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 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0026301
Owner:	City of Cabool
Address:	P.O. Box 710, 618 Main Street, Cabool, MO 65689
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Cabool Wastewater Treatment Facility
Facility Address:	East of Main Street and Walnut Street, Cabool, MO 65689
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.

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

Permitted Features #001 - #004 – POTW – SIC #4952

The use or operation of this facility shall be by or under the supervision of a Certified C Operator. The facility consists of a multiple cell lagoon system with the ability to discharge directly to surface waters through Outfall #002. This facility can also divert effluent flow from Outfall #002 and discharge to subsurface waters by sending flow to eighteen (18) individual infiltration basins. For more information on these permitted features and their locations, please see Page 2.

This permit authorizes only wastewater and stormwater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 621.250 RSMo, Section 640.013 RSMo and Section 644.051.6 of the Law.

November 1, 2017
Effective Date

Edward B. Galbraith, Director, Division of Environmental Quality

December 31, 2021
Expiration Date

Chris Wieberg, Director, Water Protection Program

FACILITY DESCRIPTION:

Permitted Feature #001 – Monitoring Well
This location represents a monitoring well located towards the northeast end of the infiltration basins and collects subsurface water samples.

Legal Description:	NE ¼, SW ¼, Sec. 06, T28N, R10W, Texas County
UTM Coordinates:	X= 581683, Y= 4110180
Receiving Stream:	Big Piney River (P)
First Classified Stream and ID:	Big Piney River (P) (1578) 303(d) List
USGS Basin & Sub-watershed No.:	(10290202-0101)

Outfall #002 – Lagoon Discharge

This outfall discharges effluent directly to surface waters from the lagoon system.

Two-cell aerated lagoon / three-cell storage lagoon / sludge is retained in the lagoon/ no exposure to industrial activities and materials to stormwater.
Design population equivalent is 8,000.
Design flow is 0.8 MGD.
Actual flow is 1.1 MGD.
Design sludge production is 97 dry tons/year.

Legal Description:	SE ¼, NE ¼, Sec. 12, T28N, R11W, Texas County
UTM Coordinates:	X= 580726, Y= 4108804
Receiving Stream:	Big Piney River (P)
First Classified Stream and ID:	Big Piney River (P) (1578) 303(d) List
USGS Basin & Sub-watershed No.:	(10290202-0101)

Outfall #003 - Removed
This outfall has been removed from the permit as the discharge is technically an overflow discharge in the Outfall #002 structure and does not discharge in a different location.

Permitted Feature #004 – Infiltration Basin Sampling Location

This is a sampling location between the lagoon system and the infiltration basins. The infiltration basins have a combined total holding capacity of just over 4.3 million gallons. Please see Appendix – Facility Layout for more information on the individual capacities of each infiltration basin.

Legal Description:	SE ¼, NE ¼, Sec. 12, T28N, R11W, Texas County
UTM Coordinates:	X= 580731, Y= 4108823
Receiving Stream:	Big Piney River (P)
First Classified Stream and ID:	Big Piney River (P) (1578) 303(d) List
USGS Basin & Sub-watershed No.:	(10290202-0101)

OUTFALL #002 – LAGOON DISCHARGE	**TABLE A-1. INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective on **November 1, 2017** and remain in effect through **December 31, 2023**. 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
Flow	MGD	*		*	once/day	24 hr. total
Biochemical Oxygen Demand$_5$	mg/L		65	45	once/month	grab
Total Suspended Solids	mg/L		110	70	once/month	grab
Ammonia as N	mg/L	12		12	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2017. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
E. coli (Note 1, Page 5)	#/100mL		*	*	once/quarter**	grab
Oil & Grease	mg/L	15		10	once/quarter**	grab
Total Nitrogen	mg/L	*		*	once/quarter**	grab
Total Phosphorus	mg/L	*		*	once/quarter**	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2018.						
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units ***	SU	6.0			once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2017.						
EFFLUENT PARAMETER(S)		UNITS	MONTHLY AVERAGE MINIMUM		MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand$_5$ – Percent Removal (Note 2, Page 5)		%	65		once/month	calculated
Total Suspended Solids – Percent Removal (Note 2, Page 5)		%	65		once/month	calculated
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2017.						

* Monitoring requirement only.
** See table on Page 5 for quarterly sampling requirements.
*** pH is measured in pH units and is not to be averaged.

OUTFALL #002 – LAGOON DISCHARGE	**TABLE A-2. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on **January 1, 2024**. 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
Flow	MGD	*		*	once/day	24 hr. total
Biochemical Oxygen Demand$_5$	mg/L		65	45	once/week	grab
Total Suspended Solids	mg/L		110	70	once/week	grab
Ammonia as N (Apr 1 – Sep 30) (Oct 1 – Mar 31)	mg/L	4.4 9.0		1.7 3.5	once/week	grab
E. coli (Note 1, Page 5)	#/100mL		630	126	once/week	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE FEBRUARY 28, 2024. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Oil & Grease	mg/L	15		10	once/quarter**	grab
Total Nitrogen	mg/L	*		*	once/quarter**	grab
Total Phosphorus	mg/L	*		*	once/quarter**	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE APRIL 28, 2024.						

EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units ***	SU	6.0			once/week	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE FEBRUARY 28, 2024.						

EFFLUENT PARAMETER(S)	UNITS	MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand$_5$ – Percent Removal (Note 2, Page 5)	%	65	once/month	calculated
Total Suspended Solids – Percent Removal (Note 2, Page 5)	%	65	once/month	calculated
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE FEBRUARY 28, 2024.				

* Monitoring requirement only.
** See table on Page 5 for quarterly sampling requirements.
*** pH is measured in pH units and is not to be averaged.

The table below lists minimum sampling requirements for quarterly parameters listed in Table A-1:

Interim Quarterly Minimum Sampling Requirements in Table A-1				
Quarter	**Months**	***E. coli***	**Oil & Grease, Total Nitrogen, and Total Phosphorus**	**Report is Due**
First	January, February, March	Not required to sample.	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	October 28th
Fourth	**October**	**Sample once during <u>October</u>**	Sample at least once during any month of the quarter	January 28th
	November & December	Not required to sample.		

The table below lists minimum sampling requirements for quarterly parameters listed in Table A-2. Note that *E. coli* is not listed in this table as final effluent limitations for *E. coli* listed in Table A-2 require weekly monitoring during the recreational season.

Final Quarterly Minimum Sampling Requirements in Table A-2			
Quarter	**Months**	**Oil & Grease, Total Nitrogen, and Total Phosphorus**	**Report is Due**
First	January, February, March	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	October 28th
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28th

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 is not required when the facility does not discharge effluent during the reporting period from Outfall #002. Samples are to be collected prior to any treatment process. Percent removal is calculated by the following formula: [(Influent – Effluent) / Influent] x 100% = Percent Removal. The Monthly Average Minimum Percent removal is to be reported as the average of all daily calculated removal efficiencies. Influent samples are to be collected as a grab sample.

OUTFALL #002 – LAGOON DISCHARGE	**TABLE A-3. WHOLE EFFLUENT TOXICITY FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**					
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on **<u>November 1, 2017</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	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Acute Whole Effluent Toxicity (Note 3)	TU_a	*			once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u>; THE FIRST REPORT IS DUE <u>JUNE 28, 2018</u>.						

* Monitoring requirement only.

Note 3 – See Special Condition #4 for additional requirements.

PERMITTED FEATURE #004 – INFILTRATION BASIN SAMPLING LOCATION	TABLE A-4. INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective on **November 1, 2017** and remain in effect through **December 31, 2023**. 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
Flow	MGD	*		*	once/day	24 hr. total
Nitrate as N	mg/L	*		*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2017.						
E. coli (Note 4)	#/100mL	*		*	once/quarter**	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2018.						

* Monitoring requirement only.
** See table below for quarterly sampling requirements.

Interim Quarterly Minimum Sampling Requirements listed in Table A-4			
Quarter	**Months**	***E. coli***	**Report is Due**
First	January, February, March	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	October 28th
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28th

PERMITTED FEATURE #004 – INFILTRATION BASIN SAMPLING LOCATION	TABLE A-5. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on **January 1, 2024**. 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
Flow	MGD	*		*	once/day	24 hr. total
Nitrate as N	mg/L	*		*	once/month	grab
E. coli (Note 4)	#/100mL	126		*	once/week	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE FEBRUARY 28, 2024.						

* Monitoring requirement only.

Note 4 – Final effluent limitations of 126 #/100 mL as a daily maximum and monitoring only as a monthly average for *E. coli* are applicable year round as this is a direct discharge to subsurface waters. No more than 10% of samples over the course of a calendar year shall exceed the 126 #/100 mL daily maximum.

PERMITTED FEATURE #001 – MONITORING WELL	TABLE A-6. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on **November 1, 2017** 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	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Nitrate as N	mg/L	*		*	once/month	grab

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2017.

* Monitoring requirement only.

B. SCHEDULE OF COMPLIANCE

Outfall #002 (Ammonia and *E. coli*) and Permitted Feature #004 (*E. coli*)

The permit for this facility issued on January 1, 2016 included a five (5) year schedule of compliance for the facility to meet final effluent limitations for ammonia and *E. coli* at Outfall #002. The adequacy of this schedule of compliance was reviewed for the purposes of this renewal. Additionally, the permit writer has also included a schedule of compliance to meet final effluent limitations for *E. coli* at Permitted Feature #004, which is a sampling location prior to the wastewater being sent to the infiltration basins. As the permit writer anticipates that any disinfection treatment which may be installed would have the capability to treat effluent which is discharged from Outfall #002 or sent to the infiltration basins. Therefore, the permit writer has determined that establishing the same compliance dates for both Outfall #002 and Permitted Feature #004 is appropriate. Compliance with final effluent limitations at Outfall #002 and Permitted Feature #004 must be achieved by **January 1, 2024**. Additionally, the previous permit included a five (5) year schedule of compliance to evaluate the collection system, which has been removed from the permit. However, the city is currently undergoing efforts to identify and eliminate sources of inflow and infiltration into the collection system, which the permit writer has considered when establishing the schedule of compliance included in this permit. Please see the Cost Analysis for Compliance for more information.

1. The permittee shall submit interim progress reports detailing progress made in attaining compliance with the final effluent limits by January 1, 2018 and every 12 months thereafter.

2. Compliance with final effluent limitations at Outfall #002 and Permitted Feature #004 must be achieved by **January 1, 2024**.

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

C. 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 March 1, 2015, and hereby incorporated as though fully set forth herein.

D. SPECIAL CONDITIONS

1. Electronic Discharge Monitoring Report (eDMR) Submission System.
   (a) Discharge Monitoring Reporting Requirements. The permittee must electronically submit compliance monitoring data via the eDMR system. In regards to Standard Conditions Part I, Section B, #7, the eDMR system is currently the only Department approved reporting method for this permit.
   (b) Programmatic Reporting Requirements. The following reports (if required by this permit) must be electronically submitted as an attachment to the eDMR system until such a time when the current or a new system is available to allow direct input of the data:
      (1) Collection System Maintenance Annual Reports;
      (2) Schedule of Compliance Progress Reports;
      (3) Sludge/Biosolids Annual Reports;
      (4) Significant Industrial Users Compliance Reports (in municipalities without approved pretreatment programs); and
      (5) Any additional report required by the permit excluding bypass reporting.

      After such a system has been made available by the Department, required data shall be directly input into the system by the next report due date.
   (c) Other actions. The following shall be submitted electronically after such a system has been made available by the Department:
      (1) Notices of Termination (NOTs);
      (2) No Exposure Certifications (NOEs);
      (3) Bypass reporting, See Special Condition #3 for 24-hr. bypass reporting requirements.
   (d) Electronic Submissions. To access the eDMR system, use the following link in your web browser: https://edmr.dnr.mo.gov/edmr/E2/Shared/Pages/Main/Login.aspx.
   (e) 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: http://dnr.mo.gov/forms/780-2692-f.pdf. The Department will either approve or deny this electronic reporting waiver request within 120 calendar days. Only permittees with an approved waiver request may submit monitoring data and reports on paper to the Department for the period that the approved electronic reporting waiver is effective.

2. The permittee shall develop and implement a program for maintenance and repair of the collection system. The recommended guidance is the US EPA's Guide For Evaluating Capacity, Management, Operation, And Maintenance (CMOM) Programs At Sanitary Sewer Collection Systems (Document number EPA 305-B-05-002) or the Departments' CMOM Model located at http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc. For additional information regarding the Departments' CMOM Model, see the CMOM Plan Model Guidance document at http://dnr.mo.gov/pubs/pub2574.htm.

   The permittee shall also submit a report to the Southeast Regional Office via the Electronic Discharge Monitoring Report (eDMR) Submission System annually, by January 28th, for the previous calendar year. The report shall contain a summary of the efforts to locate and eliminate sources of excessive infiltration and inflow into the collection system serving the facility for the previous year, the general maintenance and repairs to the collection system serving the facility for the previous year, and any planned maintenance and repairs to the collection system serving the facility for the upcoming calendar year including locations (GPS, 911 address, manhole number, etc.) and actions to be taken. This includes estimated miles of sewer evaluated during the calendar year, location of each identified source of I&I, and estimated schedules for repairs or corrective action for each identified I&I source.

3. 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.b. 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: http://dnr.mo.gov/modnrcag/ or the Environmental Emergency Response hotline 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.

D. SPECIAL CONDITIONS (continued)

4. Outfall #002 – Acute Whole Effluent Toxicity (WET) tests. Acute WET tests at Outfall #002 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:
      - The fathead minnow, *Pimephales promelas* (Acute Toxicity EPA Test Method 2000.0).
      - 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 Allowable Effluent Concentration (AEC) for this facility is 100% with the dilution series being: 100%, 50%, 25%, 12.5%, and 6.25%.
   (e) All chemical and physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% effluent concentration.
   (f) 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.

5. 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 §644.051.16, 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 pursuant to 40 CFR 403.8(a).

6. All outfalls must be clearly marked in the field.

7. Permittee will cease discharge by connection to a facility with an area-wide management plan per 10 CSR 20-6.010(3)(B) within 90 days of notice of its availability.

8. Report as no-discharge when a discharge does not occur during the report period.

9. Changes in existing pollutants or the addition of new pollutants to the treatment facility

   The permittee must provide adequate notice to the Director of the following:
   (a) 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 those pollutants; and
   (b) Any substantial change in 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.
   (c) For purposes of this paragraph, adequate notice shall include information on;
      (1) the quality and quantity of effluent introduced into the POTW, and
      (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

D. SPECIAL CONDITIONS (continued)

10. 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) The permittee shall not report a sample result as "Non-Detect" without also reporting the detection limit of the test. Reporting as "Non Detect" without also including the detection limit will be considered failure to report, which is a violation of this permit.
    (c) The permittee shall provide the "Non-Detect" sample result using the less than sign and the minimum detection limit (e.g. <10).
    (d) Where the permit contains a Minimum 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.
    (e) See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.
    (f) When calculating monthly averages, one-half of the method detection limit (MDL) should be used instead of a zero. Where all data are below the MDL, the "<MDL" shall be reported as indicated in item (c).

11. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).

12. The permittee shall comply with any applicable requirements listed in 10 CSR 20-9, unless the facility has received written notification that the Department has approved a modification to the requirements. The monitoring frequencies contained in this permit shall not be construed by the permittee as a modification of the monitoring frequencies listed in 10 CSR 20-9. If a modification of the monitoring frequencies listed in 10 CSR 20-9 is needed, the permittee shall submit a written request to the Department for review and, if deemed necessary, approval.

13. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.

14. At least one gate must be provided to access the wastewater treatment facility and provide for maintenance and mowing. The gate shall remain closed except when temporarily opened by; the permittee to access the facility, perform operational monitoring, sampling, maintenance, mowing, or for inspections by the Department. The gate shall be closed and locked when the facility is not staffed.

15. At least one (1) warning sign shall be placed on each side of the facility enclosure in such positions as to be clearly visible from all directions of approach. There shall also be one (1) sign placed for every five hundred feet (500') (150 m) of the perimeter fence. A sign shall also be placed on each gate. Minimum wording shall be SEWAGE TREATMENT FACILITY—KEEP OUT. Signs shall be made of durable materials with characters at least two inches (2") high and shall be securely fastened to the fence, equipment or other suitable locations.

16. 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.

17. An all-weather access road shall be provided to the treatment facility.

18. The discharge from the wastewater treatment facility shall be conveyed to the receiving stream via a closed pipe or a paved or rip-rapped open channel. Sheet or meandering drainage is not acceptable. The outfall sewer shall be protected against the effects of floodwater, ice or other hazards as to reasonably insure its structural stability and freedom from stoppage. The outfall shall be maintained so 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.

19. A minimum of two (2) feet freeboard must be maintained in each lagoon cell. A lagoon level gauge, which clearly marks the minimum freeboard level, shall be provided in each lagoon cell.

20. The berms of the lagoons shall be mowed and kept free of any deep-rooted vegetation, animal dens, or other potential sources of damage to the berms.

21. The facility shall ensure that adequate provisions are provided to prevent surface water intrusion into the lagoon and to divert stormwater runoff around the lagoon and protect embankments from erosion.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET
FOR THE PURPOSE OF RENEWAL
OF
MO-0026301
CABOOL WASTEWATER TREATMENT FACILITY

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollution 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)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.

This Factsheet is for a Major.

Part I – Facility Information

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?
☒ - No.

Application Date: 07/01/16
Expiration Date: 12/31/16

Facility Description: Facility Type – POTW – SIC #4952
The facility consists of a multiple cell lagoon system with the ability to discharge directly to surface waters through Outfall #002. This facility can also divert effluent flow from Outfall #002 and discharge to subsurface waters by sending flow to eighteen (18) individual infiltration basins.

PERMITTED FEATURES TABLE:

PERMITTED FEATURE	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
Permitted Feature #001	This location represents a monitoring well located towards the northeast end of the infiltration basins and collects subsurface water samples.		
Outfall #002	1.24	Equivalent to Secondary	Domestic
Outfall #003	Removed / Combined with Outfall #002.		
Permitted Feature #004	This is a sampling location between the lagoon system and the infiltration basins.		

Facility Performance History:
This facility was last inspected on April 30, 2015. The conditions of the facility at the time of inspection were found to be satisfactory.

Permit Comments:
Special conditions were updated to include the addition of requirements to submit to the department via the Electronic Discharge Monitoring Report (eDMR) Submission System and the removal of SWPPP requirements.

Expanded Effluent Testing. For application purposes, the permittee is required to conduct expanded effluent testing. The samples for these tests may be collected from either Outfall #002 when it is discharging or from Permitted Feature #004 as 40 CFR 122.21 allows for sampling to occur at only one outfall on a case-by-case basis, where the applicant has two or more outfalls with substantially identical effluent.

Permitted Feature #001 Comments: Changes in this permit include the removal of monitoring requirements for Total Kjeldahl Nitrogen (TKN). See Part VI of the Fact Sheet for further information regarding the addition and removal of effluent parameters. Sampling and reporting frequency was changed for nitrate from once/quarter to once/month by request from the permittee. This increase in sampling and reporting frequency will ensure sufficient data is collected in order to make a reasonable potential determination in the future.

Outfall #002 Comments:
Changes in this permit include the removal of monitoring requirements for dissolved oxygen. See Part VI of the Fact Sheet for further information regarding the addition and removal of effluent parameters. Sampling and reporting frequency was changed from once/week to once/month for BOD5, TSS, ammonia, and pH and from once/week to once/quarter for the interim *E. coli* parameter. Rationale for changes to BOD5, TSS, and pH are due to the consistent compliance with final effluent limitations listed in the permit. Ammonia was changed as it was determined by the permit writer that once/month monitoring is sufficient for compliance purposes due to the nature of discharges from Outfall #002. Interim *E. coli* was changed as interim monitoring requirements were placed in the permit for the purposes of data collection. Since the facility treats domestic wastewater, a schedule of compliance to meet final effluent limitations was also placed in the permit. Once final effluent limitations become effective, the facility will be required to sample for *E. coli* once/week and report results once/month as described in the permit. Weekly sampling for final effluent limitations is required for *E. coli*, per 10 CSR 20-7.015(9)(D)6.A.

Permitted Feature #004 Comments:
Changes in this permit include the removal of monitoring requirements for Total Kjeldahl Nitrogen (TKN). See Part VI of the Fact Sheet for further information regarding the addition and removal of effluent parameters. Sampling and reporting frequency was changed for nitrate from once/quarter to once/month by request from the permittee. This increase in sampling and reporting frequency will ensure sufficient data is collected in order to make a reasonable potential determination in the future.

Part II – Operator Certification Requirements

☒ - This facility is required to have a certified operator.

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 or supervisors of operations 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, if applicable, as listed below:

Owned or operated by or for a

- ☒ - Municipalities
- ☐ - Federal agency
- ☐ - County
- ☐ - Public Sewer District
- ☐ - State agency
- ☐ - Private Sewer Company regulated by the Public Service Commission
- ☐ - Public Water Supply Districts

Each of the above entities are only applicable if they have a Population Equivalent greater than two hundred (200) or fifty (50) or more service connections.

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

Operator's Name: Timothy E. Curry
Certification Number: 7091
Certification Level: C

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.

Part III– Operational Monitoring

☒ - As per [10 CSR 20-9.010(4))], the facility is required to conduct operational monitoring.

Part IV – Receiving Stream Information

RECEIVING STREAM(S) TABLE: OUTFALL #002

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Big Piney River	P	1578	AQL, DWS, HHP, IRR, LWW, SCR, WBC-A	10290202-0101	Directly Discharges

* 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)(C)].

Uses which may be found in the receiving streams table, above:

10 CSR 20-7.031(1)(C)1.:
AQL = Protection of aquatic life (Current narrative use(s) are defined to ensure the protection and propagation of fish shellfish and wildlife, which is further subcategorized as: WWH = Warm Water Habitat; **CDF** = Cold-water fishery (Current narrative use is cold-water habitat.); **CLF** = Cool-water fishery (Current narrative use is cool-water habitat); EAH = Ephemeral Aquatic Habitat; MAH = Modified Aquatic Habitat; LAH = Limited Aquatic Habitat. This permit uses AQL effluent limitations in 10 CSR 20-7.031 Table A for all habitat designations unless otherwise specified.)

10 CSR 20-7.031(1)(C)2.: Recreation in and on the water
WBC = Whole Body Contact recreation where the entire body is capable of being submerged;
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)(C)3. to 7.:
HHP (formerly HHF) = Human Health Protection as it relates to the consumption of fish;
IRR = Irrigation for use on crops utilized for human or livestock consumption;
LWW = Livestock and wildlife watering (Current narrative use is defined as LWP = Livestock and Wildlife Protection);
DWS = Drinking Water Supply;
IND = Industrial water supply

10 CSR 20-7.031(1)(C)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: OUTFALL #002

RECEIVING STREAM	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Big Piney River (P)	0.1	0.1	1.0

MIXING CONSIDERATIONS TABLE: OUTFALL #002

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
0.025	0.025	0.25	0.0025	0.0025	N/A

RECEIVING STREAM MONITORING REQUIREMENTS:
No receiving water monitoring requirements recommended at this time.

RECEIVING WATER BODY'S WATER QUALITY:
A stream survey was conducted on August 21, 2013 at three different areas of Big Piney River (P) (1578). The first was located at Pine Street. The following observations were made:

- Aquatic Macroinvertebrates: Baetid/Siphionurid Mayflies, Chimarra, Heptageniid Mayflies, Hydropsychid Caddisflies, Isopods, Physa, Pleurocera, Psephenus, Simuliids.
- Benthic Algae Density: 25 – 75 Percent.
- Benthic Algae Form: Prostrate – Thin.
- Fish: Darters, Minnows, Sunfish.
- Land Use: Pasture/Hayfield, Suburban Residential.
- Conductance: umhos/cm = 319.
- Streamflow: CFS = 0.25.
- Temperature: Celsius = 21.6.
- Riparian Vegetation: Grass, Mixed Deciduous.
- Survey also described clean substrate and clear water except for an upstream pool at this location.

