

STATE OF MISSOURI  
**DEPARTMENT OF NATURAL RESOURCES**

MISSOURI CLEAN WATER COMMISSION



**MISSOURI STATE OPERATING PERMIT**

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

Permit No. MO-0107328

Owner: City of Portage Des Sioux  
Address: P.O. Box 118, Portage Des Sioux, MO 63373

Continuing Authority: Same as above  
Address: Same as above

Facility Name: Portage Des Sioux Wastewater Treatment Plant  
Facility Address: NE corner of 2<sup>nd</sup> Street and LeClair, Portage Des Sioux, MO 63373

Legal Description: Landgrant 154, St. Charles County  
UTM Coordinates: X= 730229, Y= 4312160

Receiving Stream: Mississippi River (P) (3700)  
First Classified Stream and ID: Mississippi River (P) (3700)  
USGS Basin & Sub-watershed No.: (07110009-0401)

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

The use or operation of this facility shall be by or under the supervision of a Certified “C” Operator.  
Lift Station/ contact stabilization/ activated sludge/ chlorination/ sludge disposal by contract hauler.  
Design population equivalent is 354.  
Design flow is 30,000 gallons per day.  
Actual flow is 28,000 gallons per day.  
Design sludge production is 8.85 dry tons/year.

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

August 1, 2016  
Effective Date

Sara Parker Pauley, Director, Department of Natural Resources

September 30, 2019  
Expiration Date

John Madros, Director, Water Protection Program

<b>OUTFALL #001</b>	<b>TABLE A-2. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS</b>	PAGE NUMBER 2 of 6
		PERMIT NUMBER MO-0107328

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on **August 1, 2016** and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow	MGD	*		*	once/quarter****	24 hr. total
Biochemical Oxygen Demand <sub>5</sub>	mg/L		45	30	once/quarter****	composite**
Total Suspended Solids	mg/L		45	30	once/quarter****	composite**
<i>E. coli</i> (Note 1, Page 3)	#/100mL		630	126	once/quarter****	grab
Ammonia as N (Apr 1 – Sep 30) (Oct 1 – Mar 31)	mg/L	5.0 9.4		1.3 2.8	once/quarter****	grab
Oil & Grease	mg/L	15		10	once/quarter****	grab
Total Residual Chlorine (Note 2, Page 3)	µg/L	< 130		< 130	once/quarter****	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE OCTOBER 28, 2016. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units ***	SU	6.5		9.0	once/quarter****	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE OCTOBER 28, 2016.

- \* Monitoring requirement only.
- \*\* A composite sample made up from a minimum of four grab samples collected within a 24 hour period with a minimum of two hours between each grab sample.
- \*\*\* pH is measured in pH units and is not to be averaged.
- \*\*\*\* See table below for quarterly sampling requirements.

Minimum Sampling Requirements				
Quarter	Months	<i>E. coli</i> and Total Residual Chlorine (TRC)	All Other Parameters	Report is Due
First	January, February, March	Not required to sample.	Sample at least once during any month of the quarter	April 28 <sup>th</sup>
Second	April, May, June	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	July 28 <sup>th</sup>
Third	July, August, September	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	October 28 <sup>th</sup>
Fourth	October, November, December	Sample once during October; no sample required in either November or December	Sample at least once during any month of the quarter	January 28 <sup>th</sup>

OUTFALL #001	TABLE A-3. WHOLE EFFLUENT TOXICITY FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS			Page 3 of 6		
				PERMIT NUMBER MO-0107328		
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on <b>August 1, 2016</b> and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Acute Whole Effluent Toxicity	TU <sub>a</sub>	*			once/permit cycle	composite**
MONITORING REPORTS SHALL BE SUBMITTED <u>ONCE PER PERMIT CYCLE</u> ; THE FIRST REPORT IS DUE <u>DECEMBER 28, 2018</u> .						

\* Monitoring requirement only.

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

Note 2 - This permit contains a Total Residual Chlorine (TRC) limit.

