

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

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ANNUAL BIOSOLIDS MANAGEMENT REPORT FOR 2025

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Metropolitan Water Reclamation District of Greater Chicago
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ANNUAL BIOSOLIDS MANAGEMENT REPORT FOR 2025

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LIST OF ABBREVIATIONS

Abbreviation	Definition
°C	degrees Celsius
°F	degrees Fahrenheit
As	arsenic
Cd	cadmium
<i>CFR</i>	<i>Code of Federal Regulations</i>
CSD	Controlled Solids Distribution
Cu	copper
District	Metropolitan Water Reclamation District of Greater Chicago
DT	dry tons
Egan	John E. Egan
EQ	“Exceptional Quality”
FC	fecal coliform
Hg	mercury
IDOA	Illinois Department of Agriculture
IEPA	Illinois Environmental Protection Agency
kg	kilogram
Kirie	James C. Kirie
L	liter
MBM	Metropolitan Biosolids Management, LLC
mg	milligram
MGD	million gallons per day
Mo	molybdenum
N	nitrogen
NH ₃ -N	ammonia nitrogen
Ni	nickel
NO ₃ ⁻ +NO ₂ ⁻ -N	nitrate plus nitrite nitrogen
NO ₃ ⁻ -N	nitrate nitrogen
O’Brien	Terrence J. O’Brien
Part 503	Title 40 Part 503
Pb	lead
PFRP	Process to Further Reduce Pathogens
Se	selenium
SMA	Solids Management Area
TKN	total Kjeldahl nitrogen
TVS	total volatile solids
USEPA	United States Environmental Protection Agency
VAR	vector attraction reduction
WRP	water reclamation plant
Zn	zinc

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Special thanks are given to Ms. Laura Franklin for typing and formatting this report.

DISCLAIMER

Mention of proprietary equipment and chemicals in this report does not constitute endorsement by the Metropolitan Water Reclamation District of Greater Chicago.

FOREWORD

This report serves as a record of the data and information that fulfills the frequency of monitoring and the reporting requirements for 2025 for biosolids management by the Metropolitan Water Reclamation District of Greater Chicago (District), as specified in the United States Environmental Protection Agency's (USEPA's) Title 40 *Code of Federal Regulations (CFR)* Part 503 (Part 503). Formal Part 503 reporting was done as required through the USEPA's online reporting system in February 2026.

OVERVIEW OF METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO BIOSOLIDS PRODUCTS AND UTILIZATION PROGRAM

The District operates seven water reclamation plants (WRPs), namely the Stickney, Calumet, Terrence J. O'Brien (O'Brien), John E. Egan (Egan), Hanover Park, James C. Kirie (Kirie), and Lemont WRPs. Three WRPs, Stickney, Calumet, and Hanover Park, produce final biosolids products. Generally, the sludge generated at the Kirie WRP is sent to the Egan WRP, and after digestion, all Egan biosolids are sent to the Stickney WRP for processing into final products. Sludge generated at the O'Brien and Lemont WRPs is sent to the Stickney WRP for processing into final products. The processing of biosolids at the four WRPs that generate digested biosolids or final products includes anaerobic digestion at 35°C for at least 15 days of detention time to meet the Part 503 Class B pathogen reduction requirements. The metal concentrations in all biosolids produced at the District are well below the Pollutant Concentration limits established in Table 3 of Part 503.13(b)(3). The additional processing to achieve the final products varies among the three WRPs as indicated in the description of the biosolids products outlined below.

Biosolids Products at the Metropolitan Water Reclamation District of Greater Chicago

- **Dewatered Class B Biosolids:** These biosolids are produced by centrifugation of anaerobically digested liquid biosolids (~5 percent solids content) to approximately 25 percent solids content (centrifuge cake) at the Stickney WRP. Alternatively, the anaerobically digested liquid biosolids are stored temporarily in lagoons at the Stickney and Calumet WRPs, then placed on drying beds for partial drying to >20 percent solids content through mechanical agitation before use. These dewatered biosolids meet the Class B pathogen standards of the Part 503 biosolids rule and meet vector attraction reduction (VAR) requirements through timely incorporation into land. This product is commonly applied to farmland as a fertilizer.
- **Air-dried Exceptional Quality Biosolids:** These biosolids are produced by aging centrifuge cake biosolids or digested liquid biosolids in lagoons (typically for over one year) followed by air-drying to at least 65 percent solids content. This air-dried material meets the "Exceptional Quality" (EQ) standards of the Part 503 biosolids rule, which designates biosolids that meet the strictest trace metals, pathogen, and VAR requirements. This product is produced at the Stickney and Calumet WRPs, and since the early 1990s, it has been used as a soil amendment on areas such as recreational fields and golf courses and for reclamation of urban soils. The material is currently registered as a soil amendment with the Illinois Department of Agriculture (IDOA).
- **Composted Exceptional Quality Biosolids:** Composted biosolids have been produced at the Stickney WRP Harlem Avenue Solids Management Area (SMA) and at the Calumet East SMA under permits issued by the Illinois Environmental Protection Agency (IEPA) Bureau of Land and according to operational standards of the Part 503 Process to Further Reduce Pathogens (PFRP) protocol

(USEPA, 1993). The composting recipe consists of one part centrifuge cake biosolids and two or three parts woodchips. The composting process used is open-windrow composting for a minimum of 23 days, a minimum of five turnings, with temperature maintained at a minimum of 55°C, followed by 16 weeks of curing. The compost produced is currently voluntarily registered as a soil amendment with the IDOA.

- **Liquid Class B Biosolids:** The digested biosolids produced at the Hanover Park WRP are stored and thickened to ~5 percent solids content in lagoons on the grounds of the Hanover Park WRP. This material meets the Part 503 Class B pathogen and VAR requirements and is applied through subsurface injection at the on-site Fischer Farm as a fertilizer for crops, mainly corn. The Fisher Farm has an underdrain system that returns drainage from the fields back to the headworks of the WRP.
- **Biosolids Pellets:** The product is produced by heat-drying at a pelletizer facility located at the Stickney WRP that is owned and operated by Metropolitan Biosolids Management, LLC (MBM), a subsidiary of Veolia Water North America. The operation generates biosolids fertilizer pellets with a solids content greater than 90 percent that meet EQ biosolids standards.

Metropolitan Water Reclamation District of Greater Chicago Site-Specific Designations and Adjusted Standards for Biosolids Quality and Utilization

- **Illinois Pollution Control Board Adjusted Standards (AS 95-4 and 02-03):** These adjusted standards, originally granted to the District in 1995 by the Illinois Pollution Control Board, allow the use of lagoon-aged (at least 1.5 years) air-dried (at least 65 percent solids content) biosolids for establishing the final vegetative layer on landfills as a landfill final cover. Class A status is not necessary for lagoon-aged air-dried biosolids used for final cover.

Requirements for Co-Disposal of Unsuitable Biosolids Materials at Landfills

Some biosolids are considered unsuitable for land application because they contain gravel, wood debris, and dust from the sweeping of roads at biosolids processing sites. These materials are co-disposed with municipal solid wastes at a nonhazardous waste landfill according to the federal requirements in 40 *CFR* Parts 258 and 261 and the Illinois nonhazardous waste landfill regulations (Illinois Administrative Code Title 35, Subtitle G, Chapter I, Subchapter H, Part 810). The biosolids are certified for co-disposal at landfills through analysis as specified in 40 *CFR* Part 261 to establish their nonhazardous nature. District biosolids have always met these requirements. Analytical results required for the landfill company's IEPA permits, including toxic characteristic leaching procedure constituents, polychlorinated biphenyls, cyanide, sulfide, and paint filter tests, were last updated in October 2021 and will be updated again prior to any future landfilling. Some unsuitable biosolids can be also used as daily cover on landfills.

Total Biosolids Produced at the Metropolitan Water Reclamation District of Greater Chicago

A total of 151,611 dry tons (DT) of biosolids was produced at District WRPs in 2025 based on the total of amounts at the Calumet, Stickney (which received all solids produced at the Egan, O'Brien, Kirie, and Lemont WRPs), and Hanover Park WRPs ([Table 1](#)). The Stickney WRP produced 121,544 DT of biosolids from processing of solids generated at the plant and solids transported from the Egan, O'Brien, Kirie, and Lemont WRPs. The Calumet WRP produced 29,262 DT. The Hanover Park WRP produced 805 DT, all of which was land applied at the on-site Fischer Farm or stored on site. This brings the District's five- and ten-year biosolids production running averages to 148,563 and 143,643 DT/year, respectively.

