

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 18-20

TUNNEL AND RESERVOIR PLAN

DES PLAINES TUNNEL SYSTEM

ANNUAL GROUNDWATER MONITORING REPORT

FOR 2017

July 2018

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6001 WEST PERSHING ROAD CICERO, ILLINOIS 60804-4112

Edward W. Podczerwinski, P.E.

Director of Monitoring and Research

July 31, 2018


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

Dear Sir or Madam:

Subject: Tunnel and Reservoir Plan, Des Plaines Tunnel System, Annual
Groundwater Monitoring Report for 2017

Attached are three copies of "Tunnel and Reservoir Plan, Des Plaines Tunnel System,
Annual Groundwater Monitoring Report for 2017."

Very truly yours,



Albert E. Cox

Environmental Monitoring and Research Manager
Monitoring and Research Department

AC:PS:cm

Attachment

cc w/att: Ms. Sally K. Swanson (USEPA Region 5 - WC15J) - (2)

Mr. Podczerwinski

Dr. Zhang

Dr. Cox

Dr. Tian

Dr. Srinivasan

Dr. Lindo

cc w/o att: Mr. Murray

Mr. Garelli

Metropolitan Water Reclamation District of Greater Chicago
100 East Erie Street Chicago, Illinois 60611-2803 (312) 751-5600

**TUNNEL AND RESERVOIR PLAN,
DES PLAINES TUNNEL SYSTEM,
ANNUAL GROUNDWATER MONITORING REPORT
FOR 2017**

**Monitoring and Research Department
Edward W. Podczerwinski, Director**

July 2018

TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES	ii
LIST OF FIGURES	iii
LIST OF ABBREVIATIONS	iv
ANNUAL DATA FOR MONITORING WELLS	1
Introduction	1
Modified Groundwater Monitoring Program	1
Summary of Data for Monitoring Wells	1

LIST OF TABLES

<u>Table No.</u>		<u>Page</u>
1	Analysis of Chemical and Physical Parameters in Groundwater From Fill Event Monitoring Wells in the Des Plaines Tunnel System of the Tunnel and Reservoir Plan During 2017 and Descriptive Statistics of Each of the Parameters	3
2	Analysis of Fecal Coliform in Groundwater From Fill Event Monitoring Wells in the Des Plaines Tunnel System of the Tunnel and Reservoir Plan During 2017 and Its Descriptive Statistics	8
3	Analysis of Chemical and Physical Parameters and Fecal Coliform in Groundwater From Annual Sampling Wells in the Des Plaines Tunnel System of the Tunnel and Reservoir Plan During 2017	13

LIST OF FIGURES

<u>Figure No.</u>		<u>Page</u>
1	Map of Monitoring Wells in the Des Plaines Tunnel System	2

LIST OF ABBREVIATIONS

°C	degrees Celsius
CCD	Chicago City Datum
CFU	colony forming units
Cl ⁻	chloride
District	Metropolitan Water Reclamation District of Greater Chicago
EC	electrical conductivity
FC	fecal coliform
ft	feet
hr	hour
IEPA	Illinois Environmental Protection Agency
L	liter
m	meter
mg	milligram
mS	millisiemen
NH ₃ -N	ammonia nitrogen
SO ₄ ²⁻	sulfate
TDS	total dissolved solids
Temp	temperature
TOC	total organic carbon

ANNUAL DATA FOR MONITORING WELLS

Introduction

All monitoring wells are located along the 13A extension, south leg, middle leg, and north leg of the Des Plaines Tunnel System ([Figure 1](#)). The monitoring wells were sampled based on the modified groundwater monitoring program for the Metropolitan Water Reclamation District of Greater Chicago's (District) Tunnel and Reservoir Plan (TARP) as briefly described below.