- (a) The Water Quality Based Effluent Limit for Total Residual Chlorine was calculated to be 17 µg/L (daily maximum limit) and 8 µg/L (monthly average limit). These limits are below the minimum quantification level (ML) of the most common and practical EPA approved CLTRC methods. The Department has determined the current acceptable ML for total residual chlorine to be 130 µg/L when using the DPD Colorimetric Method #4500 – CL G. from Standard Methods for the Examination of Waters and Wastewater. The permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. The minimum quantification level does not authorize the discharge of chlorine in excess of the effluent limits stated in the permit. Measured values greater than or equal to the minimum quantification level of 130 µg/L will be considered violations of the permit and values less than the minimum quantification level of 130 µg/L will be considered to be in compliance with the permit limitation.
- (b) Disinfection is required during the recreational season from April 1 through October 31. Do not chlorinate during the non-recreational months and an actual analysis for TRC and Dissolved Oxygen (DO) is not necessary.
- (c) Do not chemically de-chlorinate **if it is not needed to meet the limits in your permit.**
- (d) If no chlorine was used in a given sampling period, an actual analysis for TRC and Dissolved Oxygen (DO) is not necessary. Simply report as “0 µg/L” for TRC and “NA” for DO.

#### B. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Parts I, II, & III standard conditions dated August 1, 2014, May 1, 2013, and March 1, 2015, and hereby incorporated as though fully set forth herein.

#### C. SPECIAL CONDITIONS

1. This permit establishes final ammonia limitations based on Missouri’s current Water Quality Standard. On August 22, 2013, the U.S. Environmental Protection Agency (EPA) published a notice in the Federal Register announcing of the final national recommended ambient water quality criteria for protection of aquatic life from the effects of ammonia in freshwater. The EPA’s guidance, Final Aquatic Life Ambient Water Quality Criteria for Ammonia – Fresh Water 2013, is not a rule, nor automatically part of a state’s water quality standards. States must adopt new ammonia criteria consistent with EPA’s published ammonia criteria into their water quality standards that protect the designated uses of the water bodies. The Department of Natural Resources has initiated stakeholder discussions on how to best incorporate these new criteria into the State’s rules. A date for when this rule change will occur has not been determined. Also, refer to Section VI of this permit’s factsheet for further information including estimated future effluent limits for this facility. It is recommended the permittee view the Department’s 2013 EPA criteria Factsheet located at <http://dnr.mo.gov/pubs/pub2481.htm>.

C. SPECIAL CONDITIONS (continued)

2. This permit may be reopened and modified, or alternatively revoked and reissued, to:
  - (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
    - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
    - (2) controls any pollutant not limited in the permit.
  - (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test including acute and chronic Whole Effluent Toxicity (WET) tests, or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
  - (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.
  - (d) Incorporate the requirement to develop a pretreatment program pursuant to 40 CFR 403.8(a) when the Director of the Water Protection Program determines that a pretreatment program is necessary due to any new introduction of pollutants into the Publicly Owned Treatment Works or any substantial change in the volume or character of pollutants being introduced. The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.
3. All outfalls must be clearly marked in the field.
4. Permittee will cease discharge by connection to a facility with an area-wide management plan per 10 CSR 20-6.010(3)(B) within 90 days of notice of its availability.
5. Report as no-discharge when a discharge does not occur during the report period.
6. Water Quality Standards
  - (a) To the extent required by law, discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
  - (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
    - (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
    - (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
    - (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
    - (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
    - (5) There shall be no significant human health hazard from incidental contact with the water;
    - (6) There shall be no acute toxicity to livestock or wildlife watering;
    - (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
    - (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.
7. Changes in existing pollutants or the addition of new pollutants to the treatment facility

The permittee must provide adequate notice to the Director of the following:

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

C. SPECIAL CONDITIONS (continued)

8. Reporting of Non-Detects:
  - (a) An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
  - (b) The permittee shall not report a sample result as “Non-Detect” without also reporting the detection limit of the test. Reporting as “Non Detect” without also including the detection limit will be considered failure to report, which is a violation of this permit.
  - (c) The permittee shall provide the “Non-Detect” sample result using the less than sign and the minimum detection limit (e.g. <10).
  - (d) The permittee shall use one-half of the detection limit for the non-detect result when calculating monthly averages.
  - (e) See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.