Biosolids Utilization Outlets

The District's Biosolids Management Program is designed to manage all the biosolids for beneficial reuse. There are five main outlets for the beneficial utilization of District biosolids: (1) the Farmland Application Program, (2) the Urban Utilization Program, (3) the Fischer Farm Utilization Program, (4) pelletizing at the MBM facility, and (5) landfill final cover. In 2025, a total of 141,007 DT of biosolids were utilized through these outlets ([Table 1](#)). During 2025, no biosolids were co-disposed with municipal solid wastes at landfill sites ([Figure 1](#)).

Farmland Application Program. In this program, dewatered Class B biosolids are utilized as a fertilizer for production of row crops in nearby counties in northeastern Illinois. Under this program, land application companies are contracted by the District through the competitive bidding process. The contractor is responsible for enrolling farmers in the program and for hauling and applying the biosolids to the farm fields. The farmland application program is conducted under separate permits issued by the IEPA to the District and the contractor. The District provides oversight of the program to ensure that the land application of biosolids is conducted in accordance with regulations and permits and that the contractor's operations are consistent with the District's goal of improving the public's awareness of the benefits of the farmland application program to the farming community. This District oversight is done by requiring the land application contractor to comply with hauling and field operation specifications and to execute a Public Relations Program, and by District staff who conduct additional activities to complement the activities of the contractors. The District continually evaluates and modifies the program as needed to improve public awareness, benefits to farmers, and long-term sustainability of the program. In 2025, a total of 91,820 DT of dewatered Class B biosolids were applied to farmland, most (91,017 DT) of which was from the Stickney and Calumet WRPs and the remainder from the Hanover Park WRP ([Figure 1](#)). In addition, some EQ air-dried biosolids were applied to agricultural fields, mainly hayfields. A total of 13,239 DT of EQ air-dried biosolids were applied to agricultural fields.

Urban Utilization Program. Air-dried and composted EQ biosolids are applied to recreational areas (e.g., parks, golf courses, and athletic fields) and residential properties within the Chicago metropolitan area. The air-dried biosolids are typically used as topdressing on established turfgrass or blended into topsoil as a soil amendment. The composted biosolids are typically applied to land as a soil amendment or as mulch on planter beds. This program has traditionally been done under a controlled solids distribution (CSD) Permit issued by the IEPA Bureau of Water. In 2015, the Illinois General Assembly amended the Illinois Environmental

TABLE 1: PRODUCTION AND UTILIZATION OF BIOSOLIDS DURING 2025¹

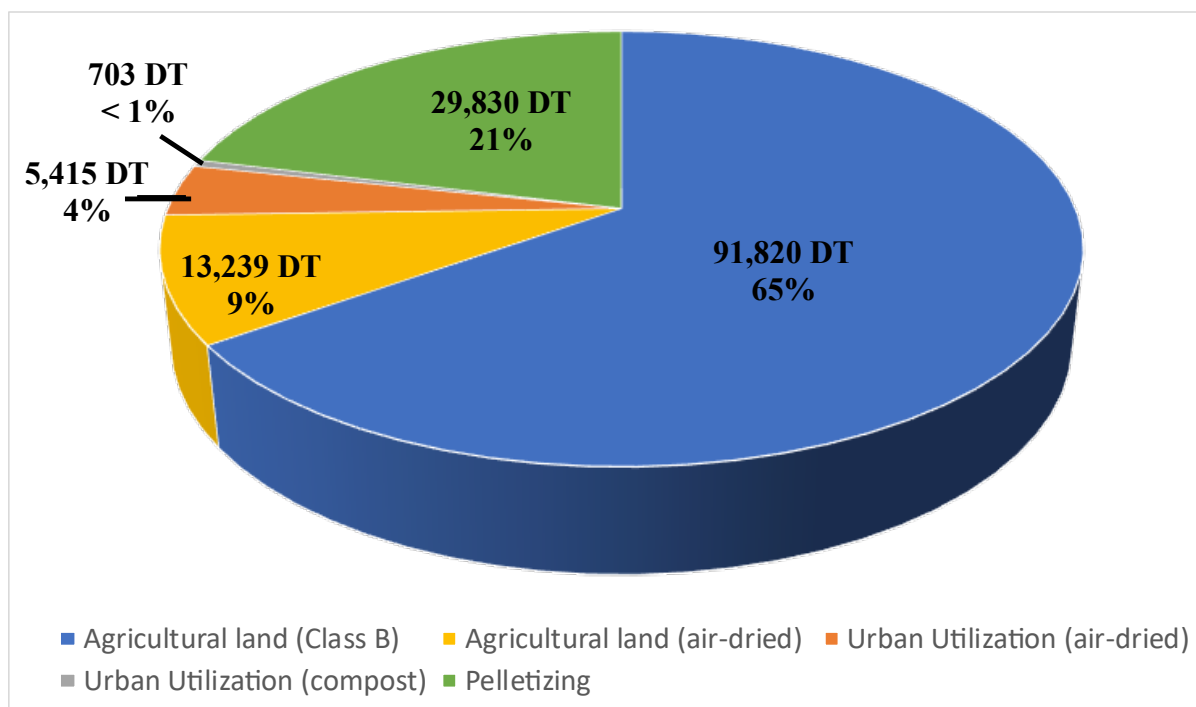
Production and Utilization	Water Reclamation Plants						
	Stickney	Calumet	Hanover Park	Egan	O'Brien	Kirie	Lemont
	-----Dry Tons (Metric Tons)-----						
Production	121,544 (110,263)	29,262 (26,546)	805 (731)	5,605 (5,085)	32,218 (29,228)	5,981 (5,426)	381 (346)
To other WRP (Stickney) ²	0	0	0	-5,605 (5,085)	-32,218 (29,228)	-5,981 (5,426)	-381 (346)
Total	121,544 (110,263)	29,262 (26,546)	805 (731)	0	0	0	0
Utilization							
Agricultural land (total)	78,854 (71,535)	24,765 (22,466)	1,440 (1,306)	0	0	0	0
Class B	67,631 (61,354)	22,749 (20,638)					
Air-dried	11,223 (10,181)	2,016 (1,829)					
Urban land (total)	6,118 (5,550)	0 (0)	0	0	0	0	0
Air-dried	5,415 (4,912)	0 (0)	0	0	0	0	0
Composted	703 (638)	0 (0)	0	0	0	0	0
Pelletizing facility ³	29,830 (27,061)	0	0	0	0	0	0
Total	114,802 (104,147)	24,765 (22,466)	1,440 (1,306)	0	0	0	0

¹Differences between biosolids production and total use or disposal in 2025 were due to a net withdrawal or storage in lagoons or drying areas and processing of biosolids imported from other WRPs.

²In 2025, biosolids produced at the Egan WRP, including the sludge from the Kirie WRP, and sludge from the O'Brien and Lemont WRPs were sent to the Stickney WRP for further processing and utilization. Figures represent solids generated at each WRP plus those imported from other plants.

³Processed at the Stickney WRP pelletizing facility owned and operated by Metropolitan Biosolids Management, LLC, 6001 W. Pershing Road, Cicero, IL 60804 (Contract No. 98-RFP-10).

FIGURE 1: OUTLETS OF BIOSOLIDS UTILIZATION AND DISPOSAL AT THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO IN 2025



Protection Act to adopt the USEPA EQ standard in the state and recognize biosolids as a safe, beneficial, and renewable resource. This legislative change eased state regulations that were stricter than federal restrictions on the use of EQ biosolids, and the CSD permit is no longer relevant for utilization of EQ biosolids. In 2025, 6,118 DT of air-dried biosolids and 703 DT of composted biosolids from the Stickney WRP were used in the metropolitan Chicago area ([Figure 1](#)).

Fischer Farm Utilization Program. The liquid Class B biosolids produced at the Hanover Park WRP are stored and thickened in lagoons and are utilized as fertilizer for application to farmland by subsurface injection at the Fischer Farm located at the WRP. The supernatant from the settling of the biosolids and the settled biosolids are applied separately. In 2025, a total of 1,440 DT of biosolids as liquid biosolids and lagoon supernatant were applied to the farm, as part of the 91,820 DT total applied to agricultural land shown in [Figure 1](#). The application of the biosolids and production of the row crops at that site are done by a contractor under separate contracts.

