

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law (Chapter 644 RSMo, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.:	MO-0021768
Owner:	City of Salem
Address:	410 N. Iron Street, Salem, MO 65560
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Salem WWTP
Facility Address:	0.25 miles northwest of Adelman Ln and Hwy 19 intersection, Salem, MO 65560
Legal Description:	See Page 2
UTM Coordinates:	See Page 2
Receiving Stream:	See Page 2
First Classified Stream and ID:	See Page 2
USGS Basin & Sub-watershed No.:	See Page 2

authorizes activities pursuant to the terms and conditions of this permit in accordance with the Missouri Clean Water Law and/or the National Pollutant Discharge Elimination System; it does not apply to other regulated activities.

FACILITY DESCRIPTION

See Page 2

April 1, 2024
Effective Date

March 31, 2029
Expiration Date

A handwritten signature in black ink, appearing to read "John Hoke", is positioned above a horizontal line.

John Hoke, Director, Water Protection Program

FACILITY DESCRIPTION (continued):

Outfall #001 – POTW

The use or operation of this facility shall be by or under the supervision of a Certified “B” Operator.

Influent lift station / peak flow basin / mechanical screen with emergency manual bar screen / oxidation ditch / 3 final clarifiers / UV disinfection / 2 aerobic sludge digester / 8 sludge reed beds / 1 sludge drying bed / biosolids are land applied

Design population equivalent is 10,000.

Design flow is 1.25 million gallons per day.

Actual flow is 905,000 gallons per day.

Design sludge production is 235 dry tons/year.

Legal Description:	Sec. 12, T34N, R6W, Dent County
UTM Coordinates:	X=628874, Y=4168633
Receiving Stream:	Spring Creek (P)
First Classified Stream and ID:	Spring Creek (P) (1870)
USGS Basin & Sub-watershed No.:	(07140102-0103)

Outfall #002 – Discharges from this outfall are no longer authorized and shall be subject to 40 CFR 122.41(m) and reported according to 40 CFR 122.41(m)(3)(i) & (ii).

Currently under an Abatement Order on Consent (AOC) to eliminate any discharges from Outfall #002. Please see **APPENDIX – ABATEMENT ORDER ON CONSENT**.

Permitted Feature INF – Influent Monitoring Location – Headworks

Legal Description:	Sec. 12, T34N, R6W, Dent County
UTM Coordinates:	X=628878, Y=4168438

Permitted Feature SM1 – Instream Monitoring – Downstream – bridge over Spring Creek on County Road 3220 – See Special Condition #19

OUTFALL #001	TABLE A-1. INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The permittee is authorized to discharge from outfall number(s) as specified in the application for this permit. In accordance with 10 CSR 20-7.031, the interim effluent limitations outlined in Table A-2 must be achieved as soon as possible but no later than April 1, 2029 . These interim effluent limitations in Table A-1 are effective beginning April 1, 2024 and remain in effect through March 31, 2029 or as soon as possible. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: M						
Flow	MGD	*		*	once/day	24 hr. total
Biochemical Oxygen Demand ₅	mg/L		45	20	twice/month	composite**
Total Suspended Solids	mg/L		45	30	twice/month	composite**
<i>E. coli</i> (Note 1, Page 4)	#/100mL		1,030	206	once/week	grab
Ammonia as N (Oct 1 – Mar 31)	mg/L	*		*	once/week	composite**
Ammonia as N (Apr 1 – Sep 30)	mg/L	6.8		1.5	once/week	composite**
Total Kjeldahl Nitrogen	mg/L	*		*	once/week	composite**
Nitrite + Nitrate	mg/L	*		*	once/week	composite**
Cadmium, Total Recoverable	µg/L	2.0		0.6	once/month	composite**
Copper, Total Recoverable	µg/L	23.5		11.4	once/month	composite**
Lead, Total Recoverable	µg/L	12.4		4.0	once/month	composite**
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units***	SU	6.5		9.0	once/week	grab
EFFLUENT PARAMETER(S)	UNITS	DAILY MINIMUM		MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Dissolved Oxygen	mg/L	*		*	once/week	grab
EFFLUENT PARAMETER(S)			UNITS	MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand ₅ – Percent Removal (Note 2, Page 4)			%	85	once/month	calculated
Total Suspended Solids – Percent Removal (Note 2, Page 4)			%	85	once/month	calculated

* Monitoring requirement only.

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

*** pH is measured in pH units and is not to be averaged.

OUTFALL #001	TABLE A-1 (continued). INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The permittee is authorized to discharge from outfall number(s) as specified in the application for this permit. In accordance with 10 CSR 20-7.031, the interim effluent limitations outlined in Table A-2 must be achieved as soon as possible but no later than April 1, 2029 . These interim effluent limitations in Table A-1 are effective beginning April 1, 2024 and remain in effect through March 31, 2029 or as soon as possible. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		MONTHLY AVERAGE		MONTHLY TOTAL §	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: M						
Total Phosphorus	mg/L	*			once/week	composite**
Total Phosphorus	lbs.			*	once/week	calculated
Total Nitrogen (Note 3)	mg/L	*			once/week	calculated
Total Nitrogen (Note 3)	lbs.			*	once/week	calculated
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY ; THE FIRST REPORT IS DUE MAY 28, 2024 .						
eDMR Limit Set: A						
EFFLUENT PARAMETER(S)	UNITS	ANNUAL AVERAGE ¥		ANNUAL TOTAL Φ	MEASUREMENT FREQUENCY	SAMPLE TYPE
Total Phosphorus	mg/L	*			once/year	calculated
Total Phosphorus	lbs.			*	once/year	calculated
Total Nitrogen (Note 3)	mg/L	*			once/year	calculated
Total Nitrogen (Note 3)	lbs.			*	once/year	calculated
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY ; THE FIRST REPORT IS DUE JANUARY 28, 2025 .						

* Monitoring requirement only.

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

§ - The facility shall calculate pounds per month by using the monthly average concentration in mg/L multiplied by 8.34 and multiplied by the total monthly flow in Million Gallons.

¥ - Annual Average is calculated as the average of the 12 calendar months (January 1st through December 31st) of weekly samples in mg/L.

Φ - Annual Total is calculated as the sum of the 12 calendar months (January 1st through December 31st) of monthly samples in pounds (lbs.).

Note 1 – Effluent limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

Note 2 – Influent sampling for BOD₅ and TSS is not required when the facility does not discharge effluent during the reporting period. Samples are to be collected prior to any treatment process. Calculate Percent Removal by using the following formula: [(Average Influent – Average Effluent) / Average Influent] x 100% = Percent Removal. Influent and effluent samples are to be taken during the same month. The Average Influent and Average Effluent values are to be calculated by adding the respective values together and dividing by the number of samples taken during the month. Influent samples are to be collected as a 24-hour composite sample, composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

Note 3 – Total Nitrogen is calculated as; TN = Total Kjeldahl Nitrogen + Nitrate+Nitrite.

OUTFALL #001	TABLE A-2. INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The permittee is authorized to discharge from outfall number(s) as specified in the application for this permit. In accordance with 10 CSR 20-7.031, the final effluent limitations outlined in Table A-3 must be achieved as soon as possible but no later than April 1, 2034 . These interim effluent limitations in Table A-2 are effective beginning April 1, 2029 and remain in effect through March 31, 2034 or as soon as possible. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: M						
Flow	MGD	*		*	once/day	24 hr. total
Biochemical Oxygen Demand ₅	mg/L		15	10	twice/month	composite**
Total Suspended Solids	mg/L		15	10	twice/month	composite**
<i>E. coli</i> (Note 1, Page 4)	#/100mL		1,030	206	once/week	grab
Ammonia as N (Oct 1 – Mar 31)	mg/L	5.2		2.6	once/week	composite**
Ammonia as N (Apr 1 – Sep 30)	mg/L	0.8		0.4	once/week	composite**
Total Kjeldahl Nitrogen	mg/L	*		*	once/week	composite**
Nitrite + Nitrate	mg/L	*		*	once/week	composite**
Cadmium, Total Recoverable	µg/L	2.0		0.6	once/month	composite**
Copper, Total Recoverable	µg/L	23.5		11.4	once/month	composite**
Lead, Total Recoverable	µg/L	12.4		4.0	once/month	composite**
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units***	SU	6.5		9.0	once/week	grab
EFFLUENT PARAMETER(S)	UNITS	DAILY MINIMUM		MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Dissolved Oxygen	mg/L	5.0		5.0	once/week	grab
EFFLUENT PARAMETER(S)			UNITS	MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand ₅ – Percent Removal (Note 2, Page 4)			%	85	once/month	calculated
Total Suspended Solids – Percent Removal (Note 2, Page 4)			%	85	once/month	calculated

* Monitoring requirement only.

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

*** pH is measured in pH units and is not to be averaged.

OUTFALL #001	TABLE A-2 (continued). INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The permittee is authorized to discharge from outfall number(s) as specified in the application for this permit. In accordance with 10 CSR 20-7.031, the final effluent limitations outlined in Table A-3 must be achieved as soon as possible but no later than April 1, 2034 . These interim effluent limitations in Table A-2 are effective beginning April 1, 2029 and remain in effect through March 31, 2034 or as soon as possible. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		MONTHLY AVERAGE		MONTHLY TOTAL §	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: M						
Total Phosphorus	mg/L	*			once/week	composite**
Total Phosphorus	lbs.			*	once/week	calculated
Total Nitrogen (Note 3)	mg/L	*			once/week	calculated
Total Nitrogen (Note 3)	lbs.			*	once/week	calculated
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY ; THE FIRST REPORT IS DUE MAY 28, 2029 .						
eDMR Limit Set: A						
EFFLUENT PARAMETER(S)	UNITS	ANNUAL AVERAGE ¥		ANNUAL TOTAL ¢	MEASUREMENT FREQUENCY	SAMPLE TYPE
Total Phosphorus	mg/L	*			once/year	calculated
Total Phosphorus	lbs.			*	once/year	calculated
Total Nitrogen (Note 3)	mg/L	*			once/year	calculated
Total Nitrogen (Note 3)	lbs.			*	once/year	calculated
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY ; THE FIRST REPORT IS DUE JANUARY 28, 2030 .						

* Monitoring requirement only.

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

§ - The facility shall calculate pounds per month by using the monthly average concentration in mg/L multiplied by 8.34 and multiplied by the total monthly flow in Million Gallons.

¥ - Annual Average is calculated as the average of the 12 calendar months (January 1st through December 31st) of weekly samples in mg/L.

Φ - Annual Total is calculated as the sum of the 12 calendar months (January 1st through December 31st) of monthly samples in pounds (lbs.).

Note 1 – Effluent limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

Note 2 – Influent sampling for BOD₅ and TSS is not required when the facility does not discharge effluent during the reporting period. Samples are to be collected prior to any treatment process. Calculate Percent Removal by using the following formula: [(Average Influent – Average Effluent) / Average Influent] x 100% = Percent Removal. Influent and effluent samples are to be taken during the same month. The Average Influent and Average Effluent values are to be calculated by adding the respective values together and dividing by the number of samples taken during the month. Influent samples are to be collected as a 24-hour composite sample, composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

Note 3 – Total Nitrogen is calculated as; TN = Total Kjeldahl Nitrogen + Nitrate+Nitrite.

OUTFALL #001	TABLE A-3. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The permittee is authorized to discharge from outfall number(s) as specified in the application for this permit. The final effluent limitations in Table A-3 shall become effective on April 1, 2034 . Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: M						
Flow	MGD	*		*	once/day	24 hr. total
Biochemical Oxygen Demand ₅	mg/L		7.5	5	twice/month	composite**
Total Suspended Solids	mg/L		7.5	5	twice/month	composite**
<i>E. coli</i> (Note 1)	#/100mL		1,030	206	once/week	grab
Ammonia as N (Oct 1 – Mar 31)	mg/L	1.8		0.9	once/week	composite**
Ammonia as N (Apr 1 – Sep 30)	mg/L	0.72		0.36	once/week	composite**
Total Kjeldahl Nitrogen	mg/L	*		*	once/week	composite**
Nitrite + Nitrate	mg/L	*		*	once/week	composite**
Cadmium, Total Recoverable	µg/L	2.0		0.6	once/month	composite**
Copper, Total Recoverable	µg/L	23.5		11.4	once/month	composite**
Lead, Total Recoverable	µg/L	12.4		4.0	once/month	composite**
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units***	SU	6.5		9.0	once/week	grab
EFFLUENT PARAMETER(S)	UNITS	DAILY MINIMUM		MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Dissolved Oxygen	mg/L	7.5		7.5	once/week	grab
EFFLUENT PARAMETER(S)			UNITS	MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand ₅ – Percent Removal (Note 2)			%	85	once/month	calculated
Total Suspended Solids – Percent Removal (Note 2)			%	85	once/month	calculated
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY ; THE FIRST REPORT IS DUE MAY 28, 2034 .						

* Monitoring requirement only.

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

*** pH is measured in pH units and is not to be averaged.

Note 1 – Effluent limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

Note 2 – Influent sampling for BOD₅ and TSS is not required when the facility does not discharge effluent during the reporting period. Samples are to be collected prior to any treatment process. Calculate Percent Removal by using the following formula: [(Average Influent – Average Effluent) / Average Influent] x 100% = Percent Removal. Influent and effluent samples are to be taken during the same month. The Average Influent and Average Effluent values are to be calculated by adding the respective values together and dividing by the number of samples taken during the month. Influent samples are to be collected as a 24-hour composite sample, composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

OUTFALL #001	TABLE A-3 (continued). FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The permittee is authorized to discharge from outfall number(s) as specified in the application for this permit. The final effluent limitations in Table A-3 shall become effective on <u>April 1, 2034</u> . Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		MONTHLY AVERAGE		MONTHLY TOTAL §	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: M						
Total Phosphorus	mg/L	*			once/week	composite**
Total Phosphorus	lbs.			*	once/week	calculated
Total Nitrogen (Note 3)	mg/L	*			once/week	calculated
Total Nitrogen (Note 3)	lbs.			*	once/week	calculated
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>MAY 28, 2034</u> .						
eDMR Limit Set: A						
EFFLUENT PARAMETER(S)	UNITS	ANNUAL AVERAGE ¥		ANNUAL TOTAL ☎	MEASUREMENT FREQUENCY	SAMPLE TYPE
Total Phosphorus	mg/L	*			once/year	calculated
Total Phosphorus	lbs.			1,128	once/year	calculated
Total Nitrogen (Note 3)	mg/L	*			once/year	calculated
Total Nitrogen (Note 3)	lbs.			28,671	once/year	calculated
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>JANUARY 28, 2035</u> .						

* Monitoring requirement only.

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

§ - The facility shall calculate pounds per month by using the monthly average concentration in mg/L multiplied by 8.34 and multiplied by the total monthly flow in Million Gallons.

¥ - Annual Average is calculated as the average of the 12 calendar months (January 1st through December 31st) of weekly samples in mg/L.

Φ - Annual Total is calculated as the sum of the 12 calendar months (January 1st through December 31st) of monthly samples in pounds (lbs.).

Note 3 – Total Nitrogen is calculated as; TN = Total Kjeldahl Nitrogen + Nitrate+Nitrite.

OUTFALL #001	TABLE A-4. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The permittee is authorized to discharge from outfall number(s) as specified in the application for this permit. The final effluent limitations in Table A-4 shall become effective on <u>April 1, 2024</u> and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM		MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: Q						
Oil & Grease	mg/L	*		*	once/quarter *****	grab
Chromium III, Total Recoverable	µg/L	*		*	once/quarter *****	composite**
Chromium VI, Total Dissolved	µg/L	*		*	once/quarter *****	grab
Cyanide, Amenable to Chlorination	µg/L	*		*	once/quarter *****	composite**
Nickel, Total Recoverable	µg/L	*		*	once/quarter *****	composite**
Silver, Total Recoverable	µg/L	*		*	once/quarter *****	composite**
Zinc, Total Recoverable	µg/L	*		*	once/quarter *****	composite**
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>JULY 28, 2024</u> .						

* Monitoring requirement only.

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

***** See table below for quarterly sampling requirements.

Quarterly Minimum Sampling Requirements			
Quarter	Months	Quarterly Effluent Parameters	Report is Due
First	January, February, March	Sample at least once during any month of the quarter	April 28 th
Second	April, May, June	Sample at least once during any month of the quarter	July 28 th
Third	July, August, September	Sample at least once during any month of the quarter	October 28 th
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28 th

OUTFALL #001	TABLE A-5. WHOLE EFFLUENT TOXICITY FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The permittee is authorized to discharge from outfall number(s) as specified in the application for this permit. The final effluent limitations in Table A-5 shall become effective on April 1, 2024 and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM			MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: WA						
Acute Whole Effluent Toxicity (Note 4)	TU _a	*			once/year	composite**
ACUTE WET TEST MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY ; THE FIRST REPORT IS DUE JANUARY 28, 2025 .						
eDMR Limit Set: WC						
Chronic Whole Effluent Toxicity (Note 5)	TU _c	*			once/permit cycle	composite**
CHRONIC WET TEST REPORTS SHALL BE SUBMITTED ONCE PER PERMIT CYCLE ; THE FIRST REPORT IS DUE JANUARY 28, 2026 .						

* Monitoring requirement only.

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

Note 4 – The Acute WET test shall be conducted during the years 2022, 2023, 2024, and 2026. See Special Condition #14 for additional requirements.

Note 5 – The Chronic WET test shall be conducted once per permit cycle during the year 2025. An Acute WET test is not required during the year of the Chronic WET test. See Special Condition #15 for additional requirements.

PERMITTED FEATURE <u>INF</u>	TABLE B-1. INFLUENT MONITORING REQUIREMENTS					
The monitoring requirements in Table B-1 shall become effective on <u>April 1, 2024</u> and remain in effect until expiration of the permit. The influent wastewater shall be monitored by the permittee as specified below:						
PARAMETER(S)	UNITS	MONITORING REQUIREMENTS				
		DAILY MAXIMUM		MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: IM						
Biochemical Oxygen Demand ₅ (Note 2, Page 4)	mg/L			*	once/month	composite**
Total Suspended Solids (Note 2, Page 4)	mg/L			*	once/month	composite**
Total Phosphorus	mg/L	*		*	once/month	composite**
Total Kjeldahl Nitrogen	mg/L	*		*	once/month	composite**
Nitrate + Nitrite	mg/L	*		*	once/month	composite**
Ammonia as N	mg/L	*		*	once/month	composite**
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>MAY 28, 2024</u> .						
0						

* Monitoring requirement only.

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

PERMITTED FEATURE <u>SM1</u>	TABLE C-1. INSTREAM MONITORING REQUIREMENTS					
	The monitoring requirements in Table C-1 shall become effective on <u>April 1, 2024</u> and remain in effect until expiration of the permit. The stream shall be monitored by the permittee as specified below:					
PARAMETER(S)	UNITS	MONITORING REQUIREMENTS				
		DAILY MAXIMUM		MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
eDMR Limit Set: DM						
Hardness, Total	mg/L	*		*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>MAY 28, 2024</u> .						

* Monitoring requirement only.

D. SCHEDULE OF COMPLIANCE

Interim Effluent Limits for Ammonia, Biochemical Oxygen Demands, Total Suspended Solids, and Dissolved Oxygen.

The facility shall attain compliance with the Table A-2 interim effluent limitations for Ammonia, Biochemical Oxygen Demands, Total Suspended Solids, and Dissolved Oxygen as soon as possible but in no case later than **five (5) years** of the effective date of this permit.

1. Within six months of the effective date of this permit, the permittee shall report progress made in attaining compliance with the Table A-2 interim effluent limits for Ammonia, Biochemical Oxygen Demands, Total Suspended Solids, and Dissolved Oxygen.
2. The permittee shall submit interim progress reports detailing progress made in attaining compliance with the Table A-2 interim effluent limits for Ammonia, Biochemical Oxygen Demands, Total Suspended Solids, and Dissolved Oxygen every 12 months from the effective date of this permit.
3. Within **five (5) years** of the effective date of this permit, the permittee shall attain compliance with the Table A-2 interim effluent limits for Ammonia, Biochemical Oxygen Demands, Total Suspended Solids, and Dissolved Oxygen.

Final Effluent Limits for Biochemical Oxygen Demands, Total Suspended Solids, Dissolved Oxygen, Ammonia, Total Phosphorus, and Total Nitrogen.

The facility shall attain compliance with the Table A-3 final effluent limitations for Biochemical Oxygen Demands, Total Suspended Solids, Dissolved Oxygen, Ammonia, Total Phosphorus, and Total Nitrogen as soon as possible but in no case later than **ten (10) years** of the effective date of this permit.

1. The permittee shall submit interim progress reports detailing progress made in attaining compliance with the Table A-3 final effluent limitations for Biochemical Oxygen Demands, Total Suspended Solids, Dissolved Oxygen, Ammonia, Total Phosphorus, and Total Nitrogen every 12 months from the effective date of this permit.
2. Within **ten (10) years** of the effective date of this permit, the permittee shall attain compliance with the Table A-3 final effluent limitations for Biochemical Oxygen Demands, Total Suspended Solids, Dissolved Oxygen, Ammonia, Total Phosphorus, and Total Nitrogen.

Please submit progress reports to the Missouri Department of Natural Resources via the Electronic Discharge Monitoring Report (eDMR) Submission System.

E. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached **Parts I, II, & III** standard conditions dated **August 1, 2014, May 1, 2013, and August 1, 2019**, and hereby incorporated as though fully set forth herein. Annual reports required per Standard Conditions Part III Section K shall be submitted online to the Department via the Department's eDMR system as an attachment. This supersedes Standard Conditions Part III Section K #4. EPA reports shall continue to be submitted online via the Central Data Exchange system.

F. SPECIAL CONDITIONS

1. **Electronic Discharge Monitoring Report (eDMR) Submission System.** Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent monitoring data and any report required by the permit (unless specifically directed otherwise by the permit) shall be submitted by the permittee via an electronic system to ensure timely, complete, accurate, and nationally consistent set of data about the NPDES program. All reports uploaded into the system shall be reasonably named so they are easily identifiable, such as “WET Test Chronic Outfall 002 Jan 2023,” or “Outfall 004 Daily Data Mar 2025.”
 - (a) eDMR Registration Requirements. The permittee must register with the Department’s eDMR system through the Missouri Gateway for Environmental Management (MoGEM) before the first report is due. Registration and other information regarding MoGEM can be found at <https://dnr.mo.gov/data-e-services/missouri-gateway-environmental-management-mogem>. Information about the eDMR system can be found at <https://dnr.mo.gov/water/business-industry-other-entities/reporting/electronic-discharge-monitoring-reporting-system-edmr>. The first user shall register as an Organization Official and the association to the facility must be approved by the Department. Regarding Standard Conditions Part I, Section B, #7, the eDMR system is currently the only Department approved reporting method for this permit unless a waiver is granted by the Department. See paragraph (c) below.
 - (b) Electronic Submissions. To access the eDMR system, use the following link in your web browser: <https://apps5.mo.gov/mogems/welcome.action>. If you experience difficulties with using the eDMR system you may contact edmr@dnr.mo.gov or call 855-789-3889 or 573-526-2082 for assistance.
 - (c) Waivers from Electronic Reporting. The permittee must electronically submit compliance monitoring data and reports unless a waiver is granted by the Department in compliance with 40 CFR Part 127. The permittee may obtain an electronic reporting waiver by first submitting an eDMR Waiver Request Form: <https://dnr.mo.gov/document-search/electronic-discharge-monitoring-report-waiver-request-form-mo-780-2692>. The Department will either approve or deny this electronic reporting waiver request within 120 calendar days.
2. The full implementation of this operating permit, which includes implementation of any applicable schedules of compliance, shall constitute compliance with all applicable federal and state statutes and regulations in accordance with §644.051.19, RSMo, and the Clean Water Act (CWA) section 402(k); however, this permit may be reopened and modified, or alternatively revoked and reissued:
 - (a) To comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:
 - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
 - (2) controls any pollutant not limited in the permit.
 - (b) To incorporate an approved pretreatment program or modification thereto pursuant to 40 CFR 403.8(c) or 40 CFR 403.18(e), respectively.
3. All outfalls must be clearly marked in the field. This does not include instream monitoring locations.
4. Report as no-discharge when a discharge does not occur during the report period. For instream samples, report as “C – No Discharge” if no stream flow occurs during the report period.
5. Reporting of Non-Detects:
 - (a) An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
 - (b) See sufficiently sensitive test method requirements in Standard Conditions Part I, Section A, No. 4 regarding proper testing and method minimum levels used for sample analysis.
 - (c) The permittee shall not report a sample result as “Non-Detect” without also reporting the method minimum level of the test. Reporting as “Non Detect” without also including the method minimum level, will be considered failure to report, which is a violation of this permit.
 - (d) The permittee shall provide the “Non-Detect” sample result using the less than symbol and the method minimum level (e.g., <50 µg/L, if the method minimum level for the parameter is 50 µg/L).
 - (e) Where the permit contains a Department determined Minimum Quantification Level (ML) and the permittee is granted authority in the permit to report zero in lieu of the < ML for a specified parameter (conventional, priority pollutants, metals, etc.), then zero (0) is to be reported for that parameter.
 - (f) For the daily maximum, the facility shall report the highest value. If the highest value was a non-detect, use the less than “<” symbol and the laboratory’s highest method minimum level.
 - (g) For reporting an average based on all non-detected values, remove the “<” sign from the values, average the values, and then add the “<” symbol back to the resulting average.
 - (h) For reporting an average based on a mix of detected and non-detected values (not including *E. coli*), assign a value of “0” for all non-detects for that reporting period and report the average of all the results.

- (i) When *E. coli* is not detected above the method minimum level, the permittee must report the data qualifier signifying less than detection limit for that parameter (e.g., <1 #/100mL, if the method minimum level is 1 #/100mL). For reporting a geometric mean based on a mix of detected and non-detected values, use one-half of the detection limit (instead of zero) for non-detects when calculating geometric means.
 - (j) See the Fact Sheet Appendix - Non-Detect Example Calculations for further guidance.
6. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).
 7. The permittee shall comply with any applicable requirements listed in 10 CSR 20-9. The permittee has been granted approval for an alternative operational monitoring schedule in accordance with 10 CSR 20-9.010(3). This approval is limited to operational monitoring and does not apply to the certified operator requirements of 10 CSR 20-9.020. The applicable operational monitoring parameters and frequencies for this facility are:

Operational Monitoring Parameter	Frequency
Precipitation	Daily (M-F)
Flow – Influent or Effluent	Daily (M-F)
pH – Influent	Daily (M-F)
Temperature (Aeration basin)	Daily (M-F)
TSS – Influent	Monthly
TSS – Mixed Liquor	Weekly
Settleability – Mixed Liquor	Daily (M-F)
Dissolved Oxygen – Mixed Liquor	Daily (M-F)
Temperature – Mixed Liquor (sample contact and reaeration basins for contact stabilization)	Daily (M-F)
Dissolved Oxygen – Aerobic Digester	Daily (M-F)

8. The permittee shall develop and implement a program for maintenance and repair of its collection system. The permittee may compare collection system performance results and other data with the benchmarks used in the Departments' Capacity, Management, Operation, And Maintenance (CMOM) Model located at <https://dnr.mo.gov/document-search/capacity-management-operations-maintenance-plan-editable-template>. Additional information regarding the Departments' CMOM Model is available at <https://dnr.mo.gov/print/document-search/pub2574>.

The permittee shall also submit a report via the Electronic Discharge Monitoring Report (eDMR) Submission System annually, by January 28th, for the previous calendar year. The report shall contain the following information:

- (a) A summary of the efforts to locate and eliminate specific sources of excessive infiltration and inflow into the collection system serving the facility for the previous year.
 - (b) A summary of the general maintenance and repairs to the collection system serving the facility for the previous year.
 - (c) A summary of any planned maintenance and repairs to the collection system serving the facility for the upcoming calendar year. This list shall include locations (GPS, 911 address, manhole number, etc.) and actions to be taken.
9. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.
 10. An Operation and Maintenance (O & M) manual shall be maintained by the permittee and made available to the operator. The O & M manual shall include key operating procedures and a brief summary of the operation of the facility.
 11. Bypasses are not authorized at this facility unless they meet the criteria in 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3), and with Standard Condition Part I, Section B, subsection 2. Bypasses are to be reported to the Southeast Regional Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application located at: <https://dnr.mo.gov/data-e-services/missouri-gateway-environmental-management-mogem> or the Environmental Emergency Response spill-line at 573-634-2436 outside of normal business hours. Once an electronic reporting system compliant with 40 CFR Part 127, the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, is available all bypasses must be reported electronically via the new system. Blending, which is the practice of combining a partially-treated wastewater process stream with a fully-treated wastewater process stream prior to discharge, is not considered a form of bypass. If the permittee wishes to utilize blending, the permittee shall file an application to modify this permit to facilitate the inclusion of appropriate monitoring conditions.

