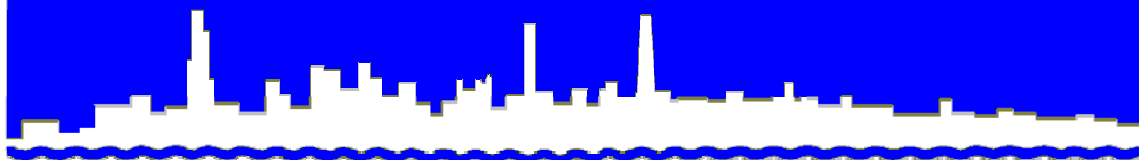


Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 09-48

***TUNNEL AND RESERVOIR PLAN
THORNTON TRANSITIONAL FLOOD CONTROL RESERVOIR
WATER QUALITY MONITORING WELLS
2008 ANNUAL GROUNDWATER MONITORING REPORT***

AUGUST 2009

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August 5, 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, Thornton Transitional Flood Control Reservoir Water Quality Monitoring Wells, 2008 Annual Groundwater Monitoring Report

Enclosed are three copies of "Tunnel and Reservoir Plan, Thornton Transitional Flood Control Reservoir Water Quality Monitoring Wells, 2008 Annual Groundwater Monitoring Report."

Very truly yours,

Louis Kollias
Director
Monitoring and Research

LK:HZ:lmf
Enclosures

cc w/enc: Ms. Sally K. Swanson (USEPA Region V—WC15J) (2)
Mr. Sobanski
Dr. Granato
Dr. O'Connor
Dr. Zhang
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TUNNEL AND RESERVOIR PLAN
THORNTON TRANSITIONAL FLOOD CONTROL RESERVOIR
WATER QUALITY MONITORING WELLS
2008 ANNUAL GROUNDWATER MONITORING REPORT

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INTRODUCTION

The purpose of this report is to meet the reporting requirements of the Illinois Environmental Protection Agency (IEPA) relative to annual flood control utilization of the Thornton Transitional Reservoir for 2008. The specific informational requirements are described in the June 16, 2001, Scope of Work (SOW) for Groundwater Quality Monitoring of the Reservoir. The SOW was approved in a letter from the IEPA dated August 6, 2001.

The reporting requirements are found in Section 7 of the SOW. The requirements for the annual flood control utilization of the reservoir shall include:

1. The year's monitoring wells sample analysis results.
2. Reservoir content grab sample results.
3. Detailed review and comparison of the monitoring well sampling analysis results, utilizing the monitoring well statistical background determinations.

Objective

The objective of collecting groundwater quality data from the four monitoring wells QT-1, QT-2, QT-3, and QT-4 and reservoir content grab samples is to assess any possible contamination of the monitoring wells which may result from seepage produced during the fill event for any of the parameters indicated in Table 2 of the SOW.

Project Description

The Reservoir is in the West Lobe of the Thornton Quarry southeast of the intersection of the Tri-State Tollway and Halsted Street in Thornton, Illinois, as shown in [Figure 1](#). The Reservoir is the final structural measure to be implemented for the Little Calumet River Watershed under the Natural Resources Conservation Service (NRCS) Little Calumet Watershed Plan of November, 1998. The reservoir provides 3.7 billion gallons of floodwater storage, which has been expanded from the planned 3.1 billion gallons due to additional rock mining and provides sufficient volume to capture a 100-year storm event from Thorn Creek at a point just south of the Tri-State Tollway.

The project provides flood control benefits for 21 businesses and 4,400 residences, for an average benefit of \$6.8 million per year. Within the little Calumet watershed are the communities of Blue Island, Calumet City, Dixmoor, Dolton, Glenwood, Harvey, Lansing, Phoenix, Riverdale, and South Holland, which receive flood control benefits.

The reservoir consists of a diversion structure at Thornton Creek, a 24 foot diameter drop-shaft and 22 foot diameter conveyance tunnel to the Lower West Lobe of Thornton Quarry. The project also includes an 8 foot diameter tunnel connected to the Calumet Tunnel and Reservoir Plan (TARP) System that will be utilized for Reservoir dewatering purposes only.

FIELD SAMPLING

There were five fill events at the Thornton Transitional Reservoir during the year 2008, January 8, 2008, February 17–18, 2008, May 11–12, 2008, September 13–16, 2008, and December 29, 2008.

The January fill event took place on January 8, 2008, resulting in 1.421 billion gallons of diversion water being stored in the reservoir. The February fill event began on February 17, 2008, resulting in an additional 263 million gallons of diversion water being added to the reservoir before the reservoir could completely be dewatered from the January 2008 fill event. The May fill event began on May 11, 2008, resulting in 257 million gallons of diversion water added to the reservoir in addition to water in the reservoir from the previous events. On June 26, 2008, a sampling crew observed that this reservoir was dry, and the crew collected the last samples from the groundwater monitoring wells for this series of events. The September fill event began on September 13, 2008, resulting in 3.574 billion gallons of diversion water being stored in the reservoir. On November 6, 2008, a sampling crew observed that the reservoir was dry, and the sampling of groundwater monitoring wells and the reservoir ended for the September 13–16, 2008, fill event. The December diversion took place on December 29, 2008, resulting in 1.046 billion gallons of diversion water being stored in the reservoir.

During these events, in accordance with the SOW, samples were collected from the four water quality monitoring wells surrounding the reservoir and grab samples were taken from the reservoir. The parameters to be analyzed for are found in Table 1, which presents all the parameters listed in Table 2 of the SOW.

ANALYTICAL DATA RESULTS

Tables 2, through 9 contain the results of the analyses of the four water quality monitoring wells surrounding the reservoir along with the calculated upper 95% confidence limits for the January 8, 2008, February 17–18, 2008, and May 11, 2008, fill events. The calculated upper 95% confidence limits were derived using ten samples from background monitoring between October 2002 and September 2004. These limits were updated from those using six samples collected from October 2002 and May 2003, which were reported in the Thornton Transitional Flood Control Reservoir Pre-Operational Background Groundwater Quality Report (Research and Development Department Report No. 03-23). Tables 10 and 11 contain the results of the grab samples from the reservoir for the January 8, 2008, February 17–18, 2008, and May 11, 2008, fill events. The monitoring results for the first three fill events in 2008 were grouped together because the Reservoir was not completely dewatered between the consecutive fill events. Tables 12, through 19 contain the results of the analyses for the four water quality monitoring wells along with the calculated upper 95% confidence limits surrounding the reservoir for the September 13–16, 2008, diversion. Tables 20 and 21 contain the results of the grab samples from the reservoir for the September 13–16, 2008, fill event. Data from the December 29, 2008, fill event was mostly collected in 2009 and is therefore not included in this report.

DISCUSSION OF RESULTS

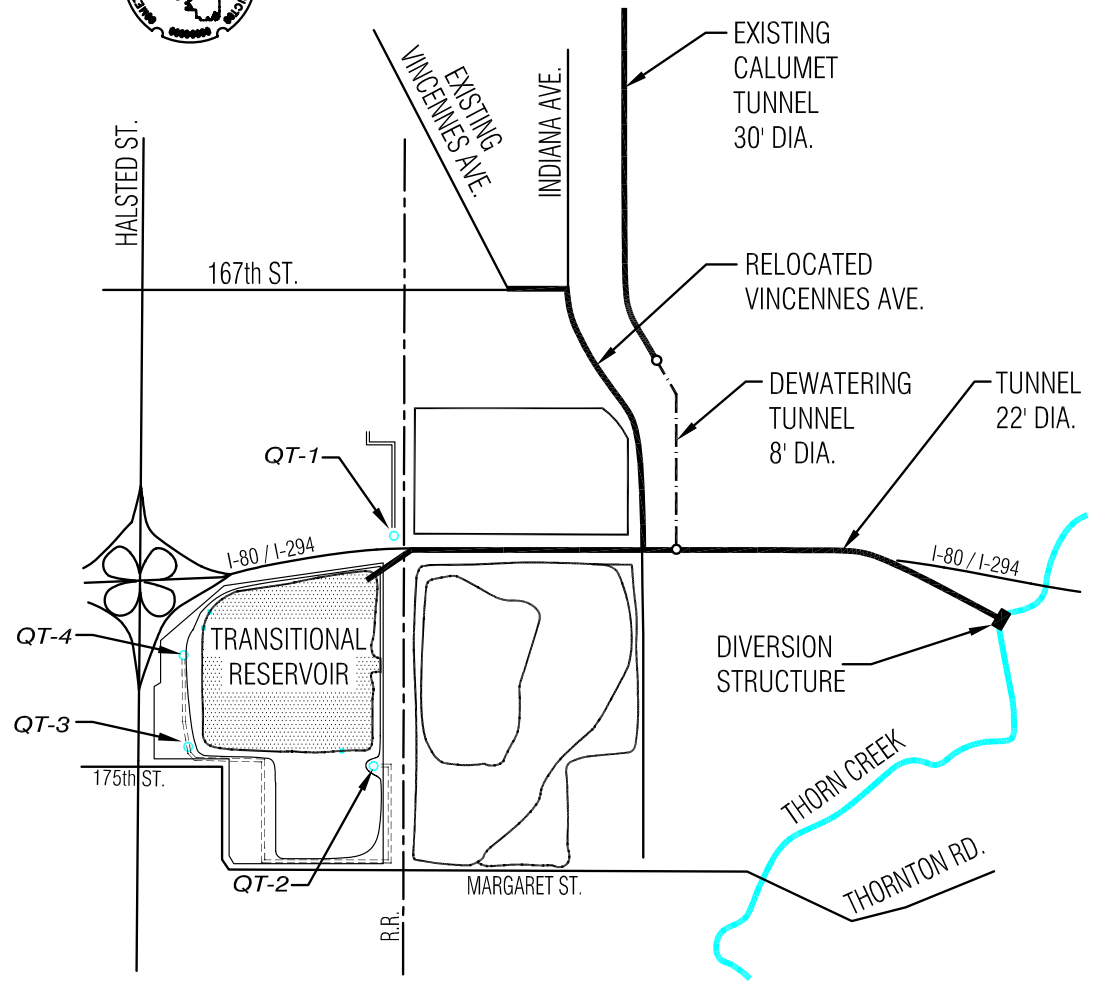
In 2008, during the first four fill events, samples of both the surrounding water quality monitoring wells and the reservoir itself were collected as long as there was water in the reservoir per requirements of the SOW.