Modified Groundwater Monitoring Program

In a letter dated July 13, 2017, the Illinois Environmental Protection Agency (IEPA) accepted the modifications for the District's TARP groundwater monitoring program effective in January 2017 for a period of three years (2017 – 2019). Under the revised monitoring plan, nine wells (QD-27, -29, -30, -31, -33, -34, -36, -46, and -54), which had fecal coliform detected in 10 percent or more of samples during the period 1995 – 2013, will be sampled for four events of TARP tunnel fills, based on the water levels in the TARP following storm events (fill event-based). The criterion that triggers a fill event sampling is that the level of water in the TARP Mainstream tunnels reaches -150 ft Chicago City Datum (CCD). At each event, sampling is done weekly for three weeks. The samples collected during the first week of sampling were analyzed for all parameters in the original monitoring program, including: pH, temperature, electrical conductivity, total dissolved solids, hardness, ammonia, total organic carbon, chloride, sulfate, and fecal coliform. However, the samples from the second and third weeks are analyzed for only fecal coliform. Groundwater elevations in the monitoring wells are measured during each sampling event.

The other 25 wells associated with the Des Plaines Tunnel System are sampled once per year. These wells had fecal coliform detected in less than 10 percent of samples during the period 1995 – 2013.

The monitoring wells QD-43, QD-47, QD-49, QD-55 and QD-58 are either dry or inaccessible. Therefore, these wells are discontinued for monitoring in the modified groundwater monitoring program.

Summary of Data for Monitoring Wells

The analytical data for groundwater sampled during 2017 from fill event-based monitoring wells QD-27, QD-29, QD-30, QD-31, QD-33, QD-34, QD-36, QD-46, and QD 54, along with descriptive statistics, are presented in [Table 1](#). Physical characteristics, such as elevation, groundwater temperature, and estimated time of recharge for each well between initial drawdown and sampling, are also included. The fecal coliform data for groundwater sampled during 2017 from these monitoring wells, along with descriptive statistics, are presented in [Table 2](#). The analytical data for groundwater from 25 wells sampled once per year are presented in [Table 3](#).