12. An all-weather access road to the treatment facility shall be maintained.
13. The outfall sewer shall be protected and maintained against the effects of floodwater, ice, or other hazards as to reasonably ensure its structural stability, freedom from stoppage, and that a sample of the effluent can be obtained at a point after the final treatment process and before the discharge mixes with the receiving waters.
14. Acute Whole Effluent Toxicity (WET) tests shall be conducted as follows:
 - (a) Freshwater Species and Test Methods: Species and short-term test methods for estimating the acute toxicity of NPDES effluents are found in the most recent edition of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA/821/R-02/012; Table IA, 40 CFR Part 136). The permittee shall concurrently conduct 48-hour, static, non-renewal toxicity tests with the following species:
 - i. The fathead minnow, *Pimephales promelas* (Acute Toxicity EPA Test Method 2000.0).
 - ii. The daphnid, *Ceriodaphnia dubia* (Acute Toxicity EPA Test Method 2002.0).
 - (b) Chemical and physical analysis of the upstream control sample and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping. Where upstream receiving water is not available or known to be toxic, other approved control water may be used.
 - (c) Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.
 - (d) The laboratory shall not chemically dechlorinate the sample.
 - (e) The Allowable Effluent Concentration (AEC) is 100%; the dilution series is: 100%, 50%, 25%, 12.5%, and 6.25%.
 - (f) All chemical and physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% effluent concentration.
 - (g) The facility must submit a full laboratory report for all toxicity testing. The report must include a quantification of acute toxic units ($TU_a = 100/LC_{50}$) reported according to the test methods manual chapter on report preparation and test review. The Lethal Concentration 50 Percent (LC_{50}) is the effluent concentration that would cause death in 50 percent of the test organisms at a specific time.
15. Chronic Whole Effluent Toxicity (WET) tests shall be conducted as follows:
 - (a) Freshwater Species and Test Methods: Species and short-term test methods for estimating the chronic toxicity of NPDES effluents are found in the most recent edition of *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA/821/R-02/013; Table IA, 40 CFR Part 136). The permittee shall concurrently conduct 7-day, static renewal toxicity tests with the following species:
 - i. The fathead minnow, *Pimephales promelas* (Survival and Growth Test Method 1000.0).
 - ii. The daphnid, *Ceriodaphnia dubia* (Survival and Reproduction Test Method 1002.0).
 - (b) Chemical and physical analysis of the upstream control sample and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping. Where upstream receiving water is not available or known to be toxic, other approved control water may be used.
 - (c) Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.
 - (d) The laboratory shall not chemically dechlorinate the sample.
 - (e) The Allowable Effluent Concentration (AEC) is 78%, the dilution series is: 100%, 78%, 60.8%, 47.5%, and 37%.
 - (f) All chemical and physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% effluent concentration.
 - (g) The facility must submit a full laboratory report for all toxicity testing. The report must include a quantification of chronic toxic units ($TU_c = 100/IC_{25}$) reported according to the *Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* chapter on report preparation and test review. The 25 percent Inhibition Effect Concentration (IC_{25}) is the toxic or effluent concentration that would cause 25 percent reduction in mean young per female or in growth for the test populations.
16. Expanded Effluent Testing

Permittee must sample and analyze for the pollutants listed in Form B2 – Application for Operating Permit for Facilities That Receive Primarily Domestic Waste And Have A Design Flow More Than 100,000 Gallons Per Day (MO-780-1805 dated 10-20), Part D – Expanded Effluent Testing Data, #18. The permittee shall provide this data with the permit renewal application. A minimum of three samples taken within four and one-half years prior to the date of the permit application must be provided. Samples must be representative of the seasonal variation in the discharge from each outfall. Approved and sufficiently sensitive testing methods listed in 40 CFR 136.3 must be utilized. A method is “sufficiently sensitive” when; 1) The method minimum level is at or below the level of the applicable water quality criterion for the measured pollutant or pollutant parameter; or 2) the method minimum level is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter in the discharge; or 3) the method has the lowest minimum level of the analytical methods approved under 40 CFR part 136. These methods are also required for parameters listed as monitoring only, as the data collected may be used to determine if numeric limitations need to be established.

17. Stormwater Pollution Prevention Plan (SWPPP): A SWPPP must be developed and implemented within 180 days of the effective date of the permit. Through implementation of the SWPPP, the permittee shall minimize the release of pollutants in stormwater from the facility to the waters of the state. The SWPPP shall be developed in consultation with the concepts and methods described in the following document: Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators, (Document number EPA 833-B-09-002) published by the United States Environmental Protection Agency (USEPA) in June 2015.
- (a) The SWPPP must identify any stormwater outfall from the facility and Best Management Practices (BMPs) used to prevent or reduce the discharge of contaminants in stormwater. The stormwater outfalls shall either be marked in the field or clearly marked on a map and maintained with the SWPPP.
 - (b) The SWPPP must include a schedule and procedures for a once per month routine site inspection.
 - (1) The monthly routine inspection shall be documented in a brief written report, which shall include:
 - i. The person(s) conducting the inspection.
 - ii. The inspection date and time.
 - iii. Weather information for the day of the inspection.
 - iv. Precipitation information for the entire period since the last inspection.
 - v. Description of the discharges observed, including visual quality of the discharges (sheen, turbid, etc.).
 - vi. Condition of BMPs
 - vii. If BMPs were replaced or repaired.
 - viii. Observations and evaluations of BMP effectiveness.
 - (2) Any deficiency observed during the routine inspection must be corrected within seven (7) days and the actions taken to correct the deficiencies shall be included with the written report.
 - (3) The routine inspection reports must be kept onsite with the SWPPP and maintained for a period of five (5) years.
 - (4) The routine inspection reports shall be made available to Department personnel upon request.
 - (c) The SWPPP must include a schedule and procedures for a once per year comprehensive site inspection.
 - (1) The annual comprehensive inspection shall be documented in a written report, which shall include:
 - i. The person(s) conducting the inspection.
 - ii. The inspection date and time.
 - iii. Findings from the areas of your facility that were examined;
 - iv. All observations relating to the implementation of your control measures including:
 - 1. Previously unidentified discharges from the site,
 - 2. Previously unidentified pollutants in existing discharges,
 - 3. Evidence of, or the potential for, pollutants entering the drainage system;
 - 4. Evidence of pollutants discharging to receiving waters at all facility outfall(s), and the condition of and around the outfall, and
 - 5. Additional control measures needed to address any conditions requiring corrective action identified during the inspection.
 - v. Any required revisions to the SWPPP resulting from the inspection;
 - vi. Any incidence of noncompliance observed or a certification stating that the facility is in compliance with Special Condition E.17.
 - (2) Any deficiency observed during the comprehensive inspection must be corrected within seven (7) days and the actions taken to correct the deficiencies shall be included with the written report.
 - (3) The comprehensive inspection reports must be kept onsite with the SWPPP and maintained for a period of five (5) years.
 - (4) The comprehensive inspection reports shall be made available to Department personnel upon request.
 - (d) The SWPPP must be kept on-site and should not be sent to the Department unless specifically requested.
 - (e) The SWPPP must be reviewed and updated at a minimum once per permit cycle, as site conditions or control measures change.
18. The permittee shall select, install, use, operate, and maintain the Best Management Practices prescribed in the SWPPP.
- (a) Permittee shall adhere to the following minimum Best Management Practices (BMPs):
 - (1) Minimize the exposure of industrial material storage areas, loading and unloading areas, dumpsters and other disposal areas, maintenance activities, and fueling operations to rain, snow, snowmelt, and runoff, by locating industrial materials and activities inside or protecting them with storm resistant coverings, if warranted and practicable.
 - (2) Provide good housekeeping practices on the site to prevent potential pollution sources from coming into contact with stormwater and provide collection facilities and arrange for proper disposal of waste products, including sludge.
 - (3) Implement a maintenance program to ensure that the structural control measures and industrial equipment is kept in good operating condition and to prevent or minimize leaks and other releases of pollutants.
 - (4) Prevent or minimize the spillage or leaks of fluids, oil, grease, fuel, etc. from equipment and vehicle maintenance, equipment and vehicle cleaning, or activities.
 - (5) Provide sediment and erosion control sufficient to prevent or control sediment loss off of the property. This could include the use of straw bales, silt fences, or sediment basins, if needed.

- (6) Provide stormwater runoff controls to divert, infiltrate, reuse, contain, or otherwise minimize pollutants in the stormwater discharge.
- (7) Enclose or cover storage piles of salt or piles containing salt, used for deicing or other commercial or industrial purposes.
- (8) Provide training to all employees who; work in areas where industrial materials or activities are exposed to stormwater, are responsible for stormwater inspections, are members of the Pollution Prevention Team. Training must cover the specific control measures and monitoring, inspection, planning, reporting and documentation requirements of this permit. Training is recommended annually for any applicable staff and whenever a new employee is hired who meets the description above.
- (9) Eliminate and prevent unauthorized non-stormwater discharges at the facility.
- (10) Minimize generation of dust and off-site tracking of raw, final, or waste materials by implementing appropriate control measures.

19. Receiving Water Monitoring Conditions

- a) Downstream receiving water samples should be taken at the location specified on Page 2 of this permit. In the event that a safe, accessible location is not present at the location listed, a suitable location can be negotiated with the Department. Samples should be taken at least four feet from the bank or from the middle of the stream (whichever is less) and 6-inches below the surface if possible.
- b) When conducting in-stream monitoring, the permittee shall record observations that include: the time of day, weather conditions, unusual stream characteristics (e.g., septic conditions, algae growth, etc.), the stream segment (e.g., riffle, pool or run) from where the sample was collected. These observations shall be submitted with the sample results.
- c) Samples shall not be collected from areas with especially turbulent flow, still water or from the stream bank, unless these conditions are representative of the stream reach or no other areas are available for sample collection. Sampling should not be made when significant precipitation has occurred recently. The sampling event should be terminated and rescheduled if any of the following conditions occur:
 - a. If turbidity in the stream increases notably; or
 - b. If rainfall over the past two weeks exceeds 2.5 inches or exceeds 1 inch in the last 24 hour.
- d) Always use the correct sampling technique and handling procedure specified for the parameter of interest. Please refer to the latest edition of Standard Methods for the Examination of Water and Wastewater for further discussion of proper sampling techniques. All analyses must be conducted in accordance with an approved EPA method. Meters shall be calibrated immediately (within 1 hour) prior to the sampling event.
- e) Please contact the Department if you need additional instructions or assistance.

20. Performance Optimization Plan: The Permittee shall submit a Performance Optimization Plan (POP) to the Department by **April 1, 2027**. The requirements of the POP are as follows:

- The permittee will optimize operations at the wastewater treatment plant following the completion of the Phase 2 WWTP improvements. Optimization will include the following actions:
 - (1) A Sampling and Monitoring Protocol will be established for the collection of grab samples for dissolved oxygen within the oxidation ditch. The Protocol will require approximately three (3) months to develop. Following development, the Protocol will include one (1) year (minimum) of monitoring to ensure the summer and winter seasons are monitored adequately.
 - (2) Following one (1) year of monitoring, the dissolved oxygen levels within the oxidation ditch will be optimized through the cyclic operation of the aeration equipment to provide further nitrate and total nitrogen reduction. The dissolved oxygen optimization will require a one (1) year period to account for season variation.
 - (3) The City will continue to optimize operation within the oxidation ditch using the new aeration equipment. The combination unit can be cyclically operated to provide aeration (nitrification) and mixing (denitrification) within separate cycles. Continued optimization allows for further denitrification to occur through the summer and winter seasons.

The facility shall submit a report by **January 28, 2030**, via the Electronic Discharge Monitoring Report (eDMR) Submission System as an attachment to the December 2029 monthly report. The report shall include the monitoring data from the one year of monitoring of the oxidation ditch, the monitoring data from the one year of optimizing of the dissolved oxygen levels in the oxidation ditch, and the monitoring data from the one year of optimizing the oxidation ditch using the new aeration equipment.

Once approved by the Department, the Performance Optimization Plan shall be located at the wastewater treatment plant and be made available upon request by the Department.

G. NOTICE OF RIGHT TO APPEAL

If you were adversely affected by this decision, you may be entitled to pursue an appeal before the administrative hearing commission (AHC) pursuant to Sections 621.250 and 644.051.9 RSMo. To appeal, you must file a petition with the AHC within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Any appeal should be directed to:

Administrative Hearing Commission
U.S. Post Office Building, Third Floor
131 West High Street, P.O. Box 1557
Jefferson City, MO 65102-1557
Phone: 573-751-2422
Fax: 573-751-5018
Website: <https://ahc.mo.gov>

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET
FOR THE PURPOSE OF RENEWAL
OF
MO-0021768
SALEM WWTP

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollutant Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of stormwater from certain point sources. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified.

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)(A)2.], a Factsheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below.

A Factsheet is not an enforceable part of an operating permit.

Part I – Facility Information

Application Date: 01/19/2018
Expiration Date: 12/31/2017

Facility Type and Description: POTW - Influent lift station / peak flow basin / mechanical screen with emergency manual bar screen / oxidation ditch / 3 final clarifiers / UV disinfection / 2 aerobic sludge digester / 8 sludge reed beds / 1 sludge drying bed / biosolids are land applied

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
#001	1.9375	Secondary	Domestic

Comments:

Changes in this permit for Outfall #001 include the addition of Total Phosphorus, Total Nitrogen, and Dissolved Oxygen effluent limits, the addition of Total Kjeldahl Nitrogen, Nitrate + Nitrite, and Total Nitrogen monitoring requirements, the addition of a once per permit cycle Chronic WET test, the revision of flow frequency to once per day, the revision of BOD₅ and TSS limits (Table A-2 interim limits, and Table A-3 final limits), the revision of Ammonia limits (Table A-2 interim limits, and Table A-3 final limits) and the revision from monthly to weekly sampling, the revision of Cadmium, Copper, and Lead limits, and the revision of Oil & Grease, Chromium III, Chromium VI, Cyanide, Nickel, Silver, and Zinc from limits to monitoring only, and from monthly to quarterly sampling. Changes in this permit for Permitted Feature INF include the addition of Ammonia, Total Phosphorus, Total Kjeldahl Nitrogen, and Nitrate + Nitrite, and the revision of Total Suspended Solids to once per week. Changes in this permit for Permitted Feature SM1 include the addition of Total Hardness. See Part II of the Fact Sheet for further information regarding the addition, revision, and removal of effluent, influent, and instream parameters. The permit also requires the facility to develop and implement a Stormwater Pollution Prevention Plan. Special conditions were updated to include the addition of inflow and infiltration reporting requirements, reporting of Non-detects, bypass reporting requirements, pretreatment requirements, addition of instream monitoring requirements, the Electronic Discharge Monitoring Report (eDMR) Submission System, and a requirement to develop a Performance Optimization Plan.

Part II – Effluent Limitations and Monitoring Requirements

OUTFALL #001 – MAIN FACILITY OUTFALL

Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including effluent limitations, of this operating permit.

OUTFALL #001 - RECEIVING STREAM INFORMATION

RECEIVING STREAM(S) TABLE:

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Spring Creek	P	1870	AHP(WWH), WBC-B, SCR, HHP, IRR, LWP	07140102-0103	0

*As per 10 CSR 20-7.031 Missouri Water Quality Standards, the Department defines the Clean Water Commission's water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and 1st classified receiving stream's beneficial water uses to be maintained are in the receiving stream table in accordance with [10 CSR 20-7.031(1)(F)].

Uses found in the receiving streams table, above:

10 CSR 20-7.031(1)(F)1.:

AHP = Aquatic Habitat Protection - To ensure the protection and propagation of fish, shellfish, and wildlife. AHP is further subcategorized as:

WWH = Warm Water Habitat;

CLH = Cool Water Habitat;

CDH = Cold Water Habitat;

EAH = Ephemeral Aquatic Habitat;

MAH = Modified Aquatic Habitat;

LAH = Limited Aquatic Habitat.

This permit uses Aquatic Life Protection effluent limitations in 10 CSR 20-7.031 Table A for all aquatic habitat designations unless otherwise specified.

10 CSR 20-7.031(1)(F)2.: Recreation in and on the water

WBC = Whole Body Contact recreation where the entire body is capable of being submerged. WBC is further subcategorized as:

WBC-A = Whole body contact recreation that supports swimming uses and has public access;

WBC-B = Whole body contact recreation that supports swimming;

SCR = Secondary Contact Recreation (like fishing, wading, and boating).

10 CSR 20-7.031(1)(F)3. to 7.:

HHP = Human Health Protection as it relates to the consumption of fish;

IRR = Irrigation - Application of water to cropland or directly to cultivated plants that may be used for human or livestock consumption;

LWP = Livestock and wildlife protection - Maintenance of conditions in waters to support health in livestock and wildlife;

DWS = Drinking water supply;

IND = Industrial water supply

10 CSR 20-7.031(1)(F)8-11.: Wetlands (10 CSR 20-7.031 Table A currently does not have corresponding habitat use criteria for these defined uses)

WSA = Storm- and flood-water storage and attenuation;

WHP = Habitat for resident and migratory wildlife species;

WRC = Recreational, cultural, educational, scientific, and natural aesthetic values and uses;

WHC = Hydrologic cycle maintenance.

10 CSR 20-7.031(6):

GRW = Groundwater

RECEIVING STREAM(S) LOW-FLOW VALUES:

RECEIVING STREAM	LOW-FLOW VALUES (CFS)*		
	1Q10	7Q10	30Q10
Spring Creek	1.02	1.32	1.65

* Low flow values obtained from USGS StreamStats. <https://streamstats.usgs.gov/ss/>. See APPENDIX: RECEIVING STREAM LOW-FLOW VALUES.

MIXING CONSIDERATIONS

MIXING CONSIDERATIONS TABLE:

MIXING ZONE (CFS) [10 CSR 20-7.031(5)(A)4.B.(II)(a)]			ZONE OF INITIAL DILUTION (CFS) [10 CSR 20-7.031(5)(A)4.B.(II)(b)]		
1Q10	7Q10	30Q10	1Q10	7Q10	30Q10
0.255	0.33	0.4125	0.0255	0.033	N/A

Receiving Water Body's Water Quality

Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation

- ✓ This facility does not discharge to a 303(d) listed stream.
- ✓ This facility discharges to a stream with an EPA approved TMDL. The effluent limits established in the permit were derived using the same calibrated QUAL2K model used to establish the approved Spring Creek TMDL. This model shows final effluent limits will result in attainment of the applicable dissolved oxygen criterion of 5 mg/L. As noted in Sections 2 and 4.2 of the approved TMDL, achievement of this dissolved oxygen criterion is the ultimate TMDL endpoint for water quality restoration. Considerations of seasonal variations in water quality standards are described in Section 12 of the TMDL. This section notes that conservative assumptions and implicit margins of safety used to establish the TMDL may allow for alternative ammonia effluent limits so long as they are consistent with the underlying TMDL model.

CHANGES TO EFFLUENT LIMITATIONS TABLE:

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Flow	MGD	1	*		*	2/month	1/day	monthly	T
BOD ₅ (Interim, Table A-2)	mg/L	1, 2		15	10	45/20	2/month	monthly	C
BOD ₅ (Final, Table A-3)	mg/L	8		7.5	5.0	15/10	2/month	monthly	C
TSS (Interim, Table A-2)	mg/L	1, 2		15	10	45/30	2/month	monthly	C
TSS (Final, Table A-3)	mg/L	8		7.5	5.0	15/10	2/month	monthly	C
Ammonia (Apr-Sep) (Interim, Table A-1)	mg/L	8	6.8		1.5	6.8/1.5 1/month	1/week	monthly	C
Ammonia (Apr-Sep) (Interim, Table A-2)	mg/L	8	0.8		0.4	6.8/1.5	1/week	monthly	C
Ammonia (Apr-Sep) (Final, Table A-3)	mg/L	8	0.72		0.36	0.8/0.4	1/week	monthly	C
Ammonia (Oct-Mar) (Interim, Table A-1)	mg/L	8	*		*	*/ 1/month	1/week	monthly	C
Ammonia (Oct-Mar) (Interim, Table A-2)	mg/L	8	5.2		2.6	*/	1/week	monthly	C
Ammonia (Oct-Mar) (Final, Table A-3)	mg/L	8	1.8		0.9	5.2/2.6	1/week	monthly	C
Cadmium, TR	µg/L	2, 3	2.0		0.6	0.7/0.3	1/month	monthly	C
Copper, TR	µg/L	2, 3	23.5		11.4	17.7/9.3	1/month	monthly	C
Lead, TR	µg/L	2, 3	12.4		4.0	9.8/3.8	1/month	monthly	C
Total Kjeldahl Nitrogen	mg/L	1	*		*	***	1/week	monthly	C
Nitrate + Nitrite	mg/L	1	*		*	***	1/week	monthly	C
Oil & Grease	mg/L	1, 3	*		*	15/10	1/quarter	quarterly	G
Chromium III, TR	µg/L	7	*		*	230.8/77.4	1/quarter	quarterly	C
Chromium VI, Dissolved	µg/L	7	*		*	14.8/5.6	1/quarter	quarterly	G
Cyanide, ATC	µg/L	7	*		*	9.9/5.0	1/quarter	quarterly	C
Nickel, TR	µg/L	7	*		*	128.4/64.0	1/quarter	quarterly	C
Silver, TR	µg/L	7	*		*	5.9/2.9	1/quarter	quarterly	C
Zinc, TR	µg/L	7	*		*	146.8/62.8	1/quarter	quarterly	C
PARAMETER	Unit	Basis for Limits	Minimum		Maximum	Previous Sampling Frequency	Sampling Frequency	Reporting Frequency	Sample Type
pH	SU	1	6.5		9.0	2/month	1/week	monthly	G

PARAMETER	Unit	Basis for Limits	Daily Minimum		Monthly Avg. Min	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
Dissolved Oxygen (Table A-1)	mg/L	7	*		*	***	1/week	monthly	G
Dissolved Oxygen (Table A-2)	mg/L	7	5.0		5.0	*/*	1/week	monthly	G
Dissolved Oxygen (Table A-3)	mg/L	8	7.5		7.5	5.0/5.0	1/week	monthly	G
PARAMETER	Unit	Basis for Limits	Monthly Average		Monthly Total	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Total Phosphorus	mg/L	7	*			***	1/week	monthly	C
Total Nitrogen	lbs.	7			*	***	1/week	monthly	M
Total Nitrogen	mg/L	7	*			***	1/week	monthly	C
Total Nitrogen	lbs.	7			*	***	1/week	monthly	M
PARAMETER	Unit	Basis for Limits	Annual Average		Annual Total	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Total Phosphorus	mg/L	7	*			***	1/year	annually	M
Total Phosphorus	lbs.	8			1,128	***	1/year	annually	M
Total Nitrogen	mg/L	7	*			***	1/year	annually	M
Total Nitrogen	lbs.	8			28,671	***	1/year	annually	M
PARAMETER	Unit	Basis for Limits	Daily Maximum			Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Acute Whole Effluent Toxicity	TUa	1, 9	*			Pass/ Fail	1/year	annually	C
Chronic Whole Effluent Toxicity	TUc	1, 9	*			***	1/permit cycle	1/permit cycle	C

* - Monitoring requirement only.

** - #/100mL; the Monthly Average for *E. coli* is a geometric mean.

*** - Parameter not previously established in previous state operating permit.

**** - C = 24-hour composite

G = Grab

T = 24-hr. total

M = Measured/calculated

Basis for Limitations Codes:

- | | | |
|------------------------------------------|-----------------------------------|-------------------------------------------|
| 1. State or Federal Regulation/Law | 5. Antidegradation Policy | 9. WET Test Policy |
| 2. Water Quality Standard (includes RPA) | 6. Water Quality Model | 10. Multiple Discharger Variance |
| 3. Water Quality Based Effluent Limits | 7. Best Professional Judgment | 11. Nutrient Criteria Implementation Plan |
| 4. Antidegradation Review | 8. TMDL or Permit in lieu of TMDL | |

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **Flow.** In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.
- **Biochemical Oxygen Demand (BOD₅)**
 - **Biochemical Oxygen Demand (BOD₅) (Table A-1).** Operating permit retains 45 mg/L as a Weekly Average and 20 mg/L as a Monthly Average from the previous permit. Please see the attached 2006 Water Quality Review Sheet
 - **Biochemical Oxygen Demand (BOD₅) (Table A-2).** The facility provided the Department with Attainable Effluent Concentrations for the Proposed Upgrade Alternatives. The upgrade proposed by the facility lists that the Attainable Effluent Concentration Average Monthly Limit (AML) for BOD₅ is 10 mg/L. Per the Department's 2010 Guidance for Water Quality and Antidegradation Review Assistance, for conventional pollutants, and the Department's 2009 Dissolved Oxygen Modeling and Biochemical Oxygen Demand Effluent Limit Development Administrative Guidance document, the BOD₅ Average Weekly Limit is calculated by multiplying the AML by 1.5. The AWL was calculated to be 15 mg/L.

AML = 10 mg/L

AWL = AML * 1.5 = 10 * 1.5 = 15 mg/L

AWL = 15 mg/L

- **Biochemical Oxygen Demand (BOD₅) (Table A-3).** Per the Department's 2010 Guidance for Water Quality and Antidegradation Review Assistance, for conventional pollutants, and the Department's 2009 Dissolved Oxygen Modeling and Biochemical Oxygen Demand Effluent Limit Development Administrative Guidance document, the WLA is used as the Average Monthly Limit (AML). The Average Weekly Limit is calculated by multiplying the AML by 1.5. The effluent limits established in the permit were derived using the same calibrated QUAL2K model used to establish the approved Spring Creek TMDL. This model shows final effluent limits will result in attainment of the applicable dissolved oxygen criterion of 5 mg/L. As noted in Sections 2 and 4.2 of the approved TMDL, achievement of this dissolved oxygen criterion is the ultimate TMDL endpoint for water quality restoration. Considerations of seasonal variations in water quality standards are described in Section 12 of the TMDL. This section notes that conservative assumptions and implicit margins of safety used to establish the TMDL may allow for alternative ammonia effluent limits so long as they are consistent with the underlying TMDL model. The WLA used below was obtained from the QUAL2K model. See APPENDIX: TMDL MODEL TABLE.

WLA = AML = 5.0 mg/L

AML = 5.0 mg/L

AWL = AML * 1.5 = 5.0 * 1.5 = 7.5 mg/L

AWL = 7.5 mg/L

- **Total Suspended Solids (TSS).**

- **Total Suspended Solids (TSS) (Table A-1).** Operating permit retains 45 mg/L as a Weekly Average and 30 mg/L as a Monthly Average from the previous permit. Please see the attached 2006 Water Quality Review Sheet
- **Total Suspended Solids (TSS) (Table A-2).** The facility provided the Department with Attainable Effluent Concentrations for the Proposed Upgrade Alternatives. The upgrade proposed by the facility lists that the Attainable Effluent Concentration Average Monthly Limit (AML) for TSS is 10 mg/L. Per the Department's 2010 Guidance for Water Quality and Antidegradation Review Assistance, for conventional pollutants, and the Department's 2009 Dissolved Oxygen Modeling and Biochemical Oxygen Demand Effluent Limit Development Administrative Guidance document, the TSS Average Weekly Limit is calculated by multiplying the AML by 1.5. The AWL was calculated to be 15 mg/L.

AML = 10 mg/L

AWL = AML * 1.5 = 10 * 1.5 = 15 mg/L

AWL = 15 mg/L

- **Total Suspended Solids (TSS) (Table A-3).** Per the Department's 2010 Guidance for Water Quality and Antidegradation Review Assistance, for conventional pollutants, the average weekly limit is calculated by multiplying the AML by 1.5. The WLA of 5 mg/L was obtained from the 2022 TMDL for Spring Creek. See APPENDIX: TMDL TABLE 15 WLAs.

WLA = AML = 5.0 mg/L

AML = 5.0 mg/L

AWL = AML * 1.5 = 5.0 * 1.5 = 7.5 mg/L

AWL = 7.5 mg/L

- **Escherichia coli (E. coli).** Monthly average of 206 per 100 mL as a geometric mean and Weekly Average of 1,030 per 100 mL as a geometric mean during the recreational season (April 1 – October 31), for discharges within two miles upstream of segments or lakes with Whole Body Contact Recreation (B) designated use of the receiving stream, as per 10 CSR 20-7.015(9)(B). An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d). The Geometric Mean is calculated by multiplying all of the data points and then taking the nth root of this product, where n = # of samples collected. For example: Five *E. coli* samples were collected with results of 1, 4, 6, 10, and 5 (#/100mL). Geometric Mean = 5th root of (1)(4)(6)(10)(5) = 5th root of 1,200 = 4.1 #/100mL.

- **Total Ammonia Nitrogen.**

PARAMETER	2022 TMDL (Total Maximum Daily Load)		Previous Permit Limits		PBELS (Performance Based Effluent Limits)	
	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average
Ammonia (Winter)	1.8	0.9	*	*	5.2	2.6
Ammonia (Summer)	0.72	0.36	6.8	1.5	0.8	0.4

Green cells are final effluent limits (Table A-3), orange cells are interim effluent limits (Table A-2), and yellow cells are interim effluent limits (Table A-1)

- **Total Ammonia Nitrogen (Interim) (Table A-1).** Operating permit retains effluent limits for Ammonia of 6.8 mg/L as a daily maximum and 1.5 mg/L as a monthly average for the months of April to September and monitoring only for the months of October to March, from the previous permit.

Total Ammonia Nitrogen (Interim) (Table A-2).

- Winter (October – March): The permit writer conducted a review of data submitted by the facility for Ammonia and determined that the 95th percentile of monthly average data for Ammonia for the winter months from October 2018 to March 2023 was 2.6 mg/L. The permit writer determined that the facility is capable of meeting the calculated limits. The permit writer established these limits using best professional judgment.

$$\text{AML} = 2.6 \text{ mg/L}$$

$$\text{MDL} = \text{AML} * 2.0 = 2.6 * 2.0 = 5.2 \text{ mg/L}$$

$$\text{MDL} = 5.2 \text{ mg/L}$$

- Summer (April – September): The permit writer conducted a review of data submitted by the facility for Ammonia and determined that the 95th percentile of monthly average data for Ammonia for the summer months from July 2018 to May 2023 was 0.4 mg/L. The permit writer determined that the facility is capable of meeting the calculated limits. The permit writer established these limits using best professional judgment.

$$\text{AML} = 0.4 \text{ mg/L}$$

$$\text{MDL} = \text{AML} * 2.0 = 0.4 * 2.0 = 0.8 \text{ mg/L}$$

$$\text{MDL} = 0.8 \text{ mg/L}$$

- **Total Ammonia Nitrogen (Final) (Table A-3).**

- The effluent limits established in the permit were derived using the same calibrated QUAL2K model used to establish the approved Spring Creek TMDL. This model shows final effluent limits will result in attainment of the applicable dissolved oxygen criterion of 5 mg/L. As noted in Sections 2 and 4.2 of the approved TMDL, achievement of this dissolved oxygen criterion is the ultimate TMDL endpoint for water quality restoration. Considerations of seasonal variations in water quality standards are described in Section 12 of the TMDL. This section notes that conservative assumptions and implicit margins of safety used to establish the TMDL may allow for alternative ammonia effluent limits so long as they are consistent with the underlying TMDL model. The WLA used below was obtained from the QUAL2K model. As Ammonia has an AML and MDL, the permit writer determined that to calculate the MDL, the AML would be multiplied by 2.0 (using the Department's 2010 Guidance for Water Quality and Antidegradation Review Assistance calculates average weekly limits by multiplying the AML by 1.5, and the Department uses a 2.0 multiplier to calculate a Daily Maximum). See APPENDIX: TMDL MODEL TABLE.

Summer: April 1 – September 30

Chronic WLA: $C_e = 0.36 \text{ mg/L}$

WLA_c = AML

$$\text{AML} = 0.36 \text{ mg/L}$$

$$\text{MDL} = \text{AML} \times 2.0$$

$$\text{MDL} = 0.36 \times 2.0 = 0.72 \text{ mg/L}$$

Winter: October 1 – March 31

Chronic WLA: $C_e = 0.9 \text{ mg/L}$

WLA_c = AML

$$\text{AML} = 0.9 \text{ mg/L}$$

$$\text{MDL} = \text{AML} \times 2.0$$

$$\text{MDL} = 0.9 \times 2.0 = 1.8 \text{ mg/L}$$

- **Oil & Grease.** During the drafting of this permit, the permit writer reviewed DMR data submitted by the permittee. Additionally, no evidence of an excursion of the water quality standard has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of the water quality standard. As a result, monitoring requirements have been included in this permit to determine if the discharge has the reasonable potential to cause or contribute to an excursion of the water quality standard. Data will be reviewed at renewal to reassess this determination.