During the January 8, 2008, February 17–18, 2008, and May 11–12, 2008, fill events, upper 95% confidence limits from the background sampling was exceeded for the following parameters: QT–1 chloride, sulfate, and total dissolved solids ([Table 2](#)) and manganese ([Table 3](#)); QT–2 iron ([Table 4](#)) and manganese ([Table 5](#)); and QT–3 chloride, sulfate, and total solids ([Table 6](#)) and manganese ([Table 7](#)). No exceedence was observed from QT–4 ([Tables 8 and 9](#)). There were some parameters that exceeded the upper 95% confidence limits from the background sampling after the reservoir was dewatered; these samples were collected on June 26, 2008, and these parameters were: chloride and manganese from QT–1 and chloride and manganese from QT–3. Additional sampling after the reservoir was dewatered was not performed because of the exceedence of these parameters. In the letter to the IEPA dated May 9, 2005, the District indicated that the exceedence of the upper 95% confidence limits of a few parameters does not appear to be related to any discernible pattern of groundwater contamination caused by the reservoir fill event. It was determined that further sampling until the upper 95% confidence limits for all parameters would be met and the expansion to the analyses of Table 1 parameters required by the SOW for the post-fill samples would result in significant cost with no benefit to the taxpayer. Therefore, it was decided that sampling after the reservoir was dewatered would end.

During the September 13–16, 2008, fill event, the upper 95% confidence limit from the background sampling was exceeded for the following parameters: QT–1 chloride, lead, sulfate, and total dissolved solids ([Table 12](#)), and barium, cadmium, chromium, and cyanide ([Table 13](#)); QT–2 lead ([Table 14](#)), and cadmium, fluoride, and manganese ([Table 15](#)); QT–3 chloride, lead, sulfate, and total solids ([Table 16](#)), and cadmium, and manganese ([Table 17](#)); and QT–4 lead ([Table 18](#)). The reservoir was dewatered by November 6, 2008; the last sampling event was October 30, 2008.



FIGURE 1

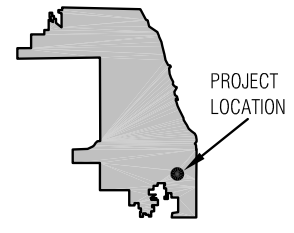


LOCATION MAP
Scale: NTS

LEGEND

- Monitoring Well
- ==== New Access Road
- Existing Access Road (to be improved)

MWRD SERVICE AREA



**THORNTON TRANSITIONAL RESERVOIR
MONITORING WELL LOCATIONS**

METROPOLITAN WATER RECLAMATION
DISTRICT OF GREATER CHICAGO
ENGINEERING DEPARTMENT
11-03 PLANNING JJK

TABLE 1: LIST OF PARAMETERS TO BE ANALYZED ACCORDING TO TABLE 2
FROM THE SCOPE OF WORK APPROVED BY THE ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

Column A	Column B
Arsenic	Barium
Boron	Cadmium
Chloride	Chromium
Copper	Cyanide
Fecal Coliform	Fluoride
Iron	Manganese
Lead	Nickel
Mercury	Silver
Phenols	Temperature
Sulfate	Nitrate
Total Dissolved Solids	5-Day Biochemical Oxygen Demand
Ammonia	21-Day Biochemical Oxygen Demand

TABLE 2: PARAMETERS FROM COLUMN A OF TABLE 1 FOR WATER QUALITY WELL QT-1 DURING JANUARY 8, 2008, FEBRUARY 17-18, 2008, AND MAY 11-12, 2008, FILL EVENTS

Date	Arsenic (mg/L)	Boron (mg/L)	Chloride (mg/L)	Copper (mg/L)	Fecal Coliform (cts/100 mL)	Iron (mg/L)	Lead (mg/L)	Mercury (µg/L)	Phenols (µg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Ammonia Nitrogen (mg/L)
1/10/08	<0.05	0.272	698	<0.010	<1	26.75	<0.015	<0.25	<5	366	2,050	0.36
1/17/08	<0.05	0.312	661	<0.010	<1	8.71	<0.015	<0.25	<5	323	1,904	0.28
1/24/08	<0.05	0.310	716	<0.010	<1	11.39	<0.015	<0.25	<5	299	1,820	0.27
1/31/08	<0.05	0.266	730	<0.010	<1	19.57	<0.015	<0.25	<5	376	2,124	0.32
2/6/08*												
2/15/08*												
2/22/08	<0.05	0.256	724	<0.010	<1	22.10	<0.015	<0.25	<5	368	2,004	0.39
2/28/08	<0.05	0.254	723	<0.010	<1	19.35	<0.015	<0.25	<5	358	1,926	0.29
3/6/08	<0.05	0.259	735	<0.010	<1	16.99	<0.015	<0.25	<5	366	1,996	0.30
3/13/08	<0.05	0.261	724	<0.010	<1	9.62	<0.015	<0.25	<5	529	1,960	0.31
3/20/08	<0.05	0.272	689	<0.010	<1	19.88	<0.015	<0.25	<5	290	1,916	0.33
3/27/08	<0.05	0.242	718	<0.010	<1	17.10	<0.015	<0.25	<5	384	464	0.32
4/3/08	<0.05	0.231	724	<0.010	<1	19.92	<0.015	<0.25	<5	363	1,904	0.34
4/10/08	<0.05	0.244	575	<0.010	<1	19.50	<0.015	<0.25	<5	385	2,068	0.30
4/17/08	<0.05	0.250	769	<0.010	<1	8.94	<0.015	<0.25	<5	348	2,068	0.32
4/24/08	<0.05	0.237	757	<0.010	<1	19.74	<0.015	<0.25	<5	387	2,092	0.33
5/1/08	<0.05	0.207	586	<0.010	<1	20.61	<0.015	<0.25	<5	371	2,174	0.32
5/15/08	<0.05	0.232	747	<0.010	<1	19.47	<0.015	<0.25	<5	372	2,196	0.32
5/22/08	<0.05	0.242	580	<0.010	<1	17.11	<0.015	<0.25	<5	345	2,206	0.34
6/5/08	<0.05	0.243	717	<0.010	<1	20.11	<0.015	<0.25	<5	373	1,948	0.32
6/12/08	<0.05	0.244	570	<0.010	<1	17.59	<0.015	<0.25	<5	357	2,320	0.34
6/26/08	<0.05	0.306	798	<0.010	<1	4.22	<0.015	<0.25	<5	299	2,214	0.35

TABLE 2 (Continued): PARAMETERS FROM COLUMN A OF TABLE 1 FOR WATER QUALITY WELL QT-1 DURING JANUARY 8, 2008, FEBRUARY 17-18, 2008, AND MAY 11-12, 2008, FILL EVENTS

Date	Arsenic (mg/L)	Boron (mg/L)	Chloride (mg/L)	Copper (mg/L)	Fecal Coliform (cts/100 mL)	Iron (mg/L)	Lead (mg/L)	Mercury (µg/L)	Phenols (µg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Ammonia Nitrogen (mg/L)
Reporting Limit	0.05	0.045	0.5	0.010	NA	0.10	0.015	0.25	5	2	40	0.10
Upper 95% Confidence Limit	**	NA	552	0.018	NA	47.61	0.015	**	NA	489	2,279	NA
Excursion during Fill	No***		Yes	No		No	No	No***		Yes	Yes	
Excursion after Dewatering	No***		Yes	No		No	No	No***		No	No	

NA = Not applicable.

