

Statement of Basis

Metropolitan Council

Met Council - East Bethel Water Reuse Plant, 18460 Buchanan St NE,
East Bethel, Minnesota 55011, Anoka County
State Disposal System Permit No: MN0069795
December 2017

Description of permitted facility

The facility is a water reclamation plant that provides tertiary treatment and disinfection of wastewater, followed by distribution of treated effluent to separate subsurface infiltration sites (Site A and Site E). The facility is designed to treat an average wet weather flow of 470,000 gallons per day. Each infiltration site is designed to receive up to 410,000 gallons per day on an annual average basis. This is a Class B facility.

The facility includes influent pumping, fine screening and grit removal, one set of biological treatment tanks with a five-stage biological nutrient removal system including two membrane biological reactor units operated in parallel for tertiary treatment, chemical addition capability, ultraviolet disinfection, chlorination, and pumping and conveyance facilities. Residual biosolids from the plant are periodically removed and delivered to another MCES plant for further treatment and disposal. The facility has backup membrane filters and pumping equipment units, to ensure reliability of the treatment process.

The facility's two infiltration sites (Sites A and E) consist of multi-celled grass-covered earthen basins and the associated distribution system consisting of underground 16-inch and 10-inch pipe that carries water year round to both sites for distribution of the treated effluent. Each site is designed to confine multiple cells in shallow, soil-covered basins with granular material at the bottom to facilitate delivery of the treated effluent through the unsaturated zone. Both Sites A and E have a piezometer (GW009 and GW010, respectively) in the middle of each site to measure elevations, and to serve as observation ports for the piping. The sites also have a network of eight monitoring wells (GW001 - GW008) to determine if there are changes in ground water quality or elevations. The treated effluent is delivered to Sites A and E to optimize cell performance based on the operational requirements to control the mound height and maintain an unsaturated zone above the water table.

Some of the facility's treated effluent may be used for reuse activities. Effluent that meets the limits and monitoring requirements outlined in Waste Stream Stations WS005 and WS006 may be reused for the corresponding activities described for Disinfected Tertiary 2.2 Effluent and Disinfected Secondary 23 Effluent in the Municipal Wastewater Reuse factsheet found on the MPCA website (www.pca.state.mn.us). If the facility proposes reuse for an activity not listed in the fact sheet, a request must be made to the MPCA describing the activity. Future reuse activities that include the construction of permanent piping systems to distribute the treated effluent to users may require a major permit modification. However, at this time the Permittee is only conveying effluent to the two subsurface disposal sites. The Permittee is not authorized under this permit to construct any additional permanent piping systems to distribute effluent for reuse. Any proposals shall be submitted to the MPCA for review and approval prior to construction.

The facility is currently being operated in batch mode due to low initial flows, necessitating changes to sampling and monitoring provisions of the permit. Requirements for batch mode are outlined in the special requirements section of this permit.

Waste streams

Limit and monitoring requirements for waste streams are assigned in order to ascertain their impact on wastewater treatment processes and land treatment/discharge sites. Requirements are based on MPCA sampling policies and/or state health requirements. This permit contains six waste streams which have all been assigned a waste stream station for monitoring and reporting purposes.

The influent wastewater will be monitored as WS001. The following table outlines the associated limit and monitoring requirements for the waste stream.

Table 1: WS001 Influent to Mechanical Facility

Parameter	Discharge limitations					Monitoring requirements			
	Quantity /Loading max.	Quantity /Loading units	Quality /Conc. min.	Quality /Conc. avg.	Quality /Conc. max.	Quality/ Conc. units	Frequency	Sample type	Effective period
BOD, Carbonaceous 05 Day (20 Deg C)				Monitor only. calendar month average	Monitor only. calendar month maximum	milligrams per liter	once per week	24-Hour Flow Composite	Jan-Dec
Flow	Monitor only. calendar month total	million gallons		Monitor only. calendar month average	Monitor only. calendar month maximum	million gallons per day	once per day	Measurement, Continuous	Jan-Dec
pH			Monitor only. calendar month minimum		Monitor only. calendar month maximum	standard units	3 times per week	Grab	Jan-Dec
Phosphorus, Total (as P)				Monitor only. calendar month average		milligrams per liter	once per week	24-Hour Flow Composite	Jan-Dec
Precipitation	Monitor only. calendar month total	inches					once per day	Measurement	Jan-Dec
Solids, Total Suspended (TSS)				Monitor only. calendar month average	Monitor only. calendar month maximum	milligrams per liter	once per week	24-Hour Flow Composite	Jan-Dec

