September 26, 2008

Mr. Bob Simpson, Chairman
Pulaski Co. Sewer District No. 1
PO Box 3008
Waynesville, MO 65583

RE: Missouri State Operating Permit # MO0111716

Dear Mr. Simpson:

Pursuant to the Federal Water Pollution Control Act, under authority granted to the State of Missouri and in compliance with the Missouri Clean Water Law, the department has issued, and you will find enclosed, the renewal for Missouri State Operating Permit (MSOP) # MO0111716 – Pulaski Co. Sewer District No. 1 – Weeks Hollow Wastewater Treatment Facility, Hank Ln., St. Robert, Pulaski County.

Please read enclosed MSOP, its schedule of compliance and attached Standard Conditions. Each contains important information on monitoring requirements, effluent limitations, sampling frequencies and reporting requirements. Discharge monitoring reports that may be required by the special conditions must be submitted on a periodic basis. Enclosed you will find copies of necessary report forms and these should be submitted to the department's Southeast Regional Office, 2155 N. Westwood Blvd., Poplar Bluff, MO 63901. Please contact the department's Southeast Regional Office for additional forms via telephone at (573) 840-9750.

Enclosed MSOP is both your federal discharge permit and your renewed state operating permit, and replaces all previous state operating permits issued for this facility under this permit number. In all future correspondence regarding this facility, please refer to your MSOP number as shown on page one of your MSOP.

As the result of changing regulations and department policy, the following modifications have been implemented to your renewed MSOP:

1. **Ammonia Limit and Temperature Monitoring.** As of August 9, 2007, the department implemented policy to address discharges of Ammonia, a toxic substance, from wastewater treatment facilities. Since your wastewater treatment facility discharges to a classified receiving stream, this MSOP contains interim and final effluent monitoring requirements for Ammonia and Temperature, and that data will be used to determine the applicable Ammonia effluent limit via a Reasonable Potential Analysis in your next operating permit at the next renewal.

2. **Disinfection Requirements.** As of January 1, 2006, applicable wastewater treatment facilities are required to disinfect their effluent in order to protect the use of whole body contact in classified receiving streams. Your wastewater treatment facility discharges to a classified receiving stream designated in the Missouri Clean Water Commission regulations for whole body contact recreation and aquatic life protection. This classified receiving stream designation requires disinfection equipment installation on your wastewater treatment systems to ensure compliance with the fecal coliform interim and final effluent limitations. Interim and final effluent limitations for this draft MSOP include an effluent limitation for fecal coliform for aquatic life protection, and an effluent limitation for total residual chlorine for aquatic life protection, in case permittee chooses chlorination as its disinfection method. In order to meet these more stringent limits, the department requires an upgrade to your wastewater treatment system be accomplished. The most common methods of accomplishing wastewater disinfection are chlorination and dechlorination facilities or an ultraviolet (UV) disinfection system. The department recognizes that this required upgrade will take time and asks that you review the schedule of compliance in your MSOP to address the department required upgrades:

   SCHEDULE OF COMPLIANCE

   1. On or before September 25, 2009, permittee must submit an engineering report to the department for review, prepared in accordance with [10 CSR 20-8.110] by a licensed professional engineer registered in the State of Missouri. Said engineering report must describe the current treatment system and list alternatives and recommendations to upgrade the wastewater treatment that will meet current and future design standards, and final effluent discharge limitations to include dechlorination equipment or alternate disinfection equipment such as an ultraviolet (UV) disinfection system (if facility utilizes chlorination as a disinfection method, facility will be required to dechlorinate the effluent). Disinfection is required for this wastewater treatment facility, and other discharge limits will be dependent upon a Geohydrologic Evaluation and other water quality review analysis criteria.

   2. On or before March 25, 2010, permittee must submit to the department an application for a construction permit with applicable filing fee along with associated plans and specifications to construct the approved recommendation from the department approved engineering report.

   3. On or before September 26, 2011, department approved construction and upgrades must be completed. Upon construction completion, permittee shall submit a letter of authorization or statement of work complete to the department signed by the owner and a licensed professional engineer registered in the State of Missouri.

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

If you were affected by this MSOP renewal issuance, you may appeal to have the matter heard by the administrative hearing commission. To appeal, you must file a petition with said administrative hearing commission within 30 days after the mailed date or delivered date of this decision, whichever date was earlier. If you send such petition by registered or certified mail, petition will be deemed filed on the mailed date. If you send petition by any method other than registered or certified mail, petition will be deemed filed on the received date by the administrative hearing commission.

You will be contacted by a member of our department's Southeast Regional Office's Rolla Satellite Office staff within 45 days to schedule an Environmental Assistance Visit (EAV). During this EAV, staff will review your MSOP requirements with you and answer any questions. If you would like to schedule an earlier EAV or if you have any questions concerning this MSOP renewal, please contact Mr. Bruce D. Volner at (573) 368-3625 in the department's Southeast Regional Office's Rolla Satellite Office, PO Box 250 (111 Fairgrounds Rd.), Rolla, MO 65402-0250.

Sincerely,

SOUTHEAST REGIONAL OFFICE

Gary L. Gaines, P.E.
Regional Director

GLG:bdv:kv

Enclosures

c: Terris Cates, PE, Interim Ops. Mgr., Pulaski Co. Sewer District No. 1, PO Box 3008, Waynesville, MO 65583
Terris Cates, PE, PLS, Integrity Engineering, Inc., PO Box 700, Rolla, MO 65402-0700

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

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

Permit No.	**MO0111716**
Owner:	Pulaski County Sewer District # 1
Address:	PO Box 3008, Waynesville, MO 65583
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Pulaski County Sewer District No. 1 – Weeks Hollow WWTF
Address:	20600 Hank Ln., St. Robert, MO 65584
Legal Description:	SE ¼, SW ¼, Sec. 2, T36N, R11W, Pulaski County
Latitude/Longitude:	(+3752116/-09206270)
Receiving Stream:	Unnamed tributary (gaining) to Weeks Hollow (U) (losing)
First Classified Stream and ID:	Gasconade River (P) (01455)
USGS Basin & Sub-watershed No.:	(10290201 – 070005)

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

FACILITY DESCRIPTION

Outfall # 001 – POTW – SIC # 4952 – **Class D Certified Wastewater Operator Required**
Four (4) Cell Aerated Lagoon/Seasonal Disinfection/Chlorination/Dechlorination/Sludge retained in lagoon
Design population equivalent = 5,800. Actual population equivalent = 5,524. Anticipated population equivalent = 7,443
Design flow = 435,000 gallons per day. Actual flow = 414,300 gallons per day. Anticipated flow = 558,000 gallons per day
Design sludge production = 87.0 dry tons per year. Actual sludge production = 82.9 dry tons per year
Anticipated sludge production = 111.6 dry tons per year

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

September 26, 2008
Effective Date

Doyle Childers, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

September 25, 2013
Expiration Date

Gary L. Gaines, PE, Director, Southeast Regional Office

A. INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this operating permit. Interim effluent limitations shall become effective upon issuance of the operating permit and remain in effect until September 25, 2011, three (3) years from the date of issuance of the operating permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER and EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DA60ILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall # 001						
Flow	MGD	*		*	Once/month	24 hr. estimate
Biochemical Oxygen Demand$_5$**	mg/L		65	45	Once/month	24 hr. composite
Total Suspended Solids**	mg/L		110	70	Once/month	24 hr. composite
pH – Units	SU	***		***	Once/month	grab
Fecal Coliform (Note 1I)	#/100 mL	1000		400	Once/month	grab
Chlorine, Total Residual (Note 2I)	mg/L	1.0		1.0	Once/month	grab
Total Ammonia as N	mg/L	*		*	Once/month	grab
Temperature	ºC	*		*	Once/month	grab
Oil and Grease	mg/L	*		*	Once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY. THE FIRST REPORT IS DUE October 28, 2008. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Whole Effluent Toxicity (WET) test	% Survival	See Special Conditions			Once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY. THE FIRST REPORT IS DUE October 28, 2009.						

B. STANDARD CONDITIONS

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

A. INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

* Monitoring requirement only

** Facility required to meet an interim effluent removal efficiency of 65% or more ($\geq$ 65%) for BOD_5 and TSS. Influent BOD_5 and TSS data shall be reported to ensure removal efficiency requirements are met.

*** pH measured in pH standard units (SUs) and is not to be averaged. pH to be maintained above 6.0 pH SUs

Note 1I – Interim effluent limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season from April 1 through October 31

Note 2I – This operating permit contains an interim Total Residual Chlorine (TRC) effluent limitation

(a) Disinfection required year-round unless this operating permit specifically states that "Interim effluent limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season from April 1 through October 31". If this operating permit does not require disinfection during the non-recreational months, do not chlorinate in those months.

(b) Do not chemically dechlorinate if it is not needed to meet the operating permit interim effluent limitation.

(c) If no chlorine was used in a given sampling period, an actual analysis is not necessary. Simply report as "0 mg/L" TRC.

C. INTERIM INFLUENT MONITORING REQUIREMENTS

Facility required to meet an interim removal efficiency of 65% or more. Interim influent monitoring requirements shall become effective upon issuance of the operating permit and remain in effect until September 25, 2011, three (3) years from the date of issuance of the operating permit. To determine removal efficiencies, influent wastewater shall be monitored by permittee as specified below:

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

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY . THE FIRST REPORT IS DUE October 28, 2008 .

MO 780-0010 (8/91)

C. INTERIM INFLUENT MONITORING REQUIREMENTS (continued)

* Facility required to meet an interim effluent removal efficiency of 65% or more ($\geq$ 65%). Influent and effluent samples used to determine percent removal shall be taken the same day.

A. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this operating permit. Final effluent limitations shall become effective on September 26, 2011, three (3) years from the date of issuance of the operating permit and remain in effect until expiration of the operating permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER and EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall # 001						
Flow	MGD	*		*	Once/month	24 hr. estimate
Biochemical Oxygen Demand$_5$**	mg/L		45	30	Once/month	24 hr. composite
Total Suspended Solids**	mg/L		45	30	Once/month	24 hr. composite
pH – Units***	SU	6.0-9.0		6.0-9.0	Once/month	grab
Fecal Coliform (Note 1F)	#/100 mL	1000		400	Once/month	grab
Chlorine, Total Residual (Note 2F)	mg/L	0.104 (0.13 mg/L ML)		0.052 (0.13 mg/L ML)	Once/month	grab
Total Ammonia as N	mg/L	*		*	Once/month	grab
Temperature	ºC	*		*	Once/month	grab
Oil and Grease	mg/L	15		10	Once/month	grab

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

Whole Effluent Toxicity (WET) test	% Survival	See Special Conditions	Once/year grab

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

B. STANDARD CONDITIONS

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

A. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

* Monitoring requirement only

** Facility required to meet a final effluent removal efficiency of 85% or more ($\geq$ 85%) for BOD_5 and TSS. Influent BOD_5 and TSS data shall be reported to ensure removal efficiency requirements are met.

*** pH measured in pH standard units (SUs) and is not to be averaged. pH to be maintained in range between 6.0-9.0 pH SUs

Note 1F – Final effluent limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season from April 1 through October 31

Note 2F – This operating permit contains a final Total Residual Chlorine (TRC) effluent limitation

(a) Disinfection required year-round unless this operating permit specifically states that "Final effluent limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season from April 1 through October 31". If this operating permit does not require disinfection during the non-recreational months, do not chlorinate in those months.

A. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

Note 2F (continued)

(b) Do not chemically dechlorinate if it is not needed to meet the operating permit interim effluent limitation.

(c) If no chlorine was used in a given sampling period, an actual analysis is not necessary. Simply report as "0 mg/L" TRC.

(d) Final effluent limitation for Total Residual Chlorine (TRC) is below the minimum quantification level (ML) of the most common and practical U.S. Environmental Protection Agency (EPA) approved CLTRC methods. The department has determined the current acceptable minimum quantification level (ML) for total residual chlorine (TRC) to be 0.13 mg/L when using the DPD Colorimetric Method #4500–CL G. from the Standard Methods for the Examination of Waters and Wastewater. Permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. Measured values greater than or equal to the minimum quantification level (ML) of 0.13 mg/L will be considered a operating permit violation and values less than the minimum quantification level (ML) of 0.13 mg/L will be considered to be in compliance with the operating permit's final effluent limitation. The minimum quantification level (ML) does not authorize the discharge of chlorine in excess of the operating permit's final effluent limitation.

C. FINAL INFLUENT MONITORING REQUIREMENTS

Facility required to meet a final removal efficiency of 85% or more. Final influent monitoring requirements shall become effective on September 26, 2011, three (3) years from the date of issuance of the operating permit and remain in effect until expiration of the operating permit. To determine removal efficiencies, influent wastewater shall be monitored by permittee as specified below:

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

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

MO 780-0010 (8/91)

C. FINAL INFLUENT MONITORING REQUIREMENTS (continued)

* Facility required to meet a final effluent removal efficiency of 85% or more ($\geq$ 85%). Influent and effluent samples used to determine percent removal shall be taken the same day.

C. SPECIAL CONDITIONS

1. This operating permit may be reopened and modified, or alternatively revoked and reissued, to:

   (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2) and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:

      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or controls any pollutant not limited in the operating permit.

      (2) controls any pollutant not limited in the permit.

   (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.

   (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

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

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

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

4. Changes in Discharges of Toxic Substances.

   Permittee shall notify the Director as soon as it knows or has reason to believe:

   (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the operating permit, if that discharge will exceed the highest of the following "notification levels":

      (1) One hundred micrograms per liter (100 µg/L);

      (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

      (3) Five (5) times the maximum concentration value reported for the pollutant in the operating permit application;

      (4) The level established in Part A of the operating permit by the Director.

   (b) That permittee has begun or expects to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the operating permit application.

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

6. General Criteria. The following water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:

   (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;

   (b) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;

   (c) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;

C. SPECIAL CONDITIONS (continued)

6. General Criteria (continued)

(d) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;

(e) There shall be no significant human health hazard from incidental contact with the water;

(f) There shall be no acute toxicity to livestock or wildlife watering;

(g) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community; and

(h) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

7. Sludge and Biosolids Use For Domestic Wastewater Treatment Facilities.

(a) Permittee shall comply with the pollutant limitations, monitoring, reporting, and other requirements in accordance with the attached permit Standard Conditions – Part III.

(b) If sludge is not removed by a contract hauler, permittee is authorized to land apply biosolids. Permit Standard Conditions, Part III shall apply to the land application of biosolids. Permittee shall notify the department at least 180 days prior to the planned removal of biosolids. The department may require submittal of a biosolids management plan for department review and approval as determined appropriate on a case-by-case basis.

8. Permittee shall comply with any applicable requirements listed in 10 CSR 20-8 and 10 CSR 20-9, unless facility has received written notification that the department has approved a modification to the requirements. Monitoring frequencies contained in this permit shall not be construed by permittee as a modification of the monitoring frequencies listed in 10 CSR 20-9. If a modification of the monitoring frequencies listed in 10 CSR 20-9 is needed, permittee shall submit a written request to the department for review and, if deemed necessary, approval.

9. Permittee shall develop and implement a program for maintenance and repair of the collection system. Recommended guidance: the United States Environmental Protection Agency's (EPA's) *Guide For Evaluating Capacity, Management, Operation, And Maintenance (CMOM) Programs At Sanitary Sewer Collection Systems* (Document number EPA 305-B-05-002). Permittee shall submit a report semi-annually by April 28th and October 28th with the Discharge Monitoring Reports which address measures taken to locate and eliminate inflow and infiltration sources into the collection system serving the facility.

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

SUMMARY OF WET TESTING FOR THIS OPERATING PERMIT				
OUTFALL	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
001	18.3	Once/year	Grab	July

(a) Test Schedule and Follow-Up Requirements.

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

(a) For stormwater discharges, samples shall be collected within three (3) hours from when discharge first occurs.

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

C. SPECIAL CONDITIONS (continued)

10. Whole Effluent Toxicity (WET) Test (continued)

(a) Test Schedule and Follow-Up Requirements (continued)

1. MULTIPLE-Dilution Test (continued)

(c) For non-stormwater discharges, samples shall be collected only when precipitation has not occurred for a period of forty-eight (48) hours prior to sample collection. In no event, shall sample collection occur simultaneously with the occurrence of precipitation except for stormwater samples.

(d) A twenty-four (24) hour composite sample shall be submitted for analysis of non-stormwater discharges.

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

(f) Samples submitted for analysis of upstream receiving water may be collected as either a grab or twenty-four (24) hour composite as appropriate to the nature of the discharge.

(g) Chemical and physical analysis of the upstream control and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping.

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

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

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

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

(l) Samples submitted for analysis of downstream receiving water may be collected as either a grab or twenty-four (24) hour composite as appropriate to the nature of the discharge.

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

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

3. If the effluent fails the test, a multiple dilution test shall be performed for BOTH test species within 30 calendar days and biweekly thereafter (for stormwater, tests shall be performed on the next and subsequent stormwater discharges as they occur), until one (1) of the following conditions are met:

(a) THREE (3) CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.

(b) A TOTAL OF THREE (3) MULTIPLE-DILUTION TESTS FAIL.

4. Failure of at least two (2) multiple-dilution tests during any period of accelerated monitoring violates the operating permit narrative requirement for aquatic life protection.

C. SPECIAL CONDITIONS (continued)

10. Whole Effluent Toxicity (WET) Test (continued)

(a) Test Schedule and Follow-Up Requirements (continued)

5. Permittee shall submit a concise summary of all test results for the test series to the department's WATER PROTECTION PROGRAM, PO Box 176, Jefferson City, MO 65102 within 14 calendar days of the third (3^{rd}) failed test.

6. Additionally, the following shall apply upon failure of the third (3^{rd}) MULTIPLE DILUTION test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. Permittee shall contact the department's WATER PROTECTION PROGRAM within 14 calendar days from availability of the test results to ascertain as to whether a TIE or TRE is appropriate. Permittee shall submit a plan for conducting a TIE or TRE to the department's WATER PROTECTION PROGRAM within 60 calendar days of the date of the department's direction to perform either a TIE or TRE. This plan must be approved by the department before the TIE or TRE is begun. A schedule for completing the TIE or TRE will be established in the approved plan.

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

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

9. When WET test sampling is required to run over one (1) discharge monitoring reporting period, each discharge monitoring report report shall contain a copy of the department's WET test report form that was generated during the reporting period.

10. Permittee shall submit a concise summary in tabular format of all test results with the annual report.

(b) PASS/FAIL procedure and effluent limitations:

1. To pass a multiple-dilution test:

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

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

(c) All effluent concentrations equal to or less than the AEC must be nontoxic. Mortality observed in all effluent concentrations equal to or less than the AEC shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* or other federal guidelines as appropriate or required. Failure of one (1) multiple-dilution test may be considered an effluent limit violation.

(c) Test Conditions.

1. Test Type: Acute Static non-renewal.

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

C. SPECIAL CONDITIONS (continued)

10. Whole Effluent Toxicity (WET) Test (continued)

(c) Test conditions (continued)

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

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

5. When dilutions are required, upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the department upon request.

6. Multiple-dilution tests will be run with:

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

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

(c) Reconstituted water.