- **pH**. 6.5-9.0 SU. pH limitations of 6.0-9.0 SU [10 CSR 20-7.015] are not protective of the in-stream Water Quality Standard, which states that water contaminants shall not cause pH to be outside the range of 6.5-9.0 SU.
- **Dissolved Oxygen (Table A-1)**. Monitoring only requirements have been included in this permit to determine the level of dissolved oxygen in the effluent. This data will be reviewed during the next permit renewal.
- **Dissolved Oxygen (Table A-2)**. The upgraded facility constructed during Phase 2 improvements will be able to meet a dissolved oxygen limit of 5.0 mg/L.
- **Dissolved Oxygen (Table A-3)**. The 2022 TMDL for Spring Creek required that for water quality standards to be attained at specified wasteload allocations, Salem WWTP effluent should be maintained to no less than 7.5 mg/L dissolved oxygen. See APPENDIX: TMDL MODEL TABLE.
- **Cyanide, Amenable to Chlorination**. Monitoring only requirements have been included in this permit. An RPA was conducted based on the current WQS and determined that there is no reasonable potential to violate the water quality standard for Cyanide, please see **Appendix – RPA Results**. This determination will be reassessed at the time of renewal.
- **Biochemical Oxygen Demand (BOD₅) Percent Removal**. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to BOD₅ and TSS for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 85% removal efficiency for BOD₅.
- **Total Suspended Solids (TSS) Percent Removal**. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to BOD₅ and TSS for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 85% removal efficiency for TSS.
- **Total Phosphorus**. The NPDES regulations at 40 CFR 122.45(d) require that all permit limits be expressed, unless impracticable, as both average monthly limits and maximum daily limits for all dischargers other than publicly owned treatment works (POTWs), and as average weekly limits and average monthly limits for POTWs.

In the March 3, 2004 EPA Memorandum with the subject of; Annual Permit Limits for Nitrogen and Phosphorus for Permits Designed to Protect Chesapeake Bay and its tidal tributaries from Excess Nutrient Loading under the National Pollutant Discharge Elimination System, the Office of Wastewater Management cautioned that the steady-state statistical procedures described in EPA's Technical Support Document for Water Quality-based Toxics Control (TSD) were not applicable or appropriate for developing nutrient limits for the main stem of Chesapeake Bay and its tidal tributaries. The memo stated that developing permit limits for nutrients affecting Chesapeake Bay and its tidal tributaries is different from setting limits for toxic pollutants because the exposure period of concern for nutrients is longer than one month, and can be up to a few years, and the average exposure rather than the maximum exposure is of concern. The statistical derivation procedure described in the TSD for acute and chronic aquatic life protection is not applicable to exposure periods more than 30 days (see TSD page 105). The Office of Wastewater Management concluded that due to the characteristics of nutrient loading and its effects on the water quality in Chesapeake Bay and its tidal tributaries and because the derivation of appropriate daily, weekly or monthly limits is not possible for the reasons described above, that it is therefore "impracticable" to express permit effluent limitations as daily maximum, weekly average, or monthly average effluent limitations. Therefore the Department has determined that the WLA provided in the TMDL will be applied as a daily maximum load (MDL). Due to the long term effects of nutrients on streams, an Annual Total Limit (ATL) with a Monthly Total monitoring only requirement has been applied. This value is consistent with the assumptions and requirements of the TMDL. The WLA was obtained from the 2022 TMDL for Spring Creek. See APPENDIX: TMDL TABLE 15 WLAs.

WLA = MDL = 3.09 lbs/day

ATL = MDL x 365 days

ATL = 3.09 lbs/day x 365 days = **1,128 lbs.**

- **Total Nitrogen**. The NPDES regulations at 40 CFR 122.45(d) require that all permit limits be expressed, unless impracticable, as both average monthly limits and maximum daily limits for all dischargers other than publicly owned treatment works (POTWs), and as average weekly limits and average monthly limits for POTWs.

In the March 3, 2004 EPA Memorandum with the subject of; Annual Permit Limits for Nitrogen and Phosphorus for Permits Designed to Protect Chesapeake Bay and its tidal tributaries from Excess Nutrient Loading under the National Pollutant Discharge Elimination System, the Office of Wastewater Management cautioned that the steady-state statistical procedures described in EPA's Technical Support Document for Water Quality-based Toxics Control (TSD) were not applicable or appropriate for developing nutrient limits for the main stem of Chesapeake Bay and its tidal tributaries. The memo stated that developing permit limits for nutrients affecting Chesapeake Bay and its tidal tributaries is different from setting limits for toxic pollutants because the exposure period of concern for nutrients is longer than one month, and can be up to a few years, and the average exposure rather than the maximum exposure is of concern. The statistical derivation procedure described in the TSD for acute and chronic aquatic life protection is not applicable to exposure periods more than 30 days (see TSD page 105). The Office of Wastewater Management concluded that due to the characteristics of nutrient loading and its effects on the water quality in Chesapeake Bay and its tidal tributaries and because the derivation of appropriate daily, weekly or monthly limits is not possible for the reasons described above, that it is therefore "impracticable" to express permit effluent limitations as daily maximum, weekly average, or monthly average effluent limitations. Therefore the Department has determined that the WLA provided in the TMDL will be applied as a daily maximum load (MDL). Due to the long term effects of nutrients on streams, an Annual Total Limit (ATL) with a Monthly Total monitoring only requirement has been applied. This value is consistent with the assumptions and requirements of the TMDL. The WLA was obtained from the 2022 TMDL for Spring Creek. See APPENDIX: TMDL TABLE 15 WLAs.

WLA = MDL = 78.55 lbs/day

ATL = MDL x 365 days

ATL = 78.55 lbs/day x 365 days = **28,671 lbs.**

- **Total Kjeldahl Nitrogen & Nitrate + Nitrite**. Effluent monitoring for Total Kjeldahl Nitrogen and Nitrate + Nitrite are required per 10 CSR 20-7.015(9)(D)8.

Metals

Effluent limitations for total recoverable metals were developed using methods and procedures outlined in the "Technical Support Document for Water Quality-based Toxic Controls" (EPA/505/2-90-001) and "The Metals Translator: Guidance For Calculating a Total Recoverable Permit Limit from a Dissolved Criterion" (EPA 823-B-96-007). General warm-water fishery criteria apply. Ecoregion water hardness for Ozark Highlands of 170 mg/L is used in the calculation below. This value represents the 50th percentile (median) for all watersheds in-stream hardness values through the Ecoregion.

Due to the absence of contemporaneous effluent and instream data for total recoverable metals, dissolved metals, hardness, and total suspended solids with which to calculate metals translators, partitioning between the dissolved and absorbed phases was assumed to be minimal (Section 5.7.3, EPA/505/2-90-001). Freshwater criteria conversion factors for dissolved metals were used as the metals translator as recommended in guidance (Section 1.3, 1.5.3, and Table 1, EPA 823-B-96-007). If concurrent site-specific data for total recoverable metals, dissolved metals, hardness, and total suspended solids are provided to the Department, partitioning evaluations may be considered and site-specific translators developed.

METAL	CONVERSION FACTORS	
	ACUTE	CHRONIC
Cadmium	0.922	0.887
Copper	0.960	0.960
Lead	0.714	0.714

Conversion factors for Cd and Pb are hardness dependent. Values calculated using equation found in Section 1.3 of EPA 823-B-96-007 and hardness = 170 mg/L.

- **Cadmium, Total Recoverable**. Protection of Aquatic Life Acute Criteria = 7.982 µg/L, Chronic Criteria = 1.07 µg/L. The hardness value of **170 mg/L** represents the 50th percentile (median) for the ecoregion water hardness for Ozark Highlands.

Acute AQL: $e^{(1.0166 * \ln 170 - 3.062490)} * (1.136672 - \ln 170 * 0.041838) = 7.982 \text{ µg/L [at hardness 170]}$

Chronic AQL: $e^{(0.7977 * \ln 170 - 3.909)} * (1.101672 - \ln 170 * 0.041938) = 1.07 \text{ µg/L [at hardness 170]}$

TR Conversion: $AQL/Translator = 7.982 / 0.922 = 8.659 \text{ [at hardness 170]}$

TR Conversion: $AQL/Translator = 1.07 / 0.887 = 1.207 \text{ [at hardness 170]}$

Acute WLA: $C_e = ((1.934 \text{ cfs} + 0.033 \text{ cfs}) * 8.659 - (0.033 \text{ cfs} * 0 \text{ background})) / 1.934 \text{ cfs} = 8.806$

Chronic WLA: $C_e = ((1.934 \text{ cfs} + 0.33 \text{ cfs}) * 1.207 - (0.33 \text{ cfs} * 0 \text{ background})) / 1.934 \text{ cfs} = 1.413$

LTAa: $WLAa * LTAa \text{ multiplier} = 8.806 * 0.08 = 0.707 \text{ [CV: 4.28280721994154, 99th percentile]}$

LTAc: $WLAc * LTAc \text{ multiplier} = 1.413 * 0.112 = 0.158 \text{ [CV: 4.283, 99th percentile]}$

Use most protective LTA: 0.158

Daily Maximum: MDL = LTA * MDL multiplier = $0.158 * 12.456 = 1.97 \mu\text{g/L}$ [CV: 4.283, 99th percentile]
Monthly Average: AML = LTA * AML multiplier = $0.158 * 3.66 = 0.58 \mu\text{g/L}$ [CV: 4.283, 95th percentile, n=4]

- **Copper, Total Recoverable.** Protection of Aquatic Life Acute Criteria = $22.15 \mu\text{g/L}$, Chronic Criteria = $14.094 \mu\text{g/L}$. The hardness value of **170 mg/L** represents the 50th percentile (median) for the ecoregion water hardness for Ozark Highlands.

Acute AQL: $e^{(1.0166 * \ln 170 - 3.062490) * (1.136672 - \ln 170 * 0.041838)} = 22.15 \mu\text{g/L}$ [at hardness 170]
Chronic AQL: $e^{(0.7977 * \ln 170 - 3.909) * (1.101672 - \ln 170 * 0.041938)} = 14.094 \mu\text{g/L}$ [at hardness 170]

TR Conversion: AQL/Translator = $22.15 / 0.96 = 23.073$ [at hardness 170]
TR Conversion: AQL/Translator = $14.094 / 0.96 = 14.681$ [at hardness 170]
Acute WLA: $C_e = ((1.934 \text{ cfs} + 0.033 \text{ cfs}) * 23.073 - (0.033 \text{ cfs} * 0 \text{ background})) / 1.934 \text{ cfs} = 23.466$
Chronic WLA: $C_e = ((1.934 \text{ cfs} + 0.33 \text{ cfs}) * 14.681 - (0.33 \text{ cfs} * 0 \text{ background})) / 1.934 \text{ cfs} = 17.186$

LTAa: $\text{WLAa} * \text{LTAa multiplier} = 23.466 * 0.306 = 7.173$ [CV: 0.635597735138145, 99th percentile]
LTAc: $\text{WLAc} * \text{LTAc multiplier} = 17.186 * 0.51 = 8.764$ [CV: 0.636, 99th percentile]

Use most protective LTA: 7.173

Daily Maximum: MDL = LTA * MDL multiplier = $7.173 * 3.272 = 23.5 \mu\text{g/L}$ [CV: 0.636, 99th percentile]
Monthly Average: AML = LTA * AML multiplier = $7.173 * 1.587 = 11.4 \mu\text{g/L}$ [CV: 0.636, 95th percentile, n=4]

- **Lead, Total Recoverable.** Protection of Aquatic Life Acute Criteria = $114.446 \mu\text{g/L}$, Chronic Criteria = $4.463 \mu\text{g/L}$. The hardness value of **170 mg/L** represents the 50th percentile (median) for the ecoregion water hardness for Ozark Highlands.

Acute AQL: $e^{(1.0166 * \ln 170 - 3.062490) * (1.136672 - \ln 170 * 0.041838)} = 114.446 \mu\text{g/L}$ [at hardness 170]
Chronic AQL: $e^{(0.7977 * \ln 170 - 3.909) * (1.101672 - \ln 170 * 0.041938)} = 4.463 \mu\text{g/L}$ [at hardness 170]

TR Conversion: AQL/Translator = $114.446 / 0.714 = 160.36$ [at hardness 170]
TR Conversion: AQL/Translator = $4.463 / 0.714 = 6.253$ [at hardness 170]

Acute WLA: $C_e = ((1.934 \text{ cfs} + 0.033 \text{ cfs}) * 160.36 - (0.033 \text{ cfs} * 0 \text{ background})) / 1.934 \text{ cfs} = 163.097$
Chronic WLA: $C_e = ((1.934 \text{ cfs} + 0.33 \text{ cfs}) * 6.253 - (0.33 \text{ cfs} * 0 \text{ background})) / 1.934 \text{ cfs} = 7.32$

LTAa: $\text{WLAa} * \text{LTAa multiplier} = 163.097 * 0.109 = 17.755$ [CV: 2.23625614357219, 99th percentile]
LTAc: $\text{WLAc} * \text{LTAc multiplier} = 7.32 * 0.185 = 1.352$ [CV: 2.236, 99th percentile]

Use most protective LTA: 1.352

Daily Maximum: MDL = LTA * MDL multiplier = $1.352 * 9.186 = 12.4 \mu\text{g/L}$ [CV: 2.236, 99th percentile]
Monthly Average: AML = LTA * AML multiplier = $1.352 * 2.933 = 4.0 \mu\text{g/L}$ [CV: 2.236, 95th percentile, n=4]

- **Chromium III, Total Recoverable.** Monitoring only requirements have been included in this permit. An RPA was conducted based on the current WQS and determined that there is no reasonable potential to violate the water quality standard for Chromium III, please see **Appendix – RPA Results**. This determination will be reassessed at the time of renewal.
- **Chromium VI, Total Dissolved.** Monitoring only requirements have been included in this permit. An RPA was conducted based on the current WQS and determined that there is no reasonable potential to violate the water quality standard for Chromium VI, please see **Appendix – RPA Results**. This determination will be reassessed at the time of renewal.
- **Nickel, Total Recoverable.** Monitoring only requirements have been included in this permit. An RPA was conducted based on the current WQS and determined that there is no reasonable potential to violate the water quality standard for Nickel, please see **Appendix – RPA Results**. This determination will be reassessed at the time of renewal.
- **Silver, Total Recoverable.** Monitoring only requirements have been included in this permit. An RPA was conducted based on the current WQS and determined that there is no reasonable potential to violate the water quality standard for Silver, please see **Appendix – RPA Results**. This determination will be reassessed at the time of renewal.
- **Zinc, Total Recoverable.** Monitoring only requirements have been included in this permit. An RPA was conducted based on the current WQS and determined that there is no reasonable potential to violate the water quality standard for Zinc, please see **Appendix – RPA Results**. This determination will be reassessed at the time of renewal.

Whole Effluent Toxicity

- **Acute Whole Effluent Toxicity**. Monitoring requirement only. Monitoring is required to determine if reasonable potential exists for this facility's discharge to exceed water quality standards.

✓ Classified P with other than default Mixing Considerations, the AEC% is determined as follows:

$$\text{Acute AEC\%} = \{[(\text{design flow}_{\text{cfs}} + \text{ZID}_{7\text{Q}10}) / \text{design flow}_{\text{cfs}}]^{-1}\} \times 100 = \#\%$$

$$\text{Acute AEC\%} = \{[(1.146 + 0.033) / 1.146]^{-1}\} \times 100 = 97\%, \text{ which is being rounded to } 100\%.$$

Chronic Whole Effluent Toxicity. Monitoring requirement only. Monitoring is required to determine if reasonable potential exists for this facility's discharge to exceed water quality standards.

✓ Classified P with other than default Mixing Considerations, the AEC% is determined as follows:

$$\text{Chronic AEC\%} = \{[(\text{design flow}_{\text{cfs}} + \text{MZ}_{7\text{Q}10}) / \text{design flow}_{\text{cfs}}]^{-1}\} \times 100 = \#\%$$

$$\text{Chronic AEC\%} = \{[(1.146 + 0.33) / 1.146]^{-1}\} \times 100 = 78\%$$

Sampling Frequency Justification: The Department has determined that previously established sampling and reporting frequency is sufficient to characterize the facility's effluent and be protective of water quality, except that the facility is required to sample Flow once per day, Ammonia, pH, Total Phosphorus and Total Nitrogen once per week, and Oil & Grease quarterly. The increased flow frequency is necessary to provide nutrient information. The increased sampling frequency will provide adequate data to the Department to determine if the facility is meeting the permit limits. Oil & Grease was reduced as the effluent did not show a reasonable potential to violate Water Quality Standards. Weekly sampling is required for *E. coli*, per 10 CSR 20-7.015(9)(D)7.A. Weekly sampling is required for Total Kjeldahl Nitrogen and Nitrate + Nitrite as they are part of the Total Nitrogen constituents.

WET Test Sampling Frequency Justification. WET Testing schedules and intervals are established in accordance with the Department's Permit Manual; Section 5.2 *Effluent Limits / WET Testing for Compliance Bio-monitoring*. It is recommended that WET testing be conducted during the period of lowest stream flow.

Acute Whole Effluent Toxicity

✓ **No less than ONCE/YEAR:**

- Facility is designated as a Major facility or has a design flow ≥ 1.0 MGD.
- Facility incorporates a pretreatment program.
- Facility continuously or routinely exceeds their design flow.
- Facility exceeds its design population equivalent (PE) for BOD₅ whether or not its design flow is being exceeded.
- Facility has Water Quality-based effluent limitations for toxic substances (other than NH₃).

Chronic Whole Effluent Toxicity

✓ **No less than ONCE/PERMIT CYCLE:**

- POTW facilities with a design flow of greater than 1.0 million gallons per day, but less than 10 million gallons per day, shall conduct and submit to the Department a chronic WET test no less than once per five years.

Sampling Type Justification: As per 10 CSR 20-7.015, samples collected for mechanical plants shall be a 24 hour composite sample. Grab samples, however, must be collected for pH, *E. coli*, Oil & Grease, Dissolved Oxygen, Cyanide, and Chromium, VI in accordance with recommended analytical methods. For further information on sampling and testing methods please review 10 CSR 20-7.015(9)(D) 2.

PERMITTED FEATURE INF – INFLUENT MONITORING

The monitoring requirements established in the below Monitoring Requirements Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including the monitoring requirements listed in this table.

CHANGES TO INFLUENT MONITORING:

PARAMETER	Unit	Basis for Limits	Daily Maximum	Monthly Average	Previous Permit Limit/Frequency	Sampling Frequency	Reporting Frequency	Sample Type ****
Total Phosphorus	mg/L	1	*	*	***	1/month	monthly	C
Total Nitrogen	mg/L	1	*	*	***	1/month	monthly	C
Ammonia as N	mg/L	1	*	*	***	1/month	monthly	C
Total Kjeldahl Nitrogen	mg/L	1	*	*	***	1/month	monthly	C
Nitrite + Nitrate	mg/L	1	*	*	***	1/month	monthly	C

* - Monitoring requirement only.

*** - Parameter not previously established in previous state operating permit.

**** - C = Composite

G = Grab

Basis for Limitations Codes:

- | | | |
|------------------------------------------|-----------------------------------|-------------------------------------------|
| 1. State or Federal Regulation/Law | 5. Antidegradation Policy | 9. WET Test Policy |
| 2. Water Quality Standard (includes RPA) | 6. Water Quality Model | 10. Multiple Discharger Variance |
| 3. Water Quality Based Effluent Limits | 7. Best Professional Judgment | 11. Nutrient Criteria Implementation Plan |
| 4. Antidegradation Review | 8. TMDL or Permit in lieu of TMDL | |

Influent Parameters

- **Biochemical Oxygen Demand (BOD₅) and Total Suspended Solids (TSS).** An influent sample is required to determine the removal efficiency. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to BOD₅ and TSS for Publicly Owned Treatment Works (POTWs)/municipals.
- **Total Phosphorus, Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia.** Influent monitoring for Total Phosphorus, Total Nitrogen, Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia required per 10 CSR 20-7.015(9)(D)8.

Sampling Frequency Justification: The sampling and reporting frequencies for Total Phosphorus, Total Nitrogen, Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia were established per 10 CSR 20-7.015(9)(D)8. The sampling and reporting frequencies for influent BOD₅ and TSS have been established to match the required sampling frequency of these parameters in the effluent.

Sampling Type Justification: Sample types for influent parameters were established to match the required sampling type of these parameters in the effluent. Samples should be analyzed as soon as possible after collection and/or properly preserved according to method requirements.

PERMITTED FEATURE SM1 – INSTREAM MONITORING (DOWNSTREAM)

The monitoring requirements established in the below Monitoring Requirements Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including the monitoring requirements listed in this table.

MONITORING REQUIREMENTS TABLE:

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Total Hardness	mg/L	1, 3	*		*	***	1/month	monthly	G

* - Monitoring requirement only.

*** - Parameter not previously established in previous state operating permit.

**** - G = Grab

Basis for Limitations Codes:

- | | | |
|------------------------------------------|-----------------------------------|-------------------------------------------|
| 1. State or Federal Regulation/Law | 5. Antidegradation Policy | 9. WET Test Policy |
| 2. Water Quality Standard (includes RPA) | 6. Water Quality Model | 10. Multiple Discharger Variance |
| 3. Water Quality Based Effluent Limits | 7. Best Professional Judgment | 11. Nutrient Criteria Implementation Plan |
| 4. Antidegradation Review | 8. TMDL or Permit in lieu of TMDL | |

PERMITTED FEATURE SM1 – DERIVATION AND DISCUSSION OF MONITORING REQUIREMENTS:

- **Total Hardness.** Monitoring only requirement as the metals parameters contained in the permit are hardness based. This data will be used in the next permit renewal.

Sampling Frequency Justification: The sampling and reporting frequency for Total Hardness has been established to match the required sampling frequency of the metals parameters in the effluent.

Sampling Type Justification: For the purposes of instream data collection, and as the downstream water quality should be consistent over a 24 hour period, grab samples are sufficient. Samples should be analyzed as soon as possible after collection and/or properly preserved according to method requirements.

OUTFALL #001 – GENERAL CRITERIA CONSIDERATIONS:

In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into the permit for those pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality. The rule further states that pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above a narrative criterion within an applicable State water quality standard, the permit shall contain a numeric effluent limitation to protect that narrative criterion. In order to comply with this regulation, the permit writer will complete reasonable potential determinations on whether the discharge will violate any of the general criteria listed in 10 CSR 20-7.031(4). These specific requirements are listed below followed by derivation and discussion (the lettering matches that of the rule itself, under 10 CSR 20-7.031(4)). It should also be noted that Section 644.076.1, RSMo as well as Section D – Administrative Requirements of Standard Conditions Part I of this permit states that it shall be unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri that is in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule or regulation promulgated by the commission.

- (A) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses. The discharge from this facility is made up of treated domestic wastewater. Based upon review of the Report of Compliance Inspection for the inspection conducted on March 18, 2016, no evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, this facility utilizes secondary treatment technology and is currently in compliance with effluent limits that are more stringent than the secondary treatment technology based effluent limits established in 40 CFR 133 and there has been no indication to the Department that the stream has had issues maintaining beneficial uses as a result of this discharge. Based on the information reviewed during the drafting of this permit, these final effluent limitations appear to have protected against the excursion of this criterion in the past. Therefore, the discharge does not have the reasonable potential to cause or contribute to an excursion of this criterion.
- (B) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
- (C) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
- (D) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life. This permit contains final effluent limitations which are protective of both acute and chronic toxicity for various pollutants that are either expected to be discharged by domestic wastewater facilities or that were disclosed by this facility on the application for permit coverage. Based on the information reviewed during the drafting of this permit, it has been determined if the facility meets final effluent limitations established in this permit, there is no reasonable potential for the discharge to cause an excursion of this criterion.
- (E) Waters shall provide for the attainment and maintenance of water quality standards downstream including waters of another state. Please see (D) above as justification is the same.
- (F) There shall be no significant human health hazard from incidental contact with the water. Please see (D) above as justification is the same.
- (G) There shall be no acute toxicity to livestock or wildlife watering. Please see (D) above as justification is the same.
- (H) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community. Please see (A) above as justification is the same.
- (I) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247. The discharge from this facility is made up of treated domestic wastewater. No evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, any solid wastes received or produced at this facility are wholly contained in appropriate storage facilities, are not discharged, and are disposed of offsite. This discharge is subject to Standard Conditions Part III, which contains requirements for the management and disposal of sludge to prevent its discharge. Therefore, this discharge does not have reasonable potential to cause or contribute to an excursion of this criterion.

Part III – Rationale and Derivation of Effluent Limitations & Permit Conditions

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:

- ✓ The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(40)] & [10 CSR 20-7.031(1)(O)].

ANTI-BACKSLIDING:

Federal antibacksliding requirements [CWA §402(o) and 40 CFR § 122.44(l) generally prohibit a reissued permit from containing effluent limitations that are less stringent than the previous permit, with some exceptions. All renewed permits are analyzed for evidence of backsliding. There are several express statutory exceptions to the antibacksliding requirements, located in CWA § 402(o)(2) and 40 CFR 122.44(l).

Item 1. Technology Based Effluent Limits (TBELs).

CWA § 402(o) Anti-backsliding (1) General Prohibition: “In the case of effluent limitations established on the basis of subsection (a)(1)(B) of this section, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 1314(b) of this title subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit...”

The references in this section to subsection (a)(1)(B) and section 1314(b) are both references to the effluent limitation guidelines (ELGs), which are promulgated at 40 CFR Subchapter N. 40 CFR § 122.44(l)(2) states that the ELG values must be applied. The only allowable methods of removing an ELG limit imposed in a previous permit are if that limit was erroneously applied or if the waste stream is no longer subject to the ELG.

Item 2. Water Quality Based Effluent Limits (WQBELs).

402(o)(1) continued: “... In the case of effluent limitations established on the basis of section 1311(b)(1)(C) or section 1313(d) or (e) of this title, a permit may not be renewed, reissued, or modified to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit except in compliance with section 1313(d)(4) of this title.”

CWA 402(o)(2)(B)(i) identifies one exception to allow a less stringent WQBEL when “(i) information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance”. Furthermore, the last sentence of CWA 402(o)(2) requires that, “Subparagraph (B) shall not apply to any revised waste load allocations or any alternative grounds for translating water quality standards into effluent limitations, except where the cumulative effect of such revised allocations results in a decrease in the amount of pollutants discharged into the concerned waters, and such revised allocations are not the result of a discharger eliminating or substantially reducing its discharge of pollutants due to complying with the requirements of this chapter or for reasons otherwise unrelated to water quality.”

As a further exception, CWA 402(o)(2)(E) identifies “except where the cumulative effect of such revised allocations results in a decrease in the amount of pollutants discharged into the concerned waters, and such revised allocations are not the result of a discharger eliminating or substantially reducing its discharge of pollutants due to complying with the requirements of this chapter or for reasons otherwise unrelated to water quality.”

When 402(o)(2)(B)(i) refers to new information, that information can be either provided by the facility or investigated by the Department. Department guidance can also change. All new information must be explored, and the Department may use new site-specific hardness (for hardness-dependent metals), pH and temperature (for ammonia WQS), stream flow (for mixing considerations), and other information, to derive less stringent WQBELs, subject to the safety clause discussed below.

Finally, a WQBEL must be based on the most stringent and applicable WQS. As an example, Missouri has two generally applicable WQSs for chromium, one for aquatic life toxicity, and a second, for irrigation. The irrigation standard is typically more stringent unless the local hardness is extremely low. The permit writer compares the WQSs and, if there is RP for both, implements the lower final effluent limit in the permit.

Item 3. Information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance

CWA 402(o)(2)(B)(i) identifies an exception to allow a less stringent limit when “(i) information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance”.

When 402(o)(2)(B)(i) refers to new information, that information can be either provided by the facility or investigated by the Department. Department guidance can also change. All new information must be explored, and the Department may use new site-specific hardness (for hardness-dependent metals), pH and temperature (for ammonia WQS), stream flow (for mixing considerations), and other information, to derive less stringent WQBELs, subject to the safety clause discussed below.

Item 4. Technical mistakes or mistaken interpretations of law

CWA 402(o)(2)(B)(ii) identifies an exception to allow a less stringent limit when “(ii) the Administrator determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under subsection (a)(1)(B) of this section;”

Item 5. Events over which the permittee has no control and for which there is no reasonable remedy

402(o)(2)(C) identifies an exception to allow a less stringent limit when “(C) a less stringent effluent limitation is necessary because of events over which the permittee has no control and for which there is no reasonably available remedy;”

Item 6. Permittee has received a permit modification under section 1311(c), 1311(g), 1311(h), 1311(i), 1311(k), 1311(n), or 1326(a) or also under 40 CFR section 301(c), 301(g), 301(h), 301(i), 301(k), 301(n), or 316(a)

402(o)(2)(D) identifies an exception to allow a less stringent limit when “(D) the permittee has received a permit modification under section 1311(c), 1311(g), 1311(h), 1311(i), 1311(k), 1311(n), or 1326(a) of this title;” and also under 40 CFR 122.44(l)(2)(i)(C) when “(C) The permittee has received a permit modification under section 301(c), 301(g), 301(h), 301(i), 301(k), 301(n), or 316(a);”

Item 7. Permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit and has properly operated and maintained the facilities but has nevertheless been unable to achieve the previous effluent limitations

402(o)(2)(E) identifies an exception to allow a less stringent limit when “(E) The permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit and has properly operated and maintained the facilities but has nevertheless been unable to achieve the previous effluent limitations, in which case the limitations in the reviewed, reissued, or modified permit may reflect the level of pollutant control actually achieved (but shall not be less stringent than required by effluent guidelines in effect at the time of permit renewal, reissuance, or modification).

Item 8. Safety clause.

402(o)(3) Limitations “In no event may a permit with respect to which paragraph (1) applies be renewed, reissued, or modified to contain an effluent limitation which is less stringent than required by effluent guidelines in effect at the time the permit is renewed, reissued, or modified. In no event may such a permit to discharge into waters be renewed, reissued, or modified to contain a less stringent effluent limitation if the implementation of such limitation would result in a violation of a water quality standard under section 1313 of this title applicable to such waters.”

This safety clause provides an absolute limitation on backsliding, even if one or more of the backsliding exceptions applies and is met. This section prohibits less stringent effluent limitations in all cases if they would result in a violation of applicable effluent guidelines or water quality standards. The Department implements the lowest of the WQS or the TMDL WLA in the permit. Absent a TMDL, if the parameter shows no RP, then a WQBEL is not necessary.

Narrative conditions, found in the special conditions portion of the permit are non-numeric permit limits. Pursuant to 40 CFR 122.2, an effluent limit is *any restriction* imposed by the permitting authority on quantities, discharge rates, and concentrations of pollutants which are discharged. However, re-assessment of non-numeric conditions during a permit reissuance can result in varying perspectives based on additional knowledge gathered by the Department over the course of the permit term. To be clear, only when there is reasonable potential (RP) is the Department charged with developing WQBELs, whether narrative or numeric. Historically, permits included a listing of the narrative general criteria identified in 10 CSR 20-7.031(4), without thoughtfully assessing RP. See REASONABLE POTENTIAL discussion, below in this part.