Pelletizing Facility. Anaerobically digested centrifuge-dewatered biosolids are delivered to the MBM facility located at the Stickney WRP, where they are dried to at least 90 percent solids, pelletized, and sold as a fertilizer product by MBM. In 2025, 29,830 DT of pelletized biosolids were generated from anaerobically digested biosolids produced at the Stickney WRP ([Figure 1](#)).

Biosolids to Landfills. In 2025, no biosolids were sent to landfills for co-disposal with municipal solid wastes or used as daily or final landfill cover.

The following sections provide a short description of the sludge processing and biosolids management operations at each of the District's seven WRPs. In addition, we discuss the utilization of the biosolids, outline the data-reporting requirements under Part 503, and present the required monitoring data in summary tables. The production and utilization of biosolids by the District in 2025 are summarized in Table 1. All utilization of biosolids in 2025 complied with the management practices specified in Section 503.14. The total biosolids production in any given year may not equal the amount of the final biosolids product utilized, since biosolids may be utilized from production inventory for a previous year or biosolids produced in a given year may be stored or aged for utilization in subsequent years.

This report documents the production and utilization of the District's biosolids in 2025 records required under Part 503 at Section 503.18.

The District has three IEPA-permitted biosolids management programs that must also comply with Part 503 requirements. These programs are:

1. Hanover Park Fischer Farm Biosolids Application to Land (IEPA Permit No. 2022-SC-66896).
2. The CSD Program (Biosolids Application to Land in the Chicago Area under IEPA Permit No. 2019-SC-64906).
3. Farmland Application Program (Biosolids Application to Farmland from the Calumet, Stickney, and the Egan WRPs under IEPA Permit No 2023-SC-68367).

In addition, the District has two IEPA permits for composting biosolids, at the Calumet East SMA (Permit No. 2017-017-DE/OP, updated in 2021-403-SP) and at the Harlem Avenue SMA (Permit No. 2017-013-DE/OP, updated in 2021-440-SP), and an IEPA Beneficial Use Determination for compost generated at both Calumet East and Harlem Avenue SMAs (BUD21-001). The biosolids compost is distributed for use as a soil amendment under IDOA registration (License No. 100181).

STICKNEY WATER RECLAMATION PLANT

Treatment Plant and Biosolids Process Train Description

The Stickney WRP, located in Stickney, Illinois, has a design average flow of 1,200 million gallons per day (MGD). The annual average treated flow in 2025 was 619 MGD. Wastewater reclamation processes include primary (primary settling) and secondary (activated sludge process) treatments. All solids produced at this WRP, solids directly transported from the Lemont WRP, solids pipelined from the O'Brien WRP, and processed solids generated at the Egan and Kirie WRPs are anaerobically digested at the Stickney WRP. Stickney WRP biosolids are then handled as follows:

1. Placed in lagoons for dewatering, aging, and stabilization and then transported to paved cells and air-dried prior to:
 - a. Application to urban land as EQ biosolids.
 - b. Application to farmland as dewatered Class B biosolids or EQ air-dried biosolids.
 - c. Use at local municipal solid waste landfills as final landfill cover. No biosolids were utilized through this outlet in 2025.
2. Dewatered by centrifuging to approximately 25 percent solids content and then applied to farmland as Class B biosolids by a private contractor.
3. Dewatered by centrifuging to approximately 25 percent solids content, transported to paved cells, and air-dried prior to use as daily landfill cover. No biosolids were utilized this way in 2025.
4. Dewatered by centrifuging to approximately 25 percent solids content and transported to the Harlem Avenue SMA for co-composting with woodchips and yard waste prior to application to urban land as composted EQ biosolids. Class A pathogen reduction was achieved using the open windrow composting process through which all the requirements were met. The temperature of the compost piles was maintained at $\geq 55^{\circ}\text{C}$ for at least 15 days, and the piles were turned five times during this period. The VAR requirement was achieved through the same open windrow composting process that met the established standards of Section 503.33(b)(5) by fulfilling the temperature and time requirements ($\geq 45^{\circ}\text{C}$ for at least 14 days). No new compost was produced in 2025. All EQ compost distributed in 2025 was produced in previous years and met time and temperature requirements as reported in the Annual Biosolids Management Reports of previous years.
4. Dewatered by centrifuging to approximately 25 percent solids content, placed in lagoons for aging and stabilization, transported to paved cells, and air-dried prior to:

- a. Application to urban land as EQ biosolids.
 - b. Use at local municipal solid waste landfills as final landfill cover. No biosolids were utilized through this outlet in 2025.
5. Dewatered by centrifuging to approximately 25 percent solids content and conveyed to MBM to produce heat-dried biosolids pellets under Contract 98-RFP-10. The biosolids pellets were marketed to users by MBM. The analysis of these biosolids (provided by MBM) is presented in Table 2.

In 2025, the Stickney WRP produced a total of 121,544 DT of biosolids (Table 1). This total includes biosolids generated by processing sludge originating at the Stickney WRP as well as the sludge imported from the Egan, O'Brien, Kirie, and Lemont WRPs for further processing. The quantity of biosolids beneficially utilized (114,802 DT) was less than the total 2025 production for the Stickney WRP. Hence, 6,742 DT of the biosolids generated in 2025 were stored in lagoons and/or on drying cells for further processing and future use.

Biosolids to Landfills

In 2025, no biosolids produced at the Stickney WRP were sent to landfill for co-disposal with municipal solid wastes or used as daily or final landfill cover.

Application of Biosolids to Farmland

In 2025, a total of 67,631 DT of dewatered Class B biosolids (centrifuge cake and semi-dried biosolids) generated at the Stickney WRP was applied to agricultural land under IEPA Permit No. 2023-SC-68367. Application to agricultural land was done through contracts with Synagro Midwest, Inc., and Stewart Environmental, Inc. A further 11,223 DT of air-dried EQ biosolids were applied to agricultural fields. In accordance with Table 1 of Section 503.16, the frequency of monitoring for all Stickney WRP biosolids applied to agricultural land is 12 times per year. All Stickney WRP dewatered Class B and air-dried EQ biosolids land applied in 2025 met the pollutant concentration limits in Table 3 of Section 503.13 (Tables 3 and 4) and the anaerobic digestion time and temperature requirements of the Class B pathogen standard of Section 503.32(b)(3) (Table 5). The VAR requirements of Section 503.33(b)(10) were met by incorporation in soil within six hours after application for dewatered Class B biosolids or volatile solids reduction for air-dried EQ biosolids (Table 4). The biosolids nitrogen (N) concentrations (Tables 3 and 4) were used to compute the agronomic rates for farmland application.

Application of Exceptional Quality Biosolids to Urban Land

In 2025, a total of 6,118 DT of Stickney WRP air-dried EQ (5,415 DT) and composted EQ (703 DT) biosolids were applied to urban land for various uses such as the construction and maintenance of golf courses, recreation fields, and parks. The sites and methods of utilization of these biosolids under the program are listed in Table 6.