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

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

SUMMARY OF TEST METHODOLOGY FOR WHOLE-EFFLUENT TOXICITY TESTS

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

Test conditions for Ceriodaphnia dubia:

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

Test conditions for (Pimephales promelas):

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

D. SCHEDULE OF COMPLIANCE

1. On or before September 25, 2009, permittee must submit an engineering report to the department for review, prepared in accordance with [10 CSR 20-8.110] by a licensed professional engineer registered in the State of Missouri. Said engineering report must describe the current treatment system and list alternatives and recommendations to upgrade the wastewater treatment that will meet current and future design standards, and final effluent discharge limitations to include dechlorination equipment or alternate disinfection equipment such as an ultraviolet (UV) disinfection system (if facility utilizes chlorination as a disinfection method, facility will be required to dechlorinate the effluent). Disinfection is required for this wastewater treatment facility, and other discharge limits will be dependent upon a Geohydrologic Evaluation and other water quality review analysis criteria.

2. On or before March 25, 2010, permittee must submit to the department an application for a construction permit with applicable filing fee along with associated plans and specifications to construct the approved recommendation from the department approved engineering report.

3. On or before September 25, 2011, department approved construction and upgrades must be completed. Upon construction completion, permittee shall submit a letter of authorization or statement of work complete to the department signed by the owner and a licensed professional engineer registered in the State of Missouri.

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

Missouri Department of Natural Resources
FACT SHEET
FOR THE PURPOSE OF THE RENEWAL OF
MISSOURI STATE OPERATING PERMIT # MO0111716
PULASKI COUNTY SEWER DISTRICT NO. 1 – WEEKS HOLLOW WWTF
ST. ROBERT, PULASKI COUNTY

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

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

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

This Factsheet is for a Major ☐, Minor ☒, Industrial Facility ☐; Variance ☐;
Master General Permit ☐; General Permit Covered Facility ☐; and/or permit with widespread public interest ☒.

Part I - Facility Information

Facility Type: Publicly-Owned Treatment Works (POTW)
Facility SIC Code(s): 4952

Facility Description: Outfall # 001	Four (4) Cell Aerated Lagoon/Seasonal Disinfection/Chlorination/Dechlorination/Sludge retained in Lagoon. Design population equivalent = 5,800. Actual population equivalent = 5,524. Anticipated population equivalent = 7,443. Design flow = 435,000 gallons per day. Actual flow = 414,300 gallons per day. Anticipated flow = 558,000 gallons per day. Design sludge production = 87.0 dry tons per year. Actual sludge production = 82.9 dry tons per year. Anticipated sludge production = 111.6 dry tons per year

Application Date: June 27, 2007
Expiration Date: December 22, 2007
Last Inspection: January 17, 2008 In Compliance ☒; Non-Compliance ☐

OUTFALL(S) TABLE: See Appendix A – Water Quality Review Sheet

Outfall # 001

Legal Description: SE ¼, SW ¼, Sec. 2, T36N, R11W, Pulaski County
Latitude/Longitude: (+3752116/-09206270)
Receiving Stream: Unnamed tributary (gaining) to Weeks Hollow (U) (losing)
First Classified Stream and ID: Gasconade River (P) (01455)
USGS Basin & Sub-watershed No.: (10290201 – 070005)

Water Quality History: See Appendix A – Water Quality Review Sheet

Comments: See Appendix A – Water Quality Review Sheet

Part II – Operator Certification Requirements

As per [10 CSR 20-6.010(8)], permittees shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions and regulations. Operators or supervisors of operations at regulated wastewater treatment facilities shall

be certified in accordance with [10 CSR 20-9.020(2)] and any other applicable state law or regulation. As per [10 CSR 20-9.010(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems, if applicable, as listed below:

- Owned or operated by or for:
  - Municipalities: ☐
  - Public Sewer District: Pulaski Co. Sewer District No. 1 ` ☒
  - County: Pulaski Co. Sewer District Board ☒
  - Public Water Supply Districts: ☐
  - Private sewer company regulated by the Public Service Commission: ☐
  - State or Federal agencies: ☐

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

- Department required ☐; The department requires this facility to retain the services of a certified wastewater operator per due to: _____.

This facility currently requires a wastewater operator with, at a minimum, a C Certification Level (See Appendix B - Classification Worksheet). Modifications made to the wastewater treatment facility may cause the classification to be modified.

Operator's Name: R. Dale Martin
Certification Number: 6792
Certification Level: C

☐ - Facility does not currently retain an operator with the correct level of certification required to operate the wastewater treatment facility. Missouri Clean Water Law and its implementing regulation [10 CSR 20-9.020(2)(F)] allows the department to develop a schedule of activities including the date by which compliance shall be obtained. This schedule of activities shall be established in this operating permit as a Schedule of Compliance.

Not Applicable ☐; This facility not required to have a certified operator.

Part III – Receiving Stream Information

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

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

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

RECEIVING STREAM(S) TABLE: See Appendix A – Water Quality Review Sheet

RECEIVING STREAM(S) LOW-FLOW VALUES TABLE: See Appendix A – Water Quality Review Sheet

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

MIXING CONSIDERATIONS: See Appendix A – Water Quality Review Sheet

Part IV – Rationale and Derivation of Effluent Limitations, and Permit Conditions

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES: 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.

Applicable ☐;

Not Applicable ☐; Facility does not discharge to a Losing Stream defined by [10 CSR 20-2.010(36)] and [10 CSR 20-7.031(1)(N)].

Not Applicable ☒; Renewal

ANTI-BACKSLIDING: Provisions in federal regulations [CWA §303(d)(4); CWA §402(c); CFR §122.44(I)] require reissued operating permits to be as stringent as the previous operating permit with some exceptions.

☒ - All limits in this statement are at least as protective as those previously established. Backsliding does not apply.

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

☐ - New facility. Backsliding does not apply.

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

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

☐ - New and/or expanded discharge. As per [10 CSR 20-7.031(2)(D)], the three (3) levels of protection provided by the antidegradation policy in subsections (A), (B) and (C) of this section shall be implemented according to procedures developed by the department. On April 20, 2007, the Missouri Clean Water Commission approved the *Missouri Antidegradation Rule and Implementation Procedure* (Antidegradation Rule), applicable to new or upgraded and/or expanded facilities. The department will implement the Antidegradation Rule upon promulgation tentatively scheduled for August 30, 2008.

APPLICABLE PERMIT PARAMETERS: Effluent parameters contained in Fact Sheets and Missouri State Operating Permits (MSOPs) are obtained from a Technology Based Effluent Limit (TBEL), Missouri's Effluent Regulations [10 CSR 20-7.015], Missouri's Water Quality Standards [10 CSR 20-7.031], previous Missouri State Operating Permits (MSOPs), and from operating permit applications.

BIO-SOLIDS, SLUDGE, & SEWAGE SLUDGE: Bio-solids are solid materials resulting from wastewater treatment that meet federal and state criteria for beneficial uses (i.e., fertilizer). Sludge is any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effect. Sewage sludge is solids, semi-solids, or liquid residues generated during domestic sewage treatment 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 sewage sludge firing in a sewage sludge incinerator or grit and screening generated during domestic sewage preliminary treatment in a treatment works.

Applicable (renewal and modifications to existing operating permits) ☐; Facility has been approved to land apply as per Permit Standard Conditions III and a department approved bio-solids management plan.

Applicable (new operating permits) ☒; Permittee has proposed that sludge and bio-solids are not to be removed by a contract hauler for this facility. Permittee has proposed to land apply the sludge and bio-solids as per the Permit Standard Conditions Part III. The department has reviewed and approved permittee's bio-solids management plan and therefore is approved to land apply said sludge and bio-solids as a means of treatment or disposal.

Not Applicable ☐; This condition not applicable to permittee for this specific facility.

COMPLIANCE AND ENFORCEMENT: Enforcement is the action taken by the department's 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 department's WPP is to resolve violations and return the entity to compliance.

Applicable ☐; Permittee/facility is currently under enforcement action due to: _____.

Not Applicable ☒; Permittee/facility not currently under the department's Water Protection Program enforcement action.

PRETREATMENT PROGRAM: 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 Publicly Owned Treatment Works (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 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; or
- Submittal of the results of the evaluation

Applicable ☐; Permittee has an approved pretreatment program in accordance with the requirements of [40 CSR Part 403] and [10 CSR 20-6.100] and is expected to implement and enforce its approved program.

Not Applicable ☒; At this time, permittee not required to implement and enforce a Pretreatment Program.

REASONABLE POTENTIAL ANALYSIS (RPA): Effluent limitations must control all pollutants or pollutant parameters that are or may be discharged at a level which will cause, have reasonable potential to cause, or contribute to an excursion above the Missouri Water Quality Standards.

Applicable ☐; A RPA was conducted on appropriate parameters.

Not Applicable ☒; A Reasonable Potential Analysis (RPA) was not conducted for this facility.

REMOVAL EFFICIENCY: Removal efficiency is a method by which federal regulations ("Clean Water Act") defines Secondary Treatment and Equivalent to Secondary Treatment applicable to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) or Non-filterable Residues (NFRs) for Publicly-Owned Treatment Works (POTWs). See the United States Environmental Protection Agency's (EPA) website for interpretation of percent removal requirements for National Pollutant Discharge Elimination System Permit Application Requirements for Publicly-Owned Treatment Works (POTW) and Other Treatment Works Treating Domestic Sewage: www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm.

Applicable ☒; Equivalent to Secondary Treatment is 65% removal [40 CFR Part 133.105(a)(3) and (b)(3)]. Influent monitoring requirement retained from previous operating permit. See Interim Influent Monitoring Requirements section in operating permit.

Applicable ☒; Secondary Treatment is 85% removal [40 CFR Part 133.102(a)(3) and (b)(3)]. See Appendix A – Water Quality Review Sheet. See Final Influent Monitoring Requirements section in operating permit.

Applicable ☐; This wastewater treatment facility is not a POTW. However, influent monitoring required to determine percent removal.

Not Applicable ☐; This wastewater treatment facility is not a POTW. Influent monitoring not being required to determine percent removal.

