

Appendix C

Preliminary Effluent Limits

Ms. Jessica Hedin, P.E.
 Short Elliott Hendrickson (S.E.H.)
 1200 25th Avenue South
 P.O. Box 1717
 Saint Cloud, MN 56302-1717

RE: Effluent Limitations Applicable to a Proposed Upgrade to the Foley Wastewater Treatment Facility (WWTF).

Dear Ms. Hedin:

This is in response to your request of September 11, 2017 for preliminary effluent limitations applicable to a proposed upgrade at the Foley Wastewater Treatment Facility (WWTF). The City of Foley currently operates two stabilization wastewater treatment facility (Birch Ponds & Golf Ponds) that discharges on controlled basis to the Stoney Brook from two discharge outfalls (SD001 & SD002). The Foley WWTF is currently permitted at average wet weather flow (AWWF) of 371,300 gallons per day, with 161,000 gallons per day discharging through SD001 and 210,300 gallons per day through SD002.

The treated effluent is discharged on a controlled basis to the Stoney Brook. Stoney Brook has been assigned use classifications of 7, 3C, 4A, 4B, 5 and 6 waters of the state under Minnesota Pollution Control Agency (MPCA) Minn. R. ch. 7050. These multiple classifications include consideration for aquatic life and recreation, industrial consumption, agriculture and wildlife, aesthetic enjoyment and navigation, and other beneficial uses not specifically listed.

The current effluent limitations in the city of Foley NPDES permit applicable to the existing Foley WWTF is summarized in the table below.

Substance or Characteristic	Limiting Concentration or Range Controlled Discharge	Limiting Concentration or Range Controlled Discharge
SECONDARY POND, acres	5.00	12.51
OUTFALL	SD001	SD002
FLOW, mgd	0.161	0.2103
Five Day Carbonaceous Biochemical Oxygen Demand (CBOD ₅)	25 mg/L (77.02 kg/day) ⁽³⁾	25 mg/L (192.70 kg/day) ⁽³⁾
Total Suspended Solids	45 mg/L (139.0 kg/day) ⁽³⁾	45 mg/L (347.0 kg/day) ⁽³⁾

Fecal Coliform Organisms ⁽¹⁾	200 organisms/100mL
pH Range (Standard Unit)	6.0 – 9.0
Total Phosphorus ⁽²⁾	1026 kg/yr

1. Applicable from May – October.
2. The combined total phosphorus limit for both SD001 & SD002 is 1026 kg/yr.
3. The mass load limit in parenthesis (kg/day).

The proposed upgrade to the Foley WWTF includes four different options. The four options are:

OPTION 1:

A Stabilization Ponds Facility with additional 13.05 acres of secondary pond to the existing 17.51 acres of secondary pond (Birch (5 acres) and Golf (12.51) ponds) totaling to 30.56 acres. The treated effluent will be discharged on a controlled basis to the existing receiving water, the Stoney Brook through a new outfall SD00X.

OPTION 2:

A Stabilization Ponds Facility with additional 27.15 acres of secondary pond to the existing 17.51 acres of secondary pond (Birch (5 acres) and Golf (12.51) ponds) totaling to 44.66 acres. The treated effluent will be discharged on a controlled basis to the existing receiving water, the Stoney Brook through a new outfall SD00X.

OPTION 3:

An Aerated Ponds Facility with design capacity of AWWF of 0.691 mgd. The treated effluent will be discharged on a continuous basis to the existing receiving water, the Stoney Brook through a new outfall SD00X.

OPTION 4:

A Mechanical Facility with design capacity of AWWF 0.691 mgd. The treated effluent will be discharged on a continuous basis to the existing receiving water, the Stoney Brook through a new outfall SD00X.

For your planning purposes, the preliminary effluent limitations applicable to the four different discharge options from the proposed Foley WWTF to the Stoney Brook are indicated in the table attached.

The Antidegradation Provision

The proposed changes to the facility may result in an increase in pollutant loading to surface waters or other causes of degradation to surface waters. If a change to the facility will result in a net increase in pollutant loading or other causes of degradation that exceed the maximum loading authorized through conditions specified in the existing permit, the changes to the facility are subject to antidegradation requirements found in Minn. R. 7050 to 7050.0335.

In order to comply with the antidegradation requirements the permittee must choose one of the two following options:

1. "Freeze" mass limits at their current level in lieu of an antidegradation review.
2. Submit an antidegradation review that meets the antidegradation requirements in Minn. R. 7050.

A full antidegradation review must be completed and approved in order to determine the final limits for the selected option. An antidegradation review is a substantial review that must consider all beneficial uses of the receiving water, potential economic impact, all other possible treatment options and all potential environmental degradation.

If you have any questions or comments regarding this letter, please call me at 651-757-2381 or e-mail gbolahan.gbadosi@state.mn.us.

