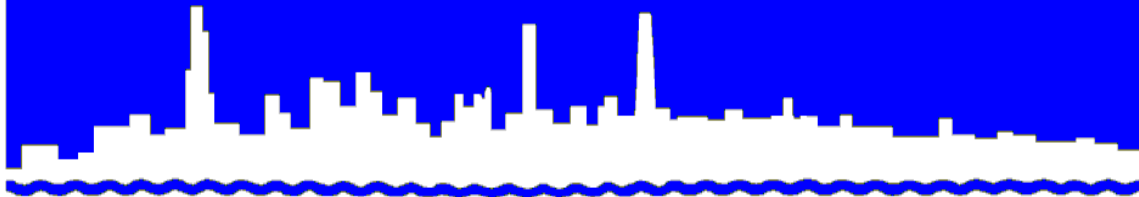


Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 26-26

***TUNNEL AND RESERVOIR PLAN
UPPER DES PLAINES TUNNEL SYSTEM ANNUAL MONITORING
REPORT FOR 2025***

July 2026



Metropolitan Water Reclamation District of Greater Chicago

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Ms. Joey Logan-Pugh
Chief
Bureau of Water
Illinois Environmental Protection Agency
2520 W. Iles Ave.
P. O. Box 19276
Springfield, IL 62794-9276

Dear Ms. Logan-Pugh:

Subject: Tunnel and Reservoir Plan Upper Des Plaines Tunnel System Annual
Groundwater Monitoring Report for 2025

The report entitled "Tunnel and Reservoir Plan Upper Des Plaines Tunnel System Annual
Groundwater Monitoring Report for 2025" is attached.

Very truly yours,

Albert Cox, Ph.D.
Environmental Monitoring and Research Manager
Monitoring and Research Department

AC:lf
Attachment
cc: Mr. Ryan Bahr (USEPA Region 5 - WC15J)
Ms. A. Zimmer (IEPA)
Mr. E. Podczewinski
Dr. H. Zhang
cc w/o att: Mr. E. Staudacher
Ms. L. Oduocha

Metropolitan Water Reclamation District of Greater Chicago
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**TUNNEL AND RESERVOIR PLAN
UPPER DES PLAINES TUNNEL SYSTEM
ANNUAL GROUNDWATER MONITORING REPORT
FOR 2025**

By

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TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES	ii
LIST OF FIGURES	iii
LIST OF ABBREVIATIONS	iv
ANNUAL DATA FOR MONITORING AND OBSERVATION WELLS	1
Introduction	1
Modified Groundwater Monitoring Program	1
Summary of Data for Monitoring and Observation Wells	1
Monitoring Wells	1
Observation Wells	4

LIST OF TABLES

<u>Table No.</u>		<u>Page</u>
1	Analysis of Chemical and Physical Parameters and Fecal Coliform in Groundwater Sampled from Fill Event Monitoring Wells in the Upper Des Plaines Tunnel System of the Tunnel and Reservoir Plan During 2025	3
1	Analysis of Chemical and Physical Parameters and Fecal Coliform in Groundwater Sampled from Annual Monitoring Wells in the Upper Des Plaines Tunnel System of the Tunnel and Reservoir Plan Sampled During 2025	5
3	Groundwater Elevations for Observation Wells MW-1 Through MW-9 in the Upper Des Plaines Tunnel System of the Tunnel and Reservoir Plan Measured During 2025	6

LIST OF FIGURES

<u>Figure No.</u>		<u>Page</u>
1	Map of Monitoring and Observation Wells in the Upper Des Plaines Tunnel System	2
2	Minimum, Mean, and Maximum Water Elevations for Monitoring/Observation Wells MW-1 Through MW-9 in the Upper Des Plaines Tunnel System of the Tunnel and Reservoir Plan Measured During 2025	7

LIST OF ABBREVIATIONS

Abbreviation	Definition
°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
IEPA	Illinois Environmental Protection Agency
m	meter
mg	milligram
mL	milliliter
mS	millisiemens
NH ₃ -N	ammonia nitrogen
SO ₄ ²⁻	sulfate
TARP	Tunnel and Reservoir Plan
TDS	total dissolved solids
Temp.	temperature
TOC	total organic carbon
UDP	Upper Des Plaines