SANITARY SEWER OVERFLOWS (SSOS), AND INFLOW AND INFILTRATION (I&I): Collection systems are a critical element in the successful performance of the wastewater treatment process. Under certain conditions, poorly designed, built, managed, operated, and/or maintained systems can pose risks to public health, the environment, or both. Causes of Sanitary Sewer Overflows (SSOs) include, but are not limited to, the following: high levels of inflow and infiltration (I&I) during wet weather; blockages; structural, mechanical or electrical failures; collapsed or broken sewer pipes; insufficient conveyance capacity; and vandalism. Effective and continuous management, operation and maintenance, as well as ensuring adequate capacity and rehabilitation when necessary, are critical to maintaining collection system capacity and performance while extending the life of the system.

Applicable ☒; Permittee required to develop or implement a program for maintenance and repair of the collection system and shall be required in this operating permit by either means of a Special Condition or Schedule of Compliance.

Not Applicable ☐; Facility not required to develop or implement a program for maintenance and repair of the collection system. However, it is a violation of the Missouri Clean Water Law and associated regulations to allow untreated wastewater to discharge to waters of the state.

SCHEDULE OF COMPLIANCE (SOC): A schedule of remedial measures included in an operating permit, including an enforceable sequence of interim requirements (actions, operations or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit.

Applicable ☒; Time given for effluent limitations of this operating permit listed under Interim Effluent Limitations and Final Effluent Limitations established in accordance with [10 CSR 20-7.031(10)].

Not Applicable ☐; This operating permit does not contain a Schedule of Compliance (SOC).

STORM WATER POLLUTION PREVENTION PLAN (SWPPP): A plan to schedule activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the state. Plan may include, but is not limited to: treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Applicable ☐; A SWPPP shall be developed and implemented for each site and shall incorporate required practices identified by the department with jurisdiction, incorporate erosion control practices specific to site conditions, and provide for maintenance and adherence to the plan.

Not Applicable ☒; At this time, permittee not required to develop and implement a SWPPP.

VARIANCE: 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 Missouri Clean Water Commission in its order. The variance may be extended by affirmative action of the Missouri Clean Water 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-§§ 644.141] or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law [§§644.006-§§ 644.141].

Applicable ☐;

Not Applicable ☒; This operating permit not drafted under premises of a petition for variance.

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS: See Appendix A – Water Quality Review Sheet. Per [10 CSR 20-2.010(78)], the amount of pollutant(s) each discharger is allowed by the department to release into a given stream after the department has determined the total amount of pollutant(s) that may be discharged into that stream without endangering its water quality.

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

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

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

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

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

Not Applicable ☐; Wasteload allocations not calculated.

WASTELOAD ALLOCATIONS (WLA) MODELING: There are two (2) 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 WQBELs must be used.

Applicable ☐; A WLA study including model was submitted to the department by _____. Said WLA study determined that (parameter) needs _____.

Not Applicable ☒; A Wasteload Allocation (WLA) study was not submitted or determined to not be applicable by department.

WHOLE EFFLUENT TOXICITY (WET) TEST: A Whole Effluent Toxicity (WET) test is a quantifiable method of determining if a discharge from a facility may be causing toxicity to aquatic life by itself, in combination with or through synergistic responses when mixed with receiving stream water.

Applicable ☒; In accordance with the Clean Water Act (CWA) [§101(a)(3)], requiring Whole Effluent Toxicity (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). Furthermore, WET testing is a means by which the department determines that [10 CSR 20-7.031(3)(D), (F) and (G)] are being met by the permitted facility. In addition to justification for the WET testing, WET tests are required under [10 CSR 20-6.010(8)(A)4.] to be performed by specialists who are properly trained in conducting the test according to the methods prescribed by the Federal Government as referenced in [40 CFR Part 136]. WET testing will be required by all facilities meeting the following criteria:

☐ Facility is a designated Major;
☐ Facility continuously or routinely exceeds its design flow;
☐ Facility (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 (WQBELs) for toxic substances (other than NH_3);
☒ Facility is a municipality or domestic discharger with a design flow ≥ 22,500 gallons per day (gpd); or
☐ Other

Not Applicable ☐; At this time, permittee not required to conduct Whole Effluent Toxicity (WET) testing for this facility.

303(d) LIST AND 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 Total Maximum Daily Load (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 Total Maximum Daily Load (TMDL) calculation

Applicable ☒; First classified water body, Gasconade River (P) (01455), listed on the 2002 Missouri 303(d) List for mercury from atmospheric deposition. See Appendix A – Water Quality Review Sheet. See department website: http://www.dnr.mo.gov/env/wpp/waterquality/2002_303d_list.pdf

☒ – Facility not considered to be a source of above listed pollutant(s), mercury from atmospheric deposition, or considered to contribute to impairment of first classified water body, Gasconade River (P) (01455). See Appendix A – Water Quality Review Sheet. See department website: http://www.dnr.mo.gov/env/wpp/waterquality/2002_303d_list.pdf

☐ – Facility considered to be a source of or has the potential to contribute to above listed pollutant(s).

Not Applicable ☐; Facility does not discharge to a 303(d) listed stream.

Part V – Effluent Limits Determination

OUTFALL # 001 – Main Facility Outfall

EFFLUENT LIMITATIONS TABLE: SEE APPENDIX A – WATER QUALITY REVIEW SHEET

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
INTERIM EFFLUENT LIMITATIONS							

FLOW	MGD	1	*	N/A	*	NO	S
BIOCHEMICAL OXYGEN DEMAND (BOD_5)**	MG/L	1	N/A	65	45	NO	S
TOTAL SUSPENDED SOLIDS (TSS)**	MG/L	1	N/A	110	70	NO	S
PH	SU	1	$\leq$ 6.0	N/A	$\leq$ 6.0	NO	S
FECAL COLIFORM (NOTE 1)	NOTE 1	1/2	1000	N/A	400	NO	S
TOTAL RESIDUAL CHLORINE (TRC)	MG/L	1/2	1.0	N/A	1.0	NO	S
TOTAL AMMONIA AS N	MG/L	2/3/5	*	N/A	*	YES	***
TEMPERATURE	° C	1/8	*	N/A	*	YES	***
OIL AND GREASE	MG/L	1	*	N/A	*	YES	***
WHOLE EFFLUENT TOXICITY (WET) TEST***	See Whole Effluent Toxicity (WET) Test in Derivation and Discussion Section						
MONITORING FREQUENCY	See Minimum Sampling and Reporting Frequency Requirements in Derivation and Discussion Section						
FINAL EFFLUENT LIMITATIONS							
FLOW	MGD	1	*	N/A	*	NO	S
BIOCHEMICAL OXYGEN DEMAND (BOD_5)**	MG/L	1	N/A	45	30	YES	65 / 45
TOTAL SUSPENDED SOLIDS (TSS)**	MG/L	1		45	30	YES	110 / 70
PH	SU	1	6.0-9.0	N/A	6.0-9.0	YES	$\leq$ 6.0 / $\leq$ 6.0
FECAL COLIFORM (NOTE 1)	NOTE 1	1/2	1000	N/A	400	YES	S
TOTAL RESIDUAL CHLORINE (TRC)	MG/L	1/2	0.104 (0.13 ML)	N/A	0.052 (0.13 ML)	YES	1.0/1.0
TOTAL AMMONIA AS N	MG/L	2/3/5	*	N/A	*	YES	***
TEMPERATURE	° C	1/8	*	N/A	*	YES	***
OIL AND GREASE	MG/L	1	15	N/A	10	YES	***
WHOLE EFFLUENT TOXICITY (WET) TEST***	See Whole Effluent Toxicity (WET) Test in Derivation and Discussion Section						
MONITORING FREQUENCY	See Minimum Sampling and Reporting Frequency Requirements in Derivation and Discussion Section						

* - Monitoring requirement only

** - Interim effluent limitation and interim influent monitoring: Facility required to meet an interim effluent removal efficiency of 65% or more ($\geq$ 65%) for BOD_5 and TSS. Final effluent limitation and final influent monitoring: Facility required to meet a final effluent removal efficiency of 85% or more ($\geq$ 85%) for BOD_5 and TSS

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

Note 1 – number of colonies per 100 mL (monthly average for Fecal Coliform is a geometric mean)

N/A – Not applicable

S – Same as previously established in previous operating permit

Basis for Limitations Codes:

1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Lagoon Policy
5. Ammonia Policy
6. Dissolved Oxygen Policy
7. Antidegradation Policy
8. Water Quality Model
9. Best Professional Judgment
10. TMDL or Permit in lieu of TMDL
11. WET test Policy

OUTFALL # 001 – DERIVATION AND DISCUSSION OF LIMITS:

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

- **Biochemical Oxygen Demand (BOD_5)**. Interim Effluent Limitation retained from previous operating permit (equal to or less than ($\leq$) 65 mg/L as a Weekly Average and equal to or less than ($\leq$) 45 mg/L as a Monthly Average [10 CSR 20-7.015(8)(B)3.A.]). Facility required to meet removal efficiency of 65% or more ($\geq$ 65%). Percent removal must be reported to the department and any influent and effluent data must be available for department inspection and review. Final Effluent Limitation: See Appendix A – Water Quality Review Sheet (equal to or less than ($\leq$) 45 mg/L as a Weekly Average and equal to

or less than (≤) 30 mg/L as a Monthly Average [10 CSR 20-7.015(8)(B)1.]). Facility required to meet a final effluent removal efficiency of 85% or more (≥ 85%). Percent removal must be reported to the department and any influent and effluent data must be available for department inspection and review. See **Part III – Receiving Stream Information**, **APPLICABLE DESIGNATION OF WATERS OF THE STATE** and **Part IV – Rationale and Derivation of Effluent Limitations, and Permit Conditions**, **REMOVAL EFFICIENCY** above.