*Sample could not be collected due to unsafe conditions.

**Value below reporting limit.

***Excursion of Upper 95% Confidence Limit was calculated based on the appropriate report limit.

TABLE 3: PARAMETERS FROM COLUMN B OF TABLE 1 FOR WATER QUALITY WELL QT-1 DURING JANUARY 8, 2008, FEBRUARY 17-18, 2008, AND MAY 11-12, 2008, FILL EVENTS

Date	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cyanide (mg/L)	Fluoride (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Silver (mg/L)	Temperature °C	Nitrate Nitrogen (mg/L)	BOD ₅ (mg/L)	BOD ₂₁ (mg/L)
1/10/08	0.0776	<0.010	<0.0025	<0.005	0.33	0.0989	<0.010	<0.0030	12.1	<0.020	3	3
1/17/08	0.0478	<0.010	<0.0025	<0.005	0.24	0.3120	<0.010	<0.0030	12.3	0.022	<2	2
1/24/08	0.0497	<0.010	<0.0025	<0.005	0.25	0.4293	<0.010	<0.0030	11.2	0.024	<2	3
1/31/08	0.0810	<0.010	<0.0025	<0.005	0.34	0.0846	<0.010	<0.0030	11.7	<0.020	<2	2
2/6/08*												
2/15/08*												
2/22/08	0.0793	<0.010	<0.0025	<0.005	0.37	0.0910	<0.010	<0.0030	11.8	<0.020	<2	NA
2/28/08	0.0826	<0.010	<0.0025	<0.005	0.34	0.0873	<0.010	<0.0030	11.6	<0.020	<2	4
3/6/08	0.0805	<0.010	<0.0025	<0.005	0.37	0.0961	<0.010	<0.0030	12.0	<0.020	7	7
3/13/08	0.0883	<0.010	<0.0025	<0.005	0.31	0.0536	<0.010	<0.0030	11.5	<0.020	4	6
3/20/08	0.0815	<0.010	<0.0025	<0.005	0.33	0.1466	<0.010	<0.0030	11.8	0.022	0	3
3/27/08	0.0846	<0.010	<0.0025	<0.005	0.35	0.0762	<0.010	<0.0030	12.1	<0.020	<2	<2
4/3/08	0.0838	<0.010	<0.0025	<0.005	0.32	0.1088	<0.010	<0.0030	12.0	<0.020	<2	2
4/10/08	0.0854	<0.010	<0.0025	<0.005	0.37	0.1004	<0.010	<0.0030	12.0	<0.020	<2	2
4/17/08	0.0763	<0.010	<0.0025	<0.005	0.35	0.1905	<0.010	<0.0030	14.0	<0.020	<2	2
4/24/08	0.0861	<0.010	<0.0025	<0.005	0.43	0.1028	<0.010	<0.0030	15.0	<0.020	<2	3
5/1/08	0.0869	<0.010	<0.0025	<0.005	0.41	0.1217	<0.010	<0.0030	16.0	<0.020	<2	3
5/15/08	0.0831	<0.010	<0.0025	<0.005	0.37	0.1082	<0.010	<0.0030	16.0	<0.020	<2	2
5/22/08	0.0865	<0.010	<0.0025	<0.005	0.34	0.0887	<0.010	<0.0030	18.0	<0.020	<2	3
6/5/08	0.0851	<0.010	<0.0025	<0.005	0.24	0.1084	<0.010	<0.0030	19.0	<0.020	<2	2
6/12/08	0.0910	<0.010	<0.0025	<0.005	0.35	0.0898	<0.010	<0.0030	21.0	<0.020	<2	<2
6/26/08	0.0396	<0.010	<0.0025	<0.005	0.38	0.4273	<0.010	<0.0030	22.0	<0.020	<2	2

TABLE 3 (Continued): PARAMETERS FROM COLUMN B OF TABLE 1 FOR WATER QUALITY WELL QT-1 DURING JANUARY 8, 2008, FEBRUARY 17-18, 2008, AND MAY 11-12, 2008, FILL EVENTS

Date	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cyanide (mg/L)	Fluoride (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Silver (mg/L)	Temperature °C	Nitrate Nitrogen (mg/L)	BOD ₅ (mg/L)	BOD ₂₁ (mg/L)
Reporting Limit	0.0030	0.010	0.0025	0.005	0.10	0.0030	0.010	0.0030	NA	0.020	2	2
Upper 95% Confidence Limit	0.0963	**	0.0050	**	0.57	0.1460	NA	**	NA	0.024	NA	NA
Excursion during Fill	No	No***	No	No***	No	Yes		No***		No		
Excursion after Dewatering	No	No***	No	No***	No	Yes		No***		No		

NA = Not applicable.

*Sample could not be collected due to unsafe conditions.

**Value below reporting limit.

***Excursion of Upper 95% Confidence Limit was calculated based on the appropriate report limit.

TABLE 4: PARAMETERS FROM COLUMN A OF TABLE 1 FOR WATER QUALITY WELL QT-2 DURING JANUARY 8, 2008, FEBRUARY 17-18, 2008, AND MAY 11-12, 2008, FILL EVENTS

Date	Arsenic (mg/L)	Boron (mg/L)	Chloride (mg/L)	Copper (mg/L)	Fecal Coliform (cts/100 mL)	Iron (mg/L)	Lead (mg/L)	Mercury (µg/L)	Phenols (µg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Ammonia Nitrogen (mg/L)
1/10/08	<0.05	0.248	232	<0.010	<1	2.67	<0.015	<0.25	<5	600	1,458	0.16
1/17/08	<0.05	0.128	133	<0.010	2	3.83	<0.015	<0.25	<5	336	882	<0.10
1/24/08	<0.05	0.171	155	<0.010	2	2.15	<0.015	<0.25	<5	375	936	<0.10
1/31/08	<0.05	0.128	135	<0.010	<1	3.10	<0.015	<0.25	<5	306	780	<0.10
2/6/08*												
2/15/08*												
2/22/08*												
2/28/08*												
3/6/08*												
3/13/08*												
3/20/08*												
3/27/08*												
4/3/08*												
4/10/08	<0.05	0.083	125	<0.010	<1	5.68	<0.015	<0.25	<5	191	560	<0.10
4/17/08	<0.05	0.098	131	<0.010	<1	2.35	<0.015	<0.25	<5	202	462	<0.10
4/24/08	<0.05	0.112	134	<0.010	<1	3.02	<0.015	<0.25	<5	221	664	<0.10
5/1/08	<0.05	0.099	134	<0.010	<1	1.20	<0.015	<0.25	<5	341	966	<0.10
5/15/08	<0.05	0.147	146	<0.010	<1	3.66	<0.015	<0.25	<5	401	988	<0.10
5/22/08	<0.05	0.143	137	<0.010	<1	2.50	<0.015	<0.25	<5	381	952	<0.10
6/5/08	<0.05	0.139	138	<0.010	<1	1.94	<0.015	<0.25	<5	355	980	<0.10
6/12/08	<0.05	0.132	122	<0.010	1	1.63	<0.015	<0.25	<5	300	878	<0.10
6/26/08	<0.05	0.151	143	<0.010	<1	1.97	<0.015	<0.25	<5	327	892	<0.10

TABLE 4 (Continued): PARAMETERS FROM COLUMN A OF TABLE 1 FOR WATER QUALITY WELL QT-2 DURING JANUARY 8, 2008, FEBRUARY 17-18, 2008, AND MAY 11-12, 2008, FILL EVENTS

Date	Arsenic (mg/L)	Boron (mg/L)	Chloride (mg/L)	Copper (mg/L)	Fecal Coliform (cts/100 mL)	Iron (mg/L)	Lead (mg/L)	Mercury (µg/L)	Phenols (µg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Ammonia Nitrogen (mg/L)
Reporting Limit	0.05	0.045	0.5	0.010	NA	0.10	0.015	0.25	5	2	40	0.10
Upper 95% Confidence Limit	**	NA	420	0.027	NA	4.50	0.015	**	NA	718	2,485	NA
Excursion during Fill	No***		No	No		Yes	No	No***		No	No	
Excursion after Dewatering	No***		No	No		No	No	No***		No	No	

NA = Not applicable.

*Sample could not be collected due to unsafe conditions.