TABLE 2: CONCENTRATIONS OF NITROGEN AND METALS IN HEAT-DRIED BIOSOLIDS PELLETS GENERATED BY METROPOLITAN BIOSOLIDS MANAGEMENT FACILITIES AT THE STICKNEY WATER RECLAMATION PLANT IN 2025¹

Date ³	Total N ²	NO ₃ ⁻ + NO ₂ ⁻ -N	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg											
02/04/25	50,909	<13.4	4,910	7.3	1.7	456	0.54	16.9	41.3	58.8	5.0	838
03/04/25	47,019	<26.8	4,920	7.2	2.1	452	0.31	16.4	43.3	51.4	5.1	775
04/01/25	33,813	12.9	4,550	6.5	1.9	432	0.27	14.5	46.4	56.9	4.4	787
05/06/25	31,102	<2.7	4,230	8.1	1.9	424	0.27	13.5	40.7	74	5.1	794
06/03/25	48,102	<2.7	3,400	8.0	1.8	400	0.34	14.6	40.3	62.3	5.0	770
07/02/25	32,302	<2.6	3,600	7.5	1.9	433	0.39	15.8	38.4	64.6	5.8	872
08/05/25	40,402	<2.2	3,480	8.0	1.8	429	1.0	14.6	39	94.7	<3.9	915
09/02/25	40,302	<2.6	3,990	9.0	2.3	465	1.1	16.0	44.6	109	4.9	950
10/07/25	31,404	<5.4	2,350	8.5	2.4	446	0.54	15.4	44	101	5.8	919
11/04/25	29,609	<13	2,330	6.2	2	362	1.2	14.9	37.8	83	4.1	785
12/02/25	28,919	<26.8	4,190	6.4	2.1	417	0.9	18.8	39.7	79.2	<4.0	881
01/06/26	43,709	<13.3	4,120	6.0	1.7	390	0.41	16.2	38.2	54.7	4.3	784
Minimum	28,919	<2.2	2,330	6.0	1.7	362	0.27	13.5	37.8	51.4	<4.1	770
Mean ⁴	38,133	NC ⁵	3,839	7.4	2.0	426	0.61	15.6	41.1	74.1	4.8	839
Maximum	50,909	12.9	4,920	9.0	2.4	465	1.20	18.8	46.4	109.0	5.8	950
503 Limit ⁶	NL ⁷	NL	NL	41	39	1,500	17	75	420	300	100	2,800

¹Data provided by Metropolitan Biosolids Management, LLC (MBM).

²Total N was calculated as total Kjeldahl N (TKN) plus NO₃⁻+NO₂⁻-N. If the NO₃⁻+NO₂⁻-N was below the laboratory reporting limit (RL), that RL was divided by the square root of two, then added to TKN.

³At the start of each month, MBM submitted composite samples of biosolids pellets produced during the previous month for analysis.

⁴In calculating each mean, any value less than the RL was treated as equal to the reporting limit divided by the square root of two.

⁵Mean was not calculated because more than half of the reported values were below the laboratory reporting limit.

⁶Regulatory limit established under United States Environmental Protection Agency *Code of Federal Regulations* Title 40 Part 503 (Part 503).

⁷No limit established under Part 503.

TABLE 3: CONCENTRATIONS OF NITROGEN AND METALS IN DEWATERED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2025

Date	TKN	NO ₃ ⁻ + NO ₂ ⁻ -N	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg											
03/04/25	48,103	BRL ¹	12,908	<10.0	2.26	371	<0.25	13.8	34.7	51.0	<10.0	691
03/04/25	44,259	BRL	13,790	<10.0	1.93	384	0.28	18.5	38.4	67.4	<10.0	771
04/01/25	31,523	32	8,711	<10.0	7.32	462	0.39	15.2	42.7	72.1	<10.0	871
04/01/25	29,527	83	9,202	10.5	3.95	480	0.35	17.4	50.3	75.3	<10.0	857
04/11/25	45,289	BRL	14,525	<10.0	2.07	406	0.27	19.7	41.5	73.0	<10.0	860
04/11/25	58,674	BRL	15,064	<10.0	2.41	422	0.27	15.3	40.2	53.2	<10.0	797
05/02/25	29,090	198	5,865	10.2	3.92	520	0.63	17.6	47.4	79.2	<10.0	866
05/02/25	38,559	BRL	11,445	10.6	8.00	504	0.41	16.7	44.2	73.7	<10.0	890
05/07/25	43,956	BRL	14,262	<10.0	1.90	404	0.67	18.6	39.7	67.7	<10.0	823
05/07/25	59,744	BRL	21,490	<10.0	2.14	423	<0.25	15.5	43.3	45.0	<10.0	818
06/03/25	32,234	BRL	9,414	<10.0	4.70	471	0.35	18.1	46.9	76.6	<10.0	955
06/03/25	33,270	BRL	8,448	<10.0	6.29	448	0.35	15.3	42.4	76.7	<10.0	895
06/12/25	57,407	BRL	22,070	<10.0	2.06	397	<0.25	13.5	40.7	57.1	<10.0	807
06/12/25	41,171	BRL	11,982	<10.0	2.09	424	<0.25	18.2	40.2	59.9	<10.0	852
07/08/25	40,572	BRL	10,573	<10.0	4.67	487	0.53	17.6	45.6	81.7	<10.0	965
07/08/25	32,018	BRL	4,696	<10.0	6.04	469	0.44	15.0	42.8	83.4	<10.0	941
07/15/25	58,289	BRL	19,758	<10.0	2.31	411	0.42	17.2	38.3	56.8	<10.0	798
07/15/25	54,380	BRL	19,188	<10.0	2.25	366	<0.25	12.6	36.4	62.5	<10.0	767
08/07/25	55,150	BRL	21,103	<10.0	2.50	415	<0.25	16.5	38.1	52.8	<10.0	805
08/07/25	54,945	BRL	21,069	<10.0	2.57	398	<0.25	15.8	37.2	56.2	<10.0	794
08/19/25	31,683	BRL	6,940	<10.0	4.52	469	0.42	16.8	45.6	81.2	<10.0	928
09/10/25	43,717	BRL	19,237	<10.0	2.56	400	<0.25	14.2	39.7	63.6	<10.0	838
09/10/25	46,417	BRL	14,343	<10.0	2.72	432	0.26	19.5	42.4	65.6	<10.0	892
09/23/25	33,152	BRL	8,208	<10.0	4.60	478	0.39	17.8	46.0	83.8	<10.0	975
10/16/25	50,083	BRL	12,810	<10.0	3.49	452	0.49	18.2	43.1	92.6	<10.0	1,005
10/16/25	47,758	BRL	16,577	10.4	2.65	447	0.42	16.4	41.2	79.7	<10.0	966

TABLE 3 (Continued): CONCENTRATIONS OF NITROGEN AND METALS IN DEWATERED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2025

Date	TKN	NO ₃ ⁻ + NO ₂ ⁻ -N	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg											
Minimum	29,090	BRL	4,696	<10.0	1.90	366	<0.25	12.6	34.7	45.0	<10.0	691
Mean ²	43,883	NC ³	13,603	NC	3.54	436	0.32	16.6	41.9	68.8	<10.0	862
Maximum	59,744	198	22,070	11.8	8.00	520	0.67	19.7	50.3	93	<10.0	1,005
503 Limit ⁴	NL ⁵	NL	NL	41	39	1,500	17	75	420	300	100	2,800

¹The NO₃⁻+NO₂⁻-N result was below the reporting limit (BRL) of 0.5 mg/L in the aliquot analyzed.

²In calculating each mean, any value less than the reporting limit was treated as equal to the reporting limit divided by the square root of two.

³Mean was not calculated because more than half of reported values were below the laboratory reporting limit.

⁴Regulatory limit established under United States Environmental Protection Agency *Code of Federal Regulations* Title 40 Part 503 (Part 503).

⁵No limit established under Part 503.

TABLE 4: CONCENTRATIONS OF NITROGEN AND METALS AND VOLATILE SOLIDS REDUCTION IN AIR-DRIED EXCEPTIONAL QUALITY BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO AGRICULTURAL FIELDS IN 2025

Date	TVS ¹	TVS ² Reduction	TKN	NO ₃ ⁻ + NO ₂ ⁻ -N	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	-----%	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	-----mg/dry kg-----													
04/25/25	40.0	64.8	22,460	493	2,285	<10.0	4.1	488	0.08	14.2	42.9	72.0	<10.0	802
07/22/25	40.0	66.4	21,935	527	4,330	11.1	4.6	469	0.10	16.3	45.2	77.9	<10.0	921
07/24/25	36.3	71.3	12,642	2,252	53	14.2	3.9	468	0.11	15.7	45.3	109	<10.0	920
Minimum	36.3	64.8	12,642	493	53	<10.0	3.9	468	0.08	14.2	42.9	72.0	<10.0	802
Mean ³	38.8	67.5	19,012	1,090	2,223	10.8	4.2	475	0.09	15.4	44.5	86.3	<10.0	881
Maximum	40.0	71.3	22,460	2,252	4,330	14.2	4.6	488	0.11	16.3	45.3	109	<10.0	921
503 Limit ⁴	NL ⁵	≥38.0	NL	NL	NL	41	39	1,500	17	75	420	300	100	2,800

¹Total volatile solids (TVS) as percentage of total solids.

²For calculating TVS reduction, mean TVS for digester feed during months when lagoon 30 was loaded from 2021 to 2023 was used for the samples collected from 04/16/25 through 06/25/25. The TVS for digester feed during months when lagoon 24 was loaded from 2022 to 2024 was used for all other samples.

