N <sup>1</sup> mg/L	TOC <sup>1</sup> mg/L	TDS <sup>1</sup> mg/L	Hard. mg/L	Cond. <sup>2</sup> µmhos/cm	pH <sup>2</sup> unit	Temp. <sup>2</sup> °C
QK-4	8/17/11	41	120	430	0.58	1.3	1,014	550	962	6.69	16.4
QK-4	8/22/11	40	14	417	0.57	1.1	1,214	567	1,203	7.30	13.1
QK-4	9/2/11	43	20	429	0.60	1.4	1,048	571	1,075	7.48	16.8

<sup>1</sup>The limit of quantification is 10 mg/L for Cl, 15 mg/L for SO<sub>4</sub>, 0.10 mg/L for NH<sub>3</sub>-N, 1.0 mg/L, for TOC, and 60 mg/L for TDS. The detection limit for the FC analysis using the membrane filter method varies based on the actual sample analyzed

<sup>2</sup>Unfiltered samples analyzed; all other samples were filtered through a 0.45-µm membrane prior to analysis.

<sup>3</sup>Well could not be sampled due to reasons provided in text of the report.

<sup>4</sup>Insufficient sample volume collected for complete analysis.