**Value below reporting limit.

***Excursion of Upper 95% Confidence Limit was calculated based on the appropriate report limit.

TABLE 5: PARAMETERS FROM COLUMN B OF TABLE 1 FOR WATER QUALITY WELL QT-2 DURING JANUARY 8, 2008, FEBRUARY 17-18, 2008, AND MAY 11-12, 2008, FILL EVENTS

Date	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cyanide (mg/L)	Fluoride (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Silver (mg/L)	Temperature °C	Nitrate Nitrogen (mg/L)	BOD ₅ (mg/L)	BOD ₂₁ (mg/L)
1/10/08	0.0451	<0.010	<0.0025	<0.005	0.32	0.0299	0.020	<0.0030	11.6	<0.020	<2	2
1/17/08	0.0216	<0.010	<0.0025	<0.005	0.24	0.1926	0.013	<0.0030	11.8	0.039	<2	<2
1/24/08	0.0350	<0.010	<0.0025	<0.005	0.28	0.0971	0.030	<0.0030	10.5	0.025	<2	2
1/31/08	0.0255	<0.010	<0.0025	<0.005	0.27	0.0939	<0.010	<0.0030	11.9	<0.020	<2	2
2/6/08*												
2/15/08*												
2/22/08*												
2/28/08*												
3/6/08*												
3/13/08*												
3/20/08*												
3/27/08*												
4/3/08*												
4/10/08	0.0229	<0.010	<0.0025	<0.005	0.25	0.0659	<0.010	<0.0030	12.3	0.028	<2	2
4/17/08	0.0227	<0.010	<0.0025	<0.005	0.25	0.0503	<0.010	<0.0030	14.5	0.124	<2	<2
4/24/08	0.0248	<0.010	<0.0025	<0.005	0.27	0.0510	<0.010	<0.0030	15.3	<0.020	<2	2
5/1/08	0.0325	<0.010	<0.0025	<0.005	0.32	0.0577	<0.010	<0.0030	15.6	<0.020	<2	2
5/15/08	0.0329	<0.010	<0.0025	<0.005	0.30	0.0520	0.010	<0.0030	16.1	0.034	<2	2
5/22/08	0.0306	<0.010	<0.0025	<0.005	0.27	0.0418	<0.010	<0.0030	19.2	<0.020	<2	2
6/5/08	0.0288	<0.010	<0.0025	<0.005	0.33	0.0322	<0.010	<0.0030	19.0	0.037	<2	2
6/12/08	0.0298	<0.010	<0.0025	<0.005	0.28	0.0349	<0.010	<0.0030	21.0	0.021	<2	<2
6/26/08	0.0250	<0.010	<0.0025	<0.005	0.31	0.0275	0.011	<0.0030	23.0	<0.020	<2	3

TABLE 5 (Continued): PARAMETERS FROM COLUMN B OF TABLE 1 FOR WATER QUALITY WELL QT-2 DURING JANUARY 8, 2008, FEBRUARY 17-18, 2008, AND MAY 11-12, 2008, FILL EVENTS

Date	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cyanide (mg/L)	Fluoride (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Silver (mg/L)	Temperature °C	Nitrate Nitrogen (mg/L)	BOD ₅ (mg/L)	BOD ₂₁ (mg/L)
Reporting Limit	0.0030	0.010	0.0025	0.005	0.10	0.0030	0.010	0.0030	NA	0.020	2	2
Upper 95% Confidence Limit	0.0742	**	0.007	**	0.35	0.0574	NA	**	NA	4.416	NA	NA
Excursion during Fill	No	No***	No	No***	No	Yes		No***		No		
Excursion after Dewatering	No	No***	No	No***	No	No		No***		No		

NA = Not applicable.

*Sample could not be collected due to unsafe conditions.

**Value below reporting limit.

***Excursion of Upper 95% Confidence Limit was calculated based on the appropriate report limit.

TABLE 6: PARAMETERS FROM COLUMN A OF TABLE 1 FOR WATER QUALITY WELL QT-3 DURING JANUARY 8, 2008, FEBRUARY 17-18, 2008, AND MAY 11-12, 2008, FILL EVENTS

Date	Arsenic (mg/L)	Boron (mg/L)	Chloride (mg/L)	Copper (mg/L)	Fecal Coliform (cts/100 mL)	Iron (mg/L)	Lead (mg/L)	Mercury (µg/L)	Phenols (µg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Ammonia Nitrogen (mg/L)
1/10/08	<0.05	0.273	243	<0.010	<1	12.29	<0.015	<0.25	<5	162	944	0.32
1/17/08	<0.05	0.211	256	<0.010	<1	15.99	<0.015	<0.25	<5	196	1,042	0.30
1/24/08	<0.05	0.212	250	<0.010	<1	14.82	<0.015	<0.25	<5	196	1,032	0.35
1/31/08	<0.05	0.209	267	<0.010	<1	14.66	<0.015	<0.25	<5	198	1,080	0.30
2/6/08*												
2/15/08*												
2/22/08*												
2/28/08*												
3/6/08*												
3/13/08*												
3/20/08*												
3/27/08*												
4/3/08*												
4/10/08	<0.05	0.221	257	<0.010	<1	17.42	<0.015	<0.25	<5	202	868	0.25
4/17/08	<0.05	0.223	261	<0.010	<1	13.96	<0.015	<0.25	<5	206	966	0.34
4/24/08	<0.05	0.226	261	<0.010	<1	15.11	<0.015	<0.25	<5	206	1,054	0.32
5/1/08	<0.05	0.189	260	<0.010	<1	17.05	<0.015	<0.25	<5	193	1,158	0.29
5/15/08	<0.05	0.225	259	<0.010	<1	19.25	<0.015	<0.25	<5	239	1,528	0.32
5/22/08	<0.05	0.215	253	<0.010	<1	17.32	<0.015	<0.25	<5	206	1,106	0.28
6/5/08	<0.05	0.200	252	<0.010	<1	18.70	<0.015	<0.25	<5	215	1,162	0.31
6/12/08	<0.05	0.217	230	<0.010	<1	18.69	<0.015	<0.25	<5	196	1,138	0.30
6/26/08	<0.05	0.251	256	<0.010	<1	20.68	<0.015	<0.25	<5	195	1,120	0.34

TABLE 6 (Continued): PARAMETERS FROM COLUMN A OF TABLE 1 FOR WATER QUALITY WELL QT-3 DURING JANUARY 8, 2008, FEBRUARY 17-18, 2008, AND MAY 11-12, 2008, FILL EVENTS

Date	Arsenic (mg/L)	Boron (mg/L)	Chloride (mg/L)	Copper (mg/L)	Fecal Coliform (cts/100 mL)	Iron (mg/L)	Lead (mg/L)	Mercury (µg/L)	Phenols (µg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Ammonia Nitrogen (mg/L)
Reporting Limit	0.05	0.045	0.5	0.010	NA	0.10	0.015	0.25	5	2	40	0.10
Upper 95% Confidence Limit	**	NA	180	0.022	NA	30.59	**	**	NA	224	1,270	NA
Excursion during Fill	No***		Yes	No		No	No***	No***		Yes	Yes	
Excursion after Dewatering	No***		Yes	No		No	No***	No***		No	No	

NA = Not applicable.

*Sample could not be collected due to unsafe conditions.

**Value below reporting limit.

***Excursion of Upper 95% Confidence Limit was calculated based on the appropriate report limit.

TABLE 7: PARAMETERS FROM COLUMN B OF TABLE 1 FOR WATER QUALITY WELL QT-3 DURING JANUARY 8, 2008, FEBRUARY 17-18, 2008, AND MAY 11-12, 2008, FILL EVENTS

Date	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cyanide (mg/L)	Fluoride (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Silver (mg/L)	Temperature °C	Nitrate Nitrogen (mg/L)	BOD ₅ (mg/L)	BOD ₂₁ (mg/L)
1/10/08	0.0616	<0.010	<0.0025	<0.005	0.25	0.1712	<0.010	<0.0030	11.6	<0.020	<2	4
1/17/08	0.0695	<0.010	<0.0025	<0.005	0.22	0.1510	<0.010	<0.0030	10.5	<0.020	<2	3
1/24/08	0.0712	<0.010	<0.0025	<0.005	0.23	0.2049	<0.010	<0.0030	8.5	<0.020	<2	3
1/31/08	0.0717	<0.010	<0.0025	<0.005	0.25	0.1922	<0.010	<0.0030	10.6	<0.020	<2	3
2/6/08*												
2/15/08*												
2/22/08*												
2/28/08*												
3/6/08*												
3/13/08*												
3/20/08*												
3/27/08*												
4/3/08*												
4/10/08	0.0677	<0.010	<0.0025	<0.005	0.18	0.1248	<0.010	<0.0030	12.0	<0.020	<2	3
4/17/08	0.0743	<0.010	<0.0025	<0.005	0.25	0.1222	<0.010	<0.0030	14.8	<0.020	<2	3
4/24/08	0.0753	<0.010	<0.0025	<0.005	0.29	0.1718	<0.010	<0.0030	15.0	<0.020	<2	4
5/1/08	0.0730	<0.010	<0.0025	<0.005	0.26	0.1949	<0.010	<0.0030	15.6	<0.020	<2	2
5/15/08	0.0704	<0.010	<0.0025	<0.005	0.25	0.1976	<0.010	<0.0030	16.3	<0.020	<2	3
5/22/08	0.0736	<0.010	<0.0025	<0.005	0.24	0.1848	<0.010	<0.0030	17.3	<0.020	<2	3
6/5/08	0.0735	<0.010	<0.0025	<0.005	0.28	0.2129	<0.010	<0.0030	20.1	<0.020	<2	2
6/12/08	0.0752	<0.010	<0.0025	<0.005	0.24	0.1941	<0.010	<0.0030	21.6	<0.020	<2	2
6/26/08	0.0702	<0.010	<0.0025	<0.005	0.27	0.2332	<0.010	<0.0030	23.0	<0.020	<2	3