ANNUAL DATA FOR MONITORING AND OBSERVATION WELLS

Introduction

The Upper Des Plaines (UDP) Tunnel System consists of two subsystems, UDP 20 and UDP 21. The UDP 20 subsystem contains six groundwater monitoring wells, MW-1 through MW-6, while the UDP 21 subsystem contains three monitoring wells, MW-7 through MW-9 ([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's) Tunnel and Reservoir Plan (TARP) as briefly described below. Groundwater elevations in the monitoring wells are measured during each sampling event. In addition, groundwater elevations are measured biweekly since these wells also serve as observation wells.

Modified Groundwater Monitoring Program

In a letter dated May 14, 2021, the Illinois Environmental Protection Agency (IEPA) approved a modified TARP groundwater monitoring program for the District's Calumet, Mainstream, Des Plaines, and UDP tunnel systems effective January 2021. The modification of the TARP groundwater monitoring program was based on the key findings of a three-year fill event-based groundwater monitoring study conducted by the District from 2017 to 2019 and submitted to the IEPA in a report dated July 30, 2020.

Under the modified monitoring program, four UDP wells (MW-5, MW-6, MW-7, and MW-8) are sampled for two tunnel fill events per year, usually following storm events. Fecal coliforms (FC) in these wells were detected in 10 percent or more of samples collected during 1995–2013. The criterion that triggers fill event sampling is that the water from the UDP Tunnel System starts to enter the Gloria Alitto Majewski Reservoir. Sampling is conducted during the first week following each fill event. For the first fill event, samples are analyzed for all parameters including pH, temperature (Temp.), electrical conductivity (EC), total dissolved solids (TDS), hardness, ammonia nitrogen ($\text{NH}_3\text{-N}$), total organic carbon (TOC), chloride (Cl^-), sulfate (SO_4^{2-}), and FC. For the second fill event, samples are analyzed for FC only. If no fill event occurs by April 30 or October 31, a sampling event is conducted as a substitute for the fill event sampling representing the periods January – June and July – December, respectively.

The other five wells associated with the UDP Tunnel System, referred to as annual monitoring wells, are sampled once per year. These wells had FC detected in less than 10 percent of samples during the period 1995–2013.

Summary of Data for Monitoring and Observation Wells

Monitoring Wells. During 2025, the UDP fill event-based monitoring wells MW-5, MW-6, MW-7, and MW-8 were sampled following two fill events which occurred on January 31 and August 19, 2025. The groundwater analytical data and physical parameters for the fill event-based monitoring wells are presented in [Table 1](#).