FIGURE 1: MAP OF MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM

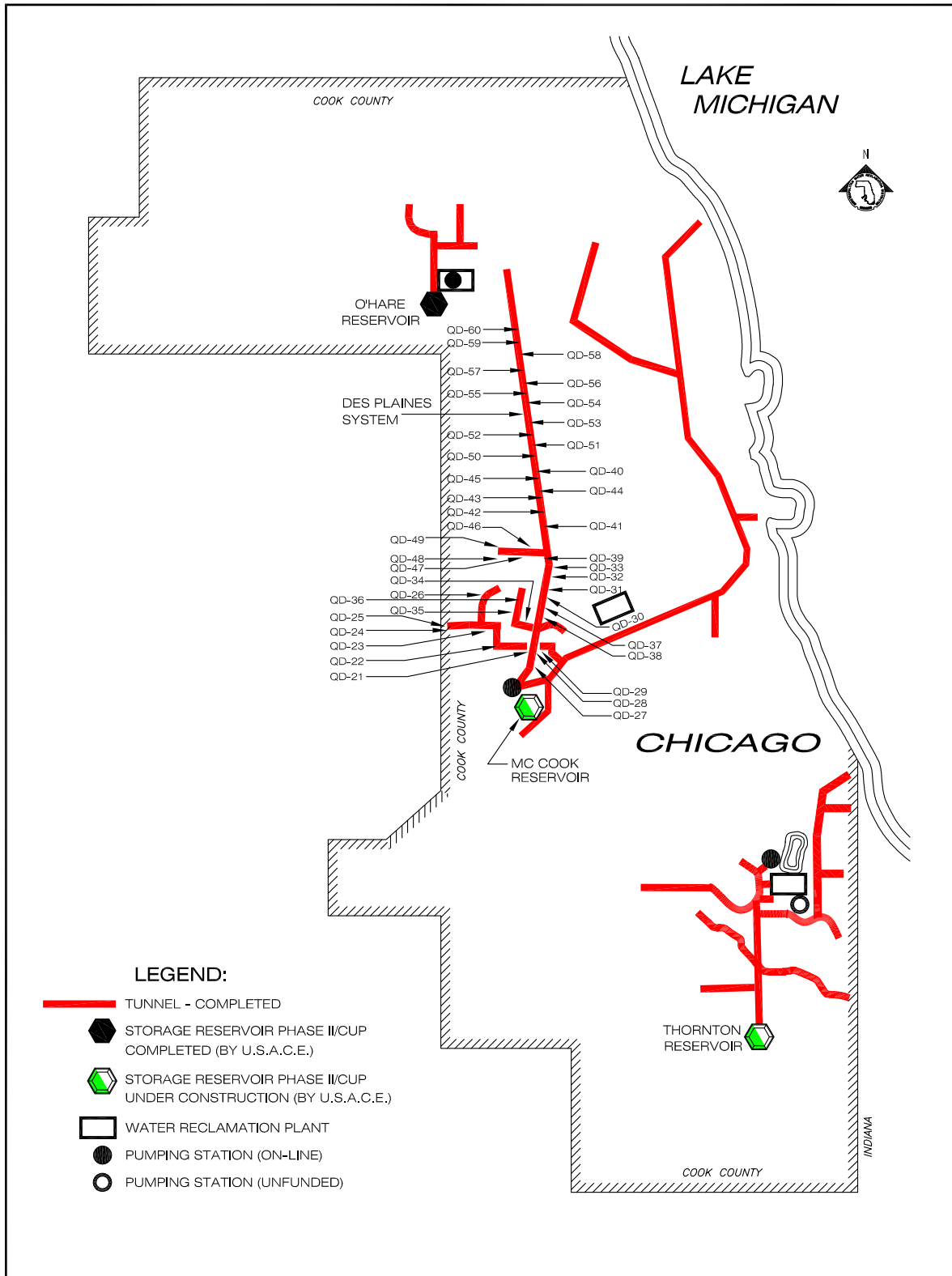


TABLE 1: ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS IN GROUNDWATER FROM FILL EVENT MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2017 AND DESCRIPTIVE STATISTICS OF EACH OF THE PARAMETERS

Well	Fill Event	Sample Date	pH	EC	TDS	TOC	Cl ⁻	SO ₄ ²⁻	NH ₃ -N	Hardness	Temp	Water Elevation ¹	Recharge Time	
				mS/m	----- mg/L -----						°C	ft	hr	
QD-27	F2	03/03/17	7.3	250	1,336	9.4	455	42	32	467	12.3	-171	<48	
	F3	04/05/17	6.9	272	1,180	12	383	67	29	464	11.5	-199	<48	
	F4	05/03/17	7.2	277	1,316	14	465	50	24	455	13.1	-55	<48	
	F5	07/14/17	7.1	NRR ²	1,142	14	342	26	28	461	13.9	-177	<48	
	F6	10/13/17	7.4	235	1,250	13	21	40	32	480	13.4	-186	<48	
		Minimum		6.9	235	1,142	9.4	21	26	24	455			
		Median		7.2	261	1,250	13	383	42	29	464			
		Mean		7.2	258	1,245	13	333	45	29	465			
		Maximum		7.4	277	1,336	14	465	67	32	480			
		Standard deviation		0.2	20	84	1.9	182	15	3.0	9.0			
		Coefficient of variation (%)		2.2	7.7	7.0	15	55	34	11	2.0			
QD-29	F1	01/19/17	7.1	328	2,290	4.7	166	767	1.0	877	12.8	-97	<48	
	F2	03/02/17	7.8	380	2,102	3.7	481	46	1.2	1,024	12.6	-95	<48	
	F3	04/05/17	7.2	374	2,476	5.6	566	929	1.2	1,012	12.8	-99	<48	
	F4	05/03/17	7.3	384	2,576	4.8	590	847	1.1	992	12.9	-79	<48	
	F5	07/13/17	7.1	187	1,198	1.7	176	274	0.5	666	13.5	-127	<48	
	F6	10/12/17	7.0	170	922	1.4	169	304	0.5	678	13.2	-122	<48	
		Minimum		7.0	170	922	1.4	166	46	0.5	666			
		Median		7.1	351	2,196	4.2	329	536	1.1	935			
		Mean		7.2	304	1,927	3.7	358	528	0.9	875			
		Maximum		7.8	384	2,576	5.6	590	929	1.2	1,024			
		Standard deviation		0.3	99	697	1.7	209	365	0.4	166			
	Coefficient of variation (%)		4.0	33	36	48	58	69	39.8	19				

