# 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, 92<sup>nd</sup> Congress) as amended,

Permit No.	MO-0116599
Owner:	City of Branson
Address:	110 West Maddux Street, Branson, MO 65616
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Branson, Cooper Creek Wastewater Treatment Facility
Facility Address:	2855 Fall Creek Road, Branson, MO 65616
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**

See Page 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 621.250 RSMo, Section 640.013 RSMo and Section 644.051.6 of the Law.

January 1, 2020 Effective Date

June 1, 2020 Modification Date

Galbraith, Director, Division of Environmental Quality

Chris Wieberg, Director, Water Potection Program

September 30, 2024 Expiration Date

#### FACILITY DESCRIPTION (continued):

#### Outfall #001 - POTW

The use or operation of this facility shall be by or under the supervision of a Certified <u>A</u> Operator. Influent pump station / mechanical bar screens (2) / manual bar screen / aerated grit basins (2) / anoxic-anaerobic selector basins (2) / oxidation ditches (2) / liquid alum treatment to facilitate phosphorus removal / final clarifiers (2) / tertiary sand filters (2) / UV disinfection / aerated sludge holding basin / sludge gravity belt thickeners / sludge holding basins (2) / sludge hauled to the Tri-Lakes Regional Class A Drying Facility for processing and sale as Class A biosolids / biosolids are land applied / facility does not have materials stored or conduct operations in a manner that would cause the discharge of pollutants via stormwater

Design population equivalent is 34,000. Design flow is 3.4 MGD. Actual flow is 2.0 MGD. Design sludge production is 880 dry tons/year.

Legal Description:	Sec. 07, T22N, R21W, Taney County
UTM Coordinates:	X = 477889, Y = 4053231
Receiving Stream:	Lake Taneycomo (L2)
First Classified Stream and ID:	Lake Taneycomo (L2) (7314)
USGS Basin & Sub-watershed No.:	(11010003-0101)

Permitted Feature INF - Influent Monitoring Location

OUTFALL #001

# 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. In accordance with 10 CSR 20-7.031, the final effluent limitations outlined in **Table A-2** must be achieved as soon as possible but no later than **January 1**, 2021. These interim effluent limitations in **Table A-1** are effective beginning **January 1**, 2020 and remain in effect through **December 31**, 2020 or as soon as possible. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

	UNITS —	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS		
EFFLUENI PAKAMETEK(S)		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Limit Set: M						
Flow	MGD	*		*	once/day	24 hr. total
Biochemical Oxygen Demand5	mg/L		15	10	once/week	composite**
Total Suspended Solids	mg/L		20	15	once/week	composite**
E. coli (Note 1, Page 4)	#/100mL		630	126	once/week	grab
Ammonia as N	mg/L	*		*	once/week	composite**
Total Phosphorus	mg/L	*		0.5	once/month	composite**
Aluminum, Total Recoverable (Note 2, Page 4)	μg/L	*		*	once/month	composite**
Total Kjeldahl Nitrogen	mg/L	*		*	once/month	composite**
Nitrite + Nitrate	mg/L	*		*	once/month	composite**
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units***	SU	6.0		9.0	once/week	grab
EFFLUENT PARAMET	ER(S)		UNITS	MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand5 – Percent Re	moval (Note 3	3, Page 4)	%	85	once/month	calculated
Total Suspended Solids – Percent Removal	(Note 3, Page	4)	%	85	once/month	calculated
MONITORING REPORTS SHALL BE SUBMI BE NO DISCHARGE OF FLOATING SOLIDS	ITED <u>MONT</u> OR VISIBLE I	' <u>HLY</u> ; THE FII FOAM IN OTH	RST REPORT ER THAN TR	IS DUE <u>FEBI</u> ACE AMOUN	<u>RUARY 28, 2020</u> . TH TS.	IERE SHALL
EFFLUENT PARAMETER(S)	UNITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Limit Set: Q						
Oil & Grease	mg/L	15		10	once/quarter <sup>†</sup>	grab
MONITORING REPORTS SHALL BE SUBMI' NO DISCHARGE OF FLOATING SOLIDS OR	ΓΤΕD <u>QUAR'</u> VISIBLE FOA	<u>TERLY</u> ; THE M IN OTHER	FIRST REPO THAN TRAC	RT IS DUE <u>Al</u> E AMOUNTS.	PRIL 28, 2020. THER	E SHALL BE

\* Monitoring requirement only.

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

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

† See table on Page 4 for quarterly sampling.

OUTFALL <u>#001</u>

# 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 in **Table A-1** shall become effective on **January 1, 2021** and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

	UNITS -	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS		
EFFLUENT PARAMETER(S)		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Limit Set: M	1	1				
Flow	MGD	*		*	once/day	24 hr. total
Biochemical Oxygen Demand <sub>5</sub>	mg/L		15	10	once/week	composite**
Total Suspended Solids	mg/L		20	15	once/week	composite**
E. coli (Note 1, Page 4)	#/100mL		630	126	once/week	grab
Ammonia as N	mg/L	*		*	once/week	composite**
Total Phosphorus	mg/L	*		0.5	once/month	composite**
Aluminum, Total Recoverable (Note 2, Page 4)	μg/L	908.3		409.2	once/month	composite**
Total Kjeldahl Nitrogen	mg/L	*		*	once/month	composite**
Nitrite + Nitrate	mg/L	*		*	once/month	composite**
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units***	SU	6.0		9.0	once/week	grab
EFFLUENT PARAMET	ER(S)		UNITS	MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand <sub>5</sub> – Percent Re	moval (Note	3, Page 4)	%	85	once/month	calculated
Total Suspended Solids – Percent Removal	(Note 3, Page	4)	%	85	once/month	calculated
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>FEBRUARY 28, 2021</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
EFFLUENT PARAMETER(S)	UNITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Limit Set: Q		1				
Oil & Grease	mg/L	15		10	once/quarter <sup><math>\dagger</math></sup>	grab
MONITORING REPORTS SHALL BE SUBMITTED <b>QUARTERLY</b> ; THE FIRST REPORT IS DUE <u>APRIL 28, 2021</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

\* Monitoring requirement only.

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

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

† See table on Page 4 for quarterly sampling.

Quarterly Minimum Sampling Requirements				
Quarter	Months	Oil & Grease	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 If no Aluminum or Iron was used in a given sampling period, an actual analysis is not necessary. Simply report as "AG Conditional Monitoring Not Required this Period".
- Note 3 Influent sampling for  $BOD_5$  and TSS is not required when the facility does not discharge effluent during the reporting period. Samples are to be collected prior to any treatment process. Calculate Percent Removal by using the following formula: [(Average Influent –Average Effluent) / Average Influent] x 100% = Percent Removal. Influent and effluent samples are to be taken during the same month. The Average Influent and Average Effluent values are to be calculated by adding the respective values together and dividing by the number of samples taken during the month. Influent samples are to be collected as a 24-hour composite sample, composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

OUTFALL <u>#001</u>	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 in <b>Table A-2</b> shall become effective on <b>January 1, 2020</b> and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:							
			FINAL EFI	FLUENT LIM	ITATIONS	MONITORING REQ	UIREMENTS
EFFLU	ENT PARAMETER(S)	UNITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Limit Set: W	A						
Acute Whole	Effluent Toxicity (Note 4)	TUa	*			once/year	composite**
ACUTE WET TEST MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>JANUARY 28, 2021</u> .							
Limit Set: W	С	•	1		1		
Chronic Whol	e Effluent Toxicity (Note 5)	TUc	*			once/permit cycle	composite**
CHRONIC WET TEST REPORTS SHALL BE SUBMITTED <u>ONCE PER PERMIT CYCLE</u> ; THE FIRST REPORT IS DUE <u>JANUARY 28, 2024</u> .							
* Monito	ring requirement only.						

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

Note 4 – The Acute WET test shall be conducted once per year. See Special Condition #16 for additional requirements.

Note 5 –The Chronic WET test shall be conducted once per permit cycle. An Acute WET test is not required during the year of the Chronic test. See Special Condition #17 for additional requirements.

PERMITTED FEATURE INF

#### TABLE B-1. INFLUENT MONITORING REQUIREMENTS

The monitoring requirements in **Table B-1** shall become effective on <u>January 1, 2020</u> and remain in effect until expiration of the permit. The influent wastewater shall be monitored by the permittee as specified below:

	UNITS	MONITORING REQUIREMENTS				
PAKAMETER(S)		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Limit Set: IM						
Biochemical Oxygen Demand <sub>5</sub> (Note 3)	mg/L			*	once/month	composite**
Total Suspended Solids (Note 3)	mg/L			*	once/month	composite**
Ammonia as N	mg/L	*		*	once/month	composite**
Total Phosphorus	mg/L	*		*	once/month	composite**
Total Kjeldahl Nitrogen	mg/L	*		*	once/month	composite**
Nitrite + Nitrate	mg/L	*		*	once/month	composite**
MONITORING REPORTS SHALL BE SUBMITTED <b>MONTHLY</b> ; THE FIRST REPORT IS DUE FEBRUARY 28, 2020.						

\* Monitoring requirement only.

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

Note 3 – Influent sampling for BOD<sub>5</sub> and TSS is not required when the facility does not discharge effluent during the reporting period. Samples are to be collected prior to any treatment process. Calculate Percent Removal by using the following formula: [(Average Influent –Average Effluent) / Average Influent] x 100% = Percent Removal. Influent and effluent samples are to be taken during the same month. The Average Influent and Average Effluent values are to be calculated by adding the respective values together and dividing by the number of samples taken during the month. Influent samples are to be collected as a 24-hour composite sample, composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

#### **C. SCHEDULE OF COMPLIANCE**

The facility shall attain compliance with final effluent limitations as soon as reasonably achievable or no later than **one (1) year** of the effective date of this permit. Discharge monitoring reports indicate the facility has not always been in compliance with the proposed limitations for Total Recoverable Aluminum; therefore this permit includes a one (1) year schedule of compliance to make sufficient operational changes so that consistent compliance with final effluent limitations for Total Recoverable Aluminum is attained.

#### **D. STANDARD CONDITIONS**

In addition to specified conditions stated herein, this permit is subject to the attached <u>Parts I, II, & III</u> standard conditions dated <u>August 1, 2014, May 1, 2013, and August 1, 2019</u>, and hereby incorporated as though fully set forth herein.

#### **E. 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) Sludge/Biosolids Annual Reports;
    - (3) In addition to the annual Sludge/Biosolids report submitted to the Department, the permittee must submit Sludge/Biosolids Annual Reports electronically using EPA's NPDES Electronic Reporting Tool ("NeT") (<u>https://cdx.epa.gov/</u>); and
    - (4) 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); and
  - (3) Bypass reporting, See Special Condition #9 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 submit compliance monitoring data and reports electronically. The Department may grant a waiver to a permittee in compliance with 40 CFR Part 127. The permittee may obtain an electronic reporting waiver by first submitting an eDMR Waiver Request Form: <u>http://dnr.mo.gov/forms/780-2692-f.pdf</u>. 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 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 or modification thereto pursuant to 40 CFR 403.8(c) or 40 CFR 403.18(e), respectively.
- 3. All outfalls must be clearly marked in the field.
- 4. Report as no-discharge when a discharge does not occur during the report period.
- 5. Reporting of Non-Detects:
  - (a) An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
  - (b) 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.

#### E. SPECIAL CONDITIONS (continued)

- (f) When calculating monthly averages, use one-half of the method detection limit (MDL) instead of a zero. Where all data are below the MDL, the "<MDL" shall be reported as indicated in item (c).
- 6. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).
- 7. The permittee shall comply with any applicable requirements listed in 10 CSR 20-9, 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. To request a modification of the operational control testing requirements listed in 10 CSR 20-9, the permittee shall submit a permit modification and fee to the Department requesting a deviation from the operational control monitoring requirements. Upon approval of the request, the Department will modify the permit.
- 8. The permittee shall develop and implement a program for maintenance and repair of its collection system. The permittee may compare collection system performance results and other data with the benchmarks used in the Departments' Capacity, Management, Operation, And Maintenance (CMOM) Model located at <a href="http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc">http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc</a>. Additional information regarding the Departments' CMOM Model is available at <a href="http://dnr.mo.gov/pubs/pub2574.htm">http://dnr.mo.gov/pubs/pub2574.htm</a>.

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

- (a) A summary of the efforts to locate and eliminate specific sources of excessive infiltration and inflow into the collection system serving the facility for the previous year.
- (b) A summary of the general maintenance and repairs to the collection system serving the facility for the previous year.
- (c) A summary of any planned maintenance and repairs to the collection system serving the facility for the upcoming calendar year. This list shall include locations (GPS, 911 address, manhole number, etc.) and actions to be taken.
- 9. Bypasses are not authorized at this facility unless they meet the criteria in 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3), and with Standard Condition Part I, Section B, subsection 2. Bypasses are to be reported to the Southwest Regional Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application located at: <u>https://dnr.mo.gov/mogem/</u> or the Environmental Emergency Response spill-line at 573-634-2436 outside of normal business hours. Once an electronic reporting system compliant with 40 CFR Part 127, the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, is available all bypasses must be reported electronically via the new system. Blending, which is the practice of combining a partially-treated wastewater process stream with a fully-treated wastewater process stream prior to discharge, is not considered a form of bypass. If the permittee wishes to utilize blending, the permittee shall file an application to modify this permit to facilitate the inclusion of appropriate monitoring conditions.
- 10. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.
- 11. 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.
- 12. An all-weather access road to the treatment facility shall be maintained.
- 13. The outfall sewer shall be protected and maintained against the effects of floodwater, ice, or other hazards as to reasonably insure its structural stability, freedom from stoppage, and that a sample of the effluent can be obtained at a point after the final treatment process and before the discharge mixes with the receiving waters.
- 14. Sludge/biosolids treatment, storage and disposal practices shall be conducted in accordance with Standard Conditions Part III.
- 15. The media in the filter beds shall be properly maintained to prevent surface pooling, vegetative growth, and accumulation of leaf litter.

### **E. SPECIAL CONDITIONS (continued)**

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

## MISSOURI DEPARTMENT OF NATURAL RESOURCES STATEMENT OF BASIS MO-0116599 BRANSON COOPER CREEK WWTF

This Statement of Basis (Statement) gives pertinent information regarding modification(s) to the above listed operating permit. A Statement is not an enforceable part of a Missouri State Operating Permit.

### Part I – Facility Information

 

 Facility Type:
 POTW

 Facility Description:
 Influent pump station / mechanical bar screens (2) / manual bar screen / aerated grit basins (2) / anoxicanaerobic selector basins (2) / oxidation ditches (2) / liquid alum treatment to facilitate phosphorus removal / final clarifiers (2) / tertiary sand filters (2) / UV disinfection / aerated sludge holding basin / sludge gravity belt thickeners / sludge holding basins (2) / sludge hauled to the Tri-Lakes Regional Class A Drying Facility for processing and sale as Class A biosolids / biosolids are land applied / facility does not have materials stored or conduct operations in a manner that would cause the discharge of pollutants via stormwater

### Part II – Modification Rationale

This operating permit is hereby modified to reflect the correction of a technical mistake which listed the incorrect fish species for the Acute WET Test.

No other changes were made at this time.

### Part III – 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.

DATE OF FACT SHEET: MARCH 19, 2020

**COMPLETED BY:** 

ASHLEY KEELY, ENVIRONMENTAL SPECIALIST MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT (573) 751-7326 ASHLEY.KEELY@DNR.MO.GOV

# MISSOURI DEPARTMENT OF NATURAL RESOURCES FACT SHEET FOR THE PURPOSE OF RENEWAL OF MO-0116599 BRANSON, COOPER CREEK WASTEWATER TREATMENT FACILITY

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

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

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

This Factsheet is for a Major facility.

## Part I – Facility Information

Facility Type: POTW

<u>Facility Description</u>: Influent pump station / mechanical bar screens (2) / manual bar screen / aerated grit basins (2) / anoxic-anaerobic selector basins (2) / oxidation ditches (2) / liquid alum treatment to facilitate phosphorus removal / final clarifiers (2) / tertiary sand filters (2) / UV disinfection / aerated sludge holding basin / sludge gravity belt thickeners / sludge holding basins (2) / sludge hauled to the Tri-Lakes Regional Class A Drying Facility for processing and sale as Class A biosolids / biosolids are land applied / facility does not have materials stored or conduct operations in a manner that would cause the discharge of pollutants via stormwater

Design population equivalent is 34,000. Design flow is 3.4 MGD. Actual flow is 2.0 MGD. Design sludge production is 880 dry tons/year.

Have any changes occurred at this facility or in the receiving water body that affects effluent limit derivation?  $\checkmark$  No.

Application Date:	03/29/19
Expiration Date:	09/30/19

#### **OUTFALL(S) TABLE:**

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
#001	5.27	Tertiary	Domestic

#### Facility Performance History:

This facility was last inspected on September 18, 2018. The inspection showed the following unsatisfactory features: failure to operate and maintain facilities to comply with the Missouri State Operating Permit.

#### Comments:

Changes in this permit include the addition of monthly influent monitoring for Total Phosphorus and Total Nitrogen, increased monitoring for Total Nitrogen (speciated) from quarterly to monthly, the revision of final effluent limits for Ammonia, and the removal of the Stormwater Pollution Prevention Plan requirements. See Part VI of the Fact Sheet for further information regarding the addition, revision, and removal of effluent parameters.

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# Part II – Operator Certification Requirements

 $\checkmark$  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 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:

wned or operated by or for a	
Annicipalities	State agency
- County	- Public Water Supply Districts
- Public Sewer District	- Private Sewer Company regulated by the Public Service Commission

Each of the above entities are only applicable if they have a Population Equivalent greater than two hundred (200).

This facility currently requires a chief operator with an  $\underline{A}$  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 Glenn, Jr.
Certification Number:	9350
Certification Level:	WW-A

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

## Part III – Operational Control Testing Requirements

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

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

✓ As per [10 CSR 20-9.010(4))], the facility is required to conduct operational monitoring. These operational monitoring reports are to be submitted to the Department along with the MSOP discharge monitoring reports. The facility is a mechanical plant and is required to conduct operational control monitoring as follows:

Operational Monitoring Parameter	Frequency
Precipitation	Daily (M-F)
Flow – Influent or Effluent	Daily (M-F)
pH – Influent	Daily (M-F)
Temperature (Aeration basin)	Daily (M-F)
TSS – Influent	Weekly
TSS – Mixed Liquor	Weekly
Settleability – Mixed Liquor	Daily (M-F)
Dissolved Oxygen – Mixed Liquor	Daily (M-F)

# Part IV – Receiving Stream Information

#### **RECEIVING STREAM(S) TABLE: OUTFALL #001**

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Lake Taneycomo	L2	7314	AQL, CDF, DWS, HHP, IRR, LWW, SCR, WBC-A	11010003-0109	Direct Discharge

\*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 1<sup>st</sup> 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 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:**

DECENTING STDEAM	Low-Flow Values (CFS)*					
RECEIVING STREAM	1Q10	7Q10	30Q10			
Lake Taneycomo	34.5	44.4	199			

\* - Low-flow values listed in the table above were calculated in the *Water Quality and Antidegradation Review for the Cooper Creek Wastewater Treatment Plant* from July 2012, submitted by the permittee and approved by the Department. Low-flow values were based on USGS data from the White River near Branson gage station (07053500) from 1959-2011.

#### MIXING CONSIDERATIONS

MIXING ZONE (MZ):

One-quarter (1/4) of the stream volume of flow; length one-quarter (1/4) mile, as per [10 CSR 20-7.031(5)(A)4.B.(III)(a)].

ZONE OF INITIAL DILUTION (ZID):

One-tenth (0.1) of the mixing zone volume of flow, not to exceed 10 times the effluent design flow, as per [10 CSR 20-7.031(5)(A)4-B.(III)(b)].

#### **MIXING CONSIDERATIONS TABLE:**

MIXING ZONE (CFS) [10 CSR 20-7.031(5)(A)4.B.(II)(a)]			ZONE OF INITIAL DILUTION (CFS) [10 CSR 20-7.031(5)(A)4.B.(II)(b)]		
1Q10	7Q10	30Q10	1Q10	7Q10	30Q10
8.625	11.1	49.75	0.86	1.11	N/A

### **RECEIVING STREAM MONITORING REQUIREMENTS:**

No receiving water monitoring requirements recommended at this time.

#### Receiving Water Body's Water Quality

Currently, the Department has not conducted a stream survey for this waterbody. When a stream survey is conducted, more information may be available about the receiving stream.

# 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(40)] & [10 CSR 20-7.031(1)(O)], 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.
  - Information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.
    - <u>Total Recoverable Iron</u>. The previous permit contained monthly sampling requirements for Total Recoverable Iron. The facility does not utilize iron based chemicals for phosphorus removal and effluent data submitted by the permittee over the previous permit cycle demonstrated no reasonable potential to exceed the water quality standard for Total Recoverable Iron. The permit is still protective of water quality and this determination will be reassessed at the time of renewal.
    - <u>Sampling and Reporting Frequencies</u>. The previous permit contained weekly sampling and reporting frequencies for Total Phosphorus and Total Recoverable Aluminum. This permit contains monthly sampling and reporting frequencies due to consistency amongst effluent data and compliance with effluent limits. The permit is still protective of water quality.
  - ✓ The Department determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b).
    - <u>General Criteria</u>. 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 of the previous permit. Please see Part VI Effluent Limits Determination for more information regarding the reasonable potential determinations for each general criteria determinations for each general criteria exists for a special condition of the previous permit. Please see Part VI 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 <a href="http://dnr.mo.gov/env/wpp/permits/antideg-implementation.htm">http://dnr.mo.gov/env/wpp/permits/antideg-implementation.htm</a>

 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.

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

✓ The facility does not have stormwater discharges or the stormwater outfalls onsite have no industrial exposure.

#### AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:

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

#### **BIOSOLIDS & SEWAGE SLUDGE:**

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

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

#### **COMPLIANCE AND ENFORCEMENT:**

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

✓ 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 optional and found on the Department's website at the following locations:

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

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: <u>http://dnr.mo.gov/forms/780-2692-f.pdf</u>. Each facility must make a request. If a single entity owns or operates more than one facility, 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.

#### NUMERIC LAKE NUTRIENT CRITERIA

This facility discharges into a lake watershed where numeric lake nutrient criteria are applicable, per 10 CSR 20-7.031(5)(N), and has a design flow greater than 0.1 MGD. Should the lake within this watershed be identified as impaired due to nutrient loading, the Department will conduct watershed modeling to determine if this facility has reasonable potential to cause or contribute to the impairment. Consequently, effluent limitations may be established at a later date based on the modeling results. For more information, please see the Department's Nutrient Criteria Implementation Plan at: <a href="https://dnr.mo.gov/env/wpp/rules/documents/nutrient-implementation-plan-final-072618.pdf">https://dnr.mo.gov/env/wpp/rules/documents/nutrient-implementation-plan-final-072618.pdf</a> See Part VI. Effluent Limits Determination, below for more information.

#### 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.

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

#### **REMOVAL EFFICIENCY:**

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

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

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

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

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

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

✓ 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 <u>http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc</u>. For additional information regarding the Departments' CMOM Model, see the CMOM Plan Model Guidance document at <u>http://dnr.mo.gov/pubs/pub2574.htm</u>. 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 may include interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR § 122.47(a)(1), 10 CSR 20-7.031(11), and 10 CSR 20-7.015(9), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, a SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

A SOC is not allowed:

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

In order to provide guidance to Permit Writers in developing 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 Total Recoverable Aluminum. The one (1) year schedule of compliance allowed for this facility should provide adequate time to evaluate operations and make necessary operational adjustments required to meet effluent limits.

#### 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 <a href="http://dnr.mo.gov/env/wpp/permits/sewer-extension.htm">http://dnr.mo.gov/env/wpp/permits/sewer-extension.htm</a>.

✓ 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 (<u>http://dnr.mo.gov/env/wpp/docs/AIP050212.pdf</u>).

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: <a href="http://dnr.mo.gov/forms/index.html">http://dnr.mo.gov/forms/index.html</a>.

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

A facility can apply for conditional exclusion for "no exposure" of industrial activities and materials to stormwater by submitting a permit modification via Form B2 (<u>http://dnr.mo.gov/forms/780-1805-f.pdf</u>) appropriate application filing fees and a completed No Exposure Certification for Exclusion from NPDES Stormwater Permitting under Missouri Clean Water Law (<u>https://dnr.mo.gov/forms/780-2828-f.pdf</u>) to the Department's Water Protection Program, Operating Permits Section. Upon approval of the No Exposure Certification, the permit will be modified and the Special Condition to develop and implement a SWPPP will be removed.

The City of Branson submitted a No Exposure Certification for Exclusion from NPDES Stormwater Permitting, which was approved by the Department on August 14, 2019. This exclusion will be reevaluated at the time of renewal.

#### 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.

 $\checkmark$  This operating permit is not drafted under premises of a petition for variance.

#### WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:

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

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

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

 $\begin{array}{ll} \mbox{Where} & C = \mbox{downstream concentration} & Ce = \mbox{effluent concentration} \\ & Cs = \mbox{upstream concentration} & Qe = \mbox{effluent flow} \\ & Qs = \mbox{upstream flow} \end{array}$ 

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.

#### WHOLE EFFLUENT TOXICITY (WET) TEST:

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

Under the federal Clean Water Act (CWA) §101(a)(3), requiring WET testing is reasonably appropriate for site-specific Missouri State Operating Permits for discharges to waters of the state issued under the National Pollutant Discharge Elimination System (NPDES). WET testing is also required by 40 CFR 122.44(d)(1). WET testing ensures that the provisions in the 10 CSR 20-6.010(8)(A) and the Water Quality Standards 10 CSR 20-7.031(4)(D),(F),(G),(J)2.A & B are being met. Under [10 CSR 20-6.010(8)(B)], the Department may require other terms and conditions that it deems necessary to assure compliance with the Clean Water Act and related regulations of the Missouri Clean Water Commission. In addition the following MCWL apply: §§§644.051.3 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<sub>5</sub> 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<sub>3</sub>)
- Facility is a municipality with a Design Flow  $\geq 22,500$  gpd.
- Other please justify.
- $\checkmark$  The permittee is required to conduct WET test for this facility.

#### 40 CFR 122.41(M) - BYPASSES:

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

✓ 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 a lake with an EPA approved TMDL. Lake Taneycomo (L2) (7314) has a TMDL for Low Dissolved Oxygen. Section 6.1.2 of the TMDL states that due to the location and relative size of the discharges, the domestic wastewater facilities within the Lake Taneycomo watershed do not significantly contribute to the low dissolved oxygen impairment. The TMDL sets WLAs for domestic wastewater discharges at current permit limits, terms and conditions. The TMDL does not preclude the establishment of future domestic point sources in the watershed.

# Part VI – Effluent Limits Determination

#### **CATEGORIES 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.

- Missouri or Mississippi River [10 CSR 20-7.015(2)]
- Lakes or Reservoirs [10 CSR 20-7.015(3)]  $\bowtie$
- Losing Streams [10 CSR 20-7.015(4)]

Metropolitan No-Discharge Streams [10 CSR 20-7.015(5)]

#### OUTFALL #001 - MAIN FACILITY OUTFALL

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

 $\boxtimes$ 

#### **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	Т
BOD <sub>5</sub>	mg/L	1		15	10	15/10	1/week	monthly	С
TSS	mg/L	1		20	15	20/15	1/week	monthly	С
Escherichia coli**	#/100mL	1, 3		630	126	630/126	1/week	monthly	G
Ammonia as N	mg/L	2, 3	*		*	*/*	1/week	monthly	С
Total Phosphorus	mg/L	1	*		0.5	*/0.5	1/month	monthly	С
Aluminum, Total Recoverable	g/L	1	908.3		409.2	*/*	1/month	monthly	С
Total Kjeldahl Nitrogen	mg/L	1	*		*	*/*	1/month	quarterly	С
Nitrite + Nitrate	mg/L	1	*		*	*/*	1/month	quarterly	С
Oil & Grease	mg/L	1, 3	15		10	15/10	1/quarter	quarterly	G
Acute Whole Effluent Toxicity	TUa	1, 9	*			*	1/year	annually	С
Chronic Whole Effluent Toxicity	TUc	1, 9	*			*	1/permit cycle	1/permit cycle	С
PARAMETER	Unit	Basis for Limits	Minimum		Maximum	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
pH	SU	1	6.0		9.0	6.0-9.0	1/week	monthly	G
PARAMETER	Unit	Basis for Limits	Daily Minimum		Monthly Avg. Min	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
BOD <sub>5</sub> Percent Removal	%	1			85	85	1/month	monthly	М
TSS Percent Removal	%	1			85	85	1/month	monthly	М
* - Monitoring requirement only.									

\* - Monitoring requirement only.

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

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

#### **Basis for Limitations Codes:**

- State or Federal Regulation/Law 1.
- Water Quality Standard (includes RPA) 2
- 3. Water Quality Based Effluent Limits 4 Antidegradation Review
- Water Quality Model 6 7. Best Professional Judgment

Antidegradation Policy

8

5.

9. WET Test Policy 10. Multiple Discharger Variance

G = Grab

T = 24-hr. total M = Measured/calculated

11. Nutrient Criteria Implementation Plan

TMDL or Permit in lieu of TMDL

#### **OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:**

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

Special Streams [10 CSR 20-7.015(6)] Subsurface Waters [10 CSR 20-7.015(7)] All Other Waters [10 CSR 20-7.015(8)]

- <u>Biochemical Oxygen Demand (BOD5</u>). Operating permit retains 15 mg/L as a Weekly Average and 10 mg/L as a Monthly Average. Please see the attached Antidegradation Review Sheet.
- <u>Total Suspended Solids (TSS)</u>. Operating permit retains 20 mg/L as a Weekly Average and 15 mg/L as a Monthly Average. Please see the attached Antidegradation Review Sheet.
- <u>Escherichia coli (E. coli)</u>. Monthly average of 126 per 100 mL as a geometric mean and Weekly Average of 630 per 100 mL as a geometric mean during the recreational season (April 1 October 31), for discharges within two miles upstream of segments or lakes with Whole Body Contact Recreation (A) designated use of the receiving stream, as per 10 CSR 20-7.015(9)(B). An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d). The Geometric Mean is calculated by multiplying all of the data points and then taking the nth root of this product, where n = # of samples collected. For example: Five *E. coli* samples were collected with results of 1, 4, 6, 10, and 5 (#/100mL). Geometric Mean = 5<sup>th</sup> root of (1)(4)(6)(10)(5) = 5<sup>th</sup> root of 1,200 = 4.1 #/100mL.
- <u>Total Ammonia Nitrogen</u>. The mixing considerations determined in the *Water Quality and Antidegradation Review* for the Cooper Creek Wastewater Treatment Plant from July 2012, submitted by the permittee and approved by the Department, were used to determine if the facility has reasonable potential to exceed water quality standards for Ammonia as N. Site-specific temperature and pH data were obtained from USGS Gauge Station 07053700 located on Lake Taneycomo at Branson, MO. The Reasonable Potential Analysis determined the facility has no reasonable potential to exceed the water quality standard for Ammonia in both the summer and winter seasons. Please see APPENDIX RPA RESULTS.
- <u>Oil & Grease</u>. Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.
- <u>Total Nitrogen (Speciated)</u>. Effluent monitoring for Total Kjeldahl Nitrogen and Nitrite + Nitrate are required per 10 CSR 20-7.015(9)(D)8.
- <u>**pH**</u>. 6.0-9.0 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 assimilative capacity of the receiving stream.
- <u>Biochemical Oxygen Demand (BOD<sub>5</sub>) Percent Removal</u>. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to BOD<sub>5</sub> and TSS for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 85% removal efficiency for BOD<sub>5</sub>.
- <u>Total Suspended Solids (TSS) Percent Removal</u>. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to BOD<sub>5</sub> and TSS for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 85% removal efficiency for TSS.
- <u>Total Phosphorus</u>. To Table Rock Lake and Lake Taneycomo, 0.5 mg/L per 10 CSR 20-7.015 (3).

#### • <u>Aluminum, Total Recoverable</u>.

Acute AQ	QL WQS: 750	
Acute WI	LA: $C_e = ((5.27 + 1.11)750 - (1.11 * 0.0))/5.27 = 908.3 \ \mu g/L$	
LTA <sub>a</sub> :	908.3*0.266 = 241.3	[CV = 0.75, 99 <sup>th</sup> Percentile]
MDL: AML:	241.3 (3.77) = <b>908.3 μg/L</b> 241.3 (1.70) = <b>409.2 μg/L</b>	[CV = $0.75$ , 99 <sup>th</sup> Percentile] [CV = $0.75$ , 95 <sup>th</sup> Percentile, n = 4]

#### Whole Effluent Toxicity

- <u>Acute Whole Effluent Toxicity</u>. Monitoring is required to determine if reasonable potential exists for this facility's discharge to exceed water quality standards.
  - ✓ Acute Allowable Effluent Concentrations (AECs) for facilities that discharge to Lakes [10 CSR 20-7.031(5)(A)4.B.(IV)(b)] are 100%, 50%, 25%, 12.5%, & 6.25%.

- Chronic Whole Effluent Toxicity. Monitoring is required to determine if reasonable potential exists for this facility's discharge to exceed water quality standards.
  - Chronic Allowable Effluent Concentrations (AECs) for facilities that discharge to Lakes [10 CSR 20-7.031(5)(A)4.B.(IV)(b)]  $\checkmark$ are 100%, 50%, 25%, 12.5%, & 6.25%.

#### Parameters Removed.

Total Recoverable Iron. The previous permit contained monthly sampling requirements for Total Recoverable Iron. The facility does not utilize iron based chemicals for phosphorus removal and effluent data submitted by the permittee over the previous permit cycle demonstrated no reasonable potential to exceed the water quality standard for Total Recoverable Iron. The permit is still protective of water quality and this determination will be reassessed at the time of renewal.

Sampling Frequency Justification: Sampling and Reporting Frequency was retained from previous permit, with the exception of Total Nitrogen (speciated), which was increased from quarterly to monthly, and Total Phosphorus and Total Recoverable Aluminum, which were reduced from weekly to monthly. Sampling for *E. coli* is set at weekly per 10 CSR 20-7.015(9)(D)7.C.

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

#### **Acute Whole Effluent Toxicity**

No less than **ONCE/YEAR**: Facility is designated as a Major facility or has a design flow  $\geq 1.0$  MGD.

#### **Chronic Whole Effluent Toxicity**

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

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

#### **PERMITTED FEATURE INF – INFLUENT MONITORING**

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

#### **INFLUENT MONITORING TABLE:**

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
BOD <sub>5</sub>	mg/L	1			*	***	1/month	monthly	С
TSS	mg/L	1			*	***	1/month	monthly	С
Ammonia as N	mg/L	1	*		*	***	1/month	monthly	С
Total Phosphorus	mg/L	1	*		*	***	1/month	monthly	С
Total Kjeldahl Nitrogen	mg/L	1	*		*	***	1/month	monthly	С
Nitrite + Nitrate	mg/L	1	*		*	***	1/month	monthly	С

\* - Monitoring requirement only.

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

#### **Basis for Limitations Codes:**

- State or Federal Regulation/Law 1. 2
- Water Quality Standard (includes RPA) Water Quality Based Effluent Limits
- 3.
- 4 Antidegradation Review

- Antidegradation Policy
- 6. Water Quality Model
- 7. Best Professional Judgment
- 8 TMDL or Permit in lieu of TMDL
- WET Test Policy 9

\*\*\*\* - C = Composite

- 10. Multiple Discharger Variance
  - Nutrient Criteria Implementation Plan
- 11.

#### **Influent Parameters**

- <u>Biochemical Oxygen Demand (BOD<sub>5</sub>) and Total Suspended Solids (TSS)</u>. An influent sample is required to determine the removal efficiency. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to BOD<sub>5</sub> and TSS for Publicly Owned Treatment Works (POTWs)/municipals.
- <u>Total Phosphorus, Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia</u>. Influent monitoring for Total Phosphorus, Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia required per 10 CSR 20-7.015(9)(D)8.

<u>Sampling Frequency Justification</u>: The sampling and reporting frequencies for Total Phosphorus and Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia parameters were established to match the required sampling frequency of these parameters in the effluent, per [10 CSR 20-7.015(9)(D)8.]. The sampling and reporting frequencies for influent BOD<sub>5</sub> and TSS have been established to match the required sampling frequency of these parameters in the effluent.

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

#### OUTFALL #001 - GENERAL CRITERIA CONSIDERATIONS:

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

- (A) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses. The discharge from this facility is made up of treated domestic wastewater. Based upon review of the recent Report of Compliance Inspection for the inspection conducted on September 18, 2018, no evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, this facility utilizes secondary treatment technology and is currently in compliance with effluent limitations that are more stringent than the secondary treatment technology based effluent limits established in 40 CFR 133 and there has been no indication to the Department that the stream has had issues maintaining beneficial uses as a result of this discharge. Based on the information reviewed during the drafting of this permit, these final effluent limitations appear to have protected against the excursion of this criterion.
- (B) <u>Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses</u>. Please see (A) above as justification is the same.
- (C) <u>Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full</u> <u>maintenance of beneficial uses</u>. 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) <u>Waters shall provide for the attainment and maintenance of water quality standards downstream including waters of another state</u>. Please see (D) above as justification is the same.
- (F) <u>There shall be no significant human health hazard from incidental contact with the water</u>. Please see (D) above as justification is the same.
- (G) There shall be no acute toxicity to livestock or wildlife watering. Please see (D) above as justification is the same.
- (H) <u>Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community</u>. Please see (A) above as justification is the same.

(I) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247. The discharge from this facility is made up of treated domestic wastewater. No evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, any solid wastes received or produced at this facility are wholly contained in appropriate storage facilities, are not discharged, and are disposed of offsite. This discharge is subject to Standard Conditions Part III, which contains requirements for the management and disposal of sludge to prevent its discharge. Therefore, this discharge does not have reasonable potential to cause or contribute to an excursion of this criterion.

# Part 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.

The following table summarizes the results of the cost analysis. See **Appendix – Cost Analysis for Compliance** for detailed information.

New Permit Requirements								
Branson, Compton Drive								
Outfall #001: Quar Total Phos	1: Quarterly monitoring for Chloroform; increased monitoring for Total Nitrogen (Nitrite + Nitrate and Total Kjeldahl Nitrogen) from quarterly to monthly; and monthly influent monitoring for Total Phosphorus and Total Nitrogen (speciated)							
Branson, Cooper Creek         Outfall #001:       Increased monitoring for Total Nitrogen (Nitrite + Nitrate and Total Kjeldahl Nitrogen) from quarterly to monthly; and monthly influent monitoring for Total Phosphorus and Total Nitrogen (speciated)								
Estimated Annual Cost	Annual Median Household Income (MHI)	Estimated Monthly User Rate	User Rate as a Percent of MHI					
\$4,996 \$41,733		\$14.00	0.40%					

#### Summary Table. Cost Analysis for Compliance Summary for the City of Branson

### 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.

#### WATER QUALITY STANDARD REVISION:

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

✓ While this permit does not establish final effluent limitations for nutrients, the increased monitoring of nutrients is the primary step in the implementation of the new numeric lake nutrient criteria. Nutrient criteria for lakes are environmentally necessary to ensure the beneficial uses of lakes (water supply, recreation in and on the water, and human health) are guarded from the effects of eutrophication and subsequent algal blooms.

#### **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.

#### **PUBLIC NOTICE:**

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

✓ The Public Notice period for this operating permit was from October 4, 2019 to November 4, 2019. The City of Branson submitted a comment on November 4, 2019 which requested a schedule of compliance to meet the final effluent limits for Total Recoverable Aluminum. In an effort to achieve compliance with Total Recoverable Aluminum, the permit was updated to include a one year schedule of compliance to meet the final effluent limits for Aluminum.

DATE OF FACT SHEET: AUGUST 27, 2019; REVISED: NOVEMBER 21, 2019

#### **COMPLETED BY:**

ASHLEY KEELY, ENVIRONMENTAL SPECIALIST MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT (573) 751-7326 ASHLEY.KEELY@DNR.MO.GOV

# **Appendices**

# **APPENDIX - CLASSIFICATION WORKSHEET:**

Item	Points Possible	Points Assigned					
Maximum Population Equivalent (P.E.) served , peak day	1 pt./10,000 PE or major fraction	3					
Design Flow (avg. day) or peak month's flow (avg. day) whichever is larger	1 pt. / MGD or major fraction thereof. (Max 10 pts.)	3					
Effluent Discharge							
Missouri or Mississippi River	0						
All other stream discharges except to losing streams and stream	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					
Direct reuse or recycle of effluent	6						
Land Application/Irriga	tion						
Drip Irrigation	3						
Land application/irrigation	5						
Overland flow	4						
Variation in Raw Wastes (higher	st level only)						
Variations do not exceed those normally or typically expected	0	0					
Reoccurring deviations or excessive variations of 100 to 200 percent in strength and/or flow	2						
Reoccurring deviations or excessive variations of more than 200 percent in strength and/or flow	4						
Department-approved pretreatment program	6						
Preliminary Treatment							
STEP systems (operated by the permittee)	3						
Screening and/or comminution	3	3					
Grit removal	3	3					
Plant pumping of main flow	3	3					
Flow equalization	5						
Primary Treatment							
Primary clarifiers	5						
Chemical addition (except chlorine, enzymes)	4						
Secondary Treatmen	Secondary Treatment						
Trickling filter and other fixed film media with or without secondary clarifiers	10						
Activated sludge (including aeration, oxidation ditches, sequencing batch reactors, membrane bioreactors, and contact stabilization)	15	15					
Stabilization ponds without aeration	5						
Aerated lagoon	8						
Advanced Lagoon Treatment – Aerobic cells, anaerobic cells, covers, or fixed film	10						
Biological, physical, or chemical	12	12					
Carbon regeneration	4						
Total from page <b>ONE</b> (1)		45					

#### **APPENDIX - CLASSIFICATION WORKSHEET (CONTINUED):**

Ітем	POINTS POSSIBLE	POINTS ASSIGNED
Solids Handling		
Sludge Holding	5	5
Anaerobic digestion	10	
Aerobic digestion	6	6
Evaporative sludge drying	2	
Mechanical dewatering	8	8
Solids reduction (incineration, wet oxidation)	12	
Land application	6	6
Disinfection		
Chlorination or comparable	5	
On-site generation of disinfectant (except UV light)	5	
Dechlorination	2	
UV light	4	4
Required Laboratory Control Performed by Plant	Personnel (highest level only)	
Lab work done outside the plant	0	
Push – button or visual methods for simple test such as pH, settleable solids	3	
Additional procedures such as DO, COD, BOD, titrations, solids, volatile content	5	
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	
Total from page <b>TWO</b> (2)		36
Total from page <b>ONE</b> (1)		45
Grand Total		81

□ - 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	24.1	2.25	5.9	0.26	35	1.5/0.05	2.31	1.75	NO
Total Ammonia as Nitrogen									
(Winter) mg/L	15.3	5.65	4.7	0.64	36	2.5/0.05	2.12	2.63	NO
Aluminum, Total Recoverable									
(µg/L)	750	1672.9	NA	NA	72	1200/66.8	0.746	1.69	YES
Iron, Total Recoverable									
(µg/L)	NA	NA	1000	306.9	28	270/10	1.26	3.54	NO

N/A - Not Applicable

\* - Units are  $(\mu g/L)$  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:**



#### **APPENDIX – COST ANALYSIS FOR COMPLIANCE:**

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

### Branson, Cooper Creek WWTF, Permit Renewal City of Branson Missouri State Operating Permit #MO-0116599

Section 644.145 RSMo requires the Department of Natural Resources (Department) 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 how the permittee will comply with new permit requirements.

#### **New Permit Requirements**

#### **Branson, Compton Drive**

Outfall #001:

Quarterly monitoring for Chloroform; increased monitoring for Total Nitrogen (Nitrite + Nitrate and Total Kjeldahl Nitrogen) from quarterly to monthly; and monthly influent monitoring for Total Phosphorus and Total Nitrogen (speciated)

#### **Branson, Cooper Creek**

Outfall #001:

Increased monitoring for Total Nitrogen (Nitrite + Nitrate and Total Kjeldahl Nitrogen) from quarterly to monthly; and monthly influent monitoring for Total Phosphorus and Total Nitrogen (speciated)

#### Connections

The number of connections was reported by the permittee on the Financial Questionnaire.

Connection Type	Branson, Compton Drive	Branson, Cooper Creek	Total
Residential	2,703	3,146	5,849
Commercial	1,215	1,413	2,628
Total	3,918	4,559	8,477

#### **Data Collection for this Analysis**

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 Department's website (<u>http://dnr.mo.gov/forms/780-2511-f.pdf</u>) is a required attachment to the permit renewal application. If the financial questionnaire is not submitted with the renewal application, the Department sends a request to complete the form with the welcome correspondence. If certain data was not provided by the permittee to the Department and the data is not obtainable through readily available sources, this analysis will state that the information is "unknown".

#### Eight Criteria of 644.145 RSMo

The Department must consider the eight (8) criteria presented in subsection 644.145 RSMo to evaluate the cost associated with new permit requirements.

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

Criterion 1 Table. Current Financial Information for the City of Branson					
Current Monthly User Rates per 5,000 gallons*	\$13.95				
Median Household Income (MHI) <sup>1</sup>	\$41,733				
Current Annual Operating Costs (excludes depreciation)	\$1,662,000				

\*User Rates were reported by the permittee on the Financial Questionnaire.

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

Criterion 2A Table. Estimated Cost Breakdown of New Permit Requirements						
New Requirement	Frequency	Estimated Cost	Estimated Annual Cost			
Total Phosphorus - Influent	Monthly	\$24	\$576			
Total Kjeldahl Nitrogen - Influent	Monthly	\$33	\$660			
Nitrate + Nitrite - Influent	Monthly	\$40	\$800			
Ammonia - Influent	Monthly	\$20	\$480			
Total Kjeldahl Nitrogen - Effluent	Monthly	\$33	\$660			
Nitrate + Nitrite - Effluent	Monthly	\$40	\$800			
Chloroform	Quarterly	\$255	\$1,020			
Total Estimated Annual Cost of New	\$4,996					

The following tables outline the estimated costs of the new permit requirements:

Criterion 2B Table. Estimated Costs for New Permit Requirements				
(1)	Estimated Annual Cost	\$4,996		
(2)	Estimated Monthly User Cost for New Requirements <sup>2</sup>	\$0.05		
	Estimated Monthly User Cost for New Requirements as a Percent of MHI <sup>3</sup>	0.001%		
(3)	Total Monthly User Cost*	\$14.00		
	Total Monthly User Cost as a Percent of MHI <sup>4</sup>	0.403%		

\* Current User Rate + Estimated Monthly Costs of New Sampling Requirements

Due to the minimal cost associated with new permit requirements, the Department anticipates an extremely low to no rate increase will be necessary, which could impact individuals or households of this community.

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

This analysis is being conducted based on new requirements in the permit, which will not require the addition of new control technologies at the facility. However, the new sampling requirements are being established in order to provide data regarding the health of the receiving stream's aquatic life and to ensure that the existing permit limits are providing adequate protection of aquatic life. 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 fulfills the goal of restoring and maintaining the chemical, physical, and biological integrity of the receiving stream; and, where attainable, it achieves a level of water quality that provides for the protection and propagation of fish, shellfish, wildlife, and recreation in and on the water.

#### **Nutrient Monitoring**

Nutrients are mineral compounds that are required for organisms to grow and thrive. Of the six (6) elemental macronutrients, nitrogen and phosphorus are generally not readily available and limit growth of organisms. Excess nitrogen and phosphorus will cause a shift in the ecosystem's food web. Once excess nitrogen and phosphorous are introduced into a waterbody, some species' populations will dramatically increase, while other populations will not be able to sustain life. Competition and productivity are two factors in which nutrients can alter aquatic ecosystems and the designated uses of a waterbody. For example, designated uses, such as drinking water sources and recreational uses, become impaired when algal blooms take over a waterbody. These blooms can cause foul tastes and odors in the drinking water, unsightly appearance, and fish mortality in the waterbody. Some algae also produce toxins that may cause serious adverse health conditions such as liver damage, tumor promotion, paralysis, and kidney damage. The monitoring requirements for nitrogen and phosphorus have been added to the permit to provide data regarding the health of the receiving stream's aquatic life. A healthy ecosystem is beneficial as it provides reduced impacts on human and aquatic health as well as recreational opportunities.

# (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 reported that their outstanding debt for their current wastewater collection and treatment systems is \$11,595,000. The community also reported that each user pays \$13.95 monthly, of which, \$0.00 is used toward payments on the current outstanding debt. Facility upgrades are funded through the City of Branson tourism tax, system connection charges paid by new developments connecting to the city sewer system, and a portion of the Taney County sewer sales tax.

# (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.
- (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.

The following table characterizes the current overall socioeconomic condition of the community as compared to the overall socioeconomic condition of Missouri. The following information was compiled using the latest U.S. Census data.

# Criterion 5 Table. Socioeconomic Data <sup>1, 5-9</sup> for the City of Branson

No.	Administrative Unit	Branson City	Missouri State	United States
1	Population (2017)	11,228	6,075,300	321,004,416
2	Percent Change in Population (2000-2017)	85.6%	8.6%	14.1%
3	2017 Median Household Income (in 2018 Dollars)	\$41,733	\$52,801	\$59,060
4	Percent Change in Median Household Income (2000-2017)	-13.5%	-7.7%	-6.7%
5	Median Age (2017)	41.9	38.4	37.8
6	Change in Median Age in Years (2000-2017)	-1.1	2.3	2.5
7	Unemployment Rate (2017)	7.0%	5.8%	6.6%
8	Percent of Population Below Poverty Level (2017)	20.0%	14.6%	14.6%
9	Percent of Household Received Food Stamps (2017)	12.6%	12.2%	12.6%
10	(Primary) County Where the Community Is Located	Taney County		

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

The community did not report any other investments relating to environmental improvements.

(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;

The new requirements associated with this permit will not impose a financial burden on the community, nor will they require the City of Branson to seek funding from an outside source.

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

The community did not report any other relevant local economic conditions.

#### **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 increase monitoring. The Department has considered the eight (8) criteria presented in subsection 644.145 RSMo to evaluate the cost associated with the new permit requirements.

This analysis examined whether the new sampling requirements affect the ability of an individual customer or household to pay a utility bill without undue hardship or unreasonable sacrifice in the essential lifestyle or spending patterns of the individual or household. After reviewing the above criteria, the Department finds that the new sampling requirements may result in a low burden with regard to the community's overall financial capability and a low financial impact for most individual customers/households; therefore, the new permit requirements are affordable.

#### References

 (A) 2017 MHI in 2017 Dollar: United States Census Bureau. United States Census Bureau. 2013-2017 American Community Survey 5-Year Estimates, Table B19013: Median Household Income in the Past 12 Months (in 2017 Inflation-Adjusted Dollars). http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS\_17\_5YR\_B19013&prodType=table.

(B) 2000 MHI in 1999 Dollar: (1) For United States, United States 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. <u>https://www.census.gov/prod/cen2000/phc-2-1-pt1.pdf</u>. (2) For Missouri State, United States Census Bureau (2003) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-2-1, pdf. (2) For Missouri State, PHC-2-27, Missouri, Table 10. Work Status and Income in 1999: 2000, Washington, DC. <u>https://www.census.gov/prod/cen2000/phc-2-1-pt1.pdf</u>.

(C) 2018 CPI, 2017 CPI and 1999 CPI: U.S. Department of Labor Bureau of Labor Statistics (2018) Consumer Price Index - All Urban Consumers, U.S. City Average. All Items. 1982-84=100. <u>http://data.bls.gov/timeseries/CUUR0000SA0?data\_tool=Xgtable</u>.

(D) 2017 MHI in 2018 Dollar = 2017 MHI in 2017 Dollar x 2018 CPI /2017 CPI; 2000 MHI in 2018 Dollar = 2000 MHI in 1999 Dollar x 2018 CPI /1999 CPI.

(E) Percent Change in Median Household Income (2000-2017) = (2017 MHI in 2018 Dollar - 2000 MHI in 2018 Dollar) / (2000 MHI in 2018 Dollar).

- 2. (\$4,996/8,477)/12 = \$0.05 (Estimated Monthly User Cost for New Requirements)
- 3. ((0.05/((41,733/12)))) = 0.001% (New Sampling Only)
- 4. (\$14.00/(\$41,733/12))100% = 0.40% (Total User Cost)
- (A) Total Population in 2017: United States Census Bureau. 2013-2017 American Community Survey 5-Year Estimates, Table B01003: Total Population - Universe: Total Population.

http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS 17 5YR B01003&prodType=table. (B) Total Population in 2000: (1) For United States, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-1-1 Part 1. United States Summary, Table 1. Age and Sex: 2000, Washington, DC. https://www.census.gov/prod/cen2000/phc-1-1-pt1.pdf. (2) For Missouri State, United States Census Bureau (2002) 2000 Census of Population and Housing Summary Develotion and Housing Characteristics PHC-1-1 Part 1. United States Summary, Table 1. Age and Sex: 2000, Washington, DC.

and Housing, Summary Population and Housing Characteristics, PHC-1-27, Missouri, Table 2. Age and Sex: 2000, Washington, DC. http://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf.

(C) Percent Change in Population (2000-2017) = (Total Population in 2017 - Total Population in 2000) / (Total Population in 2000).
(A) Median Age in 2017: United States Census Bureau. 2013-2017 American Community Survey 5-Year Estimates, Table B01002: Median Age by Sex - Universe: Total population. <u>http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS\_17\_5YR\_B01002&prodType=table</u>.

(B) Median Age in 2000: (1) For United States, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-1-1 Part 1. United States Summary, Table 1. Age and Sex: 2000, Washington, DC., Page 2. https://www.census.gov/prod/cen2000/phc-1-1-pt1.pdf. (2) For Missouri State, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Population and Housing Characteristics, PHC-1-27, Missouri, Table 2. Age and Sex: 2000, Washington, DC., Pages 64-92. http://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf.

(C) Change in Median Age in Years (2000-2017) = (Median Age in 2017 - Median Age in 2000).

- United States Census Bureau. 2013-2017 American Community Survey 5-Year Estimates, B23025: Employment Status for the Population 16 Years and Over - Universe: Population 16 years and Over.
- http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS\_17\_5YR\_B23025&prodType=table.
- 8. United States Census Bureau. 2013-2017 American Community Survey 5-Year Estimates, Table S1701: Poverty Status in the Past 12 Months. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS\_17\_5YR\_S1701&prodType=table.
- United States Census Bureau. 2013-2017 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\_17\_5YR\_B22003&prodType=table

**APPENDIX – ANTIDEGRADATION ANALYSIS:** 

# Water Quality and Antidegradation Review

For the Protection of Water Quality and Determination of Effluent Limits for Discharge to Lake Taneycomo

by Branson- Cooper Creek Wastewater Treatment Facility



September 2012

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### 1. FACILITY INFORMATION

FACILITY NAME: Branson- Cooper Creek WWTF

NPDES #: MO-0116599

FACILITY TYPE/DESCRIPTION: The City of Branson is proposing to double the design average flow of the Cooper Creek Wastewater Treatment Plant (WWTP) from the currently permitted 3.4 MGD to 6.8 MGD to accommodate future growth. The Cooper Creek WWTP is an extended aeration activated sludge facility with an influent anaerobic zone to remove phosphorus biologically. Alum is added to the aeration basin to polish the phosphorus not removed by the biological process. The secondary clarifier effluent is filtered prior to UV disinfection

COUNTY:	Taney	UTM COORDINATES:	x= 477649; y= 4053112
12- DIGIT HUC:	11010003-0101	LEGAL DESCRIPTION:	SE 1/4, NW 1/4, Sec. 07, T22N, R21W
EDU <sup>*</sup> :	Ozark/White	ECOREGION:	Ozark Highlands/ White River Hills
	<b>TT T</b>		

\* - Ecological Drainage Unit

### 2. WATER QUALITY INFORMATION

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(2)] and federal antidegradation policy at Title 40 Code of Federal Regulation (CFR) Section 131.12 (a), the Missouri Department of Natural Resources (MDNR) developed a statewide antidegradation policy and corresponding procedures to implement the policy. A proposed discharge to a water body will be required to undergo a level of Antidegradation Review which documents that the use of a water body's available assimilative capacity is justified. Effective August 30, 2008, a facility is required to use *Missouri's Antidegradation Rule and Implementation Procedure (AIP)* for new and expanded wastewater discharges.