Item 9. CWA §303(d)(4) Limitations on revision of certain effluent limitations

(A) Standard Not Attained—For waters identified under paragraph (1)(A) where the applicable water quality standard has not yet been attained, any effluent limitation based on a total maximum daily load or other waste load allocation established under this section may be revised only if (i) the cumulative effect of all such revised effluent limitations based on such total maximum daily load or waste load allocation will assure the attainment of such water quality standard, or (ii) the designated use which is not being attained is removed in accordance with regulations established under this section.

(B) Standard Attained—For waters identified under paragraph (1)(A) where the quality of such waters equals or exceeds levels necessary to protect the designated use for such waters or otherwise required by applicable water quality standards, any effluent limitation based on a total maximum daily load or other waste load allocation established under this section, or any water quality standard established under this section, or any other permitting standard may be revised only if such revision is subject to and consistent with the antidegradation policy established under this section.

The references in this section are as follows: section 1313 are CWA § 303 that refer to establishment of state water quality standards; and section 1313(d)(4) is CWA § 303(d)(4) that refers to effluent limitations based on methods to attain a higher quality of water than what currently exists. If we narrowly construe the words “*this section*”, as in CWA section 303, then this requirement only applies to the *development of water quality standards*. A wasteload allocation is a discrete portion of the available loading capacity of the receiving stream. The WLA can change based on the number of dischargers in the stream, a change in stream capacity (for example, a stream no longer classified as a “C” stream but is now a permanent stream), and any load allocation distributed to non-point sources in a TMDL.

Pursuant to 303(d)(4)(A), if the receiving waters were not yet attained for the use, the TMDL limit remains just as or more protective than the broader state WQS. Because 303(d)(4)(B) invokes the antidegradation policy, it would be important for any TMDL or permit in lieu of TMDL to provide rational analysis for any attained water where limits are becoming less stringent. This would be provided for in the TMDL removal document. However, the Department’s antidegradation policy applies only to new and expanding discharges (increase in flow or pollutant loading, or decrease in treatment), therefore if there is no new or expanding discharge, then an antidegradation review is not triggered. Once the receiving water has attained the uses, the permit limit may be based on a different, but also applicable, WQS if it meets one of the exceptions.

40 CFR 122.44(l)(2)(ii) states the antibacksliding provisions most clearly: “In no event may a permit with respect to which paragraph (l)(2) of this section applies be renewed, reissued, or modified to contain an effluent limitation which is less stringent than required by effluent guidelines in effect at the time the permit is renewed, reissued, or modified. In no event may such a permit to discharge into waters be renewed, issued, or modified to contain a less stringent effluent limitation if the implementation of such limitation would result in a violation of a water quality standard under section 303 applicable to such waters.” The Department always includes the applicable ELG and always includes the most stringent applicable in the permit. Also, 40 CFR 122.44(d)(1)(vii) states “when developing water quality-based effluent limits under this paragraph the permitting authority shall ensure that: (A) The level of water quality to be achieved by limits on point sources established under this paragraph is derived from, and complies with all applicable water quality standards”.

CHANGES IN THE PERMIT:

- ✓ **Cadmium, Copper, & Lead.** Effluent limitations were re-calculated for Cadmium, Copper, and Lead using new DMR data and new ecoregional hardness data. This backsliding is justified as there is information available which was not available at the time of the previous permit issuance (new DMR data and new ecoregional hardness data). Also, a Categorical Industrial User that previously discharged industrial wastewater to the wastewater treatment plant ceased operations and discharge in June 2022. This new information justifies the application of a less stringent effluent limitation at the time of permit issuance. Also, the revision of the effluent limit also meets the requirements of the safety clause, as the revision of the effluent limit will not result in a violation of a water quality standard. Copper, Lead and Cadmium concentrations and loads have increased as a result of how water quality standards are calculated. The receiving stream, Spring Creek, is not impaired for metal contributions and has sufficient assimilative capacity to handle the increase concentration and load into the stream. See APPENDIX: ASSIMILATIVE CAPACITY CALCULATIONS.
- ✓ **Oil and Grease.** The previous permit had final effluent limits of 15 mg/L as a daily maximum and 10 mg/L as a monthly average. During the drafting of this permit, the permit writer reviewed DMR data submitted by the permittee. Additionally, no evidence of an excursion of the water quality standard has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of the water quality standard. As a result, monitoring requirements have been included in this permit to determine if the discharge has the reasonable potential to cause or contribute to an excursion of the water quality standard. Data will be reviewed at renewal to reassess this determination. The permit is still protective of water quality. This backsliding is justified as there is information available which was not available at the time of the previous permit issuance (new effluent data). This new information along with a reasonable potential determination, justifies the application of a less stringent effluent limitation at the time of permit issuance. Also, the removal of the limit also meets the requirements of the safety clause, as the implementation of the monitoring only requirement will not result in a violation of a water quality standard.

- ✓ **Chromium III.** The previous permit had final effluent limits of 230.8 µg/L as a daily maximum and 77.4 µg/L as a monthly average. During the drafting of this permit, the permit writer reviewed DMR data submitted by the permittee. Additionally, no evidence of an excursion of the water quality standard has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of the water quality standard. Also, a Categorical Industrial User that previously discharged industrial wastewater to the wastewater treatment plant ceased operations and discharge in June 2022. As a result, monitoring requirements have been included in this permit to determine if the discharge has the reasonable potential to cause or contribute to an excursion of the water quality standard. Data will be reviewed at renewal to reassess this determination. The permit is still protective of water quality. This backsliding is justified as there is information available which was not available at the time of the previous permit issuance (new effluent data). This new information along with a reasonable potential determination, justifies the application of a less stringent effluent limitation at the time of permit issuance. Also, the removal of the limit also meets the requirements of the safety clause, as the implementation of the monitoring only requirement will not result in a violation of a water quality standard.
- ✓ **Chromium VI.** The previous permit had final effluent limits of 14.8 µg/L as a daily maximum and 5.6 µg/L as a monthly average. During the drafting of this permit, the permit writer reviewed DMR data submitted by the permittee. Additionally, no evidence of an excursion of the water quality standard has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of the water quality standard. Also, a Categorical Industrial User that previously discharged industrial wastewater to the wastewater treatment plant ceased operations and discharge in June 2022. As a result, monitoring requirements have been included in this permit to determine if the discharge has the reasonable potential to cause or contribute to an excursion of the water quality standard. Data will be reviewed at renewal to reassess this determination. The permit is still protective of water quality. This backsliding is justified as there is information available which was not available at the time of the previous permit issuance (new effluent data). This new information along with a reasonable potential determination, justifies the application of a less stringent effluent limitation at the time of permit issuance. Also, the removal of the limit also meets the requirements of the safety clause, as the implementation of the monitoring only requirement will not result in a violation of a water quality standard.
- ✓ **Cyanide.** The previous permit had final effluent limits of 9.9 µg/L as a daily maximum and 5.0 µg/L as a monthly average. During the drafting of this permit, the permit writer reviewed DMR data submitted by the permittee. Additionally, no evidence of an excursion of the water quality standard has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of the water quality standard. Also, a Categorical Industrial User that previously discharged industrial wastewater to the wastewater treatment plant ceased operations and discharge in June 2022. As a result, monitoring requirements have been included in this permit to determine if the discharge has the reasonable potential to cause or contribute to an excursion of the water quality standard. Data will be reviewed at renewal to reassess this determination. The permit is still protective of water quality. This backsliding is justified as there is information available which was not available at the time of the previous permit issuance (new effluent data). This new information along with a reasonable potential determination, justifies the application of a less stringent effluent limitation at the time of permit issuance. Also, the removal of the limit also meets the requirements of the safety clause, as the implementation of the monitoring only requirement will not result in a violation of a water quality standard.
- ✓ **Nickel.** The previous permit had final effluent limits of 128.4 µg/L as a daily maximum and 64 µg/L as a monthly average. During the drafting of this permit, the permit writer reviewed DMR data submitted by the permittee. Additionally, no evidence of an excursion of the water quality standard has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of the water quality standard. Also, a Categorical Industrial User that previously discharged industrial wastewater to the wastewater treatment plant ceased operations and discharge in June 2022. As a result, monitoring requirements have been included in this permit to determine if the discharge has the reasonable potential to cause or contribute to an excursion of the water quality standard. Data will be reviewed at renewal to reassess this determination. The permit is still protective of water quality. This backsliding is justified as there is information available which was not available at the time of the previous permit issuance (new effluent data). This new information along with a reasonable potential determination, justifies the application of a less stringent effluent limitation at the time of permit issuance. Also, the removal of the limit also meets the requirements of the safety clause, as the implementation of the monitoring only requirement will not result in a violation of a water quality standard.

- ✓ **Silver.** The previous permit had final effluent limits of 5.9 µg/L as a daily maximum and 2.9 µg/L as a monthly average. During the drafting of this permit, the permit writer reviewed DMR data submitted by the permittee. Additionally, no evidence of an excursion of the water quality standard has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of the water quality standard. Also, a Categorical Industrial User that previously discharged industrial wastewater to the wastewater treatment plant ceased operations and discharge in June 2022. As a result, monitoring requirements have been included in this permit to determine if the discharge has the reasonable potential to cause or contribute to an excursion of the water quality standard. Data will be reviewed at renewal to reassess this determination. The permit is still protective of water quality. This backsliding is justified as there is information available which was not available at the time of the previous permit issuance (new effluent data). This new information along with a reasonable potential determination, justifies the application of a less stringent effluent limitation at the time of permit issuance. Also, the removal of the limit also meets the requirements of the safety clause, as the implementation of the monitoring only requirement will not result in a violation of a water quality standard.
- ✓ **Zinc.** The previous permit had final effluent limits of 146.8 µg/L as a daily maximum and 62.8 µg/L as a monthly average. During the drafting of this permit, the permit writer reviewed DMR data submitted by the permittee. Additionally no evidence of an excursion of the water quality standard has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of the water quality standard. Also, a Categorical Industrial User that previously discharged industrial wastewater to the wastewater treatment plant ceased operations and discharge in June 2022. As a result, monitoring requirements have been included in this permit to determine if the discharge has the reasonable potential to cause or contribute to an excursion of the water quality standard. Data will be reviewed at renewal to reassess this determination. The permit is still protective of water quality. This backsliding is justified as there is information available which was not available at the time of the previous permit issuance (new effluent data). This new information along with a reasonable potential determination, justifies the application of a less stringent effluent limitation at the time of permit issuance. Also, the removal of the limit also meets the requirements of the safety clause, as the implementation of the monitoring only requirement will not result in a violation of a water quality standard.
- ✓ **General Criteria.**
 - The previous permit contained a special condition which described a specific set of prohibitions related to general criteria found in 10 CSR 20-7.031(4). In order to comply with 40 CFR 122.44(d)(1), the permit writer has conducted reasonable potential determinations for each general criterion and established numeric effluent limitations where reasonable potential exists. While the removal of the previous permit special condition creates the appearance of backsliding, since this permit establishes numeric limitations where reasonable potential to cause or contribute to an excursion of the general criteria exists the permit maintains sufficient effluent limitations and monitoring requirements in order to protect water quality, this permit is equally protective as compared to the previous permit. Therefore, given this new information, and the fact that the previous permit special condition was not consistent with 40 CFR 122.44(d)(1), an error occurred in the establishment of the general criteria as a special condition of the previous permit. Please see Part II – Effluent Limitations and Monitoring Requirements for more information regarding the reasonable potential determinations for each general criterion related to this facility. This backsliding is justified as the previous permit contained technical mistakes. Also, the removal of the narrative condition also meets the requirements of the safety clause, as the removal of the condition will not result in a violation of a water quality standard.
 - The previous permit indicated “There Shall Be No Discharge of Floating Solids or Visible Foam in Other Than Trace Amounts” under each table. The statement was not evaluated against actual site conditions therefore, this general criteria was re-assessed. It was determined that this facility does not discharge solids or foam in amounts which would indicate reasonable potential, therefore the statement was removed. Each general criteria was assessed for this facility. This backsliding is justified as the previous permit contained technical mistakes. Also, the removal of the narrative condition also meets the requirements of the safety clause, as the removal of the condition will not result in a violation of a water quality standard.

ANTIDEGRADATION:

In accordance with Missouri’s Water Quality Standard [10 CSR 20-7.031(3)], for domestic wastewater discharge with new, altered, or expanding discharges, the Department is to document by means of Antidegradation Review that the use of a water body’s available assimilative capacity is justified. In accordance with Missouri’s water quality regulations for antidegradation [10 CSR 20-7.031(3)], degradation may be justified by documenting the socio-economic importance of a discharge after determining the necessity of the discharge. Facilities must submit the antidegradation review request to the Department prior to establishing, altering, or expanding discharges. See <https://dnr.mo.gov/document-search/antidegradation-implementation-procedure>.

- ✓ No degradation was proposed in this permit action and no further review necessary. Facility did not apply for authorization to increase pollutant loading or to add additional pollutants to their discharge. The increase in the design flow was not an increase in pollutant loading as the change is due to a correction of the design flow value by the facility. The facility provided the following information:

- The physical capacity of the Salem WWTF will not change as a result of the implementation of the proposed improvements. In the case of the Salem WWTF Improvements, the sizing of the Influent Pump Station, headworks, secondary clarifiers, Intermediate Pump Station, tertiary filtration and UV disinfection are all controlled by the peak hour flow (PHF). The rated PHF capacity of the WWTF was determined based on secondary clarifier capacity and will not change within the scope of the proposed improvements.

The biological unit process (oxidation ditch) design is the only unit process controlled by the average day design flow (permitted capacity). The oxidation ditch existing capacity is 1.52 MGD based upon volume and 1.31 MGD based upon aeration. Therefore, the biological unit process has the inherent capacity to accommodate 1.25 MGD, as indicated in the facility plan.

The Department's antidegradation applicability review of the WWTP discussed:

- In accordance with the Missouri Antidegradation Rule and Implementation Procedure, the proposed discharge is not subject to an Antidegradation Review.
- According to Missouri's Antidegradation Implementation Procedure, antidegradation reviews are required "when proposed new or expanded discharges will significantly degrade water quality". Salem WWTP is an existing facility which will not be expanding its design capacity as a result of the improvements identified for Phase 2. Although the design flow of the facility is currently set at 0.741 million gallons per day (MGD), the facility has the capacity to accommodate 1.25 MGD and is currently averaging flows of approximately 1.0 MGD. TMDL modeling was conducted for a facility design flow of 1.25 MGD, and a permit renewal is underway which will rerate the facility design flow at 1.25 MGD.

For stormwater discharges, the stormwater BMP chosen for the facility, through the antidegradation analysis performed by the facility, must be implemented and maintained at the facility. Failure to implement and maintain the chosen BMP alternative is a permit violation; see SWPPP.

- ✓ The facility must review and maintain stormwater BMPs as appropriate.

AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:

As per [10 CSR 20-6.010(2)(C)], an applicant may utilize a lower preference continuing authority when a higher level authority is available by submitting information as part of the application to the Department for review and approval, provided it does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

BIOSOLIDS & SEWAGE SLUDGE:

Biosolids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works.

- ✓ Permittee is authorized to land apply biosolids in accordance with Standard Conditions III.

COMPLIANCE AND ENFORCEMENT:

Enforcement is the action taken by the Water Protection Program (WPP) to bring an entity into compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and conditions of an operating permit. The primary purpose of the enforcement activity in the WPP is to resolve violations and return the entity to compliance.

Facility Performance History:

- ✓ The facility is currently under enforcement action. On February 10, 2012, the Department and the Respondent entered into a Voluntary Compliance Agreement (VCA) to address discharges of wastewater through a wet weather outfall bypassing full treatment. The VCA required elimination of the discharges from the wet weather outfall within five years, and allowed for only one extension of five years. On April 17, 2019, the Department extended the VCA deadline to February 10, 2022. The enforcement action is due to the City voluntarily approaching the Department to apply for an Abatement Order on Consent (AOC) due to failing to meet the VCA deadline. The City and the Department entered into AOC No. 2022-WPCB-1687 on February 1, 2022. Upon entry of the AOC, the VCA was superseded and terminated. The City was ordered and agreed to eliminate discharges from the wet weather outfall as soon as practicable, but no later than June 30, 2024. The City is in the process of improving the wastewater treatment plant, and as part of that project, to construct a peak flow basin and installation of disinfection equipment, which would allow peak flows to be disinfected prior to blending with separately disinfected flows to Outfall #001.

CONTINUING AUTHORITY:

Each application for an operating permit shall identify the person, as that term is defined in section 644.016(15), RSMo, that is the owner of, operator of, or area-wide management authority for a water contaminant source, point source, wastewater treatment facility, or sewer collection system. This person shall be designated as the continuing authority and shall sign the application. By doing so, the person designated as the continuing authority acknowledges responsibility for compliance with all permit conditions.

10 CSR 20-6.010(2) establishes preferential levels for continuing authorities: Levels 1 through 5 (with Level 1 as the highest level), and generally requires permits to be issued to a higher preference continuing authority if available. A Level 3, 4, or 5 applicant may constitute a continuing authority by showing that Level 1 and Level 2 authorities are not available; do not have jurisdiction; are forbidden by state statute or local ordinance from providing service to the person; or that the Level 3, 4, or 5 applicant has met one of the requirements listed in paragraphs (2)(C)1.-7. of 10 CSR 20-6.010(2). The seven options in paragraphs (2)(C)1.-7. for a lower-level authority to demonstrate that it is the valid continuing authority are:

1. A waiver from the existing higher authority declining the offer to accept management of the additional wastewater or stormwater;
2. A written statement or a demonstration of non-response from the higher authority;
3. A to-scale map showing all parts of the legal boundary of the facility's property are beyond 2000 feet from the collection (sewer) system operated by the higher preference authority;
4. A proposed connection or adoption charge by the higher authority that would equal or exceed what is economically feasible for the applicant, which may be in the range of one hundred twenty percent (120%) of the applicant's cost for constructing or operating a wastewater treatment system;
5. A proposed service fee on the users of the system by the higher authority that is above what is affordable for existing homeowners in that area;
6. Terms for connection or adoption by the higher authority that would require more than two (2) years to achieve full sewer service; or
7. A demonstration that the terms for connection or adoption by the higher authority are not viable or feasible to homeowners in the area.

Permit applicants that are Levels 3, 4, and 5 must, as part of their application, identify their method of compliance with this regulation. The following are the methods to comply.

- No higher level authorities are available to the facility;
- No higher level authorities have jurisdiction;
- Higher level authorities are forbidden by state statute or local ordinance from providing service to the person;
- The existing higher level authority is available to the facility, however the facility has proposed the use of a lower preference continuing authority and has submitted one of the following as part of their application provided it does not conflict with any area-wide management plan approved under section 208 of the Clean Water Act or by the Missouri Clean Water Commission. (See Fact Sheet Appendix - Continuing Authority for more information on these options):
 - A waiver from the existing higher authority;
 - A written statement or a demonstration of non-response from the higher authority;
 - A to-scale map showing all parts of the legal boundary of the facility's property are beyond 2000 feet from the collection (sewer) system operated by the higher preference authority;
 - Documentation that the proposed connection or adoption charge by the higher authority would equal or exceed what is economically feasible for the applicant, which may be in the range of one hundred twenty percent (120%) of the applicant's cost for constructing or operating a wastewater treatment system;
 - Documentation that the proposed service fee on the users of the system by the higher authority is above what is affordable for existing homeowners in that area;
 - Documentation that the terms for connection or adoption by the higher authority would require more than two (2) years to achieve full sewer service;
 - A demonstration that the terms for connection or adoption by the higher authority are not viable or feasible to homeowners in the area;
- ✓ The continuing authority listed on the application is a municipality, and therefore a Level 3 Authority. There is no approved Clean Water Act Section 208 plan in Dent County. The applicant has shown that:
 - A higher level authority is not available to the facility;

ELECTRONIC DISCHARGE MONITORING REPORT (EDMR) SUBMISSION SYSTEM:

- ✓ The permittee/facility is currently using the eDMR data reporting system.

NUMERIC LAKE NUTRIENT CRITERIA:

- ✓ This facility does not discharge into a lake watershed where numeric lake nutrient criteria are applicable.

OPERATOR CERTIFICATION REQUIREMENTS:

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], the permittee shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions and regulations. Operators at regulated wastewater treatment facilities shall be certified in accordance with [10 CSR 20-9.020(2)] and any other applicable state law or regulation. As per [10 CSR 20-9.020(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems with population equivalents greater than 200 and are owned or operated by or for municipalities, public sewer districts, counties, public water supply districts, private sewer companies regulated by the Public Service Commission and state or federal agencies.

- ✓ This facility is required to have a certified operator as it has a population equivalent greater than 200 and is owned or operated by or for a municipality, public sewer district, county, public water supply district, private sewer company regulated by the PSC, state or federal agency.

This facility currently requires a chief operator with a (B) Certification Level. Please see **Appendix - Classification Worksheet**. Modifications made to the wastewater treatment facility may cause the classification to be modified.

Operator's Name: Joshua L. Hunt
Certification Number: 8359
Certification Level: WW-A

The listing of the operator above only signifies that staff drafting this operating permit have reviewed appropriate Department records and determined that the name listed on the operating permit application has the correct and applicable Certification Level.

OPERATIONAL CONTROL TESTING:

Missouri Clean Water Commission regulation 10 CSR 20-9.010 requires certain publicly owned treatment works and privately owned facilities regulated by the Public Service Commission to conduct internal operational control monitoring to further ensure proper operation of the facility and to be a safeguard or early warning for potential plant upsets that could affect effluent quality. This requirement is only applicable if the publicly owned treatment works and privately owned facilities regulated by the Public Service Commission has a calculated Population Equivalent greater than two hundred (200).

10 CSR 20-9.010(3) allows the Department to modify the monitoring frequency required in the rule based upon the Department's judgement of monitoring needs for process control at the specified facility.

- ✓ As per [10 CSR 20-9.010(4)], the facility is required to conduct operational monitoring. These operational monitoring reports are to be submitted to the Department along with the MSOP discharge monitoring reports.
 - The Department has approved alternative monitoring frequencies to the Operational Monitoring testing requirements in 10 CSR 20-9.010(5)(B) for the facility. The facility is required to conduct operational control monitoring as follows:

Operational Monitoring Parameter	Frequency
Precipitation	Daily (M-F)
Flow – Influent or Effluent	Daily (M-F)
pH – Influent	Daily (M-F)
Temperature (Aeration basin)	Daily (M-F)
TSS – Influent	Monthly
TSS – Mixed Liquor	Weekly
Settleability – Mixed Liquor	Daily (M-F)
Dissolved Oxygen – Mixed Liquor	Daily (M-F)
Temperature – Mixed Liquor (sample contact and reaeration basins for contact stabilization)	Daily (M-F)
Dissolved Oxygen – Aerobic Digester	Daily (M-F)

PERFORMANCE OPTIMIZATION PLAN:

The goal of the POP is to move the POTW's effluent level towards, and to achieve as soon as is practicable, the level specified by the underlying effluent limitations necessary to comply with the TMDL and water quality criteria. When this goal is realized, that is, when the discharger can be reasonably expected to be in compliance with the final effluent limitations contained in the permit, then the POP requirements can be removed from the permit.

PRETREATMENT PROGRAM:

- ✓ The permittee, at this time, is not required to have a Pretreatment Program or does not have an approved pretreatment program.

REASONABLE POTENTIAL (RP):

Federal regulation [40 CFR Part 122.44(d)(1)(i)] and State Regulation [10 CSR 20-7.015(9)(A)2] requires effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard.

In accordance with [40 CFR Part 122.44(d)(1)(iii)] if the permit writer determines that any given pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

A reasonable potential analysis (RPA) is a numeric RP decision calculated using effluent data provided by the facility for parameters that have a numeric Water Quality Standard (WQS).

Reasonable potential determinations (RPD) are based on physical conditions of the site as provided in Sections 3.1.2, 3.1.3, and 3.2 of the TSD using best professional judgement. An RPD consists of evaluating visual observations for compliance with narrative criteria, non-numeric information, or small amounts of numerical data (such as 3 data points supplied in the application). Narrative criteria with RP typically translate to a numeric WQS, so a parameter's establishment being based on narrative criteria does not necessarily make the decision an RPD vs RP—how the data is collected does, however. When insufficient data is received to make a determination on RP based on numeric effluent data, the RPD decisions are based on best professional judgment considering the sources of influent wastewater, type of treatment, and historical overall management of the site.

✓ An RPA was conducted on appropriate parameters. Please see **APPENDIX – RPA RESULTS**.

REMOVAL EFFICIENCY:

Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD₅) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals.

✓ Secondary Treatment is 85% removal [40 CFR Part 133.102(a)(3) & (b)(3)].

SANITARY SEWER OVERFLOWS (SSO) AND INFLOW AND INFILTRATION (I&I):

Sanitary Sewer Overflows (SSOs) are defined as untreated sewage releases and are considered bypassing under state regulation [10 CSR 20-2.010(12)] and should not be confused with the federal definition of bypass. SSOs result from a variety of causes including blockages, line breaks, and sewer defects that can either allow wastewater to backup within the collection system during dry weather conditions or allow excess stormwater and groundwater to enter and overload the collection system during wet weather conditions. SSOs can also result from lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs include overflows out of manholes, cleanouts, broken pipes, and other into waters of the state and onto city streets, sidewalks, and other terrestrial locations.

Inflow and Infiltration (I&I) is defined as unwanted intrusion of stormwater or groundwater into a collection system. This can occur from points of direct connection such as sump pumps, roof drain downspouts, foundation drains, and storm drain cross-connections or through cracks, holes, joint failures, faulty line connections, damaged manholes, and other openings in the collection system itself. I&I results from a variety of causes including line breaks, improperly sealed connections, cracks caused by soil erosion/settling, penetration of vegetative roots, and other sewer defects. In addition, excess stormwater and groundwater entering the collection system from line breaks and sewer defects have the potential to negatively impact the treatment facility.

Missouri RSMo §644.026.1.(13) mandates that the Department issue permits for discharges of water contaminants into the waters of this state, and also for the operation of sewer systems. Such permit conditions shall ensure compliance with all requirements as established by sections 644.006 to 644.141. Standard Conditions Part I, referenced in the permit, contains provisions requiring proper operation and maintenance of all facilities and systems of treatment and control. Missouri RSMo §644.026.1.(15) instructs the Department to require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities. To ensure that public health and the environment are protected, any noncompliance which may endanger public health or the environment must be reported to the Department within 24 hours of the time the permittee becomes aware of the noncompliance. Standard Conditions Part I, referenced in the permit, contains the reporting requirements for the permittee when bypasses and upsets occur. The permit also contains requirements for permittees to develop and implement a program for maintenance and repair of the collection system. The permit requires that the permittee submit an annual report to the Department for the previous calendar year that contains a summary of efforts taken by the permittee to locate and eliminate sources of excess I & I, a summary of general maintenance and repairs to the collection system, and a summary of any planned maintenance and repairs to the collection system for the upcoming calendar year.

- ✓ At this time, the Department recommends the US EPA's Guide for Evaluating Capacity, Management, Operation and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems (Document # EPA 305-B-05-002) or the Departments' CMOM Model located at <https://dnr.mo.gov/document-search/capacity-management-operations-maintenance-plan-editable-template>. For additional information regarding the Departments' CMOM Model, see the CMOM Plan Model Guidance document at <https://dnr.mo.gov/print/document-search/pub2574>. The CMOM identifies some of the criteria used to evaluate a collection system's management, operation, and maintenance and was intended for use by the EPA, state, regulated community, and/or third party entities. The CMOM is applicable to small, medium, and large systems; both public and privately owned; and both regional and satellite collection systems. The CMOM does not substitute for the Clean Water Act, the Missouri Clean Water Law, and both federal and state regulations, as it is not a regulation.

SCHEDULE OF COMPLIANCE (SOC):

Per 644.051.7 RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement, or if prohibited by other statute or regulation. A SOC includes an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit. *See also* Section 502(17) of the Clean Water Act, and 40 CFR §122.2. For new effluent limitations, the permit may include interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR § 122.47(a)(1), 10 CSR 20-7.031(11), and 10 CSR 20-7.015(9), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, a SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

A SOC is not allowed:

- For effluent limitations based on technology-based standards established in accordance with federal requirements, if the deadline for compliance established in federal regulations has passed. 40 CFR § 125.3.
- For a newly constructed facility in most cases. Newly constructed facilities must meet applicable effluent limitations when discharge begins, because the facility has installed the appropriate control technology as specified in a permit or antidegradation review. A SOC is allowed for a new water quality based effluent limit that was not included in a previously public noticed permit or antidegradation review, which may occur if a regulation changes during construction.
- To develop a TMDL, UAA, or other study that may result in site-specific criteria or alternative effluent limits. A facility is not prohibited from conducting these activities, but a SOC may not be granted for conducting these activities.

In order to provide guidance to Permit Writers in developing SOC's, and attain a greater level of consistency, on April 9, 2015 the Department issued an updated policy on development of SOC's. This policy provides guidance to Permit Writers on the standard time frames for schedules for common activities, and guidance on factors that may modify the length of the schedule such as a Cost Analysis for Compliance.

- ✓ The time given for effluent limitations of this permit listed under Interim Effluent Limitation and Final Effluent Limitations were established in accordance with [10 CSR 20-7.031(11)]. The proposed schedule of compliance is based on information provided by the City and also from the attached EPA's EJScreen for "low-income" distressed populations. The EPA EJScreen shows that the City of Salem is a disadvantaged community.
 - In mid-2022, the City provided to the Department that in 2014 the City committed to completing "Scenario 1 Alt" which consisted of a 2-Phase improvement approach to maintain an affordable rate structure for the City's sewer customers. In 2014, the total capital cost for Scenario 1 Alt was estimated at \$8.9 Million with a 20-year total present worth of \$17.9 Million. The City has already completed their Phase 1 projects, which included a new intermediate pump station, UV disinfection for Outfall 001, a headworks facility, hydraulic improvements, an oxidation ditch cleanout, and bridge modification. There is currently \$3,356,875 in debt remaining from the Phase 1 projects, with the payment schedule extending through 2038. Phase 2a and Phase 2b currently have a complete engineering report and are ready to move to design, however, the projects are contingent on accessible funding packages. Phase 2a projects include influent pump station improvements, oxidation ditch aeration improvements, wet weather disinfection, and sludge drying bed. The Phase 2b projects include secondary clarifier improvements, tertiary filtration, laboratory building, and other miscellaneous. The City estimated that Phase 2a project cost to be \$5,082,000 and Phase 2b project cost to be \$4,430,000. Phase 2a is contingent on ARPA funding and Phase 2b is contingent on financing through the State Revolving Fund (SRF) with water quality incentive grants. These Phase 2 projects are only considered affordable and implementable if they are funded through the described public funding options.
 - In late 2022, the City was awarded \$5,000,000 from the Community Water Infrastructure Grant program made available through the American Rescue Plan Act (ARPA) State Fiscal Recovery Funds. This grant is to fund the Phase 2a project.
 - The facility has been given a schedule of compliance to meet final effluent limits for Biochemical Oxygen Demand₅, Total Suspended Solids, Ammonia, Total Phosphorus, and Total Nitrogen.