TABLE 1 (Continued): ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS IN GROUNDWATER FROM FILL EVENT MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2017 AND DESCRIPTIVE STATISTICS OF EACH OF THE PARAMETERS

Well	Fill Event	Sample Date	pH	EC	TDS	TOC	Cl ⁻	SO ₄ ²⁻	NH ₃ -N	Hardness	Temp	Water Elevation ¹	Recharge Time	
				mS/m	----- mg/L -----						°C	ft	hr	
QD-30	F2	03/03/17	7.5	121	772	<1.0	97	187	0.4	465	11.9	-125	<48	
	F3	04/05/17	7.1	128	746	<1.0	98	197	0.2	475	12.1	-129	<48	
	F4	05/03/17	7.2	120	788	<1.0	101	186	0.3	447	12.3	-81	<48	
	F5	07/14/17	7.3	132	816	<1.0	97	171	0.3	475	12.7	-131	<48	
	F6	10/13/17	7.4	142	800	1.0	112	232	0.3	511	13.2	-139	<48	
		Minimum		7.1	120	746	<1.0	97	171	0.2	447			
		Median		7.3	128	788	1.0	98	187	0.3	475			
		Mean		7.3	128	784	1.0	101	195	0.3	475			
		Maximum		7.5	142	816	1.0	112	232	0.4	511			
		Standard deviation		0.1	9.0	27	0.0	6.0	23	0.1	23			
		Coefficient of variation (%)		2.0	7.0	3.0	0.0	6.0	12	28	5.0			
QD-31	F2	03/03/17	7.5	144	716	<1.0	102	132	0.7	199	11.3	-188	<48	
	F3	04/05/17	7.4	148	860	<1.0	117	219	0.2	273	11.6	-227	<48	
	F4	05/03/17	7.5	106	700	14	135	73	0.2	199	12.3	-22	<48	
	F5	07/14/17	7.4	139	832	3.1	133	156	0.2	265	12.3	-230	<48	
	F6	10/13/17	7.6	125	732	1.9	106	229	0.1	258	12.8	-212	<48	
		Minimum		7.4	106	700	<1.0	102	73	0.1	199			
		Median		7.5	139	732	1.9	117	156	0.2	258			
		Mean		7.5	132	768	4.3	119	162	0.3	239			
		Maximum		7.6	148	860	14	135	229	0.7	273			
		Standard deviation		0.1	17	73	5.7	15	64	0.2	37			
		Coefficient of variation (%)		1.3	13	9.0	133	13	40	90	15			

TABLE 1 (Continued): ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS IN GROUNDWATER FROM FILL EVENT MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2017 AND DESCRIPTIVE STATISTICS OF EACH OF THE PARAMETERS

