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-0023019
Owner:	City of Sedalia
Address:	P.O. Box 1707, Sedalia, MO 65302-1707
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Sedalia Central Wastewater Treatment Facility
Facility Address:	2900 West Main, Sedalia, MO 65302-1707
Legal Description:	See page two (2)
Latitude/Longitude:	See page two (2)
Receiving Stream:	See page two (2)
First Classified Stream and ID:	See page two (2)
USGS Basin & Sub-watershed No.:	See page two (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

See page two (2)

This permit authorizes only wastewater 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 644.051.6 of the Law.

June 17, 2011 — Effective Date
November 15, 2011 — Revised

Sara Parker Pauley, Director, Department of Natural Resources

June 16, 2016 — Expiration Date

John Madras, Director, Water Protection Program

FACILITY DESCRIPTION (continued).

Outfall #001 - POTW - SIC #4952 - **Certified "B" Operator Required**
Bar screening/grit removal/ two (2) primary clarifiers/ one (1) biological basin, and two (2) secondary clarifiers/ one (1) primary digester/ one (1) secondary digester/ one thickener/ two (2) sludge holding tanks/ and sludge is land applied by permittee.
Design population equivalent is 25,000.
Design flow is 2.5 MGD.
Actual flow is 1.8 MGD.
Design sludge production is 1,008 dry tons/year.
Actual sludge production is 300 dry tons/year.

Legal Description:	SE ¼, SE ¼, Sec. 31, T46N, R21W, Pettis County
UTM:	X = 476979, Y = 4285350
Receiving Stream:	Brushy Creek
First Classified Stream and ID:	Brushy Creek (P) (00859)
USGS Basin & Sub-watershed No.:	(10300103 – 040003)

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

SM1 – Receiving Stream Monitoring
Approximately 1/10 mile upstream of Outfall #001.

Legal Description:	SW ¼, SW ¼, Sec. 32, T46N, R21W, Pettis County
UTM:	X = 477055, Y = 4285194
Receiving Stream:	Brushy Creek
First Classified Stream and ID:	Brushy Creek (P) (00859)
USGS Basin & Sub-watershed No.:	(10300103 – 040003)

SM2 – Receiving Stream Monitoring
Approximately 1/4 mile downstream of Outfall #001.

Legal Description:	NE ¼, SE ¼, Sec. 31, T46N, R21W, Pettis County
UTM:	X = 476902, Y = 4285696
Receiving Stream:	Brushy Creek
First Classified Stream and ID:	Brushy Creek (P) (00859)
USGS Basin & Sub-watershed No.:	(10300103 – 040003)

A. 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 upon issuance and remain in effect until three (3) years after the effective date of this permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below **(Note 1)**:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #001						
Flow	MGD	*		*	once/day	24 hr. total
Biochemical Oxygen Demand$_5$**	mg/L					
(May 1 – October 31)			10	10	once/week	24 hr. composite
(November 1 – April 30)			20	20	once/week	24 hr. composite
Total Suspended Solids**	mg/L	35		30	once/week	24 hr. composite
pH – Units	SU	***		***	once/week	grab
Ammonia as N	mg/L					
(April 1 – September 30)		3.6		1.5	once/week	grab
(October 1 – March 31)		8.1		2.9	once/week	grab
Oil & Grease	mg/L	15		10	once/month	grab
Escherichia coliform (*E. coli*) (Note 4)	#/ 100mL		*	*	once/month	grab

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE July 28, 2011. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

Outfall #001						
Copper, Total Recoverable	µg/L	43		21	once/quarter***	24 hr. composite**
Lead, Total Recoverable	µg/L	*		*	once/quarter***	24 hr. composite**
Nickel, Total Recoverable	µg/L	*		*	once/quarter***	24 hr. composite**
Zinc, Total Recoverable	µg/L	379		184	once/quarter***	24 hr. composite**

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE October 28, 2011. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

Whole Effluent Toxicity (WET) test	% Survival	See Special Condition #11	once/year	24 hr. composite

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE August 28, 2011.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I, II, & III STANDARD CONDITIONS DATED October 1, 1980 and August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. 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 three (3) years from the effective date of this permit and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below **(Note 1)**:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #001						
Flow	MGD	*		*	once/day	24 hr. total
Biochemical Oxygen Demand$_5$**	mg/L					
(May 1 – October 31)			10	10	once/week	24 hr. composite
(November 1 – April 30)			20	20	once/week	24 hr. composite
Total Suspended Solids**	mg/L	35		30	once/week	24 hr. composite
pH – Units	SU	***		***	once/week	grab
Ammonia as N	mg/L					
(April 1 – September 31)		3.6		1.5	once/week	grab
(October 1 – March 31)		8.1		2.9	once/week	grab
Escherichia coliform (*E. coli*) (Note 4)	#/100 mL		1030	206	once/week	grab
Oil & Grease	mg/L	15		10	once/month	grab

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE July 18, 2014. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

Outfall #001						
Copper, Total Recoverable	µg/L	42.2		15.4	once/quarter***	24 hr. composite**
Lead, Total Recoverable	µg/L	*		*	once/quarter***	24 hr. composite**
Nickel, Total Recoverable	µg/L	207		103	once/quarter***	24 hr. composite**
Zinc, Total Recoverable	µg/L	289		114	once/quarter***	24 hr. composite**

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE October 28, 2014. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

Whole Effluent Toxicity (WET) test	% Survival	See Special Condition #11	once/year	24 hr. composite

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE August 28, 2014.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I, II, & III STANDARD CONDITIONS DATED October 1, 1980 and August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. 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 upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfalls #SM1 & SM2: Receiving Stream Monitoring (Note 2)						
Flow	MGD	*		*	once/quarter***	grab
Dissolved Oxygen	mg/L	*		*	once/quarter***	grab
pH – Units	SU	*		*	once/quarter***	grab
Temperature	°C	*		*	once/quarter***	grab
Ammonia as N	mg/L	*		*	once/quarter***	grab
Total Hardness (Note 3)	mg/L	*		*	once/quarter***	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE October 28, 2011. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I, II, & III STANDARD CONDITIONS DATED October 1, 1980 and August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

* Monitoring requirement only.

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

*** See table below for quarterly sampling.

Sample discharge at least once for the months of:	Report is due:
January, February, March (1st Quarter)	April 28
April, May, June (2nd Quarter)	July 28
July, August, September (3rd Quarter)	October 28
October, November, December (4th Quarter)	January 28

**** pH is measured in pH units and is not to be averaged. pH is limited to the range of 6.5 – 9.0

Note 1 – This permit contains a Schedule of Compliance for the Metal and E. coli Limitations contained in Table A, please see Part E – Schedule of Compliance (page 11 of 12).

Note 2 – This permit contains receiving stream monitoring requirements, please see **Part F. Receiving Water Monitoring Conditions**, starting on (page 11 of 12).

Note 3 – Total Hardness shall only be collected in the downstream location (i.e., SM2), and not at the above stream location of Outfall #SM1.

Note 4 – Final 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).

C. INFLUENT MONITORING REQUIREMENTS

The facility is required to meet a removal efficiency of 85% or more. The monitoring requirements shall become effective upon issuance and remain in effect until expiration of the permit. To determine removal efficiencies, the influent wastewater shall be monitored by the permittee as specified below:

SAMPLING LOCATION AND PARAMETER(S)	UNITS	MONITORING REQUIREMENTS	
		MEASUREMENT FREQUENCY	SAMPLE TYPE
Influent			
Biochemical Oxygen Demand$_5$	mg/L	once/month	24 hr. composite
Total Suspended Solids	mg/L	once/month	24 hr. composite

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE July 28, 2011.

D. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
   (a) 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 Clean Water Act, 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) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
   (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.
   (d) If concurrent and department approved site-specific data for total recoverable metals, dissolved metals, hardness, and total suspended solids are provided to the department, the partitioning evaluations may be considered, as part of a modification request, and site-specific translators developed.

   The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

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

3. Permittee will cease discharge by connection to area-wide wastewater treatment system within 90 days of notice of its availability.

4. Changes in Discharges of Toxic Substances

   The permittee shall notify the Director as soon as it knows or has reason to believe:
   (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
      (1) One hundred micrograms per liter (100 µg/L);
      (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
      (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
      (4) The level established in Part A of the permit by the Director.
   (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

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

D. SPECIAL CONDITIONS (continued)

6. Water Quality Standards
   (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
   (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
      (1) 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;
      (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
      (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
      (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
      (5) There shall be no significant human health hazard from incidental contact with the water;
      (6) There shall be no acute toxicity to livestock or wildlife watering;
      (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
      (8) 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.

7. The permittee shall develop and implement an Inflow & Infiltration Assessment and Reduction Plan.

8. Bypasses are not authorized at this facility and are subject to 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3)(i), and with Standard Condition Part I, Section B, subsection 2.b.

9. Permittee shall implement and enforce its approved pretreatment program in accordance with the requirements of 40 CFR Part 403. The approved pretreatment program is hereby incorporated by reference.

10. Permittee shall submit to the Department on or before March 31st of each year a report briefly describing its pretreatment activities during the previous calendar year. At a minimum, the report shall include the following:
   (a) An updated list of the Permittee's Industrial Users, including their names and addresses, or a list of deletions and additions keyed to a previously submitted list. The Permittee shall provide a brief explanation of each deletion. This list shall identify which Industrial Users are subject to categorical pretreatment Standards and specify which Standards are applicable to each Industrial User. The list shall indicate which Industrial Users are subject to local standards that are more stringent than the categorical Pretreatment Standards. The Permittee shall also list the Industrial Users that are subject only to local Requirements;
   (b) A summary of the status of Industrial User compliance over the reporting period;
   (c) A summary of compliance and enforcement activities (including inspections) conducted by the Permittee during the reporting period; and
   (d) Any other relevant information requested by the Department.

11. Whole Effluent Toxicity (WET) Test shall be conducted as follows:

SUMMARY OF ACUTE WET TESTING FOR THIS PERMIT					
OUTFALL	AEC	LC50%*	FREQUENCY	SAMPLE TYPE	MONTH
001	100%	100%	Once/year	24 hr. composite	August

* LC50 = AEC / 0.3.

D. SPECIAL CONDITIONS (continued)

12. Whole Effluent Toxicity (WET) Test shall be conducted as follows:

Dilution Series						
100%	50%	25%	12.5%	6.25%	(Control) 100% upstream, if available	(Control) 100% Lab Water, also called synthetic water

(a) Test Schedule and Follow-Up Requirements

(1) Perform a MULTIPLE-dilution acute WET test in the months and at the frequency specified above. For tests which are successfully passed, submit test results using the Department's WET test report form #MO-780-1899 along with complete copies of the test reports as received from the laboratory, including copies of chain-of-custody forms within 30 calendar days of availability to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102. If the effluent passes the test, do not repeat the test until the next test period.

(a) For discharges of stormwater, samples shall be collected within three hours from when discharge first occurs.

(b) Samples submitted for analysis of stormwater discharges shall be collected as a grab.

(c) For discharges of non-stormwater, samples shall be collected only when precipitation has not occurred for a period of forty-eight hours prior to sample collection. In no event shall sample collection occur simultaneously with the occurrence of precipitation excepting for stormwater samples.

(d) A twenty-four hour composite sample shall be submitted for analysis of non-stormwater discharges.

(e) Upstream receiving water samples, where required, shall be collected upstream from any influence of the effluent where downstream flow is clearly evident.

(f) Samples submitted for analysis of upstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.

(g) Chemical and physical analysis of the upstream control 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.

(h) Any and all chemical or physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% Effluent concentration in addition to analyses performed upon any other effluent concentration.

(i) All chemical analyses included in the Missouri Department of Natural Resources WET test report form #MO-780-1899 shall be performed and results shall be recorded in the appropriate field of the report form.

(j) Where flow-weighted composite sample is required for analysis, the samples shall be composited at the laboratory where the test is to be performed.

(k) Where in stream testing is required downstream from the discharge, sample collection shall occur immediately below the established Zone of Initial Dilution in conjunction with or immediately following a release or discharge.

(l) Samples submitted for analysis of downstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.

(m) All instream samples, including downstream samples, shall be tested for toxicity at the 100% concentration in addition to any other assigned AEC for in-stream samples.

(2) All failing test results along with complete copies of the test reports as received from the laboratory, INCLUDING THOSE TESTS CONDUCTED UNDER CONDITION (3) BELOW, shall be reported to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.

(3) If the effluent fails the test, a multiple dilution test shall be performed for BOTH test species within 30 calendar days and biweekly thereafter (for storm water, tests shall be performed on the next and subsequent storm water discharges as they occur, but not less than 7 days apart) until one of the following conditions are met:

(a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.

(b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.

(4) The permittee shall submit a summary of all test results for the test series along with complete copies of the test reports as received from the laboratory to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.

D. SPECIAL CONDITIONS (continued)

12. Whole Effluent Toxicity (WET) Test shall be conducted as follows:

(5) Additionally, the following shall apply upon failure of the third MULTIPLE DILUTION test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall contact THE WATER PROTECTION PROGRAM within 14 calendar days from availability of the test results to ascertain as to whether a TIE or TRE is appropriate. The permittee shall submit a plan for conducting a TIE or TRE to the WATER PROTECTION PROGRAM within 60 calendar days of the date of DNR's direction to perform either a TIE or TRE. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.

(6) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.

(7) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.

(b) PASS/FAIL procedure and effluent limitations:

(1) To pass a multiple-dilution test:

(a) For facilities with a computed percent effluent at the edge of the zone of initial dilution, Allowable Effluent Concentration (AEC) OF 30% OR LESS, the AEC must be less than three-tenths (0.3) of the LC_{50} concentration for the most sensitive of the test organisms; **OR**,

(b) For facilities with an AEC greater than 30%, the LC50 concentration must be greater than 100%; **AND**,

(c) All effluent concentrations equal to or less than the AEC must be nontoxic. Mortality observed in all effluent concentrations equal to or less than the AEC shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS or other federal guidelines as appropriate or required.

(c) Test Conditions

(1) Test Type: Acute Static non-renewal

(2) All tests, including repeat tests for previous failures, shall include both test species listed below.

(3) Test species: Ceriodaphnia dubia and Pimephales promelas (fathead minnow). Organisms used in WET testing shall come from cultures reared for the purpose of conducting toxicity tests and cultured in a manner consistent with the most current USEPA guidelines. All test animals shall be cultured as described in the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms.

(4) Test period: 48 hours at the "Allowable Effluent Concentration" (AEC) specified above.

(5) Upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.

(6) Unless otherwise specified above, multiple-dilution tests will be run with:

(a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;

(b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and

(c) Reconstituted water.

(7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.

(8) If upstream control mortality exceeds 10%, the entire test will be rerun using reconstituted water as the dilutant.