### 2.1. WATER QUALITY HISTORY:

The Cooper Creek WWTP discharges to Lake Taneycomo, which is a 22-mile, 2,080 acre lake. In review of the facility's previous five years of discharge monitoring reports (dmrs), the facility is in compliance with its effluent limits and achieves very low effluent levels. The flow to Lake Taneycomo is regulated by the Table Rock Dam which was completed in 1958. The discharge of water from Table Rock Dam is cool enough to maintain a cold water fishery in Lake Taneycomo. Although classified as a lake, the upper reaches of Lake Taneycomo in the vicinity of the Cooper Creek WWTP are for all intents and purposes a river.

Lake Taneycomo was identified on Missouri's 1994- 2008 303(d) lists for low dissolved oxygen (DO). A low DO Total Maximum Daily Load (TMDL) was approved for Lake Taneycomo by USEPA on December 30, 2010. The TMDL identified Table Rock Dam as the sole source of low DO and that domestic discharges are not significantly contributing to the low DO impairment below Table Rock Dam. Lake Taneycomo was additionally 303(d) listed in 2010 as impaired for total nitrogen (TN) but subsequently has been removed from the list.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	10.5	Tertiary	Lake Taneycomo	0.0

## 3. RECEIVING WATERBODY INFORMATION

WATERBODY NAME	CLASS	WRID	LOW-FLOW VALUES (CFS)*			Designated Uses**	
WATERBODT NAME	CLASS	WDID	1Q10	7Q10	30Q10	DESIGNATED USES	
Lake Taneycomo	L2	7314	34.5	44.4	199	AQL, CDF, DWS, LWW, SCR, WBC (A)	

\* Flow data collected near Branson Gage Station (07053500) for the Period from 1959 – 2011.

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

#### RECEIVING WATER BODY SEGMENT #1: Lake Taneycomo

Upper end segment\* UTM coordinates: x= 381134; y= 4336665 (Outfall)

Lower end segment\* UTM coordinates: x= 480561; y= 44054347(confluence with Turkey Creek)

\*Segment is the portion of the stream where discharge occurs. Segment is used to track changes in assimilative capacity and is bound at a minimum by existing sources and confluences with other significant water bodies.

## 4. GENERAL COMMENTS

Black and Veatch and Geosyntec Consultants prepared, on behalf of the City of Branson, the *Antidegradation Report for the Proposed Expansion of Branson Cooper Creek WWTF* dated July 2012. A QUAL2K was completed for dissolved oxygen in Lake Taneycomo. Staff believes that the results of the model are protective of the water quality standards for dissolved oxygen. Information that was provided by the applicant in the submitted report and summary forms in Appendix C was used to develop this review document. A Missouri Department of Conservation Natural Heritage Review was obtained by the applicant; and no endangered species were found to be impacted by the discharge; however there are species of concern within a mile of the discharge.

## 5. ANTIDEGRADATION REVIEW INFORMATION

The following is a review of the Antidegradation Report for Branson- Cooper Creek dated July 20, 2012.

# 5.1. TIER DETERMINATION

Below is a list of pollutants of concern reasonably expected to be in the discharge (see Appendix C: Tier Determination and Effluent Limit Summary). Pollutants of concern are defined as those pollutants "proposed for discharge that affects beneficial use(s) in waters of the state. POCs include pollutants that create conditions unfavorable to beneficial uses in the water body receiving the discharge or proposed to receive the discharge." (AIP, Page 7).

POLLUTANTS OF CONCERN	TIER*	DEGRADATION COMMENT	
BOD <sub>5</sub> /DO	1	Minimal	
Total Suspended Solids (TSS)	**	Minimal	
Ammonia	2	Minimal	
pH	***	Minimal	Permit limits applied
Oil and Grease	2*	Minimal	Permit limits applied
Escherichia coli (E. coli)	2	Minimal	Disinfection required
Total Phosphorus	2	Minimal	Permit limits applied
Total Nitrogen	2	Minimal	Monitoring only
Aluminum, Total Recoverable	2	Minimal	Monitoring only

## Table 1: Pollutants of Concern and Tier Determination

\* Tier assumed. Tier determination not possible: \*\* No in-stream standards for these parameters. \*\*\* Standards for these parameters are ranges

The following Antidegradation Review Summary attachments in Appendix C were used by the applicant:

Tier Determination and Effluent Summary

 $\boxtimes$  Attachment B, Tier 2 with minimal degradation.

# 5.2. EXISTING WATER QUALITY

Branson evaluated water quality data from USGS gaging stations and from the Lakes of Missouri Volunteer Program to get existing water quality of the Lake Taneycomo. Facility assimilative capacity calculations were completed to determine ammonia loading to Lake Taneycomo. A QUAL2K model was completed for dissolved oxygen loading and impacts in Lake Taneycomo.

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## 5.3. DEMONSTRATION OF NECESSITY AND SOCIAL AND ECONOMIC IMPORTANCE

The City is deeply committed to protecting water quality in Lake Taneycomo and interested in providing additional demonstrations that the proposed facility expansion will not significantly impact algal density and lake transparency. Branson's existing wastewater treatment plant is an extended aeration activated sludge facility with an influent anaerobic zone to remove phosphorus biologically. Alum is added to the aeration basin to polish the phosphorus not removed by the biological process. The secondary clarifier effluent is filtered prior to UV disinfection. Branson modeled their existing treatment plant at an expanded flow, plus a enhanced nutrient removal plant (ENR), and a plant that operates at the limits of nutrient removal technology (LOT). The BNR plant achieves total nitrogen of 8 mg/L and total phosphorus of 0.5 mg/L, the ENR achieves a total nitrogen of 5 mg/L and total phosphorus of 0.25 mg/L, and the LOT achieves a total nitrogen of 3 mg/L and a total phosphorus of 0.1 mg/L.

In the modeling Branson completed, Branson assumed higher loadings of nutrients in the lake from the other sources. Branson modeled all three plants based on ability to what the concentration of Chlorophyll-A would be in the Lake. The chlorophyll-a concentrations ranged from approximately 4.7 ug/L for LOT to 5.4 ug/L for BNR. The chlorophyll-a concentrations for all of the scenarios were less than the proposed water quality criterion of 11 ug/L. The low concentrations suggest that the WWTPs have a negligible impact on chlorophyll-a concentrations due to the relatively high flow coming from Table Rock Lake. Because of the high flow, there are only minor differences in chlorophyll-a concentration among the three scenarios. Branson also modeled a higher total nitrogen load from the plant to see the impact. The chlorophyll-a concentrations are equal, indicating that algae growth is not at all sensitive to increases in TN and that phosphorus rather than nitrogen limited algae growth.

Branson's existing process is a reliable, versatile, flexible treatment system that can be upgraded to provide treatment to meet potential future limits for nutrient control should lake nutrient standards be developed in the future. In essence the extended aeration process is an excellent core biological treatment facility that can serve the City well into the future as future numerical permit limits are lowered and new pollutants are added to the discharge permit. The proposed expansion of the Cooper Creek WWTP should continue to use the extended aeration activated sludge process (BNR). Branson's preferred alternative is to remain with the BNR plant, expanded for the additional flow, but design it so that future modifications can be added with minimal disturbance to operations and additional cost. The facility expansion will consist of the following: expanded headworks, addition of two additional extended activated sludge basins with attached anaerobic zones, addition of two final clarifiers and associated RAS and WAS pumping stations, duplicating the existing effluent filtration system, additional UV disinfection capacity and the addition of post aeration.

## 5.3.1. REGIONALIZATION ALTERATIVE

Within Section II B 1. Of the AIP, discussion of the potential for discharge to a regional wastewater collection system is mentioned. Cooper Creek is the municipal wastewater treatment for the City of Branson. A continuing authority waiver is not required.

Needs a Waiver to prevent conflict with area wide management plan approved under Section 208 of the Clean Water Act and/or under 10 CSR 20-6.010(3) (B) 1 or 2 Continuing Authorities? (Y or N)  $\underline{N}$ 

The affected community is the community of Branson and the Table Rock Lake/Lake Taneycomo areas. This area is highly dependent on tourism. The expansion is proposed to accommodate future development of residential, commercial, condominium and resort/time-share properties in the Branson and Table Rock Lake/Lake Taneycomo areas.

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## 6. GENERAL ASSUMPTIONS OF THE WATER QUALITY AND ANTIDEGRADATION REVIEW

- 1. A Water Quality and Antidegradation Review (WQAR) assumes that [10 CSR 20-6.010(3) Continuing Authorities and 10 CSR 20-6.010(4) (D), consideration for no discharge] has been or will be addressed in a Missouri State Operating Permit or Construction Permit Application.
- 2. A WQAR does not indicate approval or disapproval of alternative analysis as per [10 CSR 20-7.015(4) Losing Streams], and/or any section of the effluent regulations.
- 3. Changes to Federal and State Regulations made after the drafting of this WQAR may alter Water Quality Based Effluent Limits (WQBEL).
- 4. Effluent limitations derived from Federal or Missouri State Regulations (FSR) may be WQBEL or Effluent Limit Guidelines (ELG).
- 5. WQBEL supersede ELG only when they are more stringent. Mass limits derived from technology based limits are still appropriate.
- 6. A WQAR does not allow discharges to waters of the state, and shall not be construed as a National Pollution Discharge Elimination System or Missouri State Operating Permit to discharge or a permit to construct, modify, or upgrade.
- 7. Limitations and other requirements in a WQAR may change as Water Quality Standards, Methodology, and Implementation procedures change.
- 8. Nothing in this WQAR removes any obligations to comply with county or other local ordinances or restrictions.
- 9. If the proposed treatment technology is not covered in 10 CSR 20-8 Design Guides, the treatment process may be considered a new technology. As a new technology, the permittee will need to work with the review engineer to ensure equipment is sized properly. The operating permit may contain additional requirements to evaluate the effectiveness of the technology once the facility is in operation. This Antidegradation Review is based on the information provided by the facility and is not a comprehensive review of the proposed treatment technology. If the review engineer determines the proposed technology will not consistently meet proposed effluent limits, the permittee will be required to revise their Antidegradation Report.

## 7. MIXING CONSIDERATIONS

**Mixing Zone (MZ):** One-quarter (1/4) of the stream volume of flow; length one-quarter (1/4) mile. [10 CSR 20-7.031(4)(A)4.B.(III)(a)].

**Zone of Initial Dilution (ZID):** One-tenth (0.1) of the mixing zone volume of flow, not to exceed 10 times the effluent design flow. [10 CSR 20-7.031(4)(A)4.B.(III)(b)].

	Flow (cfs)	MZ (cfs)	ZID (cfs)
1Q10	34.5	8.625	0.86
7Q10	44.4	11.1	1.11
<b>30Q10</b>	199	49.75	

## 8. PERMIT LIMITS AND MONITORING INFORMATION

WASTELOAD ALLOCATION STUDY CONDUCTED (Y OR N):	N	USE ATTA Analysis	INABILITY Conducted (Y or N):	Ν	WHOLE BODY CONTACT USE RETAINED (Y OR N):	Y
WET TEST (Y OR N): Y		FREQUENCY:	ONCE/YEAR	Метно	DC: MULTIPLE	

## Table 2: Effluent Limits

Parameter	Units	Daily Maximum	WEEKLY Average	Monthly Average	BASIS FOR LIMIT (NOTE 2)	Monitoring Frequency
FLOW	MGD	*		*	FSR	ONCE/DAY
BIOCHEMICAL OXYGEN DEMAND5 ***	MG/L		15	10	PEL	TWICE/WEEK
TOTAL SUSPENDED SOLIDS***	MG/L		20	15	PEL	TWICE/WEEK
PH	SU	6.5-9.0		6.5 - 9.0	FSR	TWICE/WEEK
OIL AND GREASE	MG/L	15		10	FSR	ONCE/MONTH
Ammonia as N (Apr 1- Sept 30)	MG/L	5.7		2.9	MDEL	ONCE/WEEK
Ammonia as N (Oct 1-Mar 31)	MG/L	7.8		3.9	MDEL	ONCE/WEEK
ESCHERICHIA COLIFORM (E. COLI)	NOTE 1		630**	126**	FSR	TWICE/WEEK
TOTAL PHOSPHORUS	MG/L			0.5	FSR	ONCE/WEEK
TOTAL NITROGEN	MG/L	*		*	NA	ONCE/MONTH

NOTE 1 - COLONIES/100 ML

NOTE 2- WATER QUALITY-BASED EFFLUENT LIMITATION -WQBEL; OR MINIMALLY DEGRADING EFFLUENT LIMIT-MDEL; OR PREFERRED ALTERNATIVE EFFLUENT LIMIT-PEL; TECHNOLOGY-BASED EFFLUENT LIMIT-TBEL; OR NO DEGRADATION EFFLUENT LIMIT-NDEL; OR FSR -FEDERAL/STATE REGULATION; OR N/A-NOT APPLICABLE. ALSO, PLEASE SEE THE GENERAL ASSUMPTIONS OF THE WQAR #4 & #5.

\* - Monitoring requirements only.

\*\* - The Monthly Average for E. coli shall be reported as a Geometric Mean.

\*\*\*This facility is required to meet a removal efficiency of 85% or more for BOD<sub>5</sub> and TSS. Influent BOD<sub>5</sub> and TSS data should be reported to ensure removal efficiency requirements are met.

## 9. RECEIVING WATER MONITORING REQUIREMENTS

No receiving water monitoring requirements recommended at this time.

## 10. DERIVATION AND DISCUSSION OF LIMITS

Wasteload allocations and limits were calculated using two methods:

1) Water quality-based – Using water quality criteria or water quality model results and the dilution equation below:

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

Where C = downstream concentration

 $C_s$  = upstream concentration

 $Q_s = upstream$  flow

 $C_e = effluent$  concentration

 $Q_e = effluent flow$ 

2) Assimilative capacity based – Using existing water quality (EWQ), water quality criteria, and the facility assimilative capacity ratio within the following equation:

**Expanding Facility:** 

 $C_{d2} = ([C_c^*(Q_s+Q_{d2})-C_s^*(Q_s+Q_{d1})*CF]FAC_{ratio}+Q_{d1}*C_{d1})/Q_{d2}$ 

Where:  $C_c$  = downstream concentration, the Water Quality Standard (WQS)

 $Q_s =$ Stream 7Q10 flow (ft<sup>3</sup>/s)

 $Q_{d1}$  = Current effluent **design** flow (ft<sup>3</sup>/s)

 $Q_{d2}$  = Proposed effluent design flow (ft<sup>3</sup>/s))

 $C_s$  = combined stream concentrations (calculated using EWQ, permitted discharges)

 $C_{d1}$  = effluent concentration of the current facility

 $C_{d2} = effluent$  concentration of the proposed facility

FAC<sub>ratio</sub> = facility assimilative capacity ratio (calculated or assumed)

CF= Conversion factors for assimilative capacity calculations are: 0.0054 for ug/L, 5.4 for mg/L.

Note: Minimally-degrading effluent limits have been based on the authority included in Section III. Permit Consideration of the AIP.

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).

# 10.1. OUTFALL #001 - MAIN FACILITY OUTFALL LIMIT DERIVATION

- <u>Flow</u>. 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.
- <u>Biochemical Oxygen Demand (BOD5</u>). The applicant proposed BOD5 effluent limits of 15 mg/L weekly average, 10 mg/L monthly average, which are the more protective than the effluent limits in 10 CSR 20-7.015(3)(A)1 for dischargers to the Lake. Influent monitoring may be required for this facility in its Missouri State Operating Permit.

The QUAL2K model was also run to predict the impact on dissolved oxygen (DO) in the lake from increasing the Cooper Creek WWTP effluent from 3.4 mgd to 6.8 mgd at the 7Q10 flow. Since DO was calibrated when the DO TMDL model was developed, the following parameters were used in the QUAL2K model. It was also assumed that the carbonaceous  $BOD_5$  in the Cooper Creek, Hollister, and

Compton WWTP effluents would remain at their current permit limit of 10 mg/L. Since the model requires input of ultimate CBOD, it was assumed that  $CBOD_u$  would be equal to 2.5 x  $CBOD_5$ . Also the headwaters DO concentration was assumed to be 4 mg/L. The model indicated that, although doubling the Cooper Creek effluent flow to 6.8 mgd would lower the DO concentration, the minimum concentration (sag) would not fall below the 6 mg/L water quality criterion. The rapid increase in DO concentration from 4 mg/L to 7.5 mg/L, just upstream from the Cooper Creek WWTP is because the reaeration rate is in part a function of the deficit or difference between the stream DO concentration, which for water temperature of 25°C is about 8 mg/L. As a result of this analysis, MDNR staff concludes that the above mentioned effluent limits are protective of beneficial uses and existing water quality.



## Table 3: Comparison of DO Modeling at Existing and Proposed Design Flows

- <u>Total Suspended Solids (TSS)</u>. The applicant proposed TSS effluent limits of 20 mg/L weekly average, 15 mg/L monthly average, which are the more protective than the effluent limits in 10 CSR 20-7.015(3)(A)1 for dischargers to the lake. Influent monitoring may be required for this facility in its Missouri State Operating Permit.
- **<u>pH.</u>** pH shall be maintained in the range from 6.5 to nine (6.5–9.0) standard units [10 CSR 20-7.015 (2)(A)2.].
- <u>Oil & Grease</u>. Conventional pollutant, [10 CSR 20-7.031, Table A]. Effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.
- <u>Total Ammonia Nitrogen</u>. Water quality based effluent limits and minimally degrading effluent limits were calculated with minimally degrading being more protective than water quality based effluent limits. However the facility proposed monitoring only. Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3]. Background total ammonia nitrogen for summer is 0.01 mg/L.

# **Minimally Degrading Effluent Limits**

## Summer Ammonia

 $\begin{array}{l} \mbox{Current Summer Ammonia Loading} = [\mbox{existing summer MDL}] \bullet [Q_{d1}] \bullet [\mbox{conversion factor(CF)}] \\ = 3.7 \mbox{ mg/L} \bullet 5.27 \mbox{ cfs} \bullet 5.4 \\ = 105.3 \mbox{ lbs/day} \\ \mbox{Summer Ammonia Chronic FAC} = [(WQC_{\mbox{chronic}} \bullet (30Q10 + Qd2) - (C_{s} \bullet 30Q10)) \bullet CF] - \mbox{current summer loading} \\ = [(3.5 \mbox{ mg/L} \bullet (199 \mbox{ cfs} + 10.54 \mbox{ cfs}) \cdot (0.01 \bullet 199 \mbox{ cfs})) \bullet 5.4] - 105.3 \mbox{lbs/day} = 3,844.3 \mbox{ lbs/day} \\ \end{array}$ 

Minimal Net Increase in Chronic Loading = 9.9% • [Summer Ammonia Chronic FAC] = 9.9% • 3,844.3 lbs/day = 380.6 lbs/day Expanded Chronic Loading = [Minimal Net Increase in Chronic Loading] + [Current Summer Ammonia Loading] = 380.6 lbs/day + 105.3 lbs/day = 485.9 lbs/day

Minimally Degrading Chronic Concentration = [(Expanded Chronic Loading)/ $Q_{d2}$ )] • CF

 $= (485.9 \text{ lbs/day})/ 10.54 \text{ cfs} \bullet 5.4 = 8.5 \text{ mg/L}$ 

Summer Ammonia Acute FAC =  $[(WQC_{acute} \bullet (1Q10 + Q_{d2}) - (C_s \bullet 30Q10)) \bullet CF]$  - current summer loading=  $[(9.6 \text{ mg/L} \bullet (34.5 \text{ cfs} + 10.54 \text{ cfs}) \cdot (0.01 \bullet (34.5 \text{ cfs})) \bullet 5.4]$  - 105.3 lbs/day = 2,227.7 lbs/day Minimal Net Increase in Acute Loading = 9.9% • [Summer Ammonia Acute FAC] = 9.9% • 2,227.7 lbs/day = 220.5 lbs/day Expanded Acute Loading = [Minimal Net Increase in Acute Loading] + [Current Summer Ammonia Loading] = 220.5 lbs/day + 105.3 lbs/day = 325.8 lbs/day Minimally Degrading Acute Concentration = [(Expanded Acute Loading)/ Qd2)] • CF = (325.8 lbs/day)/ / 10.54 cfs • 5.4 = **5.7 mg/L** 

## MDL= 5.7 mg/L AML=5.7/2= 2.9 mg/L

# Winter Ammonia

Current Winter Ammonia Loading = [existing winter MDL]  $\cdot$  [Q<sub>d1</sub>]  $\cdot$  [CF] = 8.4 mg/L  $\cdot$  5.27 cfs  $\cdot$  5.4 = 239.0 lbs/day Winter Ammonia Chronic FAC = [(WQC<sub>chronic</sub>  $\cdot$  (30Q10 + Q<sub>d2</sub>) – (C<sub>s</sub> $\cdot$  30Q10))  $\cdot$  CF] – current winter loading = [(3.5 mg/L  $\cdot$  (199 cfs + 10.54 cfs)-(0.01 $\cdot$ 199 cfs)) $\cdot$ 5.4] – 239.0 lbs/day= 3,710.6 lbs/day Expanded Chronic Loading = [Minimal Net Increase in Chronic Loading] + [Current Winter Ammonia Loading] = 367.3 lbs/day + 239.0 lbs/day= 606.3 lbs/day Minimally Degrading Chronic Concentration = [(Expanded Chronic Loading)/ Q<sub>d2</sub>)]  $\cdot$  CF = (606.3 lbs/day)/ 10.54 cfs  $\cdot$  5.4= 10.7 mg/L Winter Ammonia Acute FAC = [(WQC<sub>acute</sub>  $\cdot$  (1Q10 + Q<sub>d2</sub>) – (C<sub>s</sub>  $\cdot$  30Q10))  $\cdot$  CF] – current winter loading Expanded Acute Loading = [Minimal Net Increase in Chronic Loading] + [Current Winter Ammonia Loading] = 207.3 lbs/day + 239.0 lbs/day= 446.3 lbs/day

Minimally Degrading Acute Concentration = [(Expanded Acute Loading)/ Qd2)] • CF

 $= (446.3 \text{ lbs/day})/10.54 \text{ cfs} \cdot 5.4 = 7.8 \text{ mg/L}$ 

# MDL= 7.8 mg/L AML=7.8/2= 3.9 mg/L

Season	MDL (mg/L)	AML (mg/L)
Summer	5.8	2.9
Winter	7.8	3.9

Water Quality Based Effluent Limits

Season	Temp (°C)	pH (SU)	Total Ammonia Nitrogen CCC (mg N/L)	Total Ammonia Nitrogen CMC (mg N/L)
Summer	12.4*	7.7*	3.5	9.6
Winter	9.7*	7.7*	3.5	9.6

\*Data Limited to samples Collected since 2007 between the Cooper Creek and Compton Drive WWTPs. Summer: April 1 – September 30, Winter: October 1 – March 31.

WLA:  $C_e = ((Q_d + Q_s)C_c - (Q_s \bullet C_s))/Q_d$ Chronic WLA:  $C_{e=} ((10.54 + (199 \bullet 0.25)) \bullet 3.5 - ((199 \bullet 0.25) \bullet 0.01))/10.54$ = 19.5 mg/L Acute WLA:  $C_{e=} ((10.54 + (34.5 \bullet 0.025)) \bullet 9.6 - ((34.5 \bullet 0.025) \bullet 0.01))/10.54$ = 10.4 mg/L

$LTA_c = 19.5 \text{ mg/L} \bullet (0.780) = 15.2 \text{ mg/L}$	[CV=0.6, 99thPercentile, 30 day avg.]
$LTA_a = 10.4 \text{ mg/L} \bullet (0.321) = 3.3 \text{ mg/L}$	[CV=0.6, 99thPercentile]
$MDL = 3.3 \text{ mg/L} \cdot (3.11) = 10.3 \text{ mg/L}$	[CV=0.6, 99th Percentile]
$AML = 3.3 \text{ mg/L} \cdot (1.19) = 3.9 \text{ mg/L}$	[CV=0.6, 99 <sup>th</sup> Percentile, n=30]

# Table 4: Comparison of WQBEL and MDL

Cooger	WQBEL (	(mg/L)	Minimally Degrading (mg/L)		
Season	AML	MDL	AML	MDL	
Summer	3.9	10.3	2.9	5.7	
Winter	3.9	10.3	3.9	7.8	

- <u>E. coli.</u> Effluent limitations for WBC(B) are 126 colonies per 100 ml monthly average and 630 colonies per 100 ml weekly average [10 CSR 20-7.015 (2)(A)4.] and [10 CSR 20-7.031(4)(C), Table A]. For facilities greater than 100,00 gpd: At a minimum, weekly monitoring is required during the recreational season (April 1 October 31), with compliance to be determined by calculating the geometric mean of all samples collected during the reporting period (samples collected during the calendar week for the weekly average, and samples collected during the calendar month for the monthly average). The weekly average requirement is consistent with EPA federal regulation 40 CFR 122.45(d). Further, the limit may change depending on the outcome of future state effluent regulation revision. Please see **GENERAL ASSUMPTIONS OF THE WQAR #7.** Facility plans to meet *E. Coli* effluent limits with UV disinfection.
- <u>Total Phosphorus</u>. Monthly average of 0.5 mg/L per 10 CSR 20 7.015 (3). Branson achieves compliance with biological nutrient removal and uses alum for polishing to meet the 0.5 mg/L.
- <u>Aluminum, Total Recoverable</u> Monitoring requirement only. This facility uses chemical to ensure they meet total phosphorus effluent limits. Monitoring is required to determine if reasonable potential exists for this facility's discharge to exceed water quality standards for Aluminum (Total Recoverable).
- <u>WET Test</u>. 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
    - No less than **ONCE/YEAR**:
      - Facility is designated as a Major facility or has a design flow  $\geq 1.0$  MGD.
      - $\boxtimes$  Facility has Water Quality-based effluent limitations for toxic substances (other than NH<sub>3</sub>).

# 11. ANTIDEGRADATION REVIEW PRELIMINARY DETERMINATION

The proposed expanded Branson Cooper Creek WWTP discharge, 6.8 MGD will result in minimal degradation of the segment identified in Lake Taneycomo. The expansion of the existing extended aeration activated sludge facility was determined to be the base case technology (lowest cost alternative that meets technology and water quality based effluent limitations. Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to attain the highest statutory and regulatory requirements. MDNR has determined that the submitted review is sufficient and meets the requirements of the AIP. No further analysis is needed for this discharge.

Reviewer: Leasue Meyers Date: 09/04/2012 Unit Chief: John Rustige, P.E. Branson, Cooper Creek WWTF Fact Sheet Page #36

Appendix A: Map of Discharge Location





# Appendix B: Natural Heritage Review

Miss	ouri Department of Conse	rvation	Resource Scienc P. O. Box 18	xe Unit 30
Heri	March 15, 2012 Page 1 of 2	Report	Jefferson City, MC Prepared by: Emily Emily.Clancy@mdo	) 65102 / Clancy c.mo.gov
483000	Project type:	Wastewater	(3/3) 522 - 4115 6	bxt. 3182
	Location/Scope:	Section 7 of T22	N DOMM	
John Christian	County	Tapov		
JChristiansen@Geosyntec.c	com Query reference:	Upgrading avera	ge flow from 3.4	to 6.6
	Query received:	March 6 2012	JICCK WWWIT	
t some date and location. This report considers re ay "there is a record" does not mean the species/h incountered. These records only provide one refer ook for additional information about the biological a <u>ttp://mdc.mo.gov/discover-nature/places-go/natu</u>	cords near but not necessarily at the projec abilat is still there. To say that "there is no ence and other information (e.g. wetland or and habitat needs of records listed in order <u>tral-areas</u> and <u>mdc4.mdc.mo.gov/agplica</u>	t site. Animals move and, o record" does not mean a pro soils maps, on-site inspecti to avoid or minimize impact: tions/mofwls/mofwls_searc	wer time, so do plant co ofected species will not ons or surveys) should i s. More information is ch1.aspx Contact infor	mmunities, To be be considered at mation for the
lepartment's Natural History Biologist is online at Level 3 (federal-listed) and	http://mdc.mo.gov/contact-us.	SUAS.		
Records of listed species or cri Heritage records identify <u>no</u> wildlif federal or state endangered-list sp	tical habitats: ie preserves, <u>no designated</u> becies records within one mi	wilderness areas le of the site.	or critical habita	its, <u>no</u>
The project should be managed to akes, including adherence to any natural cover is disturbed to minin andscape and wildlife needs. Po downstream. Use silt fences and/ hose after rain events and until a	o minimize erosion and sedir "Clean Water Permit" condi- nize erosion using native pla llutants, including sediment, for vegetative filter strips to t well-rooted ground cover is	mentation/runoff to tions. Revegetate int species compa- can have significa- ouffer streams and reestablished.	o nearby stream areas in which tible with the loc ant impacts far I drainages, and	is and the cal I monitor
Level 4 recommendation	edwal Endengered Species Act, Consult with the Missouri 65203-0007; 573-234-213;	2).	(101 Park Deville Drive Suit	le A, Columbia,
Level 1 recommendations: as endangered or threatened or The level 2 response received from species of concern within 1 mile o	Unlisted species/habitats subject to special regulat m the Heritage Review webs r less of the project area. The	tracked due to the ions. site indicates the p he following specie	neir rarity, but in presence of sevent es present are:	not listed eral
Name	Common Name	Location	State Rank	
Fragaria yesca var. ameri	cana Woodland Strawberry	Southeast	S1	
Callirhoe hushii	Buch's Poppy Mallow	2 maarda -	01	

Trainie	Common Hamo	LUGGUUTI	Oldle Marik
Fragaria vesca var. americana	Woodland Strawberry	Southeast	S1
Callirhoe bushii	Bush's Poppy Mallow	2 records = North & South	S2
Yucca arkansana	Arkansas Yucca	Southeast	S2
Cissus trifoliata	Marine Vine	North	\$2

State Rank codes: S1 (Critically Imperiled) or S2 (Imperiled)

The S1 classification means critically imperiled in the state because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state. Typically 5 or fewer occurrences or few remaining individuals (<1,000). The S2 classification means imperiled, there is 6 to 20 occurrences or few remaining individuals. There are no regulatory requirements associated with

these statuses, but we encourage voluntary stewardship for S1 and S2 species to minimize the risk of further decline that could lead to listing.

The state tracks species not listed as andangered, but sufficiently rare or challenged that special efforts to conserve them may be important to their survival and to avoid future listing. We encourage conservation of them if encountered. The Missouri Wildlife Code protects all wildlife species and it includes no special regulatory requirements for these.

General recommendations related to this project or site, or based on information about the historic range of species (unrelated to any specific heritage records):

- Streams in the area should be protected from soil erosion, water pollution and in-stream activities that modify or diminish aquatic habitats. Best management recommendations relating to streams and rivers may be found at <u>http://mdc.mo.gov/79</u>.
- Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment, so inspect and clean equipment thoroughly before moving between project sites.
  - Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
  - Drain water from boats and machinery that have operated in water, checking motor cavities, livewell, bilge and transom wells, tracks, buckets, and any other water reservoirs.
- When possible, wash and rinse equipment thoroughly with hard spray or HOT water (≧104° F, typically available at do-it-yourself carwash sites), and dry in the hot sun before using again.

  These recommendations are ones project managers might prudently consider based on a general understanding of species needs and landscape conditions. Heritage records language the species needs and landscape conditions. Heritage records language the species needs and landscape conditions. Heritage records language the species needs and landscape conditions. Heritage records language the species needs and landscape conditions. Heritage records language the species needs and landscape conditions.

se recommendations are ones project managers might prudently consider based on a general understanding of species needs and landscape conditions. Hentage records largely reflect sites visited by specielists in the last 30 years. Many privately owned tracts have not been surveyed and could host remnants of species once but no longer common.

## Appendix C: Antidegradation Review Summary Attachments

The attachments that follow contain summary information provided by the City of Branson, Cooper Creek.

- 1) Water Quality and Antidegradation Review Request
- 2) Tier Determination and Effluent Limit Summary Sheet.

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#### MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH WATER QUALITY REVIEW ASSISTANCE/ANTIDEGRADATION REVIEW REQUEST PRE-CONSTRUCTION REVIEW FOR PROTECTION OF BENEFICIAL USES AND DEVELOPING EFFLUENT LIMITS

TYPE OF PROJECT				
REQUESTER TELEPHONE NUMBER WITH AREA CODE				
David H. Miller (417) 337-8559				
PERMITTEE TELEPHONE NUMBER WITH AREA CODE				
like Ray				(417) 243-2740
REASON FO	R REQUEST			
New Disc	harge (See Instruction #9)	Upgrade (No expansion) (See AIP)	) 🗹 Exp	pansion
DESCRIPTION OF	PROPOSED ACTIVITY:			
Youble the cap	pacity of the the Cooper Cre	ek WWTP from 3.4 to 6.8 MGD.		
FACILITY INF	FORMATION			
ACILITY NAME				MSOP NUMBER (IF APPLICABLE)
iranson, Coop	per Creek WWTF			MO-0116599
COUNTY				SIC / NAICS CODE
aney				4952
Chlorine	Disinfection	Itraviolet Disinfection	Not	Applicable
NATER QUALITY	ISSUES			
Nater quality is	sues include: effluent limit comp	pliance issues, notice (s) of violation, water body	y beneficial uses	not attained or supported, etc.
OUTFALL	LOCATION (LAT/L	ONG OR LEGAL DESCRIPTION)	MAPPED <sup>1</sup> (CHECK)	RECEIVING WATER BODY <sup>2</sup>
001	36.	37238/-93.14599		Lake Taneycomo (L2)
<sup>1</sup> Attac For a <sup>2</sup> See	ch topographic map (See ww additional outfalls, attach a s general instructions for disc	/w.dnr.mo.gov/internetmapviewer/) with ou eparate form. narges to streams.	tfall location(s	s) clearly marked.
OUTFALL	NEW DESIGN FLOW ** (MGD)	TREATMENT TYPE		EFFLUENT TYPES*
001	6.8	Extended Aeration Activated Slu	dge	municipal wastewater
* Desc storn ** If exp	cribe predominating characte n water, mining leachate, etc pansion, indicate new design	r of effluent. Example: domestic wastewa 5. n flow.	ter, municipal	wastewater, industrial wastewater,
Chec	cked for rare or endangered	species and provided determination with t	his request. S	ee Instruction #8.
ANTIDEGRA	DATION REVIEW SUBMIS	SION:		
See attached Antidegradation instructions. Applicant supplied a summary within:          Image: Construction of the construc				
Anney AETHOD OF BAC Chlorine Chlorine VATER QUALITY Vater quality is: OUTFALL 001	TERIA COMPLIANCE Disinfection □ □ U ISSUES   Sues include: effluent limit comp LOCATION (LAT/L 36. Ch topographic map (See ww additional outfalls, attach a s general instructions for discl NEW DESIGN FLOW ** (MGD) 6.8 Cribe predominating characte m water, mining leachate, etc pansion, indicate new design cked for rare or endangered DATION REVIEW SUBMISS Antidegradation Instructions Determination and Effluent L chment A – Significant Degrad chment C – Temporary degrad chment D – Tier 1 Review Degradation Evaluation – Complexed to the second	Itraviolet Disinfection Ozone Oliance issues, notice (s) of violation, water body ONG OR LEGAL DESCRIPTION) 37238/-93.14599 ww.dnr.mo.gov/internetmapviewer/) with ou eparate form. harges to streams. TREATMENT TYPE Extended Aeration Activated Slu Fr of effluent. Example: domestic wastewas flow. species and provided determination with t SION: Applicant supplied a summary within: .imit Summary dation tion adation nclusion of Antidegradation Review	V beneficial uses	4952 Applicable a not attained or supported, etc. RECEIVING WATER BODY Lake Taneycomo (L2) clearly marked. EFFLUENT TYPES* municipal wastewater wastewater, industrial wastewater wastewater, industrial wastewa

Branson, Cooper Creek WWTF Fact Sheet Page #40

SIGNATURE David 21. Mulles	DATE 07/10/2012
RINT NAME	
David H. Miller, P.E.	
I-MAIL ADDRESS Imiller@bransonmo.gov	

=	MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM
٢	TIER DETERMINATION AND EFFLUENT LIMIT SUMMARY

Brans	on, Cooper Cree	k WWTF				41	17-339	-2786
ADDRESS (PHYSICAL) CITY			8	STATE ZIP CODE				
2855	Fall Creek Road				Branson		ON	65616
2. RE	CEIVING WAT	ER BODY	SEGME	NT #1		CONTRACTOR OF		
AME Lake	Tanevcomo (I 2)	0		an a				
2 4		FORCHENT	/l ocation /	dischame)		The same		
E. 1	UTM	OR	Lat 36.	5. Lond	-93.3			
2.2	LOWER END O	F SEGMENT						
	UTM	OR .	Lat 36.	6_, Long	-93.1			
Per the significat	Missouri Antidegrada Int existing sources ar	tion Rule and In od confluences	nplementatio with other sid	n Procedure, or Al policiant water bod	P, the definition of a segment les.*	t, "a segment is a section of	water th	at is bound, at a minimum, it
3. W4	TER BODY SI	EGMENT #	2 (IF AP	PLICABLE)		1.1.1.2.5		
NAME			- W. 74		All Control of Control			
N/A								
3.1	UPPER END O	F SEGMENT				1 ×1 ×1		
	UTM	OR	Lat	_, Long				
3.2	LOWER END C	OF SEGMENT	·					
		OR	Lat	_, Long				
4. WA	ATER BODY SI	EGMENT #	3 (IF AP	PLICABLE)				
NAME N/A								
4.1	UPPER END O	E SEGMENT						
	UTM	OR	Lat	. Long				
4.2	LOWER END	OF SEGMENT						
	UTM	OR	Lat	_, Long				
5. PR	OJECT INFOR	MATION						
Is the	receiving water	body an O	utstandin	g National Re	esource Water, an Ou	tstanding State Reso	urce	Water, or drainage
theret	107							
	Tes	No						
In Tab	les D and E of 1	0 CSR 20-7	.031. Outs	tanding Nation	nal Resource Waters a	nd Outstanding State	Resou	rce Water are listed.
Per th	e Antidegradatio	n Implement	tation Prod	cedure Section	1.B.3., "any degradati	on of water quality is p	orohibi	ted in these waters
uniess	s the discharge o	nly results in	temporal	ry degradation	." Therefore, if degrad	ation is significant or n	ninima	I, the Antidegradation
Revie	w will be denied.							
Will th	ne proposed dis	charge of a	Il polluta	nts of concer	n, or POCs, result in I	no net increase in the	e amb	ient water quality
conce		ZI No	ater atter	mixing,				
	100	BCI NO						
If yes, receiv	submit a summa	ary table sho	wing the I	evels of each	pollutant of concern be st downstream classifie	fore and after the prop d water body segmen	oused	discharge in the
Will th	ne discharge res	sult in temp	orary dec	aradation?	a satrina seri adadina	a noise and anginan		
	Yes	No No						
lf yes,	complete Attach	ment C.						
Has ti	he project been	determined	as non-o	legrading?				
	Yes	No No						
Ifune	complete No De	oradation C	valuation	Conclusion	Antidogradation Linu	ow form		
Subm	it with the approx	gradation E	valuation Pe	- Conclusion (	n as no antideoradation	ew iorm.		
If yor	to one of the	above and	actione	skin to Secti	ion 8 . Wet Weather	·		
n yes		above que	auona,	amp to secu	on o - met meatilei	•		

	6. EXISTING WATER QUALITY DATA OR MODEL SUMMARY				
	Obtaining Existing Water Quality is possible by three methods according to the Antidegradation Implementation Procedure Section II.A.1.: (1) using previously collected data with an appropriate Quality Assurance Project Plan, or QAPP (2) collecting water quality data by approved the Missouri Department of Natural Resources methodology or (3) using an appropriate water quality model. QAPPs must be submitted to the department for approval well in advance (six months) of the proposed activity. Provide all the appropriate corresponding data and reports which were approved by the department Water Quality Monitoring and Assessment Section.				
	Date existing water quality data was provided by the Water Quality Monitoring and Assessment Section:				
	Approval date of the QAPP by the Water Quality Monitoring and Assessment Section: Approval date of the project sampling plan by the Water Quality Monitoring and Assessment Section: Approval date of the data collected for all appropriate pollutants of concern by the Water Quality Monitoring and Assessment Section:				
İ	Comments/Discussion:				
	N/A				
	7 DOLLUTANTS OF CONCERN AND THE DETERMINATION OF				
	7. POLLUTANTS OF CONCERN AND THEN DETERMINATION(S) Pollutants of Concern to be considered include those pollutants reasonably expected to be present in the discharge per the Antidegradation				
	Implementation Procedure Section II.S. The tier protection levels are specified and defined in rule at 10 CSR 20-7.031 (2).				
	Water Body Segment One				
	Pollutants of Concern and Tier Determination(s)				
İ	Tier 2 with Minimal Degradation Tier 2 with Significant Degradation				
	BOD5/DO				
	– Ammonia –				
	Note: Add an asterisk to items that you only assume are Tier 2 with significant degradation.				
	Water Body Segment Two Pollutants of Concern and Tier Determination(s)				
	Tier 1 Tier 2 with Minimal Degradation Tier 2 with Significant Degradation				
	<ul> <li>For pollutants of concern that are Tier 2 with significant degradation, complete Attachment A.</li> </ul>				
	<ul> <li>For pollutants of concern that are Tier 2 with minimal degradation, complete Attachment B.</li> </ul>				
	<ul> <li>For pollutants of concern that are Tier 1, complete Attachment D. Additionally, a Tier 2 review must be conducted for each collutant of concern on the concerning to the concerning.</li> </ul>				
	8. WET WEATHER ANTICIPATIONS				
	If an applicant anticipates excessive inflow or infiltration and pursues approval from the department to bypass secondary treatment, a				
The second	feasibility analysis is required. The feasibility analysis must comply with the criteria of all applicable state and federal regulations including 40 CFR 122.41(m)(4). Attach the feasibility analysis to this report.				
	What is the Wet Weather Flow Peaking Factor in relation to design flow? The wet weather peaking flow factor is 2.5				
ľ	Wet Weather Design Summary:				
ļ	The max peak flow to the plant has been 8.02mgd which equals a peaking factor of 2.36. All effluent limits remained in compliance.				

Pollutant of Concern	Units	Wasteload /	Allocation	Average Mont	hiy Limit	Daily Maximum Limi
BOD5	mg/L			10		AWL = 15
TSS	mg/L			15		AWL = 20
Dissolved Oxygen						
Ammonia						
Bacteria (E. Coli)	#/100 mL	i		126		AWL = 630
Ammonia (Apr-Sept)	mg/L			2.9		5.7
Ammonia (Oct-Mar)	mg/L			3.9		7.8
Phosphorus	mg/L			0.5	1	
Oil & Grease	mg/L		551-9V - 8	10		15
Attach the Antidegradation Revie CONSULTANT: I have pre- consistent with the Antidegra scanature Capacity Statements vame and official titles Charles E. Sievert, Project N company name	ew report and all supporti pared or reviewed this dation Implementation	ng documentation. form and all attac Procedure and c	ched reports urrent state	and documentat	on. The co ation.	nclusion proposed is
Black & Veatch Corporation						
ADDRESS		CITY			STATE	ZIP CODE
8400 Ward Parkway		Kans	as City		Missouri	64114
ELEPHONE NUMBER WITH AREA COD	e		E-MAIL ADORESS			
(913) 458-3253			sievertce@t	ov.com		
OWNER: I have read and	reviewed the prepar	red documents a	and agree v	with this submit	tal.	
SIGNATURE	InH				DATE	
Danie A	. miller				07/10/2	012
NAME AND OFFICIAL TITLES	AN LO K	1999-1997			-	
David H. Miller, P.E., City Er	ngineer / Director of Pu	blic Works				
ADDRESS	-g	CTV			STATE	ZIP CODE
110 W. Maddux, City Hall, S	uite 310	Brans	son		MO	85818
the first made and only main, o	#				MO	00010
ELEPHONE NUMBER WITH AREA COD	-	12	E-WAIL PLUPLEOG			
TELEPHONE NUMBER WITH AREA COD 417-337-8559			dmiller@bra	nsonmo.gov		
TELEPHONE NUMBER WITH AREA COD 417-337-8559 CONTINUING AUTHORIT maintenance and modernizal 10 CSR 20-6.010(3) available have read and reviewed the	TY: Continuing Author tion of the facility. The e at www.ses.mo.gov/ prepared documents	rity is the permany regulatory require adrules/csr/current and agree with th	dmiller@bra ent organiza ement regar ot/10csr/10c2 is submittal.	nsonmo.gov tion that will be re ding continuing a 20-6a.pdf.	sponsible f uthority is fo	or the operation, ound in
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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.
- Test Procedures. The analytical and sampling methods used shall conform 4. 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 (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.

- 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.
  - 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  $28^{th}$  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
  - 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.
- It is unlawful for any person to cause or permit any discharge of water d. 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;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:
  - 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 noncompliance 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.



### 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:

- 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

## PART III - BIOSOLIDS AND SLUDGE FROM DOMESTIC TREATMENT FACILITIES

### SECTION A - GENERAL REQUIREMENTS

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

## SECTION B - DEFINITIONS

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

# SECTION C-MECHANICAL WASTEWATER TREATMENT FACILITIES

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

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

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

## SECTION E- INCINERATION OF SLUDGE

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

## $Section\,F-Surface\,Disposal\,Sites\,and\,Biosolids\,and\,Sludge\,Lagoons$

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

## SECTION G - LAND APPLICATION OF BIOSOLIDS

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

TABLE 1

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

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

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

e. Annual pollutant loading rate.

Ta	bl	e	3	
			_	

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

f. Cumulative pollutant loading rates.

с.

Ta	ble	4	

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

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

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

i. PAN can be determined as follows:

(Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor<sup>1</sup>). <sup>1</sup> Volatilization factor is 0.7 for surface application and 1 for subsurface application. Alternative volitalization factors and mineralization rates can be utilized on a case-by-case basis.

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

# SECTION H – SEPTAGE

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

### SECTION I- CLOSURE REQUIREMENTS

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

surface water drainage without creating erosion.

- b. Hazardous Waste shall not be land applied or disposed during mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations pursuant to 10 CSR 25.
- c. After demolition of the mechanical plant, the site must only contain clean fill defined in Section 260.200.1(6) RSMo as uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the Department for fill, reclamation, or other beneficial use. Other solid wastes must be removed.
- 8. If biosolids or sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or I, a landfill permit or solid waste disposal permit must be obtained if the permittee chooses to seek authorization for on-site sludge disposal under the Missouri Solid Waste Management Law and regulations per 10 CSR 80, and the permittee must comply with the surface disposal requirements under 40 CFR Part 503, Subpart C.

## SECTION J - MONITORING FREQUENCY

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

TABLE 5							
Biosolids or Sludge	Monitoring Frequency (See Notes 1, and 2)						
produced and disposed (Dry Tons per Year)	Metals, Pathogens and Vectors, Total Phosphorus, Total Potassium	Nitrogen TKN, Nitrogen PAN <sup>1</sup>	Priority Pollutants <sup>2</sup>				
319 or less	1/year	1 per month	1/year				
320 to 1650	4/year	1 per month	1/year				
1651 to 16,500	6/year	1 per month	1/year				
16,501+	12/year	1 per month	1/year				

<sup>1</sup>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.

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

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

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

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

## SECTION K – RECORD KEEPING AND REPORTING REQUIREMENTS

- 1. The permittee shall maintain records on file at the facility for at least five years for the items listed in Standard Conditions PART III and any additional items in the Special Conditions section of this permit. This shall include dates when the biosolids or sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.
- 2. Reporting period
  - a. By February 19<sup>th</sup> of each year, applicable facilities shall submit an annual report for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and biosolids or sludge disposal facilities.
  - b. Permittees with wastewater treatment lagoons shall submit the above annual report only when biosolids or sludge are removed from the lagoon during the report period or when the lagoon is closed.
- 3. Report Form. The annual report shall be prepared on report forms provided by the Department or equivalent forms approved by the Department.
- 4. Reports shall be submitted as follows:

Major facilities, which are those serving 10,000 persons or more or with a design flow equal to or greater than 1 million gallons per day or that are required to have an approved pretreatment program, shall report to both the Department and EPA if the facility land applied, disposed of biosolids by surface disposal, or operated a sewage sludge incinerator. All other facilities shall maintain their biosolids or sludge records and keep them available to Department personnel upon request. State reports shall be submitted to the address listed as follows:

DNR regional or other applicable office listed in the permit (see cover letter of permit) ATTN: Sludge Coordinator Reports to EPA must be electronically submitted online via the Central Data Exchange at: https://cdx.epa.gov/ Additional information is available at: <u>https://www.epa.gov/biosolids/compliance-and-annual-reporting-guidance-about-clean-water-act-laws</u>

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

If using a contract hauler, provide a copy of a signed contract from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate biosolids or sludge use permit.

- g. Land Application Sites:
  - i. Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as alegal description for nearest <sup>1</sup>/<sub>4</sub>, <sup>1</sup>/<sub>4</sub>, Section, Township, Range, and county, or UTM coordinates. The facility shall report PAN when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
  - ii. If the "Low Metals" criteria are exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative pollutant loading which has been reached at each site.
  - iii. Report the method used for compliance with pathogen and vector attraction requirements.
  - iv. Report soil test results for pH and phosphorus. If no soil was tested during the year, report the last date when tested and the results.