Well	Fill Event	Sample Date	pH	EC	TDS	TOC	Cl ⁻	SO ₄ ²⁻	NH ₃ -N	Hardness	Temp	Water Elevation ¹	Recharge Time	
				mS/m	----- mg/L -----					°C	ft	hr		
QD-33	F2	03/03/17	8.4	253	1,508	<1.0	337	195	<0.1	22	11.5	-214	<48	
	F3	04/05/17	8.2	269	1,490	<1.0	343	208	0.2	26	12.1	-232	<48	
	F4	05/04/17	8.1	220	988	4.7	200	75	<0.1	12	11.8	-112	<48	
	F5	07/14/17	8.3	207	1,212	4.2	249	119	<0.1	18	12.8	-235	<48	
	F6	10/13/17	8.4	238	1,300	<1.0	298	325	0.1	23	13.1	-217	<48	
		Minimum		8.1	207	988	<1.0	200	75	<0.1	12			
		Median		8.3	238	1,300	1.0	298	195	0.1	22			
		Mean		8.3	237	1,300	2.4	285	185	0.1	20			
		Maximum		8.4	269	1,508	4.7	343	325	0.2	26			
		Standard deviation		0.1	25	215	1.9	61	96	0.03	5			
	Coefficient of variation (%)		1.4	11	17	80	21	52	24	27				
QD-34	F1	01/20/17	6.8	166	864	2.9	186	88	3.0	393	12.9	-92	<48	
	F2	03/02/17	8.2	175	1,276	1.1	287	267	0.6	654	12.8	-101	<48	
	F3	04/07/17	7.1	147	718	4.7	193	64	2.1	373	12.8	-88	<48	
	F4	05/03/17	7.0	239	704	17.2	171	71	2.1	370	13.2	-82	<48	
	F5	07/14/17	6.8	158	862	2.9	142	224	2.3	550	13.0	-103	<48	
	F6	10/12/17	7.0	159	994	2.0	152	253	0.7	610	13.0	-111	<48	
		Minimum		6.8	147	704	1.1	142	64	0.6	370			
		Median		7.0	162	863	2.9	179	156	2.1	472			
		Mean		7.1	174	903	5.1	189	161	1.8	492			
		Maximum		8.2	239	1,276	17.2	287	267	3.0	654			
	Standard deviation		0.5	33	212	6.0	52	96	0.9	128				
	Coefficient of variation (%)		7.5	19	23	117	28	60	53	26				

TABLE 1 (Continued): ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS IN GROUNDWATER FROM FILL EVENT MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2017 AND DESCRIPTIVE STATISTICS OF EACH OF THE PARAMETERS

Well	Fill Event	Sample Date	pH	EC	TDS	TOC	Cl ⁻	SO ₄ ²⁻	NH ₃ -N	Hardness	Temp	Water Elevation ¹	Recharge Time	
				mS/m	----- mg/L -----						°C	ft	hr	
QD-36	F1	01/20/17	6.8	162	862	1.9	148	186	0.4	552	11.5	-86	<48	
	F2	03/02/17	8.3	104	1,130	<1.0	123	325	0.5	660	11.2	-114	<48	
	F3	04/05/17	7.0	170	1,052	1.8	119	304	0.3	687	11.7	-121	<48	
	F4	05/03/17	6.9	162	1,060	1.5	116	288	0.3	682	11.6	-90	<48	
	F5	07/13/17	6.9	161	1,172	1.4	120	345	0.3	745	12.1	-113	<48	
	F6	10/12/17	6.9	165	1,036	1.0	120	314	0.3	668	11.7	-125	<48	
		Minimum		6.8	104	862	<1.0	116	186	0.3	552			
		Median		6.9	162	1,056	1.5	120	309	0.3	675			
		Mean		7.1	154	1,052	1.4	124	294	0.3	666			
		Maximum		8.3	170	1,172	1.9	148	345	0.5	745			
	Standard deviation		0.6	25	107	0.4	12	56	0.1	63				
	Coefficient of variation (%)		8.3	16	10	27	9	19	18.5	9				
QD-46	F1	01/20/17	7.7	94	542	1.1	50	99	0.2	70	12.3	-160	<48	
	F2	03/02/17	8.1	95	534	<1.0	12	106	0.3	64	11.8	-213	<48	
	F3	04/05/17	7.8	94	528	<1.0	15	144	0.2	81	11.8	-201	<48	
	F4	05/04/17	7.2	84	500	2.1	67	62	0.3	92	12.4	-87	<48	
	F5	07/14/17	7.8	92	486	1.8	23	112	0.2	69	12.1	-198	<48	
	F6	10/12/17	7.9	91	540	<1.0	11	133	0.2	78	12.4	-198	<48	
		Minimum		7.2	84	486	<1.0	11	62	0.2	64			
		Median		7.8	93	531	1.1	19	109	0.2	74			
		Mean		7.8	92	522	1.3	30	109	0.2	76			
		Maximum		8.1	95	542	2.1	67	144	0.3	92			
	Standard deviation		0.3	4	23	0.5	23	29	0.03	10				
	Coefficient of variation (%)		4.3	4	4	37	79	26	15	13				