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

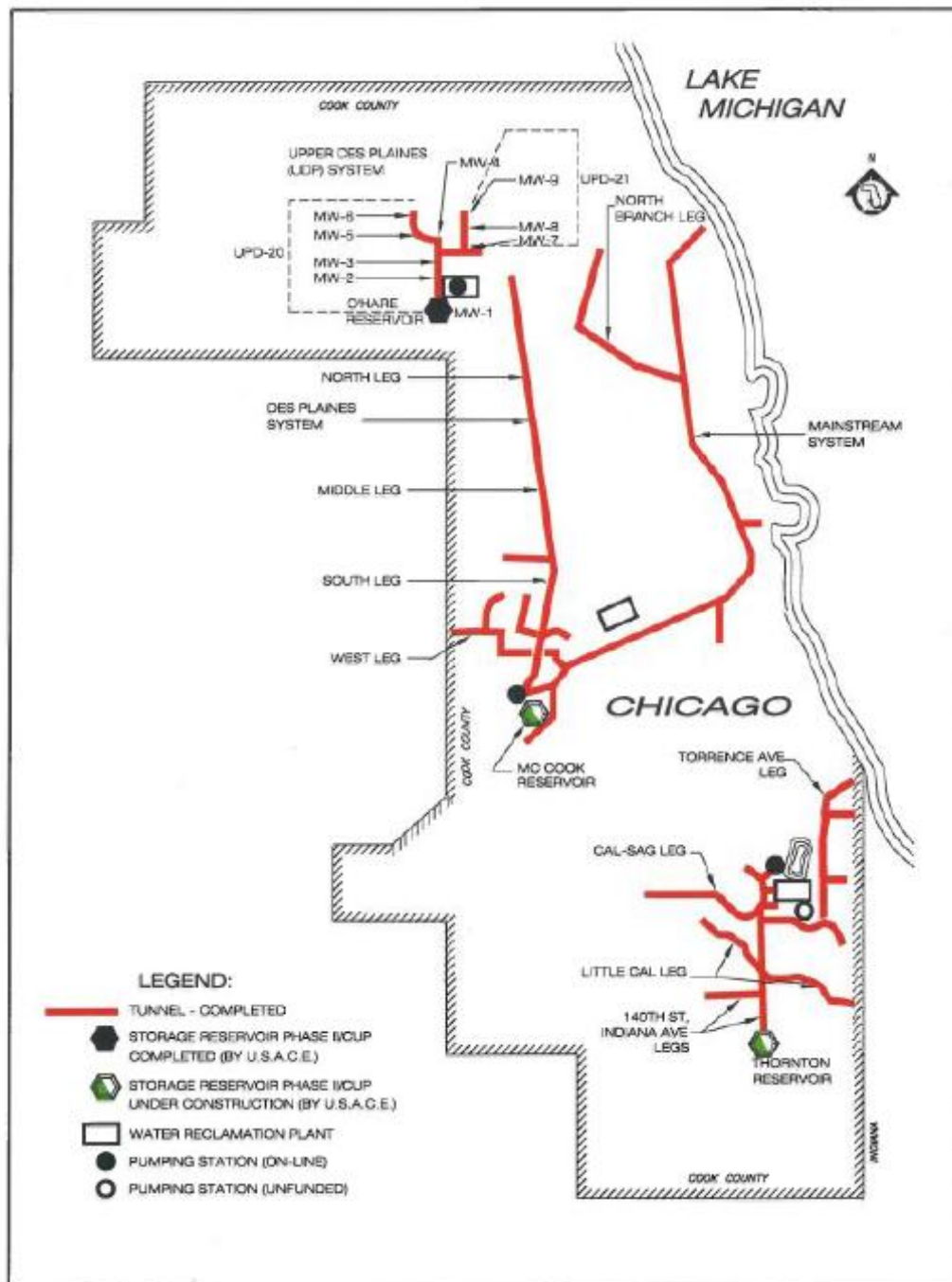


TABLE 1: ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS AND FECAL COLIFORM IN GROUNDWATER SAMPLED FROM FILL EVENT MONITORING WELLS IN THE UPPER DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2025¹

Well	Sample Date	pH	EC mS/m	TDS	TOC	Cl ⁻	SO ₄ ²⁻	NH ₃ -N	Hardness	Temp. °C	Water Elevation ² feet	Fecal Coliform CFU/100 mL	Recharge Time hours
				-----mg/L-----									
MW-5	02/13/25	8.8	46	380	<5.0	41	134	<0.30	113	12.5	-57	<1	<48
	08/27/25	8.7	39	—	—	—	—	—	—	15.0	-55	330	<48
MW-6	02/10/25	7.5	88	654	<5.0	39	320	0.54	372	14.1	41	1	<4
	08/26/25	7.7	93	—	—	—	—	—	—	14.2	66	1	<4
MW-7	02/10/25	7.4	94	762	<5.0	44	359	0.59	478	15.2	52	<1	<4
	08/26/25	7.4	107	—	—	—	—	—	—	15.9	45	<1	<4
MW-8	02/13/25	7.9	69	554	<5.0	50	238	<0.30	310	13.3	-31	<1	<48
	08/27/25	8.0	88	—	—	—	—	—	—	15.4	-30	<1	<48

¹Chemistry parameters need to be analyzed for first fill event only.

²Relative to the Chicago City Datum at the intersection of State and Madison Streets (579.48 feet above mean sea level).