MISSOURI DEPARTMENT OF NATURAL RESOURCES

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FACILITY NAM

WATER PROTECTION PROGRAM FORM B2 - APPLICATION FOR OPERATING PERMIT FOR FACILITIES AND ATOLECTION Program RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW MORE THAN regram 100,000 GALLONS PER DAY

Branson, Cooper Creek Wastewater Treatment Facility

PERMIT NO. MO-0116599

## **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

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	MISSOURI DEPARTMENT OF NATURAL R	ESOURCES	MAR Water Protec	1 9 2019 Tion Pro	FOR	AGENC	Y USE ONLY
G	WATER PROTECTION PROGRAM			Frogra	n CHECK	NUMBER	T COL CITET
2	FORM B2 – APPLICATION FOR A FACILITIES THAT RECEIVE PRIM HAVE A DESIGN FLOW MORE TH	ARILY DOM	IESTIC WAS	TE AND PER DAY	DATE F	RECEIVED	
PAR	T A - BASIC APPLICATION INFORMATION						
<u>1.</u> [	<ul> <li>THIS APPLICATION IS FOR:</li> <li>An operating permit for a new or unpermitted fa (Include completed Antidegradation Review or r</li> <li>✓ An operating permit renewal: Permit #MO- 011</li> </ul>	cility. request to cond 6599	Construction duct an Antidegr Expiration D	n Permit # adation Revie ate _Sept. 30	ew, see ins 2019	tructions	3)
l	An operating permit modification: Permit #MO		Reason:				
1.1	Is the appropriate fee included with the application	on (see instruct	ions for appropr	iate fee)?	C	] YES	□ NO
2.	FACILITY				1. 1		1
NAME Brans	on, Cooper Creek Wastewater Treatment Facility				TELEPHONE 417-337-	NUMBER V	WITH AREA CODE
ADDRE 2855	ss (PHYSICAL) Fall Creek Road	Branson			MO		ZIP CODE 65616
2.1	LEGAL DESCRIPTION (Facility Site): 1/4. s	sw 1/4, ne 1/4.	Sec. 07 . T	22n , R 21w		COUNTY	
2.2	UTM Coordinates Easting (X): <u>477889</u> No For Universal Transverse Mercator (UTM). Zon	orthing (Y):	4053231 erenced to North	American D	atum 1983	(NAD83	3)
2.3	Name of receiving stream: Lake Taneycomo						/
2.4	Number of Outfalls: 1 wastewater outfa	lls, sto	rmwater outfalls	, instre	am monito	oring site	s
3.	OWNER		-				· · · · · · · · · · · · · · · · · · ·
NAME City o	f Branson	EM	AIL ADDRESS enn@bransonm	o.gov	TELEPHONE	NUMBER V	WITH AREA CODE
ADDRE	ss / Maddux	Branson			STATE MO		ZIP CODE 65616
3.1	Request review of draft permit prior to Public No	otice?	VES	□ NO			
3.2	Are you a Publically Owned Treatment Works (F If yes, is the Financial Questionnaire attached?	POTW)?	✓ YES ✓ YES				
3.3	Are you a Privately Owned Treatment Facility?	aulated by the	TYES	NO Commission	(DCC)2		
4.	CONTINUING AUTHORITY: Permanent organiz maintenance and modernization of the facility	zation which v	vill serve as the	e continuing	authority	for the o	operation,
NAME	,	EM	AIL ADDRESS		TELEPHONE	NUMBER	WITH AREA CODE
ADDEE	t Branson	mr	ay@bransonmc	.gov	417-243-	2740	ZIP CODE
110 V	/ Maddux	Branson			MO		65616
If the descr	Continuing Authority is different than the Owner, indiption of the responsibilities of both parties within the	clude a copy of e agreement.	f the contract ag	reement betw	veen the tw	vo parties	s and a
5.	OPERATOR	1			1		
Timot	hy R Glenn Jr.	Wastewa	ter Division Mar	ager	9350	E NUMBER	(IF APPLICABLE)
EMAIL /	ADDRESS	TELEPHONE	NUMBER WITH AREA	CODE			
Gienn		417-337-0	5005				****
NAME			TITLE	- al al manufacture of the			
Mike I	Ray		Utilities Direc	tor	0005		
EMAIL	Dbransonmo gov		417-243-274	0	CODE		
mray@	gord noor interget		411 240 214	-			
ADDRE	SS (Desite	CITY	411 240 214		STATE		ZIP CODE

FACILI	TY NAME Branson, Cooper Creek WWTF	РЕКМІТ NO. MO- 0116599	OUTFALL NO. 001						
PAR	T A - BASIC APPLICATION INFORM	TION							
7.	7. FACILITY INFORMATION								
<ul> <li>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.</li> <li>See Attachments</li> </ul>									

Juno	ON, Cooper Creek WWTF	PERMIT NO. MO-0116599		OUTFALL NO.	
PART	A - BASIC APPLICATION INFOR	MATION			,
7.	FACILITY INFORMATION (contin	ued)			
7.2	<ul> <li>Topographic Map. Attach to this property boundaries. This map mu</li> <li>a. The area surrounding the treat</li> <li>b. The location of the downstreat</li> <li>c. The major pipes or other struct through which treated wastew applicable.</li> <li>d. The actual point of discharge.</li> <li>e. Wells, springs, other surface withe treatment works, and 2) list</li> <li>f. Any areas where the sewage</li> <li>g. If the treatment works receives (RCRA) by truck, rail, or speciati is treated, stored, or dispose</li> </ul>	application a topographic map ust show the outline of the fac trment plant, including all unit m landowner(s). (See Item 10 tures through which wastewa ater is discharged from the tre vater bodies and drinking wate ted in public record or otherw sludge produced by the treatm s waste that is classified as ha al pipe, show on the map whe d.	o of the area extendi ility and the following processes. .) ter enters the treatm eatment plant. Includ er wells that are: 1) v ise known to the app nent works is stored, azardous under the F ere that hazardous w	ng at least one mil i information. ent works and the le outfalls from by vithin ¼ mile of the licant. treated, or dispos Resource Conserva aste enters the tre	e beyond facility pipes or other structure pass piping, if property boundaries of ed. ation and Recovery Act atment works and wher
7.3	Facility SIC Code: 4952	Disc 495	charge SIC Code: 2		
7.4	Number of people presently conne	cted or population equivalent	(P.E.): <u>13,060</u>	Design P.E.	34,000
7.5	Connections to the facility: Number of units presently connected Homes Trailers Number of Commercial Establish	cted: Apartments O nments:	ther (including indus	trial)	
76	Design Flow	Actu	al Flow		- Carlos
1.0	3.4mgd	2.96r	ngd		
7.7	3.4mgd Will discharge be continuous throu Discharge will occur during the follo	2.96r gh the year? Yes wing months: How many d	No 🗌	discharge occur?	
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7.7 7.8 7.9 7.10	3.4mgd Will discharge be continuous throu Discharge will occur during the follo Is industrial wastewater discharged If yes, describe the number and typ Refer to the APPLICATION OVER Does the facility accept or process Is wastewater land applied? If yes, is Form I attached? Does the facility discharge to a losi	2.96r gh the year? Yes owing months: How many d to the facility? bes of industries that discharge /IEW to determine whether ac leachate from landfills?:	No No No No Ves Yes e to your facility. Attained to your facili	discharge occur? No ☑ nch sheets as nece is needed for Part No ☑ No ☑ No ☑ No ☑	essary F.
7.7 7.8 7.9 7.10 7.11 7.12	3.4mgd Will discharge be continuous throu Discharge will occur during the follo Is industrial wastewater discharged If yes, describe the number and typ Refer to the APPLICATION OVER' Does the facility accept or process Is wastewater land applied? If yes, is Form I attached? Does the facility discharge to a losi Has a wasteload allocation study b	2.96r gh the year? Yes owing months: How many d to the facility? bes of industries that discharge /IEW to determine whether ac leachate from landfills?: ng stream or sinkhole? een completed for this facility	No No No lays of the week will Yes e to your facility. Atta dditional information Yes Yes Yes Yes Yes Yes Yes Yes	discharge occur? No ☑ ach sheets as nece is needed for Part No ☑ No ☑ No ☑ No ☑ No ☑	essary F.
7.7 7.8 7.9 7.10 7.11 7.12 3.	3.4mgd Will discharge be continuous throu Discharge will occur during the follow Is industrial wastewater discharged If yes, describe the number and typ Refer to the APPLICATION OVER' Does the facility accept or process Is wastewater land applied? If yes, is Form I attached? Does the facility discharge to a losi Has a wasteload allocation study b LABORATORY CONTROL INFOR	2.96r gh the year? Yes bowing months: How many d to the facility? bes of industries that discharge VIEW to determine whether ad leachate from landfills?: Ing stream or sinkhole? een completed for this facility <b>KMATION</b>	Ingd       No         No       Ingd         Iays of the week will       Ingd         Yes       Ingd         e to your facility. Atta         dditional information         Yes         Yes         Yes         Yes         Yes         Yes         Yes         Yes         Yes	discharge occur? No 🗹 Inch sheets as nece is needed for Part No 🗹 No 🖸 No 🗹 No 🗹	essary F.
7.7 7.8 7.9 7.10 7.11 7.12 3.	3.4mgd Will discharge be continuous throu Discharge will occur during the follow Is industrial wastewater discharged If yes, describe the number and typ Refer to the APPLICATION OVER' Does the facility accept or process Is wastewater land applied? If yes, is Form I attached? Does the facility discharge to a losi Has a wasteload allocation study b LABORATORY CONTROL INFOR LABORATORY WORK CONDUCT	2.96r gh the year? Yes bwing months: How many d to the facility? bes of industries that discharge /IEW to determine whether ac leachate from landfills?: ng stream or sinkhole? een completed for this facility <b>IMATION</b> ED BY PLANT PERSONNEL	In any of the week will         No         Iays of the week will         Yes         e to your facility. Atta         dditional information         Yes         Yes         Yes         Yes         Yes         Yes         Yes         Yes         Yes	discharge occur? No 🗹 ach sheets as nece is needed for Part No 🖸 No 🖸 No 🖾 No 🖉	essary F.
7.7 7.8 7.8 7.9 7.10 7.11 7.12 8.	3.4mgd Will discharge be continuous throu Discharge will occur during the follow Is industrial wastewater discharged If yes, describe the number and typ Refer to the APPLICATION OVER' Does the facility accept or process Is wastewater land applied? If yes, is Form I attached? Does the facility discharge to a losi Has a wasteload allocation study b LABORATORY CONTROL INFOF LABORATORY WORK CONDUCT Lab work conducted outside of plan	2.96r gh the year? Yes 2 gh the year? Yes 2 owing months: How many d to the facility? bes of industries that discharge VIEW to determine whether ac leachate from landfills?: Ing stream or sinkhole? een completed for this facility the solution of the solu	No No No No No No No No	discharge occur? No 🗹 ich sheets as nece is needed for Part No 🗹 No 🖾 No 🖾 No 🖉 Yes 🗹	essary F.
7.7 7.7 7.8 7.9 7.10 7.11 7.12 8.	3.4mgd Will discharge be continuous throu Discharge will occur during the follow Is industrial wastewater discharged If yes, describe the number and typ Refer to the APPLICATION OVER' Does the facility accept or process Is wastewater land applied? If yes, is Form I attached? Does the facility discharge to a losi Has a wasteload allocation study b LABORATORY CONTROL INFOR LABORATORY WORK CONDUCT Lab work conducted outside of plan Push-button or visual methods for	2.96r gh the year? Yes bwing months: How many d to the facility? bes of industries that discharge VIEW to determine whether ac leachate from landfills?: Ing stream or sinkhole? een completed for this facility <b>RMATION</b> ED BY PLANT PERSONNEL ht. simple test such as pH, settle	An row ngd No No lays of the week will Yes e to your facility. Atta dditional information Yes Y	discharge occur? No 🖉 hch sheets as nece is needed for Part No 🖉 No 🗐 No 🗐 No 🗐 Yes 🖓 Yes 🖓	Pessary F.
7.7 7.7 7.8 7.9 7.10 7.11 7.12 8.	3.4mgd Will discharge be continuous throu Discharge will occur during the follow Is industrial wastewater discharged If yes, describe the number and typ Refer to the APPLICATION OVER' Does the facility accept or process Is wastewater land applied? If yes, is Form I attached? Does the facility discharge to a losi Has a wasteload allocation study b LABORATORY CONTROL INFOR LABORATORY WORK CONDUCT Lab work conducted outside of plan Push-button or visual methods for Additional procedures such as Diss Oxygen Demand, titrations, solids,	2.96r gh the year? Yes bwing months: How many d to the facility? bes of industries that discharge /IEW to determine whether ad leachate from landfills?: Ing stream or sinkhole? een completed for this facility <b>MATION</b> ED BY PLANT PERSONNEL nt. simple test such as pH, settle solved Oxygen, Chemical Oxy volatile content.	An row ngd No No lays of the week will Yes e to your facility. Atta dditional information Yes Yes Yes Yes Yes Yes Yes able solids. gen Demand, Biolog	discharge occur? No 🖉 ich sheets as nece is needed for Part No 🖉 No 🖗 No 🖗 No 🖉 Yes 🖓 Yes 🖓 ical Yes 🖓	essary F.
7.7 7.7 7.8 7.9 7.10 7.11 7.12 8.	3.4mgd Will discharge be continuous throu Discharge will occur during the follow Is industrial wastewater discharged If yes, describe the number and typ Refer to the APPLICATION OVER' Does the facility accept or process Is wastewater land applied? If yes, is Form I attached? Does the facility discharge to a losi Has a wasteload allocation study b LABORATORY CONTROL INFOR LABORATORY WORK CONDUCT Lab work conducted outside of plan Push-button or visual methods for Additional procedures such as Diss Oxygen Demand, titrations, solids, More advanced determinations suc nutrients, total oils, phenols, etc.	2.96r gh the year? Yes bwing months: How many d to the facility? bes of industries that discharge VIEW to determine whether ac leachate from landfills?: Ing stream or sinkhole? een completed for this facility <b>KMATION</b> ED BY PLANT PERSONNEL nt. simple test such as pH, settle solved Oxygen, Chemical Oxy volatile content. th as BOD seeding procedure	An row ngd No lays of the week will Yes e to your facility. Atta dditional information Yes Yes Yes Yes Yes Yes Secondarian of the week will Yes Yes Yes Secondarian of the week will No No No Secondarian of the week will Yes Yes Secondarian of the week will Yes Yes Secondarian of the week will Yes Yes Secondarian of the week will Yes Yes Secondarian of the week will Yes Secondarian of the week will Yes Secondarian of the week will Yes Yes Secondarian of the week will Yes Secondarian of the week will Secondarian of the week will Yes Secondarian of the week will Secondarian of the week will Secondarian of the week will Secondarian of the week will Secondarian of the week will Yes Secondarian of the week will Secondarian of the week will S	discharge occur? No 🖉 ach sheets as nece is needed for Part No 🗹 No 🖾 No 🖾 No 🖉 Ves 🖓 Yes 🖓 Yes 🖓 Yes 🖓	Pessary F.

FACILITY NAME Branson, Cooper Creek WWTF	РЕКМІТ NO. MO- 0116599	OUTFALL 001	NO.		
PART A - BASIC APPLICATION	INFORMATION				
9. SLUDGE HANDLING, USE	AND DISPOSAL	States and a states			
9.1 Is the sludge a hazardous w	vaste as defined by 10 CSR 25? Yes [	]	No 🔽		
9.2 Sludge production (Including	g sludge received from others): Design Dry T	ons/Year 880	Actual Dry	Tons/Year 266.5	
9.3 Sludge storage provided: 1	01k Cubic feet; 60 Days of storage; 1.5	Average percer	nt solids of	sludge;	
No sludge storage is pro	vided.				
9.4 Type of storage:	<ul> <li>✓ Holding Tank</li> <li>□ Basin</li> <li>□ Lag</li> <li>□ Concrete Pad</li> <li>□ Oth</li> </ul>	lding loon er (Describe)			
9.5 Sludge Treatment:					
Anaerobic Digester	Storage Tank     Lime Stabilize       Air or Heat Drying     Composting	ation 🗌 L	agoon other (Attac	h Description)	
9.6 Sludge use or disposal:					
Land Application	Contract Hauler I Hauled to Another T e Disposal Lagoon, Sludge Held For More Than n Sheet)	reatment Facility an Two Years)	Solic	d Waste Landfill eration	
9.7 Person responsible for hauli	ng sludge to disposal facility: By Others (complete below)				
NAME		EMAIL ADDRESS			
Tri-Lakes Regional Coalition		tglenn@brar	nsonmo.gov	v	
ADDRESS	CITY		STATE	ZIP CODE	
2855 Fall Creek Road	Branson		MO	65616	
CONTACT PERSON	TELEPHONE NUMBER WI	TH AREA CODE	PERMIT	10.	
Fim Glenn, Contract Operator	417-337-8563	417-337-8563			
9.8 Sludge use or disposal faci	lity:				
	y Others (Complete below)	EMAIL ADDRESS		100.01.0010.00.00.00.00.00.00.00.00.00.0	
Tri Lakes Regional Class A Drying	Facility				
ADDRESS	CITY		STATE	ZIP CODE	
2855 Fall Creek Road	Branson		MO	65616	
CONTACT PERSON	TELEPHONE NUMBER WI	TH AREA CODE	PERMIT NO.		
Chris Robertson, Board Chair	417-243-2740	417-243-2740		MO-	
9.9 Does the sludge or biosolid ☑Yes □ No (Explain	ls disposal comply with Federal Sludge Regul n)	ation 40 CFR 503?			
Class A BioSolids Drying Process					
	END OF PART A				
780-1805 (09-16)				Paç	

FACILITY NAME Branson, Cooper Creek WWTF	PERMIT NO.	OUTFALL NO. 001
PART B - ADDITIONAL APPLICAT		
10. COLLECTION SYSTEM		and the second second second second second second second second second second second second second second second
<b>10.1</b> Length of sanitary sewer collen	ection system in miles	
10.2 Does significant infiltration of If yes, briefly explain any ste	ccur in the collection system? ps underway or planned to mi	☑Yes  ☐ No nimize inflow and infiltration:
CCTV Inspections. Visual Inspections prioritized sanitary sewer mains and i	s. We have budgeted \$350,00 manholes. We plan to CIPP lir	0 for 2019 to contract out rehab, repair and replacement of the sanitary sewer mains, epoxy coat manholes.
11. BYPASSING	What all real a line and	
Does any bypassing occur anywhere If yes, explain:	e in the collection system or at	the treatment facility? Yes ☐ No 🗹
12. OPERATION AND MAINTEN	ANCE PERFORMED BY CO	NTRACTOR(S)
responsibility of the contractor? Yes No I No I If Yes, list the name, address, teleph (Attach additional pages if necessary	one number and status of eac	ch contractor and describe the contractor's responsibilities.
NAME		
MAILING ADDRESS		
TELEPHONE NUMBER WITH AREA CODE		EMAIL ADDRESS
	•	
RESPONSIBILITIES OF CONTRACTOR		
13. SCHEDULED IMPROVEMEN	ITS AND SCHEDULES OF IN	IPLEMENTATION
Provide information about any uncor wastewater treatment, effluent qualit implementation schedules or is plani April 29th 2019 is the end date on the Valves, New Screening in Headworks	npleted implementation sched y, or design capacity of the tre ning several improvements, su improvement upgrade to Sec with a conveyor and compact	ule or uncompleted plans for improvements that will affect the atment works. If the treatment works has several different ibmit separate responses for each. ondary Clarifier's (2), Replacement of Return Sludge Pumps (3) and tor system.

FACILITY NAME	le		PERMIT NO.	00	· · · · ·	OUTFALL	NO.		
Branson, Cooper Cr				99	······	1001			
14 EFELLIENT	TESTING			No. A		and the second second		1.1.1.1.4	
Applicants must pro through which effil reported must be ba comply with QA/QC not addressed by 4 more than four and	vide effluer uent is dis ased on dat requireme 0 CFR Part one-half ye	nt testing dat charged. D ta collected t nts of 40 CF 136. At a m ears apart.	a for the follo o not include hrough analy R Part 136 ar inimum, efflu	wing param information sis conducte nd other app ent testing d	eters. Provid of combined ed using 40 C ropriate QA/C lata must be	le the indicated e sewer overflows FR Part 136 met QC requirements based on at least	ffluent data f in this section hods. In add for standard t <b>three samp</b>	for each on. All in dition, thi I method oles and	outfall formation s data must s for analytes must be no
Outfall Number									
DAD	METER		MAXI	MUM DAILY	VALUE	A	VERAGE DA	AILY VAL	.UE
FAIV			Va	alue	Units	Value	Units	Numb	er of Samples
pH (Minimum)			e	8.6	S.U.	6.8	S.U.		365
pH (Maximum)			7	7.6	S.U.	7.3	S.U.		365
Flow Rate			4	.51	MGD	1.66	MGD		365
*For pH report a min	nimum and	a maximum	daily value	_					
		MAXIMU	MAXIMUM DAILY AVERAC		GE DAILY DISCHARGE		ANALYTICAL		
POLLUTAN	41	Conc.	Units	Conc.	Units	Number of Samples	METHOD		
Conventional and N	onconventi	ional Compo	unds						
BIOCHEMICAL OXYGEN	BOD <sub>5</sub>	9.3	mg/L	2.3	mg/L	103	SM521	10B	
DEMAND (Report One)	CBOD <sub>5</sub>		mg/L		mg/L				
E. COLI		8.5	#/100 mL	1.1	#/100 mL	35	SM9223B		
TOTAL SUSPENDE SOLIDS (TSS)	ED	10.4	mg/L	1.6	mg/L	104	SM2540D		
AMMONIA (as N)		0.47	mg/L	0.11	mg/L	52	EPA350.1-QC		
CHLORINE* (TOTAL RESIDUAL	, TRC)		mg/L		mg/L				
DISSOLVED OXYG	EN		mg/L		mg/L				
OIL and GREASE		5.8	mg/L	5.4	mg/L	12	EPA16	664	
OTHER			mg/L		mg/L				
*Report only if facili	ty chlorinate	es							
				END OF F	PARTB				

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Page 7
FACILITY NAME	PERMIT NO.	OUTFALL NO.
Branson, Cooper Creek WWTF	MO- 0116599	001
PART C - CERTIFICATION		
Per 40 CFR Part 127 National Pollutar and monitoring shall be submitted by t consistent set of data. <b>One of the fol</b> visit <u>http://dnr.mo.gov/env/wpp/edmr.h</u>	It Discharge Elimination System he permittee via an electror lowing must be checked in the to access the Facility Pa	rstem (NPDES) Electronic Reporting Rule, reporting of effluent limits nic system to ensure timely, complete, accurate, and nationally- in order for this application to be considered complete. Please articipation Package.
<ul> <li>You have completed and submitted</li> <li>You have previously submitted the provided the previously submitted the provided the prov</li></ul>	ed with this permit application e required documentation to	on the required documentation to participate in the eDMR system. o participate in the eDMR system and/or you are currently using the
<ul> <li>You have submitted a written required waivers.</li> </ul>	uest for a waiver from electr	ronic reporting. See instructions for further information regarding
16. CERTIFICATION		
All applicants must complete the Certi applicants must complete all applicabl applicants confirm that they have revie application is submitted.	fication Section. This certific e sections as explained in the wed the entire form and ha	cation must be signed by an officer of the company or city official. Al the Application Overview. By signing this certification statement, ave completed all sections that apply to the facility for which this
ALL APPLICANTS MUST COMPLET	E THE FOLLOWING CERT	TIFICATION.
I certify under penalty of law that this of with a system designed to assure that inquiry of the person or persons who n information is, to the best of my knowle submitting false information, including	locument and all attachmen qualified personnel properly nanage the system or those edge and belief, true, accura the possibility of fine and im	Its were prepared under my direction or supervision in accordance y gather and evaluate the information submitted. Based on my e persons directly responsible for gathering the information, the rate and complete. I am aware that there are significant penalties for nprisonment for knowing violations.
PRINTED NAME Tim Glenn		OFFICIAL TITLE (MUST BE AN OFFICER OF THE COMPANY OR CITY OFFICIAL) Wastewater Division Manager
TELEPHONE NUMBER WITH AREA CODE 417-337-8563	- {	
DATE SIGNED 3-26-19		
Upon request of the permitting authori at the treatment works or identify appr	ty, you must submit any othe opriate permitting requirement	her information necessary to assess wastewater treatment practices ents.
Send Completed Form to:		
	Department of N Water Prote ATTN: NPDES Permits P.O. Jefferson City,	Natural Resources ection Program s and Engineering Section Box 176 , MO 65102-0176
REFER TO THE APPLICATIO	END OI	IF PART C MINE WHICH PARTS OF FORM B2 YOU MUST COMPLETE.
Do not complete the remainder of this1.Your facility design f2.Your facility is a preid3.Your facility is a complete	application, unless at least low is equal to or greater the treatment treatment works. abined sewer system.	one of the following statements applies to your facility: an 1,000,000 gallons per day.
Submittal of an incomplete application forfeited. Permit fees for applications	may result in the application being processed by the dep	in being returned. Permit fees for returned applications shall be partment that are withdrawn by the applicant shall be forfeited.

MAKE ADDITIONAL C	OPIES C	F THIS F	ORM FC	R EACH	OUTFA	LL					
FACILITY NAME Branson, Cooper Creek V	MWTF		PERM MO-	IT NO. 011659	9			001F/	ALL NO.		
PART D – EXPANDED	EFFLUE	INT TEST	TING DA	ТА	a series						
17. EXPANDED EFF	LUENT	TESTING	DATA								
Refer to the APPLICAT	ION OVE	RVIEW t	o determi	ine wheth	ner Part D	) applies	to the trea	atment wo	orks.		
If the treatment works h pretreatment program, of following pollutants. Pre- include information of c analysis conducted usir identifying, and measur Part 136 and other appu- the blank rows provided data must be based on	as a desi or is othe ovide the ombined ng 40 CFI ing the co ropriate C I below a at least <b>t</b>	ign flow g rwise req indicated sewer ov R Part 13 pncentrati QA/QC red ny data y hree poll	reater tha uired by t d effluent erflows ir 6 method ions of po quiremen ou may h utant sc	an or equ the perminent testing in this sec ls. The fa ollutants. ts for sta ave on p ans and	al to 1 m tting auth formatior tion. All i acility sha In additio ndard me ollutants must be r	illion gallo nority to p n for eacl nformatic all use su n, this da thods for not speci no more t	ons per da rovide the <b>h outfall 1</b> on reporte fficiently s ata must co r analytes fically liste han four a	ay or it has e data, the through wit d must be ensitive a omply wit not addre ed in this f and one-h	s (or is requi en provide ef which efflue based on d analytical me h QA/QC rec essed by 40 form. At a m alf years apa	red to have) a fluent testing da <b>nt is discharge</b> ata collected thr thods for detecti quirements of 40 CFR Part 136. I inimum, effluent art.	ta for the d. Do not ough ng, CFR ndicate in t testing
Outfall Number (Comple	ete Once	for Each	Outfall D	ischargin	g Effluen	t to Wate	ers of the S	State.)		,	
	MAXIN	/UM DAII	LY DISCH	HARGE		AVERAG	E DAILY	DISCHAF	RGE		
POLLUTANT	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples	METHOD	ML/MDL
METALS (TOTAL RECOV	(ERABLE)	, CYANID	E, PHENC	LS AND	HARDNES	SS					
ALUMINUM	See Att.										
ANTIMONY											
ARSENIC											
BERYLLIUM											
CADMIUM											
CHROMIUM III											
CHROMIUM VI											
COPPER								-			
IRON											
LEAD											
MERCURY											
NICKEL											
SELENIUM											
SILVER											
THALLIUM											
ZINC											
CYANIDE											
TOTAL PHENOLIC COMPOUNDS											
HARDNESS (as CaCO <sub>3</sub> )											
VOLATILE ORGANIC CO	MPOUND	s				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	L		I	L	
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMOFORM											
CARBON TETRACHLORIDE 780-1805 (09-16)						5				Pa	ge 9

FACILITY NAME Branson, C	Cooper Cre	eek WWT	F MO-	IT NO. 0116	6599			OUTF	ALL NO. 001		
PART D - EXPANDED	EFFLUE	ENT TES	TING DA	TA			-HOXMIN BE	-			
17. EXPANDED EF	FLUENT	TESTING	G DATA				9-3- 7-9-4-9-4-9-4				
Complete Once for Ead	ch Outfall	Discharg	ing Efflue	ent to Wa	ters of the	e State					
	MAXIMUM DAILY DISCHARGE			A	VERAG	E DAILY	DISCHA	RGE			
POLLUTANT	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples	ANALYTICAL METHOD	ML/MDL
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							7				
1,3-DICHLORO- PROPYLENE											
ETHYLBENZENE											
METHYL BROMIDE											
METHYL CHLORIDE	-										
METHYLENE CHLORIDE											
1,1,2,2-TETRA- CHLOROETHANE											
TETRACHLORO-ETHANE						l					
TOLUENE											
1,1,1-TRICHLORO- ETHANE											
1,1,2-TRICHLORO- ETHANE											
TRICHLORETHYLENE											
VINYL CHLORIDE											
ACID-EXTRACTABLE CO	OMPOUND	S				_					
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 Branson, C	ooper Cre	eek WW		T NO. 0116	6599			OUTF	ALL NO. 001		
PART D - EXPANDED	EFFLUE	NT TES	TING DA	TA							
17. EXPANDED EF	FLUENT	TESTING	DATA						· · · · · · · · · · · · · · · · · · ·	and a second second second second second second second second second second second second second second second	
Complete Once for Eac	h Outfall	Discharg	ing Efflue	ent to Wa	ters of the	e State.					
	MAXIMUM DAILY DISCHARGE			AVERAGE DAILY DISCHARGE				RGE	ANALYTICAL		
POLLUTANT	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples	METHOD	ML/MDL
PENTACHLOROPHENOL											
PHENOL											
2,4,6-TRICHLOROPHENOL											
BASE-NEUTRAL COMPO	DUNDS										
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											2000 11

FACILITY NAME Branson, Co	FACILITY NAME Branson, Cooper CreeK WWTF			NO. 0116	599			OUTFAI	L NO. 001		
PART D - EXPANDED	FFLUEN	T TESTI	NG DATA				e de cons				
17. EXPANDED EFFI	UENT TE	ESTING D	ATA				al				1-1-2-2-
Complete Once for Each	Outfall Di	scharging	g Effluent	to Water	rs of the S	State.					
DOLLUTANT	MAXIMUM DAILY DI			DISCHARGE AVERAGE DAIL			E DAILY	DISCHA	RGE	ANALYTICAL	
POLLUTANT	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples	METHOD	ML/MD
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										1	
N-NITROSODI- PHENYLAMINE											
PHENANTHRENE											
PYRENE											
1,2,4-TRICHLOROBENZENE											
Use this space (or a sepa	arate shee	t) to prov	ide inforr	nation on	other po	llutants n	ot specifi	cally liste	d in this form	1.	
								***			
					_						
				EN	D OF PA	RTD					

MAKE ADDITIONAL COPIES OF THIS FOR	M FOR EACH OUTFALL		
Branson, Cooper Creek WWTF	MO- 0116599	0	01
PART E - TOXICITY TESTING DATA			
18. TOXICITY TESTING DATA			
Refer to the APPLICATION OVERVIEW to de	termine whether Part E applie	s to the treatment works.	
<ul> <li>Publicly owned treatment works, or POTWs, m tests for acute or chronic toxicity for each of th A. POTWs with a design flow rate greaters.</li> <li>B. POTWs with a pretreatment prograters.</li> <li>C. POTWs required by the permitting at a minimum, these results muspecies (minimum of two species prior to the application, provided on the range of receiving water information reported must be based on the species.</li> </ul>	neeting one or more of the foll the facility's discharge points. ater than or equal to 1 million m (or those that are required authority to submit data for the last include quarterly testing for es), or the results from four test d the results show no apprecia dilution. Do not include informased on data collected through	owing criteria must provide the gallons per day to have one under 40 CFR Part ese parameters a 12-month period within the past sts performed at least annually in able toxicity, and testing for acut nation about combined sewer on analysis conducted using 40 C	403) ast one year using multiple in the four and one-half years e or chronic toxicity, depending verflows in this section. All FR Part 136 methods. In
<ul> <li>addition, this data must comply standard methods for analytes r</li> <li>If EPA methods were not used, all of the information requested complete Part E. Refer to the a</li> </ul>	with QA/QC requirements of a not addressed by 40 CFR Par report the reason for using all below, they may be submitted pplication overview for direction	40 CFR Part 136 and other appr t 136. ternative methods. If test summ I in place of Part E. If no biomo ons on which other sections of t	opriate QA/QC requirements for aries are available that contain nitoring data is required, do not he form to complete.
Indicate the number of whole effluent toxicity to	ests conducted in the past for	ir and one-half years: 1ch	nronic <u>4</u> acute
Complete the following chart for the last three three tests are being reported.	e whole effluent toxicity test	s. Allow one column per test.	Copy this page if more than
	Most Recent	2 <sup>ND</sup> Most Recent	3 <sup>RD</sup> Most Recent
A. Test Information			
Test Method Number	See Attachment	See Attachment	See Attachment
Final Report Number			
Outfall Number			
Dates Sample Collected			
Date Test Started			
Duration	-		
B Toxicity Test Methods Followed			
Manual Title	1		
Edition Number and Year of Publication			
Page Number(s)			
C Semple collection method(a) used. For mu	utiple grab samples indicate t	he number of grab samples use	d
C. Sample collection method(s) used. For mo	inchie grab samples, indicate i	The number of grab samples use	G
24-Hour Composite			
D Indicate where the cample was taken in rel	ation to disinfection (Check a	Il that apply for each)	
D. Indicate where the sample was taken in rea			
After Disinfection			
After Dechleringtion			
After Dechlonnation	at which the completives coll	acted	
E. Describe the point in the treatment process	at which the sample was con	ecied	
Sample was collected.	anone obranie toxicity, coute t	aviaity or both	
F. Indicate whether the test was intended to a			
Chronic Toxicity			
Acute loxicity			
G. Provide the type of test performed			-
Static			
Static-renewal		<u> </u>	
Flow-through			
H. Source of dilution water. If laboratory wate	r, specify type; if receiving wa	ter, specify source	
Laboratory Water			
Receiving Water			Page 12

FACILITY NAME Branson Cooper Creek WW/TE		10. 0116599	OUTFALL NO.
	MO-	0110000	001
PARTE - TOXICITY TESTING DATA	-11		
18. TOXICITY TESTING DATA (continue	a)	Mast Decent	Mart Decent Third Mart Decent
L. Turne of dilution water, lé selt-water, en esi	E. In chan	Most Recent Second	Most Recent Inird Most Recent
I. Type of dilution water. If salt water, speci	ry natura	al or type of artificial sea saits or brin	e used.
Fresh Water			
Dercentage of effluent used for all concern	trations	in the test series	
J. Percentage of endent used for all concent	liations		
K Parameters measured during the test (Sta	ate wheth	per parameter meets test method spe	cifications)
nH	ILC WIICU	lei parameter meets test method spe	
Salinity			
Temperature			
Ammonia			
Dissolved Oxygen	-		
1 Test Results			
Percent Survival in 100% Effluent			
	_		
95% C I			
Control Percent Suprival			
Other (Describe)			
Chronic:	_		
NOEC			
Control Percent Suprival			
Other (Describe)			
M. Quality Control/ Quality Assurance	1		
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 re If yes, describe:	duction	evaluation?   Yes	☑ No
If you have submitted biomonitoring test infor years, provide the dates the information was	mation, o submitte	or information regarding the cause of d to the permitting authority and a sur	toxicity, within the past four and one-half nmary of the results.
Date Submitted (MM/DD/YYYY)			•
Summary of Results (See Instructions)			
		END OF PART E	
REFER TO THE APPLICATION OVERVIEW 780-1805 (09-16)	TO DET	FERMINE WHICH OTHER PARTS O	F FORM B2 YOU MUST COMPLETE. Page 14

MAK	E ADDITIONAL COPIES OF THIS FORM	FOR EACH OUTF	ALL			-
FACILI	Branson, Cooper Creek WWTF	РЕКМІТ NO. MO- 0116599		OUTFALL NO.		
PAR	T F - INDUSTRIAL USER DISCHARGES	AND RCRA/CERC	LA WASTES			
Refe	r to the APPLICATION OVERVIEW to det	termine whether Part	F applies to the trea	itment works.		
19.	GENERAL INFORMATION					
19.1	Does the treatment works have, or is it ☐ Yes ☑ No	subject to, an approv	ed pretreatment pro	gram?		
19.2	Number of Significant Industrial Users ( following types of industrial users that d Number of non-categorical SIUs Number of CIUs	SIUs) and Categorica ischarge to the treatn 	II Industrial Users (C nent works:	IUs). Provide the num	ber of eac	ch of the
20.	INDUSTRIES CONTRIBUTING MORE SIGNIFICANT INDUSTRIAL USERS IN	THAN 5 PERCENT (	OF THE ACTUAL FI	OW TO THE FACILIT	Y OR OT	HER
Supp reque	ly the following information for each SIU. ested for each. Submit additional pages a	If more than one SIL as necessary.	J discharges to the t	reatment works, provid	le the info	rmation
MAILIN	G ADDRESS		CITY		STATE	ZIP CODE
20.1	Describe all of the industrial processes	that affect or contribu	te to the SIU's disch	narge		
20.3	Raw Material(s): Flow Rate a. PROCESS WASTEWATER FLOW R collection system in gallons per day gpd Continu	ATE. Indicate the av , or gpd, and whethe uous	erage daily volume or the discharge is co ntermittent	of process wastewater ontinuous or intermitten	discharge t.	ed into the
	b. NON-PROCESS WASTEWATER FL the collection system in gallons per gpd Continu	OW RATE. Indicate day, or gpd, and who uous	the average daily vo ether the discharge i ntermittent	lume of non-process w s continuous or intermi	astewate	r discharged into
20.4	Pretreatment Standards. Indicate wheth	ner the SIU is subject	to the following:			
	a. Local Limits	Yes	🗖 No			
	<ul> <li>b. Categorical Pretreatment Standard</li> <li>If subject to categorical pretreatment sta</li> </ul>	s Ves andards, which categ	No ory and subcategory	?		
20.5	Problems at the treatment works attribut (e.g., upsets, interference) at the treatm Yes No	ted to waste discharg ent works in the past	ed by the SIU. Has three years?	the SIU caused or con	ntributed to	o any problems
	If Yes, describe each episode					
						Pope 15

	E ADDITIONAL COPIES OF THIS			
Bran	TY NAME son, Cooper Creek WWTF	MO- 0116599	OUTFALL NO.	
AR	T F - INDUSTRIAL USER DISCHA	RGES AND RCRA/CERCLA WASTE	S	
21.	RCRA HAZARDOUS WASTE RE	CEIVED BY TRUCK, RAIL, OR DEDI	CATED PIPELINE	
21.1	Does the treatment works receive pipe?	or has it in the past three years receiv ] Yes	ed RCRA hazardous was	te by truck, rail or dedicated
21.2	Method by which RCRA waste is n	eceived. (Check all that apply)	ed Pipe	
21.3	Waste Description			
	EPA Hazardous Waste Number	Amount (volume or ma	35)	Units
22.	CERCLA (SUPERFUND) WASTE REMEDIAL ACTIVITY WASTEW	WATER, RCRA REMEDIATION/COR	RECTIVE ACTION WAS	TEWATER, AND OTHER
22.1	Does the treatment works currently	y (or has it been notified that it will) red Yes ☐ No	eive waste from remedia	activities?
	Provide a list of sites and the requ	ested information for each current and	future site.	1
22.3	List the hazardous constituents tha known. (Attach additional sheets	at are received (or are expected to be if necessary)	received). Included data	on volume and concentration
22.3	List the hazardous constituents tha known. (Attach additional sheets Waste Treatment	at are received (or are expected to be if necessary)	received). Included data	on volume and concentration
22.3	List the hazardous constituents tha known. (Attach additional sheets Waste Treatment a. Is this waste treated (or will it be	at are received (or are expected to be if necessary) e treated) prior to entering the treatme	received). Included data	on volume and concentration
22.3	List the hazardous constituents tha known. (Attach additional sheets Waste Treatment a. Is this waste treated (or will it be \begin{bmm}{l} Yes If Yes, describe the treatment	at are received (or are expected to be if necessary) e treated) prior to entering the treatme No (provide information about the remov	received). Included data	on volume and concentration
22.3	List the hazardous constituents tha known. (Attach additional sheets Waste Treatment a. Is this waste treated (or will it be Ves If Yes, describe the treatment	at are received (or are expected to be if necessary) e treated) prior to entering the treatme No (provide information about the remov harge be) continuous or intermittent?	received). Included data	on volume and concentration
22.3	List the hazardous constituents tha known. (Attach additional sheets Waste Treatment a. Is this waste treated (or will it be \begin{bmm}{2mm} Yes If Yes, describe the treatment b. Is the discharge (or will the disc \begin{bmm}{2mm} Continuous If intermittent, describe the disc	at are received (or are expected to be if necessary)	received). Included data	on volume and concentration
22.3	List the hazardous constituents that known. (Attach additional sheets Waste Treatment a. Is this waste treated (or will it be Yes If Yes, describe the treatment b. Is the discharge (or will the disc Continuous If intermittent, describe the disc	at are received (or are expected to be if necessary)	received). Included data	on volume and concentration

MAK	E ADDITIONAL COPIES OF THIS FOR	I FOR EACH OUTFAI	L		
FACILI		PERMIT NO.		OUTFALL NO.	
Brans	son, Cooper Creek VVVIF	MO- 0116599		001	
PAR	T G – COMBINED SEWER SYSTEMS				
Refe	r to the APPLICATION OVERVIEW to de	termine whether Part G	applies to	to the treatment works.	
23.	GENERAL INFORMATION	and the state of the state of the state of the state of the state of the state of the state of the state of the			1. N.
23.1	System Map. Provide a map indicating	the following: (May be	included	with basic application information.)	
	A. All CSO Discharges.	ally Affected by CSOc	la a baa	achee drinking water cupplies shallfich hade cons	sitivo
	aguatic ecosystems and Ou	tstanding Natural Resc	urce Wate	ters.)	sitive
	C. Waters that Support Threat	ened and Endangered	Species P	Potentially Affected by CSOs.	
23.2	System Diagram Brovide a diagram	aither in the man provid	led above	e or on a senarate drawing of the Combined Sewer	r
20.2	Collection System that includes the follo	owing information:	ieu above	s of on a separate drawing, of the combined dewer	
	A. Locations of Major Sewer T	unk Lines, Both Comb	ined and S	Separate Sanitary.	
	B. Locations of Points where S	eparate Sanitary Sewe	ers Feed in	into the Combined Sewer System.	
	C. Locations of In-Line or Off-L	ine Storage Structures			
	E. Locations of Pump Stations	y Devices.			
23.3	Percent of collection system that is com	bined sewer			
23.4	Population served by combined sewer	collection system			
23.5	Name of any satellite community with c	ombined sewer collecti	on system	n	
24.	CSO OUTFALLS. COMPLETE THE F	OLLOWING ONCE FO	REACH	CSO DISCHARGE POINT	*****
24.1	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 monitore	d during the last year for	or this CS	so?	
	Rainfall	CSO Pollutant Concen	trations	CSO	
	CSO Flow Volume	Receiving Water Qualit	ty		
	f. How many storm events were monito	red last year?			
24.2	CSO Events				
	a. Give the Number of CSO Events in the	ie Last Year	Events	Actual Approximate	
	b.			Give the Average Duration Per CSO Event	
	Hours			Actual Approximate	
	C. Million Gallons				
	d Give the minimum rainfall that cause	d a CSO event in the la	st vear	inches of rainfall	
24.3	Description of Receiving Waters		iot your _		
	a. Name of Receiving Water				
	b. Name of Watershed/River/Stream Sv	stem			
	c. U.S. Soil Conservation Service 14-Di	ait Watershed Code (If	Known)		
	d. Name of State Management/River Ba	asin	,		
	e. U.S. Geological Survey 8- Digit Hydro	ologic Cataloging Unit	Code (If Ki	(nown)	
24.4	CSO Operations	ingle calleging child	(	,	
Desc perm water	ribe any known water quality impacts on anent or intermittent shellfish bed closing quality standard.)	the receiving water cau s, fish kills, fish advisor	ised by thi ries, other	is CSO (e.g., permanent or intermittent beach closi r recreational loss, or violation of any applicable sta	ings, ite
DEP	TO THE ADDI IOATION OVERVIEW	END OF	PART G	D DADTE OF FORM DO VOU MUST COMPLETE	
REF	TO THE APPLICATION OVERVIEW	TO DETERMINE WHIC	HUITE	R PARTS OF FORM BZ TOU MUST COMPLETE.	17



1 8

# MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM FINANCIAL QUESTIONNAIRE

RECEIVED

5-

MAR 29 2019

Water Protection Program

NO	FINANCIAL INFORMATION THAT IS NOT PROVIDED DEPARTMENT FROM READILY AVAILABLE SOURC	THROUGH THIS F ES.	ORM WILL BE OBTAINED BY THE		
1.	GENERAL INFORMATION	-			
FACIL	JTY NAME Der Creek WWTF	PERMIT NUMBER #MO- 0116599			
CITY Brar	Ison	COUNTY Taney			
2.	GENERAL FINANCIAL INFORMATION (ALL FACILITIES)				
2.1	Number of connections to the facility: Residential 3146	_ Commercial _14	13 Industrial N/A		
2.2	Current sewer user rate (Based on a 5,000 gallon per month us	Residential \$13.95 Commercia 2" \$51.17			
2.3	Current annual operating costs for the facility (excludes depreci	\$1,662,000			
2.4	Bond rating (if applicable):		S & P "A" Rating		
2.5	Bonding capacity:		\$56 million		
2.6	Current outstanding debt relating to wastewater collection and t	reatment:	\$11,595,000		
2.7	Amount within the current user rate used toward payments on c related to the current wastewater infrastructure:	outstanding debt	\$0.00		
2.8	Attach any relevant financial statements.				
3.	FINANCIAL INFORMATION REQUIRED FROM MUNICIPALIT	TIES			
3.1	Municipality's Full Market Property Value:		\$440,272,236		
3.2	Municipality's Overall Net Debt:		\$215,934,253		
3.3	Municipality's Property Tax Revenues (levied) [A]:		\$2,712,328		
3.4	Municipality's Property Tax Revenues (collected) [B]:		\$2,675,349		
3.5	Municipality's Property Tax Collection Rate ([B]/[A]):		98.64%		
4.	FINANCIAL INFORMATION REQUIRED FROM SEWER DIST	RICTS			
4.1	Total connections to the sewer district: Residential 5835	Commercial 2	642 Industrial N/A		
4.2 Faci	When facilities require upgrades, how are the costs divided? W Will the costs be divided across the sewer district? lity upgrades are funded through the City of Branson tourism tax, necting to city sewer and a portion the Taney County 1/2 cent sew	ill the homes connection system connection ver sales tax that is o	cted to the upgraded facility bear the costs? charges paid by new development when designated to municipalities in Taney County		
5.	ADDITIONAL CONSIDERATIONS (ALL FACILITIES)				
5.1 Coo pum	Provide a list of major infrastructure or other investments in envindicate any possible overlap or complications (attach sheets as per Creek WWTP Interim Improvements - Clarifier upgrades, screps. \$1,301,030.00 Scheduled completion April 29, 2019.	rironmental projects. s necessary): eening equipment up	Include project timing and costs and ogrades - compactor, new sludge return		
5.2 N/A	Provide a list of any other relevant local community economic c requirements (attach sheets as necessary):	onditions that may i	mpact the ability to afford new permit		

FINANCIA	CONTACT	
JoLyn T	ate	Accountant II
EMAIL AD	DRESS	TELEPHONE NUMBER WITH AREA CODE
tate@b	ransonmo.gov	(417) 337-8580
I certify with a s inquiry informa penaltie	under penalty of law that this document and all attachme system designed to assure that qualified personnel proper of the person or persons who manage the system, or thos tion submitted is, to the best of my knowledge and belief, as for submitting false information, including the possibility	nts were prepared under my direction or supervision in accordance rly gather and evaluate the information submitted. Based on my se persons directly responsible for gathering the information, the true, accurate, and complete. I am aware that there are significant y of fine and imprisonment for knowing violations.
OWNER O	RAUTHORIZED REPRESENTATIVE	OFFICIAL TITLE UTILITIES DIRECTOR
SIGNATUR		DATE SIGNED
	Mulael Ran	3/26/19
FOR O LESS 1 FACILI PER D	PERATING PERMIT FOR FACILITIES THAT RECEIVE F THAN OR EQUAL TO 100,000 GALLONS PER DAY and TIES THAT RECEIVE PRIMARILY DOMESTIC WASTED AY.	PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW FORM B2: APPLICATION FOR OPERATING PERMIT FOR AND HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS
1.	GENERAL INFORMATION – Provide the name by which number, and the city and county where the facility is loc	the facility is locally known, the Missouri State Operating Permit ated.
2.	GENERAL FINANCIAL INFORMATION (ALL FACILITIE complete.	ES) – Municipalities, sewer districts, and water supply districts are t
2.1	Self-explanatory.	
2.2	Provide the rate that a household would be charged for	sewer service if they use 5,000 gallons per month.
2.3	Provide the cost to operate and maintain the wastewate	r racility annually.
2.5	General obligation bond capacity allowed by constitution districts = up to 5% of taxable tangible property.	n: Cities = up to 20% of taxable tangible property; Sewer
2.6	Provide the amount of debt owed on wastewater collect community's annual financial statements	ion and treatment. Debt information is typically available from your
2.7	Provide the amount of a user's monthly sewer bill that is This may be a percentage or dollar amount.	s used toward debt owed on wastewater collection and treatment.
2.8	Self-explanatory.	NDALITIES Municipalities are to complete
3.1	Full Market Property Value is typically available through	your community or state assessor's office
3.2	Debt information is typically available from your commu	nity's annual financial statements.
3.3	Property tax revenues are typically available from your of Missouri communities can be found in the annual audito	community's annual financial statements. Property tax rates for or's report:
3.4	Property Taxes Levied = (Real Property Assessed Value	e) * (Property Tax Rate).
	This information is typically available through your comm financial statements. Property tax rates for Missouri com	nunity or state assessor's office and your community's annual nunities can be found in the annual auditor's report:
	https://app.auditor.mo.gov/AuditReports/AudRpt2.aspx?	<u>'id=31</u> .
3.5	FINANCIAL INFORMATION REQUIRED FROM SERVE	(Property Taxes Levied).     R DISTRICTS - Sever Districts and Water Supply Districts are to
4.	complete.	- Sewer Districts and Water Supply Districts are to
4. 1-4.2 5.	ADDITIONAL CONSIDERATIONS (ALL FACILITIES) –	Municipalities, sewer districts, and water supply districts are to
5,1-5.2	Self-explanatory.	
6.	CERTIFICATION – Provide the name and contact infom requests for your community. This form must be signed	nation for the individual who can respond to financial information by your community's "owner" or "authorized representative". The
	owner for a municipality is either the principal executive	officer or ranking elected official.

MO 780-2511 (12/18)

MISSOURI DEPARTMENT OF NATURAL RESOURCES DIVISION OF INVIRONMENTAL QUALITY MONTELY MONIFORING RECORD FOR WASTEWATER TREATMENT FACILITIES

NAP	MIC OF	RACETUA A					CUY					COMPANE	REFILIA					
	_		Cooper C	Creek WWT					Branson					Tan	ey / Spring	field		
FOI	THE	MUNTHO	W.	OUFFALLS	SUMBER		DERMITTEN	UMUICE				TYPE TREA	T MUNT P	ACILITY		and the second		
	L	December 20	)18		001			-	MO-0116599					Activated Slud	ige / Phospi	horus Remov	al	
			INFL	UENT								EFFLUENT						
D	AY	INF FLOW MGD	pH UNITS	BOD mg/L*	TSS mg/L	TEMP .C	pH UNITS	BOD mg/L*	BOD % Reduction	TSS mg/L	TSS % Reduction	E-Coli MPN/100 mL	P mg/L	Aluminum ug/L	Iron ug/L	Nitrogen mg/L	Oil & Grease mg/L	NH3-N mg/L*
1	Sat	1.85	8.0			16.9	7.1											
2	Sun	2.02	8.1		-	15.0	7.2								-			
3	Mon	1.53	7.8			14.6	7.0				1							
4	Tue	1.25	7.7	150	146	14.5	7.2	2.3	98.5%	2.4	98.4%		<0.10	220.0	<10.0	14.0	<5.2	<0.1
5	Wed	1.23	7.9			14.2	7.0											
6	Thr	1.29	8.0	160	223	15.1	7.0	3.6	97.8%	2.3	99.0%						-	
7	Fri	1.34	8.1			16.0	7.0											
8	Sat	1.38	7.8			15.3	7.0											
9	Sun	1.46	7.9		-	15.3	7.0	-										
10	Mon	1.30	7.8			12.4	6.9	1				-	-			1		
11	Tue	1.12	7.8	190	200	12.5	6.8	8.4	95.6%	9.0	95.5%		<0.10	200.0	12.0			0.12
12	Wed	1.16	7.8		1 miles	13.5	6.8								-		-	
13	Thr	1.15	7.7	220	220	15.8	6.9	<2.0	99.3%	1.1	99.5%		-					
14	Fri	1.49	7.7			15.5	7.0											
15	Sat	2.62	7.8			14.7	7.6		-	-	-							
16	Sun	2.55	8.0			14.6	7.3			-							1	
17	Mon	1.78	7.8			12.9	7.0						_					
18	Tue	1.35	7.9	180	384	14.3	7.2	3.0	98.3%	2.2	99.4%	-	<0.10	130.0	<10.0	-		0.13
19	Wed	1.27	7.8			14.9	7.1				-							
20	Thr	1.29	7.8	200	231	15.5	7.1	4.0	98.0%	2.6	98.9%							
21	Fri	1.31	7.8			14.7	7.2						-			-		-
22	Sat	1.48	8.1	-	-	13.9	7.2									-		_
23	Sun	1.55	8.0			13.7	7.2											
24	Mon	1.43	7.8			12.9	7.1	-	-	-					-	-	-	
25	Tue	1.36	7.8	0.00	1.00	14.5	7.0		02.001		0.0.001			1000				
26	Wed	1.24	7.8	230	162	13.8	7.0	6.5	97.2%	3.5	97.8%		<0.10	<100.0	<10.0			<0.1
27	Thr	2.20	7.8	240	235	15.8	7.2	9.3	96.1%	10.4	95.6%							
28	Fri	2.71	7.9		-	14.7	7.2		-						-			
29	Sat	2.30	8.0			13.4	7.2	-			-				-			-
30	Sun	2.10	7.9			13.4	7.2	-								-		
31	Mon	2.03	7.8	-	-	13.8	7.0	-		-	-	-						
# of	Samp	31	31	8	8	31	31	8	8	8		0	4	4	4		1	4
Sum		50.14		104	205	114		10	67.782	10	50.007		10.10	1000	2.0	-		
Ave	rage	1.02	0.1	190	243	14:4		4.8	31.074	4.2	98.0%	0	<0.10	150.0	0.8	140	15.0	1.1>
Dail	y Max.	2.71	8.1	150	384	10.9	1.0	9.3		10.4		0	<0.10	220.0	12.0	14.0	5.2	0.13
Dail	y Min.	1.12	1.1	150	140	12.4	0.8	<2.0		1.1		0	<0.10	<100.0	<10.0			<0.1
Geo	Miean	-						4.1		3.4		0	<0.10			I.		