TABLE 1 (Continued): ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS IN GROUNDWATER FROM FILL EVENT MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2017 AND DESCRIPTIVE STATISTICS OF EACH OF THE PARAMETERS

Well	Fill Event	Sample Date	pH	EC	TDS	TOC	Cl ⁻	SO ₄ ²⁻	NH ₃ -N	Hardness	Temp	Water Elevation ¹	Recharge Time	
				mS/m	----- mg/L -----					°C	ft	hr		
QD-54	F1	01/20/17	9.0	70	394	<1.0	17	137	0.2	30	12	-80	<48	
	F2	03/03/17	8.8	75	420	<1.0	17	148	0.2	37	11.7	-85	<48	
	F3	04/06/17	8.6	76	430	<1.0	19	152	0.2	39	12.1	-80	<48	
	F4	05/04/17	8.8	79	458	<1.0	19	155	0.3	40	12.3	-44	<48	
	F5	07/19/17	8.9	77	354	<1.0	18	144	0.2	37	12.7	-90	<48	
	F6	10/18/17	8.7	68	392	1.4	17	147	0.2	63	13.9	-87	<48	
		Minimum		8.6	68	354	<1.0	17	137	0.2	30			
		Median		8.8	76	407	1.0	18	148	0.2	38			
		Mean		8.8	74	408	1.1	18	147	0.2	41			
		Maximum		9.0	79	458	1.4	19	155	0.3	63			
		Standard deviation		0.1	4.0	36	0.2	1.0	6.0	0.04	11			
	Coefficient of variation (%)		1.5	5.0	9.0	15	6.0	4.0	19	28				

¹Relative to Chicago City Datum (579.48 ft above mean sea level) at intersection of Madison and State Streets.

²No reportable data due to equipment malfunction.

TABLE 2: ANALYSIS OF FECAL COLIFORM IN GROUNDWATER FROM FILL EVENT MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2017 AND ITS DESCRIPTIVE STATISTICS

Well	Fill Event	Week 1 Sample Date	Week 1	Week 2	Week 3	Week 4 ¹
----- CFU/100 mL -----						
QD-27	F2	03/02/17	43	5	4	
	F3	04/05/17	650	<1	35	
	F4	05/02/17	2,400	670	160	
	F5	07/13/17	15	<1	4,000	29
	F6	10/12/17	39	1,300	1,100	
		Minimum	15	<1	4	
		Median	43	670	160	
		Mean ²	131	21	158	
		Maximum	2,400	1,300	4,000	
	QD-29	F1	01/19/17	20	5	1
F2		03/02/17	<1	1	N/S ³	
F3		04/05/17	<1	250	<1	
F4		05/02/17	<1	<1	NR ⁴	
F5		07/13/17	4	2	12	
F6		10/12/17	25	6	94	
		Minimum	<1	<1	<1	
		Median	3	4	1	
		Mean	4	5	5	
		Maximum	25	250	94	

TABLE 2 (Continued): ANALYSIS OF FECAL COLIFORM IN GROUNDWATER FROM FILL EVENT MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2017 AND ITS DESCRIPTIVE STATISTICS