SUMMARY OF TEST METHODOLOGY FOR ACUTE WHOLE-EFFLUENT TOXICITY TESTS

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless more stringent methods are specified by the DNR, the procedures shall be consistent with the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms,

Test conditions for Ceriodaphnia dubia:

Test duration:	48 h
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light, 8 h dark
Size of test vessel:	30 mL (minimum)
Volume of test solution:	15 mL (minimum)
Age of test organisms:	<24 h old
No. of animals/test vessel:	5
No. of replicates/concentration:	4
No. of organisms/concentration:	20 (minimum)
Feeding regime:	None (feed prior to test)
Aeration:	None
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at $p \leq 0.05$)
Test acceptability criterion:	90% or greater survival in controls

Test conditions for Pimephales promelas:

Test duration:	48 h
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light/ 8 h dark
Size of test vessel:	250 mL (minimum)
Volume of test solution:	200 mL (minimum)
Age of test organisms:	1-14 days (all same age)
No. of animals/test vessel:	10
No. of replicates/concentration:	4 (minimum) single dilution method 2 (minimum) multiple dilution method
No. of organisms/concentration:	40 (minimum) single dilution method 20 (minimum) multiple dilution method
Feeding regime:	None (feed prior to test)
Aeration:	None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at $p \leq 0.05$)
Test Acceptability criterion:	90% or greater survival in controls

E. SCHEDULE OF COMPLIANCE

Metals:

1. The permittee shall take action to come into compliance with Part A – Final Effluent Limitations as soon as possible but not to exceed three (3) years from the effective date of this operating permit. In order to meet the effluent limitations contained therein, the permittee shall complete the following actions:
   (a) Within one (1) year of the effective date of this operating permit, the permittee shall submit a report to the Missouri Department of Natural Resources, Water Protection Program, Water Pollution Control Branch's, Pretreatment Coordinator (Coordinator). The report shall include a list of actions taken by the permittee to ensure that Part A – Final Effluent Limitations for the metals of Copper, Nickel, and Zinc shall be met by three (3) years from the effective date of this operating permit.
   (b) Within two (2) yeas of the effective date of this operating permit, the permittee shall submit a report to the Coordinator to include a list of actions taken by the permittee to ensure that Part A – Final Effluent Limitations for the metals of Copper, Nickel, and Zinc shall be met by three (3) years from the effective date of this operating permit.
   (c) In order to come into compliance with Part A – Final Effluent Limits, the permittee may use Department approved site-specific hardness values obtained from receiving stream monitoring location SM2. The permittee may submit a permit modification and request that the Department review site-specific hardness data from SM2 for new derivations of metal parameters reasonable potential and limitation derivation (if applicable).
   (d) In the event that the permittee determines that in order to come into compliance with Part A – Final Effluent Limitations for the metal parameters installation or construction is needed, the permittee may submit a complete construction application; however, the permittee shall come into compliance with Part A – Final Effluent Limitations as soon as possible but not to exceed three (3) years from the effective date of this operating permit.
   (e) In the event that the permittee determines that a Metals Translator Study is needed, the permittee shall submit a Department approved Metals Translator Study and an operating permit modification. Depending upon results of the Metal Translator Study, the permit may be modified to include a new schedule of compliance for the more appropriate site-specific Water Quality-based Effluent Limitations that are determined applicable from the Metals Translator Study.

E. coli:

1. The permittee must attain compliance with the final effluent limits as soon as possible, but no later than December 31, 2013.

2. Within one (1) year of issuance of this permit, the permittee shall report progress made in attaining compliance with the final effluent limits.

3. Within two (2) years of issuance of this permit, the permittee shall submit a report detailing progress made in attaining compliance with the final effluent limits.

4. If the permittee fails to meet any of the interim dates above, the permittee shall notify the Department in writing of the reason for non compliance no later than 14 days following each interim date.

5. Upon completion of construction, the permittee shall submit a Statement of Work Complete signed by the owner and a Professional Engineer that is registered in the state of Missouri.

F. RECEIVING WATER MONITORING CONDITIONS

1. In-stream samples should be taken at the location(s) specified on page 2 of this permit. For most class P streams the mixing zone is ¼ mile. In the event that a safe, accessible location is not present at this location, a suitable location can be negotiated with the department. Samples should be taken at least four feet from the bank or from the middle of the stream (whichever is less) and 6-inches below the surface. The upstream receiving water sample should be collected at a point upstream from any influence of the effluent, where the water is visibly flowing down stream.

2. When conducting in-stream monitoring, the permittee shall record observations that include: the time of day, weather conditions, unusual stream/lake characteristics (e.g., septic conditions, algae growth, etc.), the stream segment (e.g., riffle, pool or run) or the lake depth from where the sample was collected. These observations shall be submitted with the sample results.

F. RECEIVING WATER MONITORING CONDITIONS

3. Samples shall not be collected from areas with especially turbulent flow, still water or from the stream bank, unless these conditions are representative of the stream reach or no other areas are available for sample collection. Sampling should not be made when significant precipitation has occurred recently. The sampling event should be terminated and rescheduled if any of the following conditions occur:
   - If turbidity in the stream increases notably; or
   - If rainfall over the past two weeks exceeds 2.5 inches or exceeds 1 inch in the last 24 hours

4. Always use the correct sampling technique and handling procedure specified for the parameter of interest. Please refer to the latest edition of Standard Methods for the Examination of Water and Wastewater for further discussion of proper sampling techniques. All analyses must be conducted in accordance with an approved EPA method. Meters shall be calibrated immediately (within 1 hour) prior to the sampling event.

5. To obtain accurate measurements, Dissolved Oxygen, temperature and pH analyses should be performed on-site in the receiving stream where possible. However, due to high flow conditions, access, etc., it may be necessary to collect a sample in a bucket or other container. When this is necessary, care must be taken not to aerate the sample upon collection. If for any reason samples must be collected from an alternate site from the one listed in the permit, the permittee shall report the location with the sample results.

6. Dissolved oxygen measurements are to be taken during the period from one hour prior to sunrise to one and one-half hour after sunrise.

7. Please contact the department if you need additional instructions or assistance.

Missouri Department of Natural Resources
FACT SHEET
FOR THE PURPOSE OF RENEWAL
OF
MO-0023019
SEDALIA CENTRAL WWTF

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 storm water 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 ☒, Minor ☐, Industrial Facility ☐; Variance ☐;
Master General Permit ☐; General Permit Covered Facility ☐; and/or permit with widespread public interest ☐.

Part I – Facility Information

Facility Type: POTW
Facility SIC Code(s): 4952

Facility Description:
This is an Activated Sludge Treatment Facility. The headworks building consist of screening and grit removal. This facility also consist of two (2) primary clarifiers, one (1) biological basin, and two (2) secondary clarifiers. The design flow for this facility is 2.5 MGD. In addition, this facility consist of one (1) primary digester, one secondary digester, one (1) thickener, two (2) holding tanks for wastesludge, and sludge is land applied by permittee.

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?
☒ - No. There are no known changes at this facility or the receiving water body that would have an effect on effluent limit determination. However, the permittee has submitted site-specific hardness data (obtained in an agreed upon receiving stream location that have affected metal limit derivations and Reasonable Potential Analysis.

Application Date: June 14, 2007
Expiration Date: August 8, 2007
Last Inspection: July 12, 2005 In Compliance ☒; Non-Compliance ☐

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	3.88	Advanced	Municipal	0.0
002	Outfall #002 has been eliminated, please see Comment Section below.			