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

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

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

The permittee shall also submit a report to the St. Louis Regional Office annually, by January 28<sup>th</sup>, for the previous calendar year. The report shall contain the following information:

- (a) A summary of the efforts to locate and eliminate sources of excessive infiltration and inflow into the collection system serving the facility for the previous year.
- (b) A summary of the general maintenance and repairs to the collection system serving the facility for the previous year.
- (c) A summary of any planned maintenance and repairs to the collection system serving the facility for the upcoming calendar year. This list shall include locations (GPS, 911 address, manhole number, etc.) and actions to be taken.

12. Bypasses are not authorized at this facility unless they meet the criteria in 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3), and with Standard Condition Part I, Section B, subsection 2.b. Bypasses are to be reported to the St. Louis Regional Office or by using the online Sanitary Sewer Overflow/Facility Bypass Application, located at: <http://dnr.mo.gov/modnrcag/> during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. Blending, which is the practice of combining a partially-treated wastewater process stream with a fully-treated wastewater process stream prior to discharge, is not considered a form of bypass. If the permittee wishes to utilize blending, the permittee shall file an application to modify this permit to facilitate the inclusion of appropriate monitoring conditions.

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

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

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

16. An Operation and Maintenance (O & M) manual shall be maintained by the permittee and made available to the operator. The O & M manual shall include key operating procedures and a brief summary of the operation of the facility.

C. SPECIAL CONDITIONS (continued)

17. An all-weather access road shall be provided to the treatment facility.
18. The discharge from the wastewater treatment facility shall be conveyed to the receiving stream via a closed pipe or a paved or rip-rapped open channel. Sheet or meandering drainage is not acceptable. The outfall sewer shall be protected against the effects of floodwater, ice or other hazards as to reasonably insure its structural stability and freedom from stoppage. The outfall shall be maintained so that a sample of the effluent can be obtained at a point after the final treatment process and before the discharge mixes with the receiving waters.
19. Acute Whole Effluent Toxicity (WET) tests shall be conducted as follows:
  - (a) Freshwater Species and Test Methods: Species and short-term test methods for estimating the acute toxicity of NPDES effluents are found in the most recent edition of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA/821/R-02/012; Table IA, 40 CFR Part 136). The permittee shall concurrently conduct 48-hour, static, non-renewal toxicity tests with the following species:
    - The fathead minnow, *Pimephales promelas* (Acute Toxicity EPA Test Method 2000.0).
    - The daphnid, *Ceriodaphnia dubia* (Acute Toxicity EPA Test Method 2002.0).
  - (b) Chemical and physical analysis of the upstream control sample and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping. Where upstream receiving water is not available or known to be toxic, other approved control water may be used.
  - (c) Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.
  - (d) The Allowable Effluent Concentration (AEC) for this facility is 100% with the dilution series being: 100%, 50%, 25%, 12.5%, and 6.25%.
  - (e) All chemical and physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% effluent concentration.
  - (f) All chemical analyses shall be performed and results shall be recorded in the appropriate field of the report form. The parameters for chemical analysis include Temperature (°F), pH (SU), Conductivity (µmohs/cm), Dissolved Oxygen (mg/L), Total Residual Chlorine (mg/L), Un-ionized Ammonia (mg/L), Total Alkalinity (mg/L), and Total Hardness (mg/L).
  - (g) The facility must submit a full laboratory report for all toxicity testing. The report must include a quantification of acute toxic units ( $TU_a = 100/LC_{50}$ ) reported according to the test methods manual chapter on report preparation and test review. The Lethal Concentration 50 Percent ( $LC_{50}$ ) is the effluent concentration that would cause death in 50 percent of the test organisms at a specific time.