TABLE 7 (Continued): PARAMETERS FROM COLUMN B OF TABLE 1 FOR WATER QUALITY WELL QT-3 DURING JANUARY 8, 2008, FEBRUARY 17-18, 2008, AND MAY 11-12, 2008, FILL EVENTS

Date	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cyanide (mg/L)	Fluoride (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Silver (mg/L)	Temperature °C	Nitrate Nitrogen (mg/L)	BOD ₅ (mg/L)	BOD ₂₁ (mg/L)
Reporting Limit	0.0030	0.010	0.0025	0.005	0.10	0.0030	0.010	0.0030	NA	0.020	2	2
Upper 95% Confidence Limit	0.1000	0.006	0.0070	**	0.38	0.1793	NA	0.0196	NA	0.331	NA	NA
Excursion during Fill	No	No	No	No***	No	Yes		No		No		
Excursion after Dewatering	No	No	No	No***	No	Yes		No		No		

NA = Not applicable.

*Sample could not be collected due to unsafe conditions.

**Value below reporting limit.

***Excursion of Upper 95% Confidence Limit was calculated based on the appropriate report limit.

TABLE 8: PARAMETERS FROM COLUMN A OF TABLE 1 FOR WATER QUALITY WELL QT-4 DURING JANUARY 8, 2008, FEBRUARY 17-18, 2008, AND MAY 11-12, 2008, FILL EVENTS

Date	Arsenic (mg/L)	Boron (mg/L)	Chloride (mg/L)	Copper (mg/L)	Fecal Coliform (cts/100 mL)	Iron (mg/L)	Lead (mg/L)	Mercury (µg/L)	Phenols (µg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Ammonia Nitrogen (mg/L)
1/10/08	<0.05	0.363	469	<0.010	<1	20.73	<0.015	<0.25	<5	261	1,470	0.47
1/17/08	<0.05	0.387	443	<0.010	<1	2.45	<0.015	<0.25	<5	269	1,480	0.39
1/24/08	<0.05	0.412	419	<0.010	<1	5.35	<0.015	<0.25	<5	260	1,402	0.45
1/31/08	<0.05	0.376	443	<0.010	<1	17.65	<0.015	<0.25	<5	263	1,458	0.42
2/6/08*												
2/15/08*												
2/22/08*												
2/28/08*												
3/6/08*												
3/13/08*												
3/20/08*												
3/27/08*												
4/3/08*												
4/10/08	<0.05	0.363	470	<0.010	<1	19.86	<0.015	<0.25	<5	271	1,334	0.43
4/17/08	<0.05	0.393	406	<0.010	<1	3.28	<0.015	<0.25	<5	280	1,356	0.41
4/24/08	<0.05	0.368	470	<0.010	<1	15.71	<0.015	<0.25	<5	272	1,440	0.41
5/1/08	<0.05	0.349	462	<0.010	<1	7.38	<0.015	<0.25	<5	262	1,544	0.40
5/15/08	<0.05	0.411	453	<0.010	<1	3.40	<0.015	<0.25	<5	273	1,108	0.39
5/22/08	<0.05	0.351	443	<0.010	<1	16.11	<0.015	<0.25	<5	270	1,536	0.42
6/5/08	<0.05	0.357	431	<0.010	<1	17.17	<0.015	<0.25	<5	268	1,586	0.42
6/12/08	<0.05	0.364	393	<0.010	<1	18.61	<0.015	<0.25	<5	263	1,552	0.38
6/26/08	<0.05	0.379	414	<0.010	<1	21.32	<0.015	<0.25	<5	254	1,476	0.41

TABLE 8 (Continued): PARAMETERS FROM COLUMN A OF TABLE 1 FOR WATER QUALITY WELL QT-4 DURING JANUARY 8, 2008, FEBRUARY 17-18, 2008, AND MAY 11-12, 2008, FILL EVENTS

Date	Arsenic (mg/L)	Boron (mg/L)	Chloride (mg/L)	Copper (mg/L)	Fecal Coliform (cts/100 mL)	Iron (mg/L)	Lead (mg/L)	Mercury (µg/L)	Phenols (µg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Ammonia Nitrogen (mg/L)
Reporting Limit	0.05	0.045	0.5	0.010	NA	0.10	0.015	0.25	5	2	40	0.10
Upper 95% Confidence Limit	**	NA	611	0.073	NA	31.51	0.024	0.07	NA	300	1,873	NA
Excursion during Fill	No***		No	No		No	No	No		No	No	
Excursion after Dewatering	No***		No	No		No	No	No		No	No	

NA = Not applicable.

*Sample could not be collected due to unsafe conditions.

**Value below reporting limit.

***Excursion of Upper 95% Confidence Limit was calculated based on the appropriate report limit.

TABLE 9: PARAMETERS FROM COLUMN B OF TABLE 1 FOR WATER QUALITY WELL QT-4 DURING JANUARY 8, 2008, FEBRUARY 17-18, 2008, AND MAY 11-12, 2008, FILL EVENTS

Date	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cyanide (mg/L)	Fluoride (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Silver (mg/L)	Temperature °C	Nitrate Nitrogen (mg/L)	BOD ₅ (mg/L)	BOD ₂₁ (mg/L)
1/10/08	0.0988	<0.010	<0.0025	<0.005	0.25	0.1236	<0.010	<0.0030	11.8	<0.020	<2	3
1/17/08	0.0932	<0.010	<0.0025	<0.005	0.24	0.0539	<0.010	<0.0030	11.6	<0.020	<2	3
1/24/08	0.1007	<0.010	<0.0025	<0.005	0.25	0.0896	<0.010	<0.0030	11.0	<0.020	<2	3
1/31/08	0.0990	<0.010	<0.0025	<0.005	0.22	0.1252	<0.010	<0.0030	13.2	<0.020	<2	3
2/6/08*												
2/15/08*												
2/22/08*												
2/28/08*												
3/6/08*												
3/13/08*												
3/20/08*												
3/27/08*												
4/3/08*												
4/10/08	0.0985	<0.010	<0.0025	<0.005	0.26	0.1269	<0.010	<0.0030	12.8	<0.020	<2	4
4/17/08	0.0962	<0.010	<0.0025	<0.005	0.26	0.0912	<0.010	<0.0030	13.3	<0.020	<2	2
4/24/08	0.1031	<0.010	<0.0025	<0.005	0.30	0.1254	<0.010	<0.0030	14.8	<0.020	12	4
5/1/08	0.0984	<0.010	<0.0025	<0.005	0.28	0.0996	<0.010	<0.0030	15.3	<0.020	<2	3
5/15/08	0.0992	<0.010	<0.0025	<0.005	0.26	0.0889	<0.010	<0.0030	15.5	<0.020	<2	2
5/22/08	0.0982	<0.010	<0.0025	<0.005	0.25	0.1265	<0.010	<0.0030	18.9	<0.020	<2	3
6/5/08	0.0969	<0.010	<0.0025	<0.005	0.30	0.1416	<0.010	<0.0030	20.3	<0.020	<2	2
6/12/08	0.0999	<0.010	<0.0025	<0.005	0.26	0.1632	<0.010	<0.0030	22.1	<0.020	<2	2
6/26/08	0.0992	<0.010	<0.0025	<0.005	0.28	0.1925	<0.010	<0.0030	23.5	<0.020	<2	3

TABLE 9 (Continued): PARAMETERS FROM COLUMN B OF TABLE 1 FOR WATER QUALITY WELL QT-4 DURING JANUARY 8, 2008, FEBRUARY 17-18, 2008, AND MAY 11-12, 2008, FILL EVENTS

Date	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cyanide (mg/L)	Fluoride (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Silver (mg/L)	Temperature °C	Nitrate Nitrogen (mg/L)	BOD ₅ (mg/L)	BOD ₂₁ (mg/L)
Reporting Limit	0.0030	0.010	0.0025	0.005	0.10	0.0030	0.010	0.0030	NA	0.020	2	2
Upper 95% Confidence Limit	0.1576	0.0009	0.074	**	0.37	0.2332	NA	0.0043	NA	0.262	NA	NA
Excursion during Fill	No	No	No	No***	No	No		No		No		
Excursion after Dewatering	No	No	No	No***	No	No		No		No		

NA = Not applicable.