RECEIVING WATER BODY'S WATER QUALITY (CONTINUED):
The second was located at Airport Road. The following observations were made:

- Aquatic Macroinvertebrates: Amphipods, Chimarra, Heptageniid Mayflies, Hydropsychid Caddisflies, Pleurocera, Psephenus, Simuliids.
- Benthic Algae Density: Greater than 75 Percent.
- Benthic Algae Form: Prostrate – Thin.
- Benthic Algae Substrate: Epilithic.
- Fish: Darters, Minnows.
- Land Use: Forest, Other.
- Conductance: umhos/cm = 329.
- Streamflow: CFS = 3.
- Temperature: Celsius = 23.4.
- Riparian Vegetation: Grass, Mixed Deciduous, Mixed Weeds.
- Substrate: Pea Gravel, Fine-Medium Gravel, Coarse Gravel, Very Course Gravel, Small Cobble, Large Cobble, Small Boulder, Large Boulder.
- Survey also described clean substrate, clear water, good benthic diversity, and recent very high flows at the time of the survey.

The third was located towards the downstream end of the infiltration basins. The following observations were made:

- Aquatic Macroinvertebrates: Baetid/Siphionurid Mayflies, Chimarra, Crayfish, Helicophsyche, Heptageniid Mayflies, Hydropsychid Caddisflies, Other Beetles, Other Caddisflies, Pleurocera, Psephenus, Stenelmis.
- Fish: Bass, Darters, Minnows, Northern Hogsucker, Sunfish.
- Land Use: Forest, Other.
- Conductance: umhos/cm = 334.
- Temperature: Celsius = 24.8.
- Streamflow: CFS = 3.
- Riparian Vegetation: Mixed Deciduous, Mixed Weeds, Willow.
- Substrate: Pea Gravel, Fine-Medium Gravel, Coarse Gravel, Very Coarse Gravel, Small Cobble, Large Cobble, Small Boulder, Large Boulder, Calcereous Bedrock.
- Survey also described clean substrate, clear water, diverse fish and invertebrate community, and recent very high flows at the time of the survey.
- The survey determined that the use AQL was not affected by the discharge.

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

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:
As per [10 CSR 20-7.015(4)(A)], discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

☒ - The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility.

ANTI-BACKSLIDING:
A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(o); 40 CFR Part 122.44(l)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

☒ - Limitations in this operating permit for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.

☒ - The Department determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b).

- **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 VII – Effluent Limits Determination for more information regarding the reasonable potential determinations for each general criterion related to this facility.

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 http://dnr.mo.gov/env/wpp/permits/antideg-implementation.htm

☒ - No degradation proposed and no further review necessary. Facility did not apply for authorization to increase pollutant loading or to add additional pollutants to their discharge.

AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:
As per [10 CSR 20-6.010(3)(B)], …An applicant may utilize a lower preference continuing authority by submitting, as part of the application, a statement waiving preferential status from each existing higher preference authority, providing the waiver 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. Additional information regarding biosolids and sludge is located at the following web address: http://extension.missouri.edu/main/DisplayCategory.aspx?C=74, items WQ422 through WQ449.

☒ - Permittee is not authorized to land apply biosolids. Sludge/biosolids are stored in the lagoon. The permittee must submit a sludge management plan for approval that details removal and disposal plans when sludge is to be removed from lagoons.

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.

☒ - The facility is not currently under Water Protection Program enforcement action.

ELECTRONIC DISCHARGE MONITORING REPORT (EDMR) SUBMISSION SYSTEM:
The U.S. Environmental Protection Agency (EPA) promulgated a final rule on October 22, 2015, to modernize Clean Water Act reporting for municipalities, industries, and other facilities by converting to an electronic data reporting system. This final rule requires regulated entities and state and federal regulators to use information technology to electronically report data required by the National Pollutant Discharge Elimination System (NPDES) permit program instead of filing paper reports. To comply with the federal rule, the Department is requiring all permittees to begin submitting discharge monitoring data and reports online. In an effort to aid facilities in the reporting of applicable information electronically, the Department has created several new forms including operational control monitoring forms and an I&I location and reduction form. These forms are for optional use and can be found on the Department's website at the following locations:

Operational Monitoring Lagoon: http://dnr.mo.gov/forms/780-2801-f.pdf
Operational Monitoring Mechanical: http://dnr.mo.gov/forms/780-2800-f.pdf
I&I Report: http://dnr.mo.gov/forms/780-2690-f.pdf

Per 40 CFR 127.15 and 127.24, permitted facilities may request a temporary waiver for up to 5 years or a permanent waiver from electronic reporting from the Department. To obtain an electronic reporting waiver, a permittee must first submit an eDMR Waiver Request Form: http://dnr.mo.gov/forms/780-2692-f.pdf. A request must be made for each facility. If more than one facility is owned or operated by a single entity, then the entity must submit a separate request for each facility based on its specific circumstances. An approved waiver is non-transferable.

The Department must review and notify the facility within 120 calendar days of receipt if the waiver request has been approved or rejected [40 CFR 124.27(a)]. During the Department review period as well as after a waiver is granted, the facility must continue submitting a hard-copy of any reports required by their permit. The Department will enter data submitted in hard-copy from those facilities allowed to do so and electronically submit the data to the EPA on behalf of the facility.

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

PRETREATMENT PROGRAM:
The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a Publicly Owned Treatment Works [40 CFR Part 403.3(q)].

Pretreatment programs are required at any POTW (or combination of POTW operated by the same authority) and/or municipality with a total design flow greater than 5.0 MGD and receiving industrial wastes that interfere with or pass through the treatment works or are otherwise subject to the pretreatment standards. Pretreatment programs can also be required at POTWs/municipals with a design flow less than 5.0 MGD if needed to prevent interference with operations or pass through.

Several special conditions pertaining to the permittee's pretreatment program may be included in the permit, and are as follows:
- Implementation and enforcement of the program,
- Annual pretreatment report submittal,
- Submittal of list of industrial users,
- Technical evaluation of need to establish local limitations, and
- Submittal of the results of the evaluation

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

REASONABLE POTENTIAL ANALYSIS (RPA):
Federal regulation [40 CFR Part 122.44(d)(1)(i)] 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 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 (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals.

☒ - Equivalent to Secondary Treatment is 65% removal [40 CFR Part 133.105(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(11)] 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 http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc. For additional information regarding the Departments' CMOM Model, see the CMOM Plan Model Guidance document at http://dnr.mo.gov/pubs/pub2574.htm. 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 644.051.4 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 includes 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) and 10 CSR 20-7.031(11), 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 associated with development of a site specific criterion. 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 SOCs, and attain a greater level of consistency, on April 9, 2015 the Department issued an updated policy on development of SOCs. 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 facility has been given a schedule of compliance to meet final effluent limits for ammonia and E. coli for Outfall #002 and E. coli for Permitted Feature #004. The permit for this facility issued on January 1, 2016 included a five (5) year schedule of compliance for the facility to meet final effluent limitations for ammonia and *E. coli* at Outfall #002. The adequacy of this schedule of compliance was reviewed for the purposes of this renewal. Additionally, the permit writer has also included a schedule of compliance to meet final effluent limitations for *E. coli* at Permitted Feature #004, which is a sampling location prior to the wastewater being sent to the infiltration basins. As the permit writer anticipates that any disinfection treatment which may be installed would have the capability to treat effluent which is discharged from Outfall #002 or sent to the infiltration basins. Therefore, the permit writer has determined that establishing the same compliance dates for both Outfall #002 and Permitted Feature #004 is appropriate. Compliance with final effluent limitations at Outfall #002 and Permitted Feature #004 must be achieved by **January 1, 2024**. Additionally, the previous permit included a five (5) year schedule of compliance to evaluate the collection system, which has been removed from the permit. However, the city is currently undergoing efforts to identify and eliminate sources of inflow and infiltration into the collection system, which the permit writer has considered when establishing the schedule of compliance included in this permit. Please see the Cost Analysis for Compliance for more information. The 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 in accordance with the Department's "Schedule of Compliance, Policy for Staff Drafting Operating Permits". Please see the Cost Analysis for Compliance attached as an appendix to the permit for further detail on how the socio-economic status of the community has impacted this SOC.

SEWER EXTENSION AUTHORITY SUPERVISED PROGRAM:
In accordance with [10 CSR 20-6.010(6)(A)], the Department may grant approval of a permittee's Sewer Extension Authority Supervised Program. These approved permittees regulate and approve construction of sanitary sewers and pump stations, which are tributary to this wastewater treatment facility. The permittee shall act as the continuing authority for the operation, maintenance, and modernization of the constructed collection system. See http://dnr.mo.gov/env/wpp/permits/sewer-extension.htm.

☒ - 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 February 2009], 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 (http://dnr.mo.gov/env/wpp/docs/AIP050212.pdf).

Alternative Analysis (AA) evaluation of the BMPs is a structured evaluation of BMPs that are reasonable and cost effective. 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: http://dnr.mo.gov/forms/index.html.

☒ - A No Exposure Certification for Exclusion from NPDES Stormwater Permitting was submitted to the Department in October 2015. The permittee certifies that there are no discharges of stormwater contaminated by exposure to industrial activities or materials from the facility or site identified in the No Exposure Certification; therefore the requirement for the development and implementation of a SWPPP is not needed.

VARIANCE:
As per the Missouri Clean Water Law § 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

☒ - 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(78)], 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:

$$Ce = \frac{(Qe + Qs)C - (Qs \times Cs)}{(Qe)}$$ (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:
There are two general types of effluent limitations, technology-based effluent limits (TBELs) and water quality based effluent limits (WQBELs). If TBELs do not provide adequate protection for the receiving waters, then WQBEL must be used.

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

WATER QUALITY STANDARDS:
Per [10 CSR 20-7.031(4)], General Criteria shall be applicable to all waters of the state at all times including mixing zones. Additionally, [40 CFR 122.44(d)(1)] directs the Department to establish in each NPDES permit to include conditions to achieve water quality established under Section 303 of the Clean Water Act, including State narrative criteria for water quality.

WHOLE EFFLUENT TOXICITY (WET) TEST:

☒ - The permittee is required to conduct WET test for this facility.

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)7. and the Water Quality Standards 10 CSR 20-7.031(4)(D),(F),(G),(I)2.A & B are being met. Under [10 CSR 20-6.010(8)(A)4], 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: §§§644.051.3 requires the Department to set permit conditions that comply with the MCWL and CWA; 644.051.4 specifically references toxicity as an item we must consider in writing permits (along with water quality-based effluent limits, pretreatment, etc…); and 644.051.5 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 BOD_5 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 NH_3)
- ☒ Facility is a municipality with a Design Flow ≥ 22,500 gpd.

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.

☒ - This facility does not anticipate bypassing.

303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):
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 discharges to Big Piney River (P) (1578), which is listed on the 2016, originally 2010, Missouri 303(d) List for Dissolved Oxygen (W). It is unknown at this time if the facility is a source of the above listed pollutant or considered to contribute to the impairment of Big Piney River (P). Once a TMDL is developed, the permit may be modified to include WLAs from the TMDL.

Part VI – Effluent Limits Determination

OUTFALL #002 – LAGOON DISCHARGE
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.

APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:
As per Missouri's Effluent Regulations [10 CSR 20-7.015], the waters of the state are divided into the below listed seven (7) categories. Each category lists effluent limitations for specific parameters, which are presented in each outfall's Effluent Limitation Table and further discussed in the Derivation & Discussion of Limits section.

☒ - All Other Waters [10 CSR 20-7.015(8)]

EFFLUENT LIMITATIONS TABLE: OUTFALL #002

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Flow	MGD	1	*		*	*/*	1/day	monthly	T
BOD_5	mg/L	1		65	45	65/45	1/month	monthly	G
TSS	mg/L	1		110	70	110/70	1/month	monthly	G
Ammonia as N (Interim)	mg/L	2, 3	12		12	12/12	1/month	monthly	G
Ammonia as N (Final) (Apr 1 –Sep 30)	mg/L	2, 3	4.4		1.7		1/month	monthly	G
Ammonia as N (Final) (Oct 1 – Mar 31)	mg/L	2, 3	9.0		3.5		1/month	monthly	G
Escherichia coli (Interim)**	#/100mL	1, 3		*	*	***	1/quarter	quarterly	G
Escherichia coli (Final)**	#/100mL	1, 3		630	126		1/week	monthly	G
Oil & Grease	mg/L	1, 3	15		10	15/10	1/quarter	quarterly	G
Total Nitrogen	mg/L	1	*		*	*/*	1/quarter	quarterly	G
Total Phosphorus	mg/L	1	*		*	*/*	1/quarter	quarterly	G

PARAMETER	Unit	Basis for Limits	Minimum		Maximum	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
pH	SU	1	6.0			≥ 6.0	1/month	monthly	G

PARAMETER	Unit	Basis for Limits	Monthly Average Minimum	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
BOD_5 Percent Removal	%	1	65	65	1/month	monthly	M
TSS Percent Removal	%	1	65	65	1/month	monthly	M

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Acute Whole Effluent Toxicity	TUa	1, 9	*			Pass/ Fail	1/year	1/year	G

* - Monitoring requirement only.
** - #/100mL; the Monthly Average for *E. coli* is a geometric mean.
*** - Parameter not previously established in previous state operating permit.
**** - G = Grab
T = 24-hr. total
M = Measured/Calculated

Basis for Limitations Codes:
1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Antidegradation Review
5. Antidegradation Policy
6. Water Quality Model
7. Best Professional Judgment
8. TMDL or Permit in lieu of TMDL
9. WET Test Policy
10. Multiple Discharger Variance

OUTFALL #002 – 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 (BOD_5)**. Effluent limitations of 65 mg/L as a weekly average and 45 mg/L as a monthly average have been retained from previous operating permit as the previous permit cycle was less than five (5) years due to permit synchronization. Please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Effluent Limits Determination.**

- **Total Suspended Solids (TSS)**. Effluent limitations of 110 mg/L as a weekly average and 70 mg/L as a monthly average have been retained from previous operating permit as the previous permit cycle was less than five (5) years due to permit synchronization. Please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Effluent Limits Determination.**

  Please note that the final effluent limits for BOD and TSS contained in the permit are Equivalent to Secondary limits as per 10 CSR 20-7.015. Any changes made to the lagoon system that modifies it such that it no longer functions as a typical lagoon will result in the facility no longer qualifying for Equivalent to Secondary limitations. The facility may be required to also to follow the Missouri Antidegradation Rule and Implementation Procedure if the discharge is expanded.

- **Total Ammonia Nitrogen**. Due to permit synchronization, the previous permit cycle was reduced to a time period of less than five (5) years. Typically in these situations, all RPA results and derived effluent limitations from the short term permit would be carried over to this permit. The previous permit calculated an actual flow from Outfall #002, which was significantly higher than the design flow, and calculated final effluent limitations utilizing the actual flow. More recent data indicates that actual flow from Outfall #002 is consistent with the design flow. Therefore, the design flow of 1.24 CFS was used in deriving final effluent limitations for this permit. Please see **APPENDIX – RPA RESULTS** for more information regarding the RPA conducted for this permit.

  Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(5)(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: April 1 – September 30

Chronic WLA: $C_e = ((1.24 + 0.25)1.5 – (0.25 * 0.01))/1.24$
$C_e = 1.80$ mg/L

Acute WLA: $C_e = ((1.24 + 0.0025)12.1 – (0.0025 * 0.01))/1.24$
$C_e = 12.12$ mg/L

$LTA_c = 1.80$ mg/L (0.780) = 1.40 mg/L [CV = 0.6, 99th Percentile, 30 day avg.]
$LTA_a = 12.12$ mg/L (0.321) = 3.89 mg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

MDL = 1.40 mg/L (3.11) = 4.4 mg/L [CV = 0.6, 99th Percentile]
AML = 1.40 mg/L (1.19) = 1.7 mg/L [CV = 0.6, 95th Percentile, n =30]

Winter: October 1 – March 31

Chronic WLA: $C_e = ((1.24 + 0.25)3.1 – (0.25 * 0.01))/1.24$
$C_e = 3.72$ mg/L

Acute WLA: $C_e = ((1.24 + 0.0025)12.1 – (0.0025 * 0.01))/1.24$
$C_e = 12.12$ mg/L

$LTA_c = 3.72$ mg/L (0.780) = 2.91 mg/L [CV = 0.6, 99th Percentile, 30 day avg.]
$LTA_a = 12.12$ mg/L (0.321) = 3.89 mg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

MDL = 2.91 mg/L (3.11) = 9.0 mg/L [CV = 0.6, 99th Percentile]
AML = 2.91 mg/L (1.19) = 3.5 mg/L [CV = 0.6, 95th Percentile, n =30]

- ***Escherichia coli (E. coli)***. This permit includes a schedule of compliance to meet final effluent limitations for *E. coli* which include a weekly average of 630 #/100 mL as a geometric mean and a monthly average of 126 #/100 mL as a geometric mean during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (A) designated use of applicable streams within two (2) miles, as per 10 CSR 20-7.031(5)(C). 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 = 5^{th} root of (1)(4)(6)(10)(5) = 5^{th} root of 1,200 = 4.1 #/100mL.

- **Oil & Grease**. Final effluent limitations of 15 mg/L as a daily maximum and 10 mg/L as a monthly average have been retained from the previous permit. Oil and grease is a conventional pollutant and final effluent limitations are required for the protection of aquatic life.

- **Total Nitrogen and Total Phosphorus**. Monitoring is required for facilities greater than 100,000 gpd design flow per 10 CSR 20-7.015(9)(D)7. Total Nitrogen shall be determined by testing for Total Kjeldahl Nitrogen (TKN) and Nitrate + Nitrite and reporting the sum of the results (reported as N). Nitrate + Nitrite can be analyzed together or separately.

- **pH**. ≥ 6.0 SU. pH limitations [10 CSR 20-7.015] are protective of the water quality standard [10 CSR 20-7.031(5)(E)], due to the buffering capacity of the mixing zone.

- **Biochemical Oxygen Demand (BOD_5) Percent Removal**. In accordance with 40 CFR Part 133.102(a)(3) & (b)(3), 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 (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 65% removal efficiency for BOD_5.

- **Total Suspended Solids (TSS) Percent Removal**. In accordance with 40 CFR Part 133.105(a)(3) & (b)(3), 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 (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 65% removal efficiency for TSS.

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

  Acute and/or Chronic Allowable Effluent Concentrations (AECs) for facilities that discharge to Waters of the State lacking designated uses, Class C, Class P (with default Mixing Considerations), or Lakes [10 CSR 20-7.031(5)(A)4.B.(IV)(b)] are 100%, 50%, 25%, 12.5%, & 6.25%.

Parameters Removed.

- **Dissolved Oxygen**. The previous permit included monitoring only requirements in order to determine if reasonable potential to exceed water quality standards existed, due to Big Piney River (P) (1578) being listed as impaired on the Missouri 303(d) List. Currently, the 2016 Missouri 303(d) List identifies that the source of the impairment is unknown. Therefore, due to the fact that there is currently no data related to the relationship between the impairment of the Big Piney River (P) (1578) and the discharge from Outfall #002, reasonable potential to cause or contribute to an excursion of either the general or specific criteria does not exists based upon the permittee's application for discharge. As a result, monitoring requirements have been removed from this permit. Additionally, if a TMDL is developed, the permit may be modified to include WLAs from the TMDL.

Sampling Frequency Justification:

Sampling and reporting frequency was changed for the following parameters:

Parameter	Previous Permit Sampling Frequency	Previous Permit Reporting Frequency	**Changed To Sampling Frequency**	**Changed to Reporting Frequency**
BOD5	once/week	once/month	**once/month**	**once/month**
TSS	once/week	once/month	**once/month**	**once/month**
Ammonia	once/week	once/month	**once/month**	**once/month**
E. coli (Interim)	once/week	once/month	**once/quarter**	**once/quarter**
pH	once/week	once/month	**once/month**	**once/month**

Rationale for changes to BOD5, TSS, and pH are due to the consistent compliance with final effluent limitations listed in the permit. Ammonia was changed as it was determined by the permit writer that once/month monitoring is sufficient for compliance purposes due to the nature of discharges from Outfall #002.

Interim *E. coli* was changed as interim monitoring requirements were placed in the permit for the purposes of data collection. Since the facility treats domestic wastewater, a schedule of compliance to meet final effluent limitations was also placed in the permit. Once final effluent limitations become effective, the facility will be required to sample for *E. coli* once/week and report results once/month as described in the permit. Weekly sampling for final effluent limitations is required for *E. coli*, per 10 CSR 20-7.015(9)(D)6.A.

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 as the facility is designated as a Major.

Sampling Type Justification:

As per 10 CSR 20-7.015, BOD_5, TSS and WET test samples collected for lagoons may be grab samples. Grab samples must be collected for pH, Ammonia as N, *E. coli*, Oil & Grease, and Total Phosphorus. This is due to the holding time restriction for *E. coli*, the volatility of Ammonia, and the fact that pH cannot be preserved and must be sampled in the field. As Ammonia, Oil & Grease, and Total Phosphorus samples must be immediately preserved, these samples are to be collected as a grab. For further information on sampling and testing methods please review 10 CSR 20-7.015(9)(D) 2.

OUTFALL #002 – 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. 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 equivalent to secondary treatment technology and is currently in compliance with the equivalent to secondary treatment technology based effluent limits established in his permit. There has also 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) There shall be no significant human health hazard from incidental contact with the water. Please see (D) above as justification is the same.

(F) There shall be no acute toxicity to livestock or wildlife watering. Please see (D) above as justification is the same.

(G) 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.

(H) 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.

PERMITTED FEATURE #004 – INFILTRATION BASIN SAMPLING LOCATION

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.

APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:

As per Missouri's Effluent Regulations [10 CSR 20-7.015], the waters of the state are divided into the below listed seven (7) categories. Each category lists effluent limitations for specific parameters, which are presented in each outfall's Effluent Limitation Table and further discussed in the Derivation & Discussion of Limits section.

☒ - Subsurface Water [10 CSR 20-7.015(7)]

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	*		*	*/*	1/day	monthly	T
Nitrate as N	mg/L	1	*		*	*/*	1/month	monthly	G
Escherichia coli (Interim)**	#/100mL	1, 3	*		*	***	1/quarter	quarterly	G
Escherichia coli (Final)**	#/100mL	1, 3	126		*		1/week	monthly	G

* - Monitoring requirement only.
** - No more than 10% of samples over the course of the calendar year shall exceed the 126 #/100 mL daily maximum.
*** - Parameter not previously established in previous state operating permit.
**** - G = Grab
T = 24-hr. total

Basis for Limitations Codes:
1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Antidegradation Review
5. Antidegradation Policy
6. Water Quality Model
7. Best Professional Judgment
8. TMDL or Permit in lieu of TMDL
9. WET Test Policy
10. Multiple Discharger Variance

PERMITTED FEATURE #004 – 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.

- **Nitrate as N**. Monitoring only requirements have been retained from previous operating permit as the previous permit cycle was less than five (5) years due to permit synchronization. Monitoring is required in order to determine if a future effluent limitation is necessary to protect water quality standards for the protection of groundwater as described in 10 CSR 20-7.031. The Protection of Groundwater Criteria = 10 mg/L.

- ***Escherichia coli (E. coli)***. Per 10 CSR 20-7.015, discharges to losing stream shall not exceed 126 #/100 mL as a daily maximum at any time. It is assumed that given a losing stream losses flow to subsurface waters the requirement to limit bacteria in losing streams is tied to the use of groundwater for drinking water purposes. Additionally, discharges to losing streams are required to conduct monitoring only as a monthly average, as no more than 10% of samples over the course of the calendar year shall exceed the 126 #/100 mL daily maximum effluent limitation. Given the discharge from the infiltration basins is to subsurface waters, it has been determined that including final effluent limitations reflective of the protection of losing streams and groundwater is protective of water quality standards and the uses of the waterbody. Therefore, the permit includes final effluent limitations protective of losing streams. This limitation is applied at the point the wastewater enters the infiltration basins.

Parameters Removed.

- **Total Kjeldahl Nitrogen (TKN) as N**. Monitoring only requirements have been removed from this permit, as there is no groundwater standard for TKN. This permit remains protective of water quality and this determination will be reevaluate upon renewal.

Sampling Frequency Justification:

Sampling and reporting frequency was changed for nitrate from once/quarter to once/month by request from the permittee. This increase in sampling and reporting frequency will ensure sufficient data is collected in order to make a reasonable potential determination in the future.