- The ten year schedule of compliance allowed for this facility should provide adequate time to evaluate operations, obtain an engineering report, hold a bond election, obtain a construction permit and implement upgrades required to meet effluent limits. Due to the economic burden on this community of the cost of compliance and associated difficulty in raising the necessary funding, the schedule has been established at 10 years in accordance with the Department's "Schedule of Compliance, Policy for Staff Drafting Operating Permits".

At this time the City's bonding capacity and user rates cannot sustain additional burdensome financial impacts. The 10 year schedule of compliance allowed for the final effluent limits of Biochemical Oxygen Demand₅, Total Suspended Solids, and Total Phosphorus should provide adequate time evaluate operations, obtain an engineering report, hold a bond election, obtain a construction permit and implement upgrades once debt is amortized and user rates have stabilized for the community.

The following suggested milestones can be used by the permittee as a timeline toward compliance with new permit requirements. Once the permit holder's engineer has completed facility design with actual costs associated with permit compliance, it may be necessary for the permittee to request that the Department reevaluate the affordability to meet the timeline. This request must be made within the timeline of the existing schedule of compliance, and provide adequate time for the Department to make modifications to the schedule of compliance, if necessary. The Department is committed to review all requests for additional time in the schedule of compliance where adequate justification is provided.

Suggested Milestones during the 10 Year Schedule of Compliance

Year	Milestone(s)
2023	Initiation of design (Phase 2a and 2b)
2024	Completion of design (Phase 2a and 2b), bidding, contract NTP, construction (Phase 2a)
2025	Construction (Phase 2a)
2026	Construction completion (Phase 2a), bidding, contract NTP, construction (Phase 2b), facility optimization
2027	Construction (Phase 2b)
2028	Construction completion (Phase 2b), Meet Table A-2 interim effluent limits, Spring Creek TMDL Evaluation
2029	Spring Creek TMDL Evaluation
2030	Develop Facility Plan, design, bidding, contract NTP for BNR/ENR Improvements
2031	Construction for BNR/ENR Improvements
2032	Construction for BNR/ENR Improvements
2033	Construction completion for BNR/ENR Improvements

SEWER EXTENSION AUTHORITY SUPERVISED PROGRAM:

- ✓ The permittee does not have a Department approved Sewer Extension Authority Supervised Program.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

In accordance with 40 CFR 122.44(k) *Best Management Practices (BMPs)* to control or abate the discharge of pollutants when: (1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities; (2) Authorized under section 402(p) of the CWA for the control of stormwater discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (Document number EPA 833-B-09-002) [published by the United States Environmental Protection Agency (USEPA) in June 2015], BMPs are measures or practices used to reduce the amount of pollution entering (regarding this operating permit) waters of the state. BMPs may take the form of a process, activity, or physical structure.

Additionally in accordance with the Stormwater Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of stormwater discharges. The purpose of a SWPPP is to comply with all applicable stormwater regulations by creating an adaptive management plan to control and mitigate stream pollution from stormwater runoff. Developing a SWPPP provides opportunities to employ appropriate BMPs to minimize the risk of pollutants being discharged during storm events. The following paragraph outlines the general steps the permittee should take to determine which BMPs will work to achieve the benchmark values or limits in the permit. This section is not intended

to be all encompassing or restrict the use of any physical BMP or operational and maintenance procedure assisting in pollution control. Additional steps or revisions to the SWPPP may be required to meet the requirements of the permit.

Areas which should be included in the SWPPP are identified in 40 CFR 122.26(b)(14). Once the potential sources of stormwater pollution have been identified, a plan should be formulated to best control the amount of pollutant being released and discharged by each activity or source. This should include, but is not limited to, minimizing exposure to stormwater, good housekeeping measures, proper facility and equipment maintenance, spill prevention and response, vehicle traffic control, and proper materials handling. Once a plan has been developed the facility will employ the control measures determined to be adequate to achieve the benchmark values discussed above. The facility will conduct monitoring and inspections of the BMPs to ensure they are working properly and re-evaluate any BMP not achieving compliance with permitting requirements. For example, if sample results from an outfall show values of TSS above the benchmark value, the BMP being employed is deficient in controlling stormwater pollution. Corrective action should be taken to repair, improve, or replace the failing BMP. This internal evaluation is required at least once per month but should be continued more frequently if BMPs continue to fail. If failures do occur, continue this trial and error process until appropriate BMPs have been established.

For new, altered, or expanded stormwater discharges, the SWPPP shall identify reasonable and effective BMPs while accounting for environmental impacts of varying control methods. The antidegradation analysis must document why no discharge or no exposure options are not feasible. The selection and documentation of appropriate control measures shall serve as an alternative analysis of technology and fulfill the requirements of antidegradation [10 CSR 20-7.031(3)]. For further guidance, consult the antidegradation implementation procedure (<https://dnr.mo.gov/document-search/antidegradation-implementation-procedure>).

The AA evaluation should include practices that are designed to be: 1) non-degrading; 2) less degrading; or 3) degrading water quality. The glossary of AIP defines these three terms. The chosen BMP will be the most reasonable and effective management strategy while ensuring the highest statutory and regulatory requirements are achieved and the highest quality water attainable for the facility is discharged. The AA evaluation must demonstrate why “no discharge” or “no exposure” is not a feasible alternative at the facility. This structured analysis of BMPs serves as the antidegradation review, fulfilling the requirements of 10 CSR 20-7.031(3) Water Quality Standards and *Antidegradation Implementation Procedure* (AIP), Section II.B.

If parameter-specific numeric exceedances continue to occur and the permittee feels there are no practicable or cost-effective BMPs which will sufficiently reduce a pollutant concentration in the discharge to the benchmark values established in the permit, the permittee can submit a request to re-evaluate the benchmark values. This request needs to include 1) a detailed explanation of why the facility is unable to comply with the permit conditions and unable to establish BMPs to achieve the benchmark values; 2) financial data of the company and documentation of cost associated with BMPs for review and 3) the SWPPP, which should contain adequate documentation of BMPs employed, failed BMPs, corrective actions, and all other required information. This will allow the Department to conduct a cost analysis on control measures and actions taken by the facility to determine cost-effectiveness of BMPs. The request shall be submitted in the form of an operating permit modification; the application is found at: <https://dnr.mo.gov/forms-applications>.

- ✓ 10 CSR 20-6.200 and 40 CFR 122.26(b)(14)(ix) includes treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that is located within the confines of the facility, with a design flow of 1.0 MGD or more, or are required to have an approved pretreatment program under 40 CFR part 403, as an industrial activity in which permit coverage is required. In lieu of requiring sampling in the site-specific permit, the facility is required to develop and implement a Stormwater Pollution Prevention Plan (SWPPP).

A facility can apply for conditional exclusion for “no exposure” of industrial activities and materials to stormwater by submitting a permit modification via Form B2 (<https://dnr.mo.gov/document-search/form-b2-application-operating-permit-facilities-receive-primarily-domestic-waste-have-design-flow-more-100000-gallons-day-mo-780-1805>) appropriate application filing fees and a completed No Exposure Certification for Exclusion from NPDES Stormwater Permitting under Missouri Clean Water Law (<https://dnr.mo.gov/document-search/no-exposure-certification-exclusion-npdes-stormwater-permitting-under-missouri-clean-water-law-mo-780-2828>) to the Department’s Water Protection Program, Operating Permits Section. Upon receipt of the No Exposure Certification, the permit will be modified and the Special Condition to develop and implement a SWPPP will be removed.

VARIANCE:

- ✓ This operating permit is not drafted under premises of a petition for variance.

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:

As per [10 CSR 20-2.010(86)], the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined total amount of pollutant that may be discharged into that stream without endangering its water quality.

- ✓ Wasteload allocations were calculated where applicable using water quality criteria or water quality model results and the dilution equation below:

$$C_e = \frac{(Q_e + Q_s)C - (Q_s \times C_s)}{(Q_e)} \quad (\text{EPA/505/2-90-001, Section 4.5.5})$$

Where C = downstream concentration Ce = effluent concentration
Cs = upstream concentration Qe = effluent flow
Qs = upstream flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

Number of Samples "n":

Additionally, in accordance with the TSD for water quality-based permitting, effluent quality is determined by the underlying distribution of daily values, which is determined by the Long Term Average (LTA) associated with a particular Wasteload Allocation (WLA) and by the Coefficient of Variation (CV) of the effluent concentrations. Increasing or decreasing the monitoring frequency does not affect this underlying distribution or treatment performance, which should be, at a minimum, be targeted to comply with the values dictated by the WLA. Therefore, it is recommended that the actual planned frequency of monitoring normally be used to determine the value of "n" for calculating the AML. However, in situations where monitoring frequency is once per month or less, a higher value for "n" must be assumed for AML derivation purposes. Thus, the statistical procedure being employed using an assumed number of samples is "n = 4" at a minimum. For Total Ammonia as Nitrogen, "n = 30" is used.

WLA MODELING:

- ✓ A WLA study was either not submitted or determined not applicable by Department staff.

WHOLE EFFLUENT TOXICITY (WET) TEST:

A WET test is a quantifiable method of determining if a discharge from a facility may be causing toxicity to aquatic life by itself, in combination with or through synergistic responses when mixed with receiving stream water.

Under the federal Clean Water Act (CWA) §101(a)(3), requiring WET testing is reasonably appropriate for site-specific Missouri State Operating Permits for discharges to waters of the state issued under the National Pollutant Discharge Elimination System (NPDES). WET testing is also required by 40 CFR 122.44(d)(1). WET testing ensures that the provisions in the 10 CSR 20-6.010(8)(A) and the Water Quality Standards 10 CSR 20-7.031(4)(D),(F),(G),(J)2.A & B are being met. Under [10 CSR 20-6.010(8)(B)], the Department may require other terms and conditions that it deems necessary to assure compliance with the Clean Water Act and related regulations of the Missouri Clean Water Commission. In addition the following MCWL apply: 644.051.7 requires the Department to set permit conditions that comply with the MCWL and CWA and specifically references toxicity as an item we must consider in writing permits (along with water quality-based effluent limits, pretreatment, etc...); and 644.051.8 is the basic authority to require testing conditions. WET test will be required by facilities meeting the following criteria:

- ☒ Facility is a designated Major.
- ☒ Facility continuously or routinely exceeds its design flow.
- ☐ Facility that exceeds its design population equivalent (PE) for BOD₅ whether or not its design flow is being exceeded.
- ☐ Facility (whether primarily domestic or industrial) that alters its production process throughout the year.
- ☐ Facility handles large quantities of toxic substances, or substances that are toxic in large amounts.
- ☒ Facility has Water Quality-based Effluent Limitations for toxic substances (other than NH₃)
- ☒ Facility is a municipality with a Design Flow ≥ 22,500 gpd.
- ☐ Other – please justify.

- ✓ The permittee is required to conduct WET tests for this facility.

40 CFR 122.41(M) - BYPASSES:

The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from “bypassing” untreated or partially treated sewage (wastewater) beyond the headworks. A bypass is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-7.015(9)(G) states a bypass means the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending, to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri’s Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar devices designed for peak wet weather flows.

- ✓ Bypasses occur or have occurred at this facility.
 - Outfall #002 is no longer authorized to discharge as it is a Bypass. On February 10, 2012, the Department and the Respondent entered into a Voluntary Compliance Agreement (VCA) to address discharges of wastewater through a wet weather outfall bypassing full treatment. The VCA required elimination of the discharges from the wet weather outfall within five years, and allowed for only one extension of five years. On April 17, 2019, the Department extended the VCA deadline to February 10, 2022. The enforcement action is due to the City voluntarily approaching the Department to apply for an Abatement Order on Consent (AOC) due to failing to meet the VCA deadline. The City and the Department entered into AOC No. 2022-WPCB-1687 on February 1, 2022. Upon entry of the AOC, the VCA was superseded and terminated. The City was ordered and agreed to eliminate discharges from the wet weather outfall as soon as practicable, but no later than June 30, 2024. The City is in the process of improving the wastewater treatment plant, and as part of that project, to construct a peak flow basin and installation of disinfection equipment, which would allow peak flows to be disinfected prior to blending with separately disinfected flows to Outfall #001.

Part IV – Cost Analysis for Compliance

Pursuant to Section 644.145, RSMo, when issuing permits under this chapter that incorporate a new requirement for discharges from publicly owned combined or separate sanitary or storm sewer systems or publicly owned treatment works, or when enforcing provisions of this chapter or the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., pertaining to any portion of a publicly owned combined or separate sanitary or storm sewer system or [publicly owned] treatment works, the Department of Natural Resources shall make a “finding of affordability” on the costs to be incurred and the impact of any rate changes on ratepayers upon which to base such permits and decisions, to the extent allowable under this chapter and the Federal Water Pollution Control Act. This process is completed through a cost analysis for compliance. Permits that do not include new requirements may be deemed affordable.

- ✓ The Department is required to make a “finding of affordability” on the new environmental requirements within the permit. However, the facility chose to waive the finding of affordability requirement; therefore, no Cost Analysis for Compliance was conducted.

Part V – Administrative Requirements

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

WATER QUALITY STANDARD REVISION:

In accordance with section 644.058, RSMo, the Department is required to utilize an evaluation of the environmental and economic impacts of modifications to water quality standards of twenty-five percent or more when making individual site-specific permit decisions.

- ✓ This operating permit contains a permit requirement for Cadmium, Copper, and Lead which water quality criteria has been modified by twenty-five percent or more since the issuance of the previous permit. The approval of these changes by the EPA is environmentally necessary to ensure the criteria are reflective of the most current science available while protecting the water quality standards of the receiving stream without placing needless and overly burdensome requirements on regulated entities. The “Evaluation of Environmental and Economic Impacts of Revised Water Quality Standards and Criteria on a Subbasin Basis” report is available upon request to the Department.

PUBLIC NOTICE:

The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing. The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit. For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

- ✓ The Public Notice period for this operating permit was from November 22, 2023 to December 22, 2023. No responses received.

DATE OF FACT SHEET: FEBRUARY 26, 2024

COMPLETED BY:

**BRANT FARRIS, ENVIRONMENTAL PROGRAM SPECIALIST
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WATER PROTECTION PROGRAM
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Appendices

APPENDIX - CLASSIFICATION WORKSHEET:

Item	Points Possible	Points Assigned
Maximum Population Equivalent (P.E.) served , peak day	1 pt./10,000 PE or major fraction thereof. (Max 10 pts.)	1
Design Flow (avg. day) or peak month's flow (avg. day) whichever is larger	1 pt. / MGD or major fraction thereof. (Max 10 pts.)	1
Effluent Discharge		
Missouri or Mississippi River	0	
All other stream discharges except to losing streams and stream reaches supporting whole body contact recreation	1	
Discharge to lake or reservoir outside of designated whole body contact recreational area	2	
Discharge to losing stream, lake or reservoir area supporting whole body contact recreation	3	
Direct reuse or recycle of effluent	6	
Land Application/Irrigation		
Drip Irrigation	3	
Land application/irrigation	5	
Overland flow	4	
Variation in Raw Wastes (highest level only)		
Variations do not exceed those normally or typically expected	0	
Reoccurring deviations or excessive variations of 100 to 200 percent in strength and/or flow	2	2
Reoccurring deviations or excessive variations of more than 200 percent in strength and/or flow	4	
Department-approved pretreatment program	6	
Preliminary Treatment		
STEP systems (operated by the permittee)	3	
Screening and/or comminution	3	
Grit removal	3	
Plant pumping of main flow	3	3
Flow equalization	5	5
Primary Treatment		
Primary clarifiers	5	
Chemical addition (except chlorine, enzymes)	4	
Secondary Treatment		
Trickling filter and other fixed film media with or without secondary clarifiers	10	
Activated sludge (including aeration, oxidation ditches, sequencing batch reactors, membrane bioreactors, and contact stabilization)	15	15
Stabilization ponds without aeration	5	
Aerated lagoon	8	
Advanced Lagoon Treatment – Aerobic cells, anaerobic cells, covers, or fixed film	10	
Biological, physical, or chemical	12	
Carbon regeneration	4	
Total from page ONE (1)	----	27

APPENDIX - CLASSIFICATION WORKSHEET (CONTINUED):

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
Solids Handling		
Sludge Holding	5	5
Anaerobic digestion	10	
Aerobic digestion	6	6
Evaporative sludge drying	2	2
Mechanical dewatering	8	
Solids reduction (incineration, wet oxidation)	12	
Land application	6	6
Disinfection		
Chlorination or comparable	5	
On-site generation of disinfectant (except UV light)	5	
Dechlorination	2	
UV light	4	
Required Laboratory Control Performed by Plant Personnel (highest level only)		
Lab work done outside the plant	0	
Push – button or visual methods for simple test such as pH, settleable solids	3	
Additional procedures such as DO, COD, BOD, titrations, solids, volatile content	5	5
More advanced determinations, such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	7	
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph	10	
Total from page TWO (2)	----	24
Total from page ONE (1)	---	27
Grand Total	---	51

- ☐ - A: 71 points and greater
☒ - B: 51 points – 70 points
☐ - C: 26 points – 50 points
☐ - D: 0 points – 25 points

APPENDIX – RPA RESULTS:

Parameter	CMC*	RWC Acute*	CCC*	RWC Chronic*	n**	Range max/min*	CV***	MF	RP Yes/No
Cadmium, Total Recoverable (µg/L)	8.66	12.22	1.21	9.76	60	5.05/0.00435	4.28	2.49	Yes
Chromium III, Total Recoverable (µg/L)	2784.67	29.45	133.11	23.53	60	16.9/0.15	1.10	1.79	No
Chromium VI, Dissolved (µg/L)	16.00	10.09	11.00	8.06	60	9/1.15	0.50	1.15	No
Copper, Total Recoverable (µg/L)	23.07	31.95	14.68	25.52	60	20/0.75	0.64	1.64	Yes
Cyanide, ATC (ug/L)	22.00	4.29	5.20	3.43	60	6.4/0.0295	0.42	0.69	No
Lead, Total Recoverable (µg/L)	160.36	36.68	6.25	29.30	60	12.9/0.063	2.24	2.93	Yes
Nickel, Total Recoverable (µg/L)	735.49	8.19	81.72	6.54	60	5.05/0.085	0.76	1.67	No
Silver, Total Recoverable (µg/L)	9.44	3.73	n/a	2.98	60	7.05/0.0028	2.82	0.54	No
Zinc, Total Recoverable (µg/L)	188.22	171.05	186.69	136.64	60	113/1.15	0.54	1.56	No

N/A – Not Applicable

* - Units are (µg/L) unless otherwise noted.

** - If the number of samples is 10 or greater, then the CV value must be used in the WQBEL for the applicable constituent. If the number of samples is < 10, then the default CV value must be used in the WQBEL for the applicable constituent.

*** - Coefficient of Variation (CV) is calculated by dividing the Standard Deviation of the sample set by the Mean of the same sample set.

RWC – Receiving Water Concentration. It is the concentration of a toxicant or the parameter toxicity in the receiving water after mixing (if applicable).

n – Is the number of samples.

MF – Multiplying Factor. 99% Confidence Level and 99% Probability Basis.

RP – Reasonable Potential. It is where an effluent is projected or calculated to cause an excursion above a water quality standard based on a number of factors including, as a minimum, the four factors listed in 40 CFR 122.44(d)(1)(ii).

Reasonable Potential Analysis is conducted as per (TSD, EPA/505/2-90-001, Section 3.3.2). A more detailed version including calculations of this RPA is available upon request.

APPENDIX – Non-Detect Example Calculations:

Example: Permittee has four samples for Pollutant X which has a method minimum level of 5 mg/L and is to report a Daily Maximum and Monthly Average.

Week 1 = 11.4 mg/L

Week 2 = Non-Detect or <5.0 mg/L

Week 3 = 7.1 mg/L

Week 4 = Non-Detect or <5.0 mg/L

For this example, use subpart (h) - For reporting an average based on a mix of detected and non-detected values (not including *E. coli*), assign a value of “0” for all non-detects for that reporting period and report the average of all the results.

$$11.4 + 0 + 7.1 + 0 = 18.5 \div 4 \text{ (number of samples)} = 4.63 \text{ mg/L.}$$

The Permittee reports a Monthly Average of 4.63 mg/L and a Daily maximum of 11.4 mg/L (Note the < symbol was dropped in the answers).

Example: Permittee has five samples for Pollutant Y that has a method minimum level of 9 µg/L and is to report a Daily Maximum and Monthly Average.

Day 1 = Non-Detect or <9.0 µg/L

Day 2 = Non-Detect or <9.0 µg/L

Day 3 = Non-Detect or <9.0 µg/L

Day 4 = Non-Detect or <9.0 µg/L

Day 5 = Non-Detect or <9.0 µg/L

For this example, use subpart (g) - For reporting an average based on all non-detected values, remove the “<” sign from the values, average the values, and then add the “<” symbol back to the resulting average.

$$(9 + 9 + 9 + 9 + 9) \div 5 \text{ (number of samples)} = <9 \text{ µg/L.}$$

The Permittee reports a Monthly Average of <9.0 µg/L (retain the ‘less than’ symbol) and a Daily Maximum of <9.0 µg/L.

Example: Permittee has four samples for Pollutant Z where the first two tests were conducted using a method with a method minimum level of 4 µg/L and the remaining two tests were conducted using a different method that has a method minimum level of <6 µg/L and is to report a Monthly Average and a Weekly Average.

Week 1 = Non-Detect or <4.0 µg/L

Week 2 = Non-Detect or <4.0 µg/L

Week 3 = Non-Detect or <6.0 µg/L

Week 4 = Non-Detect or <6.0 µg/L

For this example, use subpart (g) - For reporting an average based on all non-detected values, remove the “<” sign from the values, average the values, and then add the “<” symbol back to the resulting average.

$$(4 + 4 + 6 + 6) \div 4 \text{ (number of samples)} = <5 \text{ µg/L. (Monthly)}$$

The facility reports a Monthly Average of <5.0 µg/L and a Weekly Average of <6.0 µg/L.

APPENDIX – Non-Detect Example Calculations (Continued):

Example: Permittee has five samples for Pollutant Z where the first two tests were conducted using a method with a method minimum level of 4 µg/L and the remaining three tests were conducted using a different method that has a method minimum level of <6 µg/L and is to report a Monthly Average and a Weekly Average.

Week 1 = Non-Detect or <4.0 µg/L

Week 2 = Non-Detect or <4.0 µg/L

Week 2 = Non-Detect or <6.0 µg/L

Week 3 = Non-Detect or <6.0 µg/L

Week 4 = Non-Detect or <6.0 µg/L

For this example, use subpart (g) - For reporting an average based on all non-detected values, remove the “<” sign from the values, average the values, and then add the “<” symbol back to the resulting average.

$(4 + 4 + 6 + 6 + 6) \div 5$ (number of samples) = <5.2 µg/L. (Monthly)

$(4 + 6) \div 2$ (number of samples) = <5 µg/L. (Week 2)

The facility reports a Monthly Average of <5.2 µg/L and a Weekly Average of <6.0 µg/L (report highest Weekly Average value)

Example: Permittee has four samples for Pollutant Z where the tests were conducted using a method with a method minimum level of 10 µg/L and is to report a Monthly Average and Daily Maximum. The permit lists that Pollutant Z has a Department determined Minimum Quantification Level (ML) of 130 µg/L.

Week 1 = 12 µg/L

Week 2 = 52 µg/L

Week 3 = Non-Detect or <10 µg/L

Week 4 = 133 µg/L

For this example, use subpart (h) - For reporting an average based on a mix of detected and non-detected values (not including *E. coli*), assign a value of “0” for all non-detects for that reporting period and report the average of all the results.

For this example, $(12 + 52 + 0 + 133) \div 4$ (number of samples) = $197 \div 4 = 49.3$ µg/L.

The facility reports a Monthly Average of 49.3 µg/L and a Daily Maximum of 133 µg/L.

Example: Permittee has five samples for *E. coli* which has a method minimum level of 1 #/100mL and is to report a Weekly Average (seven (7) day geometric mean) and a Monthly Average (thirty (30) day geometric mean).

Week 1 = 102 #/100mL

Week 2 (Monday) = 400 #/100mL

Week 2 (Friday) = Non-Detect or <1 #/100mL

Week 3 = 15 #/100mL

Week 4 = Non-Detect or <1 #/100mL

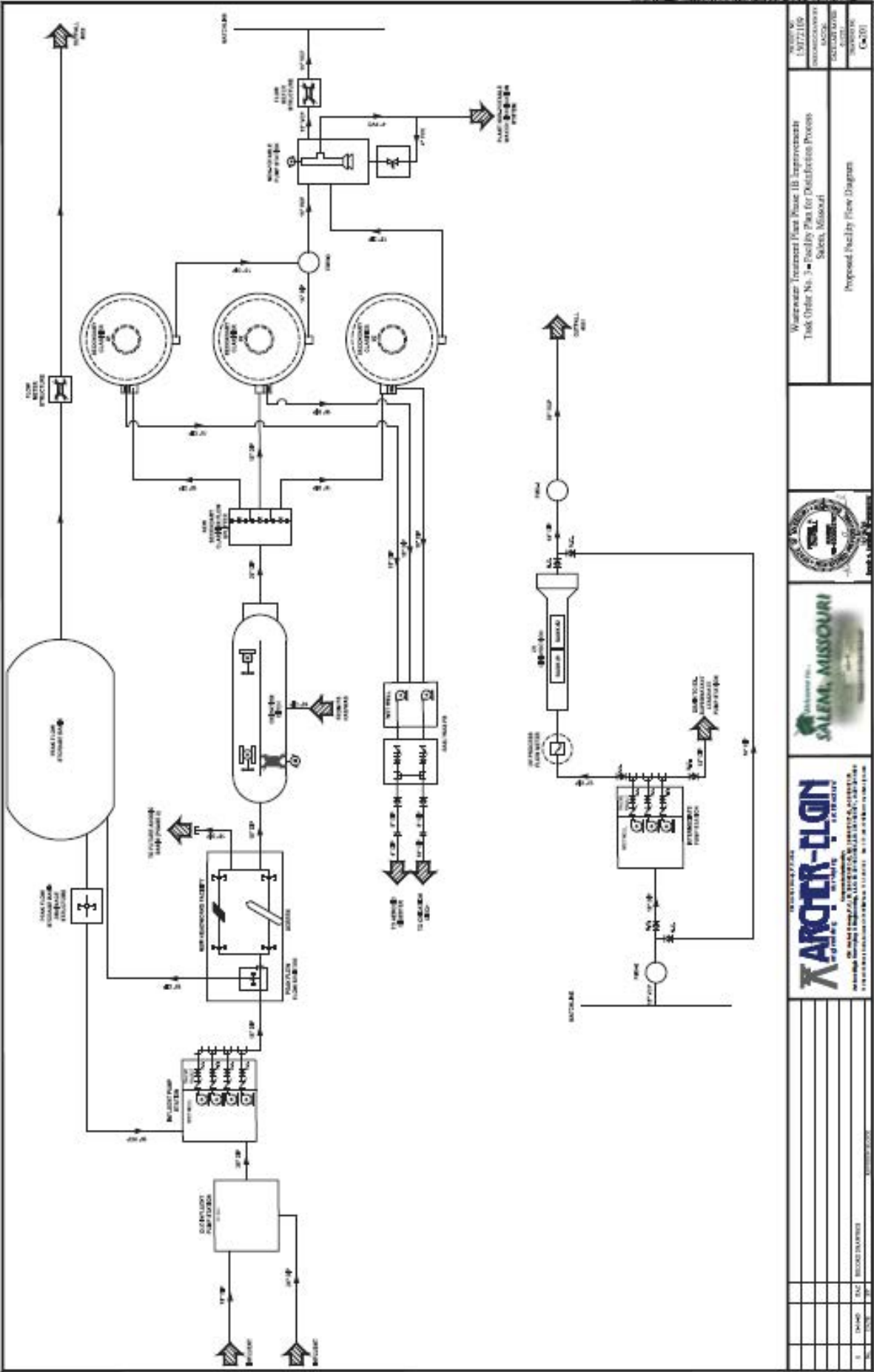
For this example, use subpart (i) - When *E. coli* is not detected above the method minimum level, the permittee must report the data qualifier signifying less than detection limit for that parameter (e.g., <1 #/100mL, if the method minimum level is 1 #/100mL). For reporting a geometric mean based on a mix of detected and non-detected values, use one-half of the detection limit (instead of zero) for non-detects when calculating geometric means. The Geometric Mean is calculated by multiplying all of the data points and then taking the nth root of this product, where n = # of samples collected.

The Monthly Average (30 day Geometric Mean) = 5th root of $(102)(400)(0.5)(15)(0.5)$ = 5th root of 153,000 = 10.9 #/100mL.