³In calculating each mean, any value less than the reporting limit was treated as equal to the reporting limit divided by the square root of two.

⁴Regulatory limit established under United States Environmental Protection Agency *Code of Federal Regulations* Title 40 Part 503.

⁵No limit established under Part 503.

TABLE 5: DIGESTER TEMPERATURES AND DETENTION TIMES DURING
PROCESSING OF BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION
PLANT IN 2025

Month	Average Temperature °F	Average Detention Time	Minimum Detention Time Required by 40 <i>CFR</i> Part 503.32(b)(3) ^{1,2}	Meets Part 503 Class B Requirements
			days	
January	97.8	26.0	15.0	Yes
February	96.0	21.1	15.0	Yes
March	96.3	19.0	15.0	Yes
April	97.4	18.4	15.0	Yes
May	98.1	19.0	15.0	Yes
June	98.3	18.9	15.0	Yes
July	98.5	19.2	15.0	Yes
August	98.9	23.4	15.0	Yes
September	98.3	17.7	15.0	Yes
October	98.4	17.2	15.0	Yes
November	97.4	17.9	15.0	Yes
December	96.8	17.4	15.0	Yes

¹*CFR* = Code of Federal Regulations.

²For anaerobic digestion at average temperature achieved.

TABLE 6: PROFILE OF USERS THAT UTILIZED STICKNEY WATER RECLAMATION PLANT COMPOSTED AND AIR-DRIED EXCEPTIONAL QUALITY BIOSOLIDS IN 2025¹

User Type	Use	Number of Users
Composted Biosolids		
Park districts, municipalities, governments	Landscaping	3
Golf courses and athletic clubs	Landscaping	6
Landscaping and construction companies	Landscaping	3
Schools and universities	Landscaping	2
Nongovernmental organizations	Landscaping	3
Metropolitan Water Reclamation District of Greater Chicago Plants and Reservoirs ²	Landscaping	3
Air-Dried Biosolids		
Nongovernmental organizations	Landscaping	3
Park districts, municipalities, governments	Topdressing	24
Golf courses and athletic clubs	Topdressing	11
Schools and universities	Topdressing	12
Landscaping and construction companies	Brownfields and construction sites	2

¹Individual users and organizations on file.

²Stickney Water Reclamation Plant, Middle Fork Reservoir, Edward C. Howell Reservoir.

Air-Dried Exceptional Quality Biosolids. In 2025, a total of 5,415 DT of Stickney WRP air-dried EQ biosolids was applied to urban land. In accordance with Table 1 of Section 503.16, the frequency of monitoring for these biosolids is six times per year. All Stickney air-dried biosolids utilized as EQ material in 2025 met the pollutant concentration limits in Table 3 of Section 503.13, the VAR requirements of Section 503.33(b)(1) (Table 7), and the Class A pathogen limits of Section 503.32(a)(5) (Tables 8 and 9). Enteric viruses and helminth ova were analyzed before biosolids were dried, in August, September, and October 2024, and May, June, and July 2025 (Table 8). The fecal coliform (FC) analyses were performed after the biosolids were dried and prior to utilization on urban land, in April, June, July, August, and October 2025 (Table 9). Management practices complied with Section 503.14.

Composted Exceptional Quality Biosolids. In 2025, a total of 703 DT of composted EQ biosolids from the Stickney WRP was applied to urban land. The composted EQ biosolids applied to urban land in 2025 met composting temperature and time requirements in previous years and met the pollutant concentration limits in Table 3 of Section 503.13 prior to utilization in 2025 (Table 10). The FC analyses were performed after the composted EQ biosolids were cured and prior to utilization on urban land (Table 11). In accordance with Table 1 of Section 503.16, the frequency of monitoring for the biosolids is four times per year.

TABLE 7: CONCENTRATIONS OF NITROGEN AND METALS AND VOLATILE SOLIDS REDUCTION IN AIR-DRIED EXCEPTIONAL QUALITY BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO URBAN LAND IN 2025

Date	TVS ¹	TVS ² Reduction	TKN	NO ₃ ⁻ + NO ₂ ⁻ -N	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	-----%							-----mg/dry kg-----						
04/16/25	38.8	66.5	21,934	835	1,923	<10.0	3.9	500	0.55	14.0	43.6	73.3	<10.0	811
05/29/25	39.9	65.0	23,228	910	3,659	<10.0	3.9	478	0.45	15.9	47.9	78.7	<10.0	888
06/06/25	39.2	65.9	28,265	1,135	4,951	<10.0	4.4	519	0.64	18.8	51.4	85.0	<10.0	957
06/25/25	36.9	69.1	26,199	<15	7,450	<10.0	4.8	522	0.46	18.6	52.7	89.1	<10.0	982
10/09/25	38.3	68.8	27,847	426	5,718	<10.0	5.5	500	0.66	21.4	54.7	96.4	<10.0	1,094
10/29/25	38.8	68.1	26,377	16	8,291	<10.0	5.4	519	0.49	19.4	50.2	88.1	<10.0	1,059
Minimum	36.9	65.0	21,934	<15	1,923	<10.0	3.9	478	0.45	14.0	43.6	73.3	<10.0	811
Mean ³	38.6	67.2	25,642	555	5,332	<10.0	4.7	506	0.54	18.0	50.1	85.1	<10.0	965
Maximum	39.9	69.1	28,265	1,135	8,291	<10.0	5.5	522	0.66	21.4	54.7	96.4	<10.0	1,094
503 Limit ⁴	NL ⁵	≥38.0	NL	NL	NL	41	39	1,500	17	75	420	300	100	2,800

¹Total volatile solids (TVS) as percentage of total solids.

²For calculating TVS reduction, mean TVS for digester feed during months when lagoon 30 was loaded from 2021 to 2023 was used for the samples collected from 04/16/25 through 06/25/25. The TVS for digester feed during months when lagoon 24 was loaded from 2022 to 2024 was used for all other samples.

³In calculating each mean, any value less than the reporting limit was treated as equal to the reporting limit divided by the square root of two.

⁴Regulatory limit established under United States Environmental Protection Agency *Code of Federal Regulations* Title 40 Part 503 (Part 503).

⁵No limit established under Part 503.

TABLE 8: PATHOGEN ANALYSIS OF AIR-DRIED EXCEPTIONAL QUALITY BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO URBAN LAND AND SOME AGRICULTURAL FIELDS IN 2025

Sample Date	Lagoon No.	Enteric Virus PFU ¹ /4g	Helminth Ova Viable Ova/4g
08/13/24	30	<0.8000	0.72
09/10/24	30	<0.8000	0.16
10/08/24	30	<0.8000	0.16
04/03/25	30	<0.8000	<0.0800
05/07/25	30	<0.8000	<0.0800
06/18/25	30	<0.8000	<0.0800

¹Plaque-forming unit.

TABLE 9: FECAL COLIFORM ANALYSIS OF AIR-DRIED EXCEPTIONAL QUALITY BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND TESTED PRIOR TO UTILIZATION ON URBAN LAND AND SOME AGRICULTURAL FIELDS IN 2025

Sample Date	Lagoon No.	Total Solids %	Fecal Coliform MPN ¹ /g
04/16/25	30	66.9	10
06/05/25	30	60.1	6
06/25/25	30	61.2	62
07/22/25	24	74.4	150
08/28/25	24	57.4	660
10/09/25	24	59.2	220
10/29/25	24	64.5	20

¹Most probable number.