Outfall #001
Legal Description: SE ¼, SE ¼, Sec. 31, T46N, R21W, Pettis County
UTM: X = 476979, Y = 4285350
Receiving Stream: Brushy Creek
First Classified Stream and ID: Brushy Creek (P) (00859)
USGS Basin & Sub-watershed No.: (10300103 – 040003)

Water Quality History:
Effluent violations for BOD_5 in May 2002 and July 2004. pH violations (low) in December 2005, August 2007, and May 2008. Copper Total Recoverable violations in September 2002, October 2004 and 2006, and March 2004. Lead Total Recoverable violation in March 2002. Zinc violation in October 2003.

Comments:
The previous state operating permit established that this facility discharged to a Missouri 303(d) Listed Stream. However, in 2002 the department developed a Total Maximum Daily Load (TMDL) for Brushy Creek, please see the TMDL section in Part IV of this Fact Sheet.

Discharge from peak flow clarifiers (and the like) are no longer authorized and are to be considered a bypass.

Additionally, on September 30, 2009, Missouri's Water Quality Standards were promulgated into rule. As a part the revision, the receiving stream was given the protection of Whole Body Contact Recreation (B). The initial drafting and Public Notice of this operating permit and fact sheet on November 7, 2008, did not include WBC(B) as a listed protection. However, with the WQS being revised, this facility will be required to meet bacteria limits applicable to the designated use of WBC(B), which may require an upgrade to this facility.

Part II – Operator Certification Requirements

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], permittees 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 20-9.010(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems, if applicable, as listed below:

Check boxes below that are applicable to the facility;

- Owned or operated by or for:
  - Municipalities ☒
  - Public Sewer District: ☐
  - County ☐
  - Public Water Supply Districts: ☐
  - Private sewer company regulated by the Public Service Commission: ☐
  - State or Federal agencies:

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

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

Operator's Name: Lawrence Mundy
Certification Number: 3567
Certification Level: A

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

Part III – Receiving Stream Information

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 list 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.

Missouri or Mississippi River [10 CSR 20-7.015(2)]: ☐
Lake or Reservoir [10 CSR 20-7.015(3)]: ☐
Losing [10 CSR 20-7.015(4)]: ☐
Metropolitan No-Discharge [10 CSR 20-7.015(5)]: ☐
Special Stream [10 CSR 20-7.015(6)]: ☐
Subsurface Water [10 CSR 20-7.015(7)]: ☐
All Other Waters [10 CSR 20-7.015(8)]: ☒

10 CSR 20-7.031 Missouri Water Quality Standards, the department defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1st classified receiving stream's beneficial water uses to be maintained are located in the Receiving Stream Table located below in accordance with [10 CSR 20-7.031(3)].

RECEIVING STREAM(S) TABLE:

WATERBODY NAME	CLASS	WBID	DESIGNATED USES*	8-DIGIT HUC	EDU**
Brushy Creek***	P	00859	LWW, AQL, WBC(B)***	10300103	Central Plains/ Blackwater/ Lamine

* - Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL), Cool Water Fishery(CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND), Groundwater (GRW).
** - Ecological Drainage Unit
*** - UAAs conducted in 2007 indicate that the stream did not meet the depth criteria at any of the three (3) sites evaluated. As a result, data in the 2007 UAA supports the 2005 Water Quality Standards where the WBC use was not assigned. However, the EPA did not support this determination and subsequently the WBC(B) for Brushy Creek was promulgated into Missouri's Water Quality Standards October 2009.

RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:

RECEIVING STREAM (U, C, P)	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Brushy Creek	0.1	0.1	1.0

MIXING CONSIDERATIONS TABLE:

MIXING ZONE (CFS) [10 CSR 20-7.031(4)(A)4.B.(II)(a)]		ZONE OF INITIAL DILUTION (CFS) [10 CSR 20-7.031(4)(A)4.B.(II)(b)]	
7Q10	30Q10	1Q10	7Q10
0.025	0.25	0.0025	0.0025

RECEIVING STREAM MONITORING REQUIREMENTS:
As part of the TMDL, please see the TMDL section located in Part IV of this fact sheet, receiving stream monitoring was included to better assess the impact to Brushy Creek from effluent discharged by this facility. The continuous monitoring plan incorporated upstream and downstream monitoring for the pollutants of concern. The previous state operating permit contain receiving stream monitoring at a frequency of once per month; however, due to the fact that the receiving stream has been reduced from a Category 4 listed water to a Category 2A, the frequency is being reduced to continue the monitoring of the stream's progress from impairment to improvement. In addition, several parameters/pollutants are being removed from the receiving stream and include Kjeldahl Nitrogen, CBOD, Volatile Suspended Solids, Settleable Solids, Nitrate + Nitrite, and Total Phosphorous. The operating permit will contain receiving stream monitoring as established below:

Site 01. (Upstream)

PARAMETER(S)	SAMPLING FREQUENCY	SAMPLE TYPE	LOCATION
Flow	Once/quarter	Grab	Approximately 0.1 miles above confluence of Outfall #001 and Brushy Creek.
Dissolved Oxygen	Once/quarter	Grab	
pH	Once/quarter	Grab	
Temperature	Once/quarter	Grab	
Ammonia as N	Once/quarter	Grab	

Legal Description: SW ¼, SW ¼, Sec. 32, T46N, R21W, Pettis County
UTM: X = 477055, Y = 4285194 (GIS data obtained from interactive map viewer program).
Receiving Stream: Brushy Creek
First Classified Stream and ID: Brushy Creek (P) (00859)
USGS Basin & Sub-watershed No.: (10300103 – 040003)

Site 02. (Downstream)

PARAMETER(S)	SAMPLING FREQUENCY	SAMPLE TYPE	LOCATION
Flow	Once/quarter	Grab	Approximately 0.25 miles below the confluence of Outfall #001 and Brushy Creek
Dissolved Oxygen	Once/quarter	Grab	
pH	Once/quarter	Grab	
Temperature	Once/quarter	Grab	
Ammonia as N	Once/quarter	Grab	
Hardness*	Once/quarter	Grab	

* - Hardness was added to the receiving stream (downstream) monitoring requirement. The previous permit did contain Hardness monitoring at the end of pipe for Outfall #001, but due to the fact that the receiving stream is a Class P stream, hardness is needed at the end of the regulatory mixing zone in order to determine an appropriate criteria for appropriate pollutants that's toxicity is governed by hardness.

Legal Description: NE ¼, SE ¼, Sec. 31, T46N, R21W, Pettis County
UTM: X = 476902, Y = 4285696 (GIS data obtained from interactive map viewer program).
Receiving Stream: Brushy Creek
First Classified Stream and ID: Brushy Creek (P) (00859)
USGS Basin & Sub-watershed No.: (10300103 – 040003)

Part IV – 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.

Not Applicable ☒;
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(c); 40 CFR Part 122.44(I)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

☒ - Backsliding proposed in this Factsheet 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.

ANTIDEGRADATION:
In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(2)], the department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. Degradation is justified by documenting the socio-economic importance of a discharging activity after determining the necessity of the discharge.

☒ - Renewal no degradation proposed and no further review necessary.

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.

BIO-SOLIDS, SLUDGE, & 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://dnr.mo.gov/env/wpp/pub/index.html, items WQ422 through WQ449.

☒ - This facility has been approved to land apply as per Permit Standard Conditions III and a department approved bio-solids management plan.

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 permittee/facility is currently under Compliance and Enforcement. Only July 1, 2009, the Department issued the City of Sedalia an Administrative Order on Consent (AOC) No. 1002. As part of the AOC, the City of Sedalia shall develop and/or implement an Information Collection and Utilization computer tracking system; an I&I Assessment and Reduction Plan; a Maintenance and Repair Program, and adhere to the AOC's Appendix A's #5 Reporting and Record Keeping section.