D. SCHEDULE OF COMPLIANCE

Portage Des Sioux is required to have a Certified C Level Operator for the Portage Des Sioux WWTF in accordance with 10 CSR 20-9.020(2)(A). In addition to the required Certified C Level Operator for the Portage Des Sioux WWTF, all additional operators of the wastewater treatment system shall possess, as a minimum, a Level D certificate of competency issued by the department. Operator Certification staff are available at the Department's toll free number, 1-800-361-4827.

1. Portage Des Sioux will obtain the services of a Certified C Level Operator within **six (6) months** from the effective date of this operating permit.
2. Portage Des Sioux shall submit a written report to the St. Louis Regional Office within **seven (7) months** from the effective date of this operating permit. The report shall contain:
  - (a) The Certified Operators' name,
  - (b) The Certified Operators' certification number,
  - (c) A copy of the contract between Portage Des Sioux and the Certified Operator; and/or
  - (d) A written correspondence from the Portage Des Sioux indicating that they have hired the services of the Certified Operator.
3. If Portage Des Sioux needs additional time to comply with 10 CSR 20-9.020(2)(A), then Portage Des Sioux shall submit a written request within **five (5) months** to the St. Louis Regional Office. The request shall contain:
  - (a) The reason for the additional time needed, and
  - (b) A specific date on when compliance with 10 CSR 20-9.020(2)(A) will be reached.

**MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FACT SHEET  
FOR THE PURPOSE OF RENEWAL  
OF  
MO-0107328  
PORTAGE DES SIOUX WWTF**

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollution Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of stormwater from certain point sources. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified. As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)2.] a Factsheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below.

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

This Factsheet is for a Minor

**Part I – Facility Information**

Facility Type: POTW - SIC #4952

Facility Description:

Lift Station/ contact stabilization/ activated sludge/ chlorination/ sludge disposal by contract hauler.

Design population equivalent is 354.

Design flow is 30,000 gallons per day.

Actual flow is 28,000 gallons per day.

Design sludge production is 8.85 dry tons/year.

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?

- No.

Application Date: 01/12/16

Expiration Date: 09/26/14

**OUTFALL(S) TABLE:**

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
#001	0.0465	Secondary	Domestic

Facility Performance History:

This facility was last inspected on April 29, 2015. The inspection showed the following unsatisfactory features; failure to apply for renewal and failure to meet monitoring requirements.

Comments:

Changes in this permit include the removal of temperature. See Part VII of the Fact Sheet for further information regarding the addition and removal of effluent parameters. Special conditions were updated to include the reporting of Non-detects and bypass reporting requirements.

The facility discharges to an arm-slough of the Mississippi River and is about 0.4 miles up-gradient of the main body of the river. The part of the Mississippi River, to which the subject facility contributes, is on the state 303(d) list for habitat loss. A TMDL has been prepared. The subject facility is not expected to contribute to the loss of habitat. Due to the lack of knowledge as to the actual volume of water through the slough, a presumed minimal current and the potential for a significant presence of early life stages, a mixing zone is not allowed.

**Part II – Operator Certification Requirements**

- This facility is required to have a certified operator.

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], the permittee shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions and regulations. Operators or supervisors of operations at regulated wastewater treatment facilities shall be certified in accordance with [10 CSR 20-9.020(2)] and any other applicable state law or regulation. As per [10 CSR 20-9.020(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems, if applicable, as listed below:

Owned or operated by or for a

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> - Municipalities | <input type="checkbox"/> - Public Water Supply Districts                                    |
| <input type="checkbox"/> - State agency              | <input type="checkbox"/> - Private Sewer Company regulated by the Public Service Commission |
| <input type="checkbox"/> - Federal agency            | <input type="checkbox"/> - State agency   |
| <input type="checkbox"/> - Public Sewer District     | <input type="checkbox"/> - Federal agency   |
| <input type="checkbox"/> - County                    |   |

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

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

Operator Name: Everett Jones  
 Certification Number: 5764  
 Certification Level: D

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

-This 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.