Interim *E. coli* sampling and reporting frequency was established at once/quarter as interim monitoring requirements placed in the permit are for the purposes of data collection. Since the facility treats domestic wastewater, a schedule of compliance to meet final effluent limitations was also placed in the permit. Once final effluent limitations become effective, the facility will be required to sample for *E. coli* once/week and report results once/month as described in the permit. Weekly sampling for final effluent limitations is required for *E. coli*, per 10 CSR 20-7.015(9)(D)6.A.

Sampling Type Justification:

This is a sampling location between the lagoon system and the infiltration basins. The permit writer has determined that grab samples are appropriate. Variation in nutrient concentration is not expected over a 24 hour period and sample type for *E. coli* was is reflective of Outfall #002.

PERMITTED FEATURE #001 – MONITORING WELL

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.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Nitrate as N	mg/L	1	*		*	*/*	1/month	monthly	G

* - Monitoring requirement only.

**** - G = Grab

Basis for Limitations Codes:

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

PERMITTED FEATURE #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **Nitrate as N**. Monitoring only requirements have been retained from previous operating permit as the previous permit cycle was less than five (5) years due to permit synchronization. Monitoring is required in order to determine if a future effluent limitation is necessary to protect water quality standards for the protection of groundwater as described in 10 CSR 20-7.031. The Protection of Groundwater Criteria = 10 mg/L.

Parameters Removed.

- **Total Kjeldahl Nitrogen (TKN) as N**. Monitoring only requirements have been removed from this permit, as there is no groundwater standard for TKN. This permit remains protective of water quality and this determination will be reevaluate upon renewal.

Sampling Frequency Justification:

Sampling and reporting frequency was changed for nitrate from once/quarter to once/month by request from the permittee. This increase in sampling and reporting frequency will ensure sufficient data is collected in order to make a reasonable potential determination in the future.

Sampling Type Justification:

This location represents a monitoring well located towards the northeast end of the infiltration basins and collects subsurface water samples. The permit writer has determined that grab samples are appropriate. Variation in nutrient concentration is not expected over a 24 hour period.

Part VII – 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 determine "findings of affordability" because the permit applies to a combined or separate sanitary sewer system for a publically-owned treatment works.

Cost Analysis for Compliance - The Department has made a reasonable search for empirical data indicating the permit is affordable. The search consisted of a review of Department records that might contain economic data on the community, a review of information provided by the applicant as part of the application, and public comments received in response to public notices of this draft permit. If the empirical cost data was used by the permit writer, this data may consist of median household income, any other ongoing projects that the Department has knowledge, and other demographic financial information that the community provided as contemplated by Section 644. 145.3. See **Appendix – Cost Analysis for Compliance.**

Part VIII – 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.

PERMIT SYNCHRONIZATION:
The Department of Natural Resources is currently undergoing a synchronization process for operating permits. Permits are normally issued on a five-year term, but to achieve synchronization many permits will need to be issued for less than the full five years allowed by regulation. The intent is that all permits within a watershed will move through the Watershed Based Management (WBM) cycle together will all expire in the same fiscal year. This will allow further streamlining by placing multiple permits within a smaller geographic area on public notice simultaneously, thereby reducing repeated administrative efforts. This will also allow the Department to explore a watershed based permitting effort at some point in the future. Renewal applications must continue to be submitted within 180 days of expiration, however, in instances where effluent data from the previous renewal is less than 4 years old, that data may be re-submitted to meet the requirements of the renewal application. If the permit provides a schedule of compliance for meeting new water quality based effluent limits beyond the expiration date of the permit, the time remaining in the schedule of compliance will be allotted in the renewed permit. With permit synchronization, this permit will expire in the 4th Quarter of calendar year 2021.

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 was held from August 25, 2017 through September 25, 2017. No comments were received.

DATE OF FACT SHEET: MAY 22, 2017

COMPLETED BY:

CAMERON EISTERHOLD, ENVIRONMENTAL SPECIALIST
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT
(573) 751-7326
cameron.eisterhold@dnr.mo.gov

Appendices

APPENDIX - CLASSIFICATION WORKSHEET:

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
Maximum Population Equivalent (P.E.) served (Max 10 pts.)	1 pt./10,000 PE or major fraction thereof.	1
Maximum: 10 pt Design Flow (avg. day) or peak month; use greater (Max 10 pts.)	1 pt. / MGD or major fraction thereof.	1
EFFLUENT DISCHARGE RECEIVING WATER SENSITIVITY:		
Missouri or Mississippi River	0	-
All other stream discharges except to losing streams and stream reaches supporting whole body contact	1	-
Discharge to lake or reservoir outside of designated whole body contact recreational area	2	-
Discharge to losing stream, or stream, lake or reservoir area supporting whole body contact recreation	3	3
PRELIMINARY TREATMENT – Headworks		
Screening and/or comminution	3	-
Grit removal	3	-
Plant pumping of main flow (lift station at the headworks)	3	3
PRIMARY TREATMENT		
Primary clarifiers	5	-
Combined sedimentation/digestion	5	-
Chemical addition (except chlorine, enzymes)	4	-
REQUIRED LABORATORY CONTROL – performed by plant personnel (highest level only)		
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	-
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	7	7
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph	10	-
ALTERNATIVE FATE OF EFFLUENT		
Direct reuse or recycle of effluent	6	-
Land Disposal – low rate	3	-
High rate	5	5
Overland flow	4	-
Total from page **ONE (1)**	----	20

APPENDIX - CLASSIFICATION WORKSHEET (CONTINUED):

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
VARIATION IN RAW WASTE (highest level only) (DMR exceedances and Design Flow exceedances)		
Variation do not exceed those normally or typically expected	0	-
Recurring deviations or excessive variations of 100 to 200 % in strength and/or flow	2	-
Recurring deviations or excessive variations of more than 200 % in strength and/or flow	4	4
Raw wastes subject to toxic waste discharge	6	-
SECONDARY TREATMENT		
Trickling filter and other fixed film media with secondary clarifiers	10	-
Activated sludge with secondary clarifiers (including extended aeration and oxidation ditches)	15	-
Stabilization ponds without aeration	5	5
Aerated lagoon	8	8
Advanced Waste Treatment Polishing Pond	2	-
Chemical/physical – without secondary	15	-
Chemical/physical – following secondary	10	10
Biological or chemical/biological	12	-
Carbon regeneration	4	-
DISINFECTION		
Chlorination or comparable	5	-
Dechlorination	2	-
On-site generation of disinfectant (except UV light)	5	-
UV light	4	-
SOLIDS HANDLING – SLUDGE		
Solids Handling Thickening	5	-
Anaerobic digestion	10	-
Aerobic digestion	6	-
Evaporative sludge drying	2	-
Mechanical dewatering	8	-
Solids reduction (incineration, wet oxidation)	12	-
Land application	6	-
Total from page **TWO (2)**	----	27
Total from page **ONE (1)**	---	20
Grand Total	---	47

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

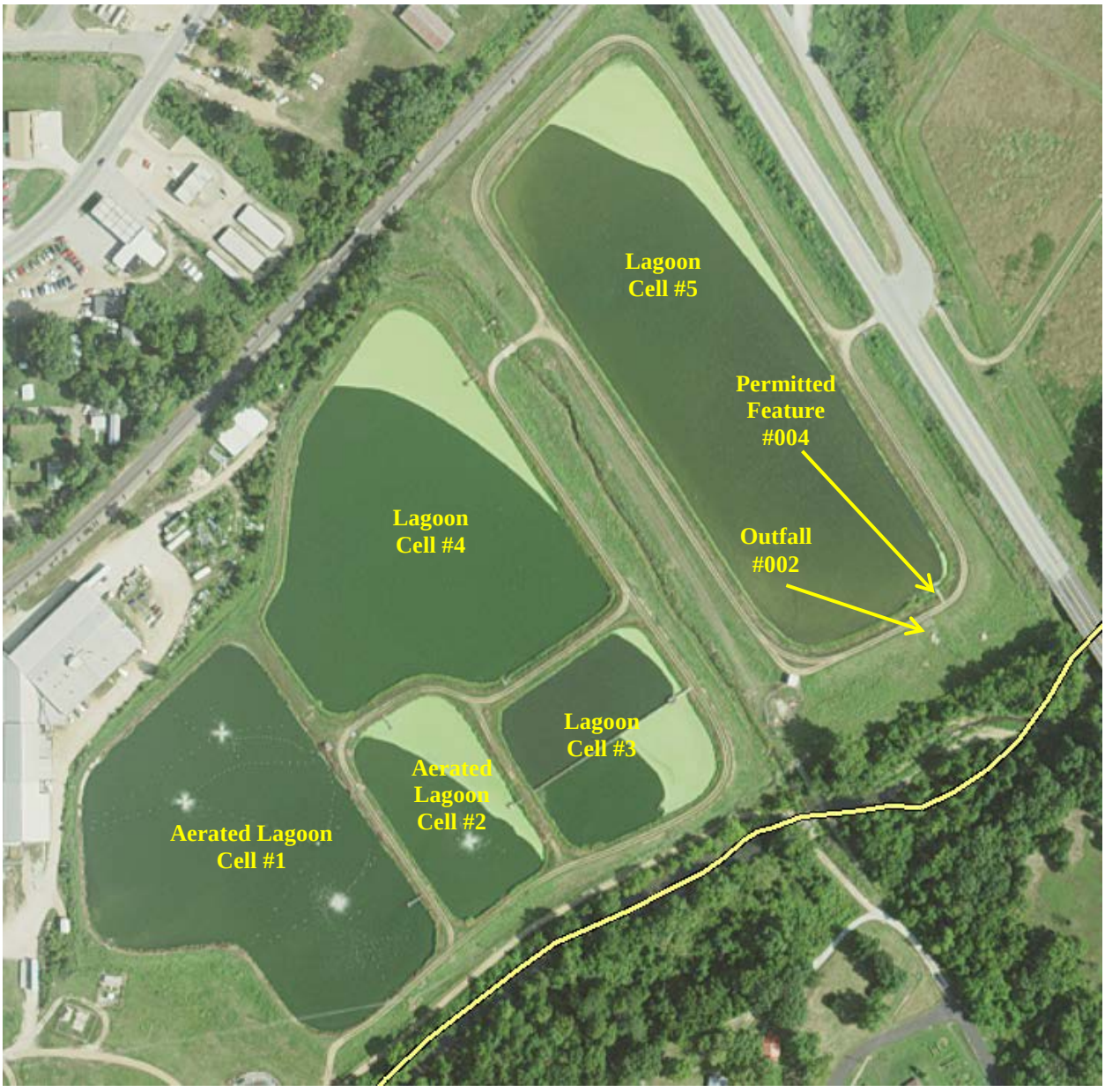
APPENDIX – RPA RESULTS:

Parameter	CMC*	RWC Acute*	CCC*	RWC Chronic*	n**	Range max/min	CV***	MF	RP Yes/No
Total Ammonia as Nitrogen (Summer) mg/L	12.1	43.57	1.5	36.34	2.00	5.9/0.32	0.60	7.40	YES
Total Ammonia as Nitrogen (Winter) mg/L	12.1	56.89	3.1	47.44	6.00	15/3.3	0.60	3.80	YES

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 – ALTERNATIVE: CABOOL WASTEWATER TREATMENT FACILITY



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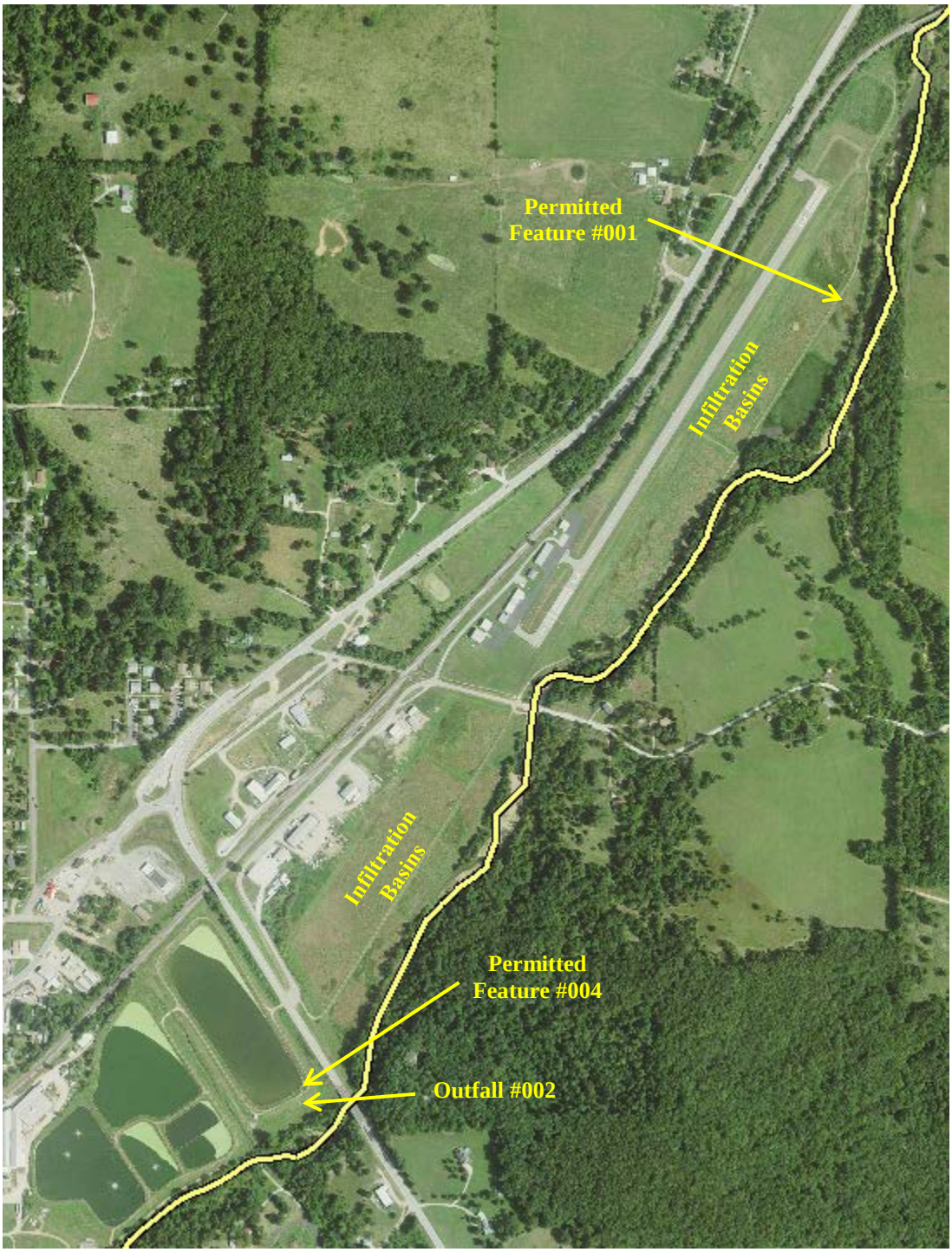

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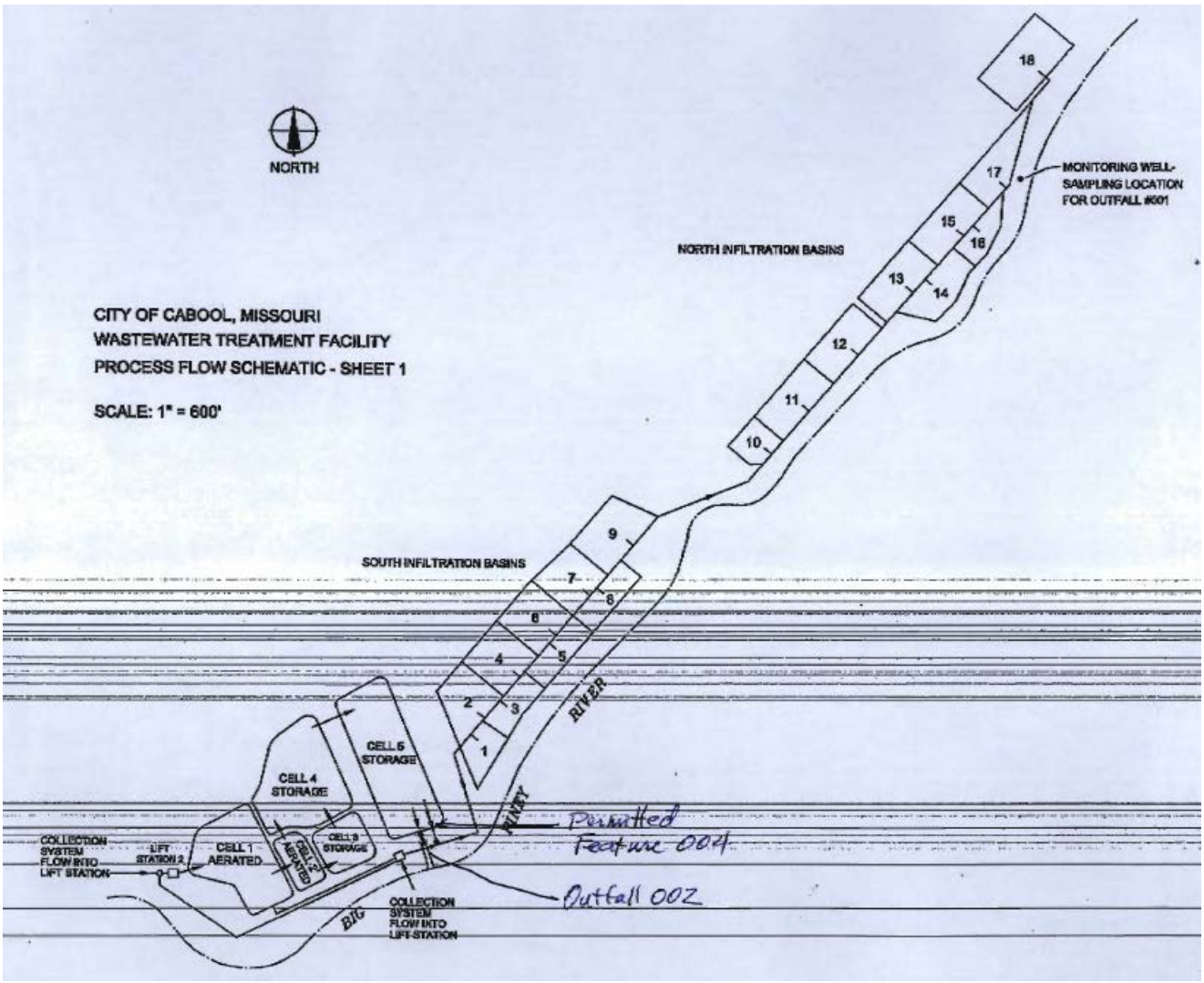

APPENDIX – INFILTRATION BASIN INFORMATION:

South Infiltration Basins							
Basin Number	**Area (Sq. Ft.)**	**Depth (feet)**	**Volume (gal)**	**Cycle Time (hrs.)**	**Rate (GPH)**	**GPH/Sq. Ft.**	**Capacity (GPD)**
Basin #1	52,250	1.00	390,830	72	5,428	0.104	130,277
Basin #2	106,500	1.00	786,620	72	11,064	0.104	265,540
Basin #3	48,500	1.00	362,780	48	7,558	0.156	181,390
Basin #4	112,000	1.00	837,760	120	6,981	0.062	167,552
Basin #5	50,500	1.00	377,740	120	3,148	0.062	75,548
Basin #6	113,000	1.00	845,240	120	7,044	0.062	169,048
Basin #7	105,000	1.00	785,400	72	10,908	0.104	261,800
Basin #8	48,750	1.00	364,650	48	7,597	0.156	182,325
Basin #9	102,750	1.00	768,570	72	10,675	0.104	256,190
SW Subtotal	**739,250**	**9.00**	**5,519,590**	**744**	**70,403**	**0.914**	**1,689,670**

North Infiltration Basins							
Basin Number	**Area (Sq. Ft.)**	**Depth (feet)**	**Volume (gal)**	**Cycle Time (hrs.)**	**Rate (GPH)**	**GPH/Sq. Ft.**	**Capacity (GPD)**
Basin #10	50,600	1.00	378,488	48	7,885	0.156	189,244
Basin #11	102,750	1.00	768,570	48	16,012	0.156	384,285
Basin #12	112,750	1.00	843,370	72	11,713	0.104	281,123
Basin #13	112,750	1.00	843,370	72	11,713	0.104	281,123
Basin #14	97,250	1.00	727,430	48	15,155	0.156	363,715
Basin #15	113,250	1.00	847,110	120	7,059	0.062	169,422
Basin #16	53,500	1.00	400,180	72	5,558	0.104	133,393
Basin #17	99,000	1.00	740,520	48	15,428	0.156	370,260
Basin #18	117,500	1.00	878,900	48	18,310	0.156	439,450
NE Subtotal	**859,350**	**9.00**	**6,427,938**	**576**	**108,833**	**1.154**	**2,612,015**

Total Measurements for Infiltration Basins							
Basin Number	**Area (Sq. Ft.)**	**Depth (feet)**	**Volume (gal)**	**Cycle Time (hrs.)**	**Rate (GPH)**	**GPH/Sq. Ft.**	**Capacity (GPD)**
SW Subtotal	739,250	9.00	5,519,590	744	70,403	0.914	1,689,670
NE Subtotal	859,350	9.00	6,427,938	576	108,833	1.154	2,612,015
Total	**1,598,600**	**18.00**	**11,947,528**	**1,320**	**179,236**	**2.068**	**4,301,685**

Comments:
Infiltration basin measurements were provided by the City of Cabool. The 4.3 MGD design flow assumes diligent and continuous management of every basin continuously. In normal operation, reduced flows and increased cycle times allow the basins to rest for longer periods. Basins that have longer cycle times require maintenance in the near future.

APPENDIX – COST ANALYSIS FOR COMPLIANCE:

Missouri Department of Natural Resources
Water Protection Program
Cost Analysis for Compliance
(In accordance with RSMo 644.145)

Cabool Wastewater Treatment Facility, Permit Renewal
City of Cabool
Missouri State Operating Permit #MO-0026301

Section 644.145 RSMo requires the Department of Natural Resources ("Department" or "DNR") to make a "finding of affordability" when "issuing permits under" or "enforcing provisions of" state or federal clean water laws "pertaining to any portion of a combined or separate sanitary sewer system for publicly-owned treatment works." This cost analysis does not dictate that a permittee will upgrade their facility, or how the permittee will comply with the new permit requirements.

This cost analysis is based on data available to the Department as provided by the permittee and data obtained from readily available sources. For the most accurate analysis, it is essential that the permittee provides the Department with current information about the City's financial and socioeconomic situation. The financial questionnaire available to permittees on the DNR website (http://dnr.mo.gov/forms/780-2511-f.pdf) should have been submitted with the permit renewal application. If it was not submitted with the renewal application, the Department sent a request to complete the form with the welcome letter. The Department currently estimates the cost for reconstruction of a treatment plant using a software program from Hydromantis[1] titled CAPDETWORKS (CapDet). CapDet is a preliminary design and costing software program for wastewater treatment plants utilizing national indices, such as the Marshall and Swift Index and Engineering News Records Cost Index to price the development of capital, operating, maintenance, material, and energy costs for each treatment technology. The program works from national indices therefore; the estimated costs are expected to be higher than actual costs as each community is unique in its budget commitments and treatment design. The cost estimates located within this document are for the construction of a brand new treatment facility or system that is the most practical to facilitate compliance with new requirements.

The Department is required to issue a permit with final effluent limits in accordance with 644.051.1.(1) RSMo, 644.051.1.(2) RSMo, and the Clean Water Act. The table below summarizes the results of this cost analysis. The practical result of this analysis is to incorporate an adequate compliance schedule into the permit that will mitigate the financial burden of the new permit requirements.

Cost Analysis for Compliance Summary Table

Estimated present worth to utilize the existing infiltration basins and install UV disinfection.	Median Household Income (MHI) for the City of Cabool	Estimated monthly cost per user as a percent of MHI	Financial Burden	Schedule of Compliance to meet final effluent limitations for ammonia and *E. coli*
$3,779,304	$18,415	1.49%	Medium	Eight (8) Years*

* The permit for this facility issued on January 1, 2016 included new effluent limitations for ammonia and a five (5) year schedule to attain compliance with those final effluent limitations. This Cost Analysis for Compliance was conducted to reassess the applicability of the original schedule of compliance granted on January 1, 2016 compared to current policies on schedule of compliance timeframes. Based on this reassessed Cost Analysis for Compliance including the Rural Population Sustainability Assessment Tool the City of Cabool's original five (5) year schedule of compliance has been determined to be inadequate and has been extended to be reflective of an eight (8) year schedule of compliance to meet final effluent limitations.