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

☒ - This permittee has an approved pretreatment program in accordance with the requirements of [40 CSR Part 403] and [10 CSR 20-6.100] and is expected to implement and enforce its approved 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)(iii)] if the permit writer determines that any give 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 B – 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. Please see the United States Environmental Protection Agency's (EPA) website for interpretation of percent removal requirements for National Pollutant Discharge Elimination System Permit Application Requirements for Publicly Owned Treatment Works and Other Treatment Works Treating Domestic Sewage @ www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm .

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

SANITARY SEWER OVERFLOWS (SSOS), AND INFLOW & INFILTRATION (I&I):
Sanitary Sewer Overflows (SSOs) are defined as an untreated or partially treated sewage release are considered bypassing under state regulation [10 CSR 20-2.010(11)] and should not be confused with the federal definition of bypass. SSO's have a variety of causes including blockages, line breaks, and sewer defects that allow excess storm water and ground water to (1) enter and overload the collection system, and (2) overload the treatment facility. Additionally, SSO's can be also be caused by lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs also include overflows out of manholes and onto city streets, sidewalks, and other terrestrial locations.

Additionally, Missouri RSMo §644.026.1 mandates that the Department require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities.

☒ - In accordance with Missouri RSMo §644.026.1.(15) and 40 CFR Part 122.41(e), the permittee is required to develop and/or implement a program for maintenance and repair of the collection system and shall be required in this operating permit by either means of a Special Condition or Schedule of Compliance. In addition, the Department considers the development of this program as an implementation of this condition. Additionally, 40 CFR Part 403.3(o) defines a POTW to include any device and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of liquid nature. It also includes sewers, pipes, and other conveyances only if they convey wastewater to a POTW Treatment Plant.

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). The CMOM identifies some of the criteria used by the EPA 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):
A schedule of remedial measures included in a permit, including 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.

☒ - The time given for effluent limitations of this permit listed under Interim Effluent Limitation and Final Effluent Limitations where established in accordance with [10 CSR 20-7.031(10), and 10 CSR 20-6.010(7)].

STORM WATER 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 storm water 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 Storm Water 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 storm water discharges.

☒ - At this time, the permittee is not required to develop and implement a SWPPP.

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.

Not Applicable ☒;
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 to total amount of pollutant that may be discharged into that stream without endangering its water quality.

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

$$C = \frac{(Cs \times Qs) + (Ce \times Qe)}{(Qe + Qs)}$$ (EPA/505/2-90-001, Section 4.5.5)

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

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

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

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(3)], 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:
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.

Applicable ☒;
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(3)(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 all facilities meeting the following criteria:
☒ Facility is a designated Major.
☒ Facility has Water Quality-based Effluent Limitations for toxic substances (other than NH_3).

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, which includes blending, 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 20-2.010(11) defines a bypass as the diversion of wastewater from any portion of wastewater treatment facility or sewer system 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.

☒ - Outfall #002 is no longer authorized to discharge as it is a Bypass. The Department has developed a Voluntary Compliance Agreement (VCA) for communities that believe they need time to eliminate this discharge. The VCA requires communities to develop and submit bypass elimination plans, to make progress, and to report on this progress. The terms of the VCA is for five (5) years, and is renewable for another five (5) years assuming that adequate progress is being made. In return, the State of Missouri will not initiate enforcement actions for the terms contained in the VCA. The permittee has indicated they wish to entered into a VCA. However, it should be noted that the permittee is also subject to AOC No. 1002. Nothing in the VCA shall negate or waive any requirement of the AOC.

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

Applicable ☒;
The receiving water body for this facility, Brushy Creek, was listed on the 2002 Missouri 303(d) List for BOD, NFR (a.k.a. TSS), and NH_3-N and listed this facility as the source of the impairment. When water bodies are listed under 303(d) they are Category 5 listed waters. However, this stream has been reduced to a Category 2A listed water, which means that some beneficial uses supported, others not assessed, and no evidence of impairment.

☒ – On February 11, 2002, the EPA approved the TMDL for Brushy Creek. Limitations for Total Ammonia as N will be modified but reviewed by the department's Water Quality Monitoring and Assessment Section (WQM&A) to ensure that the modified limitations will not be in "violation" of the existing TMDL for Brushy and Muddy Creek.

303(d) List and TMDL (continued):

Under 6.0 MONITORING PLANS FOR TMDLs DEVELOPED UNDER THE PHASED APPROACH it states, "To better assess the impacts to Muddy and Brushy Creeks from effluent discharged by the Sedalia Central WWTP, the continuous monitoring plan incorporates upstream and downstream monitoring sites for the pollutants of concern… As noted before, the Sedalia Central WWTP began constructing improved treatment technology in November 1998. These improvements to plant operation have resulted in ammonia nitrogen levels less than 2.5 mg/L in the Summer and less than 3.5 mg/L in the Winter (the present permit limits). Higher (improved) dissolved oxygen levels have also been recorded and the NFR shows a 65 percent reduction. Unless discharge-monitoring reports warrant, further WLA studies will not be scheduled. The department does plan, however, to conduct low flow visual qualitative and benthic examinations of these streams for the next two years (2002 and 2003). If the observed water quality improvements are **not** substantiated with this monitoring, the TMDL will be reopened and re-evaluated."

The department's WQM&A section reviewed the draft operating permit as drafted including limitations for Total Ammonia as Nitrogen and the reduction of receiving stream monitoring, and indicated that they concur with the draft operating permit. Please see **Appendix D – WQM&A Memo**. Therefore, the newly calculated Ammonia limitations will replace the existing ammonia effluent limitations contained in the previous state operating permit.

Part V – Effluent Limits Determination

Outfall #001 – Main Facility Outfall
EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	GPD	1	*		*	NO	
BOD_5 (MAY 1 – OCT 31)	MG/L	10		10	10	NO	
BOD_5 (NOV 1 – APRIL 30)	MG/L	10		20	20	NO	
TSS	MG/L	1	35		30	NO	
PH	SU	1	6.0 – 9.0		6.0 – 9.0	NO	
AMMONIA AS N (MAY 1 – OCT 31)	MG/L	2/3/5	3.6		1.5	YES	2.5/*
AMMONIA AS N (NOV 1 – APR 30)	MG/L	2/3/5	8.1		2.9	YES	3.5/*
OIL & GREASE (MG/L)	MG/L	1	15		10	NO	
ESCHERICHIA COLI	***	2	Please see Escherichia Coli (E. coli) in the Derivation and Discussion Section below.				
COPPER, TOTAL RECOVERABLE	µg/L	2/3	42.2		15.4	YES	43/21
LEAD, TOTAL RECOVERABLE	µg/L	2/3	*		*	YES	26/13
NICKEL, TOTAL RECOVERABLE	µg/L	2/9	207		103	YES	**
ZINC, TOTAL RECOVERABLE	µg/L	2/3	289		114	YES	379/184
WHOLE EFFLUENT TOXICITY (WET) TEST	% Survival	11	Please see WET Test in the Derivation and Discussion Section below.				
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

* - Monitoring requirement only
** - Parameter not previously established in previous state operating permit.
*** - The unit for E. coli is colonies per 100 mL and the monthly average is to be reported as a Geometric Mean. Weekly Average can also be reported as a geometric mean if more than one sample is collected during a calendar week.

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

5. Ammonia Policy
6. Dissolved Oxygen Policy
11. WET Test Policy
12. Antidegradation Review

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **Flow**. In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the department, which may require the submittal of an operating permit modification.