*Sample could not be collected due to unsafe conditions.

**Value below reporting limit.

***Excursion of Upper 95% Confidence Limit was calculated based on the appropriate report limit.

TABLE 10: PARAMETERS FROM COLUMN A OF TABLE 1 FOR THORNTON TRANSITIONAL RESERVOIR
DURING JANUARY 8, 2008, FEBRUARY 17–18, 2008, AND MAY 11–12, 2008, FILL EVENTS

Date	Arsenic (mg/L)	Boron (mg/L)	Chloride (mg/L)	Copper (mg/L)	Fecal Coliform (cts/100 mL)	Iron (mg/L)	Lead (mg/L)	Mercury (µg/L)	Phenols (µg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Ammonia Nitrogen (mg/L)
1/11/08	<0.05	0.052	91	<0.010	1,500	5.33	<0.015	<0.25	<5	48	278	0.19
1/16/08	<0.05	0.101	90	<0.010	100	4.54	<0.015	<0.25	<5	54	322	0.15
1/25/08*												
1/31/08*												
2/7/08*												
2/14/08*												
2/21/08*												
2/28/08*												
3/7/08*												
3/14/08	<0.05	0.080	124	<0.010	<10	0.72	<0.015	<0.25	<5	91	404	<0.10
3/20/08	<0.05	0.099	117	<0.010	<10	0.75	<0.015	<0.25	<5	107	462	<0.10
3/26/08	<0.05	0.110	126	<0.010	<10	0.83	<0.015	<0.25	<5	123	2,042	<0.10
4/2/08	<0.05	0.102	136	<0.010	<10	0.70	<0.015	<0.25	<5	131	480	0.21
4/11/08	<0.05	0.106	154	<0.010	20	0.67	<0.015	<0.25	<5	137	466	<0.10
4/16/08	<0.05	0.117	135	<0.010	<10	0.63	<0.015	<0.25	<5	145	452	<0.10
4/23/08	<0.05	0.112	136	<0.010	<10	0.19	<0.015	<0.25	<5	146	470	<0.10
5/2/08	<0.05	0.079	130	<0.010	<10	1.03	<0.015	<0.25	<5	153	594	0.18
5/8/08	<0.05	0.135	145	<0.010	120	0.46	<0.015	<0.25	<5	167	626	0.21
5/12/08	<0.05	0.136	141	<0.010	30	0.19	<0.015	<0.25	<5	170	640	0.23
5/22/08	<0.05	0.131	135	<0.010	140	0.18	<0.015	<0.25	<5	174	602	0.16
5/28/08	<0.05	0.140	130	<0.010	9	0.12	<0.015	<0.25	<5	193	678	<0.10
6/5/08	<0.05	0.136	133	<0.010	2,000	0.33	<0.015	<0.25	<5	174	662	0.18
6/11/08	<0.05	0.145	128	<0.010	590	0.12	<0.015	<0.25	<5	195	664	0.13

TABLE 10 (Continued): PARAMETERS FROM COLUMN A OF TABLE 1 FOR THORNTON TRANSITIONAL RESERVOIR DURING JANUARY 8, 2008, FEBRUARY 17–18, 2008, AND MAY 11–12, 2008, FILL EVENTS

Date	Arsenic (mg/L)	Boron (mg/L)	Chloride (mg/L)	Copper (mg/L)	Fecal Coliform (cts/100 mL)	Iron (mg/L)	Lead (mg/L)	Mercury (µg/L)	Phenols (µg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Ammonia Nitrogen (mg/L)
6/19/08	<0.05	0.171	146	<0.010	<10	0.27	<0.015	<0.25	<5	215	750	<0.10
6/26/08**												
Reporting Limit	0.05	0.045	0.5	0.010	NA	0.10	0.015	0.25	5	2	40	0.10

NA = Not applicable.

*Sample could not be collected because the reservoir was frozen.

**Reservoir was dry, no sample was collected.

TABLE 11: PARAMETERS FROM COLUMN B OF TABLE 1 FOR THORNTON TRANSITIONAL RESERVOIR
DURING JANUARY 8, 2008, FEBRUARY 17–18, 2008, AND MAY 11–12, 2008, FILL EVENTS

Date	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cyanide (mg/L)	Fluoride (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Silver (mg/L)	Temperature °C	Nitrate Nitrogen (mg/L)	BOD ₅ (mg/L)	BOD ₂₁ (mg/L)
1/11/08	0.0456	<0.010	0.0082	<0.005	0.21	0.0618	<0.010	<0.0030	4	1.077	3	6
1/16/08	0.0357	<0.010	0.0057	<0.005	0.19	0.0489	<0.010	<0.0030	4	1.120	8	7
1/25/08*												
1/31/08*												
2/7/08*												
2/14/08*												
2/21/08*												
2/28/08*												
3/7/08*												
3/14/08	0.0216	<0.010	0.0040	<0.005	0.20	0.0121	<0.010	<0.0030	6	0.887	NAR	5
3/20/08	0.0236	<0.010	<0.0025	<0.005	0.20	0.0151	<0.010	<0.0030	6	0.860	4	7
3/26/08	0.0255	<0.010	<0.0025	<0.005	0.19	0.0183	<0.010	<0.0030	5	0.955	4	5
4/2/08	0.0247	<0.010	<0.0025	<0.005	0.19	0.0190	<0.010	<0.0030	3	1.003	3	6
4/11/08	0.0236	0.0010	<0.0025	<0.005	0.25	0.0200	<0.010	<0.0030	4	0.906	3	6
4/16/08	0.0236	<0.010	0.0130	<0.005	0.23	0.0147	0.011	<0.0030	5	0.881	3	5
4/23/08	0.0220	<0.010	<0.0025	<0.005	0.17	0.0011	<0.010	<0.0030	5	0.290	10	7
5/2/08	0.0254	<0.010	<0.0025	<0.005	0.25	0.0201	0.010	<0.0030	7	0.520	3	6
5/8/08	0.0232	<0.010	<0.0025	<0.005	0.25	0.0188	<0.010	<0.0030	7	0.564	10	4
5/12/08	0.0233	<0.010	<0.0025	<0.005	0.28	0.0192	0.010	<0.0030	8	0.701	10	4
5/22/08	0.0217	<0.010	<0.0025	<0.005	0.23	0.0206	0.010	<0.0030	14	0.707	<2	4
5/28/08	0.0220	<0.010	<0.0025	<0.005	0.26	0.0151	<0.010	<0.0030	18	0.734	<2	3
6/5/08	0.0228	<0.010	<0.0025	<0.005	0.26	0.0186	0.010	<0.0030	23	0.770	4	6
6/11/08	0.0231	<0.010	<0.0025	<0.005	0.24	0.0090	0.011	<0.0030	22	0.801	<2	2

TABLE 11 (Continued): PARAMETERS FROM COLUMN B OF TABLE 1 FOR THORNTON TRANSITIONAL RESERVOIR DURING JANUARY 8, 2008, FEBRUARY 17–18, 2008, AND MAY 11–12, 2008, FILL EVENTS

Date	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cyanide (mg/L)	Fluoride (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Silver (mg/L)	Temperature °C	Nitrate Nitrogen (mg/L)	BOD ₅ (mg/L)	BOD ₂₁ (mg/L)
6/19/08 6/26/08**	0.0192	<0.010	<0.0025	<0.005	0.26	0.0084	0.013	<0.0030	23	0.806	<2	2
Reporting Limit	0.0030	0.010	0.0025	0.005	0.10	0.0030	0.010	0.0030	NA	0.020	2	2

NAR = No analytical results.

NA = Not applicable.

*Sample could not be collected because the reservoir was frozen.

**Reservoir was dry, no sample was collected.

TABLE 12: PARAMETERS FROM COLUMN A OF TABLE 1 FOR WATER QUALITY WELL QT-1 DURING SEPTEMBER 13-16, 2008, FILL EVENT

Date	Arsenic (mg/L)	Boron (mg/L)	Chloride (mg/L)	Copper (mg/L)	Fecal Coliform (cts/100 mL)	Iron (mg/L)	Lead (mg/L)	Mercury (µg/L)	Phenols (µg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Ammonia Nitrogen (mg/L)
9/18/08	<0.05	0.227	583	<0.010	1	21.57	0.038	<0.20	<5	341	2,308	0.40
9/25/08	<0.05	0.205	420	<0.010	<1	20.75	<0.015	<0.20	<5	345	1,986	0.33
10/2/08	<0.05	0.235	576	<0.010	<1	2.96	0.027	<0.20	<5	472	1,892	0.27
10/9/08	<0.05	0.233	579	<0.010	<1	8.77	0.031	<0.20	<5	676	2,310	0.23
10/16/08	<0.05	0.227	586	<0.010	<1	17.27	0.029	<0.20	<5	629	2,278	0.31
10/23/08	<0.05	0.216	553	<0.010	<1	18.94	0.019	<0.20	<5	628	2,286	0.31
10/30/08	<0.05	0.200	598	<0.010	<1	17.59	0.019	<0.20	<5	604	2,314	0.22
Reporting Limit	0.05	0.045	0.5	0.010	NA	0.10	0.015	0.20	5	2	40	0.10
Upper 95% Confidence Limit	*	NA	552	0.018	NA	47.61	0.015	*	NA	489	2,279	NA
Excursion during Fill	No**		Yes	No		No	Yes	No**		Yes	Yes	
Excursion after Dewatering	No**		Yes	No		No	Yes	No**		Yes	Yes	

NA = Not applicable.