TABLE 10: CONCENTRATIONS OF NITROGEN AND METALS IN COMPOSTED EXCEPTIONAL QUALITY BIOSOLIDS PRODUCED AT THE HARLEM AVENUE SOLIDS MANAGEMENT AREA IN PREVIOUS YEARS AND APPLIED TO URBAN LAND IN 2025

Date ¹	TKN	NO ₃ ⁻ + NO ₂ ⁻ -N	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg											
04/10/25	15,697	453	29	16.2	3.35	367	0.44	12.5	35.5	104	<10.0	750
04/10/25	15,614	147	41	<10.0	2.83	305	0.33	9.10	30.3	69	<10.0	648
06/05/25	18,773	178	44	<10.0	3.35	340	0.38	10.8	35.3	76	<10.0	728
06/05/25	18,924	295	43	15.6	3.37	363	0.28	13.5	36.5	101	<10.0	748
07/01/25	18,230	191	75	<10.0	3.51	328	0.33	10.6	35.4	76	<10.0	703
07/01/25	20,468	280	48	<10.0	2.63	273	0.29	8.39	27.8	59	<10.0	570
09/23/25	19,532	631	23	<10.0	3.39	337	0.32	10.0	35.2	81	<10.0	737
09/23/25	17,561	203	31	19.7	3.32	388	0.31	16.0	39.5	117	<10.0	780
10/23/25	18,629	568	28	<10.0	3.09	309	0.33	8.6	32.2	68	<10.0	673
10/23/25	17,953	681	19	<10.0	3.17	311	0.33	8.9	31.8	70	<10.0	680
10/29/25	15,344	613	50	16.6	3.28	354	0.41	14.1	34.4	108	<10.0	722
10/29/25	16,321	621	70	16.4	3.25	375	0.43	14.2	35.6	108	<10.0	730
Minimum	15,344	147	19	<10.0	2.63	273	0.28	8.39	27.8	59.3	<10.0	570
Mean ²	17,754	405	42	NC ³	3.21	338	0.35	11.4	34.1	86	<10.0	706
Maximum	20,468	681	75	19.7	3.51	388	0.44	16.0	39.5	117	<10.0	780
503 Limit ⁴	NL ⁵	NL	NL	41	39	1,500	17	75	420	300	100	2,800

¹Materials tested in 2025 prior to utilization.

²For calculating the mean, values below the reporting limit were treated as equal to the reporting limit divided by the square root of two.

³Mean was not calculated because more than half of reported values were below the laboratory reporting limit.

⁴Regulatory limit established under United States Environmental Protection Agency *Code of Federal Regulations* Title 40 Part 503 (Part 503).

⁵No limit established under Part 503.

TABLE 11: FECAL COLIFORM ANALYSIS OF CURED COMPOSTED EXCEPTIONAL QUALITY BIOSOLIDS PRODUCED AT THE HARLEM AVENUE SOLIDS MANAGEMENT AREA IN PREVIOUS YEARS AND SAMPLED PRIOR TO UTILIZATION ON URBAN LAND IN 2025

Sample Date ¹	Total Solids %	Fecal Coliform MPN ² /g
04/16/25	46.8	6
04/16/25	44.0	7
06/05/25	47.2	11
06/05/25	42.5	7
07/01/25	45.7	19
07/01/25	42.7	7
09/23/25	54.2	7
09/23/25	46.4	6
10/23/25	42.5	7
10/29/25	55.0	69

¹Materials tested in 2025 prior to utilization.

²Most probable number.

CALUMET WATER RECLAMATION PLANT

Treatment Plant and Biosolids Process Train Description

The Calumet WRP, located in Chicago, Illinois, has a design average flow of 354 MGD. The annual average treated flow in 2025 was 202 MGD. Wastewater reclamation processes at this WRP include primary settling and secondary activated sludge processes. All solids produced at the Calumet WRP are anaerobically digested. The Calumet WRP biosolids are then:

1. Placed in lagoons for dewatering, aging, and stabilization and then transported to paved cells and air-dried prior to:
 - a. Application to urban land or agricultural fields as EQ biosolids.
 - b. Use at local municipal solid waste landfills as final cover. No biosolids were utilized through this outlet in 2025.
2. Placed in lagoons for dewatering and transported to paved cells for air-drying prior to:
 - a. Application to farmland as dewatered Class B biosolids by a private contractor.
 - b. Use as daily landfill cover. No biosolids were utilized through this outlet in 2025.

In 2025, a total of 29,262 DT of biosolids was produced at the Calumet WRP (Table 1). The total quantity of biosolids utilized (24,765 DT) was less than the total 2025 production for the Calumet WRP. Hence, 4,497 DT of biosolids were stored in lagoons and/or on drying cells for further processing and later use.

Biosolids to Landfills

In 2025, no biosolids produced at the Calumet WRP were sent to landfill for co-disposal with municipal solid wastes or used as daily or final landfill cover.

Application of Biosolids to Farmland

In 2025, the Calumet WRP land-applied 22,749 DT of dewatered (semi-dried) Class B biosolids to farmland (Table 1) under IEPA Permit No 2023-SC-68367 through a contract with Stewart Environmental, Inc. (Contract No. 24-690-11). A further 2,016 DT of air-dried EQ biosolids generated at the Calumet WRP were applied to agricultural fields (individual users on file). In accordance with Table 1 of Section 503.16, the frequency of monitoring for all Calumet WRP biosolids applied to agricultural land is twelve times per year. All Calumet WRP dewatered Class B and air-dried EQ biosolids land-applied in 2025 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 12 and 13) and the anaerobic digestion time and temperature

TABLE 12: CONCENTRATIONS OF NITROGEN AND METALS IN DEWATERED BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2025

Date	TKN	NO ₃ ⁻ + NO ₂ ⁻ -N	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg											
04/18/25	6,102	BRL ¹	4,216	<10.0	2.39	407	0.41	17.9	27.1	54.7	<10.0	943
04/18/25	6,054	BRL	3,306	10.4	2.32	397	0.38	16.7	27.6	54.1	<10.0	946
07/07/25	25,576	44	3,138	11.8	2.70	383	0.39	20.0	33.0	75.4	<10.0	1,187
07/09/25	23,920	BRL	4,572	12.3	2.45	396	0.32	21.4	31.9	59.8	<10.0	1,030
07/09/25	22,352	21	4,526	11.5	2.47	390	0.33	19.9	32.1	58.2	<10.0	1,008
07/18/25	29,793	BRL	5,378	13.5	2.50	380	<0.25	20.3	30.1	57.0	<10.0	1,000
07/18/25	29,192	43	6,488	13.8	2.55	375	0.31	19.9	30.5	59.4	<10.0	988
08/07/25	23,492	BRL	2,843	15.4	3.22	400	0.45	20.0	34.4	78.3	<10.0	1,200
08/07/25	20,486	BRL	3,540	12.9	3.88	335	0.40	17.9	33.1	84.7	<10.0	1,020
08/20/25	25,259	BRL	3,073	17.6	3.24	401	0.40	22.1	37.1	83.5	<10.0	1,275
08/20/25	22,649	BRL	3,713	14.2	3.02	396	0.39	21.7	35.7	77.0	<10.0	1,118
09/04/25	22,484	23	2,855	12.0	4.63	328	0.45	20.6	33.0	75.2	<10.0	988
09/04/25	16,593	18	2,309	12.7	6.21	300	0.46	17.2	34.6	92.7	<10.0	1,013
09/04/25	25,897	36	2,281	11.2	3.15	411	0.38	20.9	33.0	64.1	<10.0	1,115
09/17/25	28,159	28	4,920	13.6	3.12	474	0.33	26.0	38.2	70.8	<10.0	1,202
09/17/25	28,586	BRL	2,121	15.1	4.18	421	0.36	21.7	38.8	82.7	<10.0	1,224
10/01/25	29,349	BRL	308	13.7	3.16	373	0.45	24.9	33.8	68.4	<10.0	1,118
10/01/25	16,283	50	354	12.8	5.34	299	0.56	19.3	41.2	95.4	<10.0	1,051
10/15/25	17,395	BRL	484	14.6	3.46	402	0.70	17.6	36.4	77.7	<10.0	1,185
10/15/25	30,694	BRL	3,745	16.5	2.86	409	0.46	24.2	33.1	58.8	<10.0	1,083
10/29/25	9,188	37	1,970	14.6	3.51	412	0.46	19.8	37.2	81.6	<10.0	1,221
10/29/25	32,888	BRL	4,531	15.7	3.10	397	0.34	23.6	33.2	60.3	<10.0	1,035
11/12/25	22,009	BRL	120	17.1	3.47	362	0.35	19.0	32.8	70.5	<10.0	980
11/12/25	37,684	BRL	767	16.2	2.65	362	0.28	19.9	33.5	72.8	<10.0	914

TABLE 12 (Continued): CONCENTRATIONS OF NITROGEN AND METALS IN DEWATERED BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2025

Date	TKN	NO ₃ ⁻ + NO ₂ ⁻ -N	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg											
Minimum	6,054	BRL	120	<10.0	2.32	299	<0.25	16.7	27.1	54.1	<10.0	914
Mean ²	23,003	NC ³	2,982	13.4	3.32	384	0.40	20.5	33.8	71.4	<10.0	1,077
Maximum	37,684	50	6,488	17.6	6.21	474	0.70	26.0	41.2	95.4	<10.0	1,275
503 Limit ⁴	NL ⁵	NL	NL	41	39	1,500	17	75	420	300	100	2,800

¹The NO₃⁻+NO₂⁻-N result was below the reporting limit (BRL) of 0.5 mg/L in the aliquot analyzed.