Well	Fill Event	Week 1 Sample Date	Week 1	Week 2	Week 3	Week 4 ¹	
----- CFU/100 mL -----							
QD-30	F2	03/02/17	1	<1	NR		
	F3	04/05/17	<1	<1	NR		
	F4	05/02/17	6	1	10		
	F5	07/13/17	1	>20,000	900	31	
	F6	10/12/17	2	14	83		
		Minimum		<1	<1	10	
		Median		1	1	83	
		Mean		2	12	91	
		Maximum		6	20,000	900	
	QD-31	F2	03/02/17	>20,000	98	35	
F3		04/05/17	95	1,200	41		
F4		05/02/17	16,000	79	960		
F5		07/13/17	89,000	>20,000	59,000	49	
F6		10/12/17	>20,000	>20,000	>20,000		
		Minimum		95	79	35	
		Median		20,000	1,200	960	
		Mean		8,844	1,300	1102	
		Maximum		89,000	20,000	59,000	

TABLE 2 (Continued): ANALYSIS OF FECAL COLIFORM IN GROUNDWATER FROM FILL EVENT MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2017 AND ITS DESCRIPTIVE STATISTICS

Well	Fill Event	Week 1 Sample Date	Week 1	Week 2	Week 3	Week 4 ¹
----- CFU/100 mL -----						
QD-33	F2	03/02/17	2,100	2	7	
	F3	04/05/18	41	52	3	
	F4	05/02/17	2,700	280	29	
	F5	07/13/17	>200,000	>20,000	53,000	4
	F6	10/12/17	>20,000	>20,000	>20,000	
		Minimum	41	2	3	
		Median	2,700	280	29	
		Mean	3,924	410	230	
		Maximum	200,000	20,000	53,000	
	QD-34	F1	01/19/17	>20,000	130	53
F2		03/02/17	<1	6	<1	
F3		04/05/18	>20,000	500	94	
F4		05/02/17	>20,000	54	27	
F5		07/13/17	51,000	120	13,000	120
F6		10/12/17	>20,000	9,300	10,000	
		Minimum	<1	6	<1	
		Median	20,000	125	74	
		Mean	4,487	169	161	
		Maximum	51,000	9,300	13,000	

TABLE 2 (Continued): ANALYSIS OF FECAL COLIFORM IN GROUNDWATER FROM FILL EVENT MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2017 AND ITS DESCRIPTIVE STATISTICS

Well	Fill Event	Week 1 Sample Date	Week 1	Week 2	Week 3	Week 4 ¹	
----- CFU/100 mL -----							
QD-36	F1	01/19/17	3,300	80	20		
	F2	03/02/17	1	3	<1		
	F3	04/05/17	1	<1	<1		
	F4	05/02/17	20	1	N/S		
	F5	07/13/17	1	100	11,000	50	
	F6	10/12/17	2,600	56	2,400		
		Minimum		1	<1	<1	
		Median		11	30	20	
		Mean		24	11	56	
		Maximum		3,300	100	11,000	
QD-46	F1	01/19/17	4,100	210	78		
	F2	03/02/17	4	1	N/S		
	F3	04/05/17	110	360	95		
	F4	05/02/17	9,100	110	39		
	F5	07/13/17	93,000	3,800	72,000	330	
	F6	10/12/17	5	13,200	590		
		Minimum		4	1	39	
		Median		2,105	285	95	
		Mean		444	273	415	
		Maximum		93,000	13,200	72,000	

TABLE 2 (Continued): ANALYSIS OF FECAL COLIFORM IN GROUNDWATER FROM FILL EVENT MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2017 AND ITS DESCRIPTIVE STATISTICS

Well	Fill Event	Week 1 Sample Date	Week 1	Week 2	Week 3	Week 4 ¹	
----- CFU/100 mL -----							
QD-54	F1	01/19/17	1	<1	NR		
	F2	03/02/17	<1	<1	NR		
	F3	04/05/17	<1	<1	<1		
	F4	05/02/17	2	<1	<1		
	F5	07/13/17	<1	4	<1		
	F6	10/12/17	5	3	<1		
		Minimum		<1	<1	<1	
		Median		1	1	1	
		Mean		1	2	1	
		Maximum		5	4	1	

¹Sampling and fecal coliform analysis done in Week 4, beyond the required Week 3, for some fill events showing high fecal coliform in Weeks 2 and 3.