					COMPER	ATIONAL C	ONTROL PAR	AMETERS			all sealing
Dav	O.B. DO	MISS mall	Settle	ability	Tamp of	Pain	Weather	Time	Sludg	ge Hauled	1
Jay	mg/L	WLD55 mg/L	30 min	60 min	- remp C	in.	Weather	TIMO	Name	Gallons	lb. dry w
1	1.9		290	270	4.4	0.70	PC	0714			
2	1.6		300	280	3.9	0.00	0	0717		- 1 - C	
3	1.2	4131	270	260	0.6	0.00	0	0708			
4	1.8	4007	250	240	-2.8	0.00	0	0711			
5	2.1	4181	260	250	-2.8	0.00	С	0634			
6	2.2	4264	260	250	0.0	0.00	0	0714			
7	1.8	4232	270	250	-0.6	0.04	0	0716			
8	2.2		260	250	0.0	0.00	0	0710			
9	2.3		250	240	-7.2	0.00	С	0709			
10	2.4	3724	230	210	-11.1	0.00	PC	0717	-		
11	2.2	4156	250	230	-2.2	0.00	С	0716	<u>0</u>		
12	1.9	3449	210	200	6.7	0.00	PC	0714			
13	2.0	3867	250	230	7.8	0.08	R	0715	2		
14	2.5	3969	240	230	5.6	0.55	R	0717			
15	2.5		190	180	1.1	1.30	R	0713			
16	2.1		240	220	0.0	0.00	0	0717			
17	2.0	4011	250	240	-1.7	0.00	F,C	0712			
18	2.0	4100	260	250	-3.3	0.00	PC	0714		- 10	
19	2.8	3841	250	240	0.0	0.00	F,PC	0717			
20	2.2	4063	250	240	4.4	0.05	PC	0716			
21	2.3	4546	260	240	0.0	0.00	PC	0712			
22	2.1		240	230	-1.1	0.00	PC	0705			
23	2.1		240	230	0.0	0.00	С	0721			
24	2.3		200	190	-7.2	0.00	С	0710		-	
25	2.0		230	220	-1.1	0.00	PC	0711			
26	2.2	3754	230	220	5.6	0.00	0	0717		-	
27	2.4	3269	200	190	10.0	1.40	0	0718			
28	2.5	3883	230	220	-1.7	0.00	0	0717			
29	2.0		240	220	-2.8	0.00	PC	0716			
30	2.1		240	230	-2.8	0.00	C	0706			
31	1.8	4109	240	230	4.4	0.30	R	0703			
VG	2.1	3977	245	232	0.2	4.42	Sum		Totals;	0.	0 dry lbs =
						1.40	Dally max.			0	gallons
						0.00	Dally min.	Annual and		0.0000	dry tons
2	PREFORMED BY	Carr				TITLE	Lab Thec.		PHONE # 417-337-8577	DATE	9
ESTS	APPROVED BY	den				TITLE Super	visor WWT Op	erations	PHONE # 417-337-8563	DATE  -   8 -	19

MISSOURI DEPARTMENT OF NATURAL RESOURCES DIVISION OF UNVIRONMENTAL DUALITY MONTHLY MONITORING RECORD FOR WASTEWATER TREATMENT FACILITIES

			Cooper C	Creek WWT					Branson					Tan	ey / Spring	field		
ROR	THE	MONTHO	F.	OUTFALL	NUMBER		PERMIT N	UMITE				TWPE DREA	<b>UTWENTER</b>	SCILITY				
	N	lovember 20	18		001				MO-0116599					Activated Slud	lge / Phosph	torus Remov	al	
			INFL	UENT								EFFLUENT						
D	AY	INF FLOW MGD	pH UNITS	BOD mg/L*	TSS mg/L	TEMP °C	pH UNITS	BOD mg/L*	BOD % Reduction	TSS mg/L	TSS % Reduction	E-Coli MPN/100 mL	P mg/L	Aluminum ug/L	lron ug/L	Nitrogen mg/L	Oil & Grease	NH3-N mg/L*
1	Thr	2.07	7.7	140	131	18.6	7.2	<2.0	98.8%	3.4	97.4%							
2	Fri	3.00	7.9			16.5	7.5						11					
3	Sat	2.19	7.8			16.6	7.5											
4	Sun	2.21	7.9			17.1	7.5			-								
5	Mon	2.12	7.8			16.8	7.2											
6	Tue	1.89	7.8	310	480	17.3	7.3	2.9	99.1%	3.6	99.3%		0.14	290.0	11.0	10.0	<5.0	<0.1
7	Wed	1.67	8.0			17.5	7.2				5 T				-	-		
8	Thr	1.64	8.1	310	317	16.9	7.1	2.0	99.4%	1.3	99.6%							
9	Fri	1.60	8.4			18.6	6.9						_	-				
10	Sat	1.64	8.4			14.5	7.1		1	_								
11	Sun	1.72	7.9			15.2	7.1											
12	Mon	1.53	8.2			15.9	6.8											
13	Tue	1.38	8.1	240	310	14.7	6.8	2.1	99.1%	1.1	99.6%		<0.10	440.0	<10.0			<0.1
14	Wed	1.35	8.4	-		14.6	6.9											
15	Thr	1.40	7.9	340	503	15.0	6.9	2.6	99.2%	1.5	99.7%							
16	Fri	1.50	8.0			15.6	6.8											
17	Sat	1.54	8.0			15.6	7.2	_			1		-					
18	Sun	1.75	8.3		-	15.9	7.2			-								
19	Mon	1.65	7.9			15.7	6.9						-					_
20	Tue	1.41	7.9	290	366	15.6	6.9	2.2	99.2%	1.2	99.7%		0.10	490.0	12.0		1	<0.1
21	Wed	1.40	7.9	230	308	15.5	6.9	2.9	98.7%	1.2	99.6%							
22	Thr	1.67	8.1			15.4	7.0	-	-									
23	Fri	1.86	8.2			16.9	6.9											
24	Sat	1.92	8.3			15.8	7.1								-			
25	Sun	1.82	8.0			15.9	7.0								-	-		
26	Mon	1.45	8.1	Contraction of the second		14.2	6.9			1								
27	Tue	1.26	7.7	260	430	14.7	7.0	2.1	99.2%	1.8	99.6%		<0.10	330,0	22.0	-		<0.1
28	Wed	1.24	7.8			14.4	7.0											
29	Thr	1.36	8.0	240	360	15.4	7.0	4.6	98.1%	2.0	99.4%							
30	Fri	1.44	8.1	1	-	16.4	7.0		1 1		-		_			-		
							-			_	_				_			
# of S	amp	30	30	9	9	30	30	9	9	9		0	4	4	4	1	1	4
Sum		50.68				-											-	
Aver	age	1.69		262	356	16.0	in the second second	2.6	99.0%	1.9	99.3%	0	<0.10	387.5	12.5			<0.1
Daily	Max.	3.00	8.4	340	503	18.6	7.5	4.6		3.6	-	0	0.14	490.0	22.0	10.0	<5.0	<0.1
Daity	Min.	1.24	7.7	140	131	14.2	6.8	< 2.0		1.1		0	<0.10	290.00	<10.0			<0.1
Geo I	Mean							2.5		1.7		0.0	<0.10					

					CC OPER	ATIONAL C	ONTROL PAR	AWEITERS			and the second
	0.B. DO	MI SS mg/I	Settle	ability	Town W	Pain	Weather	Time	Slud	ge Hauled	1
Jay	mg/L	MLSS mg/L	30 min	60 min	Temp C	in.	Weather	11110	Name	Gallons	lb. dry v
1	2.1	3630	250	230	3.3	1.60	R	0717			
2	2.6	4112	290	255	2.2	0.07	R	0716			
3	2.1		300	260	3.3	0.10	PC	0712			
4	2.5		280	250	6.7	0.46	R	0708			
5	2.6	3804	270	240	4.4	0.02	O-R	0713			
6	2.1	3860	280	250	2.8	0.40	PC	0712			
7	2.6	3932	280	250	4.4	0.02	PC	0705			
8	2.3	3887	280	250	2.8	0.00	0	0717			
9	2.7	3869	280	250	1.7	0.03	0	0708			
0	2.0		320	280	-7.8	0.00	С	0716			
1	1.3		320	280	0.0	0.00	С	0707			
2	2.2		300	270	4.4	0.00	0	0712			-
3	2.4	4186	300	270	-6.7	0.04	PC	0713		1.00	
4	2.5	4408	300	270	-6.7	0.00	PC	0716			
5	2.8	4649	340	300	-6.1	0.00	C	0715			
6	2.0	4596	320	290	-2.8	0.00	C	0720			
7	1.9		300	270	-1.7	0.00	C	0718			
8	2.0		290	260	3.9	0.00	PC	0708			
9	2.6	4197	270	260	0.6	0.01	0	0714			
20	2.1	4097	290	270	-2.2	0.00	C	0719			1
21	2.3	4260	290	270	-1.1	0.00	C	0713			
22	2.1	1200	300	280	-4.4	0.00	C	0717		-	
23	2.1		290	270	4.4	0.00	0	0703			-
24	1.0		270	260	0.0	0.00	С	0709			
25	1.4		300	290	0.6	0.00	C	0706			_
26	2.2	4790	340	310	-6.7	0.17	PC	0715			
27	2.2	4661	320	300	-1.1	0.00	0	0718			
28	1.5	4222	270	260	-1.1	0.00	C	0712			1
29	2.0	4561	320	300	-1.1	0.00	PC	0710			
30	1.7	4247	290	270	3.9	0.00	F.O	0710			
		1211		210	515	0100	- 1 *				
G	2.2	4209	295	269	0.0	2.92	Sum		Totals:	0.0	) dry lbs =
						1.60	Daily max.			0	gallons
						0.00	Daily min.		BULONE #	0.0000	dry tons
LSTS	Danite	a Carr				TITLE	Lab Tech.		417-337-8577	12-19-1	8
ESTS	APPROVED BY	den				TITLE Super	visor WWT Op	erations	PHONE # 417-337-8563	DATE 12-20-	18

MISSOURI DEPARTMENT OF NATURAL RESOURCES DIVISION OF UNVIRONMENTAL QUALITY MONTHLY MONITORING RECORD FOR WASTEWATER TRATMENT FACILITIES

Contra la	ME OF	chwenger a	Cooper (	reek WWT			CITE		Branson	-			and to a	Tan	ey / Spring	field		
17631	THE	MONTHO	P	OUTFAILU	NUMBER		PERMIT	UMBER				TYPE THE	STM KONT T	ACTUTY				
	A A A A A A A A A A A A A A A A A A A	October 201	18		001				MO-0116599					Activated Slud	lge / Phospi	orus Remov	al	
			INFL	UENT								EFFLUENT				-		
	iv	TAUE	1															
Ľ	AI	FLOW	DH UNITS	BOD ma/La	TSS meff.	TEMP .C	nH UNITS	BOD me/LA	BOD %	TSS meft.	TSS %	E-Coli	P mu/L	Aluminum	Iron	Nitrogen	Oil & Grease	NH3-N
		MGD	paronino	NOD MEN	100 100		par ottaro		Reduction		Reduction	MPN/100 mL		ug/L	ug/L	mg/L	mg/L	mg/L*
1	Mon	1.54	7.9			22.0	7.0							-				
2	Tue	1.42	7.9	150	174	22.2	7.1	<2.0	99.4%	<1.0	99.8%	1.0	<0.10	<100.0	<10.0	16.0	<5.0	<0.1
3	Wed	1.41	7.9			22.7	7.1		1		-							
4	Thr	1.48	8.0	180	251	22.9	7.1	<2.0	99.4%	1.1	99.6%							
5	Fri	1.60	8.0			21.5	7.0											
6	Sat	1.69	8.2			23.1	7.2			-								
7	Sun	1.74	7.8			23.2	7.2									-		
8	Mon	1.61	7.8			23.1	7.1					10			.10.0			-01
9	Tue	1.45	7.8	190	218	23.3	7.1	<2.0	99.3%	1.1	99.5%	1.0	<0,10	110.0	<10.0			<0.1
10	Wed	2.19	7.8			22.8	7.2											
11	Thr	1.72	7.9	160	159	19.4	7.3	<2.0	99.4%	<1.0	99.5%							
12	Fri	1.62	8.1			19.8	7.2					-	-					
13	Sat	1.62	8.2			19.0	7.2	-				-	-					
14	Sun	1.79	8.1	-		19.1	7.2											
15	Mon	1.72	8.1	100	100	18.5	7.1	-2.0	00 70/	1.6	00.00/	<10	-010	120.0	<10.0			-01
16	Tue	1.43	8,3	180	178	18.4	7.2	<2.0	99.7%	1.5	99.2%	<1.0	<0.10	120.0	<10.0			<u> </u>
17	Wed	1.43	8.1	100	101	18.2	7.1	-20	00.28/	14	00.28/					-		
18	Thr	1.50	8.1	180	191	18.0	7.1	<2.0	99.270	1.4	99.370		-			-		
19	Fri	1.08	8.4			18.0	7.1			-	-							
20	Sat	2,30	7.0			17.7	72									-		
21	Mon	1.67	7.0			17.5	72		1									
23	Tue	1.07	7.9	170	192	18.1	71	<20	99.6%	10	99.5%	<1.0	<0.10	190.0	41.0			<0.1
24	Wed	1.44	80	110	172	18.7	70	-2.0	37.070	1.0	22.010							
25	The	1.49	79	170	177	18.8	7.0	<2.0	99.4%	1.3	99.3%				M.M			
26	Fri	1.57	8.0			19.1	7.0											
27	Sat	1.56	8.2			17.7	7.2								-	1		
28	Sun	1.63	8.0			17.7	7.2				-							
29	Mon	1.45	7.9			16.9	7.0		1000	-	1000					1		
30	Tue	1.29	7.8	200	146	17.5	7.0	<2.0	99,3%	2.8	98.1%	2.0	<0.10	180.0	<10.0			<0.1
31	Wed	1.25	7.7			19.7	7.1											
H of	Samp	31	31	9	9	31	31	9	9	9		5	4	5	5	- 1	1	5
Sun	1	50.10																
Ave	rage	1.62		176	187	19.8		<2.0	99,4%	1.3	99.3%	1.0	<0.10	130.0	12.2			<0.1
Dai	ly Max.	2.56	8.4	200	251	23.3	7.3	< 2.0		2.8		2	<0.10	190.0	41.0	16.0	<5.0	<0.1
Dai	ly Min.	1.25	7.7	150	146	16.9	7.0	< 2.0	-	< 1.0		<1.0	<0.10	<100.0	<10.0			<0.1
Geo	Mean							< 2.0		1.1	1	<1.0	<0.10			1		

					CC OPER	ATTONAL	ONTROL PAR	AMETERS			
	0.B. DO	MI 00 - 11	Settle	ability	T	Data		These	Sludg	ge Hauled	1
Day	mg/L	MLSS mg/L	30 min	60 min	Temp 'C	in.	weather	lime	Name	Gallons	lb. dry w
1	2.5	3645	200	190	16.1	0.00	0	0705			
2	2.6	3610	230	220	15.6	0.00	F.PC	0715			
3	2.5	3511	235	215	16.7	0.00	C	0712			
4	2.4	3775	235	215	19.4	0.00	PC	0711			
5	2.9	3570	225	205	17.8	0.00	PC	0714			
6	2.1		225	205	17.2	0.00	PC	0708			
7	1.9		230	210	16.7	0.00	PC	0717			
8	2.4	3493	220	200	18.3	0.00	PC	0714			
9	2.2	3540	225	205	18.9	0.00	PC	0713			
10	2.5	3789	250	220	16.1	1.50	0	0714			
11	2.7	3805	250	230	6.1	0.00	PC	0715			
12	2.6	3792	250	230	7.2	0.03	R	0717	1		
13	2.3		260	230	6.1	0.05	С	0723			-
14	4.2		260	230	9.4	0.49	R	0711			
15	2.6	3792	270	230	3.3	0.06	0	0714			
16	2.8	3891	260	240	2.2	0.01	PC	0704			
17	2.8	3782	255	235	1.1	0.00	F,C	0707		-	
18	2.3	3760	265	240	4.4	0.00	PC	0645	2		
19	2.6	3748	255	235	8.3	0.00	O.R	0703			
20	2.6		270	250	6.1	0.93	PC	0728	-		-
21	1.9		270	250	3.9	0.00	PC	0738			
22	2.5	3585	260	240	0.0	0.00	F.PC	0715	-		
23	2.5	3362	250	230	4.4	0.00	F.PC	0713	1		
24	2.2	3364	235	225	2.2	0.00	PC	0714			
25	2.6	3477	245	235	4.4	0.05	0	0714			
26	2.8	3484	245	225	8.3	0.25	0	0714			
27	1.8		260	240	3.3	0.02	PC	0721			
28	2.3		250	230	4.4	0.00	С	0711			
29	2.4	3605	260	240	3.3	0.00	C	0710			
30	2.2	3645	210	205	3.9	0.00	С	0713			
31	2.4	3761	255	240	13.9	0.11	F.O	0610			-
VG	2.5	3643	245	226	9.0	3,50	Sum		Totals:	0.0	) dry lbs =
-						1.50	Daily max.			0	gallons
						0.00	Daily min.			0.0000	dry tons
ESTS	PREFORMED B	Y	10			TITLE			PHONE #	DATE	
a	Danita (	Carr					Lab Tech.		417-337-8577	11-16-1	18
ESTS	APPROVED BY	ila				TITLE		mations	PHONE #	DATE 11-16-1	8

MISSOURI DEPARTMENT OF NATURAL RESOURCES DIVISION OF UNVIRONMENTAL QUALITY MONTHER MONITORING RECORD FOR WASPEWATER TREATMENT PACIF. ITES

-		-	Cooper C	creek WWT					Branson					Tan	ey / Spring	field		
TO:	THE	MONTIC	ľ	OUTIMAL	NUMBER		PERMITN	UNLIBERT				CYPE IRES	THEN'T B	ACTLUTY				
	S	eptember 2	018		001				MO-0116599		-			Activated Slud	ige / Phospi	horus Remov	al	
			INFL	UENT								EFFLUENT					-	-
D	AY	INF									-			1 1			1	
		FLOW	pH UNITS	BOD mg/L*	TSS mg/L	TEMP .C	pH UNITS	BOD mg/L*	BOD %	TSS mg/L	TSS %	E-Coli	P mg/L	Aluminum	Iron	Nitrogen	OH & Grease	NH3-N
		MGD	-				-		Reduction		Reduction	MPN/100 mL		ug/L	ug/L	mg/L	mgyL	mg/L*
1	Sat	1.70	7.9			23.5	7.2			-						_		
2	Sun	2.18	7.8			23.8	7.3	-								-		
3	Mon	2.04	7.7			24.1	7.2	-										
4	Tue	1.78	7.9	190	198	24.5	7.2	<2.0	99.6%	<1.0	99.7%	<1.0	<0.10	<100.0	14.0	16.0	<5.2	<0.1
5	Wed	1.90	7.8	_		23.8	7.1						-			-		
6	Thr	1.52	7.7	150	197	23.9	7.1	<2.0	99.7%	1.0	99.5%							
7	Fri	1.36	7.8			23.1	7.1											
8	Sat	1.82	7.8			24.6	7.2									-	-	
9	Sun	1.75	7.6			21.8	7.1				_					1		
10	Mon	1.53	7.9			22.3	7.1						-					1
11	Tue	1.38	8.1	150	188	21.2	7.0	<2.0	99.6%	1.2	99.4%	<1.0	<0.10	110.0	270.0		1	<0.1
12	Wed	1.42	8.0		-	22.2	7.0											
13	Thr	1.37	8.1	160	167	23.4	7.1	<2.0	99.4%	<1.0	99.5%							
14	Fri	2.08	7.8			23.1	7.1	-			-							
15	Sat	1.61	8.1			23.1	7.1	-								-		
16	Sun	1.75	7.9		-	23.2	7.2											
17	Mon	1.65	7.9			23.4	7.1											
18	Tue	1.45	7.9	170	184	21.6	7.1	<2.0	99.6%	1.0	99.5%	<1.0	<0.10	<100.0	<10.0			<0.1
19	Wed	1.48	8.0			21.1	7.2											
20	Thr	1.55	7.8	150	151	24.9	7.2	<2.0	99.4%	<1.0	99.6%		-					
21	Fri	1.53	8.0		1	25.3	7.2		1.1		2				-	-		
22	Sat	2.25	7.6			23.2	7.4								-			
23	Sun	2.60	7.9			21.3	7.6											
24	Mon	1.72	7.6			22.0	7.3				- 34	1						
25	Tue	1.49	7.8	120	105	22.2	7.4	<2.0	99.4%	<1.0	99.2%	<1.0	<0.10	120.0	<10.0		-	<0.1
26	Wed	1.47	7.8			23.1	7.3				100 million						1-2-1	
27	Thr	1.44	8.0	120	171	22.4	7.3	<2.0	99.3%	<1.0	99.5%							
28	Fri	1.52	7.8			21.8	7.2			-								
29	Sat	1.05	7.9			22.0	7.3				a set and							
30	Sun	2.30	8.2			21.6	7.2		-			_			-			
					_	-	-1.		Competent of		- 1-1							
# of t	amp	30	30	8	8	30	30	8	8	8	8	4	4	4	4	1	1	4
Sum	-	50.69							The second second									
Aver	nge	1.69		151	170	22.9		< 2.0	99.5%	< 1.0	99.5%	<1.0	<0.10	82.5	73.5			<0.1
Daily	Max.	2.60	8.2	190	198	25.3	7.6	< 2.0		1.2		<1.0	<0.10	120.0	270.0	16.0	<5.2	<0.1
Daily	Min.	1.05	7.6	120	105	21.1	7.0	< 2.0	1	< 1.0		<1.0	<0.10	<100.0	<10.0			<0.1
Geo	Mean					-		< 2.0		< 1.0		<1.0	<0.10				Dura in the Line of shares	

				_	CCOPER	ATTONAL C	ONTROL PAR	AMETERS	and the second second		
Dav	<b>O.B.</b> DO	MISS mg/I	Settle	ability	Tama IC	Dain	Masthan	Time	Slud	ge Hauled	
Day	mg/L	MLSS mg/L	30 min	60 min	Temp C	in.	weather	Time	Name	Gallons	lb. dry w
1	2.4		240	210	19.4	0.00	С	0707			
2	2.0		230	210	19.4	0.00	PC	0706			
3	1.6		175	165	20.0	0.00	PC	0705			
4	2.0	3676	225	205	21.1	0.00	PC	0714			-
5	2.4	3451	215	195	20.0	0.00	С	0714			
6	2.3	3653	225	205	19.4	0.00	0	0715		-	
7	2.4	3635	230	210	21.1	0.04	0	0709		-	1.000
8	1.8		240	220	21.1	0.05	PC	0747		1	
9	2.1		230	210	15.6	0.01	0	0709			
10	2.4	3528	245	215	13.9	0.00	PC	0710			-
11	2.5	3566	240	215	12.2	0.00	F,PC	0710			-
12	2.8	3627	235	215	15.6	0.00	PC	0713			
13	2.6	3648	235	215	18.3	0.00	O.PC	0713			
14	2.6	3630	240	220	16.7	0.00	С	0710		_	
15	2.6		240	220	16.1	0.00	C	0704	2-11-1-	-	1
16	1.6		240	220	15.6	0.00	C	0706			
17	2.2	3431	225	205	17.8	0.00	PC	0708			
18	2.4	3521	230	210	17.8	0.00	C	0713			
19	2.2	3472	225	205	19.4	0.00	C	0712			
20	2.2	3567	225	205	20.0	0.00	C	0713		1	
21	2.3	3675	230	210	23,3	0.01	R	0707			
22	2.1		230	210	15.0	0.09	R	0717		-	-
23	2.2		240	220	15.0	0.09	R	0717			
24	2.4	3685	220	205	16.7	0.31	0	0712			
25	2.3	3720	205	195	18.9	0.02	0	0711			2
26	2.3	3635	240	220	13.7	0.01	0	0603			
27	2.5	3671	240	215	8.3	0.00	PC	0710			
28	2.8	3550	230	210	8.9	0.00	PC	0708			-
29	2.4		235	215	14.4	0.00	PC	0714			
30	2.2		240	220	13.9	0.00	PC .	0719			
YG	2.3	3597	230	210	17.0	0.63	Sum		Totals:	0.0	) dry lbs =
						0.31	Daily max.			0	gallons
						0.00	Daily min.	-		0.0000	dry tons
TESTS	PREFORMED BY	Can				TITLE	Lab Tech.		PHONE # 417-337-8577	DATE 10-18-	18
TESTS	APPROVED BY	den				TITLE Super	visor WWT Op	erations	PHONE # 417-337-8563	DATE 10-19-	18

MISSOUR OF PARYMENT OF NATURAL RESOURCES DIVISION OF ENVIRONMENTAL QUALITY MONTHLY MONITORING RECORD FOR WASTEWATER TREATMENT FACILITIES

			Cooper C	Creek WWT					Branson					Tan	ey / Spring	field		
TOP	THE	MONTH O	V.	OUTRALE	NUMBER		THEM IT N	IMUM				TYPE TREA	TMENT P	ACILITY				
		August 201	8		001				MO-0116599	<b>T</b>				Activated Slud	ige / Phospi	torus Remov	al	
			INFL	UENT								EFFLUENT						
D	AY	INF FLOW	pH UNITS	BOD mg/L*	TSS mg/L	TEMP *C	PH UNITS	BOD mg/L*	BOD % Reduction	TSS mg/L	TSS % Reduction	E-Coli MPN/100 mL	P mg/L	Aluminum ug/L	Iron ug/L	Nitrogen mg/L	Oil & Grease mg/L	NH3-N mg/L*
1	Wed	1.83	80			23.7	70						-			-		
2	Thr	1.03	7.8	140	163	23.7	7.0	<20	98 8%	<10	99.6%							
3	Fri	1.96	7.6	140	105	211	7.0	-2.0	70.070	-1.0	77.079							
4	Sat	2.49	7.6			23.1	7.0											
5	Sun	2.12	7.8		1	23.6	7.0											
6	Mon	2.27	75			24.1	7.0									1		
7	Tue	1 78	79	190	190	24.6	6.9	<20	90 5%	<10	99.7%	<10	0.12	<100.0	<10.0	180	<54	
8	Wed	1.76	77	170	170	25.2	6.9	-2.0	11.570	-1.0	77.176	-1,0	0.12	-100.0	-10.0	10.0	-5.1	
9	Thr	2.37	76	160	171	24.9	70	<20	98.9%	<1.0	99 5%				-	-		<01
10	Fri	1.80	7.8	100		24.9	7.0	-4.0	70.770	-1.0	77.570							-0.1
11	Sat	2.06	77			24.0	69											
12	Sun	2.00	7.8			24.6	70			-					-	1		
13	Mon	1 79	7.8			23.0	60				-							
14	Tue	1 77	7.6	150	194	24.5	71	<20	00 4%	<10	99.6%	20	0.15	<100.0	<10.0			<0.1
15	Wed	2.08	7.6	150	1/4	24.8	71	-6.0	77.470	-1.0	77.070	2.0	0.15	100.0	-10.0	-		-0.1
16	Thr	1.76	77	120	148	23.3	71	<20	00 1%	<10	99 9%					-		
17	Fri	1.60	76	120	140	23.3	71	-4.0	77.170	-1.0	22.576		-					
18	Sat	1.73	76			24.7	71		6				-					
19	Sun	1.73	76			24.8	72	1										
20	Mon	1.59	76			24.6	70		11 1000									
21	Tue	1.45	77	130	170	21.6	7.0	<20	00 3%	<10	99 7%	<1.0	0.11	<100.0	<10.0			<01
22	Wed	1 38	7.8		170	24.5	71	-2.0	77.570	-1.0	77.170		0	100.0				
23	Thr	1.35	80	140	192	23.2	71	<20	00 3%	<1.0	99.7%		-		-			
24	Fri	1.48	7.8	110	172	24.0	7.0	-4.0	23.370	-1.0								
25	Sat	1.80	8.0			243	6.9											
26	Sun	1.42	7.7			247	7.1			-								
27	Mon	1.50	7.7		-	25.0	7.0											
28	Tue	1.71	77	130	121	24.7	7.2	<2.0	99.3%	<1.0	99.6%	<1.0	<0.10	<100.0	<10.0			<0.1
29	Wed	1.32	7.7			253	7.2											
30	Thr	2,18	7.5	120	203	24.2	7.1	<2.0	99.3%	<1.0	99.7%							
31	Fri	2.11	7.6	1.50		22.9	7.2								-			
Hofs	amp	31	31	9	9	31	31	9	9	9		4	4	4	4	1	1	4
Sum	-	56.31										-			-			
Avera	ge	1.82		142	172	24.0		<2.0	99.2%	<1.0	99.7%	<1.0	0.11	<100.0	<10.0			<0.1
Daily	Max.	2.49	8.0	190	203	25.3	7.2	< 2.0		<1.0		2	0.15	<100.0	<10.0	18.0	<5.4	<0.1
Daily	Min.	1.32	7.5	120	121	21.1	6.9	< 2.0		<1.0		<1.0	<0.10	<100.0	<10.0			<0.1
Geo N	lean	· · · · · · · · · · · · ·						< 2.0		< 1.0		<1.0	<0.10					

					CC OPER	ATTIONAL C	INTROL PAR	AMETERS			
	OR DO		Settle	ahility					Sludg	ge Hauled	
Day	mg/L	MLSS mg/L	20 1	in the second se	Temp °C	Rain	Weather	Time	N		lb. dry w
	2.4	2461	30 min	60 min	100	IN.	<b>D</b> O	0711	Name	Gallons	-
1	2.4	3461	215	200	15.0	0.08	F,C	0/11	-		-
2	2.1	3501	210	200	16.7	0.00	C	0/15			
3	2.3	3480	210	200	16.7	0.00	C	0706	4		
4	2.9		205	190	17.2	0.00	PC	0705			
5	1.7		210	190	17.8	0.00	PC	0707			
6	1.5	3563	205	185	20.0	0.00	PC	0705			
7	1.2	3529	190	180	21.1	0.00	PC	0706			
8	2.2	3482	190	180	20.9	0.00	PC	0710			
9	2.2	3514	200	180	18.3	1.95	F-PC	0715			-
10	2.2	3350	195	180	17.8	0.00	PC	0709	1		
11	2.5		200	185	18.3	0.00	С	0709			
12	1.6		190	170	20.0	0.04	PC	0706			
13	2.2	3419	195	175	19.4	0.00	PC	0716			
14	3.2	3351	190	170	19.4	1.22	R	0716			
15	2.2	3236	170	155	20.9	0.47	R	0708			
16	2.4	3248	180	160	21.1	0.05	0	0714	the second second second second second second second second second second second second second second second s		
17	2.4	3123	155	145	20.9	0.08	PC	0704			-
18	2.3		185	165	18.3	0.28	PC	0705		-	
19	1.6		185	165	17.8	0.00	PC	0706			
20	2.2	3336	190	170	18.9	0.18	PC	0707			
21	2.4	3376	190	170	20.0	0.03	0	0706			
22	2.9	3373	195	180	16.1	0.00	PC	0708			
23	3.2	3439	180	160	15.6	0.00	PC	0709			
24	3.4	3391	190	170	16.7	0.25	PC	0706			
25	2.5		200	180	18.3	0.10	PC	0715			
26	2.3		200	185	20.0	0.00	PC	0708			
27	2.9	3471	205	185	20.9	0.00	C	0706			-
28	2.9	3430	205	185	20.0	0.00	C	0706			
20	30	3414	190	180	21.1	0.00	0	0706			
30	3.0	3414	105	180	20.9	0.75	0	0710			
31	42	3710	220	185	17.8	1.21	0	0708			
VG	2.5	3418	195	178	18.8	6.69	Sum	0100	Totals:	0.0	) dry lbs =
					1010	1.95	Daily max.			0	gallons
						0.00	Daily min.			0.0000	dry tons
ESTS	PREFORMED B	Y				TITLE	-		PHONE #	DATE	
6	7. F.	1							110 220 0000		
C2	and	can					LAD ASSI. II		417-337-8377	4-18-1	8
ESTS	APPROVED BY					TITLE			PHONE #	DATE	-
	A.d	0				Super	isor WWT On	erations	417-337-8563	9-19-1	8

MISSOURODEPARTMENT OF NATURAL RESOURCES DIVISION OF UNVIRONMENTAL QUALITY MONTHLY MONITORING RECORD FOR WASTEWATER THEATMENT FACILITIES

			Comme	Manda WEFERING					Descrete		-		and and provide the second	70	10-10	Gald		
	-	A REAL PROPERTY OF	Cooper C	TCCK WWI				and the second sec	Branson				and a second second	Tan	icy / Spring	lield		
1.01	1116	MONTHO	P	NUCLINE AVAILABLE	AUMUUU		IN THE WORLD IN THE	DWIBER	10 0116500			TALES TREET	TARA I I	ACTURITY ACTURIN			and a second second	
-	-	July 2018			001				MO-0116599					Activated Slud	ige / Phospl	iorus Remov	Al	
			INFL	UENT	-							EFFLUENT						-
DA	Y	INF FLOW MGD	pH UNITS	BOD mg/L*	TSS mg/L	TEMP •c	pH UNITS	BOD mg/L*	BOD % Reduction	TSS mg/L	TSS % Reduction	E-Coli MPN/100 mL	P mg/L	Aluminum ug/L	iron ug/L	Nitrogen mg/L	Oil & Grease mg/L	NH3-N mg/L*
1	Sun	2.15	7.7		_	24.4	7.2		12-1-1-1									
2	Mon	1.98	7.9			23.8	7.1											
3	Tue	1.90	8.2	180	160	23.3	7.1	<2.0	99.5%	<1.0	99.7%	<1.0	<0.10	<100.0	<10.0	19.0	<5.6	<0.1
4	Wed	1.88	7.8			25.6	7.0											
5	Thr	2.13	7.9	160	196	25.2	7.2	<2.0	99.3%	<1.0	99.8%							
6	Fri	2.16	7.9			24.0	7.0				1							
7	Sat	2.12	7.7	-		23.3	7.1								-			
8	Sun	2.11	8.1			23.9	7.1								-			
9	Mon	2.01	7.9	-		24.1	7.1											
10	Tue	1.89	7.6	170	170	23.8	7.1	<2.0	99.4%	<1.0	99.8%	<1.0	0.20	<100.0	10.0			<0.1
11	Wed	2.03	7.7			22.4	7.0											
12	Thr	1.88	7.7	200	185	23.6	7.1	2.7	98.7%	<1.0	99.9%							
13	Fri	2.19	7.7			23.6	7.1											
14	Sat	2.22	7.6			25.0	6.8						-					
15	Sun	2.16	8.1			24.9	7.0											
16	Mon	2.12	7,8			24.5	7.0											
17	Tue	1.99	7.7	180	180	23.7	7.0	<2.0	99.6%	<1.0	99.8%	<1.0	0.21	<100.0	<10.0			<0.1
18	Wed	1.94	7.5			23.1	7.0											
19	Thr	1.93	7.7	160	212	23.5	7.0	<2.0	99.4%	<1.0	99.8%							
20	Fri	1.99	8.0			24.5	7.2											
21	Sat	2.17	7.7			24.4	7.1											
22	Sun	2.14	7.8			24.5	7.1		_									
23	Mon	1.99	7.8	-		22.8	7.0				1.1.5		-					
24	Tue	1.87	7.7	210	208	24.1	7.1	<2.0	99.7%	<1.0	99.8%	<1.0	0.12	<100.0	11.0			<0.1
25	Wed	1.94	7.4			24.4	7.1											
26	Thr	2.02	7.6	150	228	24.8	7.1	<2.0	99.1%	<1.0	99.7%				-			
27	Fri	2.00	7.9			22.0	7.1											
28	Sat	2.06	7.7			24.1	6.8											
29	Sun	2.22	7.8			24.0	7.0											
30	Mon	2.05	8.0			22.9	7.0											
31	Tue	1.86	8.0	220	174	21.6	7.0	<2.0	99.4%	<1.0	99.8%	<1.0	0.11	<100.0	14.0			<0.1
H of Sa	mp	31	31	9	9	31	31	9	9	9		5	5	5	5	1	1	5
Sum		63.10																
Averag	ge	2.04		181	190	23.9		<2.0	99.3%	<1.0	99.8%	<1.0	0.14	<100.0	9.0			<0.1
Daily N	Max.	2.22	8.2	220	228	25.6	7.2	2.7		<1.0		<1.0	0.21	<100.0	14.0	19.0	<5.6	<0.1
Daily N	Min.	1.86	7.4	150	160	21.6	6.8	< 2.0		< 1.0		<1.0	<0.10	<100.0	<10.0	-		<0.1
Geo M	lean							< 2.0	-	< 1.0		<1.0	0.13				_	

					CC OPER	ATIONAL CO	ONTROL PAR	AMPIERS			
	O.B. DO	MI 00	Settle	ability	T	Dala	10/	Thurs	Sludg	ge Hauled	
ay	mg/L	MLSS mg/L	30 min	60 min	Temp C	in.	vveatner	Time	Name	Gallons	lb. dry w
1	1.8		230	210	23.3	0.00	0	0708	-		and the second
2	2.3	3430	225	215	21.7	0.00	PC	0715			
3	2.2	3417	225	210	24.4	0.00	С	0711	1		
4	2.3		205	195	22.2	0.17	С	0724			
5	2.1	3379	210	200	22.2	0.00	PC	0710	-		
6	2.4	3361	225	215	23.3	0.00	C	0717		Lon I	
7	2.2		235	220	22.2	0.00	С	0716			1
8	1.4		240	220	16.7	0.00	PC	0706			1.
9	2.0	3435	225	215	24.4	0.00	PC	0714			
0	2.6	3427	215	200	22.2	0.00	С	0714		-	
1	2.0	3417	205	195	23.3	0.04	С	0715			
2	2.1	3361	195	185	24.2	0.00	PC	0716			
3	2.1	3294	180	170	23.3	0.00	PC	0709			
4	3.1		180	170	23.9	0.00	С	0707			
5	1.4		180	170	22.2	0.04	0	0705			-
6	2.4	3348	180	170	21.7	0.60	PC	0713			
7	2.2	3389	180	170	21.1	0.26	F.PC	0704	1.4		
8	2.3	3401	190	180	22.2	0.14	0	0713			
9	2.3	3498	200	190	22.2	0.00	0	0715			1
0	2.2	3460	175	160	18.9	0.06	PC	0704	1	-	
21	2.5		210	200	22.2	0.00	PC	0703			
22	1.5		210	190	18.9	0.00	PC	0703			
23	2.3	3511	210	200	19.4	0.00	PC	0715			
24	2.3	3518	215	200	19.4	0.00	PC	0657			
25	2.0	3447	210	200	15.6	0.00	С	0555			
26	2.0	3454	215	205	20.0	0.00	0	0714			
27	2.3	3449	220	205	18.9	0.00	PC	0708			-
28	2.2		200	190	18.3	0.00	PC	0721			
9	1.4		210	200	18.3	0.00	0	0705			
30	2.0	3515	215	205	17.2	0.11	F.O	0715			
31	2.2	3494	215	200	17.2	0.25	PC	0713		and the second second	
G	2.1	3429	207	195	21.0	1.67	Sum		Totals:	0.0	) dry lbs =
-						0.60	Daily max.			0	gallons
						0.00	Daily min.			0.0000	dry tons
STS	PREFORMED B	Care				TITLE	Lab Asst. II		PHONE # 417-337-8577	DATE 8-16-	18
ESTS	APPROVED BY	de			-	TITLE	isor WWT Op	erations	PHONE # 417-337-8563	DATE 8-20-	18

TRANSFER DE LER DE LE		IN MARKED FOR ANY CALL & L.B.	A THE REPORT OF A DESCRIPTION OF A DESCR
	CALCULATION OF A DESCRIPTION OF A DESCRI		

DIVISION OF ENVIRONMENTAL QUALITY

AONTAL: MONIFORING RECORD FOR WASTEWATER TREATMENT FACILITIES

NA	ME OF	FACILITY	1 <u></u>				CTTY:					CODELINE	EGION					
1			Cooper C	Creek WWT		-			Branson			1		Tan	ey / Spring	field		
FOI	R. IVIUC	MONTHO	F	OUTFALL,	NUMBER		PERMITIN	UMBER				TABLE UNITS	TMENT 0	AGUIDITAS				
		June 2018			001				MO-0116599	1				Activated Slud	ge / Phospl	norus Remov	al	
			INFL	UENT								EFFLUENT						
D	AY	INF FLOW MGD	pH UNITS	BOD mg/L*	TSS mg/L	TEMP *C	pH UNITS	BOD mg/L*	BOD % Reduction	TSS mg/L	TSS % Reduction	E-Coli MPN/100 mL	P mg/L	Aluminum ug/L	lron ug/L	Nitrogen	Oil & Grease mg/L	NH3-N mg/L*
1	Fri	1.67	7.8			24.3	7.0									2		
2	Sat	1.74	7.7			24.4	7.1		ALCON MA									
3	Sun	1.83	7.6			23.8	7.2											
4	Mon	1.62	8.1			22.7	7.2	-										
5	Tue	1.65	7.9	200	182	22.6	7.1	<2.0	99.3%	<1.0	99.7%	<1.0	<0.10	<100.0	<10.0	19.0	<5.1	<0.1
6	Wed	1.67	8.0			23.4	7.0											
7	Thr	1.67	7.7	190	207	24.1	7.0	<2.0	99.2%	<1.0	99.6%							
8	Fri	1.72	8.2			24.3	7.0											
9	Sat	1.80	7.6			24.1	6.9								1			_
10	Sun	1.92	7.8	i		24.2	7.0											
11	Mon	1.72	7.8			24.2	7.0											
12	Tue	1.76	7.6	180	204	24.3	7.0	<2.0	99.3%	1.2	99.4%	<1.0	<0.10	130.0	15.0			<0.1
13	Wed	1.83	7.8			24.6	7.0											
14	Thr	1.72	7.7	140	179	24.8	7.1	<2.0	98.9%	<1.0	99.5%							
15	Fri	1.98	7.7			25.0	6.9						-		_			
16	Sat	2.42	7.5			24.0	7.1											
17	Sun	2.28	7.7			23.5	7.2			-								
18	Mon	1.82	7.8			24.0	7.0								-			
19	Tue	1.72	7.7	200	214	24.2	6.9	<2.0	99.4%	1.2	99.4%	1.0	0.18	120.0	<10.0			<1.0
20	Wed	2.47	7.6			21.4	7.1											
21	Thr	1.96	7.6	220	209	24.0	7.0	<2.0	99.2%	<1.0	99.6%			1	S. Sec.	-		
22	Fri	1.96	8.0			21.6	7.0											
23	Sat	2.24	8.0			23.2	7.2											
24	Sun	2.41	7.9		-	23.1	7.2											
25	Mon	2.13	8.0			22.9	7.2						-					
26	Tue	1.92	7.9	180	198	23.7	7.1	<2.0	99.3%	1.2	99.4%	<1.0	<0.10	<100.0	<10.0			<0.1
27	Wed	1.89	7.6			24.3	7.1										-	
28	Thr	1.97	8.0	220	177	23.9	7.1	<2.0	99.5%	<1.0	99.7%							
29	Fri	2.62	7.9			24.7	7.2		-									
30	Sat	2.10	7.8			24.2	7.1		-									
	-						-											
H of	Samp	30	30	8	8	30	30	8	8	8	8	4	4	4	4	1	1	4
Sum		58.21								-								
Aver	rage	1.94		191	196	23.8		< 2.0	99.3%	<1.0	99.5%	<1.0	<0.10	87.5	<10.0			<0.1
Dail	y Max.	2.62	8,2	220	214	25.0	7.2	< 2.0		1.2		1.0	0.18	130.0	15.0	19.0	<5.1	<0.10
Dail	y Min.	1.62	7.5	140	177	21.4	6.9	< 2.0		< 1.0		<1.0	<0.10	<100.0	<10.0			<0.10
Geo	Mean	La martine tone, the state and the state		Tarried and and				< 2.0		< 1.0	1	<1.0	<0.10					

-	-				CC OPER	ATIONAL C	ONTROL PAR	AMUTURS	1		
Dav	O.B. DO	MI SS mall	Settle	ability	Toma C	Bain	Weather	Time	Slud	ge Hauled	1
Jay	mg/L	MLSS mg/L	30 min	60 min	Temp C	In.	weather	THIO	Name	Gallons	lb. dry w
1	2.3	2371	140	140	21.1	0.00	F,PC	0705			
2	1.7		165	155	22.8	0.00	PC	0705			-
3	1.8		165	155	18.9	0.03	С	0705			
4	3.1	2720	175	165	15.6	0.00	PC	0711			
5	2.6	2791	175	165	16.7	0.00	PC	0716			
5	2.4	2808	175	165	20.0	0.00	PC	0714			
7	2.4	2885	170	160	20.9	0.00	PC	0710			
8	2.9	2966	175	170	21.1	0.00	С	0710	-		
9	2.2		185	170	20.0	0.00	PC	0705			
0	2.0		185	165	20.0	0.00	С	0708			
1	2.2	3205	180	165	22.2	0.00	С	0702			
2	2.4	3212	195	175	18.9	0.54	0	0715			1000
3	2.2	3281	200	180	21.1	0.00	PC	0715	-		
4	2.4	3284	180	165	22.2	0.02	PC	0716			
5	2.2	3374	200	190	22.2	0.00	С	0708	101	-	
6	2.5		210	200	23.3	0.00	С	0704			
7	1.7		210	195	21.1	0.00	PC	0704			
8	2.0	3521	220	200	23.9	0.00	PC	0717			
9	2.3	3484	215	200	23.3	0.00	С	0704			
20	2.2	3576	220	200	20.9	0.00	PC	0714			
21	2.4	3584	220	200	21.1	0.73	PC	0716	2		
22	2.5	3620	225	205	20.0	0.00	PC	0713			C.
23	2.6		230	210	17.8	0.02	0	0706		-	
24	2.0		230	210	18.9	0.02	O-R	0704			
25	2.1	3565	230	210	21.1	0.80	PC	0713	State of the local division of the local div	- It-	
26	2.4	3446	215	205	21.1	0.12	PC	0705	the second second second second second second second second second second second second second second second se		
27	2.1	3454	220	205	18.9	0.29	PC	0603			
28	2.3	3446	230	220	23,9	0.00	C	0705			-
29	2.2	3505	230	210	25.0	0.00	С	0713			
30	2.1		230	210	25.0	0.00	С	0714		-	
0	22	3242	200	186	210	2 57	Sum		Totals:	0.0	dry lbs =
G	4.3	3243	200	100	21.0	0.80	Daily max		I beats,	0	gallons
						0.00	Daily min.			0.0000	dry tons
Z.	PREFORMED BY	Carr				TITLE	Lab Asst. II		PHONE # 417-337-8577	DATE 7-18-1	8
ESTS	APPROVED BY	len				TITLE Super	visor WWT Op	erations	PHONE # 417-337-8563	DATE 7-18-	18

MISSOURI DEPARTMENT OF NATURAL RESOURCES DIVISION OF ENVIRONMENTAL QUALITY MONTHUA MONITORING RECORD FOR WASTEWATER TREATMENT FACILITIES

		- ALANA	Cooper C	Creek WWT					Branson			-		Tan	ey / Springt	ield		
FOR	THE	MON TH O	-	ONFRALL	NUMBER		PERMIT	UMITER				TYPETREA	TMENT P	ACTINEY				
		May 2018			001				MO-0116599					Activated Slud	ge / Phosph	orus Remov	al	
			INFL	UENT								EFFLUENT						
D	AY	INF												1				-
~		FLOW	PH UNITS	BOD mg/L*	TSS mg/L	TEMP °C	pH UNITS	BOD mg/L*	BOD %	TSS mg/L	TSS %	E-Coli	P mg/L	Aluminum	Iren	Nitrogen	Oil & Grease	NH3-N
_		MGD			A				Keduction		Reduction	WITH/IOU ML		ug/L	ugru	INT.	ing a	my/L-
1	Tue	1.29	7.6	160	144	17.8	6.9	<2.0	99.1%	<1.0	99.6%	8.5	<0.10	100.0	<10.0	15.0	<5.7	0.14
2	Wed	1.26	7.7			19.3	7.0						i					
3	Thr	1.35	7.7	130	164	20.7	7.0	<2.0	98.9%	<1.0	99.6%							
4	Fri	3.32	7.7			19.1	7.2									-		
5	Sat	2.15	7.5			17.7	7.1											
6	Sun	1.82	7.7			18.0	7.2		_	-								
7	Mon	1.50	7.6		100	18.3	7.0		00.001		00.50/		-0.10	-100.0	-10.0			-0.1
8	Tue	1.40	7.8	130	138	19.4	7.1	<2.0	98.9%	<1.0	99.5%	<1.0	<0.10	<100.0	<10.0			<0.1
9	Wed	1.37	7.7	100	100	21.0	7.1		00 604	.1.0	00.50/							
10	Thr	1.41	7.8	130	172	21.8	7.0	<2.0	98.5%	<1.0	99.5%							
11	Fri	1.42	7.8			21.2	7.0											
12	Sat	1.40	7.0			21.2	7.0											
13	Sun	1.52	7.8			20.9	7.0											
14	Mon	1.40	7.7	120	142	21.2	7.0	-20	00.10/	12	07.00/	<10	<0.10	250.0	<10.0			-01
15	Iue	1.40	7.7	130	142	21.4	7.1	<2.0	99.1%	4.5	91.0%	<1.0	\$0.10	230.0	<10.0			<u></u>
10	Wea	1.35	1.1	150	207	22.0	7.0	-20	00 00/	21	00.00/							
17	Inr	1.45	1.8	150	207	22.2	7.0	<2.0	98.670	2.1	99.0%							
10	Pf1 Cat	1.53	0.1	-		21.2	7.0											
19	Sal	1.56	7.5			21.0	7.0						-					
20	Mon	1.07	0.0	-		21.9	6.0			-								
21	Tue	1.31	77	180	152	21.9	70	<20	00.0%	10	08 8%	<1.0	<0.10	260.0	<10.0			<01
21	Wad	1.45	7.6	100	154	23.7	7.0	-2.0	33.070	1.7	70.070	-1.0	-0.10	200,0	-10.0			-0.1
24	Thr	1.45	77	150	155	22.2	71	<20	98 7%	<10	99 5%							
25	Fri	1.60	7.8	150	155	22.8	7.0	-2.0	20.170	-1.0	77.070							
26	Sat	1.74	8.0			22.5	7.1											
27	Sun	2.06	7.7			22.5	7.1		-						-			
28	Mon	2.12	7.6			22.8	7.2											
29	Tue	1.80	7.7	200	178	22.9	7.2	<2.0	99.1%	<1.0	99.7%	<1.0	<0.10	110.0	11.0			
30	Wed	1.66	7.7			23.0	7.2											
31	Thr	1.62	7.9	160	167	24.1	7.0	<2.0	99.3%	<1.0	99.8%							<0.1
H of S	Samp	31	31	10	10	31	31	10	10	10	10	5	5	5	5	1	1	5
Sum		50.62																-
Aver	age	1.63		152	162	21.3		< 2.0	98.9%	1.3	99.2%	2.1	<0.10	154.0	6.2			<0.1
Daily	Max.	3.32	8.0	200	207	24.1	7.2	< 2.0		4.3		8.5	<0.10	260.0	11.0	15.0	<5.7	0.14
Daily	Min.	1.26	6.7	130	138	17.7	6.9	< 2.0		< 1.0		<1.0	<0.10	<100.0	<10.0			<0.1
Geol	Mean							< 2.0		1.0		<1.0	<0.10	1				

					CE OPER	ATIONAL C	ONTROL PAR	AMETERS			
Day	O.B. DO	MISS mall	Settle	ability	Tama C	Dala	Weather	Time	Slud	ge Hauled	
Day	mg/L	MILSS mg/L	30 min	60 min	- remp C	in.	vveatner	Time	Name	Gallons	lb. dry w
1	2.1	3647	210	200	13.3	0.00	PC	0711			1
2	2.5	4010	230	220	16.7	0.00	PC	0715			
3	2.1	3936	200	190	16.7	0.52	R	0720			
4	2.4	3835	220	210	15.6	1.98	0	0703			
5	2.6		210	200	10.0	0.01	F,PC	0713			
6	2.0		220	210	10.0	0.00	C	0704			
7	2.1	4045	230	220	13.3	0.00	C	0717			
8	2.3	3752	200	190	15.6	0.00	PC	0712		T.	
9	2.4	3748	200	190	17.8	0.01	O,PC	0718			
10	2.1	3649	200	190	20.0	0.00	0	0717			
11	2.8	3239	180	180	13.3	0.00	PC	0708			
12	2.0		180	180	16.7	0.00	PC	0716			1
13	1.8		160	150	14.4	0.00	С	0706			1
14	1.9	3488	190	180	17.2	0.00	PC	0704			I DECEMBER
15	2.5	3496	190	190	16.7	0.26	0	0707			
16	2.2	3458	190	180	17.8	0.00	F,PC	0720			1
17	2.2	3157	170	170	15.0	0.37	PC	0705			
18	2.2	3753	210	200	15.6	0.00	F,PC	0714			
19	2.0		210	200	17.8	0.00	PC	0709			Law of Law
20	1.2		200	190	20.0	0.00	0	0705	and the second second		12 -
21	2.7	3629	200	200	18.9	0.27	0	0711			
22	2.1	3454	200	200	17.8	0.00	F	0713	the second second second second second second second second second second second second second second second s		
23	2.0	3719	190	180	18.3	0.00	F.PC	0603			
24	2.1	3660	210	200	17.8	0.33	F	0714			
25	1.1	2815	200	190	17.8	0.00	PC	0703	1		
26	1.9		210	200	17.8	0.69	F.PC	0712	1		
27	1.2		220	210	16.7	0.00	F.PC	0704			
28	1.2		220	210	20.0	0.00	F.PC	0703			
29	1.6	3875	230	220	18.9	0.12	C	0714			
30	2.1	3081	180	170	20.0	0.00	PC	0704			
31	2.4	2596	150	150	22.8	0.00	0	0714			
AVG	2.1	3547	200	193	16.8	4.56	Sum		Totals:	0.0	) dry lbs =
						1.98	Daily max.			0	gallons
						0.00	Daily min.			0.0000	dry tons
CESTS P	amilar (	Care				TITLE	Lab Asst. II		PHONE # 417-337-8577	DATE 6-20-1	8
TESTS A	PPROVED BY	Jem			-	TITLE	visor WWT Op	erations	PHONE # 417-337-8563	DATE 6 - 20 - 1	8

MISSOURI DEPARTMENT OF NATURAL RESOURCES DIVISION OF ENVIRONMENTAL QUALITY MONTHLY MONTEORING RECORD FOR WASTEWATER TREATMENT FACILITIES

NAI	MERCIE	INTERIA					EITY					COUNTY/R	INGION					
_			Cooper C	reek WWT	_				Branson					Tan	ey / Spring	field		
FQ	<b>SOLFE</b>	MONTHO		OUTICALLY	NUMBER		PERMIT N	UMBER				TYPE TRAA	AT ADIN'T E	ACHARY				
		April 2018			001				MO-0116599					Activated Slud	ge / Phosp	horus Remov	al	
			INFL	UENT								EFFLUENT						
D	AY	INF				_			BOD %		TSS %	E-Cell	-	Aluminum	Iron	Nitrogen		NH3-N
		FLOW MGD	pH UNITS	BOD mg/L*	TSS mg/L	TEMP •C	pH UNITS	BOD mg/L*	Reduction	TSS mg/L	Reduction	MPN/100 mL	P mg/L	ug/L	ug/L	mg/L	mg/L	mg/L*
1	Sun	1.90	7.8			14.4	7.2											
2	Mon	2.26	7.7			13.3	7.1											
3	Tue	1.80	7.6	120	126	13.7	7.1	<2.0	99.3%	<1.0	99.4%	<1.0	<0.10	120.0	69.0	6.5	<5.5	<0.1
4	Wed	1.58	7.8		-	12.4	7.1								-			
5	Thr	1.42	7.8	150	149	12.8	7.0	<2.0	99.2%	<1.0	99.6%							
6	Fri	1.44	8.0			13.3	7.0								_			
7	Sat	1.44	8.0			12.2	7.0				-							
8	Sun	1.54	7.9			12.9	7.0		-		_							
9	Mon	1.31	7.9			12.6	6.9				-							
10	Tue	1.14	8.0	130	144	13.4	7.0	<2.0	99.3%	1.0	99.3%	2.0	< 0.10	180.0	19.0			0.11
11	Wed	1.18	7.8			14.8	7.0											
12	Thr	1.22	7.7	140	207	16.0	7.0	<2.0	98.9%	<1.0	99.8%							
13	Fri	1.28	8.0			18.2	7.0						-					
14	Sat	1.89	7.8			16.9	7.1						-		-			
15	Sun	1.81	7.8			14.3	7.2		1									
16	Mon	1.45	7.8			13.3	7.1		- Original and									
17	Tue	1.26	7.8	130	137	14.1	7.1	<2.0	99.3%	1.6	98.8%	<1.0	< 0.10	420.0	24.0			<0.1
18	Wed	1.33	8.0			16.9	7.1											
19	Thr	1.32	7.9	140	181	16.2	7.1	<2.0	99.1%	1.7	99.1%							
20	Fri	1.32	8.0			16.1	7.1									-		
21	Sat	1.44	8.1			16.1	7.0											
22	Sun	1.72	7.6			16.7	7.0		-									
23	Mon	2.50	7.6			16.4	7.0			-			_					
24	Tue	1.77	7.7	100	114	16.4	7.1	<2.0	99.0%	<1.0	99.3%	<1.0	<0.10	<100.0	17.0		-	<0.1
25	Wed	1.45	8.1	-		17.4	7.1				and the							-
26	Thr	1.98	7.7	120	168	17.6	7.1	<2.0	99.0%	<1.0	99.5%							
27	Fri	1.88	7.8			17.2	7.1				-			-	-		-	
28	Sat	1.66	7.9			16.4	7.1		-						-			
29	Sun	1.74	8.0			16.7	7.0					-						
30	Mon	1.43	7.9			16.7	6.9		_						-			
_		-				-										-	-	
# of S	Samp	30	30	8	8	30	30	8	8	8	8	4	4	4	4		1	4
Sum		47.46		100	1.54			1	100-0		00.1001		-	100.0	80 A			2.4
Aver	age	1.58		129	153	15.2		< 2.0	99.1	< 1.0	99.40%	<1.0	<0.10	192.5	34.2			<0.1
Daily	Max.	2.50	8.1	150	207	18.2	1.2	< 2.0		1.7		2	<0.10	420.0	09.0	0.5	<3.3	0.11
Daily	Min.	1.14	7.6	100	114	12,2	6.9	< 2.0		< 1.0		<1.0	<0.10	<100.0	17.0			<0,1
Geol	Mean	a de la della competencia de	1					< 2.0		< 1.0		<1.0	<0.10					

					CC OPER	ATIONAL C	ONTROL PAR	AMETERS			
	O.B. DO	MISS	Settle	ability	T 961	Dela	Manthan	Time	Sludg	ge Hauled	
Day	mg/L	MLSS mg/L	30 min	60 min	lemp °C	in.	weather	Time	Name	Gallons	lb. dry wi
1	2.3		250	240	4.4	0.07	O-R	0705			
2	2.8	4132	250	230	0.0	1.05	0	0715			
3	2.4	4186	240	220	10.0	0.03	0	0715	A REAL PROPERTY AND		
4	2.5	4092	230	220	-3.3	0.00	С	0718		3	
5	2.5	4212	220	210	0.0	0.00	0	0716			
6	2.5	4234	210	190	4.4	0.00	PC	0716	-		
7	2.6		250	230	-5.6	0.07	0	0706			
8	2.0		250	230	-4.4	0.00	С	0705		-	
9	2.6	4277	240	230	-1.1	0.00	PC	0714			
10	2.3	4188	240	230	-3.3	0.00	PC	0704			
11	2.8	4058	230	220	1.7	0.00	PC	0716			
12	2.4	4171	240	220	7.8	0.00	PC	0704			
13	2.0	4140	210	200	18.3	0.00	0	0700			
14	1.8		260	240	7.2	0.96	0	0712			
15	2.0		240	230	0.6	0.00	0	0706			
16	2.5	4325	250	230	-0.6	0.00	PC	0713			
17	2.4	4126	240	220	1.7	0.00	PC	0705		A COMPANY AND A	
18	2.5	4164	240	230	16.7	0.00	С	0719			
19	2.9	4045	230	220	2.2	0.00	PC	0717			
20	2.7	4018	230	220	-1.1	0.00	С	0703			
21	2.9		220	210	7.8	0.00	0	0718			
22	1.4		220	210.	11.1	0.58	R	0705			
23	2.8	3811	220	210	11.1	0.78	0	0718			
24	2.5	3953	230	220	6.7	0.00	С	0713			
25	2.4	3718	200	190	7.2	0.00	O.R.	0603			1
26	2.3	3834	220	210	8.9	0.58	0	0718			
27	2.9	3720	200	190	7.2	0.00	C	0708			No. of Contract
28	2.0		210	200	6.7	0.00	С	0719			
29	2.0		230	220	6.7	0.00	C	0706			
30	2.1	4016	240	230	8.9	0.00	C	0705			
VG	2.4	4068	231	218	4.6	4.12	Sum		Totals:	0.0	dry lbs =
-		-				1.05	Daily max.			0	gallons
						0.00	Dally min.			0.0000	dry tons
ESTS I	PREFORMED BY	Can				TITLE	Lab Asst. II		PHONE # 417-337-8577	DATE 5-16-1	8
ESTS	APPROVED BY	Len .				TITLE	visor WWT Op	erations	PHONE # 417-337-8563	DATE 5 · 17 -	18