The treated effluent wastewater that is sent to the subsurface infiltrations sites A and E are monitored by waste stream stations WS002, WS003 and WS004. The following tables outline the proposed monitoring requirements for these stations.

Table 2: WS002 Effluent to Subsurface Sites

Parameter	Discharge limitations					Monitoring requirements			
	Quantity /Loading max.	Quantity /Loading units	Quality /Conc. /Conc. min.	Quality /Conc. avg.	Quality /Conc. max.	Quality/ Conc. units	Frequency	Sample type	Effective period
BOD, Carbonaceous 05 Day (20 Deg C)				25 calendar month average	45 maximum calendar week average	milligrams per liter	once per week	24-Hour Flow Composite	Jan-Dec
Chloride, Total				Monitor only. calendar month average		milligrams per liter	once per week	Grab	Jan-Dec
Fecal Coliform, MPN or Membrane Filter 44.5C				200 calendar month geometric mean		organisms per 100 milliliter	3 times per week	Grab	Jan-Dec
Flow	Monitor only. calendar month total	million gallons		Monitor only. calendar month average	Monitor only. calendar month maximum	million gallons per day	once per day	Measurement, Continuous	Jan-Dec
Flow	Monitor only. calendar year to date total	million gallons					once per day	Calculation	Jan-Dec
Nitrite Plus Nitrate, Total (as N)				Monitor only. calendar month average		milligrams per liter	once per week	Grab	Jan-Dec
Nitrogen, Ammonia, Total (as N)				Monitor only. calendar month average		milligrams per liter	once per week	Grab	Jan-Dec
Nitrogen, Kjeldahl, Total				Monitor only. calendar month average		milligrams per liter	once per week	Grab	Jan-Dec
Nitrogen, Total (as N)				10.0 calendar month average		milligrams per liter	once per week	Calculation	Jan-Dec
pH			6.0 calendar month minimum		9.0 calendar month maximum	standard units	3 times per week	Grab	Jan-Dec
Phosphorus, Total (as P)				1.0 calendar month average		milligrams per liter	once per week	Grab	Jan-Dec
Solids, Total Suspended (TSS)				30 calendar month average	45 maximum calendar week average	milligrams per liter	once per week	24-Hour Flow Composite	Jan-Dec

Table 3: WS003 and WS004 Disposal to Subsurface Sites A and E

Parameter	Discharge limitations					Monitoring requirements		
	Quantity /Loading max.	Quantity /Loading units	Quality /Conc. avg.	Quality /Conc. max.	Quality/ Conc. units	Frequency	Sample type	Effective period
Flow	Monitor only. calendar year to date total	million gallons				once per month	Calculation	Jan-Dec
Flow	Monitor only. calendar month total	million gallons	0.41 calendar month average	Monitor only. calendar month maximum	million gallons per day	once per day	Measurement, Continuous	Jan-Dec

The disinfection requirements for wastewater reuse at this facility are monitored at waste stream stations WS005 and WS006. The following tables outline the proposed limit and monitoring requirements for these stations.