*Value below reporting limit.

**Excursion of Upper 95% Confidence Limit was calculated based on the appropriate reporting limit.

TABLE 13: PARAMETERS FROM COLUMN B OF TABLE 1 FOR WATER QUALITY WELL QT-1 DURING SEPTEMBER 13-16, 2008, FILL EVENT

Date	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cyanide (mg/L)	Fluoride (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Silver (mg/L)	Temperature °C	Nitrate Nitrogen (mg/L)	BOD ₅ (mg/L)	BOD ₂₁ (mg/L)
9/18/08	0.0957	0.046	<0.0030	<0.005	0.39	0.1239	<0.010	<0.0030	13.4	<0.020	7	8
9/25/08	0.1117	<0.010	<0.0030	0.013	0.38	0.1319	<0.010	<0.0030	13.4	<0.020	<2	2
10/2/08	0.0872	<0.010	<0.0030	<0.005	0.26	0.0509	<0.010	<0.0030	14.1	<0.020	<2	3
10/9/08	0.0915	<0.010	0.0058	<0.005	0.32	0.0398	<0.010	<0.0030	13.2	<0.020	<2	2
10/16/08	0.0932	<0.010	<0.0030	<0.005	0.34	0.0962	<0.010	<0.0030	12.7	<0.020	<2	2
10/23/08	0.0883	<0.010	<0.0030	<0.005	0.41	0.1133	<0.010	<0.0030	12.2	<0.020	<2	3
10/30/08	0.0898	<0.010	<0.0030	<0.005	0.38	0.0932	<0.010	<0.0030	12.5	<0.020	<2	2
Reporting Limit	0.0030	0.010	0.003	0.005	0.10	0.0030	0.010	0.0030	NA	0.020	2	2
Upper 95% Confidence Limit	0.0963	*	0.005	*	0.57	0.1460	NA	**	NA	0.024	NA	NA
Excursion during Fill	Yes	Yes**	Yes	Yes**	No	No		No**		No		
Excursion after Dewatering	No	No**	No	No**	No	No		No**		No		

NA = Not applicable.

*Value below reporting limit.

**Excursion of Upper 95% Confidence Limit was calculated based on the appropriate reporting limit.

TABLE 14: PARAMETERS FROM COLUMN A OF TABLE 1 FOR WATER QUALITY WELL QT-2 DURING SEPTEMBER 13-16, 2008, FILL EVENT

Date	Arsenic (mg/L)	Boron (mg/L)	Chloride (mg/L)	Copper (mg/L)	Fecal Coliform (cts/100 mL)	Iron (mg/L)	Lead (mg/L)	Mercury (µg/L)	Phenols (µg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Ammonia Nitrogen (mg/L)
9/18/08	<0.050	0.199	124	<0.010	18	1.96	0.022	<0.20	<5	336	968	0.40
9/25/08	<0.050	0.153	68	<0.010	1	1.67	<0.015	<0.20	<5	210	544	0.33
10/2/08	<0.050	0.116	54	<0.010	<1	3.97	0.023	<0.20	<5	152	446	0.27
10/9/08	<0.050	0.233	57	<0.010	<1	2.41	0.023	<0.20	<5	251	644	0.23
10/16/08	<0.050	0.127	65	<0.010	<1	1.30	0.026	<0.20	<5	369	726	0.00
10/23/08	<0.050	0.142	50	<0.010	<1	2.05	0.017	<0.20	<5	521	1,022	0.43
10/30/09	<0.050	0.140	67	<0.010	<1	2.12	0.017	<0.20	<5	570	1,150	0.00
Reporting Limit	0.05	0.045	0.5	0.010	NA	0.10	0.015	0.20	5	2	40	0.10
Upper 95% Confidence Limit	*	NA	420	0.027	NA	4.50	0.015	0.230	NA	718	2,485	NA
Excursion during Fill	No**		No	No		No	Yes	No		No	No	
Excursion after Dewatering	No**		No	No		No	Yes	No		No	No	

NA = Not applicable.

*Value below reporting limit.

**Excursion of Upper 95% Confidence Limit was calculated based on the appropriate reporting limit.

TABLE 15: PARAMETERS FROM COLUMN B OF TABLE 1 FOR WATER QUALITY WELL QT-2 DURING SEPTEMBER 13-16, 2008, FILL EVENT

Date	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cyanide (mg/L)	Fluoride (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Silver (mg/L)	Temperature °C	Nitrate Nitrogen (mg/L)	BOD ₅ (mg/L)	BOD ₂₁ (mg/L)
9/18/08	0.0326	0.017	<0.0030	<0.005	0.35	0.1356	0.016	<0.003	14.7	0.117	6	7
9/25/08	0.0291	<0.010	<0.0030	<0.005	0.31	0.0841	0.011	<0.003	14.6	0.170	<2	2
10/2/08	0.0234	<0.010	<0.0030	<0.005	0.28	0.0803	<0.010	<0.003	14.3	0.113	<2	2
10/9/08	0.0297	<0.010	<0.0030	<0.005	0.32	0.0629	<0.010	<0.003	15.6	0.037	<2	<2
10/16/08	0.0369	<0.010	<0.0030	<0.005	0.29	0.0588	0.010	<0.003	15.6	<0.020	<2	2
10/23/08	0.0429	<0.010	<0.0030	<0.005	0.36	0.0681	0.014	<0.003	14.2	<0.020	<2	2
10/30/09	0.0414	<0.010	<0.0030	<0.005	0.33	0.0475	0.016	<0.003	14.3	<0.020	<2	<2
Reporting	0.0030	0.010	0.0030	0.005	0.10	0.003	0.010	0.0030	NA	0.020	2	2
Upper 95% Confidence Limit	0.0742	*	0.007	*	0.35	0.0574	NA	*	NA	4.416	NA	NA
Excursion during Fill	No	Yes**	No	No**	Yes	Yes		No**		No		
Excursion after Dewatering	No	No**	No	No**	No	No		No**		No		

NA = Not applicable.

*Value below reporting limit.

**Excursion of Upper 95% Confidence Limit was calculated based on the appropriate reporting limit.

TABLE 16: PARAMETERS FROM COLUMN A OF TABLE 1 FOR WATER QUALITY WELL QT-3 DURING SEPTEMBER 13-16, 2008, FILL EVENT

Date	Arsenic (mg/L)	Boron (mg/L)	Chloride (mg/L)	Copper (mg/L)	Fecal Coliform (cts/100 mL)	Iron (mg/L)	Lead (mg/L)	Mercury (µg/L)	Phenols (µg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Ammonia Nitrogen (mg/L)
9/18/08	<0.050	0.139	216	<0.010	130	22.72	0.015	<0.20	<5	267	1,254	0.37
9/25/08	<0.050	0.132	202	<0.010	<1	28.45	<0.015	<0.20	<5	243	1,136	0.30
10/2/08	<0.050	0.179	231	<0.010	<1	14.63	0.026	<0.20	<5	319	1,352	0.23
10/9/08	<0.050	0.142	223	<0.010	<1	25.83	0.031	<0.20	<5	378	1,328	0.28
10/16/08	<0.050	0.143	228	<0.010	<1	23.11	0.032	<0.20	<5	358	1,334	0.25
10/23/08	<0.050	0.132	221	<0.010	<1	22.28	0.018	<0.20	<5	366	1,422	0.29
10/30/08	<0.050	0.122	244	<0.010	<1	25.61	0.017	<0.20	<5	383	1,428	0.23
Reporting Limit	0.05	0.045	0.5	0.010	NA	0.10	0.015	0.20	5	2	40	0.10
Upper 95% Confidence Limit	*	NA	180	0.022	NA	30.59	*	*	NA	224	1,270	NA
Excursion during Fill	No**		Yes	No	No**	No	Yes**	No**		Yes	Yes	
Excursion after Dewatering	No**		Yes	No	No**	No	Yes**	No**		Yes	Yes	

NA = Not applicable.

*Value below reporting limit.