Sincerely,

Gbolahan I. Gbadosi, P.E.
Engineer Senior
Effluent Limits Unit
Environmental Analysis and Outcomes Division

CITY OF FOLEY
PROPOSED EFFLUENT LIMITATIONS

	EXISTING WWTF	PROPOSED WWTF OPTIONS			
		OPTION 1	OPTION 2	OPTION 3	OPTION 4
		STABILIZATION PONDS	STABILIZATION PONDS	AERATED PONDS	MECHANICAL WWTF
SECONDARY POND (acres)	5.00	13.05	27.15		
EXISTING SECONDARY POND (acres)		+17.51	+17.51		
TOTAL WITH ADDITIONAL SECONDARY POND (acres)		30.56	44.66		
DISCHARGE TYPE	CONTROLLED	CONTROLLED	CONTROLLED	CONTINUOUS	CONTINUOUS
OUTFALL	SD001	SD00X	SD00X	SD00X	SD00X
FLOW, mgd (AWWF)	0.161	0.607	0.607	0.691	0.691
FLOW, mgd (ADWF)	NA	0.500	0.500	0.500	0.500
EFFLUENT LIMITS					
CBOD ₅ , mg/L	25	25	25	15	15
CBOD ₅ , kg/day ⁽¹⁾	77.02	470.73	687.92	39.30	39.30
CBOD ₅ , kg/day (mass freeze) ⁽²⁾⁽⁶⁾		269.72	35.15		

TSS, mg/L	45	45	45	45	45	30
TSS, kg/day ⁽³⁾	139.00	347.00	847.32	1238.30	117.80	78.60
TSS, kg/day (mass freeze) ⁽⁴⁾⁽⁶⁾			486.00			63.27
Fecal Coliform Organisms, orgs/100 mL ⁽⁵⁾				200		
pH (Range) (standard unit)				6.0-9.0		
Phosphorus, kg/yr				1026		

- The CBOD5 mass load limit is calculated using the six-inch daily drawdown during the discharge window in the Fall & Spring for the controlled discharge option.

SD001 - 25 mg/L * [5 acres * 0.5 ft./day * 0.326 mg/acre-ft.] * 3.78 kg/day = 77.02 kg/day

SD002 - 25 mg/L * [12.51 acres * 0.5 ft./day * 0.326 mg/acre-ft.] * 3.78 kg/day = 192.70 kg/day

OPTION 1: SD00X - 25 mg/L * [30.56 acres * 0.5 ft./day * 0.326 mg/acre-ft.] * 3.78 kg/day = 470.73 kg/day

OPTION 2: SD00X - 25 mg/L * [44.66 acres * 0.5 ft./day * 0.326 mg/acre-ft.] * 3.78 kg/day = 687.92 kg/day

For the continuous discharge, the mass load limit is calculated as indicated below

OPTION 3: SD00X - 15 mg/L * 0.691 mgd * 8.341 lb/day * 0.454 kg/day = 39.3 kg/day

OPTION 4: SD00X - 15 mg/L * 0.691 mgd * 8.341 lb/day * 0.454 kg/day = 39.3 kg/day
- The CBOD5 mass freeze is the existing permitted load.

For the controlled discharge, it is the sum of the existing load at SD001 & SD002

OPTION 1 & 2: SD00X = SD001 + SD002 = 77.02 + 192.7 = 269.72 kg/day

For the continuous discharge, the mass load limit is calculated as indicated below

OPTION 3 & 4 : SD00X = 0.3713 mgd * 25 mg/L * 8.341 lbs/day * 0.454 kg/day = 35.15 kg/day

3. The TSS mass load limit is calculated using the six-inch daily drawdown during the discharge window in the Fall & Spring for the controlled discharge option.
 - SD001 - 45 mg/L * [5 acres * 0.5 ft./day * 0.326 mg/acre-ft.] * 3.78 kg/day = 138.63 kg/day
 - SD002 - 45 mg/L * [12.51 acres * 0.5 ft./day * 0.326 mg/acre-ft.] * 3.78 kg/day = 346.90 kg/day
 - OPTION 1: SD00X - 45 mg/L * [30.56 acres * 0.5 ft./day * 0.326 mg/acre-ft.] * 3.78 kg/day = 847.32 kg/day
 - OPTION 2: SD00X - 45 mg/L * [44.66 acres * 0.5 ft./day * 0.326 mg/acre-ft.] * 3.78 kg/day = 1238.30 kg/day

For the continuous discharge, the mass load limit is calculated as indicated below

 - OPTION 3: SD00X - 45 mg/L * 0.691 mgd * 8.341 lb/day * 0.454 kg/day = 117.8 kg/day
 - OPTION 4: SD00X - 30 mg/L * 0.691 mgd * 8.341 lb/day * 0.454 kg/day = 78.60 kg/day

4. The TSS mass freeze is the existing permitted load.

For the controlled discharge, it is the sum of the existing load at SD001 & SD002

OPTION 1 & 2: SD00X = SD001 + SD002 = 139.0 + 347.0 = 486.0 kg/day

For the continuous discharge, the mass load limit is calculated as indicated below

OPTION 3 & 4 : SD00X = 0.3713 mgd * 45 mg/L * 8.341 lbs/day * 0.454 kg/day = 63.27 kg/day

5. Applicable May - October

6. The proposed upgrade will trigger the antidegradation provisions of the MPCA rules and would require additional review under the Mn. R. chapter 7050.

Additional review under the antidegradation provisions of the MPCA rules is not required if the city accept to maintain the current permitted mass loading rates.

Accepting the TSS mass limit freeze, the city will not have to monitor for mercury.

From: [Gbadamosi, Gbolahan \(MPCA\)](#)
To: [Jessica Hedjn \(jhedin@sehinc.com\)](mailto:jhedin@sehinc.com)
Subject: Foley WWTF Preliminary Effluent Limits
Date: 09/21/2018 10:52 AM
Attachments: [Foley WWTF Response Letter v2 2017.docx](#)
[Foley Proposed Expansion Effluent Limits Final 2018.xlsx](#)

Jessica,

Please find attached the response to your letter of August 22, 2018. The revised flow of 199,000 gpd would not change the preliminary effluent limits as previously recommended as long as the mass cap for CBOD and TSS are accepted.

Please contact me with any questions. Thanks.

Gbolahan I. Gbadamosi, P.E.

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