Table 4: WS005 Reuse Effluent, Disinfected Tertiary 2.2

Parameter	Discharge limitations					Monitoring requirements			
	Quantity /Loading max.	Quantity /Loading units	Quality /Conc. min.	Quality /Conc. avg.	Quality /Conc. max.	Quality/ Conc. units	Frequency	Sample type	Effective period
BOD, Carbonaceous 05 Day (20 Deg C)				25 calendar month average	45 maximum calendar week average	milligrams per liter	once per week	24-Hour Flow Composite	Jan-Dec
Chloride, Total				Monitor only. calendar month average		milligrams per liter	once per week	Grab	Jan-Dec
Coliform, Total	1 calendar month total	# of samples >23 organisms per 100 mL			2.2 max 7-sample moving median	organisms per 100 milliliter	once per month	Calculation	Jan-Dec
Coliform, Total					240 daily maximum	organisms per 100 milliliter	once per day	Grab	Jan-Dec
Flow	Monitor only. calendar month total	million gallons		Monitor only. calendar month average	Monitor only. calendar month maximum	million gallons per day	once per day	Measurement, Continuous	Jan-Dec
Flow	Monitor only. calendar year to date total	million gallons					once per month	Calculation	Jan-Dec
Nitrite Plus Nitrate, Total (as N)				Monitor only. calendar month average		milligrams per liter	once per week	Grab	Jan-Dec
Nitrogen, Ammonia, Total (as N)				Monitor only. calendar month average		milligrams per liter	once per week	Grab	Jan-Dec
Nitrogen, Kjeldahl, Total				Monitor only. calendar month average		milligrams per liter	once per week	Grab	Jan-Dec
Nitrogen, Total (as N)				10.0 calendar month average		milligrams per liter	once per week	Calculation	Jan-Dec

Parameter	Discharge limitations						Monitoring requirements		
	Quantity /Loading max.	Quantity /Loading units	Quality /Conc. min.	Quality /Conc. avg.	Quality /Conc. max.	Quality/ Conc. units	Frequency	Sample type	Effective period
pH			6.0 calendar month minimum		9.0 calendar month maximum	standard units	once per day	Grab	Jan-Dec
Phosphorus, Total (as P)				1.0 calendar month average		milligrams per liter	once per week	Grab	Jan-Dec
Solids, Total Suspended (TSS)				30 calendar month average	45 maximum calendar week average	milligrams per liter	once per week	24-Hour Flow Composite	Jan-Dec
Turbidity				2 calendar month average	10 instantaneous maximum	nephelometric turbidity units (NTU)	6 times per day	Measurement, Continuous	Jan-Dec

Table 5: WS006 Reuse Effluent, Disinfected Secondary 23

Parameter	Discharge limitations						Monitoring requirements		
	Quantity /Loading max.	Quantity /Loading units	Quality /Conc. min.	Quality /Conc. avg.	Quality /Conc. max.	Quality/ Conc. units	Frequency	Sample type	Effective period
BOD, Carbonaceous 05 Day (20 Deg C)				25 calendar month average	45 maximum calendar week average	milligrams per liter	once per week	24-Hour Flow Composite	Jan-Dec
Chloride, Total				Monitor only. calendar month average		milligrams per liter	once per week	Grab	Jan-Dec
Coliform, Total					240 daily maximum	organisms per 100 milliliter	once per day	Grab	Jan-Dec
Coliform, Total					23 max 7-sample moving median	organisms per 100 milliliter	once per month	Calculation	Jan-Dec
Flow	Monitor only. calendar month total	million gallons		Monitor only. calendar month average	Monitor only. calendar month maximum	million gallons per day	once per day	Measurement, Continuous	Jan-Dec
Flow	Monitor only. calendar year to date total	million gallons					once per month	Calculation	Jan-Dec
Nitrite Plus Nitrate, Total (as N)				Monitor only. calendar month average		milligrams per liter	once per week	Grab	Jan-Dec

Parameter	Discharge limitations					Monitoring requirements			
	Quantity /Loading max.	Quantity /Loading units	Quality /Conc. min.	Quality /Conc. avg.	Quality /Conc. max.	Quality/ Conc. units	Frequency	Sample type	Effective period
Nitrogen, Ammonia, Total (as N)				Monitor only. calendar month average		milligrams per liter	once per week	Grab	Jan-Dec
Nitrogen, Kjeldahl, Total				Monitor only. calendar month average		milligrams per liter	once per week	Grab	Jan-Dec
Nitrogen, Total (as N)				10.0 calendar month average		milligrams per liter	once per week	Calculation	Jan-Dec
pH			6.0 calendar month minimum		9.0 calendar month maximum	standard units	once per day	Grab	Jan-Dec
Phosphorus, Total (as P)				1.0 calendar month average		milligrams per liter	once per week	Grab	Jan-Dec
Solids, Total Suspended (TSS)				30 calendar month average	45 maximum calendar week average	milligrams per liter	once per week	24-Hour Flow Composite	Jan-Dec

Groundwater monitoring

There are ten groundwater stations within this permit for monitoring and reporting purposes. The following table outlines the associated limit and monitoring requirements for the groundwater monitoring stations.