Flow evaluated: Design Flow of 0.8 MGD.

Residential Connections:	938
Commercial Connections:	164
Industrial Connections:	5
Total Connections for this facility:	**1,107**

New Permit Requirements:

The permit requires compliance with new effluent limitations for ammonia and *E. coli*, which may require the design, construction and operation of different treatment technology. To calculate the estimated user cost per 5,000 gallons, the Department used the equations currently being used in the Financial Assistance Center's rate calculator. The equations account for replacement of equipment during the life of the treatment facility, debt retirement, capital costs, and an inflation factor. The calculator evaluates multiple technologies through CapDet at a range of flows, then, using a linear interpolation, develops a spreadsheet outlining high and low costs for treatment plants. For this analysis the Department has selected the mechanical treatment technology that could be the most practical solution to meet the new requirements for the community as well as cost estimation to install ultraviolet disinfection for the purposes of utilizing the existing infiltration basins. Because the methods used to derive the analysis estimate costs that are greater than actual costs associated with an upgrade, it reflects a conservative estimate anticipated for a community. An overestimation of costs is due to the fact that it is not possible for the permit writer to determine what existing equipment and structures will be reused in the upgraded facility before an engineer completes a facility design.

The permit also requires compliance with new and increased monitoring requirements as shown below:

Permitted Feature	Parameter	Change in Frequency
Permitted Feature #001	Nitrate as N	Increased – Once/quarter to Once/month
Outfall #002	None	None
Permitted Feature #004	Nitrate as N	Increased – Once/quarter to Once/month
	E. coli	New – Once/quarter

The size of the facility evaluated for upgrades was chosen based on the permitted design flow. If significant population growth is expected in the community, or if a significant portion of the flow is due to I&I, the flows used in the Facility Plan prepared by a consulting engineer may be different than this flow and the estimated costs within this analysis.

Anticipated Costs Associated with Complying with the New Requirements:

Cost associated with utilizing infiltration basins and installing ultraviolet disinfection treatment:
The total present worth to add ultraviolet disinfection treatment is estimated at $3,779,304 (*CAPDETWORKS cost estimator was used*). This cost, if financed through user fees, might cost each household approximately $22.83 if added to the current user rate. Due to the design limitations in the CapDet cost estimator, the costs for disinfection have been over estimated. For any flows less than 100,000 gpd, CapDet assumes a flow of 100,000 gpd when estimating the cost for UV disinfection.

The total present worth over a 20 year period of adding ultraviolet disinfection treatment to be used in conjunction with the infiltration basins (with the assumption that all wastewater will be sent to the infiltration basins following disinfection) has been estimated to cost approximately $3,779,304. The total capital cost to construct both treatment upgrades may cost approximately $911,600.

Cost associated with mechanical treatment:
The total present worth to add ultraviolet disinfection treatment is estimated at $3,779,304 (*CAPDETWORKS cost estimator was used*). This cost, if financed through user fees, might cost each household approximately $22.83 per month. Due to the design limitations in the CapDet cost estimator, the costs for disinfection have been over estimated. For any flows less than 100,000 gpd, CapDet assumes a flow of 100,000 gpd when estimating the cost for UV disinfection.

The costs estimated in CAPDETWORKS are associated with a complete reconstruction of a new treatment plant. The total present worth for complete replacement of the existing treatment facility in order to meet new ammonia effluent limits is estimated at $6,710,006 (*CAPDETWORKS cost estimator was used*). This cost, if financed through user fees, might cost each household approximately $40.53 per month. The Department has estimated the construction and treatment costs for an extended aeration oxidation ditch, extended aeration with triangular basin, and sequencing batch reactor. The treatment type has been set to meet effluent ammonia limits of 0.6 mg/L and losing stream criteria for BOD_5 and TSS. Sludge handling and sludge treatment were not included in the capital, operations, maintenance, and present worth cost estimations as there are multiple ways for sludge handling to occur, including reuse of existing sludge equipment. Disinfection is not represented in the present worth listed in this paragraph, as it was discussed in the previous paragraph. It is the Department's opinion that an extended aeration oxidation ditch is the most practical mechanical treatment technology for your community based on the current design flow. A more detailed engineering and design report conducted for your specific facility will be completed by your hired engineer. This may reflect a different type of treatment option than what is described within this analysis and may include additional collection system work or additional upgrades at the treatment plant.

The total present worth over a 20 year period of adding both ammonia and disinfection treatment has been estimated to cost approximately $7,980,418.02. The total capital cost to construct both treatment upgrades may cost approximately $5,397,600.

Cost associated with new sampling requirements:
The total cost estimated for new and increased monitoring is listed below:

Permitted Feature	Parameter	Change in Frequency	Annual Costs
Permitted Feature #001	Nitrate as N	Increased – Once/quarter to Once/month	$160.00
Outfall #002	None	None	$0.00
Permitted Feature #004	Nitrate as N	Increased – Once/quarter to Once/month	$160.00
	E. coli	New – Once/quarter	$116.00
		Total Annual Cost	**$436.00**

This cost, if financed through user fees, might cost each household an extra $0.03 per month. A community sets their user rates based on several factors. The percentage of the current user rate that is available to cover new debt is unknown to the Department.

For any questions associated with the *CAPDETWORKS cost estimator*, please contact the Engineering Section at (573) 751-6621.

(1) A community's financial capability and ability to raise or secure necessary funding;

Current Monthly User Rates per 5,000 gallons: $12.71

Municipal Bond Rating (if applicable): Not provided by the applicant.

Bonding Capacity:
(General Obligation Bond capacity allowed by constitution:
cities=up to 20% of taxable tangible property
sewer districts or villages=up to 5% of taxable tangible property) Not provided by the applicant.

Median household income (MHI): [2] $18,415

Current outstanding debt for the WWTP: $0.00

Amount within the current user rate used toward payments on outstanding debt related to the current wastewater infrastructure: $0.00

(2) Affordability of pollution control options for the individuals or households at or below the median household income level of the community;

A Current Costs

Current annual operating costs (exclude depreciation): $201,320

B-1 Estimated Costs for New and Increased Sampling Requirements

Estimated additional cost per household per month. $0.03

B-2 Estimated Costs for Utilizing Existing Infiltration Basins and Installing Ultraviolet Disinfection Treatment

Estimated total present worth of pollution control:*	$3,779,304
Estimated capital cost of pollution control:**	$911,600
Annual cost of operation and maintenance:***	$230,112
Estimated resulting user cost per household per month to install ultraviolet disinfection treatment:****	$22.83
Estimated resulting user cost per household per month to install ultraviolet disinfection treatment plus estimated additional sampling costs per household per month:	$22.86
Estimated resulting user cost per household per month plus the amount within the current user rate used toward payments on outstanding debt: [3]	The community reported $0.00 related to outstanding debt.
Cost per household as a percent of median household income: [4]	1.49%
Estimated cost per household per month plus the amount within the current user rate used toward payments on outstanding debt as a percent of median household income: [5]	The community reported $0.00 related to outstanding debt.

These costs assume a 5% interest rate over 20 years for ultraviolet disinfection treatment. Sludge handling, sludge treatment, and disinfection have not been included in the capital, operations and maintenance, and present worth cost estimations.

B-3 Estimated Costs for Mechanical Plant Pollution Control Option

Estimated total present worth of pollution control:*	$7,980,418
Estimated capital cost of pollution control:**	$5,397,600
Annual cost of operation and maintenance:***	$207,252
Estimated resulting user cost per household per month:****	$48.21
Estimated resulting user cost per household per month for mechanical plant pollution control option plus estimated additional sampling costs per household per month:	$48.24
Estimated resulting user cost per household per month plus the amount within the current user rate used toward payments on outstanding debt: [5]	The community reported $0.00 related to outstanding debt.
Cost per household as a percent of median household income:[6]	3.14%
Estimated cost per household per month plus the amount within the current user rate used toward payments on outstanding debt as a percent of median household income: [7]	The community reported $0.00 related to outstanding debt.

These costs assume a 5% interest rate over 20 years for mechanical treatment. All treatment technologies were set to meet effluent ammonia limits of less than 0.6 mg/L and losing stream criteria for BOD_5 and TSS. Sludge handling, sludge treatment, and disinfection have not been included in the capital, operations and maintenance, and present worth cost estimations.

* Total Present Worth includes a five percent interest rate to construct and perform annual operation and maintenance of the new treatment plant over the term of the loan.
** Capital Cost includes project costs from CapDet with design, inspection and contingency costs.
*** O&M cost shown in Tables B-1 and B-2 includes operations, maintenance, materials, chemical and electrical costs for the facility on an annual basis. It includes items that are expected to replace during operations, such as pumps. O&M is estimated between 15% and 45% of the user cost.
**** The Estimated User Cost shown in Tables B-1 and B-2 is composed of two factors, Operation & Maintenance (O&M), and Debt Retirement Costs.

(3) An evaluation of the overall costs and environmental benefits of the control technologies;

The investment in wastewater treatment will provide several social, environmental and economic benefits. Improved wastewater provides benefits such as avoided health costs due to water-related illness, enhanced environmental ecosystem quality, and improved natural resources. The preservation of natural resources has been proven to increase the economic value and sustainability of the surrounding communities. Maintaining Missouri's water quality standards fulfill the goals of restoring and maintaining the chemical, physical and biological integrity of the receiving stream; and, where attainable, to achieves a level of water quality that provides for the protection and propagation of fish, shellfish, wildlife and recreation in and on the water.

Total Ammonia Nitrogen Treatment
Ammonia can be toxic to aquatic life. Fish may suffer a loss of equilibrium, hyperexcitability, increased respiratory activity and oxygen uptake, and increased heart rate. At extreme ammonia levels, fish may experience convulsions, coma, and death. Therefore, final water quality based effluent limits for total ammonia nitrogen are requirement of this Missouri State Operating Permits. A schedule of compliance is given with the final limits so that the permittee has time to secure funding and update their treatment plant, if necessary. Please see the Water Protection Program fact sheet titled "Changes to the Water Quality Standard for Ammonia" at http://dnr.mo.gov/pubs/pub2481.htm.

Native fish and other native aquatic life are extremely important to Missouri's ecosystem. They contribute essential nutrients to the streams, rivers, lakes, pond other waters in which they inhabit. Freshwater ecosystems are important for human survival, in that it provides a majority of people's drinking water. Also, a pristine freshwater ecosystem with an abundance of aquatic life can increase the community's overall income of revenue. Revenue to businesses and sales tax revenue is increased as the natural amenity will attract fisherman and tourism to the area. Fish and other aquatic life also provide a source of low cost sustenance for the people within the surrounding communities.

Disinfection
E. coli is a species of bacteria that normally live in the intestines of humans and warm-blooded animals. While some strains of *E. coli* are harmless, there are several strains that can cause severe diarrhea, abdominal cramps, and severe kidney failure. The people most susceptible to these consequences are young children, the elderly and those with weakened immune systems. The receiving stream that your facility discharges to contains designated uses to protect human health in accordance with Water Quality Standards (10 CSR 20-7.031) and the Clean Water Act. The disinfection of wastewater effluent benefits human health by reducing exposure to disease-causing bacteria, such as *E.coli*, and viruses and reducing health care costs to those infected by contaminated water. The construction and installation of a disinfection system at the treatment facility will protect human health as well as meet water quality standards.

(4) Inclusion of ongoing costs of operating and maintaining the existing wastewater collection and treatment system, including payments on outstanding debts for wastewater collection and treatment systems when calculating projected rates:

The community has reported that they have no outstanding debts for the current wastewater collection and treatment systems.

(5) An inclusion of ways to reduce economic impacts on distressed populations in the community, including but not limited to low and fixed income populations. This requirement includes but is not limited to:

(a) Allowing adequate time in implementation schedules to mitigate potential adverse impacts on distressed populations resulting from the costs of the improvements and taking into consideration local community economic considerations.

A schedule of compliance will be provided based on the results of this cost analysis. The schedule of compliance is provided to ensure that the entity has time to reasonably plan for compliance with the new permit requirements. The time provided ensures the entity has time to hire an engineer, develop facility plans, hold community meetings, seek an appropriate funding source, and construct the facility. This analysis has determined the community may endure a medium to high financial burden. Therefore, a longer schedule of compliance has been provided to allow for the permit holder to adequately plan toward compliance. For compliance assistance, please visit the Department's Community Assistance webpage at https://dnr.mo.gov/assistance/. If it is determined by the permittee that a longer schedule of compliance is necessary due to financial reasons, please contact the permit writer and request modification of the permit schedule.

An integrated plan may be an appropriate option if they community needs to meet other environmental obligations as well as the new requirements within this permit. The integrated plan needs to be well thought out with specific timeframes built into the management plan in which the municipality can reasonably commit. The plan should be designed to allow your municipality to meet their Clean Water Act obligations by maximizing their infrastructure improvement dollars through the appropriate sequencing of work. For further information on how to develop an integrated plan, please see the Department publication, "Missouri Integrated Planning Framework," at http://dnr.mo.gov/pubs/pub2684.htm.

If the permittee can demonstrate that the proposed pollution controls result in substantial and widespread economic and social impact, the permittee may use Factor 6 of the Use Attainability Analysis (UAA) 40 CFR 131.10(g)(6) in the form of a variance. This process is completed by determining the treatment type with the highest attainable effluent quality that would not result in a socio-economic hardship. For more information on variance requests, please contact the Water Protection Program's Special Projects Coordinator at 573-751-9391.

(b) Allowing for reasonable accommodations for regulated entities when inflexible standards and fines would impose a disproportionate financial hardship in light of the environmental benefits to be gained.

- If available, connection to a larger centralized sewer system in the area may be more cost effective for the community. This can be incorporated into an integrated plan.
- An opportunity may exist for the relocation of the point of discharge to a receiving stream capable of a greater mixing zone.
- The permittee may apply for State Revolving Fund (SRF) financial support in order to help fund a Capital Improvements Plan. Other loans and grants also exist for which the facility may be eligible. Contact information for the Department's Financial Assistance Center (FAC) and more information can be found on the Department's website at http://dnr.mo.gov/env/wpp/srf/wastewater-assistance.htm.

Socioeconomic Data[8-16:] The following table characterizes the current overall socioeconomic condition of the community as compared to the overall socioeconomic condition of the State of Missouri. The following information was compiled using the latest U.S. Census data.

Indicator No.	Select a Community from the Dropdown List →	Cabool City	Missouri State
1	Population (2015)	2,309	6,045,448
2	Percent Change in Population (2000-2015)	6.5%	8.0%
3	2015 Median Household Income (in 2016 Dollar)	$18,415	$48,582
4	Percent Change in Median Household Income (2000-2015)	-39.5%	-7.8%
5	Median Age (2015)	37.6	38.2
6	Change in Median Age in Years (2000-2015)	-1.9	2.1
7	Unemployment Rate (2015)	9.7%	7.5%
8	Percent of Population Below Poverty Level (2015)	41.3%	15.6%
9	Percent of Household Received Food Stamps (2015)	34.0%	13.5%
10	(Primary) County Where the Community Is Located	Texas County	

(6) An assessment of other community investments and operating costs relating to environmental improvements and public health protection;

The community reported the following related to environmental improvements:

- $80,000 budgeted this Fiscal Year for manhole repair, line repair, and inspection (Fiscal Year is July 1 – June 30). This allocation is included as a portion the City's reported annual O&M budget of $201,320. As this O&M budget is included and carried through as part of the cost for upgrade, the department did not include a separate line item in the analysis concerning the costs association with collection system evaluation work.

(7) An assessment of factors set forth in the United States Environmental Protection Agency's guidance, including but not limited to the "Combined Sewer Overflow Guidance for Financial Capability Assessment and Schedule Development" that may ease the cost burdens of implementing wet weather control plans, including but not limited to small system considerations, the attainability of water quality standards, and the development of wet weather standards;

Secondary indicators for consideration: The following table below characterizes the community's overall financial capability to raise the necessary funds to meet the new permit requirements.

Indicators	Strong (3 points)	Mid-Range (2 points)	Weak (1 point)	Score
Bond Rating Indicator	Above BBB or Baa	BBB or Baa	Below BBB or Baa	Not provided by the applicant.
Overall Net Debt as a % of Full Market Property Value	Below 2%	2% - 5%	Above 5%	3
Unemployment Rate (2015)	Beyond 1% below Missouri average of 7.5%	± 1% of Missouri average of 7.5%	Beyond 1% above Missouri average of 7.5%	1
2015 Median Household Income (in 2016 Dollar)	Beyond 25% above Missouri MHI ($48,582)	± 25% of Missouri MHI ($48,582)	Beyond 25% below Missouri MHI ($48,582)	1
Percent of Population Below Poverty Level (2015)	Beyond 10% below Missouri average of 15.6%	± 10% of Missouri average of 15.6%	Beyond 10% above Missouri average of 15.6%	1
Percent of Household Received Food Stamps (2015)	Beyond 5% below Missouri average of 13.5%	± 5% of Missouri average of 13.5%	Beyond 5% above Missouri average of 13.5%	1
Property Tax Revenues as a % of Full Market Property Value	Below 2%	2% - 4%	Above 4%	3
Property Tax Collection Rate	Above 98%	94% - 98%	Below 94%	2
Total Average Score	--	--	--	1.71

Financial Capability Matrix: The results of the Financial Capability Indicator score and the residential indicator calculated above are considered jointly in the Financial Capability Matrix to determine the financial burden that could occur as a result from compliance with the new requirements of the permit.

In the following matrix, the results are a low, medium, or high financial burden.

- Financial Capability (FCI) Indicators Average Score: 1.71
- Existing Infiltration basins plus installation of UV disinfection (plus collection system evaluation and additional sampling costs) Residential Indicator (RI, from Criteria #2 above): 1.49%
- Mechanical Plant (plus collection system evaluation and additional sampling costs) Residential Indicator (RI, from Criteria #2 above): 3.14%

Financial Capability Indicators Score from above ↓	**Residential Indicator (User cost as a % of MHI)**		
	Low (Below 1%)	Mid-Range (Between 1.0% and 2.0%)	High (Above 2.0%)
Weak (below 1.5)	Medium Burden	High Burden	High Burden
Mid-Range (1.5 – 2.5)	Low Burden	Medium Burden (Existing Infiltration Basins with UV)	High Burden (Mechanical Plant)
Strong (above 2.5)	Low Burden	Medium Burden	High Burden

- Estimated Financial Burden for Existing Infiltration Basins with UV: 1.49%
- Estimated Financial Burden for Mechanical Plant: 3.14%

(8) An assessment of any other relevant local community economic condition.

The community reported the following related to any other relevant local economic conditions:

- The city has a high percentage of retirees and low income residents.
- There are a fairly high percentage of monthly bills that already require financial assistance to be paid in full.

The Department contracted with Wichita State University to complete an assessment tool that would allow for predictions on rural Missouri community populations and future sustainability. The purpose of the study is to use a statistical modeling analysis in order to determine factors associated with each rural Missouri community that would predict the future population changes that could occur in each community. A stepwise regression model was applied to 19 factors which were determined as predictors of rural population change in Missouri. The model established a hierarchy of the predicting factors which allowed the model to place a weighted value on each of the factors. A total of 745 rural towns and villages in Missouri received a weighted value for each of the predicting factors. The weighted values for each town / village were then added together to determine an overall decision score. The overall decision scores were then divided into five categories and each town was assigned to a different categorical group based on the overall decision score.

The categorical groups were developed from the range of overall scores across all rural towns and villages within Missouri. The range covers 1,191 score points (-245 to 946).

Based on the assessment tool, the City of Cabool has been determined as a category 4 community. This means that the City of Cabool is predicted to be stable over time.

Conclusion and Finding
As a result of new regulations, the Department is proposing modifications to the current operating permit that may require the permittee to upgrade the facility and construct new control technologies, to increase monitoring, and evaluate the collection system in order to improve inflow and infiltration.

The Department considered the eight (8) criteria presented in subsection 644.145.3 when evaluating the cost associated with the relevant actions. Using this analysis, the Department finds that a utilizing the existing infiltration basins, installing an ultraviolet disinfection treatment, and evaluating the collection system is the most practical and affordable option for your community. The construction and operation of this system will ensure that the individuals within the community will not be required to make unreasonable sacrifices in their essential lifestyle or spending patterns or undergo hardships in order to make the projected monthly payments for sewer connections.

The permit for this facility issued on January 1, 2016 included new effluent limitations for ammonia and a five (5) year schedule to attain compliance with those final effluent limitations. This Cost Analysis for Compliance was conducted to reassess the applicability of the original schedule of compliance granted on January 1, 2016 compared to current policies on schedule of compliance timeframes. In accordance with 40 CFR § 122.47(a)(1) and 10 CSR 20-7.031(11), compliance must occur as soon as possible. Therefore, based on this reassessed Cost Analysis for Compliance including the Rural Population Sustainability Assessment Tool the City of Cabool's original five (5) year schedule of compliance has been determined to be inadequate and has been extended to be reflective of an eight (8) year schedule of compliance to meet final effluent limitations. The following suggested milestones are an example of a timeline that will keep the permit holder on track to maintain compliance with this permit. It should be noted that once the permit holder's engineer has completed facility design with actual costs associated with compliance of this permit, it may be necessary for the permit holder to request additional time within the schedule of compliance. The department is committed to review all requests for additional time in the schedule of compliance where adequate justification is provided.

Suggested milestones to meet within each year listed below:

Year 1. Hire an engineer and evaluate inflow and infiltration.
Year 2. Evaluation of rate structure and treatment plant and evaluate inflow and infiltration.
Year 3. Hold bond election and evaluate inflow and infiltration.
Year 4. Apply for State Revolving Fund loans and/or grants, submit facility plan, evaluate inflow and infiltration, and submit an application for renewal of the existing operating permit with new financial and socio-economic data.
Year 5. Apply for Construction Permit, close on loan, and evaluate inflow and infiltration.
Year 6. Construction.
Year 7. Construction.
Year 8. Complete construction.

The schedule of compliance allows the community adequate time to evaluate the inflow and infiltration to the collection system, hire an engineer, evaluate operations and rate structure, obtain an engineering report, hold a bond election, close on a loan, construct the facility, and complete the project. If the community wishes to seek funding from the Department, please contact the Financial Assistance Center for more information. http://www.dnr.mo.gov/env/Wpp/srf/index.html

The Department is committed to reassessing the cost analysis for compliance at renewal to determine if the initial schedule of compliance will accommodate the socioeconomic data and financial capability of the community at that time. In this longer time frame, the Department will work with you to explore the wastewater treatment options that make the most sense for your community. By working more closely with your community, the Department and permittees will be able to identify opportunities to extend the schedule of compliance, if appropriate. Because each community is unique, we want to make sure that you have the opportunity to consider all your options and tailor solutions to best meet your community's needs. The Department understands the economic challenges associated with achieving compliance, and is committed to using all available tools to make an accurate and practical finding of affordability for the communities in the State.

This determination is based on readily available data and may overestimate the financial impact on the community. The community's facility plan that is submitted as a part of the construction permit process includes a discussion of community details, what the community can afford, existing obligations, future growth potential, an evaluation of options available to the community with cost information, and a discussion on no-discharge alternatives. The cost information provided through the facility plan process, which is developed by the community and their engineer, is more comprehensive of the community's individual factors in relation to selected treatment technology and costing information.