- **Biochemical Oxygen Demand (BOD_5).** The previous state operating permit contained Seasonal Limits for BOD_5 in accordance with an approved TMDL for Muddy and Brushy Creek. These limits will remain in this operating permit and have documented that they are protective of the receiving streams Water Quality.

- **Total Suspended Solids (TSS).** The previous state operating permit contained Limits for TSS in accordance with an approved TMDL for Muddy and Brushy Creek. These limits will remain in this operating permit and have documented that they are protective of the receiving streams Water Quality.

- **pH**. Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**

- **Total Ammonia Nitrogen**. The previous state operating permit contained Seasonal Limits for Total Ammonia as Nitrogen, but as a Daily Maximum only. In addition to the Daily Maximum, which will remain the same, this operating permit will contain Average Monthly Limitations for Total Ammonia as Nitrogen. Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3]. Background total ammonia nitrogen was obtained from receiving stream monitoring. Summer background average = 1.0 mg/L, and Winter background average = 0.7 mg/L.

  In addition, staff also conducted a Reasonable Potential Analysis on Total Ammonia and determined that Total Ammonia as Nitrogen has reasonable potential to violate Water Quality Standards for both the Summer and Winter seasons. A Coefficient of Variation (CV) value of 0.521 was calculated for Summer and a CV value of 0.663 was calculated for Winter. Please see **APPENDIX B – RPA RESULTS.**

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

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

Summer

Chronic WLA: $C_e = ((3.88 + 0.25)1.5 – (0.25 * 1.0))/3.88$

$C_e = 1.5$ mg/L

Acute WLA: $C_e = ((3.88 + 0.0025)12.1 – (0.0025 * 1.0))/3.88$

$C_e = 12.1$ mg/L

LTA_c = 1.6 mg/L (0.806) = **1.3 mg/L** [CV = 0.521, 99th Percentile, 30 day avg.]

LTA_a = 12.1 mg/L (0.361) = 4.4 mg/L [CV = 0.521, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

MDL = 1.3 mg/L (2.77) = 3.6 mg/L [CV = 0.521, 99th Percentile]

AML = 1.3 mg/L (1.16) = 1.5 mg/L [CV = 0.521, 95th Percentile, n =30]

Winter

Chronic WLA: $C_e = ((3.88 + 0.25)3.1 – (0.25 * 0.7))/3.88$

$C_e = 3.1$ mg/L

Acute WLA: $C_e = ((3.88 + 0.0025)12.1 – (0.0025 * 0.7))/3.88$

$C_e = 12.1$ mg/L

Total Ammonia as N (continued):

LTA_c = 3.1 mg/L (0.761) = **2.4 mg/L** [CV = 0.663, 99th Percentile, 30 day avg.]
LTA_a = 12.1 mg/L (0.295) = 3.6 mg/L [CV = 0.663, 99th Percentile]

MDL = 2.4 mg/L (3.39) = 8.1 mg/L [CV = 0.663, 99th Percentile]
AML = 2.4 mg/L (1.21) = 2.9 mg/L [CV = 0.663, 95th Percentile, n =30]

Discharge Monitoring Reports from this facility indicate that it can meet the new proposed effluent limitations.

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

- ***Escherichia coli (E. coli)***. Monthly average of 206 per 100 ml as a geometric mean and Weekly Average of 1030 per 100 mL during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (A) or (B) designated use of the receiving stream, as per 10 CSR 20-7.031(4)(C). Weekly Average effluent variability will be evaluated in development of a future effluent limit. An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d). For POTWs if more than one (1) sample is collected in a calendar week, then the result is to be reported as a geometric mean.

Metals
Effluent limitations for total recoverable metals were developed using methods and procedures outlined in EPA/505/2-90-001 and "The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion" (EPA 823-B-96-007). General warm-water fishery criteria apply and water hardness = 282 mg/L.

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

METAL	CONVERSION FACTORS	
	ACUTE	CHRONIC
Copper	0.960	0.960
Nickel	0.998	0.997
Zinc	0.980	0.980

Values calculated using equation found in Section 1.3 of EPA 823-B-96-007 and hardness = 282 mg/L.

- **Copper, Total Recoverable**. A Reasonable Potential Analysis (RPA) was conducted on Copper and determined that Copper has the potential to violate Missouri's Water Quality Standards (WQS), please see **APPENDIX B – RPA RESULTS.** Therefore, effluent limitations for Copper are applicable. A CV value of 1.266 was calculated in the RPA. Protection of Aquatic Life Chronic Criteria = 21.7 µg/L, Acute Criteria = 35.7 µg/L.

Chronic = 21.7/0.960 = 22.6 µg/L
Acute = 35.7/0.960 = 37.2 µg/L

WLA_c = ((3.88 + 0.025)22.6 – (0.025 * 0.0))/3.88
WLA_c = 22.7 µg/L

WLA_a = ((3.88 + 0.0025)37.2 – (0.0025 * 0.0))/3.88
WLA_a = 144.4 µg/L

LTA_c = 22.7(0.307) = **7.0 µg/L** [CV = 1.266, 99th Percentile]
LTA_a = 144.4(0.166) = 24 µg/L [CV = 1.266, 99th Percentile]

MDL = 7.0(6.03) = 42.2 µg/L [CV = 1.266, 99th Percentile]
AML = 7.0(2.20) = 15.4 µg/L [CV = 1.266, 95th Percentile, n = 4]

Copper, Total Recoverable (continued):

Discharge Monitoring Reports (DMRs) from this facility indicate that the facility would have violated the new AML 5 times from March 2002 to present date; therefore, this operating permit will contain Interim/Final Effluent Limitations (3 year) for Copper.

- **Lead, Total Recoverable**. A RPA was conducted on Lead and determined that Lead does not have potential to violate Missouri's WQS, please see **APPENDIX B – RPA** Results. Therefore, the limitation will be reduced to a monitoring requirement only.

- **Nickel, Total Recoverable**. As part of the renewal application, Nickel was analyzed and yielded a concentration of 30µg/L.
RPA for n = 1. Observed x Multiplying Factor = Projected Maximum
Projected Maximum = (30 µg/L) x 13.2 = 396 µg/L.
Nickel CCC = 125.1 µg/L
Nickel CMC = 1126.3 µg/L

$$C_r = \frac{[(C_d)(Q_d) + (C_s)(Q_s)]}{(Q_d + Q_s)}$$

C_r = the receiving water concentration
C_d = the effluent concentration
Q_d = the effluent flow
C_s = the receiving water background concentration
Q_s = the appropriate receiving water flow

C_r = [(396µg/L x 3.88cfs) + (0.0µg/L x 0.025cfs)] / (3.88cfs + 0.025cfs) = 363.5µg/L

The C_r is above the Protection of Aquatic Life Chronic Criteria (CCC); therefore, this facility is required to have an effluent limitation in accordance with 40 CFR 122.44(d)(1)(iii). Protection of Aquatic Life Chronic Criteria = 125.1 µg/L, Acute Criteria = 1126.3 µg/L. CV = 0.6 due to n < 10.

Chronic =125.1/0.997 = 125.5 µg/L
Acute = 1126.3/0.998 = 1129 µg/L

WLA_c = ((3.88 + 0.025)125.5 – (0.025 * 0.0))/3.88
WLA_c = 126.3 µg/L

WLA_a = ((3.88 + 0.0025)1129 – (0.0025 * 0.0))/3.88
WLA_a = 1130 µg/L

LTA_c = 126.3(0.527) = **66.6** µg/L [CV = 0.6, 99th Percentile]
LTA_a = 1130(0.321) = 363 µg/L [CV = 0.6, 99th Percentile]

MDL = 66.6(3.11) = 207 µg/L [CV = 0.6, 99th Percentile]
AML = 66.6(1.55) = 103 µg/L [CV = 0.6, 95th Percentile, n = 4]

- **Zinc, Total Recoverable**. A RPA was conducted on Zinc and determined that Zinc has the potential to violate Missouri's WQS, please see **APPENDIX B – RPA** Results. Therefore, effluent limitations for Zinc are applicable. A CV value of 0.999 was calculated in the RPA. Protection of Aquatic Life Chronic Criteria = 282.6 µg/L, Acute Criteria = 282.6 µg/L.