²Geometric mean calculated.

³N/S: Cannot get samples.

⁴NR: Sampling is not required because the Fecal Coliform level was below detection limit in the previous week.

TABLE 3: ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS AND FECAL COLIFORM IN GROUNDWATER FROM ANNUAL SAMPLING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2017

Well	Sample Date	pH	EC	TDS	TOC	Cl ⁻	SO ₄ ²⁻	NH ₃ -N	Hardness	Temp	Water Elevation ¹	Fecal Coliform
			mS/m	----- mg/L -----						°C	ft	CFU/100 mL
QD-21	07/05/17	6.9	217	1,338	<1.0	283	327	0.2	713	14.0	-95	<1
QD-22	07/05/17	7.0	146	986	1.0	143	263	0.4	667	13.6	-84	<1
QD-23	07/05/17	6.9	201	1,354	1.2	254	370	0.5	792	14.0	-87	<1
QD-24	07/06/17	6.9	166	916	2.2	135	241	0.6	603	13.0	-189	<1
QD-25	07/06/17	6.9	265	1,530	1.5	467	257	0.6	635	11.6	-39	<1
QD-26	09/07/17	7.2	81	474	1.3	10	NA ²	0.3	387	12.9	-71	<1
QD-28	08/31/17	7.1	111	720	1.1	136	150	1.1	426	14.5	-144	4
QD-32	09/07/17	8.9	319	1,836	<1.0	532	NA	<0.1	22	12.9	-257	<1
QD-35	08/31/17	7.1	135	860	1.7	117	270	0.3	567	14.6	-140	<1
QD-37	09/07/17	7.1	199	1,200	<1.0	239	NA	0.2	284	13.4	-231	<1
QD-38	11/15/17	6.7	129	698	2.0	157	108	0.3	220	12.7	-244	<1
QD-39	12/07/17	8.3	125	768	<1.0	30	102	0.1	18	10.9	-187	<1
QD-40	09/21/17	9.2	116	738	1.0	17	NA	0.1	18	14.0	-157	<1
QD-41	01/12/17	6.5	103	728	1.5	17	327	0.3	410	13.4	-184	<1
QD-42	01/12/17	7.5	106	726	<1.0	18	297	0.3	377	11.4	-169	<1
QD-44	01/12/17	7.5	90	592	<1.0	19	214	0.3	329	10.8	-55	<1
QD-45	09/21/17	8.1	83	548	1.4	16	NA	0.4	96	13.0	-52	<1
QD-48	12/07/17	8.6	67	388	1.8	8	235	0.4	195	11.6	-229	<1
QD-50	06/28/17	9.5	110	706	<1.0	12	278	0.1	6.0	12.6	-194	<1
QD-51	06/28/17	9.4	90	542	<1.0	12	127	<0.1	4.0	12.2	-166	<1
QD-52	06/28/17	9.0	81	498	<1.0	16	149	0.1	14	14.0	-174	1
QD-56	11/15/17	8.2	49	260	1.6	11	13	0.2	52	11.9	-135	<1
QD-57	11/15/17	8.6	59	336	1.1	12	57	0.3	18	11.1	-176	7
QD-59	09/14/17	7.5	58	384	<1.0	68	NA	0.3	211	12.2	-110	<1
QD-60	09/14/17	7.7	57	470	<1.0	41	NA	0.3	249	12.6	-165	<1

¹Relative to Chicago City Datum (579.48 ft above mean sea level) at intersection of Madison and State Streets.

²NA: Not analyzed due to samples being beyond holding time.