References:

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2. U.S. Census Bureau. 2011-2015 American Community Survey 5-Year Estimates, Table B19013: Median Household Income in the Past 12 Months (in 2015 Inflation-Adjusted Dollars). http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_15_5YR_B19013&prodType=table. U.S. Department of Labor Bureau of Labor Statistics (2016) Consumer Price Index - All Urban Consumers, All items, 1982-84=100, Midwest Urban Areas. http://data.bls.gov/timeseries/CUUR0300SA0?data_tool=Xgtable.
3. The community reported $0.00 related to current outstanding debt.
4. ($22.86/($18,415/12))100% = 1.49% (existing infiltration basins plus installation of UV disinfection)
5. The community reported $0.00 related to current outstanding debt.
6. ($48.24/($18,415/12))100% = 3.14% (mechanical with UV disinfection)
7. The community reported $0.00 related to current outstanding debt.
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11. U.S. Census Bureau (2003) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-2-1 Part 1. United States Summary, Table 5. Work Status and Income in 1999: 2000, Washington, DC. https://www.census.gov/prod/cen2000/phc-2-1-pt1.pdf. U.S. Census Bureau (2003) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-2-27, Missouri, Table 10. Work Status and Income in 1999: 2000, Washington, DC. https://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf.
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13. U.S. Census Bureau. 2011-2015 American Community Survey 5-Year Estimates, Table B01002: Median Age by Sex - Universe: Total population. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_15_5YR_B01002&prodType=table.
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15. U.S. Census Bureau. 2011-2015 American Community Survey 5-Year Estimates, B23025: Employment Status for the Population 16 Years and Over - Universe: Population 16 years and

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16. U.S. Census Bureau. 2011-2015 American Community Survey 5-Year Estimates, Table B22003: Receipt of Food Stamps/SNAP in the Past 12 Months by Poverty Status in the Past 12 Months for Households - Universe: Households. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_15_5YR_B22003&prodType=table.

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.

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.

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.
   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 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

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 permittees 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.

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
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
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
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
March 1, 2015

PART III – SLUDGE AND BIOSOLIDS FROM DOMESTIC AND INDUSTRIAL WASTEWATER TREATMENT FACILITIES

SECTION A – GENERAL REQUIREMENTS

1. This permit pertains to sludge requirements under the Missouri Clean Water Law and regulation for domestic wastewater and industrial process wastewater. This permit also incorporates applicable federal sludge disposal requirements under 40 CFR 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR 503 for domestic wastewater. EPA has reviewed and accepted these standard sludge conditions. EPA may choose to issue a separate sludge addendum to this permit or a separate federal sludge permit at their discretion to further address the federal requirements.
2. These PART III Standard Conditions apply only to sludge and biosolids generated at domestic wastewater treatment facilities, including public owned treatment works (POTW), privately owned facilities and sludge or biosolids generated at industrial facilities.
3. Sludge and Biosolids Use and Disposal Practices:
    a. The permittee is authorized to operate the sludge and biosolids treatment, storage, use, and disposal facilities listed in the facility description of this permit.
    b. The permittee shall not exceed the design sludge volume listed in the facility description and shall not use sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
    c. The permittee is authorized to operate the storage, treatment or generating sites listed in the Facility Description section of this permit.
4. Sludge Received from other Facilities:
    a. Permittees may accept domestic wastewater sludge from other facilities including septic tank pumpings from residential sources as long as the design sludge volume is not exceeded and the treatment facility performance is not impaired.
    b. The permittee shall obtain a signed statement from the sludge generator or hauler that certifies the type and source of the sludge
5. These permit requirements do not supersede nor remove liability for compliance with county and other local ordinances.
6. These permit requirements do not supersede nor remove liability for compliance with other 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 sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Actor under Chapter 644 RSMo.
8. In addition to STANDARD CONDITIONS, the Department may include sludge limitations in the special conditions portion or other sections of a site specific permit.
9. Alternate Limits in the Site Specific Permit.
   Where deemed appropriate, the Department may require an individual site specific permit in order to authorize alternate limitations:
    a. A site specific permit must be obtained for each operating location, including application sites.
    b. To request a site specific permit, an individual permit application, permit fee, and supporting documents shall be submitted for each operating location. This shall include a detailed sludge/biosolids management plan or engineering report.
10. Exceptions to these Standard Conditions may be authorized on a case-by-case basis by the Department, as follows:
    a. The Department will prepare a permit modification and follow permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR 124.10, and 40 CFR 501.15(a)(2)(ix)(E). This includes notification of the owner of the property located adjacent to each land application site, where appropriate.
    b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR 503.

SECTION B – DEFINITIONS

1. Best Management Practices include agronomic loading rates, soil conservation practices 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 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 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 (PFRP) in accordance with 40 CFR 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. Industrial wastewater means any wastewater, also known as process water, not defined as domestic wastewater. Per 40 CFR Part 122, process water 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.
8. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including septic tanks, sand filters, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological discs, and other similar facilities. It does not include wastewater treatment lagoons and constructed wetlands for wastewater treatment.
9. Operating location as defined in 10 CSR 20-2.010 is all contiguous lands owned, operated or controlled by one (1) person or by two (2) or more persons jointly or as tenants in common.
10. Plant Available Nitrogen (PAN) is the nitrogen that will be available to plants during the growing seasons after biosolids application.
11. 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.
12. 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)
13. Sludge lagoon is part of a mechanical wastewater treatment facility. A sludge lagoon is an earthen 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.
14. Septage is the material pumped from residential septic tanks and similar treatment works (with a design population of less than 150 people). The standard for biosolids from septage is different from other sludges.

SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES

1. Sludge shall be routinely removed from wastewater treatment facilities and handled according to the permit facility description and sludge conditions of this permit.
2. The permittee shall operate the facility so that there is no sludge discharged to waters of the state.
3. Mechanical treatment plants shall have separate sludge storage compartments in accordance with 10 CSR 20, Chapter 8. Failure to remove sludge from these storage compartments on the required design schedule is a violation of this permit.

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

1. This section applies to permittees that haul sludge to another treatment facility for disposal or use contract haulers to remove and dispose of sludge.
2. Permittees that use contract haulers are responsible for compliance with all the terms of this permit including final disposal, unless the hauler has a separate permit for sludge or biosolids disposal issued by the Department; or the hauler transports the sludge to another permitted treatment facility.
3. Haulers who land apply septage must obtain a state permit.
4. Testing of sludge, other than total solids content, is not required if sludge is hauled to a municipal wastewater treatment facility or other permitted wastewater treatment facility, unless it is required by the accepting facility.

SECTION E – INCINERATION OF SLUDGE

1. Sludge incineration facilities shall comply with the requirements of 40 CFR 503 Subpart E; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
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, quantity of sludge incinerated, quantity of ash generated, quantity of ash stored, and ash used or disposal method, quantity, and location. Permittee shall also provide the name of the disposal facility and the applicable permit number.

SECTION F – SURFACE DISPOSAL SITES AND SLUDGE LAGOONS

1. Surface disposal sites of domestic facilities shall comply with the requirements in 40 CFR 503 Subpart C; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
2. 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 sludge storage lagoons as storage facilities, accumulated 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 sludge removed will be dependent on sludge generation and accumulation in the facility. Enough 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 sludge on the bottom of the lagoon, upon prior approval of the Department; or
    b. Permittee shall close the lagoon in accordance with Section H.

SECTION G – LAND APPLICATION

1. The permittee shall not land apply sludge or biosolids unless land application is authorized in the facility description or the special conditions of the issued NPDES permit.
2. Land application sites within a 20 miles radius of the wastewater treatment facility are authorized under this permit when biosolids are applied for beneficial use in accordance with these standard conditions unless otherwise specified in a site specific permit. If the permittee's land application site is greater than a 20 mile radius of the wastewater treatment facility, approval must be granted from the Department.
3. Land application shall not adversely affect a threatened or endangered species or its designated critical habitat.
4. Biosolids shall not be applied unless authorized in this permit or exempted under 10 CSR 20, Chapter 6.
    a. This permit does not authorize the land application of domestic sludge except for when sludge meets the definition of biosolids.
    b. This permit authorizes "Class A or B" biosolids derived from domestic wastewater and/or process water sludge 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.
5. Public Contact Sites:

    Permittees who wish to apply Class A biosolids to public contact sites must obtain approval from the Department after two years of proper operation with acceptable testing documentation that shows the biosolids meet Class A criteria. A shorter length of testing will be allowed with prior approval from the Department. Authorization for land applications must be provided in the special conditions section of this permit or in a separate site specific permit.
    a. After Class B biosolids have been land applied, public access must be restricted for 12 months.
    b. Class B biosolids are only land applied to root crops, home gardens or vegetable crops whose edible parts will not be for human consumption.
6. Agricultural and Silvicultural Sites:

    Septage – Based on Water Quality guide 422 (WQ422) published by the University of Missouri
    a. Haulers that land apply septage must obtain a state permit
    b. Do not apply more than 30,000 gallons of septage per acre per year.
    c. Septage 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 other mechanical type treatment facilities.
    d. To meet Class B sludge requirements, maintain septage at 12 pH for at least thirty (30) minutes before land application. 50 pounds of hydrated lime shall be added to each 1,000 gallons of septage in order to meet pathogen and vector stabilization for septage biosolids applied to crops, pastures or timberland.
    e. 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.

Biosolids - Based on Water Quality guide 423, 424, and 425 (WQ423, WQ424, WQ425) published by the University of Missouri;

a. Biosolids shall be monitored to determine the quality for regulated pollutants

b. The number of samples taken is directly related to the amount of sludge produced by the facility (See Section I of these Standard Conditions). Report as dry weight unless otherwise specified in the site specific permit. 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 reach the maximum concentration of pollutants allowed.

c. Table 1 gives the maximum concentration allowable to protect water quality standards

TABLE 1

Biosolids ceiling concentration [1]	
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

[1] Land application is not allowed if the sludge concentration exceeds the maximum limits for any of these pollutants

d. The low metal concentration biosolids has reduced requirements because of its higher quality and can safely be applied for 100 years or longer at typical agronomic loading rates. (See Table 2)

TABLE 2

Biosolids Low Metal Concentration [1]	
Pollutant	Milligrams per kilogram dry weight
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Nickel	420
Selenium	36
Zinc	2,800

[1] You may apply low metal biosolids without tracking cumulative metal limits, provided the cumulative application of biosolids does not exceed 500 dry tons per acre.

e. Each pollutant in Table 3 has an annual and a total cumulative loading limit, based on the allowable pounds per acre for various soil categories.

TABLE 3

Pollutant	CEC 15+		CEC 5 to 15		CEC 0 to 5	
	Annual	Total [1]	Annual	Total [1]	Annual	Total [1]
Arsenic	1.8	36.0	1.8	36.0	1.8	36.0
Cadmium	1.7	35.0	0.9	9.0	0.4	4.5
Copper	66.0	1,335.0	25.0	250.0	12.0	125.0
Lead	13.0	267.0	13.0	267.0	13.0	133.0
Mercury	0.7	15.0	0.7	15.0	0.7	15.0
Nickel	19.0	347.0	19.0	250.0	12.0	125.0
Selenium	4.5	89.0	4.5	44.0	1.6	16.0
Zinc	124.0	2,492.0	50.0	500.0	25.0	250.0

[1] Total cumulative loading limits for soils with equal or greater than 6.0 pH (salt based test) or 6.5 pH (water based test)

TABLE 4 - Guidelines for land application of other trace substances [1]

Cumulative Loading	
Pollutant	Pounds per acre
Aluminum	4,000[2]
Beryllium	100
Cobalt	50
Fluoride	800
Manganese	500
Silver	200
Tin	1,000
Dioxin	(10 ppt in soil)[3]
Other	[4]

[1] Design of land treatment systems for Industrial Waste, 1979. Michael Ray Overcash, North Carolina State University and Land Treatment of Municipal Wastewater, EPA 1981.)

[2] This applies for a soil with a pH between 6.0 and 7.0 (salt based test) or a pH between 6.5 to 7.5 (water based test). Case-by-case review is required for higher pH soils.

[3] Total Dioxin Toxicity Equivalents (TEQ) in soils, based on a risk assessment under 40 CFR 744, May 1998.

[4] Case by case review. Concentrations in sludge should not exceed the 95th percentile of the National Sewage Sludge Survey, EPA, January 2009.

Best Management Practices – Based on Water Quality guide 426 (WQ426) published by the University of Missouri

a. Use best management practices when applying biosolids.
b. Biosolids cannot discharge from the land application site
c. Biosolid application is subject to the Missouri Department of Agriculture State Milk Board concerning grazing restrictions of lactating dairy cattle.
d. Biosolid application must be in accordance with section 4 of the Endangered Species Act.
e. Do not apply more than the agronomic rate of nitrogen needed.
f. The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop removal 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.
    i. PAN can be determined as follows and is in accordance with WQ426
    (Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1]).
    [1] Volatilization factor is 0.7 for surface application and 1 for subsurface application.
g. Buffer zones are as follows:
    i. 300 feet of a water supply well, sinkhole, lake, pond, 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 if dwellings;
    iv. 100 feet of wetlands or permanent flowing streams;
    v. 50 feet of a property line or other waters of the state, including intermittent flowing streams.
h. Slope limitation for application sites are as follows;
    i. A slope 0 to 6 percent has 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.
i. No biosolids may be land applied in an area that it is reasonably certain that pollutants will be transported into waters of the state.
j. Do not apply biosolids to sites with soil that is snow covered, frozen or saturated with liquid without prior approval by the Department.
k. Biosolids / sludge applicators must keep detailed records up to five years.

SECTION H – CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical, industrial, and lagoons) and sludge or biosolids storage and treatment facilities and incineration ash ponds. 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 residues, including sludge, biosolids. Mechanical plants, sludge lagoons, ash ponds and other storage structures must obtain approval of a closure plan from the Department. 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. Residuals 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. Residuals shall meet the monitoring and land application limits for agricultural rates as referenced in Section H of these standard conditions.
    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.
        i. PAN can be determined as follows:

        (Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1]).

        [1] Volatilization factor is 0.7 for surface application and 1 for subsurface application.
4. When closing a domestic wastewater treatment lagoon with a design treatment capacity equal or less than 150 persons, the residuals are considered “septage” under the similar treatment works definition. See Section B of these standard conditions. 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. Residuals left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, the lagoon berm shall be demolished, and the site shall be graded and contain ≥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.
6. Lagoons and/or earthen structure and/or ash pond 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 and/or industrial process wastewater plant; all 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 ≥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. Per 10 CSR 20-6.015(4)(B)6, Hazardous Waste shall not be land applied or disposed during industrial and mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations under 10 CSR 25.
    c. After demolition of the mechanical plant / industrial plant, the site must only contain clean fill defined in RSMo 260.200 (5) 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 or other beneficial use. Other solid wastes must be removed.
8. If sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or H, 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 503, Subpart C.

SECTION I – MONITORING FREQUENCY

1. At a minimum, sludge or biosolids 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

Design Sludge Production (dry tons per year)	Monitoring Frequency (See Notes 1, 2, and 3)			
	Metals, Pathogens and Vectors	Nitrogen TKN [1]	Nitrogen PAN [2]	Priority Pollutants and TCLP [3]
0 to 100	1 per year	1 per year	1 per month	1 per year
101 to 200	biannual	biannual	1 per month	1 per year
201 to 1,000	quarterly	quarterly	1 per month	1 per year
1,001 to 10,000	1 per month	1 per month	1 per week	--[4]
10,001 +	1 per week	1 per week	1 per day	--[4]

[1] Test total Kjeldahl nitrogen, if biosolids application is 2 dry tons per acre per year or less.

[2] 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.

[3] Priority pollutants (40 CFR 122.21, Appendix D, Tables II and III) and toxicity characteristic leaching procedure (40 CFR 261.24) is required only for permit holders that must have a pre-treatment program.

[4] One sample for each 1,000 dry tons of sludge.

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: Total Phosphorus: Total phosphorus and total potassium shall be tested at the same monitoring frequency as metals.
Note 3: Table 5 is not applicable for incineration and permit holders that landfill their sludge.

2. If you own a wastewater treatment lagoon or sludge lagoon that is cleaned out once a year or less, you may choose to sample only when the sludge is removed or the lagoon is closed. Test one composite sample for each 100 dry tons of sludge or biosolids removed from the lagoon during the year within the lagoon at closing. 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. Permittees receiving industrial wastewater may be required to conduct additional testing upon request from the Department.
4. At this time, the Department recommends monitoring requirements shall be performed in accordance with, "POTW Sludge Sampling and Analysis Guidance Document," United States Environmental Protection Agency, August 1989, and the subsequent revisions.

SECTION J – 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 these standard conditions and any additional items in the Special Conditions section of this permit. This shall include dates when the sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.
2. Reporting period
    a. By January 28th of each year, an annual report shall be submitted for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and sludge or biosolids disposal facilities.
    b. Permittees with wastewater treatment lagoons shall submit the above annual report only when sludge or biosolids are removed from the lagoon during the report period or when the lagoon is closed.
3. Report Forms. The annual report shall be submitted on report forms provided by the Department or equivalent forms approved by the Department.
4. Reports shall be submitted as follows:

Major facilities (those serving 10,000 persons or 1 million gallons per day) shall report to both the Department and EPA. Other facilities need to report only to the Department. Reports shall be submitted to the addresses listed as follows:

DNR regional office listed in your permit
(see cover letter of permit)
ATTN: Sludge Coordinator

EPA Region VII
Water Compliance Branch (WACM)
Sludge Coordinator
11201 Renner Blvd.
Lenexa, KS 66219

5. Annual report contents. The annual report shall include the following:
    a. Sludge and biosolids testing performed. Include a copy or summary of all test results, even if not required by the permit.
    b. Sludge or biosolids quantity shall be reported as dry tons for quantity generated by the wastewater treatment facility, the quantity stored on site at the end of the year, and the quantity used 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, 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 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 sludge or biosolids 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, CEC, and phosphorus. If none was tested during the year, report the last date when tested and results.

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Water Protection Program

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH

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

FACILITY NAME	
City of Cabool, MO	
PERMIT NO.	COUNTY
MO-0026301	Texas

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

RECEIVED

JUL 01 2016

Water Protection Program

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH

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 ONLY	
CHECK NUMBER	
DATE RECEIVED: 7/1/16	FEE SUBMITTED: 0

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-0026301 Expiration Date 12/31/16
- ☐ An operating permit modification: Permit #MO-_____ Reason: _____

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

2. FACILITY

NAME		TELEPHONE NUMBER WITH AREA CODE	
City of Cabool, MO		417-962-3136	
ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE
618 Main	Cabool	MO	65689

2.1 LEGAL DESCRIPTION (Facility Site): SW ¼, NE ¼, SE ¼, Sec. 12, T 28N R 11W — COUNTY: Texas

2.2 UTM Coordinates Easting (X): 580723 Northing (Y): 4108827
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

2.3 Name of receiving stream: Big Piney River

2.4 Number of Outfalls: 3 wastewater outfalls, 0 stormwater outfalls, 0 instream monitoring sites

3. OWNER

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
City of Cabool, MO	kelliott@Cabool.org	417-962-3136	
ADDRESS	CITY	STATE	ZIP CODE
618 Main; P.O. Box 710	Cabool	MO	65689

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	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
Same as #3 above			
ADDRESS	CITY	STATE	ZIP CODE

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	TITLE	CERTIFICATE NUMBER (IF APPLICABLE)
Timothy E. Curry	WWTF Operator	7091
EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
topcat65689@yahoo.com	417-962-3136	

6. FACILITY CONTACT

NAME	TITLE		
Timothy E. Curry	WWTF Operator		
EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE		
topcat65689@yahoo.com	417-962-3136		
ADDRESS	CITY	STATE	ZIP CODE
618 Main	Cabool	MO	65689

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Cabool, MO	MO- 0026301	Entire System

PART A – BASIC APPLICATION INFORMATION

7. FACILITY INFORMATION

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.

Two cell aerated lagoons, three storage lagoons cells, 18 Infiltration Beds.

See attached diagram, Sheet 1.

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Cabool, MO	MO-0026301	Entire System

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. See attached Topographic Map.

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: 4952 | Discharge SIC Code: 4952

7.4 Number of people presently connected or population equivalent (P.E.): ____ Design P.E. 8,000

7.5 Connections to the facility:

Number of units presently connected:

Homes 622 Trailers 27 Apartments 259 Other (including industrial) 169

Number of Commercial Establishments: 164 (included in totals for other)

7.6 Design Flow 4.3 MGD | Actual Flow 1.3 MGD

7.7 Will discharge be continuous through the year? Yes ☒ No ☐

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 ☒ No ☐

If yes, describe the number and types of industries that discharge to your facility. Attach sheets as necessary

Dairy Farmers of America (DFA) sends treated waste water to Cabool. This waste constitutes 2% of the actual flow and has a BOD loading of 10-15 mg/L.

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 ☐ No ☒

7.10 Is wastewater land applied? Yes ☐ No ☒

If yes, is Form I attached? Yes ☐ No ☐

7.11 Does the facility discharge to a losing stream or sinkhole? Yes ☐ No ☒

7.12 Has a wasteload allocation study been completed for this facility? Yes ☐ No ☒

8. LABORATORY CONTROL INFORMATION

LABORATORY WORK CONDUCTED BY PLANT PERSONNEL *

Lab work conducted outside of plant.	Yes ☒	No ☐
Push–button or visual methods for simple test such as pH, settleable solids.	Yes ☒	No ☐
Additional procedures such as Dissolved Oxygen, Chemical Oxygen Demand, Biological Oxygen Demand, titrations, solids, volatile content.	Yes ☒	No ☐
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	Yes ☒	No ☐
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph.	Yes ☐	No ☒

* Laboratory responsibilities are completed both by plant personnel and contract laboratory. Generally daily tests are performed by plant personnel. Plant personnel can also perform pH, BOD, TSS.

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Cabool, MO	MO- 0026301	Entire System

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 ☐ No ☒

9.2 Sludge production (Including sludge received from others): Design Dry Tons/Year 97 Actual Dry Tons/Year 97

9.3 Sludge storage provided: _____ Cubic feet; _____ Days of storage; _____ Average percent solids of sludge;

☐ No sludge storage is provided. ☒ Sludge is stored in lagoon.

9.4 Type of storage:

☐ Holding Tank ☐ Building
☐ Basin ☒ Lagoon
☐ Concrete Pad ☐ Other (Describe) _____

9.5 Sludge Treatment:

☐ Anaerobic Digester ☐ Storage Tank ☐ Lime Stabilization ☒ Lagoon
☐ Aerobic Digester ☐ Air or Heat Drying ☐ Composting ☐ Other (Attach Description)

9.6 Sludge use or disposal:

☐ Land Application ☐ Contract Hauler ☐ Hauled to Another Treatment Facility ☐ Solid Waste Landfill
☐ Surface Disposal (Sludge Disposal Lagoon, Sludge Held For More Than Two Years) ☐ Incineration
☒ Other (Attach Explanation Sheet) City will contract this service when needed.

9.7 Person responsible for hauling sludge to disposal facility:
☐ By Applicant ☐ By Others (complete below) see 9.6 above.

NAME	EMAIL ADDRESS
NA - Retained in Lagoon	

ADDRESS	CITY	STATE	ZIP CODE

CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE	PERMIT NO.
		MO-

9.8 Sludge use or disposal facility:
☐ By Applicant ☐ 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?
☒ Yes ☐ No (Explain) Retained in the lagoon system

END OF PART A

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Cabool, MO	MO- 0026301	Entire System

PART B – ADDITIONAL APPLICATION INFORMATION

10. COLLECTION SYSTEM

10.1 Length of sanitary sewer collection system in miles

22.82 miles gravity feed + 1.89 miles of force main.

10.2 Does significant infiltration occur in the collection system? ☒ Yes ☐ No

If yes, briefly explain any steps underway or planned to minimize inflow and infiltration:

0.52 MGD is estimated to enter the system through I&I. City has and is following CMOM plans.

11. BYPASSING

Does any bypassing occur anywhere in the collection system or at the treatment facility? Yes ☐ No ☒

If yes, explain:

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 ☐ No ☒

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.

The city of Cabool is evaluating the Site Characterization Workplan, as allowed by permit Section E, Schedule of Compliance, #2. This Site Characterization Workplan is to determine if the treatment system, specifically the 18 Infiltration Basins protect the Big Piney River and ground water resources.

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Cabool, MO	MO- 0026301	002

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 002 - See attached laboratory results

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	Value	Units	Value	Units	Number of Samples
pH (Minimum)		S.U.		S.U.	
pH (Maximum)		S.U.		S.U.	
Flow Rate		MGD		MGD	

*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		mg/L		mg/L			
	$CBOD_5$		mg/L		mg/L			
E. COLI			#/100 mL		#/100 mL			
TOTAL SUSPENDED SOLIDS (TSS)			mg/L		mg/L			
AMMONIA (as N)			mg/L		mg/L			
CHLORINE* (TOTAL RESIDUAL, TRC)			mg/L		mg/L			
DISSOLVED OXYGEN			mg/L		mg/L			
OIL and GREASE			mg/L		mg/L			
OTHER			mg/L		mg/L			

*Report only if facility chlorinates

END OF PART B

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Cabool, MO	MO- 0026301	

PART C – CERTIFICATION

15. CERTIFICATION

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.