Limit and monitoring requirements for groundwater are assigned in order to ascertain their impact on land treatment/discharge sites and downgradient groundwater quality. Requirements are based on MPCA sampling policies and/or state health requirements.

Table 6: GW001-GW008 Groundwater Monitoring Wells

Parameter	Discharge limitations				Monitoring requirements		
	Quantity /Loading max.	Quantity /Loading units	Quality /Conc. max.	Quality/ Conc. units	Frequency	Sample type	Effective period
Elevation of GW Relative to Mean Sea Level	Monitor only. instantaneous maximum	feet			once per month	Measurement, Instantaneous	Apr, Jul, Oct
Nitrite Plus Nitrate, Total (as N)			Monitor only. calendar month maximum	milligrams per liter	once per month	Grab	Apr, Jul, Oct
Nitrogen, Ammonia, Total (as N)			Monitor only. calendar month maximum	milligrams per liter	once per month	Grab	Apr, Jul, Oct
Nitrogen, Kjeldahl, Total			Monitor only. calendar month maximum	milligrams per liter	once per month	Grab	Apr, Jul, Oct

Parameter	Discharge limitations			Monitoring requirements			
	Quantity /Loading max.	Quantity /Loading units	Quality /Conc. max.	Quality/ Conc. units	Frequency	Sample type	Effective period
Phosphorus, Total (as P)			Monitor only. calendar month maximum	milligrams per liter	once per month	Grab	Apr, Jul, Oct

Table 7: GW009 and GW010 Piezometers for Site A and E

Parameter	Discharge limitations		Monitoring requirements		
	Quantity /Loading max.	Quantity /Loading units	Frequency	Sample type	Effective period
Elevation of GW Relative to Mean Sea Level	Monitor only. instantaneous maximum	feet	once per month	Measurement, Instantaneous	Apr, Jul, Oct

Wastewater Reuse

This permit authorizes the Permittee to reuse, recycle or reclaim domestic wastewater effluent as outlined in the “Wastewater Reuse” section of the draft permit.

A Wastewater Effluent Reuse Annual Report is due each year by January 21st whether or not effluent water was reused. This report is limited to the wastewater reused via waste stream stations WS005 and WS006.

Tertiary Effluent reuse station, WS005, includes the following total coliform limits:

Parameter	Limit	Units	Limit type	Effective period	Sample type	Frequency
Coliform, Total	2.2	organisms per 100 milliliter	maximum 7-sample moving median	Jan-Dec	Calculation	once per month
Coliform, Total	1	# of samples >23	calendar month total	Jan-Dec	Calculation	once per month
Coliform, Total	240	organisms per 100 milliliter	daily maximum	Jan-Dec	Grab	once per day

These total coliform limits, along with the 23 max 7-sample moving median on station WS006, will not be calculable via the e-Services calculator tool. Calculations for these limits will need to be manually entered into eDMRs.

Nitrogen

Nitrogen is a pollutant that can negatively impact the quality of Minnesota’s water resources, including water used for drinking. Studies have shown that nitrogen in lakes and streams has a toxic effect on aquatic life such as fish. Like phosphorus, nitrogen is a nutrient that promotes algae and aquatic plant growth often resulting in decreased water clarity and oxygen levels. In September 2014, the MPCA completed the final draft of the Statewide Nutrient Reduction Strategy (<https://www.pca.state.mn.us/water/nutrient-reduction-strategy>) which identifies goals and milestones for nitrogen reductions for both point and non-point nitrogen sources within Minnesota.

To gain a better understanding of the current nitrogen concentrations and loadings received by and discharged from the Facility additional effluent nitrogen monitoring has been added to the Permit. This monitoring has been added in accordance with Minn. Stat. ch. 115.03.