**Excursion of Upper 95% Confidence Limit was calculated based on the appropriate reporting limit.

TABLE 17: PARAMETERS FROM COLUMN B OF TABLE 1 FOR WATER QUALITY WELL QT-3 DURING SEPTEMBER 13-16, 2008, FILL EVENT

Date	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cyanide (mg/L)	Fluoride (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Silver (mg/L)	Temperature °C	Nitrate Nitrogen (mg/L)	BOD ₅ (mg/L)	BOD ₂₁ (mg/L)
9/18/08	0.0812	0.011	<0.0030	<0.005	0.23	0.5297	0.011	<0.003	13.4	<0.020	8	5
9/25/08	0.0829	<0.010	<0.0030	<0.005	0.23	0.3904	<0.010	<0.003	14.6	<0.020	<2	3
10/2/08	0.0864	<0.010	<0.0030	<0.005	0.22	0.1352	<0.010	<0.003	13.9	<0.020	<2	3
10/9/08	0.0929	<0.010	<0.0030	<0.005	0.17	0.2844	<0.010	<0.003	11.8	<0.020	<2	2
10/16/08	0.0923	<0.010	<0.0030	<0.005	0.21	0.2681	<0.010	<0.003	12.0	<0.020	<2	3
10/23/08	0.0918	<0.010	<0.0030	<0.005	0.27	0.2564	<0.010	<0.003	11.4	<0.020	<2	3
10/30/08	0.0969	<0.010	<0.0030	<0.005	0.22	0.2721	<0.010	<0.003	11.3	<0.020	<2	2
Reporting Limit	0.0030	0.010	0.0030	0.005	0.10	0.003	0.010	0.0030	NA	0.020	2	2
Upper 95% Confidence Limit	0.1000	*	0.007	*	0.38	0.1793	NA	0.0196	NA	0.331	NA	NA
Excursion during Fill	No	Yes**	No		No	Yes		No		No		
Excursion after Dewatering	No	No**	No		No	Yes		No		No		

NA = Not applicable.

*Value below reporting limit.

**Excursion of Upper 95% Confidence Limit was calculated based on the appropriate reporting limit.

TABLE 18: PARAMETERS FROM COLUMN A OF TABLE 1 FOR WATER QUALITY WELL QT-4
DURING SEPTEMBER 13-16, 2008, FILL EVENT

Date	Arsenic (mg/L)	Boron (mg/L)	Chloride (mg/L)	Copper (mg/L)	Fecal Coliform (cts/100 mL)	Iron (mg/L)	Lead (mg/L)	Mercury (µg/L)	Phenols (µg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Ammonia Nitrogen (mg/L)
9/18/08*												
9/25/08	<0.050	0.335	415	<0.010	<1	15.47	<0.015	<0.20	<5	237	1,496	0.41
10/2/08	<0.050	0.340	414	<0.010	<1	14.64	0.027	<0.20	<5	235	1,458	0.33
10/9/08	<0.050	0.356	343	<0.010	<1	14.15	0.029	<0.20	<5	272	1,352	0.33
10/16/08	<0.050	0.339	330	<0.010	<1	17.66	0.032	<0.20	<5	254	1,330	0.33
10/23/08	<0.050	0.348	336	<0.010	<1	13.89	0.017	<0.20	<5	248	1,368	<0.10
10/30/08	<0.050	0.331	379	<0.010	<1	16.78	0.019	<0.20	<5	257	1,430	0.31
Reporting Limit	0.05	0.045	0.5	0.010	NA	0.10	0.015	0.20	5	2	40	0.10
Upper 95% Confidence Limit	**	NA	611	0.073	NA	31.51	0.024	**	NA	300	1,873	NA
Excursion during Fill	No***		No	No		No	Yes	No***		No	No	
Excursion after Dewatering	No***		No	No		No	No	No***		No	No	

NA = Not applicable.

*Sample could not be collected due to unsafe conditions.

**Value below reporting limit.

***Excursion of Upper 95% Confidence Limit was calculated based on the appropriate reporting limit.

TABLE 19: PARAMETERS FROM COLUMN B OF TABLE 1 FOR WATER QUALITY WELL QT-4
DURING SEPTEMBER 13-16, 2008, FILL EVENT

Date	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cyanide (mg/L)	Fluoride (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Silver (mg/L)	Temperature °C	Nitrate Nitrogen (mg/L)	BOD ₅ (mg/L)	BOD ₂₁ (mg/L)
9/18/08*												
9/25/08	0.0917	<0.010	<0.0030	<0.005	0.24	0.1633	<0.010	<0.0030	15.1	<0.020	<2	2
10/2/08	0.0905	<0.010	<0.0030	<0.005	0.26	0.1074	<0.010	<0.0030	13.6	<0.020	<2	3
10/9/08	0.0906	<0.010	<0.0030	<0.005	0.24	0.1337	<0.010	<0.0030	15.0	<0.020	<2	2
10/16/08	0.0893	<0.010	<0.0030	<0.005	0.23	0.1696	<0.010	<0.0030	14.0	<0.020	<2	3
10/23/08	0.0892	<0.010	<0.0030	<0.005	0.35	0.1486	<0.010	<0.0030	14.2	<0.020	<2	3
10/30/08	0.0931	<0.010	<0.0030	<0.005	0.30	0.1411	<0.010	<0.0030	14.2	<0.020	<2	2
Reporting Limit	0.0030	0.010	0.0030	0.005	0.10	0.003	0.010	0.0030	NA	0.02	2	2
Upper 95% Confidence Limit	0.1576	**	0.074	**	0.37	0.2332	NA	0.0043	NA	0.262	NA	NA
Excursion during Fill	No	No***	No	No***	No	No		No		No		
Excursion after Dewatering	No	No***	No	No***	No	No		No		No		

NA = Not applicable.

*Sample could not be collected due to unsafe conditions.

**Value below reporting limit.

***Excursion of Upper 95% Confidence Limit was calculated based on the appropriate reporting limit.

TABLE 20: PARAMETERS FROM COLUMN A OF TABLE 1 FOR THORNTON TRANSITIONAL RESERVOIR DURING SEPTEMBER 13–16, 2008, FILL EVENT

Date	Arsenic (mg/L)	Boron (mg/L)	Chloride (mg/L)	Copper (mg/L)	Fecal Coliform (cts/100 mL)	Iron (mg/L)	Lead (mg/L)	Mercury (µg/L)	Phenols (µg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Ammonia Nitrogen (mg/L)
9/16/08	<0.050	0.211	99	<0.010	600	1.06	<0.015	<0.20	<5	248	712	0.15
9/23/08	<0.050	0.177	88	<0.010	9	0.41	<0.015	<0.20	<5	226	704	0.19
10/1/09	<0.050	0.074	24	<0.010	40	0.50	0.018	<0.20	<5	46	200	0.09
10/9/09	<0.050	0.079	26	<0.010	20	0.53	0.015	<0.20	<5	53	194	0.07
10/15/09	<0.050	0.078	28	0.017	450	12.71	0.049	<0.20	<5	55	202	0.00
10/23/09	<0.050	0.078	37	<0.010	140	6.78	0.022	<0.20	<5	91	290	0.03
10/30/09	<0.050	0.106	45	<0.010	<10	0.38	<0.015	<0.20	<5	100	312	0.01
Reporting Limit	0.05	0.045	0.5	0.010	NA	0.10	0.015	0.20	5	2	40	0.10

NA = Not applicable.

TABLE 21: PARAMETERS FROM COLUMN B OF TABLE 1 FOR THORNTON TRANSITIONAL RESERVOIR DURING SEPTEMBER 13–16, 2008, FILL EVENT

Date	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cyanide (mg/L)	Fluoride (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Silver (mg/L)	Temperature °C	Nitrate Nitrogen (mg/L)	BOD ₅ (mg/L)	BOD ₂₁ (mg/L)
9/16/08	0.0227	<0.010	<0.0030	<0.005	0.26	0.0269	0.030	<0.003	18.0	1.352	<2	3
9/23/08	0.0216	<0.010	<0.0030	<0.005	0.32	0.0142	0.015	<0.003	18.5	1.315	<2	3
10/1/09	0.0173	<0.010	<0.0030	<0.005	0.19	0.0093	<0.010	<0.003	17.9	0.729	5	6
10/9/09	0.0172	<0.010	<0.0030	<0.005	0.14	0.0163	<0.010	<0.003	18.1	0.712	<2	2
10/15/09	0.0575	<0.010	0.0155	<0.005	0.16	0.2912	0.017	<0.003	16.2	0.719	4	6
10/23/09	0.0432	<0.010	0.0079	<0.005	0.27	0.1484	0.011	<0.003	16.0	0.804	3	5
10/30/09	0.0200	<0.010	<0.0030	<0.005	0.22	0.0141	<0.010	<0.003	15.8	0.772	<2	3
Reporting Limit	0.0030	0.010	0.0030	0.005	0.10	0.003	0.010	0.0030	NA	0.020	2	2

NA = Not applicable.