**Part III– Operational Monitoring**

- As per [10 CSR 20-9.010(4)], the facility is not required to conduct operational monitoring.

**Part IV – Receiving Stream Information**

10 CSR 20-7.031 Missouri Water Quality Standards, the Department defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1<sup>st</sup> classified receiving stream’s beneficial water uses to be maintained are located in the Receiving Stream Table located below in accordance with [10 CSR 20-7.031(4)].

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

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Mississippi River	P	3700	AQL, DWS, HHP, IND, IRR, LWV, SCR, WBC-A	07110009-0401	0

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

**MIXING CONSIDERATIONS**

Mixing Zone: Not Allowed [10 CSR 20-7.031(5)(A)4.B.(I)(a)].  
Zone of Initial Dilution: Not Allowed [10 CSR 20-7.031(5)(A)4.B.(I)(b)].

**MIXING CONSIDERATIONS TABLE:**

MIXING ZONE (CFS) [10 CSR 20-7.031(5)(A)4.B.(I)(a)]			ZONE OF INITIAL DILUTION (CFS) [10 CSR 20-7.031(5)(A)4.B.(I)(b)]		
1Q10	7Q10	30Q10	1Q10	7Q10	30Q10
0	0	0	0	0	N/A

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

**ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:**

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

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

**ANTI-BACKSLIDING:**

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

- All limits in this operating permit are at least as protective as those previously established; therefore, backsliding does not apply.

**ANTIDegradation:**

In accordance with Missouri’s Water Quality Standard [10 CSR 20-7.031(3)], the Department is to document by means of Antidegradation Review that the use of a water body’s available assimilative capacity is justified. Degradation is justified by documenting the socio-economic importance of a discharging activity after determining the necessity of the discharge.

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

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

As per [10 CSR 20-6.010(3)(B)], ...An applicant may utilize a lower preference continuing authority by submitting, as part of the application, a statement waiving preferential status from each existing higher preference authority, providing the waiver does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

**BIOSOLIDS & SEWAGE SLUDGE:**

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

<http://extension.missouri.edu/main/DisplayCategory.aspx?C=74>, items WQ422 through WQ449.

- Permittee is not authorized to land apply biosolids. Sludge/biosolids are removed by contract hauler.

**COMPLIANCE AND ENFORCEMENT:**

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

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

**DISCHARGE MONITORING REPORTS:**

On July 30, 2013, EPA proposed the Clean Water Act National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, which requires electronic reporting of NPDES information rather than the currently-required paper-based reports from permitted facilities. To comply with the upcoming federal rule, the Department is asking all permittees to begin submitting discharge monitoring data online. For permittees already using the Department's eDMR data reporting system, those permittees will be required to exclusively use the eDMR data reporting system.

- The permittee/facility is not currently using the eDMR data reporting system. To sign up for the eDMR system, visit the Department's eDMR page at <http://dnr.mo.gov/env/wpp/edmr.htm>.

**PRETREATMENT PROGRAM:**

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

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

Several special conditions pertaining to the permittee's pretreatment program may be included in the permit, and are as follows:

- Implementation and enforcement of the program,
- Annual pretreatment report submittal,
- Submittal of list of industrial users,
- Technical evaluation of need to establish local limitations, and
- Submittal of the results of the evaluation

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

**REASONABLE POTENTIAL ANALYSIS (RPA):**

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

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

- A RPA was conducted on appropriate parameters. Please see **APPENDIX – RPA RESULTS**.