²In calculating each mean, any value less than the reporting limit was treated as equal to the reporting limit divided by the square root of two.

³Mean was not calculated because more than half of results were below the laboratory reporting limit.

⁴Regulatory limit established under United States Environmental Protection Agency *Code of Federal Regulations* Title 40 Part 503 (Part 503).

⁵No limit established under Part 503.

TABLE 13: CONCENTRATIONS OF NITROGEN AND METALS AND VOLATILE SOLIDS REDUCTION IN AIR-DRIED EXCEPTIONAL QUALITY BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO AGRICULTURAL FIELDS IN 2025

Date	TVS ¹	TVS ² Reduction	TKN	NO ₃ ⁻ + NO ₂ ⁻ -N	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	-----%							mg/dry kg						
07/16/25	44.1	70.6	5,110	12	2,938	10.9	2.66	414	0.45	20.1	33.0	61.1	<10.0	1,082
08/07/25	40.6	74.6	12,805	301	2,144	13.1	2.90	422	0.40	22.2	33.5	62.9	<10.0	1,089
09/17/25	38.8	76.4	11,238	805	2,501	13.2	3.36	492	0.39	26.4	39.2	74.0	<10.0	1,285
10/09/25	32.6	76.2	3,428	69	111	15.9	3.66	399	0.55	15.7	35.8	82.4	<10.0	1,217
11/13/25	39.5	67.9	3,107	579	1,128	14.8	2.43	464	0.35	24.0	38.9	70.7	<10.0	1,218
11/19/25	36.8	71.3	NRR ³	1,116	43	14.6	2.65	483	0.92	20.9	38.8	75.6	<10.0	1,215
Minimum	32.6	67.9	3,107	12	43	10.9	2.43	399	0.35	15.7	33.0	61.1	<10.0	1,082
Mean	38.7	72.8	7,138	379	1,477	13.7	2.94	446	0.51	21.5	36.5	71.1	<10.0	1,184
Maximum	44.1	76.4	12,805	1,116	2,938	15.9	3.66	492	0.92	26.4	39.2	82.4	<10.0	1,285
503 Limit ⁴	NL ⁵	≥38	NL	NL	NL	41	39	1,500	17	75	420	300	100	2,800

¹Total volatile solids (TVS) as percentage of total solids.

²The TVS for digester feed during months when lagoons were loaded from 2022 to 2024 were used to calculate TVS reduction.

³No reportable result due to possible error in aliquot preparation for analysis.

⁴Regulatory limit established under United States Environmental Protection Agency *Code of Federal Regulations* Title 40 Part 503 (Part 503).

⁵No limit established under Part 503.

requirements of the Class B pathogen standard of Section 503.32(b)(3) (Table 14). The VAR requirements of Section 503.33(b)(10) were met by incorporation in soil within six hours after application for dewatered Class B biosolids or volatile solids content reduction for air-dried EQ biosolids (Table 13). The biosolids nitrogen (N) concentrations (Tables 12 and 13) were used to compute the agronomic rates for farmland application. Calumet WRP air-dried EQ biosolids met the Class A pathogen limits of Section 503.32(a)(5) (Tables 15 and 16). Enteric viruses and helminth ova (Table 15) were analyzed before biosolids were dried, in August, September, and October 2024, and April, May, and June 2025. The FC analyses (Table 16) were performed after the biosolids were dried and prior to utilization, in July, August, September, October, and November 2025.

Application of Exceptional Quality Biosolids to Urban Land. No Calumet WRP air-dried EQ biosolids were applied to urban land in 2025.

TABLE 14: DIGESTER¹ TEMPERATURES AND DETENTION TIMES DURING PROCESSING OF BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT IN 2025

Month	Average Temperature °F	Average Detention Time -----days-----	Minimum Detention Time Required by 503.32(b)(3) ²	Meets Part 503 Class B Requirements
January	97.2	43.2	15.0	Yes
February	97.0	43.7	15.0	Yes
March	97.0	38.9	15.0	Yes
April	97.2	41.3	15.0	Yes
May	96.3	34.3	15.0	Yes
June	97.3	41.5	15.0	Yes
July	97.8	43.3	15.0	Yes
August	97.5	41.4	15.0	Yes
September	97.9	44.4	15.0	Yes
October	98.0	50.2	15.0	Yes
November	97.8	46.6	15.0	Yes
December	97.8	44.3	15.0	Yes

¹Temperatures and detention times are for primary digesters 1 through 12 at the Calumet WRP.

²For anaerobic digestion at average temperature achieved.

TABLE 15: PATHOGEN ANALYSIS OF AIR-DRIED EXCEPTIONAL QUALITY BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO AGRICULTURAL FIELDS IN 2025

Sample Date	Lagoon No.	Enteric Virus PFU ¹ /4g	Helminth Ova Viable Ova/4g
08/14/24	17	<0.8000	0.4
09/10/24	17	<0.8000	0.16
10/08/24	17	<0.8000	<0.0800
04/07/25	8	<0.8000	0.08
05/15/25	8	<0.8000	0.08
06/25/25	8	<0.8000	0.4

¹Plaque-forming unit.

TABLE 16: FECAL COLIFORM ANALYSIS OF AIR-DRIED EXCEPTIONAL QUALITY BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND TESTED PRIOR TO UTILIZATION ON AGRICULTURAL FIELDS IN 2025

Sample Date	Lagoon No.	Total Solids %	Fecal Coliform MPN ¹ /dry g
07/16/25	2	91.5	710
08/07/25	2	87.2	33
09/03/25	2	86.5	580
09/23/25	2	86.2	44
10/09/25	18	85.5	170
10/29/25	18	92.3	110
11/06/25	18	92.9	41
11/19/25	18	93.0	4

¹Most probable number.

HANOVER PARK WATER RECLAMATION PLANT

Treatment Plant and Biosolids Process Train Description

The Hanover Park WRP, located in Hanover Park, Illinois, has a design average flow of 12 MGD. The annual average treated flow in 2025 was 5.85 MGD. Wastewater reclamation processes at this WRP include primary (primary settling), secondary (activated sludge process), and tertiary (filtration) treatments. All solids produced at the Hanover Park WRP are anaerobically digested and stored in lagoons and later land-applied by injection at the on-site Fischer Farm.

In 2025, the total biosolids production at this WRP was 805 DT (Table 1).

Land Application of Class B Liquid Biosolids

In 2025, the Hanover Park WRP land-applied a total of 1,440 DT of lagooned biosolids and lagoon supernatant at the on-site Fischer Farm under IEPA Permit No. 2022-61315. The total quantity of biosolids utilized (1,440 DT) was more than the total 2025 production for the Hanover Park WRP (805 DT) with 635 DT drawn from the on-site storage lagoons. In accordance with Table 1 of Section 503.16, the frequency of monitoring for these biosolids was four times per year.

All Hanover Park WRP lagoon biosolids land-applied in 2025 met the pollutant concentration limits in Table 3 of Section 503.13 for all metals (Table 17), the anaerobic digestion time and temperature requirements of the Class B pathogen standards of Section 503.32(b)(3) (Table 18), and the VAR requirements of Section 503.33(b)(1) (Table 19). Management practices at this land-application site complied with Section 503.14.