- **Total Suspended Solids (TSS)**. Interim Effluent Limitation retained from previous operating permit (equal to or less than (≤) 110 mg/L as a Weekly Average and equal to or less than (≤) 70 mg/L as a Monthly Average [10 CSR 20-7.015(8)(B)3.D.(II)(a)]). Facility required to meet removal efficiency of 65% or more (≥ 65%). Percent removal must be reported to the department and any influent and effluent data must be available for department inspection and review. Final Effluent Limitation: See Appendix A – Water Quality Review Sheet (equal to or less than (≤) 45 mg/L as a Weekly Average and equal to or less than (≤) 30 mg/L as a Monthly Average [10 CSR 20-7.015(8)(B)1.]). Facility required to meet a final effluent removal efficiency of 85% or more (≥ 85%). Percent removal must be reported to the department and any influent and effluent data must be available for department inspection and review. See **Part III – Receiving Stream Information**, **APPLICABLE DESIGNATION OF WATERS OF THE STATE** and **Part IV – Rationale and Derivation of Effluent Limitations, and Permit Conditions**, **REMOVAL EFFICIENCY** above.

- **pH**. Interim Effluent Limitation retained from previous operating permit (above 6.0 (≤ 6.0) standard units (SUs) [10 CSR20-7.015(B)3.A.]). Final Effluent Limitation: See Appendix A – Water Quality Review Sheet (pH shall be maintained in the range from six to nine (6.0-9.0) standard units (SUs) [10 CSR 20-7.015(8)(B)2.]). See **Part III – Receiving Stream Information**, **APPLICABLE DESIGNATION OF WATERS OF THE STATE** above.

- **Fecal Coliform**. Discharge shall not contain more than a monthly geometric mean of 400 colonies per 00 mL and a daily maximum of 1000 colonies per 100 mL during the recreational season (April 1 – October 31). See Appendix A – Water Quality Review Sheet. See **Part III – Receiving Stream Information**, **APPLICABLE DESIGNATION OF WATERS OF THE STATE** above [10 CSR 20-7.015(8)(B)4.A.]. Future operating permit renewal will contain effluent limitations for E. coli, which will replace fecal coliform as the applicable bacteria criteria in Missouri's water quality standards.

- **Chlorine, Total Residual**. Interim Effluent Limitation retained from previous operating permit (equal to or less than (≤) 1.0 mg/L as a Daily Maximum and equal to or less than (≤) 1.0 mg/L as a Monthly Average. Final Effluent Limitation: See Appendix A – Water Quality Review Sheet (equal to or less than (≤) 0.104 mg/L as a Daily Maximum and equal to or less than (≤) 0.052 mg/L as a Monthly Average). Final Effluent Limitation for Total Residual Chlorine (TRC) is below the minimum quantification level (ML) of the most common and practical U.S. Environmental Protection Agency (EPA) approved CLTRC methods. The department has determined the current acceptable minimum quantification level (ML) for total residual chlorine (TRC) to be 0.13 mg/L when using the DPD Colorimetric Method #4500–CL G. from the Standard Methods for the Examination of Waters and Wastewater. Permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. Measured values greater than or equal to the minimum quantification level (ML) of 0.13 mg/L will be considered a operating permit violation and values less than the minimum quantification level (ML) of 0.13 mg/L will be considered to be in compliance with the operating permit's final effluent limitation. The minimum quantification level (ML) does not authorize the discharge of chlorine in excess of the operating permit's final effluent limitation.

- **Total Ammonia as Nitrogen (N)**. Interim and Final Effluent Limitation: Monitoring requirement [10 CSR 20-7.031(4)(B)7.]. See Appendix A – Water Quality Review Sheet. Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C.] and [Table B3]. Calculated ammonia final effluent discharge limitation found in the Appendix A – Water Quality Review Sheet are above concentrations typically found in raw domestic sewage (EPA Process Design Manual 625/1-81-013). Monitoring effluent discharge proposed for verification through a Reasonable Potential Analysis (RPA).

- **Temperature.** Monitoring requirement. Toxicity of Ammonia varies by temperature.

- **Oil and Grease**. Conventional pollutant. Final Effluent Limitation for protection of aquatic life: 10 mg/L Monthly Average, 15 mg/L Daily Maximum.

- **Whole Effluent Toxicity (WET) Test**. See Appendix A – Water Quality Review Sheet. Whole Effluent Toxicity (WET) testing schedules and intervals established in accordance with the department's Permit Manual, Section 5.2., Effluent Limits / WET Testing for Compliance Bio-monitoring. The department recommends that WET testing be conducted during the period of lowest stream flow (month of July – best professional judgment assumption).

  ☒ Chronic
  ☐ Acute

  ☐ No less than **ONCE/PERMIT CYCLE:**
  ☒ Municipality or domestic facility with a design flow ≥ 22,500 gallons per day (gpd), but less than 1.0 MGD
  ☐ Other:

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

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

Allowable Effluent Concentration (AEC) calculations determine if the facility should to conduct either single dilution or multiple dilution WET testing (See Appendix A – Water Quality Review Sheet). Facilities that discharge to unclassified or Class C receiving stream, the AEC % is 100%. Facilities with less than 100% (< 100%) for an AEC %, will have multiple dilution WET testing. Facilities that discharge to lakes and have Acute WET testing, the AEC% is 100% due to [10 CSR 20-7.031(4)(A)4.B.(IV)(b)]. Zone of initial dilution (ZID) not allowed for lakes.

Classified P receiving streams calculations (See Appendix A – Water Quality Review Sheet).

- **Minimum Sampling and Reporting Frequency Requirements**.

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
INTERIM EFFLUENT LIMITATIONS		
FLOW	ONCE/MONTH	ONCE/MONTH
BIOCHEMICAL OXYGEN DEMAND (BOD_5)	ONCE/MONTH	ONCE/MONTH
TOTAL SUSPENDED SOLIDS (TSS)	ONCE/MONTH	ONCE/MONTH
PH	ONCE/MONTH	ONCE/MONTH
FECAL COLIFORM	ONCE/MONTH	ONCE/MONTH
CHLORINE, TOTAL RESIDUAL	ONCE/MONTH	ONCE/MONTH
TOTAL AMMONIA AS N	ONCE/MONTH	ONCE/MONTH
TEMPERATURE	ONCE/MONTH	ONCE/MONTH
OIL & GREASE	ONCE/MONTH	ONCE/MONTH
WHOLE EFFLUENT TOXICITY (WET) TEST	ONCE/YEAR	ONCE/YEAR
INTERIM INFLUENT MONITORING		
65% REMOVAL EFFICIENCY		
BIOCHEMICAL OXYGEN DEMAND (BOD_5)	ONCE/MONTH	ONCE/MONTH
TOTAL SUSPENDED SOLIDS (TSS)	ONCE/MONTH	ONCE/MONTH
FINAL EFFLUENT LIMITATIONS		
FLOW	ONCE/MONTH	ONCE/MONTH
BIOCHEMICAL OXYGEN DEMAND (BOD_5)	ONCE/MONTH	ONCE/MONTH
TOTAL SUSPENDED SOLIDS (TSS)	ONCE/MONTH	ONCE/MONTH
PH	ONCE/MONTH	ONCE/MONTH
FECAL COLIFORM	ONCE/MONTH	ONCE/MONTH
CHLORINE, TOTAL RESIDUAL	ONCE/MONTH	ONCE/MONTH
TOTAL AMMONIA AS N	ONCE/MONTH	ONCE/MONTH
TEMPERATURE	ONCE/MONTH	ONCE/MONTH
OIL & GREASE	ONCE/MONTH	ONCE/MONTH
WHOLE EFFLUENT TOXICITY (WET) TEST	ONCE/YEAR	ONCE/YEAR
FINAL INFLUENT MONITORING		
85% REMOVAL EFFICIENCY		
BIOCHEMICAL OXYGEN DEMAND (BOD_5)	ONCE/MONTH	ONCE/MONTH
TOTAL SUSPENDED SOLIDS (TSS)	ONCE/MONTH	ONCE/MONTH

Part VI – Administrative Requirements

Based on preliminary department staff review and application of applicable standards and regulations, the department, as administrative agent for the Missouri Clean Water Commission, proposes to issue an operating permit subject to certain effluent limitations, schedules and special conditions contained herein or within the operating permit. Proposed determinations are tentative pending public comment.

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

☒ - The Public Notice period for this operating permit is tentatively scheduled for July 25, 2008 through August 24, 2008.

☐ - The Public Notice period for this operating permit was from July 25, 2008 to August 24, 2008. Responses to the Public Notice of this operating permit warrant the modification of effluent limits and/or the terms and conditions of this permit.

☒ - The Public Notice period for this operating permit was from July 25, 2008 to August 24, 2008. No responses received or responses to the Public Notice of this operating permit do not warrant the modification of effluent limits and/or the terms and conditions of this permit.

Date of Factsheet: 07/14/08

Date of Factsheet Revision: 09/11/08

COMPLETED BY:
Bruce D. Volner
Environmental Engineer
Southeast Regional Office
Rolla Satellite Office
(573) 368-3625
bruce.volner@dnr.mo.gov

Appendix A – Water Quality Review Sheet

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

Water Quality Review Sheet

Determination of Effluent Limits

Facility Information

FACILITY NAME: Pulaski County Sewer District #1 NPDES #: MO-0111716

FACILITY TYPE/DESCRIPTION: Three-cell aerated lagoon; biosolids are retained in the lagoon. Proposed facility upgrade and expansion to 0.85 MGD.

EDU: Ozark/Gasconade Drainage 8-DIGIT HUC: 10290201 COUNTY: Pulaski

LEGAL DESCRIPTION: SE SW, Sec. 2, T36N, R11W LATITUDE/LONGITUDE: +3752097/-09206328

WATER QUALITY HISTORY: Occasional exceedances of Biochemical Oxygen Demand (BOD_5) average monthly, maximum daily effluent limitations. No recent stream surveys have been conducted for this facility.