**REMOVAL EFFICIENCY:**

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

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

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

Sanitary Sewer Overflows (SSOs) are defined as untreated sewage releases and are considered bypassing under state regulation [10 CSR 20-2.010(11)] and should not be confused with the federal definition of bypass. SSOs result from a variety of causes including blockages, line breaks, and sewer defects that can either allow wastewater to backup within the collection system during dry weather conditions or allow excess stormwater and groundwater to enter and overload the collection system during wet weather conditions. SSOs can also result from lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs include overflows out of manholes, cleanouts, broken pipes, and other into waters of the state and onto city streets, sidewalks, and other terrestrial locations.

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

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

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

**SCHEDULE OF COMPLIANCE (SOC):**

Per 644.051.4 RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement, or if prohibited by other statute or regulation. A SOC includes an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit. *See also* Section 502(17) of the Clean Water Act, and 40 CFR §122.2. For new effluent limitations, the permit includes interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR § 122.47(a)(1) and 10 CSR 20-7.031(11), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, a SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

A SOC is not allowed:

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

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

- This permit has a SOC for obtaining a class C certified operator. The SOC allows for 6 months to acquire a sufficiently certified operator.

**STORMWATER POLLUTION PREVENTION PLAN (SWPPP):**

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

In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (Document number EPA 833-B-09-002) [published by the United States Environmental Protection Agency (USEPA) in February 2009], BMPs are measures or practices used to reduce the amount of pollution entering (regarding this operating permit) waters of the state. BMPs may take the form of a process, activity, or physical structure.

Additionally in accordance with the Stormwater Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of stormwater discharges.

In lieu of requiring sampling in the site-specific permit, the facility is required to develop and implement a Stormwater Pollution Prevention Plan. A facility can apply for conditional exclusion for "no exposure" of industrial activities and materials to stormwater by submitting to the Department a completed NPDES Form 3510-11 – No Exposure Certification for Exclusion from NPDES Stormwater Permitting. That document and additional information may be found at <http://water.epa.gov/polwaste/npdes/stormwater/Conditional-No-Exposure-Exclusion.cfm>. Upon approval of the "No Exposure", the permit can be modified to remove the SWPPP requirements. If the facility chooses to retain the conditional exclusion for "no exposure", the facility is required to renew the "No Exposure" exemption during the permit renewal period by submitting NPDES Form 3510-11 with Form B2.

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

**VARIANCE:**

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

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

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

As per [10 CSR 20-2.010(78)], the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined total amount of pollutant that may be discharged into that stream without endangering its water quality.

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

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

Where C = downstream concentration      C<sub>e</sub> = effluent concentration  
Cs = upstream concentration              Q<sub>e</sub> = effluent flow  
Q<sub>s</sub> = upstream flow

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

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

Number of Samples “n”:

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

**WLA MODELING:**

There are two general types of effluent limitations, technology-based effluent limits (TBELs) and water quality based effluent limits (WQBELs). If TBELs do not provide adequate protection for the receiving waters, then WQBEL must be used.

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

**WATER QUALITY STANDARDS:**

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

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

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

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

Under the federal Clean Water Act (CWA) §101(a)(3), requiring WET testing is reasonably appropriate for site-specific Missouri State Operating Permits for discharges to waters of the state issued under the National Pollutant Discharge Elimination System (NPDES). WET testing is also required by 40 CFR 122.44(d)(1). WET testing ensures that the provisions in the 10 CSR 20-6.010(8)(A)7. and the Water Quality Standards 10 CSR 20-7.031(4)(D),(F),(G),(I)2.A & B are being met. Under [10 CSR 20-6.010(8)(A)4], the Department may require other terms and conditions that it deems necessary to assure compliance with the Clean Water Act and related regulations of the Missouri Clean Water Commission. In addition the following MCWL apply: §§644.051.3 requires the Department to set permit conditions that comply with the MCWL and CWA; 644.051.4 specifically references toxicity as an item we must consider in writing permits (along with water quality-based effluent limits, pretreatment, etc...); and 644.051.5 is the basic authority to require testing conditions. WET test will be required by facilities meeting the following criteria:

- Facility is a designated Major.
- Facility continuously or routinely exceeds its design flow.
- Facility that exceeds its design population equivalent (PE) for BOD<sub>5</sub> whether or not its design flow is being exceeded.
- Facility (whether primarily domestic or industrial) that alters its production process throughout the year.
- Facility handles large quantities of toxic substances, or substances that are toxic in large amounts.
- Facility has Water Quality-based Effluent Limitations for toxic substances (other than NH<sub>3</sub>)
- Facility is a municipality with a Design Flow ≥ 22,500 gpd.
- Other – please justify.