TABLE 17: CONCENTRATIONS OF NITROGEN AND METALS IN BIOSOLIDS GENERATED AT THE HANOVER PARK WATER RECLAMATION PLANT AND APPLIED AT THE FISCHER FARM SITE IN 2025

Sample Date	TKN	NO ₃ ⁻ + NO ₂ ⁻ -N	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
-----Supernatant, mg/L-----												
03/08/25	537	<0.50	516	0.010	<0.002	0.162	<0.0005	0.007	0.022	0.003	0.004	0.337
05/10/25	706	<0.50	685	NDR ¹	NDR	0.186	<0.0005	0.009	NDR	NDR	0.007	NDR
05/31/25	577	<0.50	569	0.018	<0.002	0.195	<0.0005	0.008	0.037	0.006	0.006	0.377
07/28/25	794	0.65	668	0.017	<0.002	0.174	<0.0005	0.010	0.033	0.003	0.007	0.323
08/23/25	680	<0.50	663	0.016	<0.02	0.351	<0.0005	NRR ²	0.042	0.008	NRR	0.653
09/06/25	901	<0.50	799	0.019	<0.002	0.363	<0.0005	0.011	0.045	0.006	0.006	0.653
09/13/25	960	0.69	816	0.019	<0.002	0.251	<0.0005	0.011	0.043	0.005	0.006	0.470
09/20/25	900	1.00	795	0.018	<0.002	0.238	<0.0005	0.012	0.044	0.003	0.008	0.462
10/18/25	818	<0.50	739	0.017	<0.002	0.188	<0.0005	0.010	0.048	0.003	0.006	0.342
Minimum	537	<0.50	516	0.010	<0.002	0.162	<0.0005	0.007	0.022	0.003	0.004	0.323
Mean ³	764	NC ⁴	694	0.017	<0.002	0.234	<0.0005	0.010	0.039	0.003	0.009	0.452
Maximum	960	1.00	816	0.019	<0.02	0.363	<0.0005	<0.02	0.048	0.008	<0.04	0.653
-----Liquid Biosolids, mg/kg-----												
11/15/25	86,744	BRL ⁵	30,660	<10.0	1.13	752	0.49	14.6	36.8	18.8	<10.0	1,090
11/22/25	102,836	BRL	33,853	<10.0	1.20	764	0.69	15.6	35.0	19.2	<10.0	1,079
Minimum	86,744	BRL	30,660	<10.0	1.13	752	0.49	14.6	35.0	18.8	<10.0	1,079
Mean	94,790	BRL	32,257	<10.0	1.16	758	0.59	15.1	35.9	19.0	<10.0	1,084
Maximum	102,836	BRL	33,853	<10.000	1.20	764	0.69	15.6	36.8	19.2	<10.0	1,090
503 Limit ⁶	NL ⁷	NL	NL	41	39	1,500	17	75	420	300	100	2,800

¹No data reportable because of instrument failures and the sample was disposed of before it could be reanalyzed.

²No reportable result because sample was inadvertently re-analyzed using incorrect dilution factor.

³In calculating each mean, any value less than the reporting limit was treated as equal to the reporting limit divided by the square root of two.

⁴Mean was not calculated because more than half of measurements were below the laboratory reporting limit.

⁵The NO₃⁻+NO₂⁻-N result was below the reporting limit (BRL) of 0.5 mg/L in the aliquot analyzed.

⁶Regulatory limit established under United States Environmental Protection Agency *Code of Federal Regulations* Title 40 Part 503.

⁷No limit established under Part 503.

TABLE 18: DIGESTER TEMPERATURES AND DETENTION TIMES DURING
PROCESSING OF BIOSOLIDS GENERATED AT THE HANOVER PARK WATER
RECLAMATION PLANT IN 2025

Month	Average Temperature °F	Average Detention Time -----days-----	Minimum Detention Time Required by 503.32(b)(3) ¹	Meets Part 503 Class B Requirements
January	98.0 ²	29.5	15.0	Yes
February	98.0	27.2	15.0	Yes
March	98.0	25.7	15.0	Yes
April	98.0	26.5	15.0	Yes
May	98.0	27.9	15.0	Yes
June	98.0	29.6	15.0	Yes
July	98.0	30.6	15.0	Yes
August	98.0	31.5	15.0	Yes
September	98.0	29.7	15.0	Yes
October	98.0	29.9	15.0	Yes
November	98.0	28.9	15.0	Yes
December	98.0	27.9	15.0	Yes

¹For anaerobic digestion at average temperature achieved.

²Temperature inside the digesters maintained at 98°F year-round.

TABLE 19: VOLATILE SOLIDS REDUCTION IN BIOSOLIDS GENERATED AT THE HANOVER PARK WATER RECLAMATION PLANT AND APPLIED AT THE FISCHER FARM SITE IN 2025

Month ¹	Digester Feed	Digester Draw	Applied Biosolids	Volatile Solids Reduction ² %
	-----% Total Volatile Solids-----			
March	88.2	76.3	62.7	77.6
May	88.2	75.7	58.7	80.9
July	85.5	75.3	62.7	71.6
August	85.4	74.4	67.3	65.0
September	86.9	73.8	70.9	62.6
October	87.4	75.8	63.0	75.5
November	88.4	77.2	72.1	66.0

¹Biosolids applied as lagoon supernatant from March through October, and as liquid biosolids in November.

²Volatile solids reduction computed using total volatile solids data for digester feed and applied biosolids.

JOHN E. EGAN WATER RECLAMATION PLANT

The Egan WRP, located in Schaumburg, Illinois, has a design average flow of 30 MGD. The annual average treated flow in 2025 was 18.2 MGD. Wastewater reclamation processes include primary (primary settling), secondary (activated sludge process), and tertiary (sand filtration) treatments. Under normal operations, all solids generated at the Egan WRP, including solids conveyed from the Kirie WRP, are anaerobically digested.

In 2025, a total amount of 5,605 DT biosolids were produced at the Egan WRP, all of which were sent via sewer to the Stickney WRP for further processing, storage, and utilization (Table 1). Anaerobic digestion at the Egan WRP in 2025 met the time and temperature requirements of the Class B pathogen standards of Section 503.32(b)(3) (Table 20).

TABLE 20: DIGESTER¹ TEMPERATURES AND DETENTION TIMES DURING PROCESSING OF BIOSOLIDS GENERATED AT THE JOHN E. EGAN WATER RECLAMATION PLANT IN 2025

Month	Average Temperature °F	Average Detention Time -----days-----	Minimum Detention Time Required by 503.32(b)(3) ²	Meets Part 503 Class B Requirements
January	96.7	29.2	15.0	Yes
February	97.3	32.7	15.2	Yes
March	96.9	25.4	15.0	Yes
April	96.5	28.7	16.5	Yes
May	96.5	26.0	15.0	Yes
June	98.3	33.9	15.0	Yes
July	97.5	32.3	15.0	Yes
August	97.3	30.9	15.0	Yes
September	98.5	35.7	15.0	Yes
October	96.7	29.6	15.0	Yes
November	97.4	31.2	15.0	Yes
December	96.3	28.8	15.0	Yes

¹Temperatures and detention times are for primary digesters A and C at the Egan WRP.

²For anaerobic digestion at average temperature achieved.

TERRENCE J. O'BRIEN WATER RECLAMATION PLANT

The O'Brien WRP, located in Skokie, Illinois, has a design average flow of 333 MGD. The annual average treated flow in 2025 was 190 MGD. Wastewater reclamation processes at the O'Brien WRP include primary (primary settling) and secondary (activated sludge process) treatments. In 2025, the O'Brien WRP produced 32,218 DT of solids (Table 1), which were sent via pipeline to the Stickney WRP where they were commingled with the solids from that WRP for anaerobic digestion and further processing, storage, and utilization.

JAMES C. KIRIE WATER RECLAMATION PLANT

The Kirie WRP, located in Des Plaines, Illinois, has a design average flow of 52 MGD. The annual average treated flow in 2025 was 30.12 MGD. Wastewater reclamation processes include grit tanks, secondary (activated sludge process), and tertiary (sand filtration) treatments. In 2025, the Kirie WRP produced 5,981 DT of solids (Table 1), which were sent via force main to the Egan WRP for anaerobic digestion. Subsequently, the biosolids from the Egan WRP were transferred to the Stickney WRP and commingled with the solids there for anaerobic digestion and further processing, storage, and utilization.

LEMONT WATER RECLAMATION PLANT

The Lemont WRP, located in Lemont, Illinois, has a design average flow of 2.3 million MGD. The annual average treated flow in 2025 was 2.61 MGD. Wastewater reclamation processes include both primary (primary settling) and secondary (activated sludge process) treatments. In 2025, the Lemont WRP produced 381 DT of solids (Table 1), which were gravity concentrated and transported to the Stickney WRP where they were commingled with the solids from that WRP for anaerobic digestion and further processing, storage, and utilization.