ALL APPLICANTS MUST COMPLETE THE FOLLOWING CERTIFICATION.

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.

PRINTED NAME	OFFICIAL TITLE (MUST BE AN OFFICER OF THE COMPANY OR CITY OFFICIAL)
Timothy E. Curry	WWTF operator

SIGNATURE: Timothy E Curry

TELEPHONE NUMBER WITH AREA CODE: 417-962-3136 (office) (417-254-4052 (cell)

DATE SIGNED: 6/28/16

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.

Send Completed Form to:

Department of Natural Resources
Water Protection Program
ATTN: NPDES Permits and Engineering Section
P.O. Box 176
Jefferson City, MO 65102

END OF PART C
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH PARTS OF FORM B2 YOU MUST COMPLETE.

Do not complete the remainder of this application, unless at least one of the following statements applies to your facility:

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.

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.

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Cabool, MO	MO- 0026301	002

PART D – EXPANDED EFFLUENT TESTING DATA No discharging samples from outfall 002, therefore no expanded test data. Please contact if you need further explanation.

16. EXPANDED EFFLUENT TESTING DATA

Refer to the APPLICATION OVERVIEW to determine whether Part D applies to the treatment works.

If the treatment works has a design flow greater than or equal to 1 million gallons per day or it has (or is required to have) a pretreatment program, or is otherwise required by the permitting authority to provide the data, then provide effluent testing data for the following pollutants. Provide the indicated effluent testing information **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. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. 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. Indicate in the blank rows provided below any data you may have on pollutants not specifically listed in this form. At a minimum, effluent testing data must be based on at least **three pollutant scans** and must be no more than four and one-half years apart.

Outfall Number (Complete Once for Each Outfall Discharging Effluent to Waters of the State.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples		
METALS (TOTAL RECOVERABLE), CYANIDE, PHENOLS AND HARDNESS											
ALUMINUM											
ANTIMONY											
ARSENIC											
BERYLLIUM											
CADMIUM											
CHROMIUM III											
CHROMIUM VI											
COPPER											
IRON											
LEAD											
MERCURY											
NICKEL											
SELENIUM											
SILVER											
THALLIUM											
ZINC											
CYANIDE											
TOTAL PHENOLIC COMPOUNDS											
HARDNESS (as $CaCO_3$)											
VOLATILE ORGANIC COMPOUNDS											
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMOFORM											
CARBON TETRACHLORIDE											

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Cabool, MO	MO- 0026301	

PART D – EXPANDED EFFLUENT TESTING DATA

16. EXPANDED EFFLUENT TESTING DATA

Complete Once for Each Outfall Discharging Effluent to Waters of the State

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples		
CHLOROBENZENE											
CHLORODIBROMO-METHANE											
CHLOROETHANE											
2-CHLORO-ETHYLVINYL ETHER											
CHLOROFORM											
DICHLOROBROMO-METHANE											
1,1-DICHLORO-ETHANE											
1,2-DICHLORO-ETHANE											
TRANS-1,2-DICHLOROETHYLENE											
1,1-DICHLORO-ETHYLENE											
1,2-DICHLORO-PROPANE											
1,3-DICHLORO-PROPYLENE											
ETHYLBENZENE											
METHYL BROMIDE											
METHYL CHLORIDE											
METHYLENE CHLORIDE											
1,1,2,2-TETRA-CHLOROETHANE											
TETRACHLORO-ETHANE											
TOLUENE											
1,1,1-TRICHLORO-ETHANE											
1,1,2-TRICHLORO-ETHANE											
TRICHLORETHYLENE											
VINYL CHLORIDE											
ACID-EXTRACTABLE COMPOUNDS											
P-CHLORO-M-CRESOL											
2-CHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
4,6-DINITRO-O-CRESOL											
2,4-DINITROPHENOL											
2-NITROPHENOL											
4-NITROPHENOL											

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Cabool, MO	MO- 0026301	

PART D – EXPANDED EFFLUENT TESTING DATA

16. EXPANDED EFFLUENT TESTING DATA

Complete Once for Each Outfall Discharging Effluent to Waters of the State.

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples		
PENTACHLOROPHENOL											
PHENOL											
2,4,6-TRICHLOROPHENOL											
BASE-NEUTRAL COMPOUNDS											
ACENAPHTHENE											
ACENAPHTHYLENE											
ANTHRACENE											
BENZIDINE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
3,4-BENZO-FLUORANTHENE											
BENZO(GH) PHERYLENE											
BENZO(K) FLUORANTHENE											
BIS (2-CHLOROTHOXY) METHANE											
BIS (2-CHLOROETHYL) – ETHER											
BIS (2-CHLOROISO-PROPYL) ETHER											
BIS (2-ETHYLHEXYL) PHTHALATE											
4-BROMOPHENYL PHENYL ETHER											
BUTYL BENZYL PHTHALATE											
2-CHLORONAPH-THALENE											
4-CHLORPHENYL PHENYL ETHER											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIBENZO (A,H) ANTHRACENE											
1,2-DICHLORO-BENZENE											
1,3-DICHLORO-BENZENE											
1,4-DICHLORO-BENZENE											
3,3-DICHLORO-BENZIDINE											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Cabool, MO	MO- 0026301	

PART D – EXPANDED EFFLUENT TESTING DATA

16. EXPANDED EFFLUENT TESTING DATA

Complete Once for Each Outfall Discharging Effluent to Waters of the State.

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples		
2,4-DINITRO-TOLUENE											
2,6-DINITRO-TOLUENE											
1,2-DIPHENYL-HYDRAZINE											
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLO-PENTADIENE											
HEXACHLOROETHANE											
INDENO (1,2,3-CD) PYRENE											
ISOPHORONE											
NAPHTHALENE											
NITROBENZENE											
N-NITROSODI-PROPYLAMINE											
N-NITROSODI-METHYLAMINE											
N-NITROSODI-PHENYLAMINE											
PHENANTHRENE											
PYRENE											
1,2,4-TRICHLOROBENZENE											
Use this space (or a separate sheet) to provide information on other pollutants not specifically listed in this form.											

END OF PART D

REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM B2 YOU MUST COMPLETE.

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Cabool, MO	MO- 0026301	

PART E – TOXICITY TESTING DATA See attached sample results from pdc labs.

17. TOXICITY TESTING DATA

Refer to the APPLICATION OVERVIEW to determine whether Part E applies to the treatment works.

Publicly owned treatment works, or POTWs, meeting one or more of the following criteria must provide the results of whole effluent toxicity tests for acute or chronic toxicity for each of the facility's discharge points.

A. POTWs with a design flow rate greater than or equal to 1 million gallons per day
B. POTWs with a pretreatment program (or those that are required to have one under 40 CFR Part 403)
C. POTWs required by the permitting authority to submit data for these parameters

- At a minimum, these results must include quarterly testing for a 12-month period within the past one year using multiple species (minimum of two species), or the results from four tests performed at least annually in the four and one-half years prior to the application, provided the results show no appreciable toxicity, and testing for acute or chronic toxicity, depending on the range of receiving water dilution. Do not include information about 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.
- If EPA methods were not used, report the reason for using alternative methods. If test summaries are available that contain all of the information requested below, they may be submitted in place of Part E. If no biomonitoring data is required, do not complete Part E. Refer to the application overview for directions on which other sections of the form to complete.

Indicate the number of whole effluent toxicity tests conducted in the past four and one-half years: _____chronic _____ acute

Complete the following chart **for the last three whole effluent toxicity tests.** Allow one column per test. Copy this page if more than three tests are being reported.

	Most Recent	2ND Most Recent	3RD Most Recent
A. Test Information			
Test Method Number			
Final Report Number			
Outfall Number			
Dates Sample Collected			
Date Test Started			
Duration			
B. Toxicity Test Methods Followed			
Manual Title			
Edition Number and Year of Publication			
Page Number(s)			
C. Sample collection method(s) used. For multiple grab samples, indicate the number of grab samples used			
24-Hour Composite			
Grab			
D. Indicate where the sample was taken in relation to disinfection (Check all that apply for each)			
Before Disinfection	☐	☐	☐
After Disinfection	☐	☐	☐
After Dechlorination	☐	☐	☐
E. Describe the point in the treatment process at which the sample was collected			
Sample Was Collected:			
F. Indicate whether the test was intended to assess chronic toxicity, acute toxicity, or both			
Chronic Toxicity	☐	☐	☐
Acute Toxicity	☐	☐	☐
G. Provide the type of test performed			
Static	☐	☐	☐
Static-renewal	☐	☐	☐
Flow-through	☐	☐	☐
H. Source of dilution water. If laboratory water, specify type; if receiving water, specify source			
Laboratory Water	☐	☐	☐
Receiving Water	☐	☐	☐

FACILITY NAME Cabool, MO	PERMIT NO. MO- 0026301	OUTFALL NO.

PART E – TOXICITY TESTING DATA

17. TOXICITY TESTING DATA (continued)

	Most Recent	Second Most Recent	Third Most Recent
I. Type of dilution water. If salt water, specify "natural" or type of artificial sea salts or brine used.			
Fresh Water			
Salt Water			
J. Percentage of effluent used for all concentrations in the test series			
K. Parameters measured during the test (State whether parameter meets test method specifications)			
pH			
Salinity			
Temperature			
Ammonia			
Dissolved Oxygen			
L. Test Results			
Acute:			
Percent Survival in 100% Effluent			
LC_{50}			
95% C.I.			
Control Percent Survival			
Other (Describe)			
Chronic:			
NOEC			
IC_{25}			
Control Percent Survival			
Other (Describe)			
M. Quality Control/ Quality Assurance			
Is reference toxicant data available?			
Was reference toxicant test within acceptable bounds?			
What date was reference toxicant test run (MM/DD/YYYY)?			
Other (Describe)			

Is the treatment works involved in a toxicity reduction evaluation? ☐ Yes ☐ No

If yes, describe:

If you have submitted biomonitoring test information, or information regarding the cause of toxicity, within the past four and one-half years, provide the dates the information was submitted to the permitting authority and a summary of the results.

Date Submitted (MM/DD/YYYY)

Summary of Results (See Instructions)

END OF PART E

REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM B2 YOU MUST COMPLETE.

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Cabool, MO	MO- 0026301	

PART F – INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

Refer to the APPLICATION OVERVIEW to determine whether Part F applies to the treatment works.

18. GENERAL INFORMATION

18.1 Does the treatment works have, or is it subject to, an approved pretreatment program?

☐ Yes ☒ No

18.2 Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs). Provide the number of each of the following types of industrial users that discharge to the treatment works:

Number of non-categorical SIUs 0 *

Number of CIUs 0

19. INDUSTRIES CONTRIBUTING MORE THAN 5 PERCENT OF THE ACTUAL FLOW TO THE FACILITY OR OTHER SIGNIFICANT INDUSTRIAL USERS INFORMATION

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, provide the information requested for each. Submit additional pages as necessary.

NAME			
MAILING ADDRESS	CITY	STATE	ZIP CODE

19.1 Describe all of the industrial processes that affect or contribute to the SIU's discharge

19.2 Describe all of the principle processes and raw materials that affect or contribute to the SIU's discharge.

Principal Product(s):

Raw Material(s):

19.3 Flow Rate

a. PROCESS WASTEWATER FLOW RATE. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day, or gpd, and whether the discharge is continuous or intermittent.

gpd ☐ Continuous ☐ Intermittent

b. NON-PROCESS WASTEWATER FLOW RATE. Indicate the average daily volume of non-process wastewater discharged into the collection system in gallons per day, or gpd, and whether the discharge is continuous or intermittent.

gpd ☐ Continuous ☐ Intermittent

19.4 Pretreatment Standards. Indicate whether the SIU is subject to the following:

a. Local Limits ☐ Yes ☐ No

b. Categorical Pretreatment Standards ☐ Yes ☐ No

If subject to categorical pretreatment standards, which category and subcategory?

19.5 Problems at the treatment works attributed to waste discharged by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

☐ Yes ☐ No

If Yes, describe each episode

* DFA has the ability to process milk products; however they operate the facility as a milk transport facility. DFA does process and prepare energy / sport drinks.

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Cabool, MO	MO- 0026301	

PART F – INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

20. RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE

20.1 Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail or dedicated pipe? ☐ Yes ☒ No

20.2 Method by which RCRA waste is received. (Check all that apply)

☐ Truck ☐ Rail ☐ Dedicated Pipe

20.3 Waste Description

EPA Hazardous Waste Number	Amount (volume or mass)	Units

21. CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER

21.1 Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?

☐ Yes ☒ No

Provide a list of sites and the requested information for each current and future site.

21.2 Waste Origin. Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates (or is expected to originate in the next five years).

21.3 List the hazardous constituents that are received (or are expected to be received). Included data on volume and concentration, if known. (Attach additional sheets if necessary)

21.4 Waste Treatment

a. Is this waste treated (or will it be treated) prior to entering the treatment works?

☐ Yes ☐ No

If Yes, describe the treatment (provide information about the removal efficiency):

b. Is the discharge (or will the discharge be) continuous or intermittent?

☐ Continuous ☐ Intermittent

If intermittent, describe the discharge schedule:

END OF PART F

REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM B2 YOU MUST COMPLETE.

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL

FACILITY NAME	PERMIT NO.	OUTFALL NO.
Cabool, MO	MO- 0026301	

PART G – COMBINED SEWER SYSTEMS

Refer to the APPLICATION OVERVIEW to determine whether Part G applies to the treatment works.

22. GENERAL INFORMATION

22.1 System Map. Provide a map indicating the following: (May be included with basic application information.)

A. All CSO Discharges.
B. Sensitive Use Areas Potentially Affected by CSOs. (e.g., beaches, drinking water supplies, shellfish beds, sensitive aquatic ecosystems and Outstanding Natural Resource Waters.)
C. Waters that Support Threatened and Endangered Species Potentially Affected by CSOs.

22.2 System Diagram. Provide a diagram, either in the map provided above or on a separate drawing, of the Combined Sewer Collection System that includes the following information:

A. Locations of Major Sewer Trunk Lines, Both Combined and Separate Sanitary.
B. Locations of Points where Separate Sanitary Sewers Feed into the Combined Sewer System.
C. Locations of In-Line or Off-Line Storage Structures.
D. Locations of Flow-Regulating Devices.
E. Locations of Pump Stations.

22.3 Percent of collection system that is combined sewer

22.4 Population served by combined sewer collection system

22.5 Name of any satellite community with combined sewer collection system

23. CSO OUTFALLS. COMPLETE THE FOLLOWING ONCE FOR EACH CSO DISCHARGE POINT

23.1 Description of Outfall

a. Outfall Number

b. Location

c. Distance from Shore (if applicable) _____ ft

d. Depth Below Surface (if applicable) _____ ft

e. Which of the following were monitored during the last year for this CSO?

☐ Rainfall ☐ CSO Pollutant Concentrations ☐ CSO
☐ CSO Flow Volume ☐ Receiving Water Quality

f. How many storm events were monitored last year?

23.2 CSO Events

a. Give the Number of CSO Events in the Last Year Events ☐ Actual ☐ Approximate

b. Give the Average Duration Per CSO Event
Hours ☐ Actual ☐ Approximate

c. Give the Average Volume Per CSO Event
Million Gallons ☐ Actual ☐ Approximate

d. Give the minimum rainfall that caused a CSO event in the last year _____ inches of rainfall

23.3 Description of Receiving Waters

a. Name of Receiving Water

b. Name of Watershed/River/Stream System

c. U.S. Soil Conservation Service 14-Digit Watershed Code (If Known)

d. Name of State Management/River Basin

e. U.S. Geological Survey 8- Digit Hydrologic Cataloging Unit Code (If Known)

23.4 CSO Operations

Describe any known water quality impacts on the receiving water caused by this CSO (e.g., permanent or intermittent beach closings, permanent or intermittent shellfish bed closings, fish kills, fish advisories, other recreational loss, or violation of any applicable state water quality standard.)

END OF PART G

REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM B2 YOU MUST COMPLETE.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

FORM I – PERMIT APPLICATION FOR OPERATION OF WASTEWATER IRRIGATION SYSTEMS

FOR AGENCY USE ONLY
PERMIT NUMBER MO -
DATE RECEIVED

INSTRUCTIONS: The following forms must be submitted with Form I: FORM B or B2 for domestic wastewater.
FORM A for industrial wastewater.

1. FACILITY INFORMATION

1.1 Facility Name: CABOOL, MO

1.2 Permit Number: MO- 0026301

1.3 Type of wastewater to be irrigated: ☐ Domestic ☒ Municipal ☐ State/National Park ☐ Seasonal business
☐ Municipal with Pretreatment Program or Significant Industrial Users ☒ Other (explain) _____
SIC Codes (list all that apply, in order of importance) _____

1.4 Months when the business or enterprise will operate or generate wastewater:
☒ 12 months per year ☐ Part of year (list Months): ___

1.5 This system is designed for:
☐ No-discharge ☐ Partial irrigation when feasible and discharge rest of time.
☐ Irrigation during recreation season (April – October) and discharge during November – March.
☒ Other (explain) Treatment via application of treated waste into 18 Infiltration Beds.

1.6 List the Facility outfalls which will be applicable to the irrigation system.
Outfall Numbers: 001 (monitoring well) & 004 (Infiltration Basin Sampling Location)

2. STORAGE BASINS

2.1 Number of storage basins: 3 storage lagoons
Type of basin: ☐ Steel ☐ Concrete ☐ Fiberglass ☒ Earthen
☐ Earthen with membrane liner

3. LAND APPLICATION SYSTEM

3.1 Number of irrigation sites 18 Infiltration Total Acres 36.82 acres.
Location: SE ¼, NE ¼, ___ ¼, Sec 12 Beds T 28 R 11 Texas County 36.82 Acres
Location: ___ ¼, ___ ¼, ___ ¼, Sec ___ T ___ R ___ _____ County _____ Acres
Attach pages as needed.

3.2 Attach a site map showing topography, storage basins, irrigation sites, property boundary, streams, wells, roads, dwellings, and other pertinent features.

3.3 Type of vegetation: ☐ Grass hay ☐ Pasture ☐ Timber ☐ Row crops ☒ Other (describe) Reed Canary Grass

3.4 Wastewater flow (dry weather) gallons/day:
Average annual: 1.4 MGD Seasonal _____ Off-season _____
Months of seasonal flow: 12

3. LAND APPLICATION SYSTEM (continued)

3.5 Land Application rate per acre (design flow including 1 in 10 year stormwater flows):

Design: _____ inches/year _____ inches/hour _____ inches/day _____ inches/week

Actual: _____ inches/year _____ inches/hour _____ inches/day _____ inches/week

Total Irrigation per year (gallons): 4.5 MGD Design 1.3 MG Actual

Actual months used for Irrigation (check all that apply):

☒ Jan ☒ Feb ☒ Mar ☒ Apr ☒ May ☒ Jun ☒ Jul ☒ Aug ☒ Sep ☒ Oct ☒ Nov ☒ Dec

3.6 Land Application Rate is based on:

☐ Nutrient Management Plan (N&P)

☒ Hydraulic Loading

☐ Other (describe) _____

3.7 Equipment type: ☐ Sprinklers ☒ Gated pipe ☐ Center pivot ☐ Traveling gun ☐ Other (describe) _____

Equipment Flow Capacity: _____ Gallons per hour _____ Total hours of operation per year

3.8 **Public Use Areas**. Public access shall not be allowed to public use area irrigation sites when application is occurring. Method of Public Access Restriction:

☐ Site is Fenced ☐ Wastewater disinfection prior to irrigation ☒ Site is not for public use

☐ Other (describe): _____

3.9 Separation distance (in feet) from the outside edge of the wetted irrigation area to nearby down gradient features:

20ft to 50yds ____ Permanent flowing stream ____ Losing Stream ____ Intermittent (wet weather) stream ____ Lake or pond

20ft to 50yds. ____ Property boundary ____ Dwellings ____ Water supply well ____ Other (describe) _____

3.10 The facility must develop and retain an Operation and Maintenance (O&M) Plan for the irrigation system.

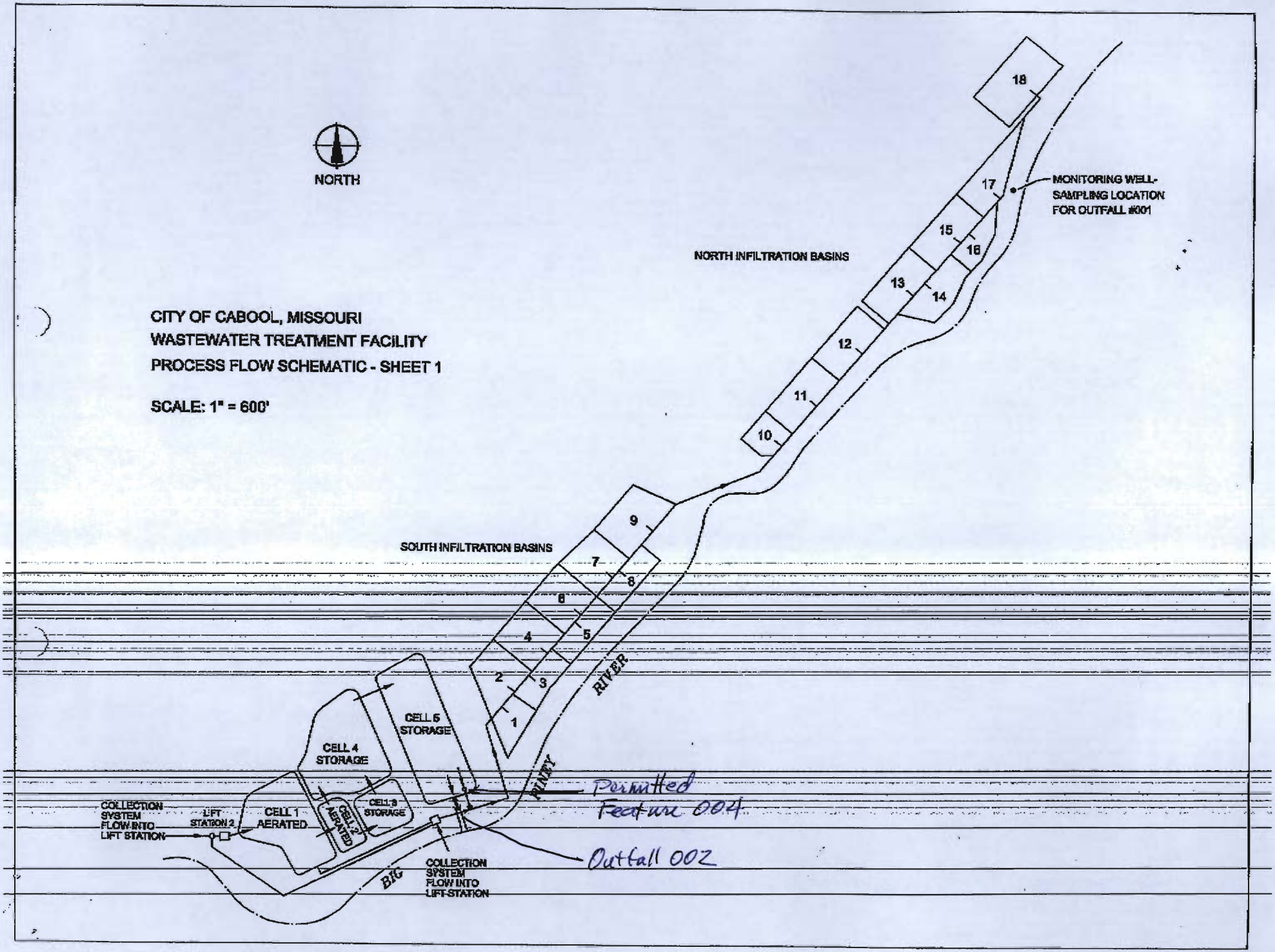
Date of O&M Plan: When system was built in 1979.