Outfall Characteristics

OUTFALL	DESIGN FLOW (CFS)	TREATMENT TYPE	RECEIVING WATERBODY	OTHER
001	1.32	Secondary	Gasconade River	

Receiving Waterbody Information

WATERBODY	CLASS	WBID	1Q10 (CFS)	7Q10 (CFS)	30Q10 (CFS)	*DESIGNATED USES
Gasconade River	P	1455	227.5	235.2	250.0	AQL, CLF, LWW, WBC, BTG, DWS

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

COMMENTS: Updated WQRS and associated water quality based effluent limits (WQBELs) developed to reflect revised total ammonia nitrogen water quality criteria. Gasconade River is on the 2002 303(d) list for mercury from atmospheric deposition; discharge from this facility is not expected to add to this impairment.

Mixing Considerations

Low-Flow Condition Volume of Flow: USGS stream gauge data were used to calculate the seven (7)-day, one (1)-day, and thirty (30)-day one (1)-in-ten (10)-year low flow values (7Q10, 1Q10, and 30Q10, respectively) for the Gasconade River near the Pulaski County Sewer District #1 WWTF. These low-flow values represent the average minimum flow for seven (7), one (1), and thirty (30) consecutive days that have a probable recurrence interval of once-in-ten (10) years.

All available data from USGS-06933500 (Gasconade River at Jerome, MO) were used to generate annual 7-day, 1-day, and 30-day low-flow values using the USGS SWSTAT 4.1 surface water statistics program. The resulting low-flows were fitted using the Log-Pearson Type III frequency distribution (Appendix A). Two significant tributaries confluence with the Gasconade River between the Pulaski County Sewer District #1 WWTF and USGS-06933500. To obtain better approximations of low flow near the facility outfall, 7Q10, 1Q10, and 30Q10 values for the two tributaries [USGS-06930000, Big Piney River near Big Piney, MO (Appendix B); USGS-06932000, Little Piney Creek at Newburg, MO (Appendix C)] were calculated and removed from low flows obtained for USGS-06933500. The adjusted 7Q10, 1Q10, and 30Q10 low-flow values are contained in the table below.

	06933500	06930000	06932000	WWTF
7Q10	350.595	85.059	30.300	235.236
1Q10	338.595	82.193	28.898	227.504
30Q10	376.117	92.753	33.330	250.034

Mixing Zone (MZ). One-quarter (1/4) of stream volume of flow; length of 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 [10 CSR 20-7.031(4)(A)4.B.(III)(b)].

	Flow (cfs)	MZ (cfs)	ZID (cfs)
7Q10	235.2	58.8	5.88
1Q10	227.5	56.9	5.69
30Q10	250.0	62.5	6.25

Applicable mixing zone regulation: 10 CSR 20-7.031(4)(A)4.B.(III)

$$A.E.C.\% = \left(\frac{DesignFlow + ZIDFlow}{DesignFlow}\right)^{-1} \times 100$$

Permit Limits and Information

TMDL Watershed: (Y or N)	W.L.A. Study Conducted: (Y or N)	Disinfection Required: (Y or N)	Use Attainability Analysis: (Y or N)
Y	N	Y	N

OUTFALL #001– Main Facility Outfall

Wet Test (Y or N): Y Frequency: once/year A.E.C. 18.3 % Limit: 10 CSR 20-7.031(3)(I)

Parameter	Units	Daily Maximum	Weekly Average	Monthly Average	Monitoring Frequency
Flow	MGD	*		*	Once/Day
Temperature	°C	*		*	Twice/Month
Biochemical Oxygen Demand (BOD_5)**	mg/L		45	30	Twice/Month
Total Suspended Solids**	mg/L		45	30	Twice/Month
pH	SU	6 – 9		6 - 9	Twice/Month
Fecal Coliform	Note 1	1000		400	Twice/Month
Total Residual Chlorine	mg/L	0.104		0.052	Twice/Month
Total Ammonia N	mg/L	*		*	Twice/Month
Oil & Grease	mg/L	15		10	Once/Month

Note 1 – colonies/100 mL

* – Monitoring Requirement Only

** – This facility is required to meet a removal efficiency of 85% or more for BOD_5 and TSS. Influent BOD_5 and TSS data shall be reported to ensure removal efficiency requirements are met.

Receiving Water Monitoring Requirements

No receiving water monitoring requirements recommended at this time.

Derivation and Discussion of Limits

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

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

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

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

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

Outfall #001 **– Main Facility Outfall**

- **Biochemical Oxygen Demand (BOD_5).** 30 mg/L monthly average, 45 mg/L weekly average [10 CSR 20-7.015(8)(B)1.]

- **Total Suspended Solids (TSS).** 30 mg/L monthly average, 45 mg/L weekly average [10 CSR 20-7.015(8)(B)1.]

- **pH.** pH shall be maintained in the range from six to nine (6 – 9) standard units [10 CSR 20-7.015 (8)(B)2.]

- **Fecal Coliform.** Discharge shall not contain more than a monthly geometric mean of 400 colonies/ 100 mL and a daily maximum of 1000 colonies/100 mL during the recreational season (April 1 – October 31) [10 CSR 20-7.015(8)(B)4.A.] Future renewals of the facility operating permit will contain effluent limitations for E. coli which will replace fecal coliform as the applicable bacteria criteria in Missouri's water quality standards.

- **Total Residual Chlorine (TRC).** Warm-water Protection of Aquatic Life CCC = 10 □g/L, CMC = 19 □g/L [10 CSR 20-7.031, Table A]. Background TRC = 0.0 □g/L

  Chronic WLA: $C_e = ((1.32 + 58.8)10 – (58.8 * 0.0))/1.32$
  $C_e = 455$ □g/L

  Acute WLA: $C_e = ((1.32 + 5.9)19 – (5.9 * 0.0))/1.32$
  $C_e = 104$ □g/L

  $LTA_c = 455$ µg/L (0.527) = 240 µg/L [CV = 0.6, 99th Percentile]
  $LTA_a = 104$ µg/L (0.321) = **33.4 µg/L** [CV = 0.6, 99th Percentile]

  MDL = 33.4 µg/L * 3.11 = 104 µg/L [CV = 0.6, 99th Percentile]
  AML = 33.4 µg/L * 1.55 = 52 µg/L [CV = 0.6, 95th Percentile, n = 4]

  Total Residual Chlorine effluent limits of 0.104 mg/L daily maximum, 0.052 mg/L monthly average are recommended if chlorine is used as a disinfectant. Standard compliance language for TRC, including the minimum level (ML), should be included in the permit.

- **Total Ammonia Nitrogen.** Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3]. Site-specific values for temperature, pH, and total ammonia nitrogen (background = 0.025 mg/L) were obtained from an analysis of water quality data from USGS-06928600 (Gasconade River near Hooker, MO) and USGS-06930800 (Gasconade River above Jerome, MO).

Season	Temp (^{o}C)	pH (SU)	Total Ammonia Nitrogen CCC (mg/L)	Total Ammonia Nitrogen CMC (mg/L)
Summer	21.4	7.9	1.8	10.1
Winter	8.3	7.9	2.8	10.1

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

Summer

Chronic WLA: $C_e = ((1.32 + 62.5)1.8 – (62.5 * 0.025))/1.32$
$C_e = 85.8$ mg/L

Acute WLA: $C_e = ((1.32 + 5.69)10.1 – (5.69 * 0.025))/1.32$
$C_e = 53.5$ mg/L

$LTA_c = 85.8$ mg/L (0.780) = 66.9 mg/L [CV = 0.6, 99th Percentile, n = 30]
$LTA_a = 53.5$ mg/L (0.321) = **17.2 mg/L** [CV = 0.6, 99th Percentile]

MDL = 17.2 mg/L * 3.11 = 53.5 mg/L [CV = 0.6, 99th Percentile]
AML = 17.2 mg/L * 1.55 = 26.7 mg/L [CV = 0.6, 95th Percentile, n = 4]

Winter

Chronic WLA: $C_e = ((1.32 + 62.5)2.8 – (62.5 * 0.025))/1.32$
$C_e = 134$ mg/L

Acute WLA: $C_e = ((1.32 + 5.69)10.1 – (5.69 * 0.025))/1.32$
$C_e = 53.5$ mg/L

$LTA_c = 134$ mg/L (0.780) = 105 mg/L [CV = 0.6, 99th Percentile, n = 30]
$LTA_a = 53.5$ mg/L (0.321) = **17.2 mg/L** [CV = 0.6, 99th Percentile]

MDL = 17.2 mg/L * 3.11 = 53.5 mg/L [CV = 0.6, 99th Percentile]
AML = 17.2 mg/L * 1.55 = 26.7 mg/L [CV = 0.6, 95th Percentile, n = 4]

Given the WQBEL values calculated above, a monitoring only requirement will be required for total ammonia nitrogen and reasonable potential analyses conducted upon renewal.

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

Reviewer: John Hoke
Date: April 25, 2006
Unit Chief: Refaat Mefrakis

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

Appendix A. Log-Pearson Type III Statistics
SWSTAT 4.1
(based on USGS Program A193)

Notice -- Use of Log-Pearson Type III or Pearson-Type III distributions are for preliminary computations. User is responsible for assessment and interpretation.