The draft permit includes effluent monitoring for Ammonia Nitrogen, Nitrite plus Nitrate-Nitrogen, Total Kjeldahl Nitrogen and Total Nitrogen for term of the Permit.

This monitoring will provide the data necessary to develop a better understanding of the total nitrogen concentrations and loadings that is currently being received and discharged from municipal and industrial wastewater treatment plants. Once a more extensive total nitrogen data set is established nitrogen reduction work can begin to achieve the necessary reductions to meet the goal of a 20% reduction in total nitrogen loads from point source dischargers by 2025. The changes and/or increases in total nitrogen monitoring in wastewater Permits as a result of the Statewide Nutrient Reduction Strategy is outlined in the Minnesota NPDES Wastewater Permit Nitrogen Monitoring Implementation Plan document located on the MPCA wastewater Permits webpage at: <https://www.pca.state.mn.us/water/wastewater-permits>.

Phosphorus

Phosphorus is a common constituent in many wastewater discharges and a pollutant that has the potential to negatively impact the quality of Minnesota's lakes, wetlands, rivers, and streams. Phosphorus promotes algae and aquatic plant growth often resulting in decreased water clarity and oxygen levels. In addition to creating general aesthetic problems, these conditions can also impact a water body's ability to support healthy fish and other aquatic species. Therefore, phosphorus discharges are being carefully evaluated throughout the state.

You are required to meet a phosphorus limit as specified in the limits and monitoring section of this permit. Although you are not required to prepare a Phosphorus Management Plan (PMP), elimination or reduction of phosphorus at the source will decrease the influent load to the wastewater treatment facility and has the potential to improve treatment efficiency and reduce treatment costs. The MPCA strongly encourages you to identify and eliminate/reduce sources of phosphorus to, and optimize phosphorus management within, your wastewater treatment facility.

All phosphorus samples must be analyzed by a certified laboratory and the data submitted to the MPCA. If your laboratory would like more information about becoming certified, please call the Environmental Laboratory Certification Unit at 612-676-5200. Samples must be collected in a clean bottle (preferably cleaned by a certified laboratory) that was not washed with phosphate detergent. Also, a sulfuric acid preservative must be added immediately after the sample is collected, and it must be stored at four degrees Celsius until analysis. If a contract laboratory is used, the bottle and preservative would typically be provided by the laboratory analyzing the sample.

Biosolids: Septage Transfer

This permit chapter authorizes biosolids to be stored or transferred in accordance with Minn. R. ch. 7041. An annual biosolids report but be submitted annual by December 31st whether or not biosolids were stored and/or transferred.

Total facility requirements

Certified laboratory

Effective January 1, 2013, all Minnesota municipal, county or industrial laboratories that analyze wastewater per Clean Water Act requirements must be certified by the MPCA or the Minnesota Department of Health. Information regarding MPCA laboratory certification is located on the MPCA website at <https://www.pca.state.mn.us/water/mpca-laboratory-certification>. If you have questions concerning MPCA laboratory certification, please contact the MPCA at 1-800-657-3864 or by email at qa.questions.mpca@state.mn.us. Commercial laboratories doing these analyses must maintain Minnesota Department of Health certification.

Electronic Discharge Monitoring Reports (eDMRs)

The electronic Discharge Monitoring Reports (eDMRs), Sample Values/Operational Spreadsheets, and related attachments shall be electronically submitted via the MPCA Online Services Portal (<https://netweb.pca.state.mn.us/private/>). Paper copies of Discharge Monitoring Reports will no longer be accepted. The eDMR and Sample Value/Operational Spreadsheets are generated directly from the limits and monitoring requirements in the [final issued/reissued/modified] permit for your facility. They are generated by the Pollution Control Data Specialist (PCDS) assigned to manage the data for your facility and will be available online within 30 days of the permit action, please make sure to download the most recent version of the eDMR and Sample Value/Operational Spreadsheet prior to submitting your next monthly eDMRs.

Term of Permit

The Agency has made a preliminary determination to reissue this SDS permit for a term of approximately ten years, per Minn. R. 7001.0150.