4. CERTIFICATION

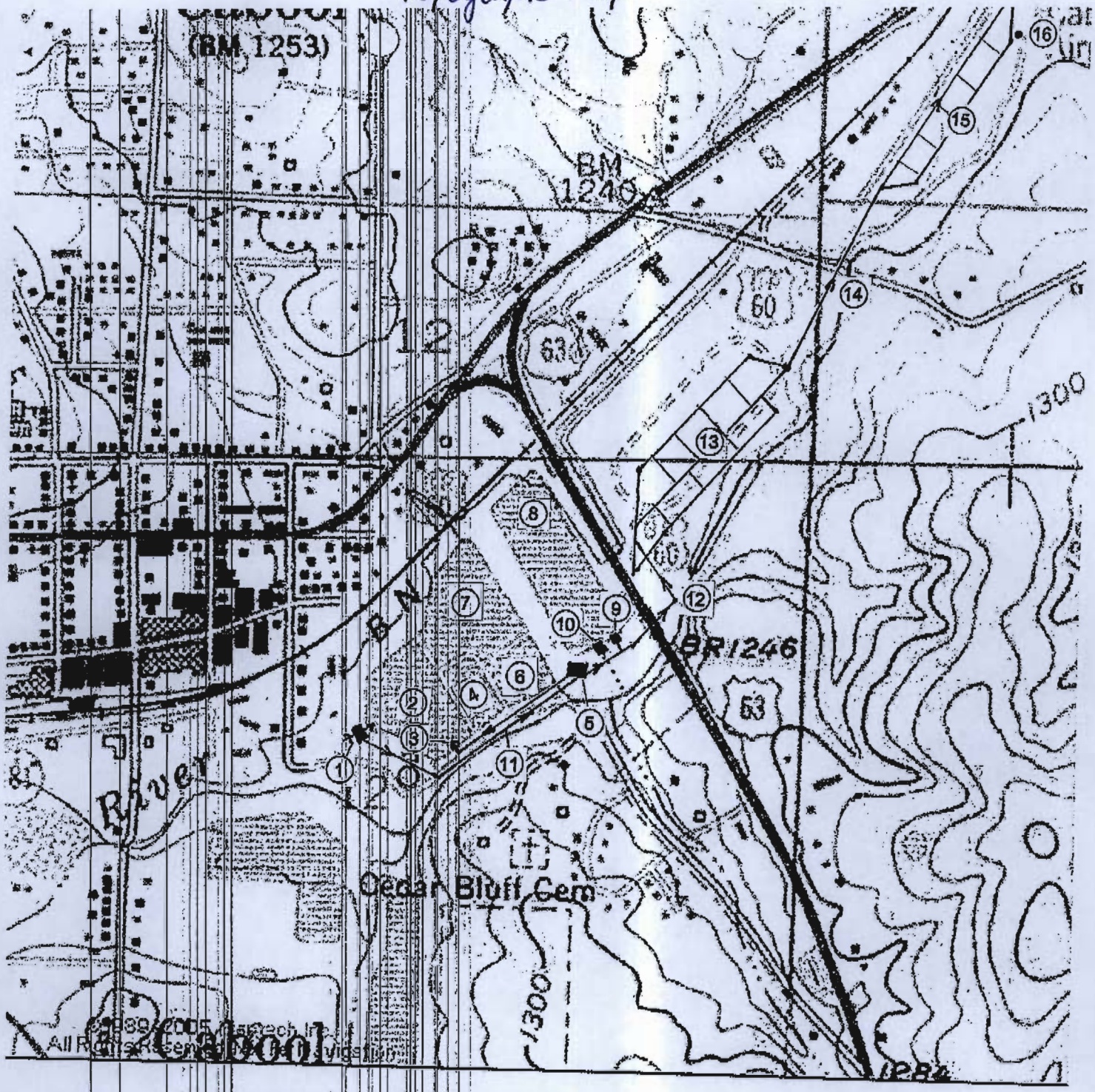
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment.

OWNER OR AUTHORIZED REPRESENTATIVE	OFFICIAL TITLE
Timothy E. Curry	WWTF Operator
EMAIL ADDRESS	**TELEPHONE NUMBER WITH AREA CODE**
topcat65689@yahoo.com	417-962-3136
SIGNATURE	**DATE SIGNED**
Timothy E Curry	6/28/16

780-1686 (06-14)



Topographic Map *



CABOOL WASTEWATER TREATMENT SYSTEM SCALE: 1" = 600'

1. LIFT STATION 2
2. CELL 1 - AERATED
3. LIFT STATION DISCHARGES TO CELL 1
4. CELL 2 - AERATED
5. LIFT STATION 1
6. CELL 3 - STORAGE
7. CELL 4 - STORAGE
8. CELL 5 - STORAGE
9. Permitted Feature 004
10. Outfall 002
11. LIFT STATION BYPASS LINE
12. INFILTRATION BASIN FEED LINE
13. SOUTH INFILTRATION BASINS
14. NORTH BASINS FEED LINE
15. NORTH INFILTRATION BASINS
16. SAMPLING WELL, Permitted Feature 001

* Downstream Landowner

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

FINANCIAL QUESTIONNAIRE

NOTE ► **FINANCIAL INFORMATION THAT IS NOT PROVIDED THROUGH THIS FORM WILL BE OBTAINED BY THE DEPARTMENT FROM READILY AVAILABLE SOURCES.**

1. GENERAL INFORMATION

FACILITY NAME	PERMIT NUMBER
City of Cabool	#MO- 0026301
CITY	**COUNTY**
Cabool	Texas
☒ PERMIT RENEWAL/MODIFICATION ☐ STATE REVOLVING FUND APPLICATION	SRF PROJECT NUMBER (IF APPLICABLE) C295_____

2. GENERAL FINANCIAL INFORMATION (ALL FACILITIES)

2.1	Number of connections to the facility: Residential 938 Commercial 164 Industrial 5	
2.2	Current sewer user rate: *Based on a 5,000 gallon per month usage* $ 12.71	The sewer user rate is (check one): ☐ Rate Capacity (set rate) ☒ Pay as You Go
2.3	Current operating costs for the facility (excludes depreciation):	201,320
2.4	Bond Rating (if applicable):	
2.5	Bonding Capacity: *General obligation bond capacity allowed by constitution: cities=up to 20% of taxable tangible property; sewer districts=up to 5% of taxable tangible property*	
2.6	Current outstanding debt relating to wastewater collection and treatment: *Debt information is typically available from your community's annual financial statements*	0
2.7	Amount of current user rate per household per month used toward payments on wastewater debt:	0
2.8	Net direct debt: *Net direct debt is the total amount of outstanding general obligation debt, including notes and short-term financing.*	0
2.9	Overlapping debt: *Overlapping debt is the financial obligations of one political jurisdiction that also falls partly on a nearby jurisdiction.*	0
2.10	Overall net debt: *Overall net debt is defined as debt repaid by property taxes within a utility/municipality's service area. It excludes debt that is repaid by special user fees (e.g. revenue bonds). Overall net debt = Net direct debt + Overlapping debt. Debt information is typically available from your community's annual financial statements*	0
2.11	Attach any relevant financial statements.	

3. FINANCIAL INFORMATION SPECIFIC TO MUNICIPALITIES

3.1	Municipality's Full Market Property Value (FMPV): *FMPV data is typically available through your community or state assessor's office*	13,126,690 Real Estate 4,957,631 Personal
3.2	Municipality's property tax revenues: *Property tax revenues are typically available from your community's annual financial statements*	146,000
3.3	Municipality's property tax collection rate: *To determine the collection rate, you will need to divide property tax revenues by the property taxes levied. To calculate property taxes levied, multiply the assessed value of real property within your community/service area by the property tax rate. This information is typically available through your community or state assessor's office. Property tax revenues are typically available in your community's annual financial statements.*	.8003 / $100 Valuation

4. FINANCIAL INFORMATION SPECIFIC TO SEWER DISTRICTS

4.1 Total connections to the sewer district: Residential 938 Commercial 164 Industrial 5

4.2 When facilities require upgrades, how are the costs divided? Will the homes connected to the upgraded facility bear the costs? Will the costs be divided across the sewer district?

cost will be Divided Across entire system

5. OTHER CONSIDERATIONS (ALL FACILITIES)

5.1 Provide a list of major infrastructure or other investments in environmental projects. Include project timing and costs and indicate any possible overlap or complications (attach sheets as necessary):

$80,000 budgeted this fiscal year for manhole repair + line repair + inspection. Our fiscal year is July 1 to June 30.

5.2 Provide a list of any other relevant local community economic conditions that may impact the ability to afford new permit requirements or the proposed SRF project. (See Community Supplemental Survey on the following page):

We have a high percentage of retirees + low income residents. There is a fairly high percentage of monthly bills that already require financial assistance to be paid in full.

6. CERTIFICATION

FINANCIAL CONTACT	OFFICIAL TITLE
Kim Elliott	City Clerk
EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE
Kelliott@cabcdmo.org	417-962-3136

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment.

OWNER OR AUTHORIZED REPRESENTATIVE	OFFICIAL TITLE
Ron Scheets	City Administrator
SIGNATURE	DATE SIGNED
X	6-27-16

For additional guidance, see http://usmayors.org/urbanwater/media/2013/0529-report-WaterAffordability.pdf.

For more information regarding your Missouri State Operating Permit, contact the department's Water Protection Program at 573-751-1300, to speak with a permit writer in the domestic wastewater unit.

For more information regarding your State Revolving Fund Application, contact the department's Water Protection Program at 573-751-1300, to speak with a project coordinator in the Financial Assistance Center.

This completed form and any attachments should be submitted to one of the following:

For Submittal of Permit Renewal/Modification:	For Submittal of SRF Applications:
Department of Natural Resources Water Protection Program ATTN: NPDES Operating Permits Section P.O. Box 176 Jefferson City, MO 65102	Department of Natural Resources Water Protection Program ATTN: Financial Assistance Center P.O. Box 176 Jefferson City, MO 65102

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
Community Supplemental Survey

PLEASE ANSWER THE FOLLOWING APPLICABLE QUESTIONS. (ATTACH ADDITIONAL SHEETS AS NECESSARY)

1. Are there any significant transportation corridors within 20 miles of your community? Yes
If yes, please explain. (Example: major interstate, railroad center)
US Hwy 160 - US Hwy 63

2. Are there any significant manufacturing or employment centers within 20 miles of your community? Yes
If yes, please explain. (Example: commercial farming, manufacturing, government operation, big box store)
manufacturing Big Box stores

3. Where do the majority of children in your community receive their education?
(Please check appropriate box for each education level)

Elementary	☒ Within your community	☐ Within 20 miles	☐ Farther than 20 miles
Middle School	☒ Within your community	☐ Within 20 miles	☐ Farther than 20 miles
High School	☒ Within your community	☐ Within 20 miles	☐ Farther than 20 miles

4. Considering your community's tax base, debt level, ability to bond capital improvement projects, or repay loans, how likely is it that your community could afford to pay for the following:

	Very Unlikely	Unlikely	Likely	Very Likely
4.1 An upgrade or replacements to your wastewater system costing $50,000				✓
4.2 An upgrade or replacements to your wastewater system costing $250,000			✓	
4.3 An upgrade or replacements to your wastewater system costing $1 million		✓		

5. Which of the following best describes anticipated population change for your community over the next ten years?
☐ Significant Decrease ☐ Decrease ☐ Remain the Same ☒ Increase ☐ Significant Increase

6. Check the appropriate boxes in the following statements as it relates to the population change you predicted in questions 5.

6.1 Over the past 20 years the population has:
☐ Significantly Decreased ☐ Decreased ☐ Remained the Same ☒ Increased ☐ Significantly Increased

6.2 The majority of the population in the community is retired or is near retirement.
☐ Definitely False ☐ Probably False ☐ Probably True ☒ True ☐ Unknown

6.3 The majority of young people leave the community in search of employment or education elsewhere.
☐ Definitely False ☐ Probably False ☐ Probably True ☒ True ☐ Unknown

6.4 In the foreseeable future, the employment opportunity in or around the community will:
☐ Significantly Decrease ☐ Decrease ☐ Remain the Same ☒ Increase ☐ Significantly Increase

6.5 In the foreseeable future the economic activity in or around the community will:
☐ Significantly Decrease ☐ Decrease ☒ Remain the Same ☐ Increase ☐ Significantly Increase

6.6 In the foreseeable future the tax base of the community will:
☐ Significantly Decrease ☐ Decrease ☒ Remain the Same ☐ Increase ☐ Significantly Increase

6.7 It is _____ for the community to meet its debt obligations.
☐ Difficult ☐ Somewhat Difficult ☒ Somewhat Easy ☐ Easy ☐ No Debt

7. What other issues or information should be considered when determining population stability or the financial ability for your community to pay for significant capital investments? Attach sheets as necessary.
(Example: Seasonal population changes, natural resources (lakes, rivers), age of infrastructure, significant employment changes, etc.) Income levels of low income and retired individuals.

8. Should an existing or proposed regional wastewater district be willing to connect, own, or operate your current facility, how likely would you be to consider this as an option?

Very Unlikely	Unlikely	Likely	Very Likely
✓			

OUTFALL 002
EFFLUENT TESTING

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM
MONTHLY MONITORING RECORD FOR WASTEWATER TREATMENT FACILITIES

RECEIVED
JUL 01 2016
Water Protection Program

NAME OF FACILITY	CITY	COUNTY/REGION
CABOOL WWTF	CABOOL, MO.	TEXAS/SERO

FOR THE MONTH OF	OUTFALL NUMBER	PERMIT NUMBER	TYPE TREATMENT FACILITY
May ,20 16	002	MO-0026301	2-CELL AERATED LAGOON

	INFLUENT			EFFLUENT								
DAY	FLOW: MGD ☑ GPD ☐ INF. OR EFF.	BOD mg/L	TOTAL SUSP. SOLIDS mg/L	BOD5 mg/L Weekly	PH SU Weekly	TOTAL SUS. SOLIDS mg/L Weekly	NH3 as N mg/L Weekly	E. COLI #/100mL Weekly	D.O. mg/L QUARTERLY	O & G mg/L QUARTERLY	Total Phosphorus mg/L QUARTERLY	Total Nitrogen mg/L QUARTERLY
1 S												
2 M												
3 T												
4 W												
5 T												
6 F												
7 S												
8 S												
9 M												
10 T												
11 W												
12 T												
13 F												
14 S												
15 S								0				
16 M												
17 T										< 5.5	1.6	1.9
18 W												
19 T					8.63				4.67			
20 F												
21 S												
22 S	1.4											
23 M	1.4				9.03				10.86			
24 T	2.0				9.01	10	0.32	77	7.09			
25 W	2.0	69.64	145	15.50								
26 T	1.7											
27 F	1.4				8.43				5.21			
28 S	.5											
29 S												
H 30 M												
31 T												0
No. of Samp.	7	1	1	1	4	1	1	1	4	1	1	1
Tot of Samp.	10.4	69.64	145			10	0.32	77	27.83	< 5.5	1.6	1.9
Monthly Avg.	1.5	69.64	145			10	0.32	77	6.96	< 5.5	1.6	1.9
Daily Max.	2.0	69.64	145		9.03	10	0.32	77	10.86	< 5.5	1.6	1.9
Daily Min.	.5	69.64	145		8.43	10	0.32	77	4.67	< 5.5	1.6	1.9
Max 7/ Avg.												

NOTE: SEE INSTRUCTION ON REVERSE SIDE OF THIS FORM

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM
MONTHLY MONITORING RECORD FOR WASTEWATER TREATMENT FACILITIES

RECEIVED
JUL 01 2016
Water Protection Program

NAME OF FACILITY	PERMIT NUMBER	COUNTY:	FOR THE MONTH OF
CABOOL WWTF	MO-0026301	TEXAS	May, 2016

	PERMITTED FEATURE 004 – Infiltration Basin Sampling Location			PERMITTED FEATURE 001 - Monitoring Well	
DAY	FLOW: MGD ONCE/DAY	TOTAL KJELDAHL NITROGEN as N mg/L QUARTERLY	NITRATE NITROGEN as N mg/L QUARTERLY	TOTAL KJELDAHL NITROGEN as N mg/L QUARTERLY	NITRATE NITROGEN as N mg/L QUARTERLY
1 S	1.7				
2 M	1.8				
3 T	1.8				
4 W	1.7				
5 T	1.9				
6 F	1.7				
7 S	1.5				
8 S	1.5				
9 M	1.3				
10 T	1.3				
11 W	1.4				
12 T	1.6				
13 F	2.0				
14 S	1.8				
15 S	1.9				
16 M	2.4				
17 T	2.1	1.8	0.086	< 1.0	0.28
18 W	2.3				
19 T	2.6				
20 F	2.7				
21 S	3.0				
22 S	.6				
23 M	.5				
24 T	.7				
25 W	.4				
26 T	.4				
27 F	.3				
28 S	1.4				
29 S	1.3				
30 M	1.5				
31 T	1.4				
No.of Samp.	31				
Tot of Samp.	47.5				
Monthly Avg.	1.5				
Daily Max.	3.0				

SIGNATURE AND TITLE OF AUTHORIZED INDIVIDUAL, IN ACCORDANCE WITH 10 CSR 20-6.010(2)(C)	Date	Phone number
Tom Curry	6/6/16	417 962 3136

OUTFALL 002
EFFLUENT TESTING

PDC Laboratories, Inc.
1805 West Sunset Street
Springfield, MO 65807
(417) 864-8924

ANALYTICAL RESULTS

Sample: 6053586-01
Name: Outfall 002 Weekly
Matrix: Waste Water - Grab

Sampled: 05/24/16 07:40
Received: 05/24/16 11:55

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Microbiology - SPMO							
E. coli	77	MPN/100 mL		05/24/16 13:14	05/24/16 13:14	PMB	SM 9223B - QT*
Nutrients - PIA							
Ammonia-N	0.32	mg/L		06/01/16 16:58	06/01/16 14:19	sjf	OIA/PAI-DK03 & EPA 350.1

002 used
Begin 5/22/16
END 5/28/16

PDC Laboratories, Inc.
1805 West Sunset Street
Springfield, MO 65807
(417) 864-8924

NOTES

Specific method revisions used for analysis are available upon request.

Certifications

PIA - Peoria, IL
TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100230
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17553
Missouri Department of Natural Resources Certificate of Approval for Microbiological Laboratory Service No. 870
Drinking Water Certifications: Iowa (240); Kansas (E-10338); Missouri (870)
Wastewater Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10338)
Hazardous/Solid Waste Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPMO - Springfield, MO
USEPA DMR-QA Program

STL - St. Louis, MO
TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 171050
Drinking Water Certifications: Missouri (1050)
Missouri Department of Natural Resources

* Not a TNI accredited analyte

Certified by: Chad Cooper, Laboratory Supervisor

PDC LABORATORIES, INC.
1805 W. SUNSET
SPRINGFIELD, MO 65807
PHONE # 417-864-8924
FAX # 417-864-7081

CHAIN OF CUSTODY RECORD

State where samples collected MO

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

1 CLIENT	PROJECT NUMBER	P.O. NUMBER	MEANS SHIPPED
CITY OF CABOOL WWTP	WEEKLY		WEST PLAINS EXPRESS
ADDRESS: 618 MAIN STREET	PHONE NUMBER: 417-962-3136	FAX NUMBER: 417-962-5144	DATE SHIPPED
CITY / STATE / ZIP: CABOOL MO 65689	SAMPLER (PLEASE PRINT): TIM CURRY		MATRIX TYPES: WW- WASTEWATER, DW- DRINKING WATER, GW- GROUND WATER, WWSL- SLUDGE, NAS- SOLID, LCHT-LEACHATE, OTHER:
CONTACT PERSON: TIM CURRY	SAMPLER'S SIGNATURE: Tim Curry		

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2 SAMPLE DESCRIPTION AS YOU WANT ON REPORT	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	3 ANALYSIS REQUESTED: Ammonia	E.coli*	Oil & Grease					REMARKS
OUTFALL 002	5-24-16	0740	X		WW	3	X	X	X					
														*E.coli recreation season only

4 (FOR LAB USE ONLY)
LOGIN # L0053580
LOGGED BY: KBW
LAB PROJ. #
TEMPLATE:
PROJ. MGR.: CHAD COOPER

5 TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH
(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)
DATE RESULTS NEEDED
RUSH RESULTS VIA (PLEASE CIRCLE) FAX PHONE
FAX # IF DIFFERENT FROM ABOVE:
PHONE # IF DIFFERENT FROM ABOVE:

6 *The sample temperature will be measured upon receipt at the lab. By initialing this area you request that the lab notify you, before proceeding with analysis, if the sample temperature is outside of the range of 0.1-6.0°C. By not initialing this area you allow the lab to proceed with analytical testing regardless of the sample temperature.*

7	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
	Tim Curry	5/24/16	09:12	Karen Wright	5-24-16	1155
	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

8 COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 3.0 °C

CHILL PROCESS STARTED PRIOR TO RECEIPT	Y OR N
SAMPLE(S) RECEIVED ON ICE	Y OR N
PROPER BOTTLES RECEIVED IN GOOD CONDITION	Y OR N
BOTTLES FILLED WITH ADEQUATE VOLUME	Y OR N
SAMPLES RECEIVED WITHIN HOLD TIME(S) (EXCLUDES TYPICAL FIELD PARAMETERS)	Y OR N
DATE AND TIME TAKEN FROM SAMPLE BOTTLE	

PDC Laboratories, Inc.

Bottle Receipt Form

Login Number: L0535586 Completed By: KBV

TYPE	QUANTITY PER SAMPLE							
	-1	-2	-3	-4	-5	-6	-7	-8
Plastic								
Plastic Shipper, Total								
Plastic Shipper, Diss								
Unpreserved, Total								
Unpreserved, Diss								
Ammonia, Total, H_2SO_4 Pres.	1							
Ammonia, Diss, H_2SO_4 Pres.								
Cyanide, NaOH Pres.								
Metals, Total, HNO_3 Pres.								
Metals, Diss., HNO_3 Pres.								
Sulfide, NaOH + ZnAc Pres.								
pH								
Diquat, $Na_2S_2O_3$ + H_2SO_4 Pres.	1							
Coliform (purple, white, black)								
Glass								
Unpreserved								
½ Gallon Amber, Unpreserved								
½ Gallon Amber, $Na_2S_2O_3$ Pres.								
½ Gallon Amber, $Na_2S_2O_3$ + HCL								
HAA, NH_4Cl Pres.								
G&O, H_2SO_4 or HCl Pres.								
Vial, 40ml, Tsp								
Vial, 40ml, Unp.								
Vial, 40ml, $Na_2S_2O_3$ (THM)								
Vial, 40ml, HCl, (VOC)								
Vial, 40ml, $Na_2S_2O_3$, (EDB, DBCP)								
Vial, 40ml, Methanol								
Vial, 40ml, DI Water								
Vial, 40ml, Sodium Bisulfate								
Carbamates, $Na_2S_2O_3$ + MCAA								
Glyphosate, 60ml, $Na_2S_2O_3$								
Phenolics, H_2SO_4								
TOC, 40ml, H_2SO_4								
TOX, 250ml, H_2SO_4								
Soil Jar (16 oz PB)								
Soil Jar (9 oz)								
Soil Jar (4 oz)								
Soil Jar (2 oz)								
Other								
Plastic Bag								
Other								

Notes

B - Broken
E - Empty

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories, Inc.

6053586

SENDING LABORATORY

PDC Laboratories, Inc.
1805 W Sunset St
Springfield, MO 65807
(417) 864-8924

RECEIVING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(309) 692-9688

Sample: 6053586-01
Name: Outfall 002 Weekly

Sampled: 05/24/16 07:40
Matrix: Water

Analysis	Due	Expires	Comments
Ammonia GD	06/06/16 16:00	06/21/16 07:40	

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JUL 01 2016
Water Protection Program

Please email results to Chad Cooper at ccooper@pdclab.com

Date Shipped: 52416 Total # of Containers: 1 Sample Origin (State): MO PO #:

Turn-Around Time Requested ☒ NORMAL ☐ RUSH Date Results Needed:

Relinquished By	Date/Time	Received By	Date/Time
Paul M Fallbourn	5-24-16 1404		
			5-26-16 0850

Sample Temperature Upon Receipt	3 °C
Sample(s) Received on Ice	(Y) or N
Proper Bottles Received in Good Condition	(Y) or N
Bottles Filled with Adequate Volume	(Y) or N
Samples Received Within Hold Time	(Y) or N
Date/Time Taken From Sample Bottle	Y or (N)

PDC Laboratories, Inc.