USGS-06933500 Gasconade River at Jerome, MO
April 1 - start of season
March 31 - end of season
1905 - 2005 - time period
1-day low - parameter
79 - non-zero values
0 - zero values
22 - negative values (ignored)

300.000	480.000	670.000	400.000	426.000
850.000	680.000	630.000	420.000	441.000
338.000	442.000	298.000	550.000	303.000
357.000	425.000	459.000	425.000	390.000
574.000	520.000	452.000	545.000	571.000
559.000	496.000	880.000	639.000	1270.000
558.000	365.000	281.000	292.000	259.000
396.000	567.000	408.000	359.000	480.000
382.000	345.000	328.000	525.000	454.000
430.000	512.000	473.000	499.000	532.000
448.000	525.000	723.000	600.000	416.000
432.000	436.000	622.000	343.000	443.000
549.000	447.000	505.000	486.000	578.000
520.000	517.000	715.000	661.000	581.000
558.000	580.000	636.000	454.000	340.000
375.000	383.000	406.000	451.000	

The following 7 statistics are based on non-zero values:

Mean (logs)	2.676
Variance (logs)	0.014
Standard Deviation (logs)	0.120
Skewness (logs)	0.472
Standard Error of Skewness (logs)	0.271
Serial Correlation Coefficient (logs)	0.422
Coefficient of Variation (logs)	0.045

Non-exceedance Probability	Recurrence Interval	Parameter Value
0.0100	100.00	274.905
0.0200	50.00	289.114
0.0500	20.00	313.443
0.1000	10.00	338.595
0.2000	5.00	374.391
0.3333	3.00	413.975
0.5000	2.00	463.996
0.8000	1.25	592.965
0.9000	1.11	682.694
0.9600	1.04	801.288
0.9800	1.02	893.572
0.9900	1.01	989.345

Appendix A. Log-Pearson Type III Statistics
SWSTAT 4.1
(based on USGS Program A193)

Notice -- Use of Log-Pearson Type III or Pearson-Type III distributions are for preliminary computations. User is responsible for assessment and interpretation.

USGS-06933500 Gasconade River at Jerome, MO
April 1 - start of season
March 31 - end of season
1905 - 2005 - time period
7-day low - parameter
79 - non-zero values
0 - zero values
22 - negative values (ignored)

416.429	480.000	670.000	415.857	431.571
900.000	680.000	664.286	430.000	446.000
347.571	470.286	299.429	560.857	306.571
385.000	425.000	466.571	431.286	403.429
588.000	523.429	468.714	576.286	607.000
587.714	511.429	1008.571	648.000	1460.000
565.714	372.143	290.143	298.857	265.571
404.571	576.857	415.714	367.571	495.000
393.286	349.286	328.857	530.000	471.143
438.571	519.571	502.714	527.429	551.000
463.000	536.714	746.571	614.286	419.857
452.143	442.143	634.429	350.429	449.857
560.000	460.429	541.429	506.000	610.429
523.286	520.714	749.571	664.143	592.286
582.429	590.714	667.571	459.000	345.000
379.714	386.429	421.143	456.571	

The following 7 statistics are based on non-zero values:

Mean (logs)	2.690
Variance (logs)	0.015
Standard Deviation (logs)	0.123
Skewness (logs)	0.717
Standard Error of Skewness (logs)	0.271
Serial Correlation Coefficient (logs)	0.406
Coefficient of Variation (logs)	0.046

Non-exceedance Probability	Recurrence Interval	Parameter Value
0.0100	100.00	294.658
0.0200	50.00	306.601
0.0500	20.00	327.812
0.1000	10.00	350.595
0.2000	5.00	384.274
0.3333	3.00	423.050
0.5000	2.00	473.734
0.8000	1.25	612.600
0.9000	1.11	714.997
0.9600	1.04	856.648
0.9800	1.02	971.408
0.9900	1.01	1094.391

Appendix A. Log-Pearson Type III Statistics
SWSTAT 4.1
(based on USGS Program A193)

Notice -- Use of Log-Pearson Type III or Pearson-Type III distributions are for preliminary computations. User is responsible for assessment and interpretation.

USGS-06933500 Gasconade River at Jerome, MO
April 1 - start of season
March 31 - end of season
1905 - 2005 - time period
30-day low - parameter
79 - non-zero values
0 - zero values
22 - negative values (ignored)

868.267	507.200	729.000	440.333	453.067
1209.667	685.333	710.833	470.867	496.500
378.700	545.267	311.733	598.600	324.033
397.633	468.933	483.067	448.500	489.133
605.000	569.467	508.500	661.133	691.600
644.933	536.200	1157.333	680.700	1917.000
578.700	389.500	302.033	328.600	277.967
437.833	646.600	459.800	394.433	514.567
431.633	367.500	342.467	545.200	512.933
493.900	570.233	559.033	660.900	587.533
533.600	629.667	776.033	672.900	430.767
497.033	486.100	704.167	386.300	521.500
607.900	493.633	651.300	528.733	711.800
595.333	564.867	889.200	747.100	612.333
634.167	634.167	823.300	471.800	361.900
401.733	441.400	487.967	483.567	

The following 7 statistics are based on non-zero values:

Mean (logs)	2.733
Variance (logs)	0.019
Standard Deviation (logs)	0.137
Skewness (logs)	0.883
Standard Error of Skewness (logs)	0.271
Serial Correlation Coefficient (logs)	0.334
Coefficient of Variation (logs)	0.050

Non-exceedance Probability	Recurrence Interval	Parameter Value
0.0100	100.00	318.851
0.0200	50.00	330.540
0.0500	20.00	352.081
0.1000	10.00	376.117
0.2000	5.00	412.999
0.3333	3.00	457.155
0.5000	2.00	516.860
0.8000	1.25	690.579
0.9000	1.11	826.360
0.9600	1.04	1023.217
0.9800	1.02	1189.530
0.9900	1.01	1373.877

Appendix B. Log-Pearson Type III Statistics
SWSTAT 4.1
(based on USGS Program A193)

Notice -- Use of Log-Pearson Type III or Pearson-Type III distributions are for preliminary computations. User is responsible for assessment and interpretation.

USGS-06930000 Big Piney River near Big Piney, MO
April 1 - start of season
March 31 - end of season
1923 - 2005 - time period
1-day low - parameter
72 - non-zero values
0 - zero values
11 - negative values (ignored)

96.000	108.000	120.000	91.000	76.000
186.000	181.000	133.000	104.000	111.000
97.000	118.000	75.000	124.000	83.000
88.000	119.000	105.000	106.000	90.000
133.000	138.000	101.000	140.000	137.000
134.000	137.000	186.000	137.000	241.000
138.000	106.000	69.000	75.000	71.000
105.000	140.000	114.000	100.000	125.000
110.000	101.000	84.000	126.000	115.000
95.000	147.000	123.000	126.000	102.000
105.000	146.000	211.000	149.000	95.000
90.000	107.000	160.000	88.000	94.000
121.000	145.000	135.000	135.000	159.000
178.000	158.000	83.000	60.000	110.000
104.000	110.000			

The following 7 statistics are based on non-zero values:

Mean (logs)	2.062
Variance (logs)	0.014
Standard Deviation (logs)	0.117
Skewness (logs)	0.172
Standard Error of Skewness (logs)	0.283
Serial Correlation Coefficient (logs)	0.373
Coefficient of Variation (logs)	0.057

Non-exceedance Probability	Recurrence Interval	Parameter Value
0.0100	100.00	63.895
0.0200	50.00	68.129
0.0500	20.00	75.164
0.1000	10.00	82.193
0.2000	5.00	91.830
0.3333	3.00	102.040
0.5000	2.00	114.460
0.8000	1.25	144.225
0.9000	1.11	163.466
0.9600	1.04	187.453
0.9800	1.02	205.171
0.9900	1.01	222.815

Appendix B. Log-Pearson Type III Statistics
SWSTAT 4.1
(based on USGS Program A193)

Notice -- Use of Log-Pearson Type III or Pearson-Type III distributions are for preliminary computations. User is responsible for assessment and interpretation.

USGS-06930000 Big Piney River near Big Piney, MO
April 1 - start of season
March 31 - end of season
1923 - 2005 - time period
7-day low - parameter
72 - non-zero values
0 - zero values
11 - negative values (ignored)

103.286	112.714	129.000	94.000	78.143
196.286	184.143	140.857	108.571	117.143
99.143	120.000	81.286	138.286	86.286
90.571	121.143	113.286	107.857	96.000
133.429	141.571	105.429	148.857	146.714
142.571	141.714	203.143	158.000	288.857
139.143	106.000	71.143	76.714	72.714
105.857	143.429	114.000	103.429	128.000
114.571	101.000	87.571	127.286	119.429
96.714	148.857	125.429	132.429	109.000
107.143	148.429	218.714	152.143	95.000
94.286	111.143	162.571	89.143	96.286
124.714	150.571	138.714	136.857	162.571
180.000	158.000	85.143	63.286	111.429
106.714	110.571			

The following 7 statistics are based on non-zero values:

Mean (logs)	2.078
Variance (logs)	0.014
Standard Deviation (logs)	0.120
Skewness (logs)	0.368
Standard Error of Skewness (logs)	0.283
Serial Correlation Coefficient (logs)	0.390
Coefficient of Variation (logs)	0.058

Non-exceedance Probability	Recurrence Interval	Parameter Value
0.0100	100.00	67.885
0.0200	50.00	71.769
0.0500	20.00	78.344
0.1000	10.00	85.059
0.2000	5.00	94.494
0.3333	3.00	104.778
0.5000	2.00	117.613
0.8000	1.25	149.940
0.9000	1.11	171.919
0.9600	1.04	200.443
0.9800	1.02	222.282
0.9900	1.01	244.657

Appendix B. Log-Pearson Type III Statistics
SWSTAT 4.1
(based on USGS Program A193)

Notice -- Use of Log-Pearson Type III or Pearson-Type III distributions are for preliminary computations. User is responsible for assessment and interpretation.