**40 CFR 122.41(m) - BYPASSES:**

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

- This facility does not anticipate bypassing.

### **303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):**

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

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

- This facility discharges to a stream with an EPA approved TMDL for PCBs and Chlordane.

- This facility is not considered to be a source of the above listed pollutants.

### **Part VI –2013 Water Quality Criteria for Ammonia**

Upcoming changes to the Water Quality Standard for ammonia may require significant upgrades to wastewater treatment facilities.

On August 22, 2013, the U.S. Environmental Protection Agency (EPA) finalized new water quality criteria for ammonia, based on toxicity studies of mussels and gill breathing snails. Missouri's current ammonia criteria are based on toxicity testing of several species, but did not include data from mussels or gill breathing snails. Missouri is home to 69 of North America's mussel species, which are spread across the state. According to the Missouri Department of Conservation nearly two-thirds of the mussel species in Missouri are considered to be "of conservation concern". Nine species are listed as federally endangered, with an additional species currently proposed as endangered and another species proposed as threatened.

The adult forms of mussels that are seen in rivers, lakes, and streams are sensitive to pollutants because they are sedentary filter feeders. They vacuum up many pollutants with the food they bring in and cannot escape to new habitats, so they can accumulate toxins in their bodies and die. But very young mussels, called glochidia, are exceptionally sensitive to ammonia in water. As a result of a citizen suit, the EPA was compelled to conduct toxicity testing and develop ammonia water quality criteria that would be protective if young mussels may be present in a waterbody. These new criteria will apply to any discharge with ammonia levels that may pose a reasonable potential to violate the standards. Nearly all discharging domestic wastewater treatment facilities (cities, subdivisions, mobile home parks, etc.), as well as certain industrial and stormwater dischargers with ammonia in their effluent, will be affected by this change in the regulations.

When new water quality criteria are established by the EPA, states must adopt them into their regulations in order to keep their authorization to issue permits under the National Pollutant Discharge Elimination System (NPDES). States are required to review their water quality standards every three years, and if new criteria have been developed they must be adopted. States may be more protective than the Federal requirements, but not less protective. Missouri does not have the resources to conduct the studies necessary for developing new water quality standards, and therefore our standards mirror those developed by the EPA; however, we will utilize any available flexibility based on actual species of mussels that are native to Missouri and their sensitivity to ammonia.

Many treatment facilities in Missouri are currently scheduled to be upgraded to comply with the current water quality standards. But these new ammonia standards may require a different treatment technology than the one being considered by the permittee. It is important that permittees discuss any new and upcoming requirements with their consulting engineers to ensure that their treatment systems are capable of complying with the new requirements. The Department encourages permittees to construct treatment technologies that can attain effluent quality that supports the EPA ammonia criteria.

Ammonia toxicity varies by temperature and by pH of the water. Assuming a stable pH value, but taking into account winter and summer temperatures, Missouri includes two seasons of ammonia effluent limitations. Current effluent limitations in this permit are:

Summer – 5.0 mg/L daily maximum, 1.3 mg/L monthly average.  
Winter – 9.4mg/L daily maximum, 2.8 mg/L monthly average.

Under the new EPA criteria, where mussels of the family Unionidae are present or expected to be present, the estimated effluent limitations for a facility in a location such as this that discharges to a receiving stream with no mixing Sheet will be:

Summer – 2.3 mg/L daily maximum, 0.6 mg/L monthly average.  
Winter – 7.0 mg/L daily maximum, 2.1 mg/L monthly average.