Chronic =282.6/0.980 =288.4 g/L
Acute = 282.6/0.980 = 288.4 µg/L

WLA_c = ((3.88 + 0.025)288.4 – (0.025 * 0.0))/3.88
WLA_c = 290.3 µg/L

WLA_a = ((3.88 + 0.0025)288.4 – (0.0025 * 0.0))/3.88
WLA_a = 288.6 µg/L

LTA_c = 290.3(0.373) = 108 µg/L [CV = 0.999, 99th Percentile]
LTA_a = 288.6(0.204) = **59** µg/L [CV = 0.999, 99th Percentile]

Zinc, Total Recoverable (continued):

MDL = 59(4.90) = 289 µg/L [CV = 0.999, 99th Percentile]
AML = 59(1.94) = 114 µg/L [CV = 0.999, 95th Percentile, n = 4]

DMRs from this facility indicate that the facility would have violated the new AML 3 times from March 2002 to present date; therefore, this operating permit will contain Interim/Final Effluent Limitations (3 year) for Zinc.

- **WET Test**. 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.
  - ☐ Chronic
  - ☒ Acute

  ☐ No less than **ONCE/PERMIT CYCLE:**
  - ☐ Municipality or domestic facility with a design flow ≥ 22,500 gpd, but less than 1.0 MGD.
  - ☐ Other, please justify.

  ☒ No less than **ONCE/YEAR:**
  - ☒ Facility is designated as a Major facility or has a design flow ≥ 1.0 MGD.
  - ☐ Facility continuously or routinely exceeds their design flow.
  - ☐ Facility exceeds its design population equivalent (PE) for BOD_5 whether or not its design flow is being exceeded.
  - ☒ Facility has Water Quality-based effluent limitations for toxic substances (other than NH_3).

  ☐ No less than **TWICE/YEAR:**
  - ☐ Facility is subject to production processes alterations throughout the year.
  - ☐ Facility handles large quantities of toxic substances, or substances that are toxic in large amounts.
  - ☐ Facility has been granted seasonal relief of numeric limitations.

  Allowable Effluent Concentration (AEC) calculations determine if the facility is to conduct single dilution or multiple dilution WET testing. Facilities that discharge to unclassified or Class C receiving streams, the AEC% is 100%. Facilities with less than 100% for an AEC% will have multiple dilution WET testing. Facilities that discharge to Lakes and have Acute WET testing, the AEC% is 100% due to [10 CSR 20-7.031(4)(A)4.B.(IV)(b)] ZID not allowed for Lakes.

  Acute AEC% = $((\text{design flow}_{cfs} + ZID_{7Q10}) / \text{design flow}_{cfs})^{-1}] \times 100$ = %
  Acute AEC% = $((2.8cfs + 0.0025cfs) / 2.8cfs)^{-1}] \times 100$ = 99.9% this is rounded up to **100%**

- **Minimum Sampling and Reporting Frequency Requirements**. Sampling and reporting frequency requirements have been retained from previous state operating permit. However, pH is being modified from once per weekday to once per week. Oil & Grease is being reduced from once per week to once per month.

  During drafting this operating permit, the City provided Total Hardness data at an agreed upon downstream location in the receiving stream. Department staff then took the 25th Percentile Average of the submitted hardness data, which subsequently documented a reduction in toxicity of the metals in the permittee's effluent. Because of the reduction in toxicity, it is staff's best professional judgment consideration that metal sampling occur once per quarter, which will replace the once per month sampling regiment that was in the previous state operating permit. Having once per quarter sampling will allow the department to still obtain a valid data set for the metals in order to conduct a RPA upon the next operating permit renewal. Additionally, the once per quarter sampling regiment for metals will match the sampling regiment for the receiving stream sample, which is also once per quarter.

Part VI – 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.

PUBLIC NOTICE:
As per the Missouri Clean Water Law, the Missouri Clean Water Commission, and the federal Clean Water Act, persons wishing to comment on Missouri State Operating Permits are directed to do so by a department approved Public Notice coversheet. This Public Notice coversheet is attached to a Missouri State Operating Permit during the Public Notice period.

☒ - The initial Public Notice period for this operating permit was from November 7, 2009, to December 7, 2009. Comments were received; however, at that time did not warrant a major modification. Due to Missouri promulgating its revised Water Quality Standards on September 30, 2009, new limitations have been calculated and added to this operating permit. A E. coli limitation was added as well as Copper and Zinc recalculated. In accordance with federal regulation 40 CFR 122.62 and 40 CFR 122.63 this operating permit is being re-Public Noticed due to the newly calculated Copper limitation being less stringent.

DATE OF FACT SHEET: APRIL 19, 2011

COMPLETED BY:
MICHAEL ABBOTT, ENVIRONMENTAL SPECIALIST
NPDES PERMITS UNIT
PERMITTING AND ENGINEERING SECTION
WATER PROTECTION PROGRAM
(573) 526-1139
michael.abbott@dnr.mo.gov

MODIFIED BY: Hillary Clark on 11-3-2011

Part VII – Appendices

APPENDIX A - 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.	3
Maximum: 10 pt Design Flow (avg. day) or peak month; use greater (Max 10 pts.)	1 pt. / MGD or major fraction thereof.	3
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	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	--
PRELIMINARY TREATMENT - Headworks		
Screening and/or comminution	3	3
Grit removal	3	3
Plant pumping of main flow (lift station at the headworks)	3	--
PRIMARY TREATMENT		
Primary clarifiers	5	5
Combined sedimentation/digestion	5	--
Chemical addition (except chlorine, enzymes)	4	--
REQUIRED LABORATORY CONTROL – performed by plant personnel (highest level only)		
Lab work conducted outside of plant	0	--
Push – button or visual methods for simple test such as pH, Settleable solids	3	--
Additional procedures such as DO, COD, BOD, titrations, solids, volatile content	5	5
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	7	--
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph	10	--
ALTERNATIVE FATE OF EFFLUENT		
Direct reuse or recycle of effluent	6	--
Land Disposal – low rate	3	--
High rate	5	--
Overland flow	4	--
Total from page **ONE (1)**	----	23

APPENDIX A - 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	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	--
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	15
Stabilization ponds without aeration	5	--
Aerated lagoon	8	--
Advanced Waste Treatment Polishing Pond	2	--
Chemical/physical – without secondary	15	--
Chemical/physical – following secondary	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	5
Anaerobic digestion	10	10
Aerobic digestion	6	--
Evaporative sludge drying	2	--
Mechanical dewatering	8	--
Solids reduction (incineration, wet oxidation)	12	--
Land application	6	6
Total from page **TWO (2)**	----	36
Total from page **ONE (1)**	---	23
Grand Total	---	59