USGS-06930000 Big Piney River near Big Piney, MO
April 1 - start of season
March 31 - end of season
1923 - 2005 - time period
30-day low - parameter
72 - non-zero values
0 - zero values
11 - negative values (ignored)

118.400	121.500	156.633	97.233	86.333
268.300	190.267	156.000	118.267	129.533
102.000	126.100	87.667	154.633	97.733
99.000	128.933	124.600	112.933	101.700
149.833	150.933	124.533	165.467	160.100
149.100	146.733	227.400	165.467	411.400
144.600	108.567	72.633	83.633	78.300
114.233	156.867	119.967	108.633	132.367
122.900	102.333	95.433	134.767	126.900
103.333	158.967	140.767	156.067	119.367
125.533	174.867	231.333	159.900	97.467
108.000	121.933	168.067	93.367	100.767
131.433	170.067	153.100	145.867	180.433
188.300	168.767	91.167	79.333	118.200
133.533	114.200			

The following 7 statistics are based on non-zero values:

Mean (logs)	2.116
Variance (logs)	0.017
Standard Deviation (logs)	0.129
Skewness (logs)	0.856
Standard Error of Skewness (logs)	0.283
Serial Correlation Coefficient (logs)	0.344
Coefficient of Variation (logs)	0.061

Non-exceedance Probability	Recurrence Interval	Parameter Value
0.0100	100.00	79.114
0.0200	50.00	81.929
0.0500	20.00	87.070
0.1000	10.00	92.753
0.2000	5.00	101.386
0.3333	3.00	111.610
0.5000	2.00	125.289
0.8000	1.25	164.326
0.9000	1.11	194.240
0.9600	1.04	236.899
0.9800	1.02	272.405
0.9900	1.01	311.286

Appendix C. Log-Pearson Type III Statistics
SWSTAT 4.1
(based on USGS Program A193)

Notice -- Use of Log-Pearson Type III or Pearson-Type III distributions are for preliminary computations. User is responsible for assessment and interpretation.

USGS-06932000 Little Piney Creek at Newburg, MO
April 1 - start of season
March 31 - end of season
1930 - 2005 - time period
1-day low - parameter
76 - non-zero values
0 - zero values
0 - negative values (ignored)

58.000	49.000	36.000	27.000	29.000
26.000	51.000	24.000	31.000	43.000
41.000	34.000	34.000	52.000	32.000
29.000	62.000	62.000	58.000	56.000
63.000	63.000	101.000	45.000	40.000
24.000	29.000	24.000	46.000	47.000
36.000	35.000	51.000	38.000	35.000
28.000	29.000	34.000	38.000	41.000
47.000	45.000	32.000	28.000	60.000
54.000	48.000	34.000	30.000	34.000
60.000	33.000	44.000	40.000	55.000
57.000	83.000	62.000	59.000	56.000
53.000	70.000	66.000	61.000	70.000
74.000	69.000	70.000	73.000	85.000
66.000	40.000	34.000	37.000	38.000
49.000				

The following 7 statistics are based on non-zero values:

Mean (logs)	1.650
Variance (logs)	0.022
Standard Deviation (logs)	0.149
Skewness (logs)	0.075
Standard Error of Skewness (logs)	0.276
Serial Correlation Coefficient (logs)	0.594
Coefficient of Variation (logs)	0.090

Non-exceedance Probability	Recurrence Interval	Parameter Value
0.0100	100.00	20.540
0.0200	50.00	22.434
0.0500	20.00	25.637
0.1000	10.00	28.898
0.2000	5.00	33.458
0.3333	3.00	38.379
0.5000	2.00	44.483
0.8000	1.25	59.499
0.9000	1.11	69.437
0.9600	1.04	82.022
0.9800	1.02	91.433
0.9900	1.01	100.886

Appendix C. Log-Pearson Type III Statistics
SWSTAT 4.1
(based on USGS Program A193)

Notice -- Use of Log-Pearson Type III or Pearson-Type III distributions are for preliminary computations. User is responsible for assessment and interpretation.

USGS-06932000 Little Piney Creek at Newburg, MO
April 1 - start of season
March 31 - end of season
1930 - 2005 - time period
7-day low - parameter
76 - non-zero values
0 - zero values
0 - negative values (ignored)

59.286	50.143	36.857	28.143	31.857
26.000	53.857	24.000	32.429	43.571
43.000	35.143	35.286	57.143	34.000
30.429	62.714	62.286	60.143	56.429
65.000	67.000	111.000	59.857	41.143
25.857	30.286	24.000	46.286	48.286
37.429	35.286	55.857	39.857	35.143
29.857	30.714	37.286	39.000	41.429
49.000	47.000	34.286	31.714	62.857
60.857	56.857	36.286	32.857	36.571
62.714	33.714	47.286	45.000	58.286
60.714	85.143	62.857	59.714	58.000
54.857	71.000	66.143	61.714	71.857
75.429	70.571	76.857	74.000	87.000
67.714	42.143	34.714	38.571	40.000
50.286				

The following 7 statistics are based on non-zero values:

Mean (logs)	1.670
Variance (logs)	0.022
Standard Deviation (logs)	0.148
Skewness (logs)	0.039
Standard Error of Skewness (logs)	0.276
Serial Correlation Coefficient (logs)	0.589
Coefficient of Variation (logs)	0.089

Non-exceedance Probability	Recurrence Interval	Parameter Value
0.0100	100.00	21.400
0.0200	50.00	23.422
0.0500	20.00	26.835
0.1000	10.00	30.300
0.2000	5.00	35.128
0.3333	3.00	40.315
0.5000	2.00	46.721
0.8000	1.25	62.333
0.9000	1.11	72.562
0.9600	1.04	85.408
0.9800	1.02	94.941
0.9900	1.01	104.459

Appendix C. Log-Pearson Type III Statistics
SWSTAT 4.1
(based on USGS Program A193)

Notice -- Use of Log-Pearson Type III or Pearson-Type III distributions are for preliminary computations. User is responsible for assessment and interpretation.

USGS-06932000 Little Piney Creek at Newburg, MO
April 1 - start of season
March 31 - end of season
1930 - 2005 - time period
30-day low - parameter
76 - non-zero values
0 - zero values
0 - negative values (ignored)

62.767	52.533	39.367	29.467	34.233
27.133	59.133	27.533	33.767	45.067
45.233	35.933	37.200	59.467	42.133
38.467	68.700	64.700	62.700	57.800
68.300	70.733	135.867	63.433	43.133
27.900	32.567	26.000	54.267	51.333
43.600	36.867	57.900	41.533	36.367
31.967	36.200	42.533	43.300	46.033
55.333	50.200	38.967	44.033	73.600
75.067	66.233	39.600	41.700	39.067
66.033	36.033	52.533	63.400	65.167
67.200	92.933	66.867	63.167	58.733
56.933	78.767	69.100	63.967	95.267
80.900	74.700	87.067	75.933	90.600
68.300	44.233	37.300	42.700	44.900
53.433				

The following 7 statistics are based on non-zero values:

Mean (logs)	1.710
Variance (logs)	0.022
Standard Deviation (logs)	0.148
Skewness (logs)	0.135
Standard Error of Skewness (logs)	0.276
Serial Correlation Coefficient (logs)	0.583
Coefficient of Variation (logs)	0.087

Non-exceedance Probability	Recurrence Interval	Parameter Value
0.0100	100.00	24.022
0.0200	50.00	26.124
0.0500	20.00	29.688
0.1000	10.00	33.330
0.2000	5.00	38.444
0.3333	3.00	43.998
0.5000	2.00	50.929
0.8000	1.25	68.200
0.9000	1.11	79.795
0.9600	1.04	94.655
0.9800	1.02	105.890
0.9900	1.01	117.277

Appendix B – Classification Worksheet

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
Population Equivalent (P.E.) served (Maximum: 10 points)	1 point per 10,000 P.E. or major fraction thereof	1
Design Flow (average day) or peak month (Maximum: 10 points)	1 point per MGD or major fraction thereof	1
EFFLUENT DISCHARGE RECEIVING WATER SENSITIVITY:		
Missouri or Mississippi River	0	
All other stream discharges except to losing streams and stream reaches supporting whole body contact	1	
Discharge to lake or reservoir outside of designated whole body contact recreational area	2	
Discharge to losing stream, or stream, lake or reservoir area supporting whole body contact recreation	3	3
PRELIMINARY TREATMENT – Headworks		
Screening and/or comminution	3	
Grit removal	3	
Plant pumping of main flow (lift station at the headworks)	3	3
PRIMARY TREATMENT		
Primary clarifiers	5	
Combined sedimentation/digestion	5	
Chemical addition (except chlorine, enzymes)	4	
REQUIRED LABORATORY CONTROL – performed by plant personnel (highest level only)		
Lab work conducted outside of plant	0	0
Push – button or visual methods for simple test such as pH, Settleable solids	3	3
Additional procedures such as DO, COD, BOD, titrations, solids and volatile content	5	
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	7	
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph	10	
ALTERNATIVE FATE OF EFFLUENT		
Direct reuse or recycle of effluent	6	
Land Disposal – low rate	3	
High rate	5	
Overland flow	4	
Total from page **ONE (1)**	----	11

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
VARIATION IN RAW WASTE (highest level only) (DMR exceedances and Design Flow exceedances)		
Variation do not exceed those normally or typically expected	0	
Recurring deviations or excessive variations of 100 to 200 % in strength and/or flow	2	
Recurring deviations or excessive variations of more than 200 % in strength and/or flow	4	
Raw wastes subject to toxic waste discharge	6	
SECONDARY TREATMENT		
Trickling filter and other fixed film media with secondary clarifiers	10	
Activated sludge with secondary clarifiers (including extended aeration and oxidation ditches)	15	
Stabilization ponds without aeration	5	
Aerated lagoon	8	8
Advanced Waste Treatment Polishing Pond	2	
Chemical/physical – without secondary	15	
Chemical/physical – following secondary	10	
Biological or chemical/biological	12	
Carbon regeneration	4	
DISINFECTION		
Chlorination or comparable	5	5
Dechlorination	2	
On-site generation of disinfectant (except UV light)	5	
UV light	4	
SOLIDS HANDLING - SLUDGE		
Solids Handling Thickening	5	
Anaerobic digestion	10	
Aerobic digestion	6	
Evaporative sludge drying	2	
Mechanical dewatering	8	
Solids reduction (incineration, wet oxidation)	12	
Land application	6	
Total from page **TWO (2)**	----	13
Total from page **ONE (1)**	---	11
Grand Total	---	24

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