The 7 day Geometric Mean = 2nd root of $(400)(0.5)$ = 2nd root of 200 = 14.1 #/100mL. (Week 2)

The Permittee reports a Monthly Average (30 day Geometric Mean) of 10.9 #/100mL and a Weekly Average (7 day geometric mean) of 102 #/100mL (report highest Weekly Average value)

APPENDIX – Flow diagram:



APPENDIX – TMDL MODEL TABLE:

Critical Condition	Salem Expansion (1.25 MGD) Q2K Model Inputs mg/L							Model Output Q2K Min DO mg/L
	BOD ₅	DO	pH	Temp	NH ₄	TN	TP	
Summer	5.0	7.5	7.65	27.0	0.36	12.7	0.5	5.00
Winter	5.0	7.5	7.8	18.0	0.9	13.25	0.5	5.01

APPENDIX – TMDL TABLE 15 WLAS:

Table 15. Wasteload Allocations for Domestic Wastewater Dischargers

Effluent Parameter	Design Flow (MGD)	Existing Permit Limit ¹⁶		WLA at Design Flow		Percent Reduction
		Concentration (mg/L)	Load (lbs/day)	Concentration (mg/L)	Load (lbs/day)	
Salem WWTF (MO-0021768)						
BOD ₅	0.741	Monthly Average = 20	124	3.05	18.87	84.75%
TP	0.741	No Existing Limit	No data	0.5	3.09	No data
TN	0.741	No Existing Limit	No data	12.7	78.55	No data

Effluent Parameter	Design Flow (MGD)	Existing Permit Limit ¹⁶		WLA at Design Flow		Percent Reduction
		Concentration (mg/L)	Load (lbs/day)	Concentration (mg/L)	Load (lbs/day)	
NH ₃ -N	0.741	Monthly Average = 1.5	9.28	0.6	3.71	60%
TSS	0.741	Monthly Average = 30	186	5.0	37.17	83%
DO*	0.741	No Existing Limit	n/a	7.5	n/a	n/a

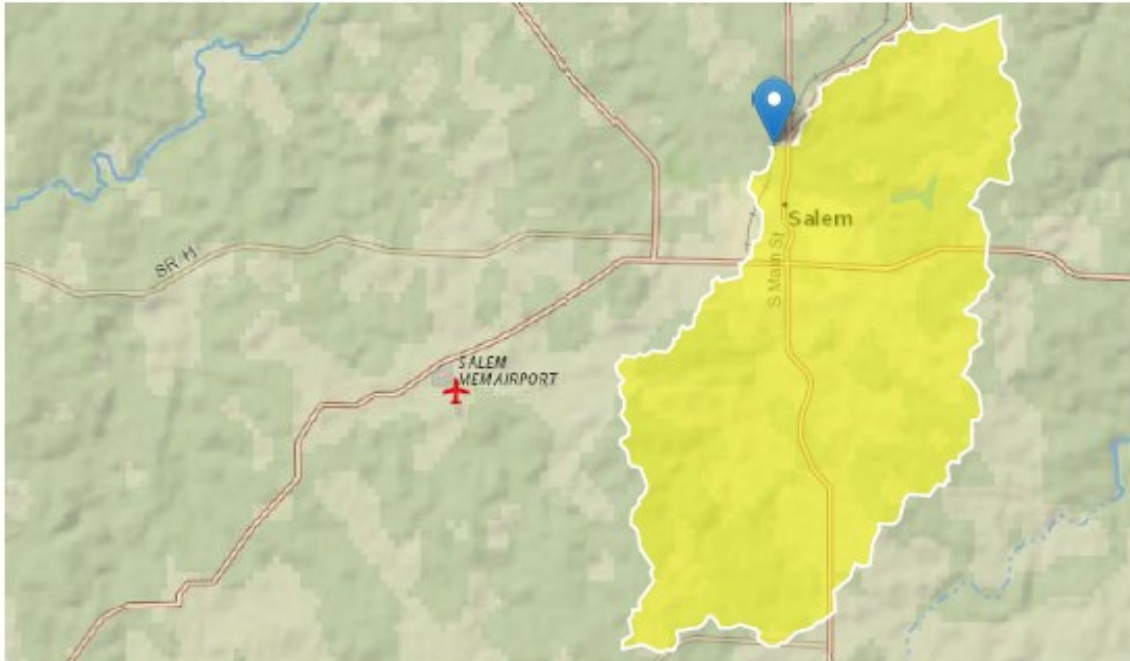
APPENDIX: RECEIVING STREAM LOW-FLOW VALUE:

5/26/22, 3:49 PM

StreamStats

StreamStats Report

Region ID: MO
Workspace ID: MO20220526204746410000
Clicked Point (Latitude, Longitude): 37.65592, -91.53890
Time: 2022-05-26 15:48:11 -0500



Collapse All

> Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	19.7	square miles
STREAM_VARG	Streamflow variability index as defined in WRIR 02-4068, computed from regional grid	0.39	dimensionless

> Low-Flow Statistics

5/26/22, 3:49 PM

StreamStats

Low-Flow Statistics Parameters [LowFlow Region 2 SIR 2013 5090]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	19.7	square miles	0.21	7380
STREAM_VARG	Streamflow Variability Index from Grid	0.39	dimensionless	0.273	0.926

Low-Flow Statistics Flow Report [LowFlow Region 2 SIR 2013 5090]

Statistic	Value	Unit
1 Day 10 Year Low Flow	1.02	ft ³ /s
2 Day 10 Year Low Flow	1.1	ft ³ /s
3 Day 10 Year Low Flow	1.16	ft ³ /s
7 Day 10 Year Low Flow	1.32	ft ³ /s
10 Day 10 Year Low Flow	1.4	ft ³ /s
30 Day 10 Year Low Flow	1.65	ft ³ /s
60 Day 10 Year Low Flow	1.95	ft ³ /s

Low-Flow Statistics Citations

Southard, R.E., 2013, Computed statistics at streamgages, and methods for estimating low-flow frequency statistics and development of regional regression equations for estimating low-flow frequency statistics at ungaged locations in Missouri: U.S. Geological Survey Scientific Investigations Report 2013-5090, 28 p. (<http://pubs.usgs.gov/sir/2013/5090/>)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

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5/26/22, 3:49 PM

StreamStats

USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.9.0

StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.0

APPENDIX – ABATEMENT ORDER ON CONSENT:

BEFORE THE MISSOURI DEPARTMENT OF NATURAL RESOURCES

In the Matter of:)	
)	
City of Salem)	Order No. 2022-WPCB-1687
)	
Proceeding under the)	
Missouri Clean Water Law)	

ABATEMENT ORDER ON CONSENT

The issuing of this Abatement Order on Consent (AOC) No. 2022-WPCB-1687, by the Missouri Department of Natural Resources (Department), is a formal administrative action by the State of Missouri and is being issued because the City of Salem (Respondent) requested the AOC for anticipated violations of the Missouri Clean Water Law (MCWL). This AOC is issued under the authorities of Sections 644.056 and 644.079, Revised Statutes of Missouri (RSMo). Failure to comply with this AOC is, by itself, a violation of Section 644.076.1, RSMo. Litigation may occur without further notice if there is not compliance with the requirements of this AOC. This AOC does not constitute a waiver or a modification of any requirements for the MCWL, or its implementing regulations, all of which remain in full force and effect. Compliance with the terms of this AOC shall not relieve the Respondent of liability for, or preclude the Department from, initiating an administrative or judicial enforcement action to recover civil or administrative penalties for any future violations of the MCWL, or to seek injunctive relief, pursuant to Chapter 644, RSMo.

FINDINGS OF FACT

1. The Respondent is a fourth class municipality with a population of approximately 4,935 residents. The Respondent owns and operates a wastewater treatment plant (WWTP) that

consists of an oxidation ditch, a sludge holding tank, sludge reed beds, and sludge land application. The WWTP is located in the SE ¼, SE ¼, Section 12, Township 34 North, Range 06 West, of Dent County. The WWTP has a design population equivalent of 7,410, a design flow of 741,000 gallons per day and an actual flow of 857,000 gallons per day. Treated effluent discharges through Outfall No. 001 of the WWTP to Spring Creek, subject to the conditions and requirements of Missouri State Operating Permit No. MO-0021768 (Permit).

2. Spring Creek is waters of the State as the term is defined by Section 644.016(27), RSMo.

3. Domestic wastewater is a water contaminant as the term is defined by Section 644.016(24), RSMo.

4. On February 10, 2012, the Department and the Respondent entered into a Voluntary Compliance Agreement (VCA) to address discharges of wastewater through a wet weather outfall bypassing full treatment. The VCA required elimination of the discharges from the wet weather outfall within five years, and allowed for only one extension of five years. On April 17, 2019, the Department extended the VCA deadline to February 10, 2022. Upon entry of this AOC, the VCA is superseded and terminated.

5. On January 12, 2018, the Department received a Facility Plan from Archer-Elgin Engineering Surveying and Architecture on behalf of the Respondent as part of a Small Community Engineering Assistance Program (SCEAP) Grant. The Facility Plan recommended repairs and upgrades as part of Phase I of the Respondent's project to improve the WWTP. On April 13, 2018, the Department issued a letter to the Respondent accepting the Facility Plan for SCEAP Grant final payment.

6. On or around October 10, 2019, the Department received a Request for Variance from the Spring Creek Total Maximum Daily Load from the Respondent. The variance request recommended improvements to the existing WWTP, including construction of a peak flow disinfection basin and installation of disinfection equipment during Phase II of the WWTP improvements project to allow peak flows to be disinfected prior to blending with separately disinfected flows to Outfall No. 001. The variance request's Pollution Minimization Program estimated completion of Phase II of the WWTP improvements project by the end of 2023.

7. On June 21, 2021, the Department received an email from HDR Engineering, Inc. on behalf of the Respondent that estimated completion of the work to address discharges from the wet weather outfall by June of 2024.

STATEMENT OF ANTICIPATED VIOLATIONS

The Department and the Respondent anticipate that during the Respondent's project to eliminate discharges from the wet weather outfall, the Respondent will violate the MCWL and its implementing regulations as follows:

8. Discharge partially treated or untreated domestic wastewater through Outfall No. 002 to Spring Creek, waters of the State, in violation of Sections 644.051.1(1) and 644.076.1, RSMo.

AGREEMENT

9. The Department and the Respondent desire to amicably resolve all claims that may be brought against the Respondent for violations alleged above in Statement of Violations.

10. The provisions of this AOC shall apply to and be binding upon the parties executing this AOC, their successors, assigns, agents, subsidiaries, affiliates, and lessees, including the officers, agents, servants, corporations, and any persons acting under, through, or

for the parties. Any changes in ownership or corporate status, including but not limited to any transfer of assets or real or personal property, shall not affect the responsibilities of the Respondent under this AOC.

11. In the period of time from the effective date of this AOC until the new or upgraded WWTP is completed, except for unavoidable wet weather discharges, the Respondent is ordered and agrees to operate and maintain the existing WWTP at all times in compliance with the conditions and requirements of the Permit. Specifically, from the time of the effective date of the AOC until the upgrades are complete, the Respondent shall operate the WWTF to maximize the volume of effluent receiving full treatment and discharged through Outfall No. 001 and to minimize discharges from the wet weather outfall to the extent practicable, and shall report all discharges from the wet weather outfall to the Department as bypasses. All units or components of the existing WWTP shall be maintained in an operable condition, even if this requires the purchase and installation of new parts or equipment, or repair of the WWTP.

12. The Respondent is ordered and agrees to eliminate discharges from the wet weather outfall as soon as practicable, but no later than June 30, 2024.

13. The Respondent is ordered and agrees to consult with the Department's Engineering Section staff and comply with all applicable application, permit, and permit fee requirements as set forth in 10 CSR 20-6 Permits and 10 CSR 20-8 Minimum Design Standards.

14. Within 60 days of completing construction of the improvements eliminating discharges from the wet weather outfall, the Respondent is ordered and agrees submit to the Department a Statement of Work Completed Form, signed, sealed, and dated by a professional engineer licensed in the State of Missouri certifying that the project is complete and operable in accordance with Department-approved plans and specifications.

15. This AOC shall terminate 90 days after the improvements eliminating discharges from the wet weather outfall are completed, or by June 30, 2024, whichever occurs first. If wet weather discharges are not eliminated by June 30, 2024, then any subsequent discharges from the wet weather outfall are violations subject to separate enforcement action.

SUBMISSIONS

16. All other documentation submitted to the Department for compliance with this AOC shall be submitted within the timeframes specified to:

Natalie Wigger
Department of Natural Resources
Water Protection Program
Compliance and Enforcement Section
P.O. Box 176
Jefferson City, MO 65102-0176

OTHER PROVISIONS

17. Immediately upon becoming aware that a deadline or milestone as set forth in this AOC will not be completed by the required deadline, the Respondent shall notify the Department by telephone or electronic mail: i) identifying the deadline that will not be completed; ii) identifying the reason for failing to meet the deadline; and iii) proposing an extension to the deadline. Within five days of notifying the Department, the Respondent shall submit to the Department, for review and approval, a written request containing the same basic provisions of i, ii, and iii listed above. The Department may grant an extension if it deems appropriate. Failure to submit a written notice to the Department may constitute a waiver of the Respondent's right to request an extension and may be grounds for the Department to deny the Respondent an extension. The Department acknowledges that if the revised Total Maximum Daily Load for Spring Creek is not approved by January 31, 2022, a reasonable extension beyond the June 30, 2024 deadline in paragraphs 12 and 14 may be appropriate.

18. Should the Respondent fail to meet the terms of this AOC, including the deadlines set out in Paragraphs 12 through 14, the Respondent shall be subject to pay stipulated penalties in the following amount:

<u>Days of Violation</u>	<u>Amount of Penalty</u>
1 to 30 days	\$100 per day
31 to 90 days	\$250 per day
91 days and above	\$500 per day

Stipulated penalties will be paid in the form of a check made payable to "Dent County Treasurer, as custodian of the Dent County School Fund." Any such stipulated penalty shall be paid within ten days of demand by the Department and shall be delivered to:

Accounting Program
Department of Natural Resources
P.O. Box 477
Jefferson City, MO 65102-0477

19. Compliance with this AOC resolves only the specific violations described herein, and this AOC shall not be construed as a waiver or modification for any other requirements of the MCWL and regulations, or any other source of law. Nor does this AOC resolve any future violations of this AOC or any law or regulation. Consistent with 10 CSR 20-3.010(5), this AOC shall not be construed as satisfying any claim by the state or federal government for natural resource damages.

20. Nothing in this AOC forgives the Respondent from future non-compliance with the laws of the State of Missouri, nor requires the Department or State of Missouri to forego pursuing by any legal means for any non-compliance with the laws of the State of Missouri. The terms stated herein constitute the entire and exclusive agreement of the parties. There are no other obligations of the parties, be they express or implied, oral or written, except those expressly

set forth herein. The terms of this AOC supersede all previous memoranda of understanding, notes, conversations, and agreements, express or implied. This AOC may not be modified orally.

21. By signing this AOC, all signatories assert that they have read and understood the terms of this AOC, and that they have the authority to sign this AOC on behalf of their respective party.

22. The effective date of the AOC shall be the date the Department signs the AOC. The Department shall send a fully executed copy of this AOC to the Respondent for their records.

COST ANALYSIS FOR COMPLIANCE

23. Pursuant to Section 644.145, the Cost Analysis for Compliance (CAFCOM) addresses the obligations included within this AOC and is attached hereto as Exhibit 1. This CAFCOM does not address future improvements that may be necessary to comply with the MCWL or its implementing regulations. This AOC requires the Respondent to complete upgrades or replacement of the WWTP in accordance with a Department-approved WWTP plan, designs, and specifications.

NOTICE OF APPEAL RIGHTS

24. By signing this AOC, the Respondent consents to its terms and waives any right to appeal, seek judicial review, or otherwise challenge the terms and conditions of this AOC, including the CAFCOM referenced herein, pursuant to Sections 621.250, 640.010, 640.013, 644.056.3, 644.079.2, Chapter 536 RSMo, 644.145, RSMo, 10 CSR 20-1.020, 10 CSR 20-3.010, 10 CSR 20-6.020(5), the Missouri Constitution, or any other source of law.

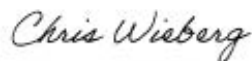
SIGNATORY AUTHORITY

Agreed to and Ordered on this 25th day of January, 2022



The Honorable Kim Steelman, Mayor
City of Salem

Agreed to and Ordered on this 1st day of February, 2022



DEPARTMENT OF NATURAL RESOURCES
Chris Wieberg, Director
Water Protection Program

c: Art Goodin, Director, Southeast Regional Office
 Operating Permits Section
 General Counsel's Office
 Accounting Program
 Fiscal Management Section

APPENDIX – EJSCREEN REPORT:



EJScreen Report (Version 2.1)



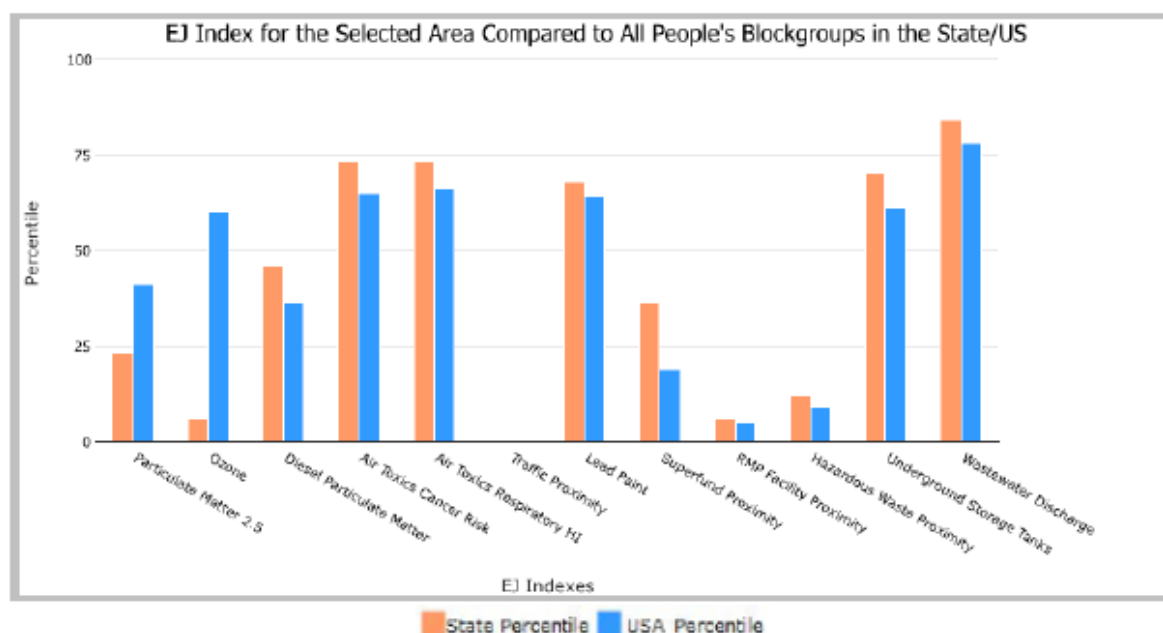
City: Salem, MISSOURI, EPA Region 7

Approximate Population: 4,573

Input Area (sq. miles): 3.17

Salem, MO

Selected Variables	State Percentile	USA Percentile
Environmental Justice Indexes		
EJ Index for Particulate Matter 2.5	23	41
EJ Index for Ozone	6	60
EJ Index for Diesel Particulate Matter*	46	38
EJ Index for Air Toxics Cancer Risk*	73	65
EJ Index for Air Toxics Respiratory HI*	73	68
EJ Index for Traffic Proximity	N/A	N/A
EJ Index for Lead Paint	68	64
EJ Index for Superfund Proximity	36	19
EJ Index for RMP Facility Proximity	6	5
EJ Index for Hazardous Waste Proximity	12	9
EJ Index for Underground Storage Tanks	70	61
EJ Index for Wastewater Discharge	84	78



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

March 02, 2023

**EJScreen Report (Version 2.1)**

City: Salem, MISSOURI, EPA Region 7

Approximate Population: 4,573

Input Area (sq. miles): 3.17

Salem, MO



Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
Pollution and Sources					
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$)	7.69	8.53	10	8.67	26
Ozone (ppb)	41.7	45.3	3	42.5	44
Diesel Particulate Matter* ($\mu\text{g}/\text{m}^3$)	0.119	0.269	23	0.294	<50th
Air Toxics Cancer Risk* (lifetime risk per million)	30	29	95	28	80-90th
Air Toxics Respiratory HI*	0.4	0.4	82	0.36	80-90th
Traffic Proximity (daily traffic count/distance to road)	N/A	450	N/A	780	N/A
Lead Paint (% Pre-1960 Housing)	0.28	0.29	55	0.27	56
Superfund Proximity (site count/km distance)	0.015	0.098	16	0.13	10
RMP Facility Proximity (facility count/km distance)	0.028	0.72	3	0.77	2
Hazardous Waste Proximity (facility count/km distance)	0.028	1.4	5	2.2	4
Underground Storage Tanks (count/km ²)	1.3	2	59	3.9	51
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.066	5.8	79	12	82
Socioeconomic Indicators					
Demographic Index	34%	28%	72	35%	57
People of Color	10%	21%	45	40%	24
Low Income	58%	31%	86	30%	86
Unemployment Rate	6%	5%	74	5%	67
Limited English Speaking Households	0%	1%	0	5%	0
Less Than High School Education	19%	9%	84	12%	78
Under Age 5	7%	6%	67	6%	69
Over Age 64	24%	17%	78	16%	78

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: <https://www.epa.gov/haps/air-toxics-data-update>.

For additional information, see: www.epa.gov/environmentaljustice

EJScreen is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJScreen documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJScreen outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.



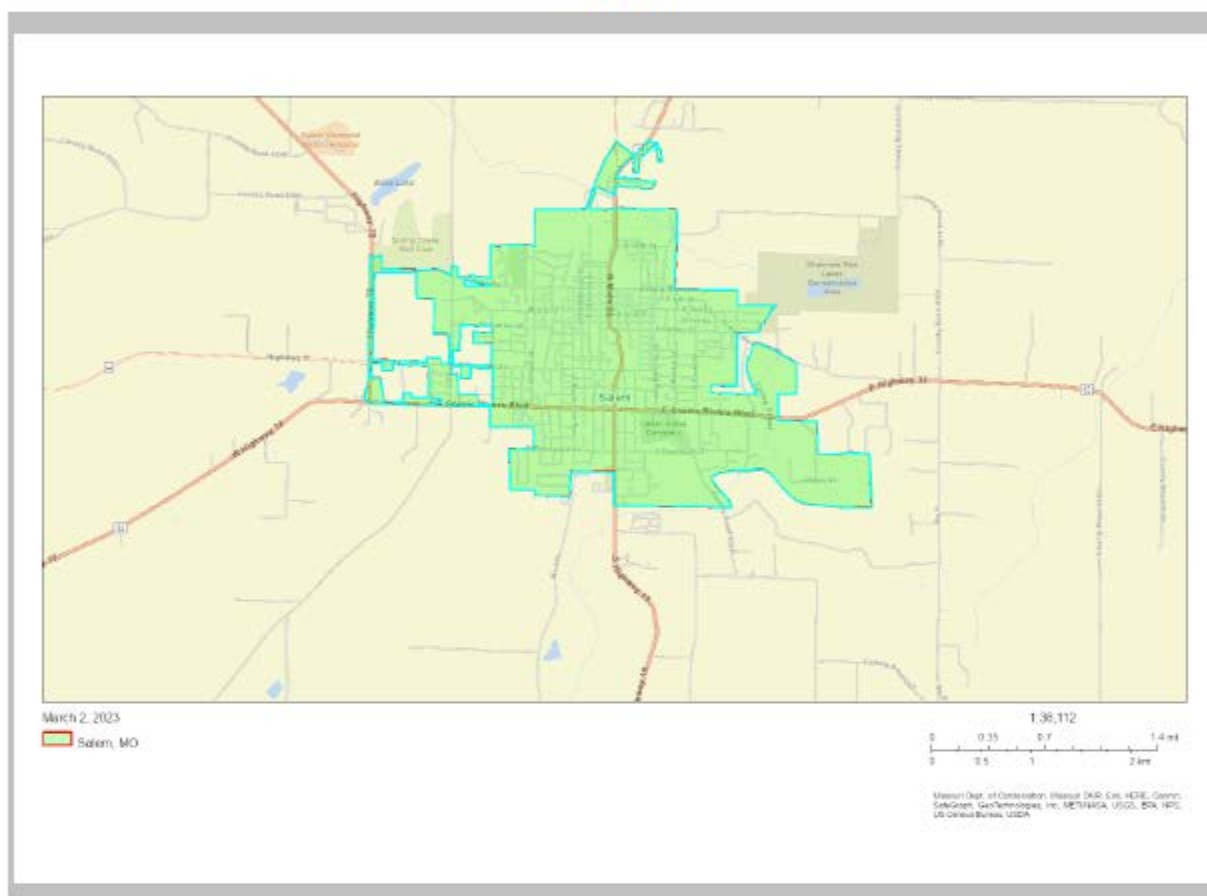
EJScreen Report (Version 2.1)

City: Salem, MISSOURI, EPA Region 7

Approximate Population: 4,573

Input Area (sq. miles): 3.17

Salem, MO



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

APPENDIX – 2006 WATER QUALITY REVIEW SHEET:



Missouri Department of Natural Resources
Water Protection Program
NPDES Permits and Engineering Section

Water Quality Review Sheet
Determination of Effluent Limits and Monitoring Requirements

Facility Information

FACILITY NAME: Salem Municipal WWTF NPDES #: MO-0021768

FACILITY TYPE/DESCRIPTION: .741 MGD oxidation ditch

EDU*: OM 8-DIGIT HUC: 07140102 COUNTY: Dent
* - Ecological Drainage Unit

LEGAL DESCRIPTION: SE ¼, SE ¼, Sec. 12, T34N, R6W LATITUDE/LONGITUDE: +3739158/-09132194

WATER QUALITY HISTORY: In compliance with effluent limits.
Significant industrial user – Heartland Metals

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	APPROXIMATE DISTANCE TO CLASSIFIED SEGMENT (MI)
001	1.15	Secondary	Spring Branch	0.0
002	varies	Primary	Spring Branch	0.0

Receiving Waterbody Information

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)			DESIGNATED USES**
			1Q10	7Q10	30Q10	
Spring Branch 303(d) BOD & VSS	P	1870	0.1	0.1	1.0	LWW, AQL

** Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL), Cool Water Fishery (CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND)

COMMENTS: Greater than 2.0 miles to portion of Spring Branch with WBC beneficial use.
The receiving stream is on the 303(d) list, and this facility is a contributor to the pollution. However, because the TMDL is not complete, this permit will be renewed with existing limits for BOD & TSS.
New WQBELs have been calculated for Ammonia & Metals.

Mixing Considerations

Mixing Zone (MZ): One quarter stream width, cross-sectional area, or volume of flow. Length of one quarter mile. 10 CSR 20-7.031(4)(A)4.B.(II)(a)

Zone of Initial Dilution (ZID): One tenth mixing zone width, cross sectional area or volume of flow. 10 CSR 20-7.031(4)(A)4.B.(II)(b)

	Flow (cfs)	MZ (cfs)	ZID (cfs)
1Q10	0.1	0.025	0.0025
7Q10	0.1	0.025	0.0025
30Q10	1.0	0.25	N.A.

$$A.E.C. \% = \left(\frac{\text{Design Flow} + \text{Zone of Initial Dilution}}{\text{Design Flow}} \right)^{-1} \times 100$$

Permit Limits and Information

WASTELoad ALLOCATION
STUDY CONDUCTED (Y OR N):

☐ N

USE ATTAINABILITY
ANALYSIS CONDUCTED (Y OR N):

☐ Y

WHOLE BODY CONTACT
USE RETAINED (Y OR N):

☐ N

OUTFALL #001

WET TEST (Y OR N):

☐ Y

FREQUENCY:

ONCE/YEAR

AEC:

100 %

METHOD:

SINGLE

PARAMETER	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MONITORING FREQUENCY
FLOW	MONITOR			twice/month
BOD ₅ (MG/L)*		45	20	twice/month
TSS (MG/L)*		45	30	twice/month
PH (S.U.)	6-9		6-9	twice/month
AMMONIA AS N (MG/L) (MAY 1 – OCT 31)	4.4		2.2	twice/month
AMMONIA AS N (MG/L) (NOV 1 – APR 30)	9.3		4.7	twice/month
TEMPERATURE (°C)	MONITOR			twice/month
OIL & GREASE (MG/L)	15		10	once/month
CHROMIUM, TOTAL RECOVERABLE III (µG/L)	202		101	once/month
CHROMIUM, TOTAL RECOVERABLE VI (µG/L)	15.2		7.6	once/month
ZINC, TOTAL RECOVERABLE (µG/L)	168		84	once/month
CADMIUM, TOTAL RECOVERABLE (µG/L)	MONITOR			twice/year
COPPER, TOTAL RECOVERABLE (µG/L)	MONITOR			twice/year
LEAD, TOTAL RECOVERABLE (µG/L)	MONITOR			twice/year
NICKEL, TOTAL RECOVERABLE (µG/L)	MONITOR			twice/year
SILVER, TOTAL RECOVERABLE (µG/L)	MONITOR			twice/year
CYANIDE, AMENABLE TO CHLORINATION (µG/L)	MONITOR			twice/year

* - This facility is required to meet a removal efficiency of 85% or more for BOD₅ and TSS. Influent BOD₅ and TSS data should be reported to ensure removal efficiency requirements are met.

OUTFALL #002

WET TEST (Y OR N): ☒ Y FREQUENCY: ONCE/YEAR AEC: 100 % METHOD: SINGLE

PARAMETER	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MONITORING FREQUENCY
FLOW	MONITOR			once/discharge/day
BOD ₅ (MG/L)		45		once/discharge/day
TSS (MG/L)		45		once/discharge/day
PH (S.U.)	6-9		6-9	once/discharge/day
RAINFALL (INCHES)	MONITOR			once/day

Receiving Water Monitoring Requirements

LOCATIONS WILL BE NOTED IN THE PERMIT.

PARAMETER	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MONITORING FREQUENCY
HARDNESS, TOTAL (MG/L)	MONITOR			once/month
DISSOLVED OXYGEN (MG/L)	MONITOR			once/month
TEMPERATURE (°C)	MONITOR			once/month
PH (S.U.)	MONITOR			once/month
AMMONIA AS N (MG/L)	MONITOR			once/month

Derivation and Discussion of Limits

Wasteload allocations were calculated using water quality criteria or water quality model results and the dilution equation below:

$$C = \frac{(C_s \times Q_s) + (C_e \times Q_e)}{(Q_e + Q_s)} \quad (\text{EPA/505/2-90-001, Section 4.5.5})$$

Where C = downstream concentration
C_s = upstream concentration
Q_s = upstream flow
C_e = effluent concentration
Q_e = effluent flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

Outfall #001 – Main Facility Outfall

- **Biochemical Oxygen Demand (BODs).** Limits carried over from previous permit.
- **Total Suspended Solids (TSS).** 30 mg/L monthly average, 45 mg/L weekly average [10 CSR 20-7.015(8)(B)1.].
- **pH.** pH shall be maintained in the range from six to nine (6 – 9) standard units [10 CSR 20-7.015 (8)(B)2.].
- **Total Ammonia Nitrogen.** Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L

Season	Temp (°C)	pH (SU)	Total Ammonia Nitrogen CCC (mg/L)	Total Ammonia Nitrogen CMC (mg/L)
Summer	26	7.8	1.5	12.1
Winter	6	7.8	3.1	12.1

Summer: May 1 – October 31, Winter: November 1 – April 30

Summer

Chronic WLA: $C_e = ((1.15 + 0.25)1.5 - (0.25 * 0.01))/1.15$
 $C_e = 1.8 \text{ mg/L}$

Acute WLA: $C_e = ((1.15 + 0.0025)12.1 - (0.0025 * 0.01))/1.15$
 $C_e = 12.1 \text{ mg/L}$

$LTA_c = 1.8 \text{ mg/L } (0.780) = 1.4 \text{ mg/L}$ [CV = 0.6, 99th Percentile, n = 30]
 $LTA_a = 12.1 \text{ mg/L } (0.321) = 3.9 \text{ mg/L}$ [CV = 0.6, 99th Percentile]

MDL = 1.4 mg/L (3.11) = 4.4 mg/L [CV = 0.6, 99th Percentile]
 AML = 1.4 mg/L (1.55) = 2.2 mg/L [CV = 0.6, 95th Percentile, n = 4]

Winter

Chronic WLA: $C_e = ((1.15 + 0.25)3.1 - (0.25 * 0.01))/1.15$
 $C_e = 3.8 \text{ mg/L}$

Acute WLA: $C_e = ((1.15 + 0.0025)12.1 - (0.0025 * 0.01))/1.15$
 $C_e = 12.1 \text{ mg/L}$

$LTA_c = 3.8 \text{ mg/L } (0.780) = 3.0 \text{ mg/L}$ [CV = 0.6, 99th Percentile, n = 30]
 $LTA_a = 12.1 \text{ mg/L } (0.321) = 3.9 \text{ mg/L}$ [CV = 0.6, 99th Percentile]

MDL = 3.0 mg/L (3.11) = 9.3 mg/L [CV = 0.6, 99th Percentile]
 AML = 3.0 mg/L (1.55) = 4.7 mg/L [CV = 0.6, 95th Percentile, n = 4]

- **Temperature** Monitoring required because the toxicity of Ammonia varies by temperature.