MB BIN MG	ISOUR ISION	OF ENVER	MENT OF N ONMENTA	ATURAL RE L QUALITY DED FOR W	SOURCES	ERTREAT	IND FACI	(PETES										
N A	MEOF	PACILITY	ATATALA	AND TANK W	Acres (Market	CALINA AND	CITY	C. 4. 4. 4 4			-	COUNTY/R	EGION		_			
1.4.54	un un	1025 C 1 1 1 1 1	Cooper (	Creek WWT			CIUN		Branson			S. CONTENATION	THE PARTY OF	Tau	ey / Spring	ield		
FO.	THE	MONTHO	R	OUTBALL	NUMBER	-	DEBMILLIN	UMBER				INCOUTED	IMENER	ACILITY	V 1 0			
.0	N THE	March 201	8	UU11/14.1.1	001		ALL AND AND AN	Carrier	MO-0116599			10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	N.B. OYEAND N.C. B"	Activated Slud	ge / Phosph	orus Remov	al	
-			INFI	UENT		-						FFELLENT			<u></u>			
I	DAY	INF FLOW	pH UNITS	BOD mg/L*	TSS mg/L	TEMP °C	pH UNITS	BOD mg/L*	BOD % Reduction	TSS mg/L	TSS % Reduction	E-Coli MPN/100 mL	P mg/L	Aluminum ug/L	I FOR ug/L	Nitrogen mg/L	Oil & Grease	NH3-N mg/L*
1	Thr	153	76		83	14.1	71		-	<10	08 0%		-					
2	Fri	1.30	7.8		05	13.2	7.0			-1.0	70.770		- 5					
3	Sat	1.30	7.0			13.0	6.0											
4	Sun	1.20	77			13.0	60											
5	Mon	1.30	76			13.1	6.8		-				11					
6	Tue	1.15	7.0	160	156	12.3	6.0	<20	09.1%	<1.0	99.6%		<0.10	120.0	<10.0	86	<5.8	<0.10
7	Wed	1.10	7.8	100	150	11.3	6.9	-4.0	57.170	-1.0	33.070		-0.10	120.0	10.0	5.0	0.0	-0.10
8	Thr	0.99	80	160	169	10.7	6.8	00	00.1%	<1.0	99 5%							
0	Fri	1.09	7.8	100	105	10.7	6.8	-2.0	77.170	-1.0	11.070						1	
10	Sot	1.05	80			12.6	6.0										-	
11	Sun	1 34	7.8		-	13.7	6.8											
12	Mon	1.04	7.0			12.6	6.8											
13	Tue	1.27	80	210	194	13.4	6.9	20	00 0%	<10	99.6%		<0.10	120.0	23.0		-	0.100
14	Wed	1.31	7.0	210	104	13.7	6.0	2.0	37.070	51.0	33.070		-0.10	120.0	20.0			0.100
15	Thr	1.40	7.9	170	225	13.8	7.0	2.0	08 8%	<10	00 7%		1					
16	Fri	1.51	70	110	243	16.1	71	2.0	70.070	-1.0	11.110		1					-
17	Sat	1.55	80			15.5	7.0	-					1					
18	Sun	1.78	82			14.9	7.0								1			
19	Mon	1.75	7.9			15.1	6.8			-							The second second second second second second second second second second second second second second second se	
20	Tue	1.53	7.8	170	182	15.5	6.9	<2.0	99.2%	<1.0	99.7%		<0.10	<100.0	14.0			
21	Wed	1.58	8.0		102	15.3	6.9										2	
22	Thr	1.64	8.0	160	182	15.4	6.9	<2.0	99.1%	<1.0	99.6%						-	<0.10
23	Fri	1.72	8.0			16.7	6.9											
24	Sat	1.80	7.8		1	18.1	7.0		1.50							1	1	
25	Sun	1.91	8.1			16.8	7.1						-					
26	Mon	1.41	8.2			15.5	6.8										N	
27	Tue	1.78	7.7	150	188	17.2	7.1	<2.0	98.7%	1.0	99.5%		<0.10	130.0	<10.0			<0.10
28	Wed	4.51	7.7			15.5	7.1		200		-	-	1		-			
29	Thr	2.89	7.7	110	235	15.8	7.2	2.1	98.1%	1.7	99.3%		-					
30	Fri	3.32	7.7			14.1	7.1						Carlos					
31	Sat	2.17	7.7			14.0	7.1											
# of	Samp	31	31	8	9	31	31	8	8	9	9	0	4	4	4	1	1	4
Sum		51.61	15 3									1			- 33	1.72	111 44	- 102-1
Ave	rage	1.66	-	161	179	14.3		< 2.0	98.9%	< 1.0	99.5%	0	<0.10	105.0	11.8			<0.10
Dall	y Max.	4.51	8.2	210	235	18.1	7.2	2.1		1.7		0	<0.10	130.0	23.0	8.6	<5.8	0.10
Dail	y Min.	0.99	7.6	110	83	10.7	6.8	<2.0		< 1.0		0	<0.10	<100.0	<10.0		1	<0.10
Geo	Mean							<2.0		< 1.0		0	<0.10					

					CC OPER	TIONAL CO	NTROL PAR	AMETERS			
	OP DO		Sattle	ability	•				Sludg	ge Hauled	
Day	mg/L	MLSS mg/L	Settle	ability	Temp °C	Rain	Weather	Time			Ib. dry w
-			30 min	60 min		in.		0.000	Name	Gallons	
1	2.1	4164	240	220	10.0	0.00	0	0659			
2	2,5	4172	250	230	-3.9	0.00	C	0707			
3	2.3		250	230	-1.1	0.00	<u> </u>	0708			
4	2,4	1107	250	230	4,4	0.00	0	0706			
5	2.1	4107	250	230	8.9	0.08	0	0702			
6	3.1	4344	250	230	0.0	0.00	C	0713			
7	2.8	4130	250	230	0.0	0.00	0	0714			
8	2.6	4042	250	230	-2.2	0.00	С	0721			
9	2.5	4238	250	230	-1.7	0.00	PC	0721			
10	2.6		260	240	4.4	0.00	PC	0652			
11	1.8		250	230	4,4	0.00	0	0706			
12	1.8	3851	250	230	0.6	0.00	0	0724			
13	2.0	4072	250	230	-5.6	0.00	PC	0709			1000
14	2.5	4097	250	230	-6.7	0.00	С	0710			
15	2.2	3951	250	230	0.0	0.00	C	0717			
16	1.7	4165	250	230	10.0	0.00	O-R,PC	0714			-
17	2.1		260	240	5.6	0.00	PC	0711			
18	1.2		250	230	1.1	0.00	PC	0707			
19	1.8	4241	250	230	6.7	0.16	0	0716			
20	1.9	4061	250	230	4.4	0.07	PC	0712			
21	2.2	4001	240	230	0.0	0.00	PC	0712			
22	2.7	3868	230	220	-1.1	0.00	PC	0721			
23	2.2	4097	260	240	7.8	0.00	0	0713			
24	1.2		250	230	16.7	0.00	PC	0705			
25	1.1		270	250	4.4	0.00	0	0704			
26	2.5	4274	260	240	7.2	0.01	0.	0714			
27	2.1	3838	210	200	12.8	0.98	R	0723	20		
28	3.5	3731	230	210	7.8	2.70	0	0604			
29	2.3	4120	210	200	10.0	0.59	R	0706			
30	2.6	3439	200	190	1.1	0.61	C	0715			
31	3.2		250	230	0.0	0.00	PC	0650			
VG	2.2	4046	246	227	3,4	5.20	Sum		Totals:	0.0	) dry lbs =
-						2,70	Daily max.			0	gallons
						0.00	Dally min.			0.0000	dry tons
ESTS	) amita	Care				TITLE	Lab Asst. II		PHONE # 417-337-8577	DATE 4-30-	18
ESTS	APPROVED BY	en		a alter a sea		TITLE Supervi	isor WWT Op	erations	PHONE # 417-337-8563	DATE 4-23-1	8

DIVISION OF           MONTHLY M           NAME OF FAX           FOR THE MO           FOR THE MO           DAY           INF           1           Thr           2           Fri           3           Sat           4           Sun           5           Mon           6           7           Wed           8           11           Sun           12           Mon           13           Tue           14           Wed           15	E EXVIRO MONITOR ACIETTY ONTH OF	NMENTAL ING RECO	QUALITY RD FOR WA	STEWATE	RTREATM	ENT FACIL	THES										
NAME OF Factor           FOR THE MO           Febr           DAY           Intr           2           Fri           3           Sat           4           Sun           5           Mon           6           Tue           7           Wed           8           Thr           9           Fri           10           Sat           11           Sun           12           Mon           13           Tue           14           Wed	ACILITY ONTH OF	ING KENY	XD FOR WI	SILWAIE	K . K. S. V	C. S. A. State											
KOK         HUD         MOV           I         Thr         INF           2         Fri         INF           3         Sat         4           4         Sun         5           5         Mon         6           6         Tue         7           7         Wed         8           8         Thr         9           9         Fri         10           10         Sat         11           12         Mon         113           13         Tue         114	ONTE OF	Comment				CHY	4.4.4.4.4.4				COUNTY/RI	SIGN					-
KOK HILD MO           DAY         INF           1         Thr           2         Fri           3         Sat           4         Sun           5         Mon           6         Tue           7         Wed           8         Thr           9         Fri           10         Sat           11         Sun           12         Mon           13         Tue           14         Wed	ONTE OF	Cooper C	reek WWT					Branson					Tan	ey / Spring	field		
Febr           DAY         INF           1         Thr           2         Fri           3         Sat           4         Sun           5         Mon           6         Tue           7         Wed           8         Thr           9         Fri           10         Sat           11         Sun           12         Mon           13         Tue           14         Wed			OMITANT.	NUMBER	-	PERMIT	UMBER				INPL IRLA	IMPN P	AGILITY				
DAY         INF           1         Thr         INF           2         Fri         I           3         Sat         I           4         Sun         I           5         Mon         I           6         Tue         I           7         Wed         I           8         Thr         I           9         Fri         I           10         Sat         I           11         Sun         I           12         Mon         I           13         Tue         I           14         Wed         I	bruary 201	8		001				MO-0116599					Activated Sluc	ige / Phospl	horus Remov	al	
DAY         INF           1         Thr           2         Fri           3         Sat           4         Sun           5         Mon           6         Tue           7         Wed           8         Thr           9         Fri           10         Sat           11         Sun           12         Mon           13         Tue           14         Wed		INFLU	UENT			-					EFFLUENT					-	
I         Thr           2         Fri           3         Sat           4         Sun           5         Mon           6         Tue           7         Wed           8         Thr           9         Fri           10         Sat           11         Sun           12         Mon           13         Tue           14         Wed	WE FLOW	pH UNITS	BOD mg/L*	TSS mg/L	TEMP °C	pH UNITS	BOD mg/L*	BOD %	TSS mg/L	TSS %	E-Coli MPN/100 ml	P mg/L	Aluminum	Iren	Nitrogen	Oll & Grease	NH3-N
1         Imr           2         Fri           3         Sat           4         Sum           5         Mon           6         Tue           7         Wed           8         Thr           9         Fri           10         Sat           11         Sun           12         Mon           13         Tue           14         Wed	MGD	7.0	110	101	12.0	(0	(20	Reduction	2.1	Reduction	MITOIOUML		ugy L	ug/L	ug/L		mg/L-
2       Fri         3       Sat         4       Sun         5       Mon         6       Tue         7       Wed         8       Thr         9       Fri         10       Sat         11       Sun         12       Mon         13       Tue         14       Wed	0.92	1.8	110	151	13.0	0.0	~2.0	90.370	2.1	98.470							
3     Sat       4     Sun       5     Mon       6     Tue       7     Wed       8     Thr       9     Fri       10     Sat       11     Sun       12     Mon       13     Tue       14     Wed	0.05	0.0			12.2	0.0											
4         Sun           5         Mon           6         Tue           7         Wed           8         Thr           9         Fri           10         Sat           11         Sun           12         Mon           13         Tue           14         Wed	0.95	7.0		-	12.2	0.8				-							
S         Mon           6         Tue           7         Wed           8         Thr           9         Fri           10         Sat           11         Sun           12         Mon           13         Tue           14         Wed	0.98	7.8			11.5	0.8	-										
o         Tue           7         Wed           8         Thr           9         Fri           10         Sat           11         Sun           12         Mon           13         Tue           14         Wed	1.40	7.9	120	124	8,4	0./	20	09.59/	2.2	00 20/		c0.10	240.0	100	74	-6.7	-0.
/         wea           8         Thr           9         Fri           10         Sat           11         Sun           12         Mon           13         Tue           14         Wed	0.93	7.0	150	154	11.0	0.7	2.0	98.3%	2.3	98.3%		40.10	240.0	10.0	1.4	\$9.1	<0.1
a         Im           9         Fri           10         Sat           11         Sun           12         Mon           13         Tue           14         Wed	0.97	7.8	140	170	11.0	0.0	22	00 49/	20	00.00/							
y         rn           10         Sat           11         Sun           12         Mon           13         Tue           14         Wed           15         Thr	0.80	0.0	140	170	12.1	6.0	4.3	70.470	2.0	70.076				-			
IO         Sat           11         Sun           12         Mon           13         Tue           14         Wed           15         Thr	0.07	7.0			12.1	0.0			-								
11         Sur           12         Mon           13         Tue           14         Wed           15         Thr	1.02	2.0			11.0	6.7											
12 Mod 13 Tue 14 Wed	0.02	77			10.1	6.6									-		
14 Wed	0.90	77	120	110	10.1	67	00	08 7%	24	08 0%	1 1	c0 10	520.0	11.0			0.470
15 Thr	0.99	77	120	115	12.4	68	-2.0	20,770	2.7	70.070		-0.10	330.0	11.0			0.470
	0.95	79	100	135	14.8	67	25	97 5%	23	08 3%							
16 Eri	1.50	78	100	155	13.3	6.8	derand	51.576	4.0	70.570		-					
17 Sat	1.24	7.8	-		13.1	6.9											
18 Sun	1.59	7.8			12.2	6.9				-							
19 Mon	1.38	7.8			13.1	6.8								1			
20 Tue	115	7.8	170	184	14.7	6.9	<20	00 7%	11	00 4%		<0.10	<100.0	<10.0			-01
21 Wed	2.95	7.8	110	101	12.3	71	-6.0	37210	1.1	77.476		40.10	-100.0	~10.0			-0.1
22 Thr	1.87	7.8	57	58	12.0	7.0	24	95 8%	16	97 7%							
23 Fri	1.50	7.6	51		12.0	72		75.070	1.0	11.270							
24 Sat	3.87	7.5			12.5	7.1											
25 Sun	3.85	7.7			11.5	7.1						-					
26 Mon	1.96	7.7			11.5	7.2											
27 Tue	1.57	7.8	92	92	11.7	7.2	<2.0	98.8%	1.6	98.3%		<0.10	340.0	<10.0			<0.1
28 Wed	1.67	7.8			13.5	7.2											
# of Samp	28	28	8	8	28	28	8	8	8		0	4	4	4	1	1	4
Sum	40.86						1									-	
Average	1.46	1	115	128	12.0		< 2.0	98.2	1.9	98.3%	0	<0.10	290.0	9.2			0.16
Daily Max.	2 07	8.0	170	184	14.8	7.2	2.5		2.4		0	<0.10	530.0	16.0	74	<57	0.47
Daily Min.	2.0/	-					-	-				V & A V		A V · V	1 1 4 7		
Geo Mean	0.87	7.4	57	58	8.4	6.6	<2.0		1.1		0	<0.10			1.4	-0.1	

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					CC OPER	ATIONAL CO	NTROL PAR	AVETERS			
	OPDO		Settle	ability					Slud	ge Hauled	
Day	mg/L	MLSS mg/L	30 min	60 min	Temp °C	Rain	Weather	Time	Name	Gallons	Tb. dry wi
1	30	3845	240	220	44	0.00	0	0718	Name	Ganons	
2	31	3050	240	220	-10.6	0.00	PC	0710	-		
3	20	3737	240	220	-33	0.00	PC	0710			
4	20		240	220	-11	0.00	C	0705			
5	2.0	4059	260	220	-13.3	0.05	PC	0718			
6	2.8	4074	250	210	-7.2	0.00	PC	0715			
7	25	4007	250	220	-5.6	0.01	PC	0718			
8	22	4136	250	220	-72	0.00	PC	0717			
9	26	3965	210	190	-44	0.00	PC	0716			
10	21	5705	240	210	-1.7	0.00	0	0710			-
11	2.1		240	210	-56	0.02	0	0706			-
12	23	3703	230	200	-11.7	0.00	PC	0713			-
12	2.4	4092	220	200	-17	0.00	PC	0716			
14	3.7	3865	200	190	72	0.01	0	0703			-
15	23	3825	210	200	172	0.00	PC	0718			
16	2.5	4344	280	230	28	0.26	0	0705			
17	24	TTCT	280	240	17	0.60	R	0713			
18	2.4		280	240	-22	0.02	FPC	0704			
10	23		270	240	117	0.04	0	0703	A CONTRACTOR OF A CONTRACTOR O		-
20	2.0	4417	260	230	15.6	0.06	0	0716			
20	20	3108	180	170	-22	2.17	0	0710			-
21	25	4267	250	230	0.0	0.06	0	0719			
22	200	3020	240	210	44	0.25	0	0713			-
24	45	5727	150	150	72	2.70	0	0714			-
25	23		250	230	-22	0.72	EPC	0712			
26	2.0	4148	250	230	0.6	0.00	C	0719			
27	28	3980	250	230	-1.1	0.00	PC	0711	Contraction of the local division of the loc		
28	3.0	4306	250	230	94	0.37	0	0713			
20	5.0	4500		250	2.1	0.01	-	0115			
					-						
				-							-
VG	2.6	4006	240	215	0.0	7.34	Sum		Totals:	0.0	0 dry lbs =
-	-			•		2.70	Daily max.		1	0	gallons
						0.00	Daily min.		The same second second second	0.0000	dry tons
TESTS 2	Danita (	Care				TITLE	Lab Asst. II		PHONE # 417-337-8577	DATE 3-20-1	8
TESTS	APPROVED BY	de				TITLE	visor WWT Op	erations	PHONE # 417-337-8563	DATE 3-20-1	8

MIS DIN	SOUR ISION	OF ENVIR	MENT OF N	ATURAL RE	SOURCES	0.702.121		TIDE										
N.C.	NILL.	PACILITY	KING RECO	KD FOR W.	ASTEMATI	CK TREATS	ENTRACI.	LITES			-	COUNTING	EGION			-		
2.20	m. Or	a sector of	Cooper C	reek WWT			Cree		Branson			COUNTING	BUIUN	Tan	ey / Spring	ïeld		
10	THE	MONTHO	1	OUTEALL	CUMURER		PERMIT	UMBER	_			INTE TREE	MINT F	ATTELEDA				
		January 201	8		001				MO-0116599					Activated Slud	ge / Phosph	orus Remov	al	
			INFL	UENT					-			EFFLUENT						
n	AV	INE									1							
~	~	FLOW	pH UNITS	BOD mg/L*	TSS mg/L	TEMP °C	pH UNITS	BOD mg/L*	BOD %	TSS mg/L	TSS %	E-Coli	P mg/L	Aluminum	Iren	Nitrogen	Oll & Grease	NH3-N
		MGD							Reduction		Reduction	MPN/100 mL		Wg/L	ug/L	mg/L	my L	mg/L*
1	Mon	2.12	7.7			10.0	7.0											
2	Tue	1.42	7.9	180	295	9.2	6.9	<2.0	98.9%	<1.0	99.7%		<0.10	140.0	<10.0	10.0	<5.3	0.12
3	Wed	1.20	7.7			9.7	6.8											
4	Thr	1.08	7.8	120	131	11.5	6.8	<2.0	98.6%	1.2	99.1%							
5	FI	1.09	7.8			11.5	0.8										-	
0	Sat	1.01	7.0			11.0	6.0											
0	Mon	1.02	7.6			11.5	7.0											
0	The	1.32	7.8	110	84	11.9	69	22	98 0%	40	95.2%		<0.10	200.0	13.0			<0.10
10	Wed	1.11	77	110		12.8	6.9	de sde	10.070	1.0	13.4.10		-0.10	200.0	13.0			
11	Thr	1.00	7.7	95	135	14.3	6.9	2.3	97.6%	1.7	98.7%							
12	Fri	0.90	7.8			12.4	7.0											
13	Sat	0.97	7.7			11.6	6.9											
14	Sun	1.06	7.7			10.8	6.8											
15	Mon	0.96	7.7			9.7	6.7	-							and and			
16	Tue	0.92	7.7	160	158	7.7	6.6	2.4	98.5%	3.1	98.0%		<0.10	250.0	<10.0			0.15
17	Wed	1.31	7.6			7.7	6.8											
18	Thr	0.94	7.8	110	235	9.3	6.8	<2.0	98.4%	2.2	99.1%						and the second	
19	Fri	1.11	7.9			10.5	6.7		-							-		
20	Sat	0.99	8.0			10.8	6.8											
21	Sun	1.04	7.8			10.9	6.8									-		
22	Mon	2.14	7.8			11.4	7.1											
23	Tue	1.74	7.8	120	344	11.0	7.1	2.7	97.8%	2.0	99.4%		<0.10	170.0	26.0			0.10
24	Wed	1.08	7.8	100	105	11.1	7.0	-	00.54	1.0	00.000							
25	Thr	1.00	7.8	100	195	11.7	7.0	<2.0	98.5%	1.5	99.2%				-	-		
26	FI	0.95	1.8			12.2	7.0											
20	Sat	1.02	7.0			11.7	7.0											
20	Man	1.15	77		-	11.7	7.0										1000	
30	Tue	0.96	7.9	200	234	10.7	6.9	2.0	99.0%	1.8	99.2%		<0.10	640.0	20.0		-	0.12
31	Wed	0.91	8.0	200	au T	11.6	6.8	ANY		1.0								
# of	Samp	31	31	9	9	31	31	9	9	9	9	0	5	5	5	1	1	5
Sum		36.12			2. 2. 2	1000		1.15.2.1	Lans			Lange F			-			
Ave	rage	1.17	1	133	201	11.0		2.1	98.4%	2.0	98.6%		<0.10	280.0	13.8	2		0.11
Dail	y Max.	2.14	8.0	200	344	14.3	7.1	2.7		4.0		0	<0.10	640.0	26.0	10.0	<5.3	0.12
Dail	y Min.	0.90	7.6	95	84	7.7	6.6	<2.0	1	< 1.0		0	<0.10				- Elini	
Geo	Mean	-	-					2.0		1.9	-	0	<0.10					

CC OPERATIONAL CONTROL PARAMETERS											
Day	O.B. DO mg/L	MLSS mg/L	Sattlashility		Temp °C	Rain	Weather	Time	Sludge Hauled		
			Settleability								lb. dry wt.
			30 min	60 min		in.		0.554	Name	Gallons	
1	4.9		300	270	-18.3	0.00	C	0704			
2	3.5	4447	300	260	-16.1	0.00	PC	0713			
3	3.7	4078	270	240	-8,9	0.00	C	0712			
4	2.3	4216	260	240	-13.3	0.00	C	0714			
5	2.3	3840	280	250	-12.2	0.00	С	0708			
6	2.8		280	260	-8.3	0.00	C	0713	1.0		
7	2.5		260	230	-3.3	0.00	O,R	0705			-
8	2.1	4174	260	230	2.2	0.98	0	0706			
9	2.8	4035	250	230	0.6	0.00	F,O	0717			A CONTRACTOR
10	2.6	4039	260	230	2.2	0.00	PC	0719			-
11	2.7	4097	250	240	12.2	0.00	0	0718			
12	3.1	3723	250	230	-11.1	0.00	PC	0709			
13	3.2		250	230	-9.4	0.00	PC	0713			
14	3.2		290	220	-11.7	0.01	S	0706			
15	2.9		220	200	-6.6	0.14	S	0704			
16	2.7	3835	230	210	-20.6	0.10	PC	0712			
17	3.6	3906	230	210	-19.4	0.00	0-C	0721			
18	2.4	3954	250	230	-16.7	0.00	C	0721			
19	2.6	4090	250	230	-10.0	0.00	PC	0702			
20	2.5		280	250	1.7	0.00	0	0709			
21	2.7		270	250	0.0	0.00	C	0705			-
22	25	3461	210	190	3.0	1.66	C	0711	1		-
23	2.4	4053	260	240	-0.6	0.00	0	0715			
24	3.2	4100	250	240	-67	0.00	C	0604			-
25	3.5	4282	280	260	-7.2	0.00	C	0710			
26	20	4202	230	250	0.0	0.00	0	0706			
27	2.5	CFCF	270	250	7.8	0.39	0	0711			-
28	2,0		250	240	67	0.00	C	0704			-
20	2.0	1262	250	240	-0.7	0.00	0	0711		-	-
30	20	4203	250	240	-3.5	0.00	PC	0716			
31	2.0	3841	230	230	-1.0	0.00	PC	0716			
JI	2.0	1042	250	210	5.0	2.07	IC IC	0/10	Totals		0 day the m
AVG 2.9 4045 259 255 -5.9						166 Deliveren					
						0.00	Daily max.			0.0000	ganons dry tons
TESTS PREFORMED BY						TITLE	Cary min.		PHONE #	DATE	ury tons
Damla Carr						Lab Asst. II			417-337-8577	2-20-18	
Di den						TITLE Supervisor WWT Operations			PHONE # 417-337-8563	DATE 2-20-18	
FACILITY NAME	reek		PERMIT NO.	00		OUTFALL	NO.				
---	--	---	---	--	---	---	--	--	---		
PART B - ADDITIONAL APPLICATION INFORMATION											
14. EFFLUENT	TESTING	DATA									
Applicants must pro through which eff reported must be b comply with QA/QC not addressed by 4 more than four and	ovide effluer <b>luent is dis</b> ased on dat C requireme IO CFR Part I one-half ye	nt testing dat charged. De ta collected to nts of 40 CFI 136. At a m ears apart.	a for the follow o not include i hrough analys R Part 136 an inimum, efflue	ving param information is conducte d other app ent testing c	eters. Provide of combined s ed using 40 CF propriate QA/Q data must be b	the indicated e ewer overflows R Part 136 me C requirements ased on at leas	effluent data s in this section thods. In add s for standard st <b>three sam</b>	for each on. All int dition, this methods ples and	outfall formation s data must s for analytes must be no		
Outfall Number											
PAR	AMETER		MAXIN	NUM DAIL	VALUE	1	VERAGE D	AILY VAL	UE		
			Va	lue	Units	Value	Units	Numb	er of Samples		
pH (Minimum)			6.1	6	S.U.	6.8	S.U.	3	65		
pH (Maximum)			7.	6	S.U.	7.3	S.U.	31	.5		
Flow Rate			4,	51	MGD	1.66	MGD 365				
*For pH report a m	inimum and	a maximum	daily value								
DOLLUTA	N		JM DAILY HARGE	AVER	AGE DAILY D	SCHARGE	ANALYTICAL				
POLLUTA	NI	Conc.	Units	Conc.	Units	Number of Samples	METH	IOD	ML/MDL		
Conventional and I	Nonconventi	ional Compo	unds								
BIOCHEMICAL OXYGEN	BOD <sub>5</sub>	9.3	mg/L	2.3	mg/L	103	SM 5210	в			
DEMAND (Report One)	CBOD <sub>5</sub>		mg/L		mg/L						
E. COLI		8.5	#/100 mL	1.1	#/100 mL	35					
TOTAL SUSPEND SOLIDS (TSS)	ED	10.4	mg/L	1.6	mg/L	104	5M 8540 D				
AMMONIA (as N)		0,47	mg/L	0.11	mg/L	52	EDA 350	1-00			
CHLORINE* (TOTAL RESIDUA	L, TRC)		mg/L		mg/L		5m 4500-Cl 6	*			
DISSOLVED OXY	GEN		mg/L		mg/L		5m 4500-0	G			
OIL and GREASE	_	5.8	mg/L	5.4	mg/L	12	EPA 16	64			
OTHER MIT T	OTAL NITE	GEN 19	mg/L	12.9	mg/L	12					
*Report only if facil	ity chlorinate	es		_							
				END OF	PARTB						

780-1805 (09-16)

Page 7

CC 2018 UD PH min, max BOD TSS Ecol 6.8-7.6 8 4.2 - 10.4 4.8 9.3 51-2 6.8-7.5 9 1.9 - 3.6 (4) 1 - 1 2.6 4.6 1.3 - 2.8 7.0 - 7.3 91-2 2.0 2.0 1.0 - 1.2 7.0 - 7.6 51.1 2.0 2.0 6.9 - 7.2 91-1 9 1.0 - 1.0 2.0 2.0 9 5 2.1-8.5 1.0 - 1.0 6.8 - 7.2 2.0 2.7 \$ 1.0 - 1.2 91-2 1.9 - 7.2 2.0 2.0 101.3 - 4.3 (4) 1 - 1 6.9.7.2 2,0 2.0 1.1 BIS MAY \$ 1.0 - 1.7 6.9 - 7.2 2.0 2.0 91.0-1.7 6.8.7.2 (35 samples) 2.1 20 (8) 1.9 - 2.4 6.6 - 7.2 2.5 2.0 9 2.0 - 4.0 6.6 - 7.1 2.7 2.1 (9.3 229 104)1.6 - 10.4 6.B = 7.6 618AUS - 7. 3AUS 103 SrAmples Flow AUG - MAY Ammonia 1.17 (4) , 1 , 13 1.62 2.71 2.14 19.16.47 1.69 3.0 1.66 4.51 Ø - 1 , 1 B +++ 12 1.6 AUG 315 MAX 2.56 52).11 .47 , 1 .1 1.62 (5) 2.60 9 , 1 .1 1.69 (7) 2.49 .1 , 1 1.82 2.04 5 2.22 , 1 1, .1 2.62 1.94 (4) .1 3.32 .1 1.63 (5) .14 1.58 2,50 (9) , 1 .11 4.51 1,66 (2) .1 .1 3.87 1.46

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5,4	18	and the second	
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5.8	8.6		
5.7	7.4		
(12) 5.3	(12) 5.3	the second second	
5.4 5.8	12.9 19		
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# Annual Report 2018

Sanitary Sewer System Maintenance and Repair Report Cooper Creek WWTP Permit #: MO 0116599

# UTILTIES DEPARTMENT

616 W Pacific Street Branson, MO 65616

.

Phone 417-243-2731 Fax 417-334-9518

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## Sanitary Sewer Overflows (SSO)

A dry weather event occurred on July 23<sup>rd</sup>, 2018. Our sewer collection crew was conducting routine maintenance checking a section of sewer easement and found the manhole overflowing. A crew was immediately dispatched to the site to unplug the sewer main. They found that roots had grown in the manhole through a seam and plugged the outlet pipe. After unplugging the sewer they washed the area down and used a pump truck to vacuum up 2,200 gallons of sewer located at a drainage pool where the water had stopped. Lime was then added to the spill area. The spill was located east of 3220 Falls Parkway. The manhole is located 30 feet south of Falls Parkway at a lower elevation where you cannot see it directly from the road. The event was discovered at 10:13 a.m. and stopped by 11:15 a.m. The roots have been removed to prevent further plugging.

### Collection System Infiltration and Inflow (I&I) Reduction

Identifying I&I consist of the following:

- Closed-Circuit Television (CCTV) Inspection: Utilities staff use a CCTV robotic camera to video and record one-thousand-three-hundred-forty-one (1341) feet of pipe, inspecting the interior integrity and identifying sources of I&I.
- Visual Inspection: Utilities staff have visually inspected one-hundred-eighty-six (186) manholes for defects, blockages, and I&I.

I&I reduction consist of the following:

- Manhole Rehab and Repair: Utilities staff repaired zero (0) manholes to eliminate I&I.
- Main Line Repair: Utilities staff excavated and made repairs to zero (0) sections of broken sanitary sewer main.
- Plan Review and Inspection: Utilities staff reviews plans for new building construction, repair work to be performed on existing private building sewers and public sanitary sewer main extensions. The review and inspection of these projects is essential to limit I&I to a minimal amount.

#### **Collection System Maintenance and Repair**

#### Manholes

**Debris Removal:** Utilities staff cleaned and removed debris from six (6) manholes to prevent blockages and SSO events.

#### Sanitary Sewer Mains

**Jet Cleaning:** Utilities staff used a flushing machine to clean (2160) twothousand-one-hundred-sixty feet of sanitary sewer main, removing grease and debris to eliminate blockages.

**Saw Cutting:** Utilities staff used a flushing machine with a root saw to cut out twenty (20) feet of sanitary sewer main to remove intrusions.

#### Force mains

**Replacement of Lift Station #41 force main.** This project consisted of replacing (700) seven-hundred feet of (3) three inch diameter force main that has been repaired multiple times in the past.

#### Easements

**Clearing:** Utilities staff used an excavator, skid steer, chain saws, and a mulching machine to clear out (4748) four-thousand-seven-hundred-forty-eight feet of sanitary sewer easement to allow access for inspection and maintenance.

#### Geographic Information System (GIS)

**Data Collection:** Utilities staff used a GPS unit to map the location of (8) eight manholes to add data to our GIS mapping system.

#### **Capital Projects**

**Repair of flood damage around existing manholes and sewer main.** This capital project was completed in 2018. This project consisted of eighteen (18) total sanitary sewer related site repairs. Flood waters had eroded embankment material away from fourteen (14) manholes and four (4) sanitary sewer mains. The goal of the project was to protect and stabilize the area around these sites with heavy rip rap material for ground stabilization. Four (4) of these fourteen (14) manhole sites and the four (4) sanitary sewer mains fall within the Cooper Creek system. These sites are identified as manholes mh963, mh993, mh994, and mh1298. The sanitary sewer mains are identified as line upstream of mh692A, line between mh877 and mh877B, line upstream of mh989 and line upstream of mh1294.

#### **Collection System Maintenance and Repair for 2019**

**Implement Maintenance by Watershed program.** The City of Branson is responsible for two different sanitary sewer systems which convey sewer to our Compton Drive system and Cooper Creek system. These (2) two basins consist of (8) eight watersheds in which we will begin focusing preventative maintenance by selecting a watershed based from weight factors. These factors include, but not limited to age of infrastructure, construction type, increase of flow during rain events, documented issues, CCTV work, and urgency.

#### **Capital Projects**

**Sewer Rehab.** The city has budgeted \$350,000 for 2019 to contract out rehab, repair and replacement of prioritized sanitary sewer mains and manholes. We plan to CIPP line sanitary sewer mains, epoxy coat manholes affected by hydrogen sulfide, point repair sanitary sewer mains and complete replacement of sanitary sewer mains in selected areas to help limit and reduce I&I as well as to prevent structural failures.

**Lift Station Upgrade.** Lift Station #34 is located off Missouri Route 165 near Table Rock Dam and serves the surrounding area. Lift Station #34 has had the pumps replaced, but additional improvements are still necessary. The project consists of constructing a new equalization basin prior to the wet well and a new diesel generator with transfer switch.

**GIS.** Utilities staff will continue updating GPS point locations of sewer manholes with survey grade data collector. This will help illustrate our system needs to further our maintenance program.

# CC EXPANded EFFLUENT

Part D 17

# PDC Laboratories, Inc.

St. 1 55

PROFESSIONAL • DEPENDABLE • COMMITTED

February 08, 2019

# RECEIVED MAR 2 9 2019

Water Protection Program

Tim Glenn Branson, City of 616 W Pacific St Branson, MO 65611

Dear Tim Glenn:

Please find enclosed the analytical results for the sample(s) the laboratory received on **1/24/19 9:55 am** and logged in under work order **9013842**. 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 Director of Client Services, Lisa Grant with any feedback you have about your experience with our laboratory.

Sincerely,

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





## PDC Laboratories, Inc.

1805 West Sunset Street Springfield, MO 65807 (417) 864-8924

#### ANALYTICAL RESULTS

Sample:9013842-01Name:CC Effluent CompositeMatrix:Waste Water - Composite				Sampled: Received:	01/24/19 ( 01/24/19 (	)7:21 )9:55
Parameter	Result	Unit	Qualifier Prepared	Analyzed	Analyst	Method
General Chemistry - SPMO						
Hexavalent chromium	< 0.0050	mg/L	01/24/19 15:46	01/24/19 15:46	RRG	SM 3500-Cr D*
Trivalent chromium	< 0.0050	mg/L	02/04/19 14:31	02/05/19 13:17	RRG	calculation
Total Metals - PIA						
Aluminum	0.12	mg/L	01/28/19 10:03	02/05/19 14:28	TJJ	EPA 200.7
Antimony	< 0.0030	mg/L	01/28/19 10:03	01/31/19 12:19	KMC	EPA 200.8
Arsenic	< 0.0010	mg/L	01/28/19 10:03	01/31/19 12:19	KMC	EPA 200.8
Beryllium	< 0.0010	mg/L	01/28/19 10:03	01/31/19 12:19	KMC	EPA 200.8
Cadmium	< 0.0010	mg/L	01/28/19 10:03	01/31/19 12:19	KMC	EPA 200.8
Calcium	49	mg/L	01/28/19 10:03	02/05/19 14:26	TJJ	EPA 200.7
Chromium	0.0053	mg/L	01/28/19 10:03	01/31/19 12:19	KMC	EPA 200.8
Chromium	< 0.0040	mg/L	02/04/19 14:31	02/05/19 13:17	TJJ	EPA 200.7
Copper	0.0075	mg/L	01/28/19 10:03	01/31/19 12:19	KMC	EPA 200.8
Iron	< 0.010	mg/L	01/28/19 10:03	02/05/19 14:28	TJJ	EPA 200.7
Lead	< 0.0010	mg/L	01/28/19 10:03	01/31/19 12:19	KMC	EPA 200.8
Magnesium	19	mg/L	01/28/19 10:03	02/05/19 14:26	TJJ	EPA 200.7
Mercury	< 0.00020	mg/L	01/30/19 13:28	01/30/19 14:44	TAT	EPA 245.1
Nickel	< 0.0050	mg/L	01/28/19 10:03	01/31/19 12:19	KMC	EPA 200.8
Selenium	< 0.0020	mg/L	01/28/19 10:03	01/31/19 12:19	KMC	EPA 200.8
Silver	< 0.0050	mg/L	01/28/19 10:03	01/31/19 12:19	KMC	EPA 200.8
Thallium	< 0.0010	mg/L	01/28/19 10:03	01/31/19 12:19	KMC	EPA 200.8
Total Hardness as CaCO3	200	mg/L	01/28/19 10:03	02/05/19 14:26	TJJ	SM 2340B
Zinc	0.027	mg/L	01/28/19 10:03	01/31/19 12:19	KMC	EPA 200.8



#### **PDC Laboratories, Inc.** 1805 West Sunset Street

Springfield, MO 65807 (417) 864-8924

#### ANALYTICAL RESULTS

#### Sample: 9013842-02 Sampled: 01/24/19 07:23 Name: CC Effluent Grab Received: 01/24/19 09:55 Waste Water - Grab Matrix: Parameter Result Unit Qualifier Prepared Analyzed Analyst Method **General Chemistry - PIA** Cyanide < 0.0050 mg/L 01/29/19 08:47 01/29/19 15:16 SAH EPA 335.4 Phenolics < 0.0050 mg/L 01/31/19 11:42 02/01/19 10:24 SAH EPA 420.4 Semivolatile Organics - PIA 1,2,4-Trichlorobenzene < 10 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 ug/L 02/01/19 15:16 CRS 1.2-Dichlorobenzene < 10 01/29/19 08:14 EPA 625 CRS 1,2-Diphenylhydrazine < 10 ug/L 01/29/19 08:14 02/01/19 15:16 EPA 625\* 1,3-Dichlorobenzene < 10 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 < 10 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 1.4-Dichlorobenzene 2,4,6-Trichlorophenol < 20 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 ug/L 01/29/19 08:14 02/01/19 15:16 CRS 2,4-Dichlorophenol < 8.9 EPA 625 2,4-Dimethylphenol < 10 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 01/29/19 08:14 02/01/19 15:16 CRS 2,4-Dinitrophenol < 20 ug/L EPA 625 2,4-Dinitrotoluene < 10 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 2,6-Dinitrotoluene < 10 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 ug/L 2-Chloronaphthalene < 10 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 2-Chlorophenol < 10 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 CRS 2-Nitrophenol < 10 ug/L 01/29/19 08:14 02/01/19 15:16 EPA 625 01/29/19 08:14 02/01/19 15:16 CRS EPA 625\* 3,3'-Dichlorobenzidine < 20 ug/L 4,6-Dinitro-2-methylphenol < 50 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 4-Bromophenyl phenyl ether CRS < 10 ug/L 01/29/19 08:14 02/01/19 15:16 EPA 625 4-Chloro-3-methylphenol < 10 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 4-Chlorophenylphenyl ether < 10 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 CRS 4-Nitrophenol < 20 ug/L 01/29/19 08:14 02/01/19 15:16 EPA 625 Acenaphthene < 10 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 < 10 ug/L Acenaphthylene < 10 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 Anthracene ug/L CRS 01/29/19 08.14 02/01/19 15:16 **EPA 625** < 80 Benzidine ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 Benzo(a)anthracene < 10 02/01/19 15:16 < 5.0 ug/L 01/29/19 08:14 CRS **FPA 625** Benzo(a)pyrene 01/29/19 08:14 CRS EPA 625 Benzo(b)fluoranthene < 10 ug/L 02/01/19 15:16 Benzo(g,h,i)perylene < 10 ug/L 01/29/19 08:14 02/01/19 15:16 CRS **EPA 625** < 10 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 ug/L Benzo(k)fluoranthene ug/L Bis(2-chloroethoxy) methane < 10 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 CRS < 5.0 01/29/19 08:14 02/01/19 15:16 EPA 625 Bis(2-chloroethyl) ether ug/L < 4.4 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 Bis(2-ethylhexyl) phthalate < 10 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 Butyl benzyl phthalate 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 Chrysene < 10 ug/L < 10 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625 Dibenzo(a,h)anthracene Diethyl phthalate < 10 ug/L 01/29/19 08:14 02/01/19 15:16 CRS EPA 625

Dimethyl phthalate

01/29/19 08:14

< 10

ug/L

CRS

02/01/19 15:16

EPA 625



#### PDC Laboratories, Inc.

Sampled: 01/24/19 07:23

Received: 01/24/19 09:55

1805 West Sunset Street Springfield, MO 65807 (417) 864-8924

#### ANALYTICAL RESULTS

#### Sample: 9013842-02 Name: CC Effluent Grab Matrix: Waste Water - Grab

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method	
Di-n-butyl phthalate	< 10	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
Fluoranthene	< 10	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
Fluorene	< 10	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
Hexachlorobenzene	< 5.0	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
Hexachlorocyclopentadiene	< 20	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
Hexachloroethane	< 5.0	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
Indeno(1,2,3-cd)pyrene	< 10	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
Isophorone	< 10	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
Naphthalene	< 10	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
Nitrobenzene	< 10	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
N-Nitrosodimethylamine	< 10	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
N-Nitrosodi-n-propylamine	< 5.0	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
N-Nitrosodiphenylamine	< 10	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
Pentachlorophenol	< 10	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
Phenanthrene	< 10	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
Phenol	< 10	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
Pyrene	< 10	ug/L		01/29/19 08:14	02/01/19 15:16	CRS	EPA 625	
Volatile Organics - PIA								
1,1,1-Trichloroethane	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
1,1,2,2-Tetrachloroethane	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
1,1,2-Trichloroethane	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	111	EPA 624	
1,1-Dichloroethane	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
1,1-Dichloroethene	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
1,2-Dichloroethane	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
1,2-Dichloropropane	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
2-Chloroethylvinyl ether	< 5.0	ug/L		01/25/19 12:06	01/25/19 15:45	JJI	EPA 624	
Acrolein	< 50	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
Acrylonitrile	< 10	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
Benzene	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
Bromodichloromethane	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
Bromoform	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
Bromomethane	< 10	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
Carbon tetrachloride	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
Chlorobenzene	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
Chloroethane	< 10	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
Chloroform	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
Chloromethane	< 10	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
cis-1,3-Dichloropropene	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
Dibromochloromethane	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
Ethylbenzene	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
Methylene chloride	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	
Tetrachloroethene	< 5.0	ug/L		01/31/19 10:31	01/31/19 20:22	JJI	EPA 624	



#### PDC Laboratories, Inc.

1805 West Sunset Street Springfield, MO 65807 (417) 864-8924

#### ANALYTICAL RESULTS

Samp	e: 9013842-02	Sampled: 01/24/19 07:23
Name	CC Effluent Grab	Received: 01/24/19 09:55
Matrix	Waste Water - Grab	

Parameter	Result	Unit	Qualifier Prepared	Analyzed	Analyst	Method
Toluene	< 5.0	ug/L	01/31/19 10:31	01/31/19 20:22	JJI	EPA 624
trans-1,2-Dichloroethene	< 20	ug/L	01/31/19 10:31	01/31/19 20:22	JJI	EPA 624
Trichloroethene	< 5.0	ug/L	01/31/19 10:31	01/31/19 20:22	JJI	EPA 624
Vinyl chloride	< 5.0	ug/L	01/31/19 10:31	01/31/19 20:22	JJI	EPA 624



#### NOTES

Specific method revisions used for analysis are available upon request.

#### Certifications

CHI - McHenry, IL

TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100279 Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17556

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)

SPIL - Springfield, IL

NELAP/NELAC accredidation through the Illinois EPA, PAS IL 100323

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 Accreditation of Laboratories for Wastewater, Hazardous, and Solid Waste Analysis through IL EPA No. 200080 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

#### **CHAIN OF CUSTODY RECORD**

FAX# 417-864-7081

PHONE # 417-864-8924

State where samples collected \_\_\_\_\_MO\_\_\_\_\_

		ALL HIGHLI	GHTED AREA	S MUST BE	COMPLE	ETED BY CLI	ENT (PLEAS	E PRII	NT)						
	PROJECT NUMBER		PROJECT NUMBER P.O. NUMBER MEANS S		SHIPPED	3	) AN	ANALYSIS REQUESTED					(FOR LAB USE ONLY)		
ADDRESS CU WWTP LAB		PHONE NU	WBER	FAX NUM	BER	DATE S	HIPPED	Cu	1, Fe	semp		VE)			LOGIN # 90/3842
CITY, STATE ZIP BRANSON, MO 65616		SANPLER	m -/in Fr.	ench		MATRIX T WW- WASTE DW- DRINKIN	YPES: WATER IG WATER	cd,Cr,	ie,Sb,1	+3, Har		624CE			LAB PROJ. # TEMPLATE:
CONTACT PERSON		SAMPLER'S SIGNATURE	A			WWSL- SLUD NAS- SOLID LCHT-LEACH	INTE	As,Be,(	Hg,Ni,S	AI, CR	Pheno	C(624)(	DC(625		PROJ. MGR.: CHAD COOPER
SAMPLE DESCRIPTION AS YOU WANT ON REPORT		DATE COLLECTED	TIME	SAMPL D GRAB	E TYPE COMP	MATRIX TYPE	BOTTLE COUNT	Ag,	Pb,	Zn,	CN,	Ň	SVC		REMARKS
EFFLUENT COMPOSITE		1-24-19	0721		x	ww	3	x	X	X					-2-P, 250ml, HNO3
EFFLUENT GRAB		1-24-19	0773	x		ww	8				X	X	X	$\rightarrow$	-1- P, 1L, Unp
														<u> </u>	
														T	2-A.G. IL, Unp
															1- P, SOOme, Nabt
															1-A.G. 250-2, H2504
															3 C, V, 40ml, HCC
									+						(- C, V, YUM, Unp
													_		
5 TURNAROUND TIME REQUESTED (PLEASE CIRCL (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND S RUSH RESULTS VIA (PLEASE CIRCLE) FAX PHO FAX & IF DIFFERENT FROM ABOVE: PHONE & IF DIFFERENT	E) NORMAL URCHARGE) NE ENT FROM ABOVE :	RUSH	DATE	RESULTS N	EEDED	٠	The sample this area you the sample t this area you sample temp	temper u reque temper u allow peratur	ature i st that ature is the lai *	wiil be t the la s outsi b to pr	measu b noti de of l oceed	ured u fy you, the ran with a	pon re , befor nge of ( nalytic	ceipt a e proc 0.1-6.0 cal tes	et the lab. By initialing eoding with analysis, if <sup>P</sup> C. By not initialing ting regardless of the
RELINQUISHED BY: (SIGNATURE)	DATE 1-24-19 TIME 0750	P RECEIV	ed By: (SIGNA	ature)	- CĽ_		DATE	14-1 156	19		8	CC	MME	NTS: (F	FOR LAB USE ONLY)
RELINQUISHED BY: (SIGNATURE)	DATE 1-24-19 TIME 085-	RECEIV	tacer		olf	1	DATE /-	-24	-19 -5	SA CH SA	MPLE	TEMP ROCES	ERATI	URE U NRTED	PON RECEIPT <u>()</u> OR N PRIOR TO RECEIPT () CE () VIOR N
RELINQUISHED BY: (SIGNATURE)	DATE	RECEIV	ED BY: (SKONA	TURE)	C		DATE			PR BC SA (E) DA	OPER TTLES MPLE (CLUD TE AN	BOTT S FILL S REC DES TY	LIES R ED WI EIVED PICAL E TAK	ECEIV TH AD WITH FIELD	ED IN GOOD CONDITION YOR N EQUATE VOLUME YOR N IN HOLD TIME(S) YOR N D PARAMETERS) OM SAMPLE BOTTLE

Page \_

#### SUBCONTRACT ORDER Transfer Chain of Custody

PDC Laboratories, Inc.

9013842

#### SENDING LABORATORY

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

# Sample: 9013842-01

Name: CC Effluent Composite

#### RECEIVING LABORATORY

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

Sampled:01/24/19 07:21Matrix:Waste WaterPreservative:HNO3, pH <2</th>

Analysis	Due	Expires	Comments
Ag 200.8 WW Tot	02/05/19 16:00	07/23/19 07:21	
AI 200.7 WWTot	02/05/19 16:00	07/23/19 07:21	
As 200.8 WW Tot	02/05/19 16:00	07/23/19 07:21	
Be 200.8 WW Tot	02/05/19 16:00	07/23/19 07:21	
Ca 200.7 WWTot	02/05/19 16:00	07/23/19 07:21	
Cd 200.8 WW Tot	02/05/19 16:00	07/23/19 07:21	
Cr 200.7 WW Tot	02/05/19 16:00	07/23/19 07:21	
Cr 200.8 WW Tot	02/05/19 16:00	07/23/19 07:21	
Cu 200.8 WWTot	02/05/19 16:00	07/23/19 07:21	
EPA 200.2	02/05/19 16:00	02/21/19 07:21	
EPA 200.8	02/05/19 16:00	02/21/19 07:21	
Fe 200.7 WWTot	02/05/19 16:00	07/23/19 07:21	
Hg 245.1	02/05/19 16:00	02/21/19 07:21	
Mg 200.7 WWTot	02/05/19 16:00	07/23/19 07:21	·
Ni 200.8 WW fot	02/05/19 16:00	07/23/19 07:21	
Pb 200.8 WWTot	02/05/19 16:00	07/23/19 07:21	
Sb 200.8 WWTot	02/05/19 16:00	07/23/19 07:21	
Se 200.8 WWTot	02/05/19 16:00	07/23/19 07:21	
TI 200.8 WWTot	02/05/19 16:00	07/23/19 07:21	
Zn 200.8 WWTot	02/05/19 16:00	07/23/19 07:21	

#### SUBCONTRACT ORDER Transfer Chain of Custody

#### PDC Laboratories, Inc.

9013842

#### SENDING LABORATORY

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

> Sample: 9013842-02 Name: CC Effluent Grab

#### RECEIVING LABORATORY

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

> Sampled: 01/24/19 07:23 Matrix: Waste Water Preservative: NaOH, cool <6

Analysis	Due	Expires	Comments	
CN-T	02/05/19 16:00	02/07/19 07:23		
M624	02/05/19 16:00	02/07/19 07:23		
M624 2-Chloroethylvinyl ether	02/05/19 16:00	01/31/19 07:23		
M625	02/05/19 16:00	01/31/19 07:23		
Phenol	02/05/19 16:00	02/21/19 07:23		
	N.			

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

Date Shipped: 1-24-19 Total # of Containers: 10	Sample Origin (State): MO PO #:
Turn-Around Time Requested 💢 NORMAL 🔲 RUSH	Date Results Needed:
1400	Sample Temperature Upon ReceiptC
Stacen Wolf 1-24-19	Sample(s) Received on Ice
Relinquished/By Date/Time Received By	Date/Time Proper Bottles Received in Good Condition
	Bottles Filled with Adequate Volume
March 11	25/19 11:55 Samples Received Within Hold Time () or N
Relinquished By Date/Time Received By	Date/Time Date/Time Taken From Sample Bottle Y or N

# PDC Laboratories, Inc.

**PROFESSIONAL • DEPENDABLE • COMMITTED** 

March 08, 2018

MAR 2 9 2019

Water Protection Program

Mike Ray Branson, City of 616 W Pacific St Branson, MO 65611

Dear Mike Ray:

Please find enclosed the analytical results for the sample(s) the laboratory received on 2/19/18 9:23 am and logged in under work order 8022863. 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.

2018 Chronic Toxicity Part E 18

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





#### ANALYTICAL RESULTS

Sample: Name:					Sampled: Received:		
Reg ID:					PO #:		
Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method



#### NOTES

Specific method revisions used for analysis are available upon request.

#### **Certifications**

CHI - McHenry, IL

TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100279 Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17556

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 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

TNI

Certified by: Chad Cooper, Laboratory Supervisor



Pace Analytical Services, Inc. 9608 Loiret Blvd. Lenexa, KS 66219 Phone: 913.599.5665 Fax: 913.599.1759

February 28, 2018

PDC Laboratories, Inc 1805 W. Sunset St Springfield, MO 65807

Re: Lab Project Number: 60264291 Client Project ID: Wet Test

Dear:

Enclosed are the analytical results for sample(s) received by the laboratory. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any question concerning this report, please feel free to contact me.

Sincerely,

s.m. Handl

Tim Harrell Tim.Harrell@pacelabs.com **Technical Director** 







**REFERENCE #60264291** 

Pace Analytical Services, Inc. 9608 Loiret Blvd. Lenexa, KS 66219 Phone: 913.599.5665 Fax: 913.599.1759

#### CHRONIC TOXICITY TEST FOR City of Branson (Cooper Creek)

PERMIT # MO-0116599

PERFORMED ON:

Pimephales promelas

and

Ceriodaphnia dubia

PREPARED FOR:

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

PREPARED BY: Pace Analytical Services, Inc. 808 West McKay Frontenac, KS 66763 1-620-235-0003

February 28, 2018

# **REPORT OF LABORATORY ANALYSIS**





**REFERENCE #60264291** 

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Pace Analytical Services, Inc. 9608 Loiret Blvd. Lenexa, KS 66219 Phone: 913.599.5665 Fax: 913.599.1759

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#### SUMMARY

A Chronic Whole Effluent Toxicity Test using the 7-day chronic fathead minnows (<u>Pimephales promelas</u>), static renewal larval survival and growth test, and three brood 7-day chronic Cladoceran (<u>Ceriodaphnia dubia</u>), static renewal survival and reproduction test, was conducted on effluent discharge water collected at City of Branson (Cooper Creek) effluent discharge from February 19, 2018 to February 23, 2018. All the test methods followed are as listed in <u>EPA 821-R-02-013</u>, "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms."

Statistically significant (p<0.05) mortality is determined by Dunnet's procedure using average percent survival of each test concentration versus the average survival of the controls. If significant mortality occurs, median lethal concentrations (LC50) are calculated using effluent concentrations and their corresponding percent mortality data. The LC50's and the 95% confidence intervals are calculated where appropriate by the Spearman-Karber method. Statistical analysis is accomplished by following steps in EPA 821-R-02-013, November 2002 and by use of Toxstat version 3.4.

In minnow section of testing, it was observed that the effluent had no significant effect on the survival of the larvae at the 100% concentration. No significant mortality was observed in the other effluent concentrations after the 7-day exposure period. The No Observed Effect Concentration (NOEC) was determined to be 100% for survival. The LC50 was estimated to be >100% effluent. No significant reduction in growth was observed in the 100% effluent concentration. The Toxic Units is <1. The IC25 is >100. The NOEC for growth in effluent was determined to be 100%.

In Cladoceran section of testing, it was observed that the effluent had no significant effect on the survival of the organisms in the 100% effluent concentration. No significant mortality was observed in the other effluent concentrations after the 7-day exposure period. The No Observed Effect Concentration (NOEC) was determined to be 100% for survival. The LC50 was estimated to be >100% effluent. No significant reduction in reproduction was observed in the 100% effluent concentrations. The Toxic Units is <1. The IC25 is >100. The NOEC for reproduction in effluent was determined to be 100%.

The chronic toxicity exhibited by the fathead minnows and the <u>Ceriodaphnia</u> treated by the effluent sampled from February 19 to February 23 from City of Branson (Cooper Creek) effluent discharge, is acceptable as described in <u>EPA</u> 821-R-02-013.

#### **REPORT OF LABORATORY ANALYSIS**







#### INTRODUCTION

Pace Analytical was contracted to perform this chronic toxicity test on effluent from City of Branson (Cooper Creek) effluent discharge. Chronic toxicity was measured using the <u>Pimephales promelas</u> at larval for survival and growth test and the <u>Ceriodaphnia dubia</u> survival and reproduction test described in <u>EPA 821-R-02-013</u>, "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms." The raw data of the study is stored at Pace Analytical Services, INC. 808 West McKay, Frontenac, KS 66763.

#### TEST MATERIAL

City of Branson (Cooper Creek) personnel collected sampling of the effluent. A sample of the effluent was delivered to Pace by commercial carrier on 2-20-18. Subsequent samples followed by delivery on 2-22-18 and on 2-24-18. All samples were stored at  $\leq 6^{\circ}$  Celsius. Upstream was used as a control and also to make the required dilutions in the test as described in EPA 821-R-02-013.

#### **TEST METHODS**

Pace used EPA test method 1000.0 for conducting the Fathead Minnow, <u>Pimephales promelas</u>, Larval Survival and Growth Test. EPA test method 1002.0 was used for conducting the Cladoceran, <u>Ceriodaphnia dubia</u>, Survival and Reproduction Test. The tests were conducted to estimate the LC50, NOEC, and LOEC for survival, growth, and reproduction of these test species.