Fecal coliforms were not detected following the first fill event that occurred on January 31, 2025, in any well except well MW-6. Fecal coliforms were detected at wells MW-5 and MW-6 during the second fill event on August 19, 2025.

The analytical data for groundwater sampled from the five wells sampled once per year are presented in Table 2. Fecal coliforms in all annual wells were undetectable.

Observation Wells. Groundwater elevations were measured twice per month at observation wells MW-1 through MW-9. Groundwater elevations were calculated relative to the Chicago City Datum (579.48 feet above mean sea level) at the intersection of State and Madison Streets and are presented in Table 3. The minimum, mean, and maximum groundwater elevations for each well during the year are presented in Figure 2. Overall, groundwater fluctuation in the UDP observation wells remained less than 20 feet during the year, except for wells MW-5, and MW-8 where the groundwater fluctuations ranged between 16 feet to 31 feet due to slow recharge after well sampling.

TABLE 2: ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS AND FECAL COLIFORM IN GROUNDWATER SAMPLED FROM ANNUAL MONITORING WELLS IN THE UPPER DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN SAMPLED DURING 2025

Well	Sample Date	pH	EC mS/m	TDS	TOC	Cl ⁻	SO ₄ ²⁻	NH ₃ -N	Hardness	Temp. °C	Water Elevation ¹ feet	Fecal Coliform CFU/100 mL
				-----mg/L-----								
MW-1	12/11/25	7.9	100	692	<5.0	43	353	<0.30	307	14.2	43	<1
MW-2	12/03/25	7.7	105	790	<5.0	74	391	<0.30	520	14.1	49	<1
MW-3	12/03/25	8.0	92	668	<5.0	28	406	<0.30	415	15.5	46	<1
MW-4	04/23/25	7.9	112	868	<5.0	95	367	<0.30	537	14.5	7	<1
MW-9	04/23/25	8.0	73	526	<5.0	35	279	<0.30	300	14.8	15	<1

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

TABLE 3: GROUNDWATER ELEVATIONS FOR OBSERVATION WELLS MW-1 THROUGH MW-9 IN THE UPPER DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN MEASURED DURING 2025

Date	Observation Well No.								
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9
	-----Elevation (feet) ¹ -----								
01/15/25	41	49	44	2	-55	64	NA ²	21	6
01/24/25	41	49	44	6	NA	68	51	25	10
02/14/25	41	49	44	6	-60	68	53	26	8
02/27/25	44	49	44	6	-53	68	52	15	9
03/17/25	42	49	44	6	-50	69	51	28	11
03/31/25	45	50	45	7	-49	69	50	27	NA
04/11/25	42	49	45	6	-58	69	49	27	12
04/25/25	42	49	48	4	-48	69	49	26	19
05/09/25	42	49	45	6	-47	69	48	26	18
05/23/25	42	49	45	6	-47	67	47	26	17
06/17/25	45	49	45	7	-46	66	46	26	15
06/27/25	42	49	45	7	-42	61	46	27	14
07/11/25	42	49	45	7	-44	65	55	27	14
07/28/25	42	49	44	7	-43	66	45	26	13
08/08/25	41	49	44	7	-46	62	44	26	12
08/26/25	41	49	44	7	-37	65	44	26	9
09/12/25	41	48	44	7	-47	65	51	13	11
09/24/25	41	48	44	7	-48	65	50	25	11
10/10/25	37	48	44	6	-43	65	50	26	11
10/24/25	41	48	44	6	-41	66	49	29	11
11/14/25	41	49	44	7	NA	67	49	29	11
11/26/25	41	49	45	7	-39	67	49	25	11
12/11/25	43	49	46	7	-38	68	48	28	10
12/19/25	43	49	46	7	-30	68	48	25	10

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

²No measurement was reported due to measurement error.

³Bold numbers report measurements conducted at well MW-8 on a different date, February 11, 2025, to avoid the effect of well pumpdown on sampling.

FIGURE 2: MINIMUM, MEAN, AND MAXIMUM WATER ELEVATIONS FOR MONITORING/OBSERVATION WELLS MW-1 THROUGH MW-9 IN THE UPPER DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN MEASURED DURING 2025