- **Oil & Grease.** Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.

Metals

Effluent limitations for total recoverable metals were developed using methods and procedures outlined in EPA/505/2-90-001 and "The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion" (EPA 823-B-96-007). General warm-water fishery criteria apply and water hardness = 162.5 mg/L.

Due to the absence of contemporaneous effluent and instream data for total recoverable metals, dissolved metals, hardness, and total suspended solids with which to calculate metals translators, partitioning between the dissolved and absorbed phases was assumed to be minimal (Section 5.7.3, EPA/505/2-90-001). Freshwater criteria conversion factors for dissolved metals were used as the metals translator as recommended in guidance (Section 1.3, 1.5.3, and Table 1, EPA 823-B-96-007). If concurrent site-specific data for total recoverable metals, dissolved metals, hardness, and total suspended solids are provided to the department, partitioning evaluations may be considered and site-specific translators developed.

METAL	CONVERSION FACTORS	
	ACUTE	CHRONIC
Chromium III	0.316	0.860
Chromium VI	0.982	0.962
Zinc	0.978	0.986

- **Chromium III, Total Recoverable** Protection of Aquatic Life Chronic Criteria = 103 µg/L, Acute Criteria = 794 µg/L.

$$\begin{aligned}\text{Chronic} &= 103/0.860 = 120 \mu\text{g/L} \\ \text{Acute} &= 794/0.316 = 2513 \mu\text{g/L}\end{aligned}$$

$$\begin{aligned}\text{Chronic} \\ C_c &= ((1.15 + 0.025)120 - (0.025 * 0.0))/1.15 \\ C_c &= 123 \mu\text{g/L} \\ \text{WLA}_c &= 123 \mu\text{g/L}\end{aligned}$$

$$\begin{aligned}\text{Acute} \\ C_c &= ((1.15 + 0.0025)2513 - (0.0025 * 0.0))/1.15 \\ C_c &= 2518 \mu\text{g/L} \\ \text{WLA}_c &= 2518 \mu\text{g/L}\end{aligned}$$

$$\begin{aligned}\text{LTA}_c &= 123(0.527)=65 \mu\text{g/L} & [\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}] \\ \text{LTA}_a &= 2518(0.321)=808 \mu\text{g/L} & [\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}]\end{aligned}$$

Use most protective number of LTA_c or LTA_a .

$$\begin{aligned}\text{MDL} &= 65(3.11)=202 \mu\text{g/L} & [\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}] \\ \text{AML} &= 65(1.55)=101 \mu\text{g/L} & [\text{CV} = 0.6, 95^{\text{th}} \text{ Percentile, } n = 4]\end{aligned}$$

- **Chromium VI, Total Recoverable** Protection of Aquatic Life Chronic Criteria = 10 µg/L, Acute Criteria = 15 µg/L.

$$\begin{aligned}\text{Chronic} &= 10/0.962 = 10.4 \mu\text{g/L} \\ \text{Acute} &= 15/0.982 = 15.3 \mu\text{g/L}\end{aligned}$$

Chronic

$$C_e = ((1.15 + 0.025)10.4 - (0.025 * 0.0))/1.15$$

$$C_e = 10.6 \mu\text{g/L}$$

$$WLA_c = 10.6 \mu\text{g/L}$$

Acute

$$C_e = ((1.15 + 0.0025)15.3 - (0.0025 * 0.0))/1.15$$

$$C_e = 15.3 \mu\text{g/L}$$

$$WLA_c = 15.3 \mu\text{g/L}$$

$$LTA_c = 10.6(0.527) = 5.6 \mu\text{g/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$LTA_a = 15.3(0.321) = 4.9 \mu\text{g/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}]$$

Use most protective number of LTA_c or LTA_a .

$$MDL = 4.9(3.11) = 15.2 \mu\text{g/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$AML = 4.9(1.55) = 7.6 \mu\text{g/L}$$

$$[CV = 0.6, 95^{\text{th}} \text{ Percentile}, n = 4]$$

- **Zinc, Total Recoverable** Protection of Aquatic Life Chronic Criteria = 151 $\mu\text{g/L}$, Acute Criteria = 165 $\mu\text{g/L}$.

$$\text{Chronic} = 151/0.986 = 153 \mu\text{g/L}$$

$$\text{Acute} = 165/0.978 = 169 \mu\text{g/L}$$

Chronic

$$C_e = ((1.15 + 0.025)153 - (0.025 * 0.0))/1.15$$

$$C_e = 156 \mu\text{g/L}$$

$$WLA_c = 156 \mu\text{g/L}$$

Acute

$$C_e = ((1.15 + 0.0025)169 - (0.0025 * 0.0))/1.15$$

$$C_e = 169 \mu\text{g/L}$$

$$WLA_c = 169 \mu\text{g/L}$$

$$LTA_c = 156(0.527) = 82 \mu\text{g/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$LTA_a = 169(0.321) = 54 \mu\text{g/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}]$$

Use most protective number of LTA_c or LTA_a .

$$MDL = 54(3.11) = 168 \mu\text{g/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$AML = 54(1.55) = 84 \mu\text{g/L}$$

$$[CV = 0.6, 95^{\text{th}} \text{ Percentile}, n = 4]$$

- **Cadmium, Copper, Lead, Nickel, Silver, & Cyanide** Monitoring carried over from previous permit.

Outfall 002 – Peak flow clarifier

- **Biochemical Oxygen Demand (BODs)** 45 mg/L weekly average [10 CSR 20-7.015(8)(B)3.E.(I)].
- **Total Suspended Solids (TSS)** 45 mg/L weekly average [10 CSR 20-7.015(8)(B)3.E.(I)].
- **pH** pH shall be maintained in the range from six to nine (6 – 9) standard units [10 CSR 20-7.015 (8)(B)3.E.(II)].
- **Rainfall** monitoring required to assess rainfall relation to incidence of peak flow clarifier discharge.

Receiving Stream Monitoring

- Dissolved Oxygen, Temperature, pH, Ammonia as N Monitoring required to gather data for modeling and development of wasteload allocation.

Reviewer: Curt B. Gateley

Date: 10-23-06

Unit Chief: Refaat Mefrakis

Monitoring and effluent limits contained within this document have been developed in accordance with EPA guidelines using the best available data and are believed to be consistent with Missouri's Water Quality Standards and Effluent Regulations. If additional water quality data or anecdotal information are available that may affect

APPENDIX: ASSIMILATIVE CAPACITY CALCULATIONS.

$$\text{Facility Assimilative Capacity (FAC)} = (C_c * (Q_s + Q_d) - (\text{EWQ} * Q_s)) * \text{CF}$$

C_c = Chronic Criterion

Q_s = stream flow (7Q10 or other representative flow) in cubic feet per second (cfs)

Q_d = average daily design flow of discharge in cfs

EWQ = Existing Water Quality

CF = conversion factor to convert a pollutant mass loading into the desired units.

Cadmium

$$C_c = 1.21 \mu\text{g/L} = 0.00121 \text{ mg/L}$$

$$\text{EWQ} = 0 \mu\text{g/L} = 0 \text{ mg/L}$$

$$Q_d = 1.9375$$

$$Q_s = 1.32 \text{ cfs}$$

$$\text{CF} = 5.4$$

$$\text{FAC} = (0.00121 * (1.32 + 1.9375) - (0 * 1.32)) * 5.4 = 0.0212 \text{ lbs/day}$$

$$\text{Discharge load} = (0.0006 * 8.345 * 1.25) = 0.00625 \text{ lbs/day}$$

% of FAC being used: 29.5%

FAC remaining: 0.01495 lbs/day or 70.5%

Copper

$$C_c = 14.68 \mu\text{g/L} = 0.01468 \text{ mg/L}$$

$$\text{EWQ} = 0 \mu\text{g/L} = 0 \text{ mg/L}$$

$$Q_d = 1.9375$$

$$Q_s = 1.32 \text{ cfs}$$

$$\text{CF} = 5.4$$

$$\text{FAC} = (0.01468 * (1.32 + 1.9375) - (0 * 1.32)) * 5.4 = 0.258 \text{ lbs/day}$$

$$\text{Discharge load} = (0.0114 * 8.345 * 1.25) = 0.1189 \text{ lbs/day}$$

% of FAC being used: 46.1%

FAC remaining: 0.1391lbs/day or 53.9%

Lead

$$C_c = 6.25 \mu\text{g/L} = 0.00625 \text{ mg/L}$$

$$\text{EWQ} = 0 \mu\text{g/L} = 0 \text{ mg/L}$$

$$Q_d = 1.9375$$

$$Q_s = 1.32 \text{ cfs}$$

$$\text{CF} = 5.4$$

$$\text{FAC} = (0.00625 * (1.32 + 1.9375) - (0 * 1.32)) * 5.4 = 0.1099 \text{ lbs/day}$$

$$\text{Discharge load} = (0.004 * 8.345 * 1.25) = 0.0417 \text{ lbs/day}$$

% of FAC being used: 38.0%

FAC remaining: 0.0682 lbs/day or 62%



STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
REVISED
AUGUST 1, 2014

These Standard Conditions incorporate permit conditions as required by 40 CFR 122.41 or other applicable state statutes or regulations. These minimum conditions apply unless superseded by requirements specified in the permit.

Part I – General Conditions

Section A – Sampling, Monitoring, and Recording

1. **Sampling Requirements.**
 - a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
 - b. All samples shall be taken at the outfall(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.
2. **Monitoring Requirements.**
 - a. Records of monitoring information shall include:
 - i. The date, exact place, and time of sampling or measurements;
 - ii. The individual(s) who performed the sampling or measurements;
 - iii. The date(s) analyses were performed;
 - iv. The individual(s) who performed the analyses;
 - v. The analytical techniques or methods used; and
 - vi. The results of such analyses.
 - b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department pursuant to Section B, paragraph 7.
3. **Sample and Monitoring Calculations.** Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.
4. **Test Procedures.** The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is “sufficiently sensitive” when; 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility’s discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.
5. **Record Retention.** Except for records of monitoring information required by the permit related to the permittee’s sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

6. **Illegal Activities.**
 - a. The Federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than two (2) years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than four (4) years, or both.
 - b. The Missouri Clean Water Law provides that any person or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than six (6) months, or by both. Second and successive convictions for violation under this paragraph by any person shall be punished by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

Section B – Reporting Requirements

1. **Planned Changes.**
 - a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
 - i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
 - ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42;
 - iii. The alteration or addition results in a significant change in the permittee’s sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
 - iv. Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.
2. **Non-compliance Reporting.**
 - a. The permittee shall report any noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.



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- b. The following shall be included as information which must be reported within 24 hours under this paragraph.
 - i. Any unanticipated bypass which exceeds any effluent limitation in the permit.
 - ii. Any upset which exceeds any effluent limitation in the permit.
 - iii. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit required to be reported within 24 hours.
 - c. The Department may waive the written report on a case-by-case basis for reports under paragraph 2. b. of this section if the oral report has been received within 24 hours.
3. **Anticipated Noncompliance.** The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The notice shall be submitted to the Department 60 days prior to such changes or activity.
 4. **Compliance Schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date. The report shall provide an explanation for the instance of noncompliance and a proposed schedule or anticipated date, for achieving compliance with the compliance schedule requirement.
 5. **Other Noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, and 6 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.
 6. **Other Information.** Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.
 7. **Discharge Monitoring Reports.**
 - a. Monitoring results shall be reported at the intervals specified in the permit.
 - b. Monitoring results must be reported to the Department via the current method approved by the Department, unless the permittee has been granted a waiver from using the method. If the permittee has been granted a waiver, the permittee must use forms provided by the Department.
 - c. Monitoring results shall be reported to the Department no later than the 28th day of the month following the end of the reporting period.
- b. Notice.
 - i. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
 - ii. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section B – Reporting Requirements, paragraph 5 (24-hour notice).
 - c. Prohibition of bypass.
 - i. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
 1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 3. The permittee submitted notices as required under paragraph 2. b. of this section.
 - ii. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three (3) conditions listed above in paragraph 2. c. i. of this section.
3. **Upset Requirements.**
 - a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 3. b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
 - b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - i. An upset occurred and that the permittee can identify the cause(s) of the upset;
 - ii. The permitted facility was at the time being properly operated; and
 - iii. The permittee submitted notice of the upset as required in Section B – Reporting Requirements, paragraph 2. b. ii. (24-hour notice).
 - iv. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
 - c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

Section C – Bypass/Upset Requirements

1. **Definitions.**
 - a. *Bypass*: the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending.
 - b. *Severe Property Damage*: substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
 - c. *Upset*: an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
2. **Bypass Requirements.**
 - a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2. b. and 2. c. of this section.

Section D – Administrative Requirements

1. **Duty to Comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
 - a. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
 - b. The Federal Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed \$25,000 per day for each violation. The Federal Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement



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- imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of \$2,500 to \$25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.
- c. Any person may be assessed an administrative penalty by the EPA Director for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.
- d. It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law or any other provision which this state is required to enforce pursuant to any federal water pollution control act, is being, was, or is in imminent danger of being violated, the commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed \$10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.
2. **Duty to Reapply.**
- a. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.
- b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
- c. A permittee with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
3. **Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
4. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.
5. **Proper Operation and Maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
6. **Permit Actions.**
- a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
- i. Violations of any terms or conditions of this permit or the law;
- ii. Having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;
- iii. A change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
- iv. Any reason set forth in the Law or Regulations.
- b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.
7. **Permit Transfer.**
- a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
- b. The Department may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Missouri Clean Water Law or the Federal Clean Water Act.
- c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.
8. **Toxic Pollutants.** The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
9. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.



STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
REVISED
AUGUST 1, 2014

10. **Duty to Provide Information.** The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.
11. **Inspection and Entry.** The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:
 - a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
 - c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
 - d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.
12. **Closure of Treatment Facilities.**
 - a. Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
 - b. Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.
13. **Signatory Requirement.**
 - a. All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
 - b. The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
 - c. The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.
14. **Severability.** The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.



STANDARD CONDITIONS FOR NPDES PERMITS
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MISSOURI CLEAN WATER COMMISSION
REVISED
MAY 1, 2013

PART II - SPECIAL CONDITIONS – PUBLICLY OWNED
TREATMENT WORKS
SECTION A – INDUSTRIAL USERS

1. Definitions

Definitions as set forth in the Missouri Clean Water Laws and approved by the Missouri Clean Water Commission shall apply to terms used herein.

Significant Industrial User (SIU). Except as provided in the *General Pretreatment Regulation* 10 CSR 20-6.100, the term Significant Industrial User means:

1. All Industrial Users subject to Categorical Pretreatment Standards; and
2. Any other Industrial User that: discharges an average of 25,000 gallons per day or more of process wastewater to the Publicly-Owned Treatment Works (POTW) (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority on the basis that the Industrial User has a reasonable potential for adversely affecting the POTW's or for violating any Pretreatment Standard or requirement.

Clean Water Act (CWA) is the the federal Clean Water Act of 1972, 33 U.S.C. § 1251 et seq. (2002).

2. Identification of Industrial Discharges

Pursuant to 40 CFR 122.44(j)(1), all POTWs shall identify, in terms of character and volume of pollutants, any Significant Industrial Users discharging to the POTW subject to Pretreatment Standards under section 307(b) of the CWA and 40 CFR 403.

3. Application Information

Applications for renewal or modification of this permit must contain the information about industrial discharges to the POTW pursuant to 40 CFR 122.21(j)(6)

4. Notice to the Department

Pursuant to 40 CFR 122.42(b), all POTWs must provide adequate notice of the following:

1. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging these pollutants; and
2. Any substantial change into the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
3. For purposes of this paragraph, adequate notice shall include information on:
 - i. the quality and quantity of effluent introduced into the POTW, and
 - ii. any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

For POTWs without an approved pretreatment program, the notice of industrial discharges which was not included in the permit application shall be made as soon as practicable. For POTWs with an approved pretreatment program, notice is to be included in the annual pretreatment report required in the special conditions of this permit. Notice may be sent to:

Missouri Department of Natural Resources
Water Protection Program
Attn: Pretreatment Coordinator
P.O. Box 176
Jefferson City, MO 65102

STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
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MISSOURI CLEAN WATER COMMISSION
August 1, 2019

PART III – BIOSOLIDS AND SLUDGE FROM DOMESTIC TREATMENT FACILITIES

SECTION A – GENERAL REQUIREMENTS

1. PART III Standard Conditions pertain to biosolids and sludge requirements under the Missouri Clean Water Law and regulations for domestic and municipal wastewater and also incorporates federal sludge disposal requirements under 40 CFR Part 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR Part 503 for domestic biosolids and sludge.
2. PART III Standard Conditions apply only to biosolids and sludge generated at domestic wastewater treatment facilities, including public owned treatment works (POTW) and privately owned facilities.
3. Biosolids and Sludge Use and Disposal Practices:
 - a. The permittee is authorized to operate the biosolids and sludge generating, treatment, storage, use, and disposal facilities listed in the facility description of this permit.
 - b. The permittee shall not exceed the design sludge/biosolids volume listed in the facility description and shall not use biosolids or sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
 - c. For facilities operating under general operating permits that incorporate Standard Conditions PART III, the facility is authorized to operate the biosolids and sludge generating, treatment, storage, use and disposal facilities identified in the original operating permit application, subsequent renewal applications or subsequent written approval by the department.
4. Biosolids or Sludge Received from other Facilities:
 - a. Permittees may accept domestic wastewater biosolids or sludge from other facilities as long as the permittee's design sludge capacity is not exceeded and the treatment facility performance is not impaired.
 - b. The permittee shall obtain a signed statement from the biosolids or sludge generator or hauler that certifies the type and source of the sludge
5. Nothing in this permit precludes the initiation of legal action under local laws, except to the extent local laws are preempted by state law.
6. This permit does not preclude the enforcement of other applicable environmental regulations such as odor emissions under the Missouri Air Pollution Control Law and regulations.
7. This permit may (after due process) be modified, or alternatively revoked and reissued, to comply with any applicable biosolids or sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Act or under Chapter 644 RSMo.
8. In addition to Standard Conditions PART III, the Department may include biosolids and sludge limitations in the special conditions portion or other sections of a site specific permit.
9. Exceptions to Standard Conditions PART III may be authorized on a case-by-case basis by the Department, as follows:
 - a. The Department may modify a site-specific permit following permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR § 124.10, and 40 CFR § 501.15(a)(2)(ix)(E).
 - b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR Part 503.

SECTION B – DEFINITIONS

1. Best Management Practices are practices to prevent or reduce the pollution of waters of the state and include agronomic loading rates (nitrogen based), soil conservation practices, spill prevention and maintenance procedures and other site restrictions.
2. Biosolids means organic fertilizer or soil amendment produced by the treatment of domestic wastewater sludge.
3. Biosolids land application facility is a facility where biosolids are spread onto the land at agronomic rates for production of food, feed or fiber. The facility includes any structures necessary to store the biosolids until soil, weather, and crop conditions are favorable for land application.
4. Class A biosolids means a material that has met the Class A pathogen reduction requirements or equivalent treatment by a Process to Further Reduce Pathogens (PFRP) in accordance with 40 CFR Part 503.
5. Class B biosolids means a material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PSRP) in accordance with 40 CFR Part 503.
6. Domestic wastewater means wastewater originating from the sanitary conveniences of residences, commercial buildings, factories and institutions; or co-mingled sanitary and industrial wastewater processed by a (POTW) or a privately owned facility.
7. Feed crops are crops produced primarily for consumption by animals.
8. Fiber crops are crops such as flax and cotton.
9. Food crops are crops consumed by humans which include, but is not limited to, fruits, vegetables and tobacco.
10. Industrial wastewater means any wastewater, also known as process wastewater, not defined as domestic wastewater. Per 40 CFR Part 122.2, process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product. Land application of industrial wastewater, residuals or sludge is not authorized by Standard Conditions PART III.
11. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including, sand filters, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological contact systems, and other similar facilities. It does not include wastewater treatment lagoons or constructed wetlands for wastewater treatment.
12. Plant Available Nitrogen (PAN) is nitrogen that will be available to plants during the growing seasons after biosolids application.
13. Public contact site is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.
14. Sludge is the solid, semisolid, or liquid residue removed during the treatment of wastewater. Sludge includes septage removed from septic tanks or equivalent facilities. Sludge does not include carbon coal byproducts (CCBs), sewage sludge incinerator ash, or grit/screenings generated during preliminary treatment of domestic sewage.
15. Sludge lagoon is part of a mechanical wastewater treatment facility. A sludge lagoon is an earthen or concrete lined basin that receives sludge that has been removed from a wastewater treatment facility. It does not include a wastewater treatment lagoon or sludge treatment units that are not a part of a mechanical wastewater treatment facility.
16. Septage is the sludge pumped from residential septic tanks, cesspools, portable toilets, Type III marine sanitation devices, or similar treatment works such as sludge holding structures from residential wastewater treatment facilities with design populations of less than 150 people. Septage does not include grease removed from grease traps at a restaurant or material removed from septic tanks and other similar treatment works that have received industrial wastewater. The standard for biosolids from septage is different from other sludges. See Section H for more information.

SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES

1. Biosolids or sludge shall be routinely removed from wastewater treatment facilities and handled according to the permit facility description and the requirements of Standard Conditions PART III or in accordance with Section A.3.c., above.
2. The permittee shall operate storage and treatment facilities, as defined by Section 644.016(23), RSMo, so that there is no biosolids or sludge discharged to waters of the state. Agricultural storm water discharges are exempt under the provisions of Section 644.059, RSMo.
3. Mechanical treatment plants shall have separate biosolids or sludge storage compartments in accordance with 10 CSR 20, Chapter 8. Failure to remove biosolids or sludge from these storage compartments on the required design schedule is a violation of this permit.

SECTION D – BIOSOLIDS OR SLUDGE DISPOSED AT OTHER TREATMENT FACILITY OR BY CONTRACT HAULER

1. Permittees that use contract haulers, under the authority of their operating permit, to dispose of biosolids or sludge, are responsible for compliance with all the terms of this permit. Contract haulers that assume the responsibility of the final disposal of biosolids or sludge, including biosolids land application, must obtain a Missouri State Operating Permit unless the hauler transports the biosolids or sludge to another permitted treatment facility.
2. Testing of biosolids or sludge, other than total solids content, is not required if biosolids or sludge are hauled to a permitted wastewater treatment facility, unless it is required by the accepting facility.

SECTION E – INCINERATION OF SLUDGE

1. Please be aware that sludge incineration facilities may be subject to the requirements of 40 CFR Part 503 Subpart E, Missouri Air Conservation Commission regulations under 10 CSR 10, and solid waste management regulations under 10 CSR 80, as applicable.
2. Permittee may be authorized under the facility description of this permit to store incineration ash in lagoons or ash ponds. This permit does not authorize the disposal of incineration ash. Incineration ash shall be disposed in accordance with 10 CSR 80; or, if the ash is determined to be hazardous, with 10 CSR 25.
3. In addition to normal sludge monitoring, incineration facilities shall report the following as part of the annual report, mass of sludge incinerated and mass of ash generated. Permittee shall also provide the name of the ash disposal facility and permit number if applicable.

SECTION F – SURFACE DISPOSAL SITES AND BIOSOLIDS AND SLUDGE LAGOONS

1. Please be aware that surface disposal sites of biosolids or sludge from wastewater treatment facilities may be subject to other laws including the requirements in 40 CFR Part 503 Subpart C, Missouri Air Conservation Commission regulations under 10 CSR 10, and solid waste management regulations under 10 CSR 80, as applicable.
2. Biosolids or sludge storage lagoons are temporary facilities and are not required to obtain a permit as a solid waste management facility under 10 CSR 80. In order to maintain biosolids or sludge storage lagoons as storage facilities, accumulated biosolids or sludge must be removed routinely, but not less than once every two years unless an alternate schedule is approved in the permit. The amount of biosolids or sludge removed will be dependent on biosolids or sludge generation and accumulation in the facility. Enough biosolids or sludge must be removed to maintain adequate storage capacity in the facility.
 - a. In order to avoid damage to the lagoon seal during cleaning, the permittee may leave a layer of biosolids or sludge on the bottom of the lagoon, upon prior approval of the Department; or
 - b. Permittee shall close the lagoon in accordance with Section I.

SECTION G – LAND APPLICATION OF BIOSOLIDS

1. The permittee shall not land apply biosolids unless land application is authorized in the facility description, the special conditions of the issued NPDES permit, or in accordance with Section A.3.c., above.
2. This permit only authorizes “Class A” or “Class B” biosolids derived from domestic wastewater to be land applied onto grass land, crop land, timber, or other similar agricultural or silviculture lands at rates suitable for beneficial use as organic fertilizer and soil conditioner.
3. Class A Biosolids Requirements: Biosolids shall meet Class A requirements for application to public contact sites, residential lawns, home gardens or sold and/or given away in a bag or other container.
4. Class B biosolids that are land applied to agricultural and public contact sites shall comply with the following restrictions:
 - a. Food crops that touch the biosolids/soil mixture and are totally above the land surface shall not be harvested for 14 months after application of biosolids.
 - b. Food crops below the surface of the land shall not be harvested for 20 months after application of biosolids when the biosolids remain on the land surface for four months or longer prior to incorporation into the soil.
 - c. Food crops below the surface of the land shall not be harvested for 38 months after application of biosolids when the biosolids remain on the land surface for less than four months prior to incorporation into the soil.
 - d. Animal grazing shall not be allowed for 30 days after application of biosolids.
 - e. Food crops, feed crops, and fiber crops shall not be harvested for 30 days after application of biosolids.
 - f. Turf shall not be harvested for one year after application of biosolids if used for lawns or high public contact sites in close proximity to populated areas such as city parks or golf courses.
 - g. After Class B biosolids have been land applied to public contact sites with high potential for public exposure, as defined in 40 CFR § 503.31, such as city parks or golf courses, access must be restricted for 12 months.
 - h. After Class B biosolids have been land applied public contact sites with low potential for public exposure as defined in 40 CFR § 503.31, such as a rural land application or reclamation sites, access must be restricted for 30 days.
5. Pollutant limits
 - a. Biosolids shall be monitored to determine the quality for regulated pollutants listed in Table 1, below. Limits for any pollutants not listed below may be established in the permit.
 - b. The number of samples taken is directly related to the amount of biosolids or sludge produced by the facility (See Section J, below). Samples should be taken only during land application periods. When necessary, it is permissible to mix biosolids with lower concentrations of biosolids as well as other suitable Department approved material to achieve pollutant concentration below those identified in Table 1, below.
 - c. Table 1 gives the ceiling concentration for biosolids. Biosolids which exceed the concentrations in Table 1 may not be land applied.

TABLE 1

Biosolids ceiling concentration	
Pollutant	Milligrams per kilogram dry weight
Arsenic	75
Cadmium	85
Copper	4,300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7,500

- d. Table 2 below gives the low metal concentration for biosolids. Because of its higher quality, biosolids with pollutant concentrations below those listed in Table 2 can safely be applied to agricultural land, forest, public contact sites, lawns, home gardens or be given away without further analysis. Biosolids containing metals in concentrations above the low metals concentrations but below the ceiling concentration limits may be land applied but shall not exceed the annual loading rates in Table 3 and the cumulative loading rates in Table 4. The permittee is required to track pollutant loading onto application sites for parameters that have exceeded the low metal concentration limits.

TABLE 2

Biosolids Low Metal Concentration	
Pollutant	Milligrams per kilogram dry weight
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2,800

- e. Annual pollutant loading rate.

Table 3

Biosolids Annual Loading Rate	
Pollutant	Kg/ha (lbs./ac) per year
Arsenic	2.0 (1.79)
Cadmium	1.9 (1.70)
Copper	75 (66.94)
Lead	15 (13.39)
Mercury	0.85 (0.76)
Nickel	21 (18.74)
Selenium	5.0 (4.46)
Zinc	140 (124.96)

- f. Cumulative pollutant loading rates.

Table 4

Biosolids Cumulative Pollutant Loading Rate	
Pollutant	Kg/ha (lbs./ac)
Arsenic	41 (37)
Cadmium	39 (35)
Copper	1500 (1339)
Lead	300 (268)
Mercury	17 (15)
Nickel	420 (375)
Selenium	100 (89)
Zinc	2800 (2499)

6. Best Management Practices. The permittee shall use the following best management practices during land application activities to prevent the discharge of biosolids to waters of the state.
- Biosolids shall not be applied to the land if it is likely to adversely affect a threatened or endangered species listed under § 4 of the Endangered Species Act or its designated critical habitat.
 - Apply biosolids only at the agronomic rate of nitrogen needed (see 5.c. of this section).
 - The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop

nitrogen removal when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kgTN; or 2) When biosolids are land applied at an application rate greater than two dry tons per acre per year.