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

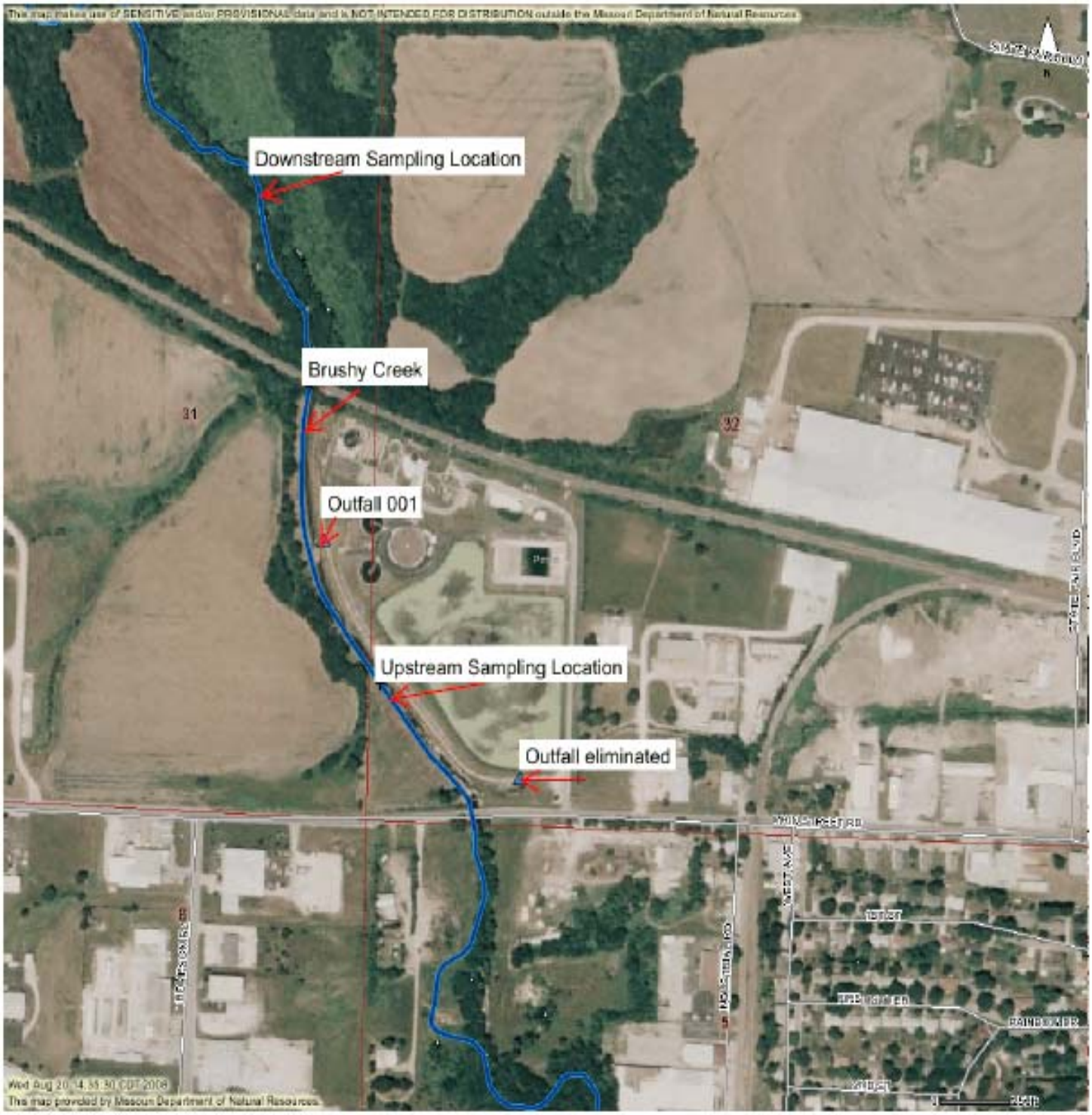
APPENDIX B – RPA RESULTS:

CONSTITUENT	CMC*	RWC ACUTE*	CCC*	RWC CHRONIC*	REASONABLE POTENTIAL	# OF SAMPLES**	CV***
COPPER, TOTAL RECOVERABLE	37.2	128.5	22.6	127.5	YES	63	1.266
LEAD, TOTAL RECOVERABLE	305.4	10	11.9	9.9	NO	45	0.548
ZINC, TOTAL RECOVERABLE	288.4	1328	288.4	1318	YES	72	0.999
TOTAL AMMONIA AS N (SUMMER) (MG/L)	12.1	2.3	1.5	2.2	YES	35	0.521
TOTAL AMMONIA AS N (WINTER) (MG/L)	12.1	4.3	3.1	4.0	YES	40	0.663

N/A – Not Applicable
* - Units are (µg/L) unless otherwise noted.
** - If the number of samples is greater than 10, then the CV value must be used in the WQBEL for the applicable constituent.
*** - Coefficient of Variation (CV) is calculated by dividing the Mean of the sample by the Standard Deviation of the sample.

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 C – FACILITY MAP



APPENDIX D – WQM&A MEMO

STATE OF MISSOURI
Matt Blunt, Governor • Doyle Childers, Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.mo.gov

MEMORANDUM

DATE: SEP 9 2008

TO: Phil A. Schroeder, Chief
Water Quality Monitoring and Assessment Section

FROM: Refaat Mefrakis, P.E., Chief
NPDES Permits and Engineering Section

SUBJECT: Re-evaluation of Waste Load Allocations for Total Ammonia As Nitrogen

On February 11, 2002, the Total Maximum Daily Load (TMDL) for Muddy Creek and Brushy Creek in Pettis County, Missouri, was approved. The TMDL listed the pollutant(s) of concern (POC) for Muddy Creek as 5-day Biochemical Oxygen Demand (BOD) and the POC for Brushy Creek as BOD, non-filterable residue and Ammonia (NH_3-N). The TMDL also listed the source of the pollutants was from the Sedalia Central Wastewater Treatment Plant (facility), Missouri State Operating Permit number MO-0023019 (operating permit), in Pettis County. At this time the receiving stream for this facility, Brushy Creek, has been reduced from a Category 5 listed water body to a Category 2A listed water body.

Section 3.2.6 Waste Load Allocation (Point Source) for Ammonia of the TMDL indicates that the effluent limitations from the previous state operating permit of 2.5 mg/L as a summer daily maximum and 3.5 mg/L as a winter daily maximum were retained, which were developed with outdated Ammonia criteria. The TMDL also states, "that outputs from the QUAL2E indicate that these limits may not be protective of chronic ammonia criteria. Since this is a phased TMDL, further in-stream monitoring is required to determine whether this is the case."

At this time, Mr. Michael Abbott of my staff is drafting a renewal operating permit for this facility, which is attached for your convenience. Mr. Abbott has developed effluent limitations for NH_3-N for this facility by conducting seasonal reasonable potential analysis, calculating above stream ambient NH_3-N averages, and subject all appropriate items to the mass balance equation. The limits, which are based on new Ammonia criteria, are as follows:

Season	Maximum Daily Limit (mg/L)	Average Monthly Limit (mg/L)
Summer (May 1 – October 31)	3.6	1.5
Winter (November 1 – April 28)	8.1	2.9

Recycled Paper

MEMO TO— Phil A. Schroeder
Page TWO

As documented in the table above and in the attached draft operating permit, the daily maximum for both seasons is increased; however, the average monthly limits are below the previously daily maximum permitted limitations. Due to the fact that this facility and operating permit are subject to the TMDL, I respectfully request either approval or disapproval of the newly calculated total Ammonia as Nitrogen effluent limitations. If you have any questions, please contact Mr. Abbott at (573) 526-1139.

✓ I concur with the new proposed total Ammonia as Nitrogen effluent limits.

_____ I do not concur with the new proposed total Ammonia as Nitrogen effluent limits.

Comments:

RM:map

Attachment