The <u>Pimephales</u> and <u>Ceriodaphnia</u> tests were initiated on 2-20-18 and carried out until 2-27-18. The Pimephales tests were conducted in 500 ml plastic jars with 250 ml of test solution. Ten larvae were placed in each of at least 4 replicates to make a total of 40 larvae per sample concentration. The <u>Ceriodaphnia</u> tests were carried out in 35ml vials containing 25 ml of test solution. One Neonate was placed in each of 10 replicates to make a total of 10 neonates per sample concentration.

#### TEST ORGANISMS

The organisms used in these tests were cultured at Pace under controlled temperature and photoperiod conditions and/or were purchased from an external supplier. Pace maintains records of all culture techniques used in producing organisms.

# **REPORT OF LABORATORY ANALYSIS**





**REFERENCE #60264291** 

Pace Analytical Services, Inc. 9608 Loiret Blvd. Lenexa, KS 66219 Phone: 913.599.5665 Fax: 913.599.1759

RESULTS







#### TABLE 1

Permittee: City of Branson (Cooper Creek) Effluent discharge.

Date Sampled	No. 1:	2-19-18	7:23
	No. 2:	2-21-18	7:23
	No. 3:	2-23-18	7:23
 		_	

Test Initiated: 11:15 Date: 2-20-18

Dilution Water used: Upstream

#### FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL (Pimephales promelas)

DATA TABLE FOR GROWTH OF FATHEAD MINNOWS						
Effluent Concentration	Average	e Dry Weigl Replicate (	nt in Milligra Chambers	ams in	Mean Dry Weight	CV% *
(%)	A	В	С	D	(mg)	
Upstream 0%	0.529	0.533	0.568	0.460	0.523	8.65
Dilution 1 6.25%	0.428	0.408	0.573	0.669	0.520	23.84
Dilution 2 12.5%	0.470	0.417	0.494	0.429	0452	7.91
Dilution 3 25%	0.447	0.515	0.527	0.502	0.498	7.10
Dilution 4 50%	0.463	0.561	0.555	0.530	0.527	8.51
Dilution 5 100%	0.522	0.490	0.541	0.449	0.501	8.05

#### DATA TADI E FOD ODOW/TH OF FATUEAD MININO/MO

\* Coefficient of Variation = Standard Deviation X 100 / Mean

# **REPORT OF LABORATORY ANALYSIS**





**REFERENCE #60264291** 

#### Permittee: CITY OF BRANSON (COOPER CREEK) Effluent discharge.

Conc. %	Perce	Percent Survival in Replicate Mean Percent Survival			urvival	CV %		
		Char	nbers					
	A	В	С	D	24hr	48hr	7 day	
Upstream 0%	100	100	100	100	100	100	100	0.00
Dilution 1 6.25%	90	90	100	100	100	100	95	7.07
Dilution 2 12.5%	100	100	100	100	100	100	100	0.00
Dilution 3 25%	90	100	100	100	100	100	97.5	5.94
Dilution 4 50%	100	100	100	100	100	100	100	0.00
Dilution 5 100%	100	90	100	90	100	100	95	7.07

#### FATHEAD MINNOW SURVIVAL





**REFERENCE #60264291** 

Permittee: CITY OF BRANSON (COOPER CREEK) Effluent discharge.

#### **CERIODAPHNIA SURVIVAL AND REPRODUCTION**

#### DATA TABLE FOR CERIODAPHNIA YOUNG PRODUCTION

Replicate	Upstream 0%	Dilution 1 6.25%	Dilution 2 12.5%	Dilution 3 25%	Dilution 4 50%	Dilution 5 100%
1	27	24	18	16	23	15
2	15	18	22	19	17	24
3	23	24	21	23	18	20
4	16	24	22	26	19	17
5	21	27	26	22	20	16
6	18	22	24	21	26	22
7	17	24	23	23	20	22
8	17	23	17	24	18	23
9	24	17	24	23	23	18
10	24	24	23	21	21	16
Mean	20.2	22.7	22.0	21.8	20.5	19.3
SD	4.131	3.020	2.749	2.781	2.799	3.302
CV %	20.45	13.31	12.49	12.76	13.65	17.11

**REPORT OF LABORATORY ANALYSIS** 





Permittee: CITY OF BRANSON (COOPER CREEK) Effluent discharge.

#### CERIODAPHNIA MEAN PERCENT SURVIVAL

Percent Effluent (%)							
Time	Upstream	Dilution 1	Dilution 2	Dilution 3	Dilution 4	Dilution 5	
Elapsed	0%	6.25%	12.5%	25%	50%	100%	
24 hrs	100	100	100	100	100	100	
48 hrs	100	100	100	100	100	100	
7-day	100	100	100	100	100	100	
SD	0.000	0.000	0.000	0.000	0.000	0.000	
CV %	0.00	0.00	0.00	0.00	0.00	0.00	







# TABLE 2SUMMARY OF TEST CONDITIONS FOR THE FATHEAD MINNOW(Pimephales promelas)LARVAL SURVIVAL AND GROWTH TEST

1. Test type	Static renewal
2. Temperature	25 degrees Celsius
3. Light quality	Ambient laboratory light
4. Light intensity	Ambient laboratory levels
5. Photoperiod	16 hr light, 8 hr dark
6. Test chamber size	500 ml
7. Test solution volume	250 ml
8. Renewal of test concentrations	Daily
9. Age of test organism	< 24 hours
10. No. larvae/chamber	10
11. No. replicates/concentration	4
12. No. larvae/concentration	40
13. Feecling regime	Feecl 0.15 g newly hatched brine shrimp nauplii two times daily. Larvae are not fed 12 hours prior to termination of test.
14. Cleaning	Siphon daily, immediately before test solution renewal
16. Aeration	None

# **REPORT OF LABORATORY ANALYSIS**



#### TABLE 2 (CONT.)

16. Dilution Water	Upstream
18. Effluent concentrations	0%, 6.25%, 12.5%, 25%, 50%, 100%
18. Test duration	7 days
19. Endpoints	Survival and growth
20. Test acceptability	80% or greater survival in the controls, Average dry weight in controls >0.25 mg, Coefficient of variation in the control must not exceed 40%.

# TABLE 2 (CONT.)SUMMARY OF TEST CONDITIONS FOR THE CLADOCERAN(Ceriodaphnia dubia)SURVIVAL AND REPRODUCTION TEST

1. Test type	Static renewal
2. Temperature	25 degrees Celsius
3. Light quality	Ambient laboratory light
4. Light intensity	Ambient laboratory levels
5. Photoperiod	16 hr light, 8 hr dark
6. Test chamber size	30 ml
7. Test solution volume	25 ml

TABLE 2 (CONT.)

# **REPORT OF LABORATORY ANALYSIS**



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Fax: 913.599.1759

8. Renewal of test concentrations	Daily Fax:
9. Age of test organism	< 24 hours
10. No. larvae/chamber	1
11. No. replicates/concentration	10
12. No. larvae/concentration	10
13. Feeding regime	Feed 0.1 ml YCT and 0.1 ml of Algae daily. Larvae are not fed 12 hours prior to termination of test.
14. Cleaning	Siphon daily, immediately before test solution renewal
16. Aeration	None
16. Dilution Water	Upstream
18. Effluent concentrations	0%, 6.25%, 12.5%, 25%, 50%, 100%
18. Test duration	Until 60% or more surviving control
	females have three broods or a
	maximum of 8 days.
19. Endpoints	Survival and Reproduction
20. Test acceptability	80% or greater survival in the controls, Average reproduction rate of 15 young / adult. Coefficient of variation in the control must not exceed 40%.





**REFERENCE #60264291** 

#### TABLE 2 (SECTION 2)

#### BIOMONITORING CHRONIC TOXICITY REPORT FATHEAD MINNOW (<u>Pimephales promelas</u>) CHEMICAL PARAMETERS CHART

Permittee: CITY OF BRANSON (COOPER CREEK) Effluent discharge.

- ANALYSTS: Pace Analytical Services, Inc. Timothy Harrell Mike Bollin
- SAMPLE NO. 1 COLLECTED: DATE: 2-19-18
- SAMPLE NO. 2 COLLECTED: DATE: 2-21-18
- SAMPLE NO. 3 COLLECTED: DATE: 2-23-18

#### TABLE 2 (SECTION 2) INITIAL WATER QUALITY EFFLUENT CONCENTRATION

	Upstream	100%
PH	7.97	7.77
D.O.	8.60	8.30
Temp	25.0	25.0
Alk	110	100
Hard	178	208
Cond	696	840
Chlorine	<0.1	<0.1

\* D.O. is reported as mg/L Alkalinity is reported as mg/L CaCO3 Hardness is reported as mg/L CaCO3 Conductance is reported as umhos Chlorine is reported as mg/L

# **REPORT OF LABORATORY ANALYSIS**


# TEST WATER QUALITY

# 24-Hour Water Quality Measurements

Effluent	PH	D.O.	Temperature
Concentration (%)		(mg/l)	(C)
0% Upstream	8.07	6.80	25.1
6.25% Effluent	8.10	6.90	25.1
12.5% Effluent	8.13	7.00	25.1
25% Effluent	8.17	7.10	25.1
50% Effluent	8.19	7.20	25.1
100% Effluent	8.21	7.30	25.1

# 48-Hour Water Quality Measurements

Effluent	PH	D.O.	Temperature
Concentration (%)		(mg/l)	(C)
0% Upstream	8.05	6.80	24.8
6.25% Effluent	8.08	6.80	24.8
12.5% Effluent	8.12	6.80	24.8
25% Effluent	8.14	6.90	24.8
50% Effluent	8.17	7.00	24.8
100% Effluent	8.19	7.00	24.8

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# FINAL WATER QUALITY

# EFFLUENT CONCENTRATION

	Upstream	100%
ρН	8.00	8.08
D.O.	6.90	7.10
Temp	25.1	25.1
Alk	108	102
Hard	128	214
Cond	976	1330

\* D.O. is reported as mg/L Alkalinity is reported as mg/L CaCO3 Hardness is reported as mg/L CaCO3 Conductance is reported as umhos



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# TEST VALIDITY

The <u>Pimephales promelas</u> control survival rate was 100. The mean dry weight (growth) of the <u>Pimephales promelas</u> was determined at 0.523 g/organism in the controls. The percent coefficient of variation (%CV) values for the fathead minnow control for survival and growth were 0.00 and 8.65. The <u>Ceriodaphnia</u> dubia survival rates were 100 in the control. The <u>Ceriodaphnia</u> in the control produced an average of 20.2 young over the seven-day exposure period. Percent CV values for <u>Ceriodaphnia dubia</u> control survival and reproduction was 0.00 and 20.45. Control data met or exceeded all criteria set out by <u>EPA 821-R-02-013</u> for test acceptance.

# CONCLUSIONS

The No Observed Effect Concentration (NOEC) for <u>Pimephales promelas</u> was 100% for survival and 100% for growth. The No Observed Effect Concentration (NOEC) for <u>Ceriodaphnia dubia</u> was 100% for Survival and 100% for Reproduction. The tests were ran using an upstream control against effluent concentrations of 6.25%, 12.5%, 25%, 50%, and 100%. The effluent sampled on 2-19-18, 2-21-18, and 2-23-18 exhibited acceptable chronic toxicity in <u>Pimephales promelas</u> and in <u>Ceriodaphnia dubia</u> during the exposure period as described in <u>EPA 821-R-02-013</u>.



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# APPENDIX C

# **REFERENCE TOXICANTS**

The absence of significant control mortality during this test indicated the health of the organisms and indicated that any significant mortality in the test concentrations was not due to contaminants or variations in testing conditions.

Reference toxicity testing is routinely performed by staff members in our biomonitoring - bioassay laboratory.

Reference Toxicant (NaCl		Pimephales promelas			
Concentration of Toxicant		Avg. # of Live Organisms/replicate			
	0 hrs	24 hrs	48 hrs	7 days	
10 g/l	40	4	0	0	
8 g/l	40	35	28	3	
6 g/l	40	39	36	22	
4 g/l	40	40	40	40	
2 g/l	40	40	40	40	
of loxicant 10 g/l 8 g/l 6 g/l 4 g/l 2 g/l	0 hrs 40 40 40 40 40 40	Avg. # of Live Organisms/replicate           0 hrs         24 hrs         48 hrs           40         4         0           40         35         28           40         39         36           40         40         40           40         39         36           40         40         40			

IC25 (4.95 g/l Sodium Chloride)

Survival NOEC: 4.0 g/l

Reference Toxica	ant (NaCl)	<u>Ceriodaphi</u>	<u>nia Dubia</u>	
Concentration of Toxicant		Avg. # of Live Organisms/replicate		
	0 hrs	24 hrs	48 hrs	7 days
2.5 g/l	10	5	0	0
2.0 g/l	10	10	9	1
1.5 g/l	10	10	10	10
1.0 g/l	10	10	10	10
0.5 g/l	10	10	10	10

IC25 (1.24 g/l Sodium Chloride)

Survival NOEC: 1.5 g/l

Handl'

Submitted By:

Timothy Harrell, Technical Director

# **REPORT OF LABORATORY ANALYSIS**

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60264291 Branson CC FATHEAD SURVIVAL File: 6264291A Transform: ARC SINE(SQUARE ROOT(Y)) Chi-square test for normality: actual and expected frequencies . . . . . . . . . <-1.5 -1.5 to <-0.5 -0.5 to 0.5 >0.5 to 1.5 >1.5 INTERVAL \_\_\_\_\_ 5.808 EXPECTED 1.608 9.168 5.808 1.608 OBSERVED 0 5 15 4 0 \_\_\_\_\_ Calculated Chi-Square goodness of fit test statistic = 7.6011 Table Chi-Square value (alpha = 0.01) = 13.277 Data PASS normality test. Continue analysis. 60264291 Branson CC FATHEAD SURVIVAL File: 6264291A Transform: ARC SINE(SQUARE ROOT(Y)) Shapiro - Wilk's test for normality D = 0.073W = 0.869Critical W (P = 0.05) (n = 24) = 0.916 Critical W (P = 0.01) (n = 24) = 0.884 \_\_\_\_\_ Data FAIL normality test. Try another transformation. Warning - The first three homogeneity tests are sensitive to non-normal data and should not be performed.

#### 60264291 Branson CC FATHEAD SURVIVAL File: 6264291A Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Upstream	4	1.412	1.412	1.412
2	6.25%	4	1.249	1.412	1.331
3	12.5%	4	1.412	1.412	1.412
4	25%	4	1.249	1,412	1.371
5	50%	4	1.412	1.412	1.412
6	100%	4	1.249	1.412	1.331

60264291 Branson CC FATHEAD SURVIVAL File: 6264291A Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %	
1	Upstream	0.000	0.000	0.000	0.00	
2	6.25%	0.009	0.094	0.047	7.07	
3	12.5%	0.000	0.000	0.000	0.00	
4	25%	0.007	0.081	0.041	5.94	
5	50%	0.000	0.000	0.000	0.00	
6	100%	0.009	0.094	0.047	7.07	

60264291 Branson CC FATHEAD SURVIVAL File: 6264291A Transform: ARC SINE(SQUARE ROOT(Y))

ANOVA TABLE					
SOURCE	DF	SS	MS	F	
Between	5	0.032	0.006	1.582	
Within (Error)	18	0.073	0.004		
Total	23	0.105			
Critical F val	ue = 2.77	(0.05,5,18)			

Since F < Critical F FAIL TO REJECT Ho: All equal

60264291 Branson CC FATHEAD SURVIVAL File: 6264291A Transform: ARC SINE(SQUARE ROOT(Y)) \_ \_ \_ \_ \_ \_ \_ \_

. . . . . . . . . . . .

	DUNNETT'S TEST -	TABLE 1 OF 2	Hc	:Control<	Ireatment	
GROUP	IDENTIFICATION	TRANSFORM MEAN	ED MEAN CALC ORIGINA	ULATED IN	T STAT	SIG
1 2 3 4 5 6	Upstream 6.25% 12.5% 25% 50% 100%	1.412 1.331 1.412 1.371 1.412 1.331	1. 0. 1. 0. 1. 0.	000 950 000 975 000 950	1.809 0.000 0.905 0.000 1.809	
Dunne	tt table value = 2.41	l (1 Tail	ed Value, P=0.0	5, df=18	,5)	
60264: File:	291 Branson CC FATHEAI 6264291A Trans DUNNETT'S TEST -	) SURVIVAL sform: ARC SI TABLE 2 OF 2	NE(SQUARE ROOT( Hc	Y)) :Control<	Treatment	
GROUP	IDENTIFICATION	NUM OF Mi REPS (I	nimum Sig Diff N ORIG. UNITS)	% of CONTROL	DIFFEREN FROM CON	CE TROL
1 2 3 4 5 6	Upstream 6.25% 12.5% 25% 50% 100%	4 4 4 4 4 4 4 4	0.045 0.045 0.045 0.045 0.045 0.045	4.5 4.5 4.5 4.5 4.5 4.5	0.05 0.00 0.02 0.00	50 00 25 00 50

60264291 Branson CC FATHEAD GROWTH File: 6264291B Transform: NO TRANSFORMATION Shapiro - Wilk's test for normality \_\_\_\_\_ \_ \_ \_ \_ D = 0.071W = 0.948Critical W (P = 0.05) (n = 24) = 0.916Critical W (P = 0.01) (n = 24) = 0.884 Data PASS normality test at P=0.01 level. Continue analysis. 60264291 Branson CC FATHEAD GROWTH File: 6264291B Transform: NO TRANSFORMATION Bartlett's test for homogeneity of variance Calculated B1 statistic = 8.25 \_\_\_\_\_ Table Chi-square value = 15.09 (alpha = 0.01, df = 5) Table Chi-square value = 11.07 (alpha = 0.05, df = 5) Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

#### 60264291 Branson CC FATHEAD GROWTH File: 6264291B Transform: NO TRANSFORMATION

#### SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Upstream	4	0.460	0.568	0.523
2	6.25%	4	0.408	0.669	0.520
3	12.5%	4	0.417	0.494	0.452
4	25%	4	0.447	0.527	0.498
5	50%	4	0.463	0.561	0.527
6	100%	4	0.449	0.541	0.501

#### 60264291 Branson CC FATHEAD GROWTH File: 6264291B Transform: NO TRANSFORMATION

#### SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

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GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %	
1	Upstream	0.002	0.045	0.023	8.65	
2	6.25%	0.001	0.124	0.018	7.91	
4 5	25% 50%	0.001 0.002	0.035 0.045	0.018 0.022	7.10 8.51	
6	100%	0.002	0.040	0.020	8.05	

60264291 Branson CC FATHEAD GROWTH File: 6264291B Transform: NO TRANSFORMATION

		ANOVA TABLE		
SOURCE	DF	SS	MS	F
Between	5	0.015	0.003	0.779
Within (Error)	18	0.071	0.004	
Total	23	0.086		
Critical F val	ue = 2.77	(0.05,5,18)	2	

Since F < Critical F FAIL TO REJECT Ho: All equal

. . . . . . . .

	DUNNETT'S TEST -	TABLE 1 OF 2	Ho:Control <treatm< th=""><th colspan="2">tment</th></treatm<>		tment	
GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG	
1 2 3 4 5	Upstream 6.25% 12.5% 25% 50%	0.523 0.520 0.452 0.498 0.527	0.523 0.520 0.452 0.498 0.527	0.068 1.580 0.559 -0.107		
6	100%	0.501	0.501	0.497		
Dunnet	t table value = 2.4	l (1 Tailed	Value, P=0.05, df=18,	5)		

60264291 Branson CC FATHEAD GROWTH File: 6264291B Transform: NO TRANSFORMATION

	DUNNETT'S TEST -	TABLE 2 O	F2H	o:Control<	Treatment
GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
	Instream	 Л			****
2	6.25%	4	0.107	20.4	0.003
3	12.5%	4	0.107	20.4	0.070
4	25%	4	0.107	20.4	0.025
5	50%	4	0.107	20.4	-0.005
6	100%	4	0.107	20.4	0.022

***************************************		NUMBER OF		
IDENTIFICATION	ALIVE	DEAD	TOTAL ANIMALS	
CONTROL	10	0	10	
6.25%	lO	0	10	
TOTAL	20	0	20	
CRITICAL FISHER'S VALUE	(10,10,10) (p=0.05)	IS 6.	b VALUE IS 10.	

## FISHER'S EXACT TEST

CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10 Since b is greater than 6 there is no significant difference between CONTROL and TREATMENT at the 0.05 level.

# FISHER'S EXACT TEST

***************************************		NUMBI	ER OF
IDENTIFICATION	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
12.5%	10	0	10
TOTAL	20	0	20

CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10. Since b is greater than 6 there is no significant difference between CONTROL and TREATMENT at the 0.05 level.

	FISHER'S EXACT	TEST ======== NUMB	ER OF
IDENTIFICATION	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
25%	10	0	10

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TOTA	$\mathbf{L}$	20	0	20		
	=======================================					
CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10. Since b is greater than 6 there is no significant difference between CONTROL and TREATMENT at the 0.05 level.						
	FISHER	'S EXACT TES	ST			
	==================					
IDENTIFICATION		ALIVE	DEAD	TOTAL ANIMALS		
CONTRO	)L	10	0	10		
F	Q_	1.0	0	1.0		
	/6	TO TO				
TO T	т	20	0	20		
	.================:					
CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10. Since b is greater than 6 there is no significant difference between CONTROL and TREATMENT at the 0.05 level.						
	FISHER	'S EXACT TES	5T			
			NUMBER OF			
IDENTIFICATION		ALIVE	DEAD	TOTAL ANIMALS		
CONTRO	)L	10	0	10		
100	)	10	0	10		
TOTA	AL	20	0	20		

CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10. Since b is greater than 6 there is no significant difference between CONTROL and TREATMENT at the 0.05 level.

SUMMARY OF FISHER'S EXACT TESTS

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NUMBER

GROUP	IDENTIFICATION	EXPOSED	DEAD	(P=.05)
	CONTROL	10	0	
1	6.25%	10	0	
2	12.5%	10	0	
3	25%	10	0	
4	50%	10	0	
5	100%	10	0	

#### 60264291 Branson CC CERIODAPHNIA DUBIA SURVIVA File: 6264291D Transform: NO TRANSFORM

#### SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Upstream	10	1.000	1.000	1.000
2	6.25%	10	1.000	1.000	1.000
3	12.5%	10	1.000	1.000	1.000
4	25%	10	1.000	1,000	1.000
5	50%	10	1.000	1.000	1.000
6	100%	10	1.000	1.000	1.000
	**************				

## 60264291 Branson CC CERIODAPHNIA DUBIA SURVIVA File: 6264291D Transform: NO TRANSFORM

# SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	Upstream	0.000	0.000	0.000	0.00
2	6.25%	0.000	0.000	0.000	0.00
3	12.5%	0.000	0.000	0.000	0.00
4	25%	0.000	0.000	0.000	0.00
5	50%	0.000	0.000	0.000	0.00
6	100%	0.000	0.000	0.000	0.00

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60264291 Branson CC CERIODAPHNIA DUBIA REPRODU File: 6264291E Transform: NO TRANSFORMATION Chi-square test for normality: actual and expected frequencies INTERVAL <-1.5 -1.5 to <-0.5 -0.5 to 0.5 >0.5 to 1.5 >1.5 ----------14.520 4.020 14.520 22.920 EXPECTED 4.020 OBSERVED 4 24 14 15 3 \_\_\_\_\_ Calculated Chi-Square goodness of fit test statistic = 0.3443 Table Chi-Square value (alpha = 0.01) = 13.277 Data PASS normality test. Continue analysis. 60264291 Branson CC CERIODAPHNIA DUBIA REPRODU File: 6264291E Transform: NO TRANSFORMATION Bartlett's test for homogeneity of variance Calculated B1 statistic = 2.36 Table Chi-square value = 15.09 (alpha = 0.01, df = 5) Table Chi-square value = 11.07 (alpha = 0.05, df = 5) Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

#### 60264291 Branson CC CERIODAPHNIA DUBIA REPRODU File: 6264291E Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

1Upstream1015.00027.00020.20026.25%1017.00027.00022.700312.5%1017.00026.00022.000425%1016.00026.00021.800550%1017.00026.00020.5006100%1015.00024.00019.300	GRP	IDENTIFICATION	N	MIN	MAX	MEAN
2       6.25%       10       17.000       27.000       22.700         3       12.5%       10       17.000       26.000       22.000         4       25%       10       16.000       26.000       21.800         5       50%       10       17.000       26.000       20.500         6       100%       10       15.000       24.000       19.300	1	Upstream	10	15.000	27.000	20.200
4       25%       10       16.000       26.000       21.800         5       50%       10       17.000       26.000       20.500         6       100%       10       15.000       24.000       19.300	2 7	6.25% 12.5%	10 10	17.000 17.000	27.000	22.700
5 50% 10 17.000 26.000 20.500 6 100% 10 15.000 24.000 19.300	4	25%	10	16.000	26.000	21.800
	5 6	50% 100%	10 10	17.000 15.000	26.000 24.000	20.500 19.300

60264291 Branson CC CERIODAPHNIA DUBIA REPRODU File: 6264291E Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %	
1 2	Upstream 6.25%	17.067 9.122	4.131 3.020	1.306 0.955	20.45 13.31	
3 4 5	12.5% 25% 50%	7.556 7.733 7.833	2.749 2.781 2.799	0.869 0.879 0.885	12.49 12.76 13.65	
6	100%	10.900	3.302	1.044	17.11	

60264291 Branson CC CERIODAPHNIA DUBIA REPRODU File: 6264291E Transform: NO TRANSFORMATION

		ANOVA TABLE		
SOURCE	DF	SS	MS	F
Between	5	82.683	16.537	1.648
Within (Error)	54	541.900	10.035	
Total	59	624.583		
Critical E valu	$u_{e} = 2.4$	45 (0.05.5.40)		

Since F < Critical F FAIL TO REJECT Ho: All equal

60264291 Branson CC CERIODAPHNIA DUBIA REPRODU File: 6264291E Transform: NO TRANSFORMATION . . . . . . . . . . .

	DUNNETT'S TEST -	TABLE 1 C	)F 2	Ho:C	ontrol<	Freatment	
GROUP	IDENTIFICATION	TRANSF MEA	'ORMED ME .N	AN CALCUL	ATED IN UNITS	T STAT	SIG
1 2 3 4 5 6	Upstrea 6.29 12.5 29 50 100	am       20.2         5%       22.7         5%       22.0         5%       21.8         0%       20.5         19.3	00 00 00 00 00 00 00	20.20 22.70 22.00 21.80 20.50 19.30	0 0 0 0 0 0	-1.765 -1.271 -1.129 -0.212 0.635	
Dunne	tt table value = 2.	.31 (1 T	ailed Value	, P=0.05,	df=40	,5)	
60264 File:	291 Branson CC CERIC 6264291E Tra	DAPHNIA DUE ansform: NO	IA REPRODU TRANSFORMAT	ION			
	DUNNETT'S TEST -	TABLE 2 C	)F 2	Ho:C	ontrol<	Freatment	
GROUP	IDENTIFICATION	NUM OF REPS	Minimum Si (IN ORIG.	g Diff % UNITS) C	of ONTROL	DIFFEREN FROM CON	CE TROL
1 2 3 4 5	Upstrea 6.25 12.5 50	am 10 5% 10 5% 10 5% 10 5% 10 0% 10	3. 3. 3. 3.	273 273 273 273 273	16.2 16.2 16.2 16.2	-2.5 -1.8 -1.6 -0.3	00 00 00 00

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Conc. I	D	1	2	3	4		5		6
Conc. T	ested	0	6.25	12.5	25		50	10	00
Respons Respons Respons Respons	e 1 e 2 e 3 e 4	.529 .533 .568 .460	.428 .408 .573 .669	.470 .417 .494 .429	.447 .515 .527 .502		463 561 555 530	.52 .49 .54 .44	22 90 11 19
*** Inh Toxican Test St Test Sp Test Du DATA FI	ibition Con t/Effluent: art Date: 2 ecies: Fath ration: LE:	centratio Branson /20/18 ead 7	n Percen CC Test End Day	ling Date: 2,	ce ***				
Conc. ID	Number Replicates	Concen	tration	Response Means	9	Std. Dev.	Resp	Pooled onse Me	ans
1 2 3 4 5 6	4 4 4 4 4 4 4 4	1 2 5 10	0.000 6.250 2.500 5.000 0.000 0.000	0.52 0.52 0.45 0.49 0.52 0.50	3 0 3 8 7 1	0.045 0.124 0.036 0.035 0.045 0.040		0.523 0.520 0.494 0.494 0.494 0.494	-
*** No input d	Linear Inte lata since n	rpolation one of th	Estimat e (possi	e can be ca bly pooled)	lculate	ed from respon	the se me	ans	-

were less than 75% of the control response mean.

Conc. I	D	1	2	3	4		5	6
Conc. T	ested	0	6.25	12.5	25		50	100
Respons	e 1	27	24	18	16		23	15
Respons	e 2	15	18	22	19		17	24
Respons	e 3	23	24	21	23		18	20
Respons	e 4	16	24	22	26		19	17
Respons	e 5	21	27	26	22		20	16
Respons	е б	18	22	24	21		26	22
Respons	e 7	17	24	23	23		20	22
Respons	e 8	17	23	17	24		18	23
Respons	e 9	24	17	24	23		23	18
Respons	e 10	24	24	23	21		21	16
Toxican Test St Test Sp Test Du DATA FI	t/Effluent: 3 art Date: 2/ ecies: Dubia ration: LE:	PDC Brans 20/18 T 7 D	on CC est Endin ay	g Date: 2/2	7/18			
Conc. ID	Number Replicates	Concent	ration	Response Means		Std. Dev.	Pool Response	ed Means
1	10	0	.000	20.200		4.131	21.67	5
2	10	6	.250	22.700		3.020	21.67	5
3	10	12	.500	22.000		2.749	21.67	5
4	10	25	.000	21.800		2.781	21.67	5
5	10	50	.000	20.500		2.799	20.50	0
6	10	100	.000	19.300		3.302	19.30	0

\*\*\* No Linear Interpolation Estimate can be calculated from the input data since none of the (possibly pooled) group response means were less than 75% of the control response mean.

#### SUBCONTRACT URDER Transfer Chain of Custody

PDC Laboratories, Inc.

### 8022863

(026429)

#### SENDING LABORATORY

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

# Sample: 9022962.01

## **RECEIVING LABORATORY**

Pace Analytical - Frontenac 808 West McKay Street Frontenac, KS 66763 (620) 235-0003

Sample: 8022863-01 Name: CC Outfall 001			Sampled: Matrix: Preservative:	02/19/18 07:23 Waste Water Cool <6
Analysis	Due	Explres	Comm	ents
01-WET Chronic SPMO	03/01/18 16:00	02/21/18 07:23		
Sample: 8022863-02 Name: CC Upstream Grab			Sampled: Matrix: Preservative:	02/19/18 07:37 Surface Water Cool <6
Analysis	Due	Expires	Comm	ents

01-WET Chronic SPMO

03/01/18 16:00

02/21/18 07:37

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

Date Shipped: <u>2 · 19 · 18</u>	Total # of Containers:	Sample Origin	(State): <u>MD</u>	PO #:	
Turn-Around Time Requested	NORMAL 🗌 RUSH	Date Res	ults Needed:		
1 50	$\mathcal{D}$ , $\Lambda$ ,		Sample Temperature	Upon Receipt	2.6 °C
VALIA LICEAT 21G	18 Flow along	Apple 10	Sample(s) Received	on Ice	Øor N
Relinquished By Date/Tim	ne Received By	Date/Time	O Proper Bottles Recei	ived in Good Conditio	n 💮or N
	ų		Bottles Filled with Ad	lequate Volume	(Y)or N
			Samples Received V	Vithin Hold Time	Gor N
Relinquished By Date/Tim	e Received By	Date/Time	Date/Time Taken Fro	om Sample Bottle	(Y)br N

# SUBCONTRACT ORDER Transfer Chain of Custody

# PDC Laboratories, Inc.

# 8022863

	Due	02/21/18 07:37	Comm				
Sample: 8022863-02 Name: CC Upstream Grab			Sampled: Matrix: Preservative:	Surface Water Cool <6			
01-WET Chronic SPMO	03/01/18 16:00	02/21/18 07:23		00/40/40 07:07			
Analysis	Due	Expires	Comm	ents			
Sample: 8022863-01 Name: CC Outfall 001			Sampled: Matrix: Preservative:	02/19/18 07:23 Waste Water Cool <6			
SENDING LABORATORY PDC Laboratories, Inc. 1805 West Sunset Street Springfield, MO 65807 (417) 864-8924		RECEIVING LABORATORY Pace Analytical - Frontenac 808 West McKay Street Frontenac, KS 66763 (620) 235-0003					

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

Date Shipped: 2 21.18 Tot	al # of Containers: _ 것	Sample Origin	(State): PO #:	
Turn-Around Time Requested 💢 N	ORMAL 🗌 RUSH	Date Re	sults Needed:	
1500	~ ^		Sample Temperature Upon Receipt	1 <u>8</u> °c
VALID 1110 th 2 2110	Eth la	Da 1/2/2	Sample(s) Received on Ice	(Yor N
Relinquished By Date/Time	Received By	Date/Time	Proper Bottles Received in Good Condit	ion n N
	Ū		Bottles Filled with Adequate Volume	(Y) or N
			Samples Received Within Hold Time	( y or N
Relinquished By Date/Time	Received By	Date/Time	Date/Time Taken From Sample Bottle	(y) or N

Face Analytical Sample Condition	Upon Receipt	
Client Name: MDC Cabs		
Courier: FedEx UPS UPS CIA Clay		Pace 🔲 Xroads 🗆 Client 🗆 Other 🗆
Tracking #: Pa	ice Shipping Label Used	I? Yes □ No
Custody Seal on Cooler/Box Present: Yes No 🗆	Seals intact: Yes	No 🗆
Packing Material: Bubble Wrap  Bubble Bags	Foam D	None Other
Thermometer Used: T - III Type of	of Ice (Wet) Blue Non	
Cooler Temperature (°C): As-read <u>3.0</u> Corr. Fac	tor <u>-1,2</u> Correcte	ed 1.8 Date and initials of person examining contents:
Chain of Custody relinquished:		
Samples arrived within holding time:		
Short Hold Time analyses (<72hr):		
Rush Turn Around Time requested:		
Sufficient volume:		
Correct containers used:		
Pace containers used:		
Containers intact:		
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?		
Filtered volume received for dissolved tests?		
Sample labels match COC: Date / time / ID / analyses		
Samples contain multiple phases? Matrix:		
Containers requiring of preservation in compliance?		
(HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)		
(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)		
Lead acetate strip turns dark? (Record only)	□Yes □No	
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □No	
Trip Blank present:		
Headspace in VOA vials ( >6mm):		
Samples from USDA Regulated Area: State:		
Additional labels attached to 5035A / TX1005 vials in the field		
Client Notification/ Resolution: Copy COC	to Client? Y / N	Field Data Required? Y / N
Person Contacted: Date/	/Time:	
Comments/ Resolution:		
Project Manager Review:	Date	:

## SUBCONTRACT ORDER Transfer Chain of Custody

#### PDC Laboratories, Inc.

## 8022863

### SENDING LABORATORY

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

#### **RECEIVING LABORATORY**

Pace Analytical - Frontenac 808 West McKay Street Frontenac, KS 66763 (620) 235-0003

Sample: 8022863-01 Name: CC Outfall 001			Sampled: Matrix: Preservative:	02/19/18 07:23 Waste Water Cool <6	
Analysis	Due	Expires	Comm	ents	
01-WET Chronic SPMO	03/01/18 16:00	02/21/18 07:23			
Sample: 8022863-02 Name: CC Upstream Grab			Sampled: Matrix: Preservative:	02/19/18 07:37 Surface Water Cool <6	
Analysis	Due	Expires	Comm	ents	
01-WET Chronic SPMO	03/01/18 16:00	02/21/18 07:37			

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

Date Shipped: 2-23-18 Total # 0	of Containers:	Sample Origin (	State): <u>MO</u>	PO #:	
Turn-Around Time Requested X NORM	IAL 🗌 RUSH	Date Resu	Ilts Needed:		
1300	1-41 ()		Sample Temperatu	ire Upon Receip	nt <u>1.a</u> ∘c
Atrice - Wolf 2-22.18	HALL COM	12:00 2/2	Sample(s) Receive	ed on Ice	(Por N
Relinquished By Date/Time	Received By	Date/Time	Proper Bottles Rec	eived in Good (	Condition () or N
0	v		Bottles Filled with	Adequate Volum	ne 🖗 or N
			Samples Received	Within Hold Tir	ne (Mor N
Relinguished By Date/Time	Received By	Date/Time	Date/Time Taken F	rom Sample Bo	ottle 🕅 or N

Program Angeletical"				
Sample Condition U	pon R	eceip \	ot	8
10 miles	(C	7		
Client Name: <u>FIO</u>				
Courier: FedEx UPS 🗆 VIA 🗆 Clay 🗆 🛛	PEX 🗆	EC		Pace 🛛 Xroads 🗆 Client 🗆 Other 🗆
Tracking #: Pac	ce Shippi	ng Lab	el Used	d? Yes □ No) Q
Custody Seal on Cooler/Box Present: Yes 📉 No 🗆	Seals	intact:	Yes	No D
Packing Material: Bubble Wrap  Bubble Bags (		Fo	am 🗋	None Other
Thermometer Used: Type of		er) BI	ue Nor	Date and initials of person
Cooler Temperature (°C): As-read Corr. Fact	tor-1	2	Correct	ted 1. 2 examining contents: ,
Temperature should be above freezing to 6°C			_	0 / 04 / 18
Chain of Custody present:	Yes	□No		10 10:00
Chain of Custody relinquished:	fyes	□Ņo		
Samples arrived within holding time:	Yes	□No	□n/A	
Short Hold Time analyses (<72hr):	Yes	□No	□n/a	
Rush Turn Around Time requested:	Yes	No No		
Sufficient volume:	Yes			
Correct containers used:	Yes	No	□n/a	
Pace containers used:	Yes	□No		
Containers intact:	Yes	⊡No	□n/a	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	`.] □Yes			
Filtered volume received for dissolved tests?	[]Yes	□No		
Sample labels match COC: Date / time / ID / analyses	Yes	۵N		
Samples contain multiple phases? Matrix:	□Yes	No	□n/A	
Containers requiring pH preservation in compliance?	□Yes			
(HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)				
(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)				
Lead acetate strip turns dark? (Record only)	□Yes	□No	-	
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes	DN0		
Trip Blank present:	□Yes	□No		
Headspace in VOA vials ( >6mm):	□Yes	⊡No		
Samples from USDA Regulated Area: State:	□Yes	□No		
Additional labels attached to 5035A / TX1005 vials in the field	? 🗆 Yes	□ No		
Client Notification/ Resolution: Copy COC t	o Client?	Y	Ń	Field Data Required? Y / N
Person Contacted: Date/	Time:			
Comments/ Resolution:				
		44 4 19 4 19 4 19 4 19 4 19 4 19 4 19 4		
Project Manager Review:			Date	le:

# CHAIN OF CUSTODY RECORD

PDC LABORATORIES, INC. 1805 W. SUNSET SPRINGFIELD, MO 65807

PHONE # 417-864-8924 FAX # 417-864-7081

State where samples collected

MO

CLIENT	ALL HIGHLI	GHTED AREAS	P.O. NUM	BER	ETED BY CL	ENT (PLEAS		<u>(T)</u>	(FOR LAB USE ONLY)
ADDRESS ADDRESS 601 Compten Dr. CITY, STATE ZIP Brenson MO. 65616 CONTACT PERSON	CC- WI PHONE NU SAMPLER (PLEASE PRI	nt Rycn	FAX NUM	BER	DATE S MATRIX T WW- WASTE DW- DRINHUR GW- GROUN WWGL-SLU	YPES: WATER NG WATER D WATER DGE	t -Chronic	ARALYSIS REQUESTED	LOGIN # 2022403 LOGGED BY: 000 LAB PROJ. # TEMPLATE:
2 SAMPLE DESCRIPTION AS YOU WANT ON REPORT	DATE	TIME	SAMPI GRAB	LE TYPE COMP	NAS-SOLID LCHT-LEACH OTHER: MATRIX TYPE	BOTTLE COUNT	WET Tes		PROJ. MGR.: CHAD COOPER REMARKS
WET TEST EFFLUENT COMPOSITE	2-21-18	0730		x	ww	1	x		PH-74 Terp-8.0 High Flor
UPSTREAM GRAB (IF AVAILABLE)	2-21-18	0746	X		ww	1	X		9H-815 Temp-6.6
TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NOT	MAL RUSH		RESULTS	NEEDED		The sample		ature will be messured upon re	ceipt at the lab. By initialing
(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE) RUSH RESULTS VIA (PLEASE CIRCLE) FAX PHONE FAX # IF DIFFERENT FROM ABOVE: PHONE # IF DIFFERENT FROM ABC	VE:				$\odot$	this area yo the sample this area yo sample ten	temperature	st that the lab notify you, befor sture is outside of the range of the lab to proceed with analytic s	e proceeding with analysis, if 0.1-8.0°C. By not initialing cal testing regardless of the
RELINQUISHED BY: (SIGNATURE)	-18 RECEN	LED BY: (SIGNA)	TURE)	olf			05		
RELINQUISHED BY: (SIGNATURE) DATE	, RECEN	ED BY: (SIGNA)	IURE)			DATE		SAMPLE(S) RECEIVE PROPER BOTTLES R BOTTLES RILLED WI SAMPLES RECEIVEL (EXCLUDES TYPICAL DATE AND TIME TAK	ED ON ICE Y OR N TECEIVED IN GOOD CONDITION Y OR N TH ADEQUATE VOLUME Y OR N WITHIN HOLD TIME(\$) Y OR N L FIELD PARAMETERS) EEN FROM SAMPLE BOTTLE

Page 42 of 44

# 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 HIGHLIG	HTED AREAS	MUST BE	COMPLE	TED BY CLI	ENT (PLEAS		IT)				
CLIENT COST COST	ay or or of the second s	PROJECT NU CC- FRI	MBER	P.O. NUMI	BER	MEANS	SHIPPED	3		YSIS REQUESTED (FOR LAB USE C			(FOR LAB USE ONLY) 4) SQUASCOSTANT
ADDRESS		PHONE NUM	IBER	FAX NUMBER		DATE SHIPPED		U					LOGIN # -80237/5-
CITY, STATE ZIP		SAMPLER				MATRIX TY	MATRIX TYPES:						LOGGED BY: SMW
Branson MD 65616	2	(PLEASE PRIN	Jan FI	rench	~	WW- WASTEN	WATER G WATER	-Ç					LAB PROJ. #
CONTACT PERSON		SAMPLER'S SIGNATURE	4			WWSL- SLUD	GE	est					
Tim Glenn		Ø	no	=	t aterate	OTHER:	ATE	T					PROJ. MGR.: CHAD COUPER
2 SAMPLE DESCRIPTION AS YOU WANT ON REPORT		DATE COLLECTED		SAMPL GRAB	E TYPE COMP	MATRIX TYPE	BOTTLE COUNT	WE					REMARKS
WET TEST EFFLUENT COMPO	SITE	223-18	0741		x	ww	1	x					Temp 7,5 PH 8.0
UPSTREAM GRAB (IF AVAILA	BLE)	2-23-18	0753	x		ww	1	x					TEND 7.1 PH 8.5
													41-2.51 Cube
												4	-1-2.5 L Cube
·····													
5 TURNAROUND TIME REQUESTED (PLEASE CIRCL (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND RUSH RESULTS VIA (PLEASE CIRCLE) FAX PHO FAX # IF DIFFERENT FROM ABOVE: PHONE # IF DIFFER	LE) NORMAL SURCHARGE) DNE LENT FROM ABOVE:	RUSH	DATE	RESULTS	NEEDED	6	The sample this area yo the sample this area yo sample tem	temper u reque tempera u allow perature	ature wi est that ti ature is c the lab t e.	ll be mea he lab no butside of o procee	sured u tify you, f the rar d with a	pon recei, , before p nge of 0.1- nalytical	pt at the lab. By initialing roceeding with analysis, if -6.0°C. By not initialing testing regardless of the
RELINQUISHED BY: (SIGNATURE)	DATE 2.23-1	F RECEIVE	ED BY: (SIGNA	TURE)	,		DATE	-23-	-)8	<u> </u>	CC	OMMENTS	S: (FOR LAB USE ONLY)
U	TIME	Dr	A 1	V La	24 mil		TIME	813	\$	(8)	)	·····	
RELINGUISHED BY: (SIGNATURE)	DATE 23-1	RECEIVE	ED BY: (SIGNA	TURE)	/	20	DATE	DATE 22-2				E UPON RECEIPT D.O. °C	
Vist The by	TIME 0948	D	tacos	- h	)OK	K	TIME 0948 S				PROCES	SS START	TED PRIOR TO RECEIPT OF OR N
RELINQUISHED BY: (SIGNATURE)	DATE	RECEIVI	ED BY: (SIQNA	TURE)		0	DATE			PROPE	R BOTT	ED WITH	EIVED IN GOOD CONDITION (VOR N ADEQUATE VOLUME (VOR N (THIN HOLD TIME(S))
	TIME						TIME	TIME SAMPLES RECEIVED WITH (EXCLUDES TYPICAL FIELE DATE AND TIME TAKEN FR				HIN HOLD TIME(S) (VOR N LD PARAMETERS) ROM SAMPLE BOTTLE	

# CHAIN OF CUSTODY RECORD

PDC LABORATORIES, INC. 1805 W. SUNSET SPRINGFIELD, MO 65807

PHONE # 417-864-8924 FAX # 417-864-7081

State where samples collected

MO

	anton and a state	ALL HIGHLIG	SHTED AREAS	MUST BE	COMPLI	ETED BY CLI	ENT (PLEA	SE PRINT	)		C ONLY IN	
(1) City of Brans	City of Branson		N	P.O. NUMI	BER	MEANS	SHIPPED	(3)	ANALYSIS REQUESTED	(4) (FOR LAB US	ACI. 7	
ADDRESS			WBER	FAX NUMBER		DATES	HIPPED	U		LOGIN : DOMOLUS		
CATY, STATE ZP	r.v.	SAMPLER				MATRIX	YPES:	Lon		LOGGED BY:	M	
Branson no 65616	4 9	PLEASE PRIME				WW- WASTE	WATER	ភ្		LAB PROJ. #		
CONTACT PERSON Tim Glenn		SAMPLER'S SIGNATURE	2x	a		WWBL- SLUC NAS- SOLID LONT-LEACH OTHER:	IATE	T Test		PROJ. MGR.: CHA	D COOPER	
2 SAMPLE DESCRIPTION AS YOU WANT ON REPORT		COLLECTED	COLLECTED	SAMPL GRAB	E TYPE COMP	MATRIX	BOTTLE	ME		REMARK	S	
WET TEST EFFLUENT COM	POSITE	2-19-18	0723		x	ww	1	x		PH - 7.09	Temp8.1	
UPSTREAM GRAB (IF AVAI	LABLE)	2-19-18	0737	X		ww	1	x		PH-7.52	Tem- 7.9	
										2:30jal	Cube.	
S TURNAROUND TIME REQUESTED (PLEASE (RUSH TAT IS SUBJECT TO POC LABS APPROVAL RUSH RESULTS VIA (PLEASE CIRCLE) FAX FAX # IF DIFFERENT FROM ABOVE: PHONE # IF D	CIRCLE) NORMAL AND SURCHARGE) PHONE IFFERENT FROM ABOVE:	RUSH	DATE	RESULTS	EEDED	$\odot$	The sample this area y the sample this area y sample ten	e temperati ou request temperati ou allow U mperature.	ture will be measured upon rec t that the lab notify you, before ure is outside of the range of 0 he lab to proceed with analytics	elpt at the lab. By initialing proceeding with analysis, if 1-6.0°C. By not initialing al testing regardless of the		
RELINQUERHED BY: (SIGNATURE)	DATE 2-19-1 TIME	8 RECEIV	ED BY: (SIGNAT	URE)	K	<u> </u>	DATE	19.1	8 (e)	TS: (FOR LAB USE ONLY)		
RELINQUISHED BY: (SIGNATURE)	DATE	RECEIV	ED BY: (SIGNAT	URE)			DATE	101-	SAMPLE TEMPERATU	RE UPON RECEIPT	2100	
	TIME						TIME		CHILL PROCESS STAL	RTED PRIOR TO RECEIPT	MOR N	
RELINQUISHED BY: (SIGNATURE)	DATE	RECEIV	ED BY: (SIGNAT	URE)	Annual & rocks		DATE		PROPER BOTTLES RE BOTTLES FILLED WIT	CEIVED IN GOOD CONDITION	YOR N	
TIME							TIME		SAMPLES RECEIVED (EXCLUDES TYPICAL DATE AND TIME TAKE	H ADEQUATE VOLUME YOR N WITHIN HOLD TIME(S) YOR N FIELD PARAMETERS) EN FROM SAMPLE BOTTLE		

2019 ACUTE Toxicity Part E 18



# PDC Laboratories, Inc.

PROFESSIONAL • DEPENDABLE • COMMITTED

February 22, 2019

Danita Carr Branson, City of 616 W Pacific St Branson, MO 65611

Dear Danita Carr:

Please find enclosed the analytical results for the sample(s) the laboratory received on 2/12/19 9:45 am and logged in under work order 9021727. 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 Director of Client Services, Lisa Grant with any feedback you have about your experience with our laboratory.

Sincerely,

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





•

# **PDC Laboratories, Inc.** 1805 West Sunset Street

Springfield, MO 65807 (417) 864-8924

# ANALYTICAL RESULTS

Sample: 9021727-01					Sampled:	02/12/19 0	07:25
Matrix: Waste Water - Composite					Received:	02/12/19 (	19.40
Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
General Chemistry - SPMO							
Chlorine - Total Residual	< 0.10	mg/L	н	02/15/19 11:00	02/15/19 11:00	KMR	SM 4500-CI G*
Conductivity	620	umhos/cm		02/13/19 13:23	02/13/19 13:23	KMR	SM 2510B
Dissolved Oxygen	9.3	mg/L	н	02/13/19 13:23	02/13/19 13:23	KMR	SM 4500-O G*
рН	7.3	pH Units	н	02/13/19 13:23	02/13/19 13:23	KMR	SM 4500-H B - SW 9040*
General Chemistry - STL							
Alkalinity - total as CaCO3	100	mg/L		02/21/19 08:55	02/21/19 13:31	sjp	SM 2320B*
Nutrients - SPMO							
Ammonia-N	< 0.10	mg/L		02/14/19 14:43	02/14/19 14:43	RRG	EPA 350.1 - QC 10-107-06-1-I & J*
Total Metals - STL							
Calcium	46	mg/L		02/15/19 07:58	02/18/19 14:31	WPS	EPA 200.7
Hardness	190	mg/L		02/15/19 07:58	02/18/19 14:31	WPS	SM 2340B
Magnesium	18	mg/L		02/15/19 07:58	02/18/19 14:31	WPS	EPA 200.7
WETT - SPMO							
Ceriodaphnia Dubia TUa	< 1.0	units		02/13/19 14:05	02/13/19 14:05	KMR	EPA 2002.0*
Pimephales Promelas TUa	< 1.0	units		02/13/19 14:05	02/13/19 14:05	KMR	EPA 2002.0*
Sample: 9021727-02		····			Sampled:	02/12/19	07:37
Name: CC Upstream Grab					Received:	02/12/19 (	09:45
Matrix: Surface Water - Grab							
Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
General Chemistry - SPMO							
	< 0.10	ma/l	н	02/15/19 11:00	02/15/19 11:00	KMR	SM 4500-CI G*
	220	umbos/cm		02/13/19 13:23	02/13/19 13:23	KMR	SM 2510B
Dissolved Oxygen	9.0	ma/L	н	02/13/19 13:23	02/13/19 13:23	KMR	SM 4500-O G*
pH	7.6	pH Units	н	02/13/19 13:23	02/13/19 13:23	KMR	SM 4500-H B - SW 9040*
Nutrients - SPMO							
Ammonia-N	< 0.10	mg/L		02/14/19 14:43	02/14/19 14:43	RRG	EPA 350.1 - QC 10-107-06-1-I & J*



#### NOTES

Specific method revisions used for analysis are available upon request.

#### <u>Memos</u>

Report of Acute Toxicity Testing

Reference Toxicity Test:

PDC Laboratories, INC. conducts a monthly reference toxicant test to demonstrate and obtain consistent, precise results for permit compliance purposes. This demonstration is to ensure satisfactory laboratory performance. The most recent reference test results are as follows:

Date Initiated: January 16, 2019 Date Concluded: January 18, 2019

Reference Toxicant: Potassium Chloride (KCI) Lot Number: 18A195207 Expiration: N/A Standards ID: SPMO6-22A

Moderately Hard Synthetic Water: 3-2AC1 Prepared: January 14, 2019 Expiration: January 30, 2019 Analyst: KMR

Pimephales promelas: 48 hour Acute Test - LC50 = 884.6 mg/L SPMO %CV = 19.60 % National Limits (75th Percentile) = 17.9% CV National Control Limit (90th Percentile) = 33% CV Ceriodaphnia dubia: 48 hour Acute Test - LC50 = 406.8 mg/L SPMO %CV = 20.93 % National Limits (75th Percentile) = 29%CV National Control Limit (90th Percentile) = 34%CV

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



1805 West Sunset Street Springfield, MO 65807

(417) 864-8924



**Certifications** 

#### CHI - McHenry, IL

TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100279 Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17556

#### 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)

#### SPIL - Springfield, IL

NELAP/NELAC accredidation through the Illinois EPA, PAS IL 100323

#### 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 Accreditation of Laboratories for Wastewater, Hazardous, and Solid Waste Analysis through IL EPA No. 200080 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**

H Test performed after the expiration of the appropriate regulatory/advisory maximum allowable hold time.



Certified by: Chad Cooper, Laboratory Supervisor

PDC Laboratories Inc, SPMO.

# **Multiple Dilution WET Test**

EPA Test Methods: 2002.0 & 2000.0

			Olivert					
Constants II	0	7 - 44	Client F		0-01145 99	2.24 /1		
Sample #	702112	1-01	CD Hatch	02181919	MHSt Board/Shold	5 7HCI		
Client	Dranson	Laterat		401	buard/snelf	64 Times		
Cup	Conc.	Initial	24 nour	48 hour	for a procedure	Set times		
P1	50	10	10	10	Start Date/Time:	6-13-	196.1405	
P2	6.25	10	10	10		Date	Time	Analyst
P3	100	10	10	10	0 Hour	2-13 19	1405	King
P4	UP	10	10	9	24 Hour	2.14.19	1400	KMK
P5	56	10	10	16	48 Hour	2.15.19	1410	KMK
P6	100	10	10	9	End Date/Time:	2-15-14	CHIO	
P7	UP	10	10	10		Results	-	
P8	25	10	10	10		Pimephales prom	elas	
P9	4.25	10	10	10	48 Hour	Result	Date	Analyst
P10	Lab	10	10	10	LC 50	2100	2-15-19	Kurk
P11	125	10	10	9	TUa	61	2.15.19	Kme
P12	Lab	10	10	10	P-Value			
P13 *	12.5	10	10	10		Ceriodaphnia Du	ıbia	1
P14 *	25	10	10	10	48 Hour	Result	Date	Analyst
C1	50	5	5	5	LC 50	2100	2.15.19	kim
C2	6.25	5	5	5	TU,	44	2:15:17	Kum
C3	6.25	5	5	5	P-Value			
C4	Lab	5	5	5			Date	Analyst
C5	12.5	5	5	5	Filtered (Y / N):	N	2.515	Kith t
C6	up	5	5	5	Light Check:	NIA	2.15.19	Vinie
C7	Jab	6	5	5	PP Fry Age	21-1-6	2.15.19	
C7	1.25	5	5	5	CD Neonates Age:	10003	2.1515	
0	25	E	5	5	Comments: PP fry we	re set in 200 ml of	f conc. w/in a	Kunk
C9	23	2	5	5		the aff and aff and		
C10	20	5	5	5	250 milliop.co were	Set in 15 mi of con	c. w/in a su mi	cup
	101	3	5	5				
C12	Lab	5	5	5				
C13	6.25	2	3	3				
C14	UP	5	5	5				
C15	25	5	0	5				
C16	100	5	5	9				
C17	12.5	5	5	5				
C18	100	5	5	6				
C19	56	5	5	5				
C20	UP	5	5	5		Justo -1	,	
C21	50	5	5	5	Analyst Signature:	Subia P	i u	
C22	Lab	5	5	5	Date:	2.15.19		
C23	UP	5	5	5	Read and			
C24	25	5	5	5	Understood By:	Inpt	-	
C25 *	100	5	5	5	Date:	2-15-19	-	
C26 *	12.5	5	5	5				
C27 *	12.5	5	5	5	Logbook: 2	Report #: 710		
C28 *	100	5	5	5				
C24 C25 * C26 * C27 * C28 *	25 100 12.5 12.5 100	5 5 5 5 5	5 5 5 5 5 5	5 5 5 5 5	Understood By: P Date: Logbook:	Report #: 710	-	

\* These cups only used when upstream samples are provided.