PROFESSIONAL • DEPENDABLE • COMMITTED

June 01, 2016

RECEIVED
JUL 01 2016
Water Protection Program

Tim Curry
Cabool, City of
PO BOX 710
Cabool, MO 65689

Dear Tim Curry:

Please find enclosed the analytical results for the sample(s) the laboratory received on **5/24/16 11:55 am** and logged in under work order **6053586**. All testing is performed according to our current TNI certifications unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Vice President, John LaPayne with any feedback you have about your experience with our laboratory.

Sincerely,

Chad Cooper
Laboratory Supervisor
(417) 864-8924
ccooper@pdclab.com

NELAP ACCREDITED TNI LABORATORY

Toxicity Testing
Outfall 002

PDC Laboratories, Inc.

PROFESSIONAL • DEPENDABLE • COMMITTED

May 01, 2016

RECEIVED
JUL 01 2016
Water Protection Program

Tim Curry
Cabool, City of
PO BOX 710
Cabool, MO 65689

Dear Tim Curry:

Please find enclosed the analytical results for the sample(s) the laboratory received on **4/19/16 11:04 am** and logged in under work order **6042883**. All testing is performed according to our current TNI certifications unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Vice President, John LaPayne with any feedback you have about your experience with our laboratory.

Sincerely,

Chad Cooper
Laboratory Supervisor
(417) 864-8924
ccooper@pdclab.com

NELAP ACCREDITED TNI LABORATORY

PDC Laboratories, Inc.
1805 West Sunset Street
Springfield, MO 65807
(417) 864-8924

NOTES

Specific method revisions used for analysis are available upon request.

Certifications

PIA - Peoria, IL
TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100230
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SPMO - Springfield, MO
USEPA DMR-QA Program

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Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 171050
Drinking Water Certifications: Missouri (1050)
Missouri Department of Natural Resources

* Not a TNI accredited analyte

Qualifiers

Pass Pass

Certified by: Chad Cooper, Laboratory Supervisor

Environmental Analysis South, Inc.
4000 East Jackson Blvd. • Jackson, MO 63755 • 573-204-8817 • Fax 573-204-8818

REPORT OF ACUTE TOXICITY TESTING
Cabool WWTF
Outfall 002 (grab) AEC = 100%
MO-0026301
EAS LOG# 2000317
April 20, 2016 through April 22, 2016

RECEIVED
JUL 01 2016
Water Protection Program

Tests performed by:
John P. Clippard / Chemical Analyst at Environmental Analysis South (EAS)
Kelly J. Ray / Biologist at Environmental Analysis South (EAS)
Sara C. Shields / Lab Supervisor - Chemist at Environmental Analysis South (EAS)
David F. Warren / Lab Director - Chemist at Environmental Analysis South (EAS)

Environmental Analysis South, Inc.
4000 East Jackson Blvd. • Jackson, MO 63755 • 573-204-8817 • Fax 573-204-8818

REPORT OF ACUTE TOXICITY TESTING
Cabool WWTF
Outfall 002 (grab) AEC = 100%
MO-0026301
EAS LOG# 2000317
April 20, 2016 through April 22, 2016

RECEIVED
JUL 01 2016
Water Protection Program

1. REPORT SUMMATION:

1.1. Multiple Dilution Data Summation

Test Solution	*Pimephales promelas* Acute Toxicity Test 48 Hour Survival	*Ceriodaphnia dubia* Acute Toxicity Test 48 Hour Survival
Reconstituted Control (RC)	100%	100%
Upstream Control (UC)	100%	100%
6.25% Effluent	100%	100%
12.5% Effluent	100%	100%
25% Effluent	100%	100%
50% Effluent	100%	100%
100% Effluent	100%	100%
Estimated 48 Hour LC_{50} Value	>100% Effluent	>100% Effluent
TUa	<1.0	<1.0
Result of Toxicity Test	Monitor Only	Monitor Only

* Indicates a significant difference at alpha = 0.5 between effluent and control survival data.

Conclusion:

Pimephales promelas 48 hour WET results: LC 50 >100% using the Graphical Method
NOAEC = 100% by Steel's Many-One Rank Test
TUa < 1.0

Ceriodaphnia dubia 48 hour WET results: LC 50 >100% using the Graphical Method
NOAEC = 100% by Steel's Many-One Rank Test
TUa < 1.0

Approved by _____
Sara C. Shields, Chemist

Environmental Analysis South, Inc.
4000 East Jackson Blvd. • Jackson, MO 63755 • 573-204-8817 • Fax 573-204-8818

RECEIVED
JUL 01 2016
Water Protection Program

REPORT OF ACUTE TOXICITY TESTING
Cabool WWTF
Outfall 002 (grab) AEC = 100%
MO-0026301
EAS LOG# 2000317
April 20, 2016 through April 22, 2016

2. TEST METHOD SUMMARY

2.1. TEST CONDITIONS AND METHODS:

	Ceriodaphnia dubia:	***Pimephales promelas:***
Test duration:	48 hours	48 hours
Temperature:	24 - 26 degree Celsius	24 - 26 degree Celsius
Light quality:	Ambient laboratory illumination	Ambient laboratory illumination
Photoperiod:	16 hour light, 8 hours dark	16 hour light, 8 hours dark
Control Water:	Moderately Hard Reconstituted Water	Moderately Hard Reconstituted Water
Dilution Water:	Upstream Water - If unavailable or toxic, then control water will be used.	Upstream Water - If unavailable or toxic, then control water will be used.
Size of test vessel:	30 milliliters	250 milliliters
Volume of test solution:	15 milliliters	200 milliliters
Age of test organisms:	<24 hours	1 -14 days (all same age)
Number of organisms/test vessel:	5	10
Number of replicates/concentration:	4	2
Number of organisms/concentration:	20	40 for a single dilution test and 20 for a multiple dilution test
Feeding regime:	None (fed prior to test)	None (fed prior to test)
Aeration:	None	None
Test acceptability criterion:	90% or greater survival in controls	90% or greater survival in controls

The methodology used for the chemistry data was taken from the *Standard Methods for the Examination of Water and Wastewater*, 18th edition (1992). The exception was hardness, which was determined using a Hach EDTA titration test kit. The toxicity tests follow guidelines laid out in the permittee's NPDES permit and were conducted according to EPA approved methods (USEPA 2002).

All test organisms were cultured according to EPA approved methods (USEPA 2002). The *Ceriodaphnia dubia* and the *Pimephales promelas* were obtained from C-K Associates Inc. located in Baton Rouge, Louisiana and shipped overnight for use in the whole effluent toxicity test.

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REPORT OF ACUTE TOXICITY TESTING
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2.2. REFERENCE TOXICITY TEST:

Environmental Analysis South performs monthly reference toxicity tests. The most recent reference test was initiated on April 6, 2016 using KCL Lot #41713. Following are the results:

2.2.1. ***P. promelas*** - 48 hr. Acute Test – LC_{50} = 0.990 g/l 95%CI (0.782-1.462 g/l)
EAS %CV = 15.1%
National Warning Limits (75th percentile) = 19%CV
National Control Limits (90th percentile) = 33%CV

2.2.2. ***C. dubia*** - 48 hr. Acute Test – LC_{50} = 0.456 g/l 95%CI (0.343-0.699g/l)
EAS %CV = 17.1%
National Warning Limits (75th percentile) = 29%CV
National Control Limits (90th percentile) = 34%CV

2.3. LITERATURE CITED:

1. APHA. 1992. *Standard methods for the examination of water and wastewater*, 18th Ed. American Public Health Association, Washington, D.C
2. USEPA. 2002. *Methods for measuring the acute toxicity of effluents and receiving waters to freshwater and marine organisms*, 5th Ed. EPA-821-R-02-012
3. USEPA 2000. *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications under the National Pollutant Discharge Elimination System, (Table B-2).* June 2000. EPA 833-R-00-003.

WHOLE EFFLUENT TEST conducted in accordance with US EPA 600/4-90/027
Fifth Edition October 2002

CLIENT NAME:	Cabool WWTF, Outfall 002, grab
NPDES NUMBER:	MO-0026301
TYPE OF METHOD:	multiple dilution, 48 hr non-renewal WET, PP and CD species AEC=100%, Tua report
DATE & TIME OF COLLECTION:	04/19/16 0919 hrs by Cabool WWTF
DATE & TIME OF SUBMISSION:	04/20/16 1055 hrs by UPS

Upstream: Big Piney River
Collected: 04/19/16 0856 hrs by Cabool WWTF

INITIAL OBSERVATIONS	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	INT EFFL	INT UC	INT RC
LOG NUMBER / ID NUMBER						2000317	2000317A	RC4155
pH - SU	04/20/16	1115 hrs	SCS	SB114 (8.8-9.2)	8.86	7.67	7.79	8.15
TEMPERATURE °C RECEIVED	04/20/16	1115 hrs	SCS	EAS 106		6	6	23
SPECIFIC CONDUCTANCE umhos	04/20/16	1115 hrs	SCS	ERA229-506 (490-549)	504	725	348	249
HARDNESS - ppm	04/20/16	1115 hrs	SCS	DMRQA34 (184-250)	240	260	200	80
CHLORINE - ppm	04/20/16	1115 hrs	SCS	tap water	+	<0.04	<0.04	<0.04
DISSOLVED OXYGEN - ppm	04/20/16	1115 hrs	SCS	cal@840		4.7	7.9	8.5
TOTAL ALKALINITY - ppm	04/20/16	1400 hrs	SCS	P243-506 (48.8-58.3)	57.3	341	182	65.4
INITIAL AMMONIA - ppm	04/25/16	1300 hrs	JPC	DMRQA35 (8.12-12.2)	11.4	1.59	<0.05	<0.05
TOTAL DISSOLVED SOLIDS -ppm								

0 HOUR OBSERVATIONS	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	RC	UC	100%	50%	25%	12.5%	6.25%	X %AEC
pH - SU	04/20/16	1200 hrs	SCS	SB114 (8.8-9.2)	8.86	7.75	7.46	7.76	7.47	7.46	7.45	7.46	
TEMPERATURE °C	04/20/16	1200 hrs	SCS	EAS 106		24.0	24.4	23.8	23.9	23.9	24.3	24.6	
SPECIFIC CONDUCTANCE umhos	04/20/16	1200 hrs	SCS	ERA229-506 (490-549)	506	247	364	822	583	476	412	389	
DISSOLVED OXYGEN - ppm	04/20/16	1200 hrs	SCS	cal@840		8.2	8.2	10.2	9.1	8.9	8.7	8.6	

24 HOUR OBSERVATIONS - PP	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	RC	UC	100%	50%	25%	12.5%	6.25%	X %AEC
pH - SU	04/21/16	1200 hrs	SCS	SB114 (8.8-9.2)	8.97	8.10	7.35	8.02	7.79	7.53	7.40	7.34	
TEMPERATURE °C	04/21/16	1200 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0	
SPECIFIC CONDUCTANCE umhos	04/21/16	1200 hrs	SCS	ERA229-506 (490-549)	500	267	397	846	596	481	425	402	
DISSOLVED OXYGEN - ppm	04/21/16	1200 hrs	SCS	cal@840		8.0	8	7.2	7.6	7.7	7.7	8	
48 HOUR OBSERVATIONS - PP	**DATE**	**TIME**	**ANALYST**	**QC LOT**	**QC EXP VALUE**	**RC**	**UC**	**100%**	**50%**	**25%**	**12.5%**	**6.25%**	**X %AEC**
pH - SU	04/22/16	1200 hrs	SCS	SB114 (8.8-9.2)	8.97	8.10	7.91	7.98	7.96	7.95	7.95	7.92	
TEMPERATURE °C	04/22/16	1200 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0	
SPECIFIC CONDUCTANCE umhos	04/22/16	1200 hrs	SCS	ERA229-506 (490-549)	500	267	448	860	613	485	425	407	
DISSOLVED OXYGEN - ppm	04/22/16	1200 hrs	SCS	cal@840		8.0	7.8	7.8	7.9	7.9	8.0	8.0	
FINAL AMMONIA - ppm				DMRQA33 (10.0-16.8)									

24 HOUR OBSERVATIONS - CD	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	RC	UC	100%	50%	25%	12.5%	6.25%	X %AEC
pH - SU	04/21/16	1200 hrs	SCS	SB114 (8.8-9.2)	8.97	8.22	8.11	8.15	8.12	8.11	8.11	8.10	
TEMPERATURE °C	04/21/16	1200 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0	
SPECIFIC CONDUCTANCE umhos	04/21/16	1200 hrs	SCS	ERA229-506 (490-549)	505	247	346	847	596	480	422	394	
DISSOLVED OXYGEN - ppm	04/21/16	1200 hrs	SCS	cal@840		8.2	8.4	8.1	8.3	8.5	8.5	8.5	
48 HOUR OBSERVATIONS - CD	**DATE**	**TIME**	**ANALYST**	**QC LOT**	**QC EXP VALUE**	**RC**	**UC**	**100%**	**50%**	**25%**	**12.5%**	**6.25%**	**X %AEC**
pH - SU	04/22/16	1200 hrs	SCS	SB114 (8.8-9.2)	8.89	7.56	7.82	7.83	7.79	7.77	7.75	7.77	
TEMPERATURE °C	04/22/16	1200 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0	
SPECIFIC CONDUCTANCE umhos	04/22/16	1200 hrs	SCS	ERA229-506 (490-549)	500	275	394	854	600	482	432	398	
DISSOLVED OXYGEN - ppm	04/22/16	1200 hrs	SCS	cal@840		8.2	8.7	8.6	8.6	8.7	9.0	8.8	
FINAL AMMONIA - ppm				DMRQA33 (10.0-16.8)									

Approved by: DAL DB Date: 4/25/16

WHOLE EFFLUENT TEST conducted in accordance with US EPA 600/4-90/027
Fifth Edition October 2002

Cabool WWTF, Outfall 002, grab **EAS LOG# 2000317**

Date Test Began:	April 20, 2016	**Time Test Began:**	1200 hrs	**Analyst 1:**	DFW
				Analyst 2:	KJR
Date Test Finished:	April 22, 2016	**Time Test Finished:**	1200 hrs	**Analyst 3:**	SCS

P. promelas (PP) **AGE:** 4 **days** **HATCH NUMBER:** 9794 c-k

	RC	UC	100%	50%	25%	12.5%	6.25%	X% AEC
PERIOD	**ALIVE**	**ALIVE**	**ALIVE**	**ALIVE**	**ALIVE**	**ALIVE**	**ALIVE**	**ALIVE**
0 HR-PP	10,10	10,10	10,10	10,10	10,10	10,10	10,10	
24 HR-PP	10,10	10,10	10,10	10,10	10,10	10,10	10,10	
48 HR-PP	10,10	10,10	10,10	10,10	10,10	10,10	10,10	

Ceriodaphnia dubia (CD) **AGE:** <24 **hours** **HATCH NUMBER:** 3301 c-k

	RC	UC	100%	50%	25%	12.5%	6.25%	X% AEC
PERIOD	**ALIVE**	**ALIVE**	**ALIVE**	**ALIVE**	**ALIVE**	**ALIVE**	**ALIVE**	**ALIVE**
0 HR-CD	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	
24 HR-CD	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	
48 HR-CD	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	5,5,5,5	

Approved by: [signature] Date: 4/25/16

Cabool WWTF, Outfall 002, grab EAS#: 2000317

Notes & Comments
Outfall 002 aerated prior to test initiation due to low DO upon arrival to the lab

Prepared by: [signature]

Date: 4/25/16

TI report

135756

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories, Inc.

6042883

SENDING LABORATORY

PDC Laboratories, Inc.
3805 W Sunset St
Springfield, MO 65807
(417) 864-8924

multiple 1052

RECEIVING LABORATORY

Environmental Analysis South
4000 East Jackson Blvd
Jackson, MO 63755
(573) 204-8817

Sample: 6042883-01 City of Caboo / WWTF
Name: WET COMPOSITE 2000317 MO-0021601
Sampled: 04/19/16 09:19
Matrix: Water
temp rec'd = 6°C

Analysis	Due	Expires	Comments
01-WET Multiple SPMO	04/29/16 16:00	04/21/16 09:19	002, grab

Sample: 6042883-02
Name: WET UPSTREAM 2000317-A
Sampled: 04/19/16 08:56
Matrix: Water
6°C

Analysis	Due	Expires	Comments
01-WET Multiple SPMO	04/29/16 16:00	04/21/16 08:56	57

Please email results to Chad Cooper at ccooper@pdclab.com

Date Shipped: 41916 Total # of Containers: 2 Sample Origin (State): MO PO #:

Turn-Around Time Requested ☒ NORMAL ☐ RUSH Date Results Needed:

Relinquished By	Date/Time	Received By	Date/Time
Paul W Ballmann	4-19-16 1444		
		Received By	4/20/16 1055

Sample Temperature Upon Receipt	°C
Sample(s) Received on Ice	Y or N
Proper Bottles Received in Good Condition	Y or N
Bottles Filled with Adequate Volume	Y or N
Samples Received Within Hold Time	Y or N
Date/Time Taken From Sample Bottle	Y or N

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM - P.O. BOX 176, JEFFERSON CITY MO, 65102

WHOLE EFFLUENT TOXICITY (WET) TEST REPORT

(TO BE ATTACHED TO WET TESTS FOR SUBMISSION TO THE REGULATORY AUTHORITY)

PART A – TO BE COMPLETED IN FULL BY PERMITTEE

FACILITY NAME: Cabool WWTF	DATE & TIME COLLECTED: EFFLUENT 04/19/16 0919 UPSTREAM 04/19/16 0856
PERMIT NUMBER: MO-0026301	PERMIT OUTFALL NUMBER: Outfall # 002
COLLECTOR'S NAME: Cabool WWTF	
RECEIVING STREAM COLLECTION SITE AND DESCRIPTION: Big Piney River	
PERMIT ALLOWABLE EFFLUENT CONCENTRATION (AEC): 100%	EFFLUENT SAMPLE TYPE (CHECK ONE): ☐ 24HR COMPOSITE ☒ GRAB ☐ OTHER
SAMPLE NUMBER: EFFLUENT 2000317 UPSTREAM 2000317A	UPSTREAM SAMPLE TYPE (CHECK ONE): ☐ 24HR COMPOSITE ☒ GRAB ☐ OTHER
PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR: CHLORINE ____ mg/L	PERMITTED EFFLUENT DAILY MAXIMUM LIMITATION FOR: AMMONIA ____ mg/L

PART B – TO BE COMPLETED IN FULL BY PERFORMING LABORATORY

PERFORMING LABORATORY: Environmental Analysis South, Inc.	TEST TYPE: Acute Static Non renewal Test Multiple Dilution	
FINAL REPORT NUMBER: MO_2000317	TEST DURATION: 48 hour	
DATE OF LAST REFERENCE TOXICANT TESTING: April 6, 2016	TEST METHOD: Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms	
DATE AND TIME SAMPLES RECEIVED AT LABORATORY: 04/20/16 1055 hrs by UPS	TEST START DATE AND TIME: 04/20/16 1200 hrs	TEST END DATE AND TIME: 04/22/16 1200 hrs
SAMPLE DECHLORINATED PRIOR TO ANALYSIS? ☐ YES ☒ NO EFFLUENT ____ UPSTREAM ____	TEST ORGANISM #1 AND AGE: Pimephales promelas 4 days	TEST ORGANISM #2 AND AGE: Ceriodaphnia dubia < 24 hours
SAMPLE FILTERED[1] PRIOR TO ANALYSIS? ☐ YES ☒ NO EFFLUENT ____ UPSTREAM ____	90% OR GREATER SURVIVAL IN SYNTHETIC CONTROL? ☒ YES ☐ NO	DILUTION WATER USED TO ACHIEVE AEC: upstream 2000317A
FILTER MESH SIZE[2]: None	EFFLUENT ORGANISM #1 % MORTALITY AT AEC: LC50>100%Effluent/TUa<1.0	EFFLUENT ORGANISM #2 % MORTALITY AT AEC: LC50>100%Effluent/TUa<1.0
SAMPLE AERATED DURING TESTING? ☐ YES ☒ NO	UPSTREAM ORGANISM #1 % MORTALITY: 0%	UPSTREAM ORGANISM #2 % MORTALITY: 0%
pH ADJUSTED? ☐ YES ☒ NO EFFLUENT ____ UPSTREAM ____	TEST RESULT AT AEC FOR ORGANISM #1 ☐ PASS ☐ FAIL	TEST RESULT AT AEC FOR ORGANISM #2 ☐ PASS ☐ FAIL

MINIMUM REQUIRED ANALYTICAL RESULTS FOR THE 100% EFFLUENT SAMPLE

PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	6	SM18 2550B stored at 4 degree C until test setup	04/20/16 1115 hrs
pH Standard Units	7.67	SM18 4500-H B	04/20/16 1115 hrs
Conductance µMohs	725	SM18 2510B	04/20/16 1115 hrs
Dissolved Oxygen mg/L	4.7	03/12/14 0945 hrsSM18 4500-O G	04/20/16 1115 hrs
Total Residual Chlorine mg/L	<0.04	SM18 4500-Cl G	04/20/16 1115 hrs
Unionized Ammonia mg/L	1.59x0.03=0.048	SM18 4500-NH3 F @ 25 degree C	04/25/16 1300 hrs
*Total Alkalinity mg/L	341	SM18 2320B	04/20/16 1400 hrs
*Total Hardness mg/L	260	SM18 2340 C	04/20/16 1115 hrs

*Recommended by USEPA guidance, not a required analysis.

[1] Samples shall only be filtered if indigenous organisms are present that may be confused with, or attack, the test organisms.

[2] Filters shall have a sieve size of 60 microns or greater.

CONTINUED ON PAGE 2

WHOLE EFFLUENT TOXICITY (WET) TEST REPORT

(TO BE ATTACHED TO WET TESTS FOR SUBMISSION TO THE REGULATORY AUTHORITY)

MINIMUM REQUIRED ANALYTICAL RESULTS FOR THE 100% UPSTREAM SAMPLE[3]

PARAMETER	RESULT	METHOD	WHEN ANALYZED
Temperature °C	6	SM18 2550B stored at 4 degree C until test setup	04/20/16 1115 hrs
pH Standard Units	7.79	SM18 4500-H B	04/20/16 1115 hrs
Conductance µMohs	348	SM18 2510B	04/20/16 1115 hrs
Dissolved Oxygen mg/L	7.9	SM18 4500-O G	04/20/16 1115 hrs
Total Residual Chlorine mg/L	<0.04	SM18 4500-Cl G	04/20/16 1115 hrs
Unionized Ammonia mg/L	<0.05x0.03<0.010	SM18 4500-NH3 F @ 25 degree C	04/25/16 1300 hrs
*Total Alkalinity mg/L	182	SM18 2320B	04/20/16 1400 hrs
*Total Hardness mg/L	200	SM18 2340 C	04/20/16 1115 hrs

*Recommended by USEPA guidance, not a required analysis.

PRELIMINARY TEST ACCEPTABILITY MATRIX (FOR USE BY PERMITTEE IN DETERMINING TEST VALIDITY)

PERMIT ALLOWABLE EFFLUENT CONCENTRATION (AEC): As indicated on permit. Test is invalid otherwise.

EFFLUENT SAMPLE TYPE: As indicated on permit. Test is invalid otherwise.

TEST TYPE: Acute Static Non-Renewal Test or other as indicated on permit. Test is invalid otherwise.

TEST DURATION: Forty-eight (48) hours or as indicated on permit. Test is invalid otherwise.

TEST ORGANISMS: As indicated on permit. Test is invalid otherwise.

DILUTION WATER USED TO ACHIEVE AEC: Upstream receiving water required if available.

TEST METHOD: The only acceptable method is the ***most current edition*** of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, or other as specifically assigned by EPA for determining NPDES compliance. Test is invalid otherwise.

TEST START DATE & TIME: Unless otherwise specified in writing by EPA, if >36 hours lapse between collection and initiation, test is invalid.

FILTER MESH SIEVE SIZE: Unless otherwise specified in writing by EPA, if sieve size is smaller than 60 microns, test is invalid.

90% OR GREATER SURVIVAL IN LABORATORY CONTROL(S) (Y/N): If NO, test is invalid.

PARAMETER	RESULT	NOTES	WHEN ANALYZED
Temperature °C	0 - 6	Unless received by the laboratory on the same day as collected, values outside this range invalidate the test.	Upon receipt

[3] Where no upstream control is available, enter results from laboratory or synthetic control.