- i. PAN can be determined as follows:
(Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor¹).
¹ Volatilization factor is 0.7 for surface application and 1 for subsurface application. Alternative volatilization factors and mineralization rates can be utilized on a case-by-case basis.
- ii. Crop nutrient production/removal to be based on crop specific nitrogen needs and realistic yield goals. **NOTE:** There are a number of reference documents on the Missouri Department of Natural Resources website that are informative to implement best management practices in the proper management of biosolids, including crop specific nitrogen needs, realistic yields on a county by county basis and other supporting references.
- iii. Biosolids that are applied at agronomic rates shall not cause the annual pollutant loading rates identified in Table 3 to be exceeded.
- d. Buffer zones are as follows:
 - i. 300 feet of a water supply well, sinkhole, water supply reservoir or water supply intake in a stream;
 - ii. 300 feet of a losing stream, no discharge stream, stream stretches designated for whole body contact recreation, wild and scenic rivers, Ozark National Scenic Riverways or outstanding state resource waters as listed in the Water Quality Standards, 10 CSR 20-7.031;
 - iii. 150 feet of dwellings or public use areas;
 - iv. 100 feet (35 feet if biosolids application is down-gradient or the buffer zone is entirely vegetated) of lake, pond, wetlands or gaining streams (perennial or intermittent);
 - v. 50 feet of a property line. Buffer distances from property lines may be waived with written permission from neighboring property owner.
 - vi. For the application of dry, cake or liquid biosolids that are subsurface injected, buffer zones identified in 5.d.i. through 5.d.iii above, may be reduced to 100 feet. The buffer zone may be reduced to 35 feet if the buffer zone is permanently vegetated. Subsurface injection does not include methods or technology reflective of combination surface/shallow soil incorporation.
- e. Slope limitation for application sites are as follows:
 - i. For slopes less than or equal to 6 percent, no rate limitation;
 - ii. Applied to a slope 7 to 12 percent, the applicator may apply biosolids when soil conservation practices are used to meet the minimum erosion levels;
 - iii. Slopes > 12 percent, apply biosolids only when grass is vegetated and maintained with at least 80 percent ground cover at a rate of two dry tons per acre per year or less.
 - iv. Dry, cake or liquid biosolids that are subsurface injected, may be applied on slopes not to exceed 20 percent. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation.
- f. No biosolids may be land applied in an area that it is reasonably certain that pollutants will be transported into waters of the state.
- g. Biosolids may be land applied to sites with soil that are snow covered, frozen, or saturated with liquid when site restrictions or other controls are provided to prevent pollutants from being discharged to waters of the state during snowmelt or stormwater runoff. During inclement weather or unfavorable soil conditions use the following management practices:
 - i. A maximum field slope of 6% and a minimum 300 feet grass buffer between the application site and waters of the state. A 35 feet grass buffer may be utilized for the application of dry, cake or liquid biosolids that are subsurface injected. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation;
 - ii. A maximum field slope of 2% and 100 feet grass buffer between the application site and waters of the state. A 35 feet grass buffer may be used for the application of dry, cake or liquid biosolids that are subsurface injected. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation;
 - iii. Other best management practices approved by the Department.

SECTION H – SEPTAGE

1. Haulers that land apply septage must obtain a state permit. An operating permit is not required for septage haulers who transport septage to another permitted treatment facility for disposal.
2. Do not apply more than 30,000 gallons of septage per acre per year or the volume otherwise stipulated in the operating permit.
3. Septic tanks are designed to retain sludge for one to three years which will allow for a larger reduction in pathogens and vectors, as compared to mechanical treatment facilities.
4. Septage must comply with Class B biosolids regarding pathogen and vector attraction reduction requirements before it may be applied to crops, pastures or timberland. To meet required pathogen and vector reduction requirements, mix 50 pounds of hydrated lime for every 1,000 gallons of septage and maintain a septage pH of at least 12 pH standard units for 30 minutes or more prior to application.
5. Lime is to be added to the pump truck and not directly to the septic tanks, as lime would harm the beneficial bacteria of the septic tank.
6. As residential septage contains relatively low levels of metals, the testing of metals in septage is not required.

SECTION I– CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical and lagoons) and sludge or biosolids storage and treatment facilities. It does not apply to land application sites.
2. Permittees of a domestic wastewater facility who plan to cease operation must obtain Department approval of a closure plan which addresses proper removal and disposal of all sludges and/or biosolids. Permittee must maintain this permit until the facility is closed in accordance with the approved closure plan per 10 CSR 20 – 6.010 and 10 CSR 20 – 6.015.
3. Biosolids or sludge that are left in place during closure of a lagoon or earthen structure or ash pond shall not exceed the agricultural loading rates as follows:
 - a. Biosolids and sludge shall meet the monitoring and land application limits for agricultural rates as referenced in Section G, above.
 - b. If a wastewater treatment lagoon has been in operation for 15 years or more without sludge removal, the sludge in the lagoon qualifies as a Class B biosolids with respect to pathogens due to anaerobic digestion, and testing for fecal coliform is not required. For other lagoons, testing for fecal coliform is required to show compliance with Class B biosolids limitations. In order to reach Class B biosolids requirements, fecal coliform must be less than 2,000,000 colony forming units or 2,000,000 most probable number. All fecal samples must be presented as geometric mean per gram.
 - c. The allowable nitrogen loading that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. For a grass cover crop, the allowable PAN is 300 pounds/acre. Alternative, site-specific application rates may be included in the closure plan for department consideration.
 - i. PAN can be determined as follows:
$$(\text{Nitrate} + \text{nitrite nitrogen}) + (\text{organic nitrogen} \times 0.2) + (\text{ammonia nitrogen} \times \text{volatilization factor}^1).$$
¹ Volatilization factor is 0.7 for surface application and 1 for subsurface application. Alternative volatilization factors and mineralization rates can be utilized on a case-by-case basis.
4. Domestic wastewater treatment lagoons with a design treatment capacity less than or equal to 150 persons, are “similar treatment works” under the definition of septage. Therefore the sludge within the lagoons may be treated as septage during closure activities. See Section B, above. Under the septage category, residuals may be left in place as follows:
 - a. Testing for metals or fecal coliform is not required.
 - b. If the wastewater treatment lagoon has been in use for less than 15 years, mix lime with the sludge at a rate of 50 pounds of hydrated lime per 1000 gallons (134 cubic feet) of sludge.
 - c. The amount of sludge that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. 100 dry tons/acre of sludge may be left in the basin without testing for nitrogen. If 100 dry tons/acre or more will be left in the lagoon, test for nitrogen and determine the PAN using the calculation above. Allowable PAN loading is 300 pounds/acre.
5. Biosolids or sludge left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, and unless otherwise approved, the lagoon berm shall be demolished, and the site shall be graded and contain $\geq 70\%$ vegetative density over 100% of the site so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion. Alternative biosolids or sludge and soil mixing ratios may be included in the closure plan for department consideration.
6. Lagoon and earthen structure closure activities shall obtain a storm water permit for land disturbance activities that equal or exceed one acre in accordance with 10 CSR 20-6.200.
7. When closing a mechanical wastewater plant, all biosolids or sludge must be cleaned out and disposed of in accordance with the Department approved closure plan before the permit for the facility can be terminated.
 - a. Land must be stabilized which includes any grading, alternate use or fate upon approval by the Department, remediation, or other work that exposes sediment to stormwater per 10 CSR 20-6.200. The site shall be graded and contain $\geq 70\%$ vegetative density over 100% of the site, so as to avoid ponding of storm water and provide adequate

- surface water drainage without creating erosion.
- b. Hazardous Waste shall not be land applied or disposed during mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations pursuant to 10 CSR 25.
 - c. After demolition of the mechanical plant, the site must only contain clean fill defined in Section 260.200.1(6) RSMo as uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the Department for fill, reclamation, or other beneficial use. Other solid wastes must be removed.
8. If biosolids or sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or I, a landfill permit or solid waste disposal permit must be obtained if the permittee chooses to seek authorization for on-site sludge disposal under the Missouri Solid Waste Management Law and regulations per 10 CSR 80, and the permittee must comply with the surface disposal requirements under 40 CFR Part 503, Subpart C.

SECTION J – MONITORING FREQUENCY

1. At a minimum, biosolids or sludge shall be tested for volume and percent total solids on a frequency that will accurately represent sludge quantities produced and disposed. Please see the table below.

TABLE 5

Biosolids or Sludge produced and disposed (Dry Tons per Year)	Monitoring Frequency (See Notes 1, and 2)		
	Metals, Pathogens and Vectors, Total Phosphorus, Total Potassium	Nitrogen TKN, Nitrogen PAN ¹	Priority Pollutants ²
319 or less	1/year	1 per month	1/year
320 to 1650	4/year	1 per month	1/year
1651 to 16,500	6/year	1 per month	1/year
16,501+	12/year	1 per month	1/year

¹ Calculate plant available nitrogen (PAN) when either of the following occurs: 1) when biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.

² Priority pollutants (40 CFR 122.21, Appendix D, Tables II and III) are required only for permit holders that must have a pre-treatment program. Monitoring requirements may be modified and incorporated into the operating permit by the Department on a case-by-case basis.

Note 1: Total solids: A grab sample of sludge shall be tested one per day during land application periods for percent total solids. This data shall be used to calculate the dry tons of sludge applied per acre.

Note 2: Table 5 is not applicable for incineration and permit holders that landfill their sludge.

2. Permittees that operate wastewater treatment lagoons, peak flow equalization basins, combined sewer overflow basins or biosolids or sludge lagoons that are cleaned out once a year or less, may choose to sample only when the biosolids or sludge is removed or the lagoon is closed. Test one composite sample for each 319 dry tons of biosolids or sludge removed from the lagoon during the reporting year or during lagoon closure. Composite sample must represent various areas at one-foot depth.
3. Additional testing may be required in the special conditions or other sections of the permit.
4. Biosolids and sludge monitoring shall be conducted in accordance with federal regulation 40 CFR § 503.8, Sampling and analysis.

SECTION K – RECORD KEEPING AND REPORTING REQUIREMENTS

1. The permittee shall maintain records on file at the facility for at least five years for the items listed in Standard Conditions PART III and any additional items in the Special Conditions section of this permit. This shall include dates when the biosolids or sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.
2. Reporting period
 - a. By February 19th of each year, applicable facilities shall submit an annual report for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and biosolids or sludge disposal facilities.
 - b. Permittees with wastewater treatment lagoons shall submit the above annual report only when biosolids or sludge are removed from the lagoon during the report period or when the lagoon is closed.
3. Report Form. The annual report shall be prepared on report forms provided by the Department or equivalent forms approved by the Department.
4. Reports shall be submitted as follows:
Major facilities, which are those serving 10,000 persons or more or with a design flow equal to or greater than 1 million gallons per day or that are required to have an approved pretreatment program, shall report to both the Department and EPA if the facility land applied, disposed of biosolids by surface disposal, or operated a sewage sludge incinerator. All other facilities shall maintain their biosolids or sludge records and keep them available to Department personnel upon request. State reports shall be submitted to the address listed as follows:

DNR regional or other applicable office listed in the
permit (see cover letter of permit)
ATTN: Sludge Coordinator

Reports to EPA must be electronically submitted online via the Central Data Exchange at: <https://cdx.epa.gov/>. Additional information is available at: <https://www.epa.gov/biosolids/compliance-and-annual-biosolids-reporting>.

5. Annual report contents. The annual report shall include the following:
 - a. Biosolids and sludge testing performed. If testing was conducted at a greater frequency than what is required by the permit, all test results must be included in the report.
 - b. Biosolids or sludge quantity shall be reported as dry tons for the quantity produced and/or disposed.
 - c. Gallons and % solids data used to calculate the dry ton amounts.
 - d. Description of any unusual operating conditions.
 - e. Final disposal method, dates, and location, and person responsible for hauling and disposal.
 - i. This must include the name and address for the hauler and sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name of that facility.
 - ii. Include a description of the type of hauling equipment used and the capacity in tons, gallons, or cubic feet.
 - f. Contract Hauler Activities:

If using a contract hauler, provide a copy of a signed contract from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate biosolids or sludge use permit.
 - g. Land Application Sites:
 - i. Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as a legal description for nearest ¼, ¼, Section, Township, Range, and county, or UTM coordinates. The facility shall report PAN when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
 - ii. If the “Low Metals” criteria are exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative pollutant loading which has been reached at each site.
 - iii. Report the method used for compliance with pathogen and vector attraction requirements.
 - iv. Report soil test results for pH and phosphorus. If no soil was tested during the year, report the last date when tested and the results.

**B2 – APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT
VE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW MORE THAN
GALLONS PER DAY**

PERMIT NO.
MO-0021768

COUNTY
Dent

APPLICATION OVERVIEW

Form B2 has been developed in a modular format and consists of Parts A, B and C and a Supplemental Application Information (Parts D, E, F and G) packet. All applicants must complete Parts A, B and C. Some applicants must also complete parts of the Supplemental Application Information packet. The following items explain which parts of Form B2 you must complete. Submittal of an incomplete application may result in the application being returned.

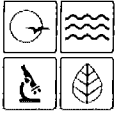
BASIC APPLICATION INFORMATION

- A. Basic application information for all applicants. All applicants must complete Part A.
- B. Additional application information for all applicants. All applicants must complete Part B.
- C. Certification. All applicants must complete Part C.

SUPPLEMENTAL APPLICATION INFORMATION

- D. Expanded Effluent Testing Data. A treatment works that discharges effluent to surface water of the United States and meets one or more of the following criteria must complete *Part D - Expanded Effluent Testing Data*:
 - 1. Has a design flow rate greater than or equal to 1 million gallons per day.
 - 2. Is required to have or currently has a pretreatment program.
 - 3. Is otherwise required by the permitting authority to provide the information.
- E. Toxicity Testing Data. A treatment works that meets one or more of the following criteria must complete *Part E - Toxicity Testing Data*:
 - 1. Has a design flow rate greater than or equal to 1 million gallons per day.
 - 2. Is required to have or currently has a pretreatment program.
 - 3. Is otherwise required by the permitting authority to provide the information.
- F. Industrial User Discharges and Resource Conservation and Recovery Act / Comprehensive Environmental Response, Compensation and Liability Act Wastes. A treatment works that accepts process wastewater from any significant industrial users, also known as SIUs, or receives a Resource Conservation and Recovery Act or CERCLA wastes must complete *Part F - Industrial User Discharges and Resource Conservation and Recovery Act /CERCLA Wastes*.
SIUs are defined as:
 - 1. All Categorical Industrial Users, or CIUs, subject to Categorical Pretreatment Standards under 40 Code of Federal Regulations 403.6 and 40 Code of Federal Regulations 403.6 and 40 CFR Chapter 1, Subchapter N.
 - 2. Any other industrial user that meets one or more of the following:
 - i. Discharges an average of 25,000 gallons per day or more of process wastewater to the treatment works (with certain exclusions).
 - ii. Contributes a process waste stream that makes up five percent or more of the average dry weather hydraulic or organic capacity of the treatment plant.
 - iii. Is designated as an SIU by the control authority.
 - iv. Is otherwise required by the permitting authority to provide the information.
- G. Combined Sewer Systems. A treatment works that has a combined sewer system must complete *Part G - Combined Sewer Systems*.

ALL APPLICANTS MUST COMPLETE PARTS A, B and C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

**FORM B2 – APPLICATION FOR AN OPERATING PERMIT FOR
FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND
HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS PER DAY**

FOR AGENCY USE ON.

CHECK NUMBER

DATE RECEIVED

FEE SUBMITTED

PART A – BASIC APPLICATION INFORMATION

1. THIS APPLICATION IS FOR:

- ☐ An operating permit for a new or unpermitted facility. Construction Permit # _____
(Include completed Antidegradation Review or request to conduct an Antidegradation Review, see instructions)
- ☐ An operating permit renewal: Permit #MO-_____ Expiration Date _____
- ☒ An operating permit modification: Permit #MO-0021768 Reason: Construction of UV Disinfection Process

1.1 Is the appropriate fee included with the application (see instructions for appropriate fee)? ☐ YES ☐ NO

2. FACILITY

NAME Salem WWTF		TELEPHONE NUMBER WITH AREA CODE 573-729-6308	
ADDRESS (PHYSICAL) Highway 19 North	CITY Salem	STATE MO	ZIP CODE 65560

2.1 LEGAL DESCRIPTION (Facility Site): ¼, SE ¼, SE ¼, Sec. 12, T 34, R 06W COUNTY
Dent

2.2 UTM Coordinates Easting (X): 628900 Northing (Y): 4168474
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

2.3 Name of receiving stream: Spring Creek

2.4 Number of Outfalls: 2 wastewater outfalls, 0 stormwater outfalls, 0 instream monitoring sites

3. OWNER

NAME City of Salem		EMAIL ADDRESS administration@salem-mo.com		TELEPHONE NUMBER WITH AREA CODE 573-729-4811	
ADDRESS 410 N. Iron Street	CITY Salem	STATE MO	ZIP CODE 65560		

3.1 Request review of draft permit prior to Public Notice? ☒ YES ☐ NO

3.2 Are you a Publically Owned Treatment Works (POTW)? ☒ YES ☐ NO
If yes, is the Financial Questionnaire attached? ☐ YES ☐ NO

3.3 Are you a Privately Owned Treatment Facility? ☐ YES ☒ NO

3.4 Are you a Privately Owned Treatment Facility regulated by the Public Service Commission (PSC)? ☐ YES ☒ NO

4. CONTINUING AUTHORITY: Permanent organization which will serve as the continuing authority for the operation, maintenance and modernization of the facility.

NAME City of Salem		EMAIL ADDRESS administration@salem-mo.com		TELEPHONE NUMBER WITH AREA CODE 573-729-4811	
ADDRESS 410 N. Iron Street	CITY Salem	STATE MO	ZIP CODE 65560		

If the Continuing Authority is different than the Owner, include a copy of the contract agreement between the two parties and a description of the responsibilities of both parties within the agreement.

5. OPERATOR

NAME Bill Lunn		TITLE Operator		CERTIFICATE NUMBER (IF APPLICABLE) 7028	
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE 573-729-5371			

6. FACILITY CONTACT

NAME Jack Emory		TITLE Water and Sewer Superintendant			
EMAIL ADDRESS water@salem-mo.com		TELEPHONE NUMBER WITH AREA CODE 573-729-5371			
ADDRESS 400 N. Iron Street	CITY Salem	STATE MO	ZIP CODE 65560		

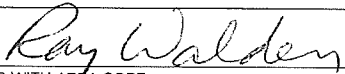

FACILITY NAME Salem WWTF	PERMIT NO. MO- 0021768	OUTFALL NO. 001
PART A – BASIC APPLICATION INFORMATION		
7. FACILITY INFORMATION		
<p>7.1 Process Flow Diagram or Schematic. Provide a diagram showing the processes of the treatment plant. Show all of the treatment units, including disinfection (e.g. – Chlorination and Dechlorination), influents, and outfalls. Specify where samples are taken. Indicate any treatment process changes in the routing of wastewater during dry weather and peak wet weather. Include a brief narrative description of the diagram. Attach sheets as necessary.</p> <p>See Attached Flow Diagram.</p> <p>Headworks facility shall be incorporated as a Phase 1B improvement, as will other hydraulic improvements, such as the replacement of the secondary clarifier flow splitter.</p> <p>Intermediate pump station and UV Disinfection process shall be incorporated as Phase 1A improvement, necessary to meet the current Schedule of Compliance contained within the facility's Missouri State Operating Permit.</p> <p>Influent sampling shall occur at the headworks facility, upstream of the screens.</p> <p>Effluent sampling shall occur at the UV Disinfection Process, immediately downstream of the effluent weir.</p> <p>Flow measurement for Outfall #001 occurs at the Flow Meter Structure downstream of the existing secondary clarifiers.</p> <p>Flow measurement of Outfall #002 occurs at the Flow Meter Structure downstream of the Peak Flow Storage Basin.</p>		

FACILITY NAME Salem WWTF	PERMIT NO. MO-0021768	OUTFALL NO. 001
PART A – BASIC APPLICATION INFORMATION		
7. FACILITY INFORMATION (continued)		
7.2 Topographic Map. Attach to this application a topographic map of the area extending at least one mile beyond facility property boundaries. This map must show the outline of the facility and the following information. <ul style="list-style-type: none"> a. The area surrounding the treatment plant, including all unit processes. b. The location of the downstream landowner(s). (See Item 10.) c. The major pipes or other structures through which wastewater enters the treatment works and the pipes or other structures through which treated wastewater is discharged from the treatment plant. Include outfalls from bypass piping, if applicable. d. The actual point of discharge. e. Wells, springs, other surface water bodies and drinking water wells that are: 1) within ¼ mile of the property boundaries of the treatment works, and 2) listed in public record or otherwise known to the applicant. f. Any areas where the sewage sludge produced by the treatment works is stored, treated, or disposed. g. If the treatment works receives waste that is classified as hazardous under the Resource Conservation and Recovery Act (RCRA) by truck, rail, or special pipe, show on the map where that hazardous waste enters the treatment works and where it is treated, stored, or disposed. 		
7.3	Facility SIC Code: <u>4952</u>	Discharge SIC Code: <u>4952</u>
7.4	Number of people presently connected or population equivalent (P.E.): <u>4924</u> Design P.E. <u>7410</u>	
7.5	Connections to the facility: Number of units presently connected: Homes _____ Trailers _____ Apartments _____ Other (including industrial) _____ Number of Commercial Establishments: _____	
7.6	Design Flow 0.741 mgd	Actual Flow 0.826 mgd
7.7	Will discharge be continuous through the year? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Discharge will occur during the following months: How many days of the week will discharge occur?	
7.8	Is industrial wastewater discharged to the facility? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, describe the number and types of industries that discharge to your facility. Attach sheets as necessary Refer to the APPLICATION OVERVIEW to determine whether additional information is needed for Part F.	
7.9	Does the facility accept or process leachate from landfills?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
7.10	Is wastewater land applied? If yes, is Form I attached?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>
7.11	Does the facility discharge to a losing stream or sinkhole?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
7.12	Has a wasteload allocation study been completed for this facility?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
8. LABORATORY CONTROL INFORMATION		
LABORATORY WORK CONDUCTED BY PLANT PERSONNEL		
Lab work conducted outside of plant. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Push-button or visual methods for simple test such as pH, settleable solids. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Additional procedures such as Dissolved Oxygen, Chemical Oxygen Demand, Biological Oxygen Demand, titrations, solids, volatile content. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc. Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph. Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

FACILITY NAME Salem WWTF	PERMIT NO. MO- 0021768	OUTFALL NO. 001
PART A – BASIC APPLICATION INFORMATION		
9. SLUDGE HANDLING, USE AND DISPOSAL		
9.1 Is the sludge a hazardous waste as defined by 10 CSR 25? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
9.2 Sludge production (Including sludge received from others): Design Dry Tons/Year 155 Actual Dry Tons/Year		
9.3 Sludge storage provided: _____ Cubic feet; <u>2555</u> Days of storage; <u>35.9</u> Average percent solids of sludge; <input type="checkbox"/> No sludge storage is provided. <input type="checkbox"/> Sludge is stored in lagoon.		
9.4 Type of storage: <input type="checkbox"/> Holding Tank <input type="checkbox"/> Building <input type="checkbox"/> Basin <input type="checkbox"/> Lagoon <input type="checkbox"/> Concrete Pad <input checked="" type="checkbox"/> Other (Describe) <u>sludge reed bed</u>		
9.5 Sludge Treatment: <input type="checkbox"/> Anaerobic Digester <input type="checkbox"/> Storage Tank <input type="checkbox"/> Lime Stabilization <input type="checkbox"/> Lagoon <input checked="" type="checkbox"/> Aerobic Digester <input type="checkbox"/> Air or Heat Drying <input type="checkbox"/> Composting <input type="checkbox"/> Other (Attach Description)		
9.6 Sludge use or disposal: <input checked="" type="checkbox"/> Land Application <input type="checkbox"/> Contract Hauler <input type="checkbox"/> Hauled to Another Treatment Facility <input type="checkbox"/> Solid Waste Landfill <input type="checkbox"/> Surface Disposal (Sludge Disposal Lagoon, Sludge Held For More Than Two Years) <input type="checkbox"/> Incineration <input type="checkbox"/> Other (Attach Explanation Sheet) _____		
9.7 Person responsible for hauling sludge to disposal facility: <input checked="" type="checkbox"/> By Applicant <input type="checkbox"/> By Others (complete below)		
NAME		EMAIL ADDRESS
ADDRESS	CITY	STATE ZIP CODE
CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE	PERMIT NO. MO-
9.8 Sludge use or disposal facility: <input checked="" type="checkbox"/> By Applicant <input type="checkbox"/> By Others (Complete below)		
NAME		EMAIL ADDRESS
ADDRESS	CITY	STATE ZIP CODE
CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE	PERMIT NO. MO-
9.9 Does the sludge or biosolids disposal comply with Federal Sludge Regulation 40 CFR 503? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Explain)		
END OF PART A		

FACILITY NAME	PERMIT NO. MO-	OUTFALL NO.
PART B – ADDITIONAL APPLICATION INFORMATION		
10. COLLECTION SYSTEM		
10.1 Length of sanitary sewer collection system in miles <u>44.2</u>		
10.2 Does significant infiltration occur in the collection system? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, briefly explain any steps underway or planned to minimize inflow and infiltration: Owner is currently working to reduce I/I in conformance with a Bypass Elimination Plan developed in accordance with the Voluntary Compliance Agreement entered into with the MDNR for the elimination of discharges from Outfall #002. Proposed Phase 1 improvements (Phase 1A and 1B) include \$400,000 for the continued rehabilitation of the existing collection system infrastructure.		
11. BYPASSING		
Does any bypassing occur anywhere in the collection system or at the treatment facility? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, explain: Flows in excess of the secondary treatment process capacity are split from the influent flow and sent to a Peak Flow Storage Structure, until such a time that influent flows recede and stored flow can be directed back through the secondary treatment process for treatment. Flow volumes in excess of the storage basin capacity are discharge at outfall #002.		
12. OPERATION AND MAINTENANCE PERFORMED BY CONTRACTOR(S)		
Are any operational or maintenance aspects (related to wastewater treatment and effluent quality) of the treatment works the responsibility of the contractor? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If Yes, list the name, address, telephone number and status of each contractor and describe the contractor's responsibilities. (Attach additional pages if necessary.)		
NAME		
MAILING ADDRESS		
TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS	
RESPONSIBILITIES OF CONTRACTOR		
13. SCHEDULED IMPROVEMENTS AND SCHEDULES OF IMPLEMENTATION		
Provide information about any uncompleted implementation schedule or uncompleted plans for improvements that will affect the wastewater treatment, effluent quality, or design capacity of the treatment works. If the treatment works has several different implementation schedules or is planning several improvements, submit separate responses for each. Phase 1 (Phase 1A and 1B) shall be completed within the next year to accommodate the Schedule of Compliance contained within the currently effective Missouri State Operating permit and to address hydraulic and maintenances issues. A Total Maximum Daily Load (TMDL) study was performed for the receiving stream. The Owner is currently negotiating the effluent limits proposed by the TMDL with the MDNR and EPA. Once an agreement on the effluent limits has be reached, future phases of improvements shall be undertaken to address any changes to the secondary treatment processes and addition of tertiary treatment processes within the scope of an agreed upon implementation schedule.		

FACILITY NAME Salem WWTF		PERMIT NO. MO-0021768		OUTFALL NO. 001			
PART B – ADDITIONAL APPLICATION INFORMATION							
14. EFFLUENT TESTING DATA							
Applicants must provide effluent testing data for the following parameters. Provide the indicated effluent data for each outfall through which effluent is discharged . Do not include information of combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three samples and must be no more than four and one-half years apart.							
Outfall Number							
PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE				
	Value	Units	Value	Units	Number of Samples		
pH (Minimum)	6.3	S.U.	7.4	S.U.	2193		
pH (Maximum)	8.1	S.U.	7.4	S.U.	2193		
Flow Rate	1.845	MGD	0.826	MGD	746		
*For pH report a minimum and a maximum daily value							
POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML/MDL
	Conc.	Units	Conc.	Units	Number of Samples		
Conventional and Nonconventional Compounds							
BIOCHEMICAL OXYGEN DEMAND (Report One)	BOD ₅	17.7	mg/L	307	mg/L	220	20/--
	CBOD ₅	--	mg/L	--	mg/L	--	--
E. COLI	>2419.6	#/100 mL	>2419.6	#/100 mL	87		--/--
TOTAL SUSPENDED SOLIDS (TSS)	24	mg/L	4.9	mg/L	286		30/--
AMMONIA (as N)	0.14	mg/L	2.23	mg/L	158		1.5/6.8
CHLORINE* (TOTAL RESIDUAL, TRC)	--	mg/L	--	mg/L	--	--	--
DISSOLVED OXYGEN	7.28	mg/L	4.42	mg/L	352		--/--
OIL and GREASE	<5	mg/L	<5	mg/L	103		15/10
OTHER	--	mg/L	--	mg/L	--	--	--
*Report only if facility chlorinates							
END OF PART B							

FACILITY NAME Salem WWTF	PERMIT NO. MO- 0021768	OUTFALL NO. 001
PART C – CERTIFICATION		
15. ELECTRONIC DISCHARGE MONITORING REPORT (eDMR) SUBMISSION SYSTEM		
<p>Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent limits and monitoring shall be submitted by the permittee via an electronic system to ensure timely, complete, accurate, and nationally-consistent set of data. One of the following must be checked in order for this application to be considered complete. Please visit http://dnr.mo.gov/env/wpp/edmr.htm to access the Facility Participation Package.</p> <p><input type="checkbox"/> - You have completed and submitted with this permit application the required documentation to participate in the eDMR system.</p> <p><input checked="" type="checkbox"/> - You have previously submitted the required documentation to participate in the eDMR system and/or you are currently using the eDMR system.</p> <p><input type="checkbox"/> - You have submitted a written request for a waiver from electronic reporting. See instructions for further information regarding waivers.</p>		
16. CERTIFICATION		
<p>All applicants must complete the Certification Section. This certification must be signed by an officer of the company or city official. All applicants must complete all applicable sections as explained in the Application Overview. By signing this certification statement, applicants confirm that they have reviewed the entire form and have completed all sections that apply to the facility for which this application is submitted.</p>		
ALL APPLICANTS MUST COMPLETE THE FOLLOWING CERTIFICATION.		
<p>I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.</p>		
PRINTED NAME Ray Walden	OFFICIAL TITLE (MUST BE AN OFFICER OF THE COMPANY OR CITY OFFICIAL) City Administrator	
SIGNATURE 		
TELEPHONE NUMBER WITH AREA CODE 573-729-4811		
DATE SIGNED 03-16-18		
<p>Upon request of the permitting authority, you must submit any other information necessary to assess wastewater treatment practices at the treatment works or identify appropriate permitting requirements.</p>		
<p>Send Completed Form to:</p> <p style="text-align: center;">Department of Natural Resources Water Protection Program ATTN: NPDES Permits and Engineering Section P.O. Box 176 Jefferson City, MO 65102-0176</p>		
END OF PART C		
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH PARTS OF FORM B2 YOU MUST COMPLETE.		
<p>Do not complete the remainder of this application, unless at least one of the following statements applies to your facility:</p> <ol style="list-style-type: none"> 1. Your facility design flow is equal to or greater than 1,000,000 gallons per day. 2. Your facility is a pretreatment treatment works. 3. Your facility is a combined sewer system. 		
<p>Submittal of an incomplete application may result in the application being returned. Permit fees for returned applications shall be forfeited. Permit fees for applications being processed by the department that are withdrawn by the applicant shall be forfeited.</p>		