PDC Laboratories Inc, SPMO.

EPA Test Methods 2002 0 & 2000 0

	Citeri	Dramso	ra		CD Hatch	021	31910	A	Board/Shelf	00313						
			-			Calib	ration data				1	1				
pН	Initial	Date	Time	Analyst	48 hour	Date	Time	Analyst	DO (mg/L)	Date	Time	Analyst	Pressure (mmHg)	% Sat		
4.00	4.01	213.19	1239	KMK	4.01	2.1519	1400	Jun	Initial	2.13.19	1242	Kurk	730	100%-		
7.00	7.00				7.00				1 Hour	2.13.19	1450	Henrye	727	100%		
10.00	10.03				10.03				24 Hour	2.14.19	1341	KMR	120	100%.		
Curve	984				99.2		and and and		48 Hour	215-19	1400	here	7.20	100%		
						Initia	I/Received									
Cup #	10	2	11	8	5	3	4		6	1999 1999 1999			100 5			
Concentration	MHSF	6.25%	12.5%	25%	50%	Effluent	*Upstream		EFF-DUP	Dat	e	Time	Batch	Analyst		
pH (EPA 150.1)	8.03	7.58	756	7.54	7.46	7.30	7.9	57	7.30	2.13 1	5	1323	B907279	KMK		
DO mg/L (SM 5010)	8.20	8.71	8.73	883	8.84	9.26	96	3	9.18	2-13-14	ĩ	1323	8903,279	KML		
Conductivity (µMohs)		MHSF			Effluent		*Upstream		m	Date		Time	Batch	Analyst		
(SM 2510B)		314		41	51621	41		224		2-13-19		1523	B903219	KME		
	Method	Effluent	Upst	ream *	D	ate	Ti	me	Bat	Batch An		alyst		10 . 1		
Chlorine (mg/L)	4500CI-G	0.01	0.0	2	215	519	11	60	B903298 100		un	Analyst Signature:	Kusta			
		10.91	1		0 Hou	r	-							1		
	F	athead Minov	N	1	Cerodapt	nnia Dubia			Date	Tim	e	Analyst		Date: 2-15		
Temperature (°C)		24.4			22	2 60	2.13.19			16Int	5	Viere				
				-	1 Hou	T		<u> </u>	2.11	10	2	1	Read and			
Test	M	HSF	Eff	luent		Upstream	•		Date Time			Analyst	Understood By:	und		
DQ (mg/L)	50	8	1 5 6	7	4	1414		2.13	2.13.19		5	1/ mar		17		
00 (1100 0)	0.0	athead Minov	1 6.2	1	Cerodapt	nia Dubia			Date	Time		Analyst		Data: 2-15		
Temperature (*C)		24.4			23	1		2.13	.19	A ISec						
remperature ( c)		211.4		-	24 Ho	Ir.						THOUGH				
Test	MHSE	6.25%	12 5%	75%	50%	Effluent	*Uns	tream	Oat	P	Time	Analyst				
DO (mg/l)	7 / / / /	3 21	5.00	2 00	214	1 40	7 2-		2.14	2.11/44		2.111 4 4		k to d		
DO (mg/c)	1.44	[ [.]	11.21	1.20	1.14	Cerodant	nia Dubia	1			1245	Analyst				
Tamana ("C)		200	1			Du	2		2		12115	-unaryst				
Temperature ( C)		23.	1		All Hou	14.	4		1.14.	19	11243	Kun				
Test	MUSS	6.354	1 13 68	250	40 100	C 68 upor	*11-0	I Internet	0.0		Time	Analyst				
lest	MHSF	0.25%	14.57	6763	3076	Emuent	- Ups	le le	Dat		time	Andiyst				
рн	1.81	8.13	18.17	0.13	106	1.02	8.1	0	2.15	19	1405	mun				
DO (mg/L)	1.24	7.27	11.42	1.37	1.29	7.14	1.1	Y	2.15	9	1405	Mun				
	Fa	ithead Minow	1		Cerodaph	nia Dubia		-	Date	Time		Analyst				
Temperature (°C)		25.0	-		2	4.4		2-	1519	140	5	im				
	M	HSF	Eff	uent		*Upstream		1	Date	Time	2	Analyst				
	2.	-	1 1 -			0 011	2-15-10			19 1405 1404						

• Upstream only performed if supplied by the client

Page 6 of 8

# 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 HIGHLI	GHTED AREAS		COMPLE	TED BY CLI	IENT (PLEAS		VT)				
			PROJECT N	UMBER	P.O. NUM	BER	MEANS	SHIPPED	1		LYSIS REQUESTED	(FOR LAB USE ONLY)		
	( DE AD	10.01	PLIONE NIL	ABED	FAY NUMBED		DATES		A	1		C 902/227		
ADDR	Bransen City of B	City of Branson (CoB)		MDEN	FAA RUM	DCK	DATES	MIFFEU				LOGIN # IVAI / A /		
CITY, S	Massearri CU WWIP Lab		SAMPLER				MATRIX TYPES:					LOGGED BY:		
	(417)337	7-8577	(PLEASE PRI	mkyanf	French		WW-WASTEWATER					LAB PROJ. #		
CONTA	0		SAMPLER'S				GW- GROUND WATER		- 1			TEMPLATE:		
			1 25				NAS- SOLID LCHT-LEACHATE		ese la comparte de la	ing		PROJ. MGR.: CHAD COOPER		
			1				OTHER:		E	dd				
2	SAMPLE DESCRIPTION AS YOU WANT ON REPORT		COLLECTED	COLLECTED	GRAB	COMP	TYPE	COUNT	Ň	F		REMARKS		
5118	WET TEST EFFLUENT CON	POSITE	2-12-19	0725		x	ww	3	x			-1-P, 1 Gal Cube, Unp		
CC	UPSTREAM GRAB (IF AVAI	LABLE)	2-12-19	0737	x		ww	1	x			11-8 250 0 44103		
			a 10-11									1 0 200 0 11		
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	Sulfare and the second state of the second sta											1010000		
					+					-+-		1-F, 1 Gal ( whe unp		
												1		
		11 10000 0000 000000000000000000000000												
5 FAX # F DR	TURNAROUND TIME REQUESTED (PLEASE (RUSH TAT IS SUBJECT TO POC LABS APPROVAL RUSH RESULTS VIA (PLEASE CIRCLE) FAX FERENT FROM ABOVE: PHONE # IF C	CIRCLE) NORMAL AND SURCHARGE) PHONE FFERENT FROM ABOVE:	RUSH	DATE R	RESULTS N	EEDED	$\odot$	The sample this area you the sample i this area you sample temp	iemper u reque lemper u allow peratur	ature w st that i sture is the jab	III be measured upon receip the lab notify you, before pro outside of the range of 0.1-4 to proceed with analytical te	t at the leb. By initialing sceeding with analysis, if .0°C. By not initialing eting regardless of the		
REL	INQUISHED BY: (SIGNATURE)	DATE	RECEIV	ED BY: (SIGNAT	URE)			DATE	A 1	0	COMMENTS:	(FOR LAB USE ONLY)		
$(\mathbf{r})$	ega-	TIME	- R1	100	1.2	0i		TIME	nei	7	0			
RELINCI	SHED BY: (SIGNATURE)	DATE	8 stace well			4F		DATE	945		U			
				0		•					SAMPLE TEMPERATURE	UPON RECEIPT Q. 9 °C		
TIME										CHILL PROCESS STARTE SAMPLE(S) RECEIVED ON	D PRIOR TO RECEIPT			
RELINQUI	SHED BY: (SIGNATURE)	DATE	RECEIV	ED BY: (SIGNAT	URE)			DATE			PROPER BOTTLES RECEN	VED IN GOOD CONDITION YOR N DEQUATE VOLUME YOR N		
		TIME						TIME			SAMPLES RECEIVED WITHIN HOLD TIME(S) (VOR N (EXCLUDES TYPICAL FIELD PARAMETERS) DATE AND TIME TAKEN BROW SAMPLE BOUTLE			
							-							

Page

# SUBCONTRACT ORDER Transfer Chain of Custody

### PDC Laboratories, Inc.

9021727

#### SENDING LABORATORY

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

> Sample: 9021727-01 Name: CC Outfall 001

# RECEIVING LABORATORY

PDC Laboratories, Inc. - St Louis 3278 N Highway 67 Florissant, MO 63033 (314) 432-0550

02/12/19 07:25
Waste Water
Cool <6

Analysis	Due	Expires	Comments	
04-Alk	02/22/19 16:00	02/26/19 07:25		
04-Ca 200.7 WWTot	02/21/19 16:00	08/11/19 07:25	DP	
04-Mg 200.7 WWTot	02/21/19 16:00	08/11/19 07:25	2500	

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

Date Shipped: 2-12-	-19 SAW Total #	of Containers: 2	Sample Origin	(State): <u>MO</u> PO #:
Turn-Around Time Requ		MAL CRUSH	Date Res	sults Needed:
Stacky Wolf Relinquished By	1500 sm 2-12-19 Date/Time	Received By	1140 and 2/14/19 Date/Time	Sample Temperature Upon Receipt 5.1 C Sample(s) Received on Ice or N Proper Bottles Received in Good Condition or N Bottles Filled with Adequate Volume Y or N Samples Received Within Hold Time Y or N
Relinquished By	Date/Time	Received By	Date/Time	Date/Time Taken From Sample Bottle Y or N





PROFESSIONAL • DEPENDABLE • COMMITTED

February 20, 2017

Mike Ray Branson, City of 616 W Pacific St Branson, MO 65611

Dear Mike Ray:

Please find enclosed the analytical results for the sample(s) the laboratory received on 2/7/17 10:20 am and logged in under work order 7020800. 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




4

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

#### ANALYTICAL RESULTS

Sample: 7020800-01 Name: CC Outfall 001 Matrix: Waste Water - Composite					Sampled: Received:	02/07/17 0 02/07/17 1	07:15 10:20
Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Distilled Nutrients - STL							
Ammonia-N	< 0.30	mg/L		02/13/17 19:09	02/13/17 19:09	RMD	EPA 350.1*
General Chemistry - SPMO							
Ceriodaphnia Dubia TUa	< 1.0	units		02/07/17 16:10	02/07/17 16:10	JMD1	EPA 2002.0*
Chlorine - Total Residual	0.14	mg/L	н	02/07/17 11:07	02/07/17 11:07	RRG	SM 4500-CI G*
Conductivity	710	umhos/cm		02/07/17 12:14	02/07/17 12:14	JMD1	SM 2510B
Dissolved Oxygen	9.0	mg/L	н	02/07/17 12:09	02/07/17 12:09	JMD1	SM 4500-O G*
рН	7.2	pH Units	н	02/07/17 12:09	02/07/17 12:09	JMD1	SM 4500-H B - SW 9040*
Pimephales Promelas TUa	< 1.0	units		02/07/17 16:10	02/07/17 16:10	JMD1	EPA 2002.0*
General Chemistry - STL							
Alkalinity - total as CaCO3	96	mg/L		02/13/17 16:20	02/13/17 16:21	MEG	SM 2320B*
Total Metals - STL							
Calcium	43	mg/L		02/10/17 12:00	02/13/17 14:57	KLA	EPA 200.7
Hardness	170	mg/L		02/10/17 12:00	02/13/17 14:57	KLA	SM 2340B
Magnesium	15	mg/L		02/10/17 12:00	02/13/17 14:57	KLA	EPA 200.7
Sample: 7020800-02	<u> </u>			· · · · · · · · · · · · · · · · · · ·	Sampled:	02/07/17 (	08:04
Name: CC Upstream Grab Matrix: Surface Water - Grab					Received:	02/07/17 1	10:20
Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Distilled Nutrients - STI							
Ammonia-N	0.77	mg/L		02/13/17 19:21	02/13/17 19:21	RMD	EPA 350.1*
General Chemistry - S PMO							
Chlorine - Total Residual	0,16	mg/L	н	02/07/17 11:07	02/07/17 11:07	RRG	SM 4500-CI G*
Conductivity	190	umhos/cm		02/07/17 12:14	02/07/17 12:14	JMD1	SM 2510B
Dissolved Oxygen	8.8	mg/L	н	02/07/17 12:09	02/07/17 12:09	JMD1	SM 4500-O G*
pH	7.2	pH Units	н	02/07/17 12:09	02/07/17 12:09	JMD1	SM 4500-H B - SW 9040*
•							



#### 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

#### **Qualifiers**

H Test performed after the expiration of the appropriate regulatory/advisory maximum allowable hold time.



Certified by: Chad Cooper, Laboratory Supervisor

Cooper (	reck	Fathead Hato	h 020617A	MHSF	17BC 3		
003		CD Hato	h 9 pm 05-16B	Board	003		
Conc.	Initial	24 hour	48 hour		Sol Thmes		Constant.
50	10	10	10	Start Date:	2-7-17		
MHSF	10	10	10		Time	Analyst	Sint
UP	920	9	9	0 Hour	lelo	Rea	
25	11 40	11	$10^{-1}$	24 Hour	1007	RRG	
25	to at	10	10	48 Hour	1990	JMD	1 March
100	9 70	9	9		10.50		
UP	10	10	10		Fathead Minow		
100	10	10	10	48 Ho	ours	Analyst	
AHSF	10	10	10	>100 TU	- <1	J.Mo	
6.25	10	10	10	Ce	rodaphnia Dubia		
12.5	10	10	10	48 Ho	DUFS	Analyst	
6,25	10	10	10	7100 TU	= <1	JMD	
12.5.	10	10	10	Comments:			
50	10	10	ID				
UP	5	5	5		and the second second	1	
12.5	5	5	5				
6.25	5	5	5			. Strawley	
25	5	5	5		1.14 S. S. S.		
25	5	5	9	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1			
50	5	5	5	Analyst Signature:	22 Fr- File	AS	
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629	.5.	5	9	Date: 2	12-10-17		
MHSF	4.5	5	5	ang a kanabat kawa na sa			
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625	5	5	5	Understood By:	you		
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118	5	- 5	5	Date:	2-10-17		
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P	E	5	6				
	Capper C 003 Conc. 50 AHGF UP 25 25 100 UP 100 AHGF 6,25 100 AHGF 6,25 100 00 100 6,25 00 00 6,25 100 00 6,25 00 00 6,25 00 00 100 6,25 00 00 00 00 00 00 00 00 00 0	Creek $OO3$ Initial         S.D       10 $AHGF$ 10 $VP$ $9$ $30$ $UP$ $9$ $30$ $2.5$ $N0$ $UP$ $9$ $30$ $UP$ $10$ $100$ $100$ $9$ $100$ $100$ $9$ $100$ $100$ $100$ $100$ $AHJFF$ $100$ $100$ $6.25$ $100$ $100$ $G.25$ $100$ $100$ $G.25$ $100$ $100$ $G.25$ $500$ $100$ $G.25$ $5$ $500$ $500$ $I.000$ $5$ $500$ $500$ $I.000$ $500$ $500$ $500$ $I.000$ $500$ $500$ $500$ $I.000$ $500$ $500$ $500$ $I.000$ $500$ $500$ $500$ $500$ $I.000$ $500$ $500$ $500$	Cooper Creek         Fathead Hate $003$ COHate           Conc.         Initial         24 hour $50$ 10 $1.0$ $50$ 10 $2.0$ $0P$ 9         9         9 $0P$ 9         9         9 $0P$ 9         9         9 $0P$ 9         9         9 $0P$ 9         9         9 $0P$ 9         9         11 $2.5$ 10         10 $100$ 10         10 $100$ 10         10 $100$ 10         10 $12.5$ 10         10 $12.5$ 10         10 $0P$ 5         5 $50$ 10         10 $0P$ 5         5 $000$ 5         5 $000$ 5         5 $000$ 5         5 $000$ 5         5 </td <td>Cooper Creek         Fathead Hatch         <math>0206 7-A</math> <math>003</math>         CD Hatch         <math>9pM05-6B</math>           Conc.         Initial         24 hour         48 hour           <math>50</math>         10         <math>10</math> <math>10</math> <math>49pM05-6B</math> <math>00</math> <math>10</math> <math>0P</math> <math>9pM05-6B</math> <math>0P</math> <math>10</math> <math>10</math> <math>0P</math> <math>9pM05-6B</math> <math>0P</math> <math>9pM05-6B</math> <math>0P</math> <math>10</math> <math>10</math> <math>0P</math> <math>9pM05-6B</math> <math>10</math> <math>0P</math> <math>9pM05-6B</math> <math>10</math> <math>10P</math> <math>10</math> <math>10</math> <math>10P</math> <math>10</math> <math>10</math> <math>10P</math> <math>10</math> <math>10</math> <math>10P</math> <math>10</math> <math>10</math> <math>10P</math> <math>5</math> <math>5</math> <math>20P</math> <math>5</math> <math>5</math></td> <td>Cooper (ref)         Fathead Hatch         <math>O2.0617-6B</math>         MHSF           QO3         CD Hatch         <math>ggM05-46B</math>         Board           Conc         Initial         24 hour         48 hour         Board           SQ         10         10         10         Start Date:           AHMF         10         CD         10         Start Date:           AHMF         10         CD         10         Start Date:           AHMF         10         CD         10         Athour           2.5         11 NQ         11         11         24 Hour           2.5         NQ         CO         10         48 Hour           2.5         NQ         CO         10         48 Hour           100         10         10         10         48 Hour           100         10         10         10         24 Mour           42.5         10         10         10         10         26           12.5         10         10         10         10         20         70           12.5         10         10         10         10         20         70           12.5         5</td> <td><math display="block">\begin{array}{c ccccccccccccccccccccccccccccccccccc</math></td> <td>Cooper Creek         Failed Hatch <math>2g \neq 005^{-1}6B</math>         MMSS <math>17, 8C \leq 5</math>           Conc         Initial         Call of the set of the</td>	Cooper Creek         Fathead Hatch $0206 7-A$ $003$ CD Hatch $9pM05-6B$ Conc.         Initial         24 hour         48 hour $50$ 10 $10$ $10$ $49pM05-6B$ $00$ $10$ $0P$ $9pM05-6B$ $0P$ $10$ $10$ $0P$ $9pM05-6B$ $0P$ $9pM05-6B$ $0P$ $10$ $10$ $0P$ $9pM05-6B$ $10$ $0P$ $9pM05-6B$ $10$ $10P$ $10$ $10$ $10P$ $10$ $10$ $10P$ $10$ $10$ $10P$ $10$ $10$ $10P$ $5$ $5$ $20P$ $5$ $5$	Cooper (ref)         Fathead Hatch $O2.0617-6B$ MHSF           QO3         CD Hatch $ggM05-46B$ Board           Conc         Initial         24 hour         48 hour         Board           SQ         10         10         10         Start Date:           AHMF         10         CD         10         Start Date:           AHMF         10         CD         10         Start Date:           AHMF         10         CD         10         Athour           2.5         11 NQ         11         11         24 Hour           2.5         NQ         CO         10         48 Hour           2.5         NQ         CO         10         48 Hour           100         10         10         10         48 Hour           100         10         10         10         24 Mour           42.5         10         10         10         10         26           12.5         10         10         10         10         20         70           12.5         10         10         10         10         20         70           12.5         5	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Cooper Creek         Failed Hatch $2g \neq 005^{-1}6B$ MMSS $17, 8C \leq 5$ Conc         Initial         Call of the set of the

4

Page 4 of 19

DC Laboratories, SP	MO. 70205	100	Routi	ne Ch	emist	ries (N	Aultiple D	lutior	Pag	e	of
Sample #	Cooper	Creek	Fat	head Hatch	Ded	AFL	MHSF	NA HSE IS	HBC3		
Shell	002	5		CD Hatch	SPAD	5-160	Board	003			
					Cali	bration dat	a	n gitter i star			
H	Initial	Time	Analyst	48 hour	Time	Analyst	DO (mg/L)	Time	Analyst	Pressure (mmHg)	% Sat
4.00	4-00	924	PAST.	4.0	1915	Res	Initial	901	1402	720	10
7.00	DeF	C1212	<i>峰和</i> 方	7.09	113	1229	1 Hour	1004	PRG	721	100
10.00	10.01	910	120	10.02	920	V REA	24 Hour	400	Reg	724	100
Curve	M.10	7 30	P. Eng	93.1	1 20	fee.	48 Hour	900	I KKB	+39	100
					unit Unit	al/Receive					
Test	MHSF	6.25%	12.50%	25%	50%	Effluent	Upstream *	EFF-DUP	Time	Batch	Analy
рН	Folz	7000	6.94	2.97	10.94	7.21	7,25	7.20	1209	870477	RIU
DO (mg/L)	8.0	8.3	3.4	8.3	8.3	9.0	3.8	901	1209	8702477	KK
Martin		M	HSF	Eff	uent	Up	stream *	OPA Tir	ne	Batch	Analy
Conductivity (µ	Mohs)	31-	7	71	3	19:	3.10	KRE	12/4	8702477	K
	Effl	uent	Upstr	ream *	Ba	atch	Time	Ana	lyst -	Style 1	
Chlorine (mg/L)	Dol	4	0.	17	BAC	2079	1107	: pq	2	the state of	
Ammonia (mg/L)	0.1	7	0.7	7	1870	2506	2/3, 19:09	SMO	n		e sa la
Alkalinity (mg/L)	96				870	2503		the second		a data a a	
Hardness (mg/L)	17	0			\$700	1360		·	A	and the second sec	
						OHQU	1				
	1 11. 1. 3.	Fathead	Minow	le -		erodaphnia	a Dubia	.32 Tir	ne	Analyst	
Temperature (°C)	2	1209	6	03)	22	3,5	(pl)	lali	2	las	
·····································						1 Hour					te de la casa de la casa de la casa de la casa de la casa de la casa de la casa de la casa de la casa de la cas
Test	1.11	MHSF	44 - 484 - 1		Effluent	2	Upstream *	· C · · Tir	ne	Analyst	
DO (mg/L)	3	.0	B	ç	3.4	5. H	83	1712		RRG	
147 A 199 A	Fa	thead Min	ow		Ceroda	aphnia Dub	la	Tir	ne	Analyst	
Temperature (°C)	2	3.9	(03)		230	g	(01)	1-71	2	RRG	
						24 Hour		a para sita			14
Test	MHSE	6.25%	12.50%	25%	50%	Effluent	Upstream *	Tir	ne .	Analyst	
DO (mg/L)	Folo	7.5	Folo	705	Fole	7.3	Fole	101=	+	RRG	
	Fa	thead Min	ow	12 1 1.	Cerod	aphnia Dub	la	Tir	ne	Analyst	
Temperature (°C)	25.	0	(PB)		25.10	5	(01)	- Hel 7	-	ROG	
		Million	4	1. Sec. 1	and the second	48 Hour	30 <u>52</u> 00 - Kaz		4. Sec. 1		
Test	MHSE	6.25%	12.50%	25%	50%	Effluent	Upstream *	Tir	ne	Analyst	
nH	2.82	7.58	74	7.58	757	756	7.64	161	FT	740	· · ·
DO (mg/l)	77	75	26	75	73	31	7.4	16:	7	. I Mo	
	Fa	thead Min	nw		Ceroda	aohnia Dub	ia	Tir	ne .	Analyst	1
8 8 W	10	6	Cala	-	24	9	(01)	154	0	TMD	
Temperature (°C)	1 24	PF			V 1.1		- CALL			and the second of the second s	
Temperature (°C)	1. 24	M	ICE	Fff	uent	Lin	stream *	Tin	ne	Analyst	

Analyst Signature: Life Read and Understood By:

\* Upstream only performed if supplied by the client Date: 2-10-13

2-20-17 Date:

Report Date: 07 Feb-17 10:07 (p 1 of 1) **CETIS Test Data Worksheet** 16-3644-6880/618A32A0 Test Code/ID: PDC Labs SPMO Ceriodaphnia 48-h Acute Survival Test Start Date: 07 Feb-17 13:59 Species: Ceriodaphnia dubia Sample Code: 53C2E76B Protocol: EPA/821/R-02-012 (2002) Sample Source: City of Branson End Date: 09 Feb-17 13:59 Material: **Dilution Water** Sample Station: Cooper Creek Sample Date: 07 Feb-17 10:04 # Exposed 24h Survival 48h Survival Code Rep Pos Notes Conc-% U 12.5 6.25 6.25 L 6.25 U 6.25 12.5 L 12.5 L U 12.5 U 3 28 F L

CET	'IS Tes	t Da	ta W	orks	heet			Report Dat Test Code	te: 07 Fet /ID: 12-7	-17 10:07 (p 1 of 1) 135-9363/4BC76783
Fath	ead Minn	low 48	3-h Ac	ute Su	rvival Test					PDC Labs SPMO
Star End Sam	t Date: Date: ple Date:	07 F 09 F 07 F	eb-17 eb-17 eb-17	13:59 13:59 10:04	Species: F Protocol: E Material: D	Pimephales promelas PA/821/R-02-012 (2002) Dilution Water		Sample Code: Sample Source: Sample Station:	53C2E76B City of Branson Cooper Creek	
C	Conc-% C				# Exposed	24h Survival	48h Survival		Notes	
	50		1	1						
	888	L	2	2						
A	0	U	1.	3						
A	25		2	4						
19 - 1 2	25		1	5	-					
	100		2	6						
	0	U	2	7						
*	100		1	8					ana an	
A	888	L	- 1	9						
	6.25		1	10						
	12.5		2	11						
R	6.25		2	12						
4	12.5		1	13						
*	50		2	14				1		

Analyst: JMD Page 7 of 19

CETIS Sun	nmary Rep	ort					Re Te	port Date st Code:	: 14   4B	Feb-17 14:5 C76783   12	0 (p 1 of 1 -7135-9363
Fathead Minn	ow 48-h Acute	Surviva	Test							PDC La	abs SPMO
Batch ID: Start Date: Ending Date: Duration:	08-1936-6858 07 Feb-17 13: 09 Feb-17 13: 48h	59 59	Test Type: Protocol: Species: Source:	Survival (48h) EPA/821/R-02 Pimephales pr In-House Cultu	-012 (2002) omelas ire		Ar Di Br Ag	nalyst: luent: ine: je:	Jason Davis Mod-Hard Syntl Not Applicable	netic Water	
Sample ID: Sample Date: Receipt Date: Sample Age:	14-0528-2155 07 Feb-17 10: 07 Feb-17 13: 4h	04 58	Code: Material: Source: Station:	53C2E76B Dilution Water City of Branso Cooper Creek	n		CI Pr	lent: oject:	City of Branson Effluent Charac	terization (A	nnual)
Multiple Com	parison Summ	nary									
Analysis ID	Endpoint		Comp	arison Method	Les Maria		NOEL	LOEL	TOEL	TU	PMSD /
06-2396-7625	48h Survival R	Rate	Dunne	ett Multiple Com	parison Tes	t	100	> 100	n/a	1	3.03%
Point Estimat	e Summary										
Analysis ID	Endpoint		Point	Estimate Meth	bod		Level	%	95% LCL	95% UCL	TU 🗸
03-5135-3734	48h Survival F	late	Linea	Interpolation (I	CPIN)		LC5 LC10 LC15 LC20 LC25 LC40 LC50	>100 >100 >100 >100 >100 >100 >100 >100	n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a	<1 <1 <1 <1 <1 <1 <1 <1
48h Survival I	Rate Summary	, 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997									
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Er	T Std Dev	CV%	%Effect
0	U	2	1.000	0 1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		2	1.000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		2	1.000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		2	1.000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		2	1.000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		2	1.000	0 1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
888	L	2	1.000	0 1.0000	1.0000	1.0000	1.0000	0.0000	) 0.0000	0.00%	0.00%
48h Survival F	Rate Detail										
Conc-%	Code	Rep 1	Rep 2								
0	U	1.0000	1.000	)				1			
6.25		1.0000	1.000	)							
12.5		1.0000	1.000								
25		1.0000	1.000								
50		1.0000	1.000	)							
100		1.0000	1.000	)							
888		1.0000	1.0000	)						_	Contraction of the
48h Survival F	Rate Binomials	5									
Conc-%	Code	Rep 1	Rep 2				: موقع بالمحمد الم	: 		a reprint	
0	U	9/9	10/10								
6.25		10/10	10/10								
12.5		10/10	10/10								
25		10/10	11/11								
50		10/10	10/10								
100		10/10	9/9								
888	L	10/10	10/10								- Tr

<b>CETIS Anal</b>	ytical Rep	port					Rep Tes	ort Date: t Code:	14 4B	Feb-17 14 C76783	:50 (p 1 of 1
Fathead Minno	w 48-h Acute	Surviva	al Test						Section 1	PDC	Labs SPMC
Analysis ID: Analyzed:	06-2396-762 14 Feb-17 14	5 :43	Endpoint: Analysis:	48h Survival R Parametric-Co	ate introl vs Trea	atments	CET	ris Version cial Result	n: CETISvi s: Yes	.9.2	
Data Transform	n en statistik	Alt H	lyp				NOEL	LOEL	TOEL	TU	PMSD
Angular (Correc	ted)	C > T					100	> 100	n/a	1	3.03%
Dunnett Multip	le Compariso	on Test	1. 1. 1. 1.		1.14 1.14						
Control	s Conc-9	6	Test	Stat Critical	MSD D	F P-Type	P-Value	Decisio	n(a:5%)		
Upstream Contr	6.25		-1.047	2.827	0.012 2	CDF	0.9801	Non-Sig	nificant Effect	1. 4 1 34	and the second second second second second second second second second second second second second second second
	12.5		-1.047	2.827	0.012 2	CDF	0.9801	Non-Sig	nificant Effect	E a la compañía	
A. B. S. S.	25		-1.946	2.827	0.012 2	CDF	0.9970	Non-Sig	nificant Effect		
	50	1.0	-1.047	2.827	0.012 2	CDF	0.9801	Non-Sig	nificant Effect		
	100		0	2.827	0.012 2	CDF	0.8333	Non-Sig	nificant Effect	i	
Auxiliary Tests						A State					
Attribute	Test				Test Stat	Critical	P-Value	Decision	n(a:5%)		
Extreme Value	Grubbs	Extreme	Value Test	Alter Sec.	1.417	2.412	1.0000	No Outli	ers Detected	1.61 14	
Control Trend	Mann-K	endall Tr	end Test		1.417		1.0000	Non-Sig	nificant Trend	in Contro	ls
ANOVA Table			المناجع والمراجع المراجع معرف المراجع								State Sec
Source	Sum Sq	uares	Mean	Square	DF	F Stat	P-Value	Decision	n(a:5%)		
Between	9.472E-0	)5	1.894	E-05	5	1.105	0.4451	Non-Sig	nificant Effect		
Error	0.00010	29	1.714	E-05	6						
Total	0.00019	76	Net al produ	No. 27 5.	11.						
Distributional T	ests .				1. 37 6	A Start	111	New William			
Attribute	Test				Test Stat	Critical	P-Value	Decision	n(a:1%)		
Distribution	Shapiro-	Wilk W N	Iormality Tes	st a constant	0.8544	0.8025	0.0416	Normal (	Distribution		
48h Survival Ra	ate Summary	M1 1 1						and the second			
Conc-%	Code	Cour	t Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	H	2	1.0000	1 0000	1.0000	1.0000	1 0000	1 0000	0.0000	0.00%	0.00%
6.25		2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100	1.4.1.1.1	2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
Angular (Correc	cted) Transfo	rmed Su	immary						Carago en	and the second	
Conc-%	Code	Coun	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	U	2	1.408	1.353	1.463	1.408	1.403	1.412	0.004339	0.44%	0.00%
6.25		2	1.412	1.409	1.415	1.412	1.412	1.412	0	0.00%	-0.31%
12.5		2	1.412	1:409	1.415	1.412	1.412	1.412	0	0.00%	-0.31%
25	et en la seconda de la seconda d	2	1.416	1.368	1.463	1.416	1.412	1.419	0.003732	0.37%	-0.57%
50		2	1.412	1.409	1.415	1.412	1.412	1.412	0	0.00%	-0.31%
100		- 2	1.408	1.353	1.463	1.408	1.403	1.412	0.004339	0.44%	0.00%
48h Survival Ra	te Detail							N S D			N. Pro
Conc-%	Code	Rep 1	Rep 2					1.1.1			
0	U	1.0000	0 1.0000								a second and a second as
6.25	e s gui e	1.0000	0 1.0000						1.00		
12.5		1.0000	1.0000								1
25		1.0000	1.0000				Neger en				
50		1.0000	1.0000					· · · ·			



Analyst: JMV Page 10 of 10

CETIS	S Ana	lytical Repo	ort					Rep Test	ort Date: Code:	14 4B	Feb-17 1 C76783	4:50 (p 1 of 12-7135-936
Fathea	d Minn	ow 48-h Acute \$	Survival To	≫st				-			PDC	Labs SPM
Analys	is ID:	03-5135-3734	En	dpoint:	48h Survival Ra	ate		CET	IS Version	: CETISVI	.9.2	
Analyz	ed:	14 Feb-17 14:4	3 An	alysis:	Linear Interpola	tion (ICPIN	)	Offic	cial Result	s: Yes		
Linear	Interpo	lation Options										
X Tran	sform	Y Transform	n Se	bed	Resamples	Exp 95%	CL Met	hod				
Linear		Linear	15	15856	1000	Yes	Two	Point Interp	olation			
Residu	al Anal	ysis										
Attribu	te	Method			Test Stat	Critical	P-Value	Decision	(a:5%)			
Extrem Control	e Vaiue Trend	Grubbs Ex Mann-Ken	dreme Vali Idail Trend	ue T <b>e</b> st Test	1.417 1.417	2.412	1.0000 1.0000	No Outlie Non-Sign	rs Detected	d in Controls		
Point E	stimate	<b>S</b>										
Level	%	95% LCL	95% UCI	TU	95% LCL	95% UCL						
_C5	>100	n/a	п/а	<1	n/a	n/a						
_C10	>100	n/a	n/a	<1	n/a	n/a						
LC15	>100	n/a	n/a	<1	n/a	n/a						
_C20	>100	n/a	n/a	<1	n/a	n/a						
LC25	>100	n/a	n/a	<1	n/a	n/a						
LC40	>100	n/a	n/a	<1	n/a	n/a						
LC50	>100	n/a	n/a	<1	n/a	n/a						
18h Su	rvival R	ate Summary				Calcu	lated Varia	te(A/B)				
Conc-%	6	Code	Count	Mean	Min	Мах	Std Err	Std Dev	CV%	%Effect	A	В
<b>)</b> 1 1 1 1 1 1	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	U	2	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	19	19
5.25			2	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	20	20
2.5			2	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	20	20
25			2	1,0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	21	21
50			2	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	20	20
100			2	1.0000	1.0000	1.0000	0.0000	0:0000	0.00%	0.0%	19	19
18h Su	rvival R	ate Detail										
Conc-%	6	Code	Rep 1	Rep 2								
)		U	1.0000	1.0000	)							
5.25			1.0000	1.0000	)							
12.5			1.0000	1.0000								
25			1.0000	1.0000	)							
50			1.0000	1.0000	)							
100			1 0000	1.0000	)							



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CETIS Sun	nmary Rep	oort					Rej Tes	oort Date: t Code:	14 61	Feb-17 14:5 8A32A0   16	0 (p 1 of 2 -3644-6880
Ceriodaphnia	48-h Acute S	urvival Test								PDC La	ibs SPMO
Batch ID: Start Date: Ending Date: Duration:	11-9212-3487 07 Feb-17 13: 09 Feb-17 13: 48h	Te 59 Pr 59 Sp Sc	ost Type: otocol: pecies: purce:	Survival (48h) EPA/821/R-02 Ceriodaphnia c In-House Cultu	-012 (2002) Iubia ire		An Dil Bri Age	alyst: uent: ne:   e:	Jason Davis Upstream of Dis Not Applicable	scharge	
Sample ID: Sample Date: Receipt Date: Sample Age:	14-0528-2155 07 Feb-17 10: 07 Feb-17 13: 4h	Co 04 Ma 58 So St	ode: aterial: ource: ation:	53C2E76B Dilution Water City of Bransor Cooper Creek			Cik Pro	ent: ( )ject:	City of Branson Effluent Charac	terization (A	nnual)
Multiple Com	parison Sumn	nary									
Analysis ID 00-8319-4639	Endpoint 48h Survival F	Rate	Compa Steel M	arison Method	Sum Test		NOEL 100	LOEL > 100	TOEL n/a	TU 1	PMSD /
Point Estimat	e Summary										an karan a
Analysis ID	Endpoint		Point E	Estimate Meth	od		Level	%	95% LCL	95% UCL	TU /
10-8768-9867	48h Survival F	Rate	Linear	Interpolation (I	CPIN)		LC5 LC10	>100 >100	n/a n/a	n/a n/a	<1 <1
							LC15	>100	n/a n/a	n/a n/a	<1 <1
							LC25	>100	n/a	n/a	<1
							LC40	>100	n/a	n/a	<1
and the second second							LC50	>100	n/a	n/a	<1
Test Acceptat	bility					TAC	Limits				
Analysis ID	Endpoint		Attribu	te	Test Stat	Lower	Upper	Overla	p Decision		de la deservação A deservação de la deserva
00-8319-4639 10-8768-9867	48h Survival F 48h Survival F	tate Late	Control Control	Resp Resp	1 1	0.9 0.9	>> >>	Yes Yes	Passes C Passes C	riteria riteria	
48h Survival F	Rate Summary										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Er	r Std Dev	CV%	%Effect
0	U	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
20		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100			1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
888	L.	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
48h Survival F	Rate Detail								a the second straining of		
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4						
0	U	1.0000	1.0000	1.0000	1.0000						
6.25		1.0000	1.0000	1.0000	1.0000						
12.5		1.0000	1.0000	1.0000	1.0000						
25		1.0000	1.0000	1.0000	1.0000						
50		1.0000	1.0000	1.0000	1.0000						
100		1.0000	1.0000	1.0000	1.0000						
888	L	1.0000	1.0000	1.0000	1.0000						

CETIS Summa	ary Repo	ort					Report Date: Test Code:	14 Feb-17 14:50 (p 2 of 2) 618A32A0   16-3644-6880
Ceriodaphnia 48-h	Acute Sur	vival Test				er sanga sa sa sa		PDC Labs SPMO
48h Survival Rate	Binomials		an an an an an an an an an an an an an a					
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4			
0	U	5/5	5/5	5/5	5/5			
6.25		5/5	5/5	5/5	5/5			
12.5		5/5	5/5	5/5	5/5			
25		5/5	5/5	5/5	5/5			
50		5/5	5/5	5/5	5/5			
100		5/5	5/5	5/5	5/5			
888	L	5/5	5/5	5/5	5/5			

<b>CETIS Analy</b>	tical Rep	oort					Test	Code:	6	18A32A01	16-3644-68
Ceriodaphnia 48	-h Acute Su	Irvival Tes	t Black							PDC	Labs SPN
Analysis ID: 0 Analyzed: 1	0-8319-4639 4 Feb-17 14	E	ndpoint: 48 nalysis: No	n Survival R	ate -Control vs	Treatments	CET	IS Version	n: CETISv s: Yes	1.9.2	
Data Transform		Alt Hy	D				NOEL	LOEL	TOEL	TU	
Angular (Correcte	ed)	C>T	A State of the				100	> 100	n/a	1	
Steel Many-One	Rank Sum	Test			a destas					a Ballanda	
Control vs	Conc-%		Test Stat	Critical	Ties Di	P-Type	P-Value	Decisio	n(a:5%)		
Upstream Contr.	6.25		18	10	1 6	Asymp	0.8333	Non-Sig	nificant Effe	*	And the second
	12.5		18	10	1 6	Asymp	0.8333	Non-Sig	nificant Effe	1	
	25		18	10	1 6	Asymp	0.8333	Non-Sig	nificant Effe	t and a state	
	50		18	10	1 6	Asymp	0.8333	Non-Sig	nificant Effe	st .	
	100		18	10	1 6	Asymp	0.8333	Non-Sig	nificant Effect	t	
Auxiliary Tests						A A Carrow		74 ±			
Attribute	Test				Test Stat	Critical	P-Value	Decision	n(a:5%)		1
Control Trend	Mann-K	endall Trer	d Test				1.0000	Non-Sig	nificant Tren	d in Contro	ls
ANOVA Table						1					
Source	Sum Sq	uares	Mean Squ	Jare	DF	F Stat	P-Value	Decision	n(a:5%)		
Between	0	- W	0	1	.5	65540	<1.0E-37	Significa	nt Effect		
Error	0	and the second	0		18	and the second second					
Total	0		e en alta en		23						
48h Survival Rat	e Summary	11 - Ar	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1								
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effec
0	U	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25	A St. Starts	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50	a fire a	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1,0000	1.0000	1.0000	0.0000	0.00%	0.00%
Angular (Correct	ed) Transfo	rmed Sum	mary	1							
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effec
0	U	4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.00%	0.00%
6.25		4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.00%	0.00%
12.5		. 4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.00%	0.00%
25		4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.00%	0.00%
50		4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.00%	0.00%
100		4	1.345	1.345	1.346	1.345	1.345	1.345	0	0.00%	0.00%
48h Survival Rate	e Detall										
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4						
0	U	1.0000	1.0000	1.0000	1.0000						
		1.0000	1.0000	1.0000	1.0000			1.1.1.1.1	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		
6.25		1 0000	1.0000	1.0000	1.0000						
6.25 12.5						Sector Contraction					
6.25 12.5 25		1.0000	1.0000	1.0000	1.0000						
5.25 12.5 25 50		1.0000	1.0000	1.0000	1.0000 1.0000						

CETIS Ana	alytical Rep	oort					Report Date: Test Code:	14 Feb-1 618A32A	7 14:50 (p 2 of 2 0   16-3644-6880
Ceriodaphnia	48-h Acute Su	urvival Te	st					P	DC Labs SPMO
Analysis ID: Analyzed:	00-8319-4639 14 Feb-17 14	) :42	Endpoint: 4 Analysis: N	8h Survival I onparametri	Rate c-Control vs T	reatments	CETIS Version: Official Results;	CETISv1.9.2 Yes	
Angular (Con	rected) Transfo	ormed De	tail						
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4				
0	U	1.345	1.345	1.345	1.345				
6.25		1.345	1.345	1.345	1.345				
12.5		1.345	1,345	1.345	1.345				
25		1.345	1,345	1.345	1.345				
50		1.345	1.345	1.345	1.345				
100		1.345	1.345	1.345	1.345				
					Connection	3.0c41			
a2 m a1	18 425		2	I 001		0.02+00 -2.0 -1		<b>10 10 10 10 10</b>	

Analyst: TMD Page 15 of 19

Cerioda	a hata			- 1								
	pnnia	48-h Acute Sur	vival Test	1							PDC	Labs SPM
Analysis Analyze	s ID: d:	10-8768-9867 14 Feb-17 14:4	End 2 Ana	lpoint: lysis:	48h Survival Ra Linear Interpola	ate ition (ICPIN	) 	CET	IS Version: al Results	CETISv1 : Yes	.9.2	
Linear Ir	nterpol	lation Options										
X Trans	form	Y Transform	n See	d	Resamples	Exp 95%	CL Met	hod				
Linear		Linear	299	843	1000	Yes	Two-	Point Interp	olation			
Residua		/sis										
Attribute	9	Method			Test Stat	Critical	P-Value	Decision	(a:5%)			
Control 7	Frend	Mann-Ken	dall Trend	Test			1.0000	Non-Signi	ficant Trend	I in Controls		
Point Et	timate	8										
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL						
C5	>100	n/a	n/a	<1	n/a	n/a		<u> </u>				
LC10	>100	n/a	n/a	<1	n/a	n/a						
C15	>100	n/a	n/a	<1	n/a	n/a						
_C20	>100	n/a	n/a	<1	n/a	n/a						
C25	>100	n/a	n/a	<1	n/a	n/a						
C40	>100	n/a	n/a	<1	n/a	n/a						
.C50	>100	n/a	n/a	<1	n/a	п/а			<u></u>		tan ar san san san san san san san san san san	
18h Sun	vival R	ate Summary				Calcu	iated Varia	te(A/B)				
Conc-%		Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	<b>A</b>	В
)		U	4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	20	20
5.25			4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	20	20
12.5			4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	20	20
25			4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	20	20
50			4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	20	20
100			4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	20	20
18h Surv	vival R	ate Detail										
Conc-%	t da.	Code	Rep 1	Rep 2	Rep 3	Rep 4		- 				
<b>)</b> (16) (17)		U	1.0000	1.0000	1.0000	1.0000						
3.25			1.0000	1.0000	1.0000	1.0000						
2.5			1.0000	1.0000	1.0000	1.0000						
25			1.0000	1.0000	1.0000	1.0000						
50			1.0000	1.0000	1.0000	1.0000						
100			1.0000	1.0000	1.0000	1.0000						
Fraphics	5										. A. A.	
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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 HIGHLIG	GHTED AREAS	MUST BE	COMPLE	ETED BY CLI	ENT (PLEA	SE PRIN	(т)					
BRANSON, CITY OF		PROJECT NU CC WE1	T	P.O. NUM	BER	MEANS	SHIPPED	3	) ANAI	LYSIS RE	QUESTED		(FOR LAB US	EONLY)
ADDRESS		PHONE NUI	MBER	FAX NUM	BER	DATE S	HIPPED	M	T				LOGIN # 707	0800
CU WWIP LAB		SAMPLER				MATRIX	YPES:						LOGGED BY: 7	4°0
BRANSON, MO 65616	5	(PLEASE PRIN	Ryan	Frence	ch	WW-WASTEN	WATER IG WATER	tiple					LAB PROJ. #	
CONTACT PERSON		SAMPLER'S SIGNATURE				GW- GROUND WWSL- SLUD NAS- SOLID	D WATER IGE	Mul					TEMPLATE:	
		P		700		LCHT-LEACH	ATE	E					PROJ. MGR.: CHA	D COOPER
2 SAMPLE DESCRIPTION AS YOU WANT ON REPORT		DATE COLLECTED	TIME COLLECTED	SAMPL	E TYPE COMP	MATRIX TYPE	BOTTLE COUNT	Ň					REMARK	S
CC OUTFALL 001		2-7-17	0715		X	ww	4	x					Temp. 14.1	PH 7.03
CC UPSTREAM		2-7-17	0804	X		SW	2	X					Temp. 10.7's	PH- 7.60
												_		
5 TURNAROUND TIME REQUESTED (PLEASE CIRCL (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND S RUSH RESULTS VIA (PLEASE CIRCLE) FAX PHO FAX # IF DIFFERENT FROM ABOVE: PHONE # IF DIFFER	E) NORMAL BURCHARGE) DNE ENT FROM ABOVE:	RUSH	DATE R	ESULTS N	EEDED	6	The sample this area yo the sample this area yo sample tem	tempera u reques tempera u allow perature	ature wi st that ti ture is c the lab t	ll be mea he lab no butside o o procee	sured upoi tify you, be f the range d with ana	n receipt efore proc of 0.1-6. lytical tes	at the lab. By initialing ceeding with analysis, if o <sup>r</sup> C. By not initialing sting regardless of the	
RELINQUISHED BY: (SIGNATURE)	DATE 2-7-17 TIME 0832		DBY: (SIGNATI	JRE) Car	K.		DATE 2-7 TIME	-17		(8)	сомі	MENTS: (	FOR LAB USE ONLY)	
RELINQUISHED BY: (SIGNATURE)	DATE 2-7-17	RECEIVE	D BY: (SIGNATI	JRE)	1		DATE	2.7.	17	SAMPL	E TEMPER	ATURE	JPON RECEIPT	628 °C
( Dante Carr	TIME 0857	T VAL	lia M	1/FF	the.	7	TIME	90		CHILL I	ROCESS	STARTE	PRIOR TO RECEIPT	OR N
RELINQUISHED BY: (SIGNATURE)	DATE	RECEIVE	BY SIGNATI	JRE)	/		DATE			PROPE	R BOTTLE	S RECEN	VED IN GOOD CONDITIO	
	TIME				/		TIME			SAMPL (EXCLU	ES RECEIV	ED WITH	IN HOLD TIME(S) D PARAMETERS) ROM SAMPLE BOTTLE	(POR N
													CONTRACTOR OF THE	

## PDC Laboratories, Inc.

## Bottle Receipt Form

Login Number: 7000800

Completed By: TMD

TYPE			Q	JANTITY	PER SA	MPLE		
	-1	-2	-3	-4	-5	-6	-7	-8
Plastic								
Plastic Shipper Total								
Plastic Shipper, Diss				a an an an an an an an an an an an an an				Palana Analasan
Linoreserved Total () Galen.)	N	Ø	14 - 14 gampanda, Sala Birdday		-anatomic and		-	- *
Lippreserved Diss	-		and a set of the set of			single-transforder	La face inter	
Ammonia Total H SO Pros	0	0						
Ammonia, Iotal, H2004 Fres.	11		Contraction or Second		****	and the second s		
Annonia, Diss, H <sub>2</sub> SO <sub>4</sub> Fres.	alle al stands-autor		, Australia Majourado		sector - Republic -		an egy a debilition die	
Cyanide, NaOH Pres.			Summing the state of a state of the state	birgen i an si dili silili sugarat	marketing a state opposite	angelijken oor andere wijs opp	All the and the set of	
Metals, Iotal, HNO <sub>3</sub> Pres.		U	4**************		. A description of the second se		de senserare	and the second second second
Cullide McChile Zoto Dece		y water from any state of the	anage of spinor and the	Value of surger light life	anton lancos	-		uniter require the later
Sunde, NaOH + Zhac Pres.	A	1. (1)						
	TU	<u> </u>	- Alexandratic control of		-			
Diquat, $Na_2S_2O_3 + H_2SO_4$ Pres.	T Talahan dike-alifa dapatan pilaka				-	-	a compressive frances	
Coliform (purple, white, black)	And the state of t	and the second second	warming a supplier was					
Glass								
Uppreserved								
1/2 Gallon Amber Linoreserved		- addression of this 1 in and	- No. of Street Photos	and an distances		Shall branching a	and the second s	protection of the second
1/2 Gallon Amber Na S O. Pres	a ya ana dan dan da da da da da da da da da da da da da			saturtus are dispositive as	and a fight of the state of the	appine from 600000000000		artesapelity association
1/2 Gallon Amber Na S O + HCL	and a state of the		minimaterimeter				-	
HAA NH CI Pres	Anappe or the same date	And Real-Address advantages	additional in opposition de		****		State of the State of the	
CLO H CO at HCI Pres		and the second second second second second second second second second second second second second second second	anger-soldige.A maps	The second second second second second second second second second second second second second second second s	No. of Texas and Texas and	continues and the functions		and a substantial difference of
Vial 40ml Tan		-			urradio, an addig al. Anor			
Vial, 40mi, 1sp			a an ta single Plan with differen			desphasized and participation of the		
Vial, 40ml, Unp.		-Massimonia fatar	understage preligious d					
Vial, 40ml, Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (THM)	-	-teasternings and	<ul> <li>voltets des ausversettings</li> </ul>					
Vial, 40ml, HCI, (VOC)		-desentative protect	making to be an an and the	ages , agentiki rayaregiside				
Vial, 40ml, $Na_2S_2O_3$ , (EDB, DBCP)			and the second second		and and a second second			
Vial, 40ml, Methanol	- and the second second second			*****			Sugar-Hundo-William	
Vial, 40ml, DI Water								
Vial, 40ml, Sodium Bisulfate	-	-		Value over cases. Presspore	Anyon manginally as independent			
Caribamates, Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> + MCAA	to many states of the second states			and all the second second			-	
Glyphosate, 60ml, Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	attracted to a second	des alle suite de			till man stilligter attempt	ter miller -qualities -		
Phenolics, H <sub>2</sub> SO <sub>4</sub>	4	A non-participation of the second second	umupathilis or colopses		wards the week mandred			
TOC, 40ml, H <sub>2</sub> SO <sub>4</sub>	8-440 hardfree	warringly south		and a set of the set o				
TOX, 250ml, H <sub>2</sub> SO <sub>4</sub>		-		Analda Barana A Barana	-	Supplies and the second	-	
Soil Jar (16 oz PB)	1		sama-motor of classifiations				-	
Soil Jar (9 oz)	and the second s	Bearing and the second second	Langens - State and Land			and strange which the	-	
Soil Jar (4 oz)	- Approxide Program (Marrison of the	- Address and Property and Solar	<b>AND 10</b> 10100-000 0100-000 0100-0	way of the standing party of	entering and and don't	ughtungs diata-status		
Soil Jar (2 oz)								
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Plastic Bag	State Street State	1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-						weathing
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D - Droken								
E - Empty				,				

### SUBCONTRACT ORDER

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Transfer Chain of Custody

PDC Laboratories, Inc.

7020800

SENDING LABORATORY		RECEIVING	ABORATORY	
PDC Laboratories, Inc. 1805 W Sunset St Springfield, MO 65807 (417) 864-8924		PDC Laborate 3278 N Highy Florissant, Me (314) 432-055	ories, Inc St Lo vay 67 O 63033 50	ula
Sample: 7020800-01 Name: CC Outfall 001			Sampled: Matrix: Preservative:	02/07/17 07:15 Waste Water Cool <6
Analysis	Due	Expires	Comme	ents
04-Aik	02/17/17 16:00	02/21/17 07:15		
04-Ammonia-N Distill Gallery	02/17/17 16:00	03/07/17 07:15		
04-Ca 200.7 WWTot	02/17/17 16:00	08/06/17 07:15		
04-Mg 200.7 WWTot	02/17/17 16:00	08/06/17 07:15		
Sample: 7020800-02 Name: CC Upstream Grab			Sampled: Matrix: Preservative:	02/07/17 08:04 Surface Water H2SO4, cool <6
Analysis	Due	Expires	Comm	enita
04-Ammonia-N Distill Gallery	02/17/17 16:00	03/07/17 08:04		
	· · · · · · · · · · · · · · · · · · ·			
	Disease small secults to Ch	od Comment of some	northead alab com	

Date Shipped:     2. 7. /)     Total # of Containers:       Turm-Around Time Requested:     Image: Normal Image: Representation of the second seco	JA     Sample Origin (State): <u>MO</u> PO #:       USH     Date Results Needed:	
Relinquished By Date/Time Received By Received By Received By	1200     Sample Temperature Upon Receipt       Muffues     2-9-17       Date/Time     Proper Bottles Received on Ice       Proper Bottles Received in Good Condition       Bottles Filled with Adequate Volume       Samples Received Within Hold Time       Date/Time     Date/Time Taken From Sample Bottle	Y or N Y or N Y or N Y or N or N

## PDC Laboratories, Inc.

PROFESSIONAL • DEPENDABLE • COMMITTED

CC WET TEST Results

2016 Acute Toxicity

Part E18

February 10, 2016

Mike Ray Branson, City of 616 W Pacific St Branson, MO 65611

Dear Mike Ray:

Please find enclosed the analytical results for the sample(s) the laboratory received on 1/27/16 10:00 am and logged in under work order 6013469. 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





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

#### ANALYTICAL RESULTS

Sampi Name: Matrix	e: 6013469-01 WET Test Effluent Cor : Waste Water - Compo	nposite site				Sampled: Received: PO #:	01/26/16 0 01/27/16 1 31304	)7:50 0:00
Parameter		Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Miscellaneous	- SPMO							
WET Testing Mul subcontracted	tiple Dilution -	Subcontracted		Pass	01/27/16 10:15	01/27/16 10:15	PMB	Subcontracted*



### PDC Laboratories, Inc.

1805 West Sunset Street Springfield, MO 65807 (417) 864-8924

#### QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit



#### 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

#### Qualifiers

Pass Pass



Certified by: Chad Cooper, Laboratory Supervisor

eas

4000 East Jackson Blvd. • Jackson, MO 63755 • 573-204-8817 • Fax 573-204-8818

#### REPORT OF ACUTE TOXICITY TESTING Branson, Cooper Creek WWTF OUTFALL 001 (24 hr composite) AEC = 100% MO-0116599 EAS LOG# 1912104 January 27, 2016 through January 29, 2016

#### 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)

- 1. Report Summation
  - 1.1. Data Summation
  - 1.2. Conclusion
- 2. Method Summation
  - 2.1. Test Conditions and Methods
  - 2.2. Potassium chloride Reference Salt Test
    - 2.2.1. Pimephales promelas data
    - 2.2.2. Ceriodaphnia dubia data
  - 2.3. Literature Cited
- 3. Raw Data Bench Sheets
  - 3.1. Initial observations (page 1)
  - 3.2. Zero hour Observations (page 1)
  - 3.3. Twenty-four (24) hour Observations (page 1)
  - 3.4. Forty-eight (48) hour Observations (page 1)
  - 3.5. Survival Data Table (page 2)
  - 3.6. Test Comments (page 3)
- 4. Chain of Custody
- 5. MO DNR "Whole Effluent Toxicity (WET) Test Report (Form 780-1899)

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#### REPORT OF ACUTE TOXICITY TESTING Branson, Cooper Creek WWTF OUTFALL 001 (24 hr composite) AEC = 100% MO-0116599 EAS LOG# 1912104 January 27, 2016 through January 29, 2016

#### 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 <sub>50</sub> Value	>100% Effluent	>100% Effluent
To Pass: All concentrations = or < AEC must not have significant difference to control in survival.	Yes	Yes
Result of Toxicity Test	PASS	PASS

\* 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 LC 50 > 100% using the Graphical Method NOAEC = 100% by Steel's Many-One Rank Test

Ceriodaphnia dubia 48 hour WET results:

Based on these results the outfall passed the whole effluent toxicity test with both indicator species.

Approved by Sara C. Shields, Chemist

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#### REPORT OF ACUTE TOXICITY TESTING Branson, Cooper Creek WWTF OUTFALL 001 (24 hr composite) AEC = 100% MO-0116599 EAS LOG# 1912104 January 27, 2016 through January 29, 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 sur⊻val in controls

The methodology used for the chemistry data was taken from the *Standard Methods for the Examination of Water and Wastewater*, 18<sup>th</sup> 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 Branson, Cooper Creek WWTF OUTFALL 001 (24 hr composite) AEC = 100% MO-0116599 EAS LOG# 1912104 January 27, 2016 through January 29, 2016

#### 2.2. REFERENCE TOXICITY TEST:

Environmental Analysis South performs monthly reference toxicity tests. The most recent reference test was initiated on January 6, 2016 using KCL Lot #41713. Following are the results: 2.2.1. *P. promelas* - 48 hr. Acute Test –  $LC_{50} = 1.115 \text{ g/l } 95\%$ Cl (0.731-1.498g/l) EAS %CV = 17.2% National Warning Limits (75<sup>th</sup> percentile) = 19%CV National Control Limits (90<sup>th</sup> percentile) = 33%CV 2.2.2. *C. dubia* - 48 hr. Acute Test –  $LC_{50} = 0.498 \text{ g/l } 95\%$ Cl (0.308-0.687g/l) EAS %CV = 19.0% National Warning Limits (75<sup>th</sup> percentile) = 29%CV National Control Limits (90<sup>th</sup> 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.

Page 1 of 3

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

CLIENT NAME:	Branson, Co	ranson, Cooper Creek WWTF, Outfall 001, 24 hr composite												
NPDES NUMBER:	MO-011659	9												
TYPE OF METHOD:	multiple dilu	ition, 48 hrs	s, PP & CD, A	AEC=100%										
DATE & TIME OF COLLECTION:	01/26/16 07	50 hrs by E	Brad Reasons	3		Upstream: Lake Taneycomo								
DATE & TIME OF SUBMISSION:	01/27/16 10	00 hrs by l	JPS					Collected: 01/26/16 0800 hrs by Brad Reasons						
INITIAL OBSERVATIONS	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	INT EFFL	INT UC	INT RC						
LOG NUMBER / ID NUMBER					States and Street of	1912104	1912104A	RC4148						
pH - SU	01/27/16	1015 hrs	SCS	SB114 (8.8-9.2)	8.88	8.17	8.43	8.59						
TEMPERATURE <sup>O</sup> C RECEIVED	01/27/16	1015 hrs	SICS	EAS 106		2	2	19						
SPECIFIC CONDUCTANCE umhos	01/27/16	1015 hrs	SCS	ERA229-506 (490-549)	534	944	226	278						
HARDNESS - ppm	01/27/16	1015 hrs	SCS	DMRQA34 (184-250)	240	280	120	80						
CHLORINE - ppm	01/27/16	1015 hrs	SCS	tap water	+	<0.04	<0.04	<0.04						
DISSOLVED OXYGEN - ppm	01/27/16	1015 hrs	SCS	cal@840		11.3	10.3	9.5						
TOTAL ALKALINITY - ppm	01/27/16	1300 hrs	SCS	P243-506 (48.8-58.3)	58.2	156	122	58.4						
INITIAL AMMONIA - ppm	02/01/16	1340 hrs	JPC	DMRQA35 (8.12-12.2)	12.1	< 0.05	<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	01/27/16	1100 hrs	SCS	SB114 (8.8-9.2)	8.88	8.70	8.16	7.88	7.96	8.01	8.06	8.08		
TEMPERATURE °C	01/27/16	1100 hrs	SCS	EAS 106		24.3	24.0	24.2	23.6	24.2	23.9	24.3		
SPECIFIC CONDUCTANCE umhos	01/27/16	1100 hrs	SCS	ERA229-506 (490-549)	534	242	247	968	602	432	335	290		
DISSOLVED OXYGEN - ppm	01/27/16	1100 hrs	SCS	cal@840		9.0	10.4	10.8	10.8	10.8	10.9	10.8		
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	01/28/16	1100 hrs	SCS	SB114 (8.8-9.2)	8.85	7.97	8.41	8.18	8.23	8.26	8.30	8.35		
TEMPERATURE °C	01/28/16	1100 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0		
SPECIFIC CONDUCTANCE umhos	01/28/16	1100 hrs	SCS	ERA229-506 (490-549)	533	256	252	969	632	467	344	291		
DISSOLVED OXYGEN - ppm	01/28/16	1100 hrs	SCS	cal@840		8.3	8.1	7.8	8	8	8	7.9		
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	01/29/16	1100 hrs	SCS	SB114 (8.8-9.2)	8.82	8.41	8.43	8.19	8.23	8.26	8.29	8.29		
TEMPERATURE °C	01/29/16	1100 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0		
SPECIFIC CONDUCTANCE umhos	01/29/16	1100 hrs	SCS	ERA229-506 (490-549)	532	268	255	979	696	491	348	292		
DISSOLVED OXYGEN - ppm	01/29/16	1100 hrs	SCS	cal@840		7.3	8.3	8.2	8.2	8.6	8.2	8.2		
FINAL AMMONIA - ppm	}			DMRQA33 (10.0-16.8)										
24 HOUR OBSERVATIONS - CO	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	RC	UC	100%	50%	25%	12.5%	6.25%	X %AEC	
pH - SU	01/28/16	1100 hrs	SCS	SB114 (8.8-9.2)	8.85	8.72	8.60	8.29	8.35	8.40	8.44	8.50		
TEMPERATURE °C	01/28/16	1100 hrs	SICS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0		
SPECIFIC CONDUCTANCE umhos	01/28/16	1100 hrs	SCS	ERA229-506 (490-549)	533	243	239	947	609	432	342	293		
DISSOLVED OXYGEN - ppm	01/28/16	1100 hrs	SCS	cal@840		8.6	8.6	8.5	9.0	8.9	9.0	8.7		
48 HOUR OBSERVATIONS - CE	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	RC	UC	100%	50%	25%	12.5%	6.25%	X %AEC	
pH - SL	01/29/16	1100 hrs	SCS	SB114 (8.8-9.2)	8.82	8.51	8.43	8.18	8.23	8.30	8.33	8.38		
TEMPERATURE °C	01/29/16	1100 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0		
SPECIFIC CONDUCTANCE umhos	01/29/16	1100 hrs	SCS	ERA229-506 (490-549)	532	280	282	939	597	426	338	292		
DISSOLVED OXYGEN - ppm	01/29/16	6 1100 hrs	SCS	cal@840		8.6	8.6	8.3	8.5	8.5	8.7	8.6		
FINAL AMMONIA - ppm	4			DMRQA33 (10.0-16.8)										

Approved by:

Date:-2/3/11.0

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

Branson, Cooper Creek WWTF, Outfall 001, 24 hr composite EAS LOG# 1912104 January 27, 2016 Time Test Began: 1100 hrs Date Test Began: Analyst 1: DFW Analyst 2: KJR Time Test Finished: 1100 hrs January 29, 2016 Date Test Finished: Analyst 3: SCS 6 days HATCH NUMBER: 9708 c-k P. promelas (PP) AGE: 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 AGE: <24 HATCH NUMBER: 3266 c-k hours Ceriodaphnia dubia (CD) RC UC 100% 50% 25% 12.5% 6.25% X% AEC ALIVE ALIVE ALIVE ALIVE PERIOD 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 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

Approved by:

Date: 2/3/16

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

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Prepared by:

Date: 2/3/16

Page 3 of 3

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

### **CHAIN OF CUSTODY RECORD**

State where samples collected \_\_\_\_\_

MO

	ALL HIGHLIC	HTED AREAS	MUST BE	COMPLE	TED BY CLI	ENT (PLEAS	SE PRIN	IT)					
	PROJECT NU	IMBER	P.O. NUMB	ER	MEANS	SHIPPED				OUERT	=		(FOR LAB USE ONLY)
City of Branson (CoB)							l 3	ANALI		QUEST	ED	1	
ADDR CU WWTP Lab	PHONE NUI	BER	FAX NUME	ER	DATE S	HIPPED							6013469
Missouri Branson, MO 65616							e l			1			PARE
CITY. (417)337-8577	SAMPLER				MATRIX T	PES:	1 8						LOGGED BY: 17015
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### 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	D IN FULL BY PERMIT	EE	DATE & THE OCH FOTED	-				
Branson, Cooper Creek W	WTF .		EFFLUENT 01/26/16 0750	UPSTRI	EAM 01/26/16 0800			
PERMIT NUMBER MO-0116599			PERMIT OUTFALL NUMBER Outfall # 001					
COLLECTOR'S NAME Brad Reasons								
RECEIVING STREAM COLLECTION SITE AN	D DESCRIPTION							
Lake Taneycomo								
100% Effluent	RATION (AEC)				THER			
SAMPLE NUMBER EFFLUENT 1912104	UPSTREAM 191210	04A	UPSTREAM SAMPLE TYPE (CHECK ONE)		THER			
PERMITTED EFFLUENT DAILY MAXIMUM LIN	IITATION FOR	ng/L	PERMITTED EFFLUENT DAILY MAXIMUM LIMITA	TION FOR	mg/L			
PART B - TO BE COMPLETED	IN FULL BY PERFOR	MING LABOR	RATORY	44,				
PERFORMING LABORATORY Environmental Analysis Sout	th, Inc.		TEST TYPE Acute Static Non renew	val Test	Multiple Dilution			
FINAL REPORT NUMBER			TEST DURATION 48 hour					
DATE OF LAST REFERENCE TOXICANT TEST January 6, 2016	FING		TEST METHOD Methods for Measuring the Acute Toxicity of Efflue Marine Organisms	ents and Rece	ving Waters to Freshwater and			
DATE AND TIME SAMPLES RECEIVED AT LAN 01/27/16 1000 hrs by UPS	BORATORY		TEST START DATE AND TIME 01/27/16 1100 hrs	TEST END 01/29/	DATE AND TIME 16 1100 hrs			
SAMPLE DECHLORINATED PRIOR TO ANALY	SIS? I YES X NO		TEST ORGANISM #1 AND AGE Pimephales prometas 6 days	TEST ORG	ANISM #2 AND AGE phnia dubia < 24 hours			
SAMPLE FILTERED <sup>1</sup> PRIOR TO ANALYSIS?	UPSTREAM		90% OR GREATER SURVIVAL IN SYNTHETIC CONTROL? XYES NO		VATER USED TO ACHIEVE AEC			
FILTER MESH SIEVE SIZE <sup>2</sup>	- Andrea		EFFLUENT ORGANISM #1 % MORTALITY AT AEC LC50>100% Effluent	EFFLUENT	ORGANISM #2 % MORTALITY AT AE 00% Effluent			
SAMPLE AERATED DURING TESTING?	YES 🗱 NO		UPSTREAM ORGANISM #1 % MORTALITY	UPSTREAM	ORGANISM #2 % MORTALITY			
	UPSTREAM		TEST RESULT AT AEC FOR ORGANISM #1	TEST RESU	S FAIL			
MINIMUM REQUIRED ANALYT	ICAL RESULTS FOR T	HE 100% EF	FLUENT SAMPLE					
PARAMETER	RESULT		METHOD		WHEN ANALYZED			
Temperature °C	2	SM18 2550	0B stored at 4 degree C until tes	t setup	01/27/16 1015 hrs			
pH Standard Units	8.17	SM18 4500	8 4500-H B 01/27/16 1015					
Conductance µMohs	944	SM18 2510	18 2510B 01/27/16 1015 hr					
Dissolved Oxygen mg/L	11.3	03/12/14 09	945 hrsSM18 4500-O G		01/27/16 1015 hrs			
Total Residual Chlorine mg/L	<0.04	SM18 4500	)-CI G		01/27/16 1015 hrs			
Unionized Ammonia mg/L	<0.05x0.08<0.010	SM18 4500	-NH3 F @ 25 degree C		02/01/16 1340 hrs			
*Total Alkalinity mg/L	156	SM18 2320	B		01/27/16 1300 hrs			
*Total Hardness mg/L	280	SM18 2340	SM18 2340 C 01/27/16 1015 hrs					

\*Recommended by USEPA guidance, not a required analysis.

Samples shall only be filtered if indigenous organisms are present that may be confused with, or attack, the test organisms. 1 2

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

#### WHOLE EFFLUENT TOXICITY (WET) TEST REPORT

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

PARAMETER	RESULT	METHOD	WHEN ANALYZED
Tomporature °C	2	CM19 2550D stored at 4 degree C until test acture	01/27/16 1015 hrs
	2	Siviro 2550B stored at 4 degree C until test setup	01/2//10 1015 hrs
pH Standard Units	8.43	SM18 4500-H B	01/27/16 1015 hrs
Conductance µMohs	226	SM18 2510B	01/27/16 1015 hrs
Dissolved Oxygen mg/L	10.3	SM18 4500-O G	01/27/16 1015 hrs
Total Residual Chlorine mg/L	<0.04	SM18 4500-CI G	01/27/16 1015 hrs
Unionized Ammonia mg/L	<0.05x0.12<0.010	SM18 4500-NH3 F @ 25 degree C	02/01/16 1340 hrs
*Total Alkalinity mg/L	122	SM18 2320B	01/27/16 1300 hrs
*Total Hardness mg/L	120	SM18 2340 C	01/27/16 1015 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

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



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Branson, City of 616 W Pacific St Branson, MO 65611 Attn: Mike Ray Date Received: 01/21/15 10:50 Report Date: 02/09/15 Customer #: 257318 PO#: 30416

\*Laboratory Results\*

Certified by: Chad Cooper, Laboratory Supervisor

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Branson, City of 616 W Pacific St Branson, MO 65611 Attn: Mike Ray Date Received: 01/21/15 10:50 Report Date: 02/09/15 Customer #: 257318 PO#: 30416

\*Laboratory Results\*

#### Sample No: 5021109-01

Collect Date: 01/20/15 07:37 Matrix: Waste Water Composite

Sample Description: WET Test Effluent Composite

Parameters	Result	Qual	Prep Date	Analysis Date	Analyst	Method
Miscellaneous - SPM						
WET Testing Multiple Dilution - subcontracted	Subcontracted	Pass	01/21/15 10:55	01/21/15 10:55	KBB	Subcontracted

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#### REPORT OF ACUTE TOXICITY TESTING Branson, Cooper Creek WWTF OUTFALL 001 (24 hr composite) AEC = 100% MO-0116599 EAS LOG# 1806124 January 21, 2015 through January 23, 2015

#### 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)

- 1. Report Summation
  - 1.1. Data Summation
  - 1.2. Conclusion
- 2. Method Summation
  - 2.1. Test Conditions and Methods
  - 2.2. Potassium chloride Reference Salt Test
    - 2.2.1. Pimephales promelas data
    - 2.2.2. Ceriodaphnia dubia data
  - 2.3. Literature Cited
- 3. Raw Data Bench Sheets
  - 3.1. Initial observations (page 1)
  - 3.2. Zero hour Observations (page 1)
  - 3.3. Twenty-four (24) hour Observations (page 1)
  - 3.4. Forty-eight (48) hour Observations (page 1)
  - 3.5. Survival Data Table (page 2)
  - 3.6. Test Comments (page 3)
- 4. Chain of Custody
- 5. MO DNR "Whole Effluent Toxicity (WET) Test Report (Form 780-1899)

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#### REPORT OF ACUTE TOXICITY TESTING Branson, Cooper Creek WWTF OUTFALL 001 (24 hr composite) AEC = 100% MO-0116599 EAS LOG# 1806124 January 21, 2015 through January 23, 2015

#### 1. REPORT SUMMATION:

#### 1.1. Multiple Dilution Data Summation

Test Solution	<i>Pimephales promelas</i> 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 <sub>50</sub> Value	>100% Effluent	>100% Effluent
To Pass: All concentrations = or < AEC must not have significant difference to control in survival.	Yes	Yes
<b>Result of Toxicity Test</b>	PASS	PASS

\* 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 LC 50 > 100% using the Graphical Method NOAEC = 100% by Steel's Many-One Rank Test

Ceriodaphnia dubia 48 hour WET results:

Based on these results the outfall passed the whole effluent toxicity test with both indicator species.

Approved by Sara C. Shields, Chemist
# Environmental Analysis South, Inc.

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#### REPORT OF ACUTE TOXICITY TESTING Branson, Cooper Creek WWTF OUTFALL 001 (24 hr composite) AEC = 100% MO-0116599 EAS LOG# 1806124 January 21, 2015 through January 23, 2015

#### 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*, 18<sup>th</sup> 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 Branson, Cooper Creek WWTF OUTFALL 001 (24 hr composite) AEC = 100% MO-0116599 EAS LOG# 1806124 January 21, 2015 through January 23, 2015

#### 2.2. REFERENCE TOXICITY TEST:

Environmental Analysis South performs monthly reference toxicity tests. The most recent reference test was initiated on January 7, 2015 using KCL Lot #41713. Following are the results:

2.2.1. *P. promelas* - 48 hr. Acute Test –  $LC_{50} = 0.983$  g/l 95%Cl (0.622-1.344g/l) EAS %CV = 18.4% National Warning Limits (75<sup>th</sup> percentile) = 19%CV National Control Limits (90<sup>th</sup> percentile) = 33%CV 2.2.2. *C. dubia* - 48 hr. Acute Test –  $LC_{50} = 0.447$  g/l 95%Cl (0.316-0.578g/l) EAS %CV = 14.6% National Warning Limits (75<sup>th</sup> percentile) = 29%CV National Control Limits (90<sup>th</sup> 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
- 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
- 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

Branson, Cooper Creek	WWTF, Outfal	l 001, 24 hr com	posite EA	S LOG# 1806124					
Date Test Began:	Janu	uary 21, 2015	] т	ime Test Began:	1100 hrs			Analyst 1:	DFW
Date Test Finished:	Janu	uary 23, 2015	] Tim	e Test Finished:	1100 hrs			Analyst 2: Analyst 3:	KJR SCS
P. promelas (PP)	1/21/2015	AGE:		7]days	НА	TCH NUMBER:	9335 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	н	ATCH NUMBER:	2981 c-k	]	
	01/22/	UC	100%	50%	25%	12.5%	6.25%	X% AEC	
PERIOD	ALIVE	ALIVE	ALIVE	ALIVE	512	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		

Date: 2/3/15-

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Page 1 of 3

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

NPDES NUMBER; UNO-0116599     Upsteam: Lake Taney.como       DATE & TIME OF COLLECTION;     DIZID 51737: hr by Brad R.     Upsteam: Lake Taney.como       DATE & TIME OF SUBMISSIONE (0112/151505 hr by UPS     CC DT     CC EXP VALUE     INT TEL: Collected: 012/01150745 hr by Brad R.       LOG NUMBER / DNNBBER / DNNBBER / DIVIDIE     CC ST CC SP VALUE     INT TEL: Collected: 012/01150745 hr by Brad R.     EVALUE     INT TEL: Collected: 012/01150745 hr by Brad R.       LOG NUMBER / DNNBBER / DNNBBER / DIVIDIE     CC ST CAS (SS SB114 (8.9.42)     6.87     7.45     7.50     7.16       SPECIFIC CONDUCTANCE umhoe     01/21/11 1055 hr SGS     CS SB14 (8.9.42)     2.47     7.90     2.22     3.80       OISSOLVED OXICEL - prof     01/21/11 1055 hr SGS     CS CS     ERA 229-806(80-549)     4.00     4.00.4     4.00.4       DISSOLVED OXICEL - prof     01/21/11 1055 hr SGS     CS CS     ERA 229-806(80-104)     9.81     10.5     4.00.4     4.00.4     4.00.4     4.00.4     4.00.4     4.00.4     4.00.4     4.00.4     4.00.4     4.00.4     4.00.4     4.00.4     4.00.4     4.00.4     4.00.4     4.00.4     4.00.4     4.00.4     4.00.4     4.	CLIENT NAME:	Branson, Cooper Creek WWTF, Outfall 001, 24 hr composite												
TYPE OF METHOD:     Update at TME OF COLLECTION by Brd R.       DATE at TME OF COLLECTION by Brd R.     Collector:     Object to 1/2/1/15 1005 hrs by Brd R.       Collector:     Collector:     Object to 1/2/1/15 1005 hrs by Brd R.       Collector:     Object to 1/2/1/15 1005 hrs by Brd R.       Colspan="2">Collector:     Object to 1/2/1/15 1005 hrs by Brd R.       Colspan="2">Collector:     Object to 1/2/1/15 1005 hrs by Brd R.       Colspan="2">Colspan="2"Colspan="2"      Colspan="2	NPDES NUMBER	MO-0116599												
DATE a TIME OF COLLECTION:     Dividi 10 0721 http by BBR.     Uppletarm:     Luke Tamey.como       DATE a TIME OF SUBMISSION:     Dividi 10 050 http by BBR.     Collecte:     0/101/015 074 http by BBR.       LOG NUMBER / ID NUM	TYPE OF METHOD:	nultiple dilution, 48 hrs, PP & CD, AEC=100%												
DATE & TIME OF SUBMISSIONE (1):2115 1020 has by UPS     Collected:     Collected: <thcollected:< th="">     Collected:</thcollected:<>	DATE & TIME OF COLLECTION:	01/20/15 0737 hrs by Brad R. Upstream: Lake Taneycomo												
INITIAL OBSERVATIONS DATE     TIME     AAALYST     QC LOT     QC EXP VALUE     RTFEL/INT UC     INIT RC       LOG NUMBER / ID	DATE & TIME OF SUBMISSION:	01/21/15 10	1/21/15 1050 hrs by UPS Collected: 01/20/15 0746 hrs by Brad R.											
LOG NUMBER / DH + SU     Construction of the state of the s	INITIAL OBSERVATIONS	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	INT EFFL	INT UC	INT RC				•	
pH - SU     Dif 2/11/5     SGS     SB114 (8.8-2)     8.87     7.45     7.50     7.16       SPECAFIC CONDUCTANCE umbos     Dif 2/15     Disob hrs     SGS     ERA3 (06     3     2     21       SPECAFIC CONDUCTANCE umbos     Dif 2/15     Disob hrs     SGS     ERA3 228-506 (490-549)     512     759     252     306       CHUORINE - ppm     Dif 2/15     Disbs hrs     SGS     Ead@2640     117     122     88       TOTAL ALKALINITY - pm     Dif 2/15     Disbs hrs     SGS     ERA P228-506(86.8-104)     98.1     105     115     59.9       TOTAL ALKALINITY - pm     Di2/16     Di3b hrs     SGS     SE114 (8.8-9.2)     6.87     7.35     7.74     7.43     7.46     7.50     7.57     7.60       TEMPERATURE *C     Di2/15/1100 hrs     SGS     SE114 (8.8-9.2)     6.87     7.35     7.74     7.43     7.46     7.50     7.57     7.60       DISSOLVED OXCIGNACe umbos     Di2/15/1100 hrs     SGS     SE14/4 (8.8-2)     2.35     2.40     2.31     2.32	LOG NUMBER / ID NUMBER	$\mu = 0.000$	$(2,3,2) \in [0,1]$				1806124	1806124A	RC4119					
TEMPERATURE ©     CPL/11/10 1055 hrs     SCS     EAX 306     1     3     2     1       SPECIFIC CONDUCTANCE UMBO     01/21/15 1055 hrs     SCS     DMROA34 (184-250)     240     1000	pH - SU	01/21/15	1055 hrs	SCS	SB114 (8.8-9.2)	8.87	7.45	7.50	7.16					
SPECIFIC CONDUCTANCE umhos     O1/21/15 [1055 hrs]     SC5     ERA229-506 (490-549)     512     759     252     309       HARDNESS - ppm     O1/21/15 [1055 hrs]     SC5     Ibw water     +	TEMPERATURE <sup>O</sup> C RECEIVED	01/21/15	1055 hrs	SCS	EAS 106		3	2	21					
HARDNESS - ppm   Dif2/11/5 [105/hrs]   SC:S   DMRQA34 (184-250)   240   180   100   100   80     DISSOLVED OXYGEN - ppm   01/21/15 [105/hrs]   SC:S   Lat@400   11.7   12.2   8.8     TOTAL ALKALINITY - ppm   01/21/15 [105/hrs]   SC:S   Lat@400   98.1   105   115   56.9     INITAL ALMONIA - ppm   0/22/15 [100 hrs]   PC   DMRA34 (5.78.4 90)   8.09   -0.05   -0.05     0 HOUR DISSERVATIONS [DATE   TIME   ANA_YST   QC LOT   QC EXP VALUE   RC   UC   100/w   50%   25%   12.5%   6.26%   X ALE     0 HOUR DISSERVATIONS [DATE   TIME   ANA_YST   QC LOT   QC EXP VALUE   RC   UC   100/w   50%   25%   12.5%   6.26%   X ALE     0 HOUR DISSERVATIONS (DATE   TIME   ANA_YST   QC LOT   QC EXP VALUE   RC   UC   100/w   50%   25%   12.5%   4.0   23.6   24.0   23.6   24.0   23.6   24.0   23.6   24.0   23.6   24.0   23.6   24.0   23.6   25.0   25	SPECIFIC CONDUCTANCE umhos	01/21/15	1055 hrs	SCIS	ERA229-506 (490-549)	512	759	252	309					
CHLORINE - ppm     01/21/15 1055 hrs     SCS     clay barl     +     <0.04     <0.04     <0.04     <0.04     <0.04     <0.04     <0.04     <0.04     <0.04     <0.04     <0.04     <0.04     <0.04     <0.04     <0.04     <0.04     <0.04     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0.05     <0	HARDNESS - ppm	01/21/15	1055 hrs	SCIS	DMRQA34 (184-250)	240	180	120	80					
DISSOLVED OXYGEN - ppm     01/21/15 105 hrs     SCS     Eral@240     11.7     12.2     8.8       TOTAL LAKLNINY     pm     01/21/15 1315 hrs     SCS     EraRP229-506(68.8-0.0)     98.1     105     115     55.9       TOTAL DISSOLVED SOLIDS - ppm     pr     DIMRQA34 (5.78-8.90)     8.09     <0.05	CHLORINE - ppm	01/21/15	1055 hrs	SCIS	tap water	+	<0.04	<0.04	<0.04					
TOTAL ALKALINITY - ppm     01/21/15     TSCS     ERA P229-506(88.8-104)     98.1     105     115     55.9       TOTAL DISSOLVED SOLIDS - ppm     1     0     6.00     4.005	DISSOLVED OXYGEN - ppm	01/21/15	1055 hrs	SCIS	cal@840		11.7	12.2	8.8					
INITAL AMMONIA - ppm     02/02/15 (100 hrs     PC     DMRQA34 (5.78-8.90)     8.09     <0.05     <0.05       TOTAL DISSOLVED SOLIDS - ppm     Image: construction of the set o	TOTAL ALKALINITY - ppm	01/21/15	1315 hrs	SCIS	ERA P229-506(86.8-104)	98.1	105	115	56.9					
TOTAL DISSOLVED SOLIDS "ppm     C     C     C     C       0 HOUR OBSERVATIONS DAT     TIME     ANA_YST     QC LOT     QC EXP VALUE     RC     UC     100%     50%     25%     12.8%     5.25%     5.25%     5.25%     5.25%     5.2	INITIAL AMMONIA - ppm	02/02/15	1100 hrs	JPC	DMRQA34 (5.78-8.90)	8.09	<0.05	<0.05	<0.05					
O HOUR OBSERVATIONS DATE     TIME     ANA_YST     QC LOT     QC RAP VALUE     RC     UC     100%     50%     25%     12.5%     6.25%     X Acc       TEMPERATURE 'C     01/21/15     1100 hrs     SCS     SB114 (8.8-9.2)     8.87     7.35     7.74     7.46     7.50     7.50     7.60       SPECIFIC CONDUCTANCE umhos     01/21/15     1100 hrs     SCS     ERA229-506 (490-549)     512     245     238     881     585     417     320     284       DISSOLVED OXYGEN - ppm     01/21/15     1100 hrs     SCS     cal@840     9.0     11.5     12.2     12.1     12.1     12.1     11.1     11.9     1.9       24 HOUR OBSERVATIONS - PP     DATE     TIME     ANALYST     QC LOT     QC EXP VALUE     RC     UC     100%     50%     25%     7.85     7.85     7.85     7.85     7.85     7.85     7.85     7.85     7.85     7.85     7.85     7.85     7.85     7.85     7.85     7.85     7.85     7.85     7.85	TOTAL DISSOLVED SOLIDS -ppm			1										
ph - SU     01/21/15 [1100 hrs     SCS     SB114 (8.8-9.2)     8.87     7.35     7.74     7.43     7.46     7.50     7.57     7.60       SPECIFIC CONDUCTANCE umhos     01/21/15     1100 hrs     SCS     EAX 106     23.5     24.0     23.3     23.5     24.0     23.3     23.5     24.0     23.3     23.5     24.0     23.3     23.5     24.0     23.3     23.5     24.0     23.3     23.5     24.0     23.3     23.5     24.0     23.3     23.5     24.0     23.3     23.5     24.0     23.3     23.5     24.0     23.3     23.5     24.0     23.3     23.5     24.0     23.3     23.5     24.0     23.3     23.5     24.0     23.6     25.0	0 HOUR OBSERVATIONS	DATE	TIME	ANA_YST	QC LOT	QC EXP VALUE	RC	UC	100%	50%	25%	12.5%	6.25%	X %AEC
TEMPERATURE *C     01/21/15 (1100 hrs SCS     EAS 106     23.5     24.0     23.1     23.3     23.5     24.0     23.6       SPECIFIC CONDUCTANCE umbos DISSOLVED OXYGEN - ppm     01/21/15 (100 hrs SCS     ERA229-506 (490-549)     512     245     238     881     585     417     320     28.4       DISSOLVED OXYGEN - ppm     01/21/15 (100 hrs SCS     ERA229-506 (490-549)     512     24.0     12.1     12.1     11.1     11.9     11.9       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     01/22/15 (1100 hrs     SCS     EAS 106     25.0<	pH - SU	01/21/15	1100 hrs	SCS	SB114 (8.8-9.2)	8.87	7.35	7.74	7.43	7.46	7.50	7.57	7.60	
SPECIFIC CONDUCTANCE unhos     01/21/15     1100 hrs     SCS     ERA229-506 (490-549)     512     245     238     881     585     417     320     284       DISSOLVED OXYGEN - ppm     01/21/15     1100 hrs     SCS     cal@840     9.0     11.5     12.2     12.1     12.1     12.1     11.9     12.1     12.1     12.1     12.1     12.1     12.1     12.1     12.1     12.1     12.1     12.1     12.1     12.1     12.1	TEMPERATURE °C	01/21/15	1100 hrs	SCS	EAS 106		23.5	24.0	23.1	23.3	23.5	24.0	23.6	
DISSOLVED OXYGEN - ppm     01/21/15     1100 hrs     SCS     cal@840     9.0     11.5     12.2     12.1     12.1     11.9     11.9       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     01/22/15     1100 hrs     SCS     SB114 (8.8-9.2)     9.09     7.62     7.95     7.80     7.87     7.85     7.86     7.88       SPECIFIC CONDUCTANCE umbos     01/22/15     1100 hrs     SCS     ERA229-506 (490-549)     535     256     923     609     428     338     301       7.88     7.88      7.88      7.88      7.88      7.88      7.88      7.88      7.8     7.8     7.8     7.8     7.8     7.8     7.8     7.8     7.9     8      7.8     7.9     7.8     7.7     7.8     7.9     7.8     7.9	SPECIFIC CONDUCTANCE umhos	01/21/15	1100 hrs	SCS	ERA229-506 (490-549)	512	245	238	881	585	417	320	284	
24 HOUR OBSERVATIONS - PP     DATE     TIME     ANALYST     QC LOT     QC EXP VALUE     RC     UC     100%     50%     25%     12.5%     6.25%     X MAEC       pH - SU     01/22/15     1100 hrs     SCS     SB114 (8.8-9.2)     9.09     7.62     7.95     7.90     7.87     7.85     7.86     7.88       SPECIFIC CONDUCTANCE umhos     01/22/15     1100 hrs     SCS     ERA229-506 (490-549)     535     25.8     22.0     25.0	DISSOLVED OXYGEN - ppm	01/21/15	1100 hrs	SCS	cal@840		9.0	11.5	12.2	12.1	12.1	11.9	11.9	
24 HOUR OBSERVATIONS - PP DATE     TIME     ANALYST     QC LOT     QC EXP VALUE     RC     UC     100%     50%     25%     12.5%     6.25%     X/AEC       TEMPERATURE °C     01/22/15     1100 hrs     SCS     B114 (8.8-9.2)     9.09     7.62     7.90     7.87     7.85     7.86     7.86     7.88     7.88     7.86     7.86     7.86     7.86     7.85     7.80     7.85     7.85     7.80     7.85     7.80     7.85     7.80     7.85     7.86     7.88     7.85     7.80     7.81     7.80     7.81     7.8		_												
pH - SU TEMPERATURE °C 01/22/15     01/22/15 1100 hrs     SCS     SB114 (8.8-9.2)     9.09     7.62     7.95     7.90     7.87     7.85     7.86     7.90     8.30     8.1     8     7.90     7.8     7.9     8       MSOLVED OXYGEN - ppm 01/22/15     1100 hrs     SCS     EAX 106     25.0	24 HOUR OBSERVATIONS - PP	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	RC	UC	100%	50%	25%	12.5%	6.25%	X %AEC
TEMPERATURE °C     01/22/15     1100 hrs     SCS     EAS 106     25.0     2		01/22/15	1100 hrs	SCS	SB114 (8.8-9.2)	9.09	7.62	7.95	7.90	7.87	7.85	7.86	7.88	
SPECIFIC CONDUCTANCE umbos     01/22/15     1100 hrs     SCS     ERA229-506 (490-549)     535     258     265     923     609     428     338     301       DISSOLVED OXYGEN - ppm     01/22/15     1100 hrs     SCS     cal@e40     8.3     8.1     8     7.9     7.8     7.9     8       48 HOUR OBSERVATIONS - PP     DATE     TIME     ANA_YST     QC LOT     QC EXP VALUE     RC     UC     100%     50%     25%     12.5%     6.2%     X % AEC       pH - SU     01/23/15     1100 hrs     SCS     EAS 106     25.0     <	TEMPERATURE °C	01/22/15	1100 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0	
DISSOLVED OXYGEN - ppm     01/22/15     1100 hrs     SCS     cal@840     8.3     8.1     8     7.9     7.8     7.9     8       48 HOUR OBSERVATIONS - PP     DATE     TIME     ANA_YST     QC LOT     QC EXP VALUE     RC     UC     100%     50%     25%     12.5%     6.25%     X %AEC       pH - SU     01/23/15     1100 hrs     SCS     SB114 (8.8-9.2)     9.09     7.74     8.20     25.0     2	SPECIFIC CONDUCTANCE umhos	01/22/15	1100 hrs	SCS	ERA229-506 (490-549)	535	258	265	923	609	428	338		
48 HOUR OBSERVATIONS - PP     DATE     TIME     ANA_YST     QC LOT     QC EXP VALUE     RC     UC     100%     50%     25%     12.5%     6.25%     X %AEC       pH - SU     01/23/15     1100 hrs     SCS     SB114 (8.8-9.2)     9.09     7.74     8.27     8.03     8.01     8.07     8.08     8.07     8.08     8.07     8.08     8.07     8.08     8.07     8.08     8.07     8.08     8.07     8.08     8.07     8.08     8.07     8.08     8.07     8.08     8.07     8.08     8.07     8.08     8.01     8.07     8.08     101/23/15     1100 hrs     SCS     ERA229-506 (490-549)     540     292     286     952     629     438     350     309     90     309     90     7.84     8.4     8.2     7.7     7.8     7.9     7.9     8.0     90     90     7.84     8.14     8.05     8.08     8.05     8.08     8.08     8.08     8.08     8.08     8.02     8.04     8.08	DISSOLVED OXYGEN - ppm	01/22/15	1100 hrs	SCS	cal@840		8.3	8.1	8	7.9	7.8	7.9	8	
pH - SU     01/23/15     1100 hrs     SCS     SB114 (8.8-9.2)     9.09     7.74     8.27     8.03     8.01     8.07     8.08     8.13       TEMPERATURE *2     01/23/15     1100 hrs     SICS     EAS 106     25.0	48 HOUR OBSERVATIONS - PP	DATE	TIME	A.NA_YS T	QC LOT	QC EXP VALUE	RC	UC	100%	50%	25%	12.5%	6.25%	X %AEC
TEMPERATURE *     01/23/15     1100 hrs     SCS     EAS 106     25.0     25	pH - SU	01/23/15	1100 hrs	SICS	SB114 (8.8-9.2)	9.09	7.74	8.27	8.03	8.01	8.07	8.08	8.13	
SPECIFIC CONDUCTANCE umbes     01/23/15     1100 hrs     SiCS     ERA229-506 (490-549)     540     292     286     952     629     438     350     309       DISSOLVED OXYGEN - ppm     01/23/15     1100 hrs     SiCS     cal@840     8.4     8.2     7.7     7.8     7.9     7.9     8.0       FINAL AMMONIA - ppm     DMRQA33     (10.0-16.8)     DMRQA33     10.0-16.8)	TEMPERATURE °	01/23/15	1100 hrs	SiCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0	
DISSOLVED OXYGEN - ppm   01/23/15   1100 hrs   SCS   cal@840   8.4   8.2   7.7   7.8   7.9   7.9   8.0     FINAL AMMONIA - ppm   DMRQA33 (10.0-16.8)   DMRQA33 (10.0-16.8)   Image: colored	SPECIFIC CONDUCTANCE umbos	01/23/15	1100 hrs	SICS	ERA229-506 (490-549)	540	292	286	952	629	438	350	309	
FINAL AMMONIA - ppm     DMRQA33 (10.0-16.8)     U     U     U     U       24 HOUR OBSERVATIONS - CD     DATE     TIME     ANALYSiT     QC LOT     QC EXP VALUE     RC     UC     100%     50%     25%     12.5%     6.25%     X %AEC       pH - SU     01/22/15     1100 hrs     SCS     SB114 (8.8-9.2)     9.09     7.84     8.14     8.05     8.08     8.05     8.08     8.05     8.08     8.05     8.08     8.05     8.08     8.05     8.08     8.05     8.08     8.05     8.08     8.05     8.08     8.05     8.08     8.05     8.08     8.05     8.08     8.08     8.05     8.08     8.05     8.08     8.05     8.08     8.05     8.08     8.05     8.08     8.05     8.08     8.05     8.08     8.05     8.08     8.05     8.05     8.08     9.05     25.0     25.0     25.0     25.0     25.0     25.0     25.0     25.0     25.0     25.0     25.0     25.0     25.0     25.0 <td< td=""><td>DISSOLVED OXYGEN - ppm</td><td>01/23/15</td><td>1100 hrs</td><td>SCS</td><td>cal@840</td><td></td><td>8.4</td><td>8.2</td><td>7.7</td><td>7.8</td><td>7.9</td><td>7.9</td><td>8.0</td><td></td></td<>	DISSOLVED OXYGEN - ppm	01/23/15	1100 hrs	SCS	cal@840		8.4	8.2	7.7	7.8	7.9	7.9	8.0	
24 HOUR OBSERVATIONS - CD     DATE     TIME     ANALYSIT     QC LOT     QC EXP VALUE     RC     UC     100%     50%     25%     12.5%     6.25%     X %AEC       pH - SU     01/22/15     1100 hrs     SCS     SB114 (8.8-9.2)     9.09     7.84     8.14     8.05     8.08     8.05     8.05     8.08       TEMPERATURE °C     01/22/15     1100 hrs     SCS     EAS 106     25.0     <	FINAL AMMONIA - ppm				DMRQA33 (10.0-16.8)				1			1		
24 HOUR OBSERVATIONS - CD     DATE     TIME     ANALYSIT     QC LOT     QC EXP VALUE     RC     UC     100%     50%     25%     12.5%     6.25%     X %AEC       pH - SU     01/22/15     1100 hrs     SCS     SB114 (8.8-9.2)     9.09     7.84     8.14     8.05     8.08     8.05     8.05     8.08       TEMPERATURE °C     01/22/15     1100 hrs     SCS     EAS 106     25.0     <														
pH - SU   01/22/15   1100 hrs   SCS   SB114 (8.8-9.2)   9.09   7.84   8.14   8.05   8.08   8.05   8.08     TEMPERATURE °C   01/22/15   1100 hrs   SCS   EAS 106   25.0	24 HOUR OBSERVATIONS - CD	DATE	TIME	ANALYSIT	QC LOT	QC EXP VALUE	RC	UC	100%	50%	25%	12.5%	6.25%	X %AEC
TEMPERATURE °C   01/22/15   1100 hrs   SCS   EAS 106   25.0	pH - SU	01/22/15	1100 hrs	SCS	SB114 (8.8-9.2)	9.09	7.84	8.14	8.05	8.08	8.05	8.05	8.08	ļ
SPECIFIC CONDUCTANCE umhos   01/22/15   1100 hrs   SCS   ERA229-506 (490-549)   535   250   250   898   597   423   339   299     DISSOLVED OXYGEN - ppm   01/22/15   1100 hrs   S CS   cal@840   8.8   9.2   9.5   9.4   9.5   50	TEMPERATURE °C	01/22/15	1100 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0	
DISSOLVED OXYGEN - ppm   01/22/15   1100 hrs   S CS   cal@840   8.8   9.2   9.5   9.4   9.4   9.4   9.4   9.4   9.4   9.4     48 HOUR OBSERVATIONS - CD DATE   TIME   A NALYST   QC LOT   QC EXP VALUE   RC   UC   100%   50%   25%   12.5%   6.25%   X %AEC     pH - SU   01/23/15   1100 hrs   S CS   SB114 (8.8-9.2)   9.09   8.19   8.39   8.12   8.15   8.18   8.21   8.28     TEMPERATURE °C   01/23/15   1100 hrs   S CS   EAS 106   25.0 <t< td=""><td>SPECIFIC CONDUCTANCE umhos</td><td>01/22/15</td><td>1100 hrs</td><td>SCS</td><td>ERA229-506 (490-549)</td><td>535</td><td>250</td><td>250</td><td>898</td><td>597</td><td>423</td><td>339</td><td>299</td><td></td></t<>	SPECIFIC CONDUCTANCE umhos	01/22/15	1100 hrs	SCS	ERA229-506 (490-549)	535	250	250	898	597	423	339	299	
48 HOUR OBSERVATIONS - CD     DATE     TIME     A NALYST     QC LOT     QC EXP VALUE     RC     UC     100%     50%     25%     12.5%     6.25%     X %AEC       pH - SU     01/23/15     1100 hrs     S CS     SB114 (8.8-9.2)     9.09     8.19     8.39     8.12     8.15     8.18     8.21     8.28     8.24     8.28     8.24     8.28     8.24     8.28     8.21     8.28     8.26     8.25     8.26	DISSOLVED OXYGEN - ppm	01/22/15	1100 hrs	SCS	cal@840		8.8	9.2	9.5	9.4	9.4	9.4	9.4	
pH - SU   01/23/15   1100 hrs   S CS   SB114 (8.8-9.2)   9.09   8.19   8.39   8.12   8.15   8.18   8.21   8.28     TEMPERATURE °C   01/23/15   1100 hrs   S CS   EAS 106   25.0	48 HOUR OBSERVATIONS - CD	DATE	TIME	ANALYST	QC LOT	QC EXP VALUE	RC	UC	100%	50%	25%	12.5%	6.25%	X %AEC
TEMPERATURE °C   01/23/15   1100 hrs   S CS   EAS 106   25.0	pH - SU	01/23/15	1100 hrs	SCS	SB114 (8.8-9.2)	9.09	8.19	8.39	8.12	8.15	8.18	8.21	8.28	
SPECIFIC CONDUCTANCE umhos     01/23/15     1100 hrs     S CS     ERA229-506 (490-549)     540     268     276     888     590     421     338     301       DISSOLVED OXYGEN - ppm     01/23/15     1100 hrs     S CS     cal@840     8.6     8.6     8.3     8.3     8.5     8.5       FINAL AMMONIA - ppm     DMRQA33     (10.0-16.8)     DMRQA33     0.0-16.8)     DMRQA33     0.0-16.8     DMRQA33     0.0-16.8     0.0	TEMPERATURE °C	01/23/15	1100 hrs	SCS	EAS 106		25.0	25.0	25.0	25.0	25.0	25.0	25.0	
DISSOLVED OXYGEN - ppm     01/23/15     1100 hrs     S CS     cal@840     8.6     8.6     8.3     8.3     8.3     8.5     8.5       FINAL AMMONIA - ppm     DMRQA33     (10.0-16.8)     DMRQA33     0.0-16.8)     0 <t< td=""><td>SPECIFIC CONDUCTANCE umhos</td><td>01/23/15</td><td>1100 hrs</td><td>SCS</td><td>ERA229-506 (490-549)</td><td>540</td><td>268</td><td>276</td><td>888</td><td>590</td><td>421</td><td>338</td><td>301</td><td></td></t<>	SPECIFIC CONDUCTANCE umhos	01/23/15	1100 hrs	SCS	ERA229-506 (490-549)	540	268	276	888	590	421	338	301	
FINAL AMMONIA - ppm	DISSOLVED OXYGEN - ppm	01/23/15	5 1100 hrs	SCS	cal@840		8.6	8.6	8.3	8.3	8.3	8.5	8.5	
	FINAL AMMONIA - ppm			1	DMRQA33 (10.0-16.8)									

Approved by: Achilan

Date: 2/3/15

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

Branson, Cooper Creek W	WIF, Outfall 001, 24	a hr composite	EAS#: 18061	24					
Notes & Comments									
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Prepared by:

Date: 2/3/15

Page 3 of 3

### PDC LABORATORIES, INC. 1805 W. SUNSET SPRINGFIELD, MO 65807

### CHAIN OF CUSTODY RECORD

State where samples collected \_\_\_\_\_

MO

		ALL HIGHLIC	HTED AREAS	MUST BE	COMPLE	TED BY CLI	ENT (PLEA	SE PRI	NT)							
		PROJECT NU	MBER	P.O. NUME	IER	MEANS	SHIPPED	3	) AN	ALYSI	S REO	UESTI	ED		(FOR LAB USE OF	iLY)
City of Branson (CoB) CU WWTP Lab		PHONE NU	IBER	FAX NUME	ER	DATE S	HIPPED							·····	LOGIN # 5021109	
(417)337-8577		SAMPLER (PLEASE PRIN	n CAS R	r DASC		MATRIX T	(PES: MATER IG WATER								LOGGED BY:	
		SAMPLER'S	1///	1		GW- GROUNI WWSL- SLUD NAS- SOLID	O WATER	est								COOPER
		DATE	ТІМЕ	SAMPL	ε τγρε	OTHER:	BOTTLE									
2 AS YOU WANT ON REPORT		COLLECTED	COLLECTED	GRAB	COMP	ТҮРЕ	COUNT	>				0			REMARKS	-lempreco
WET TEST EFFLUENT COMPOSITE		1-20	737		X	ww	1	X	1	80	61	2	4			26
UPSTREAM GRAB (IFAVAILABLE)		1-20	746	X		ww	1	X		81	0	12	4	74		213
- <u> </u>							Z								BEDZED	
								$\Box$								
								- <b> </b>								
TURNAROUND TIME REQUESTED (PLEASE CIRCLE) (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARG	NORMAL	RUSH	DATER	ESULTS	EEDED		The sample this area y the sample	le temp ou requ e tempe	erature vest that prature	will b at the l is out:	e mea: lab no: síde oi	sured i tify you f the ra	upon r u, befo	receipt pre pro f 0.1-6.	at the lab. By initialing ceeding with analysis, if 0°C. By not initialing	
FAX # IF DIFFERENT FROM ABOVE: PHONE # IF DIFFERENT FROM	ABOVE:		<b>.</b>				this area y sample tei	rou allo mperatu	w the la ire	ab to p	070000	d with	analy	lical te:	sting regardless of the	
RELINQUISHED BY: (SIGNATURE) DATE	-20-1	RECEIV	ED BY (SIGNAT				DATE	21/	15		8		OMM	ENTS:	(FOR LAB USE ONLY)	
RELINQUISHED BY: (SIGNATURE) DATE	3815	RECEN	EDBY: (SIGNAT	URE	m		DATE	10	50	리\			DEDA	TUPE		°c
TIME				O			TIME				HILL	PROCE	SS ST	TARTE	D PRIOR TO RECEIPT	Y OR N
RELINQUISHED BY: (SIGNATURE) DATE		RECEIN	ED BY: (SIGNAT	URE)			DATE				ROPE	E(S) R R BOT ES FIL	ECEIV TLES LED W	ED ON RECEN	I ICE VED IN GOOD CONDITION DEQUATE VOLUME	Y OR N Y OR N Y OR N
TIME							TIME			- S (1 D	AMPL EXCLU	ES RE JDES T	CEIVE	D WIT	HIN HOLD TIME(S) LD PARAMETERS) ROM SAMPLE BOTTLE	YORN

129511

PHONE # 417-864-89245807FAX # 417-864-7081

#### 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	D IN FULL BY PERMIT	TEE	DATE & TIME COLLECTED						
Branson, Cooper Creek WV	VTF		EFFLUENT 01/20/15 0737 UPSTREAM 01/20/15 0746						
			PERMIT OUTFALL NUMBER						
COLLECTOR'S NAME									
Brad R									
RECEIVING STREAM COLLECTION SITE AN	D DESCRIPTION								
			EEELLIENT SAMPLE TYDE (CHECK ONE)		tanang tanang tang tang tang tang tang t				
100%	CANON (AEC)		24HR COMPOSITE GRA	вПо	THER				
SAMPLE NUMBER EFFLUENT 1806124	UPSTREAM 180612	24A	UPSTREAM SAMPLE TYPE (CHECK ONE)	вПо	THER				
PERMITTED EFFLUENT DAILY MAXIMUM LIN	IITATION FOR	ng/L	PERMITTED EFFLUENT DAILY MAXIMUM LIMITA	TION FOR	mg/L				
PART B - TO BE COMPLETED	IN FULL BY PERFOR	MING LABOR	RATORY						
Environmental Analysis Sout	th, Inc.		Acute Static Non renew	al Test	Multiple Dilution				
FINAL REPORT NUMBER			TEST DURATION 48 hour						
DATE OF LAST REFERENCE TOXICANT TEST January 7, 2015	TING		TEST METHOD Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms						
DATE AND TIME SAMPLES RECEIVED AT LAN 01/21/15 1050 hrs by UPS	BORATORY	•	TEST START DATE AND TIME     TEST END DATE AND TIME       01/21/15 1100 hrs     01/23/15 1100 hrs						
SAMPLE DECHLORINATED PRIOR TO ANALY EFFLUENT			TEST ORGANISM #1 AND AGE Pimephales promelas 7 days	TEST ORGA	nism #2 and age phnia dubia < 24 hours				
SAMPLE FILTERED <sup>1</sup> PRIOR TO ANALYSIS? EFFLUENT			90% OR GREATER SURVIVAL IN SYNTHETIC DILUTION WATER USED TO ACHIEVE AEC CONTROL? YES NO Upstream 1806124A						
FILTER MESH SIEVE SIZE <sup>2</sup>			EFFLUENT ORGANISM #1 % MORTALITY AT AEC EFFLUENT ORGANISM #2 % MORTALITY LC50>100% Effluent LC50>100% Effluent						
SAMPLE AERATED DURING TESTING?	YES 💭 NO		UPSTREAM ORGANISM #1 % MORTALITY	ORGANISM #2 % MORTALITY					
PH ADJUSTED? YES X NO	UPSTREAM	TEST RESULT AT AEC FOR ORGANISM #1	ILT AT AEC FOR ORGANISM #2						
MINIMUM REQUIRED ANALYT	ICAL RESULTS FOR T	HE 100% EF	FLUENT SAMPLE						
PARAMETER	RESULT		METHOD		WHEN ANALYZED				
Temperature °C	3	SM18 2550	B stored at 4 degree C until tes	01/21/15 1055 hrs					
pH Standard Units	7.45	SM18 4500	0-H B 01/21/15 1055 I						
Conductance µMohs	759	SM18 2510	0B 01/21/15 1055 hrs						
Dissolved Oxygen mg/L	11.7	03/12/14 09	01/21/15 1055 hrs						
Total Residual Chlorine mg/L	<0.04	SM18 4500	-CI G		01/21/15 1055 hrs				
Unionized Ammonia mg/L	<0.05x0.01<0.010	SM18 4500	02/02/15 1100 h						
*Total Alkalinity mg/L	105	В		01/21/15 1315 hrs					
*Total Hardness mg/L	180	SM18 2340	С		01/21/15 1055 hrs				

\*Recommended by USEPA guidance, not a required analysis.

Samples shall only be filtered if indigenous organisms are present that may be confused with, or attack, the test organisms.
Filters shall have a sieve size of 60 microns or greater.

#### WHOLE EFFLUENT TOXICITY (WET) TEST REPORT

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

RESULT	METHOD	WHEN ANALYZED
2	SM18 2550B stored at 4 degree C until test setup	01/21/15 1055 hrs
7.50	SM18 4500-H B	01/21/15 1055 hrs
252	SM18 2510B	01/21/15 1055 hrs
12.2	SM18 4500-O G	01/21/15 1055 hrs
<0.04	SM18 4500-CI G	01/21/15 1055 hrs
<0.05x0.02<0.010	SM18 4500-NH3 F @ 25 degree C	02/02/15 1100 hrs
115	SM18 2320B	01/21/15 1315 hrs
120	SM18 2340 C	01/21/15 1055 hrs
	RESULT   2   7.50   252   12.2   <0.04	RESULT     METHOD       2     SM18 2550B stored at 4 degree C until test setup       7.50     SM18 4500-H B       252     SM18 2510B       12.2     SM18 4500-O G       <0.04

#### 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 <u>Methods for Measuring the Acute Toxicity of Effluents and</u> <u>Receiving Waters to Freshwater and Marine Organisms</u>, 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

<sup>&</sup>lt;sup>3</sup> Where no upstream control is available, enter results from laboratory or synthetic control.



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DLH 15:30 12-01-1995 J: \BRANSON\930571\PROCMW\CPCROM01.DWG

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