These estimated limits above are based in part on the actual performance of the plant at the time of the drafting of this permit and should not be construed as future effluent limitations. Future effluent limits, based on the EPA's 2013 water quality criteria for ammonia, will depend in part on the actual performance of the facility at the time the permit is renewed.

Operating permits for facilities in Missouri must be written based on current statutes and regulations. Therefore permits will be written with the existing effluent limitations until the new standards are adopted. To aid permittees in decision making, an advisory will be added to permit Fact Sheets notifying permittees of the expected effluent limitations for ammonia. When setting schedules of compliance for ammonia effluent limitations, consideration will be given to facilities that have recently constructed upgraded facilities to meet the current ammonia limitations.

For more information on this topic feel free to contact the Missouri Department of Natural Resources, Water Protection Program, Water Pollution Control Branch, Operating Permits Section at (573) 751-1300.

## **Part VII – Effluent Limits Determination**

### **APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:**

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

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

### **OUTFALL #001 – MAIN FACILITY OUTFALL**

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

### **EFFLUENT LIMITATIONS TABLE:**

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Flow	MGD	1	*		*	*/*	1/quarter	quarterly	T
BOD <sub>5</sub>	mg/L	1		45	30	45/30	1/quarter	quarterly	C
TSS	mg/L	1		45	30	45/30	1/quarter	quarterly	C
<i>Escherichia coli</i> **	#/100mL	1, 3		630	126	Fecal 1000/ 400	1/quarter	quarterly	G
Ammonia as N (Apr 1 – Sep 30)	mg/L	2, 3	5.0		1.3	3.6/1.4	1/quarter	quarterly	G
Ammonia as N (Oct 1 – Mar 31)	mg/L	2, 3	9.4		2.8	7.5/2.9	1/quarter	quarterly	G
Oil & Grease	mg/L	1, 3	15		10	15/10	1/quarter	quarterly	G
Chlorine, Total Residual	µg/L	1, 3	< 130		< 130	< 130	1/quarter	quarterly	G
Acute Whole Effluent Toxicity	TUa	1, 9	*			*	1/permit	permit cycle	C
PARAMETER	Unit	Basis for Limits	Minimum		Maximum	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
pH	SU	1	6.5		9.0	6.5/9.0	1/quarter	quarterly	G

\* - Monitoring requirement only.

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

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

\*\*\*\* - C = 24-hour composite

G = Grab

T = 24-hr. total

E = 24-hr. estimate

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

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

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

- **Flow.** In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.
- **Biochemical Oxygen Demand (BOD<sub>5</sub>).** Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Effluent Limits Determination.**
- **Total Suspended Solids (TSS).** Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Effluent Limits Determination.**
- **Escherichia coli (E. coli).** Monthly average of 126 per 100 mL as a geometric mean and Weekly Average of 630 per 100 mL as a geometric mean during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (A) designated use of the receiving stream, as per 10 CSR 20-7.031(5)(C). An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d). The Geometric Mean is calculated by multiplying all of the data points and then taking the nth root of this product, where n = # of samples collected. For example: Five E. coli samples were collected with results of 1, 4, 6, 10, and 5 (#/100mL). Geometric Mean = 5<sup>th</sup> root of (1)(4)(6)(10)(5) = 5<sup>th</sup> root of 1,200 = 4.1 #/100mL.
- **Total Ammonia Nitrogen.** Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(5)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L. No mixing considerations allowed; therefore, WLA = appropriate criterion.

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

**Summer: April 1 – September 30**

Chronic WLA:  $C_e = ((0.0465 + 0.0)1.5 - (0.0 * 0.01))/0.0465$   
 $C_e = 1.5 \text{ mg/L}$

Acute WLA:  $C_e = ((0.0465 + 0.0)12.1 - (0.0 * 0.01))/0.0465$   
 $C_e = 12.1 \text{ mg/L}$

$LTA_c = 1.5 \text{ mg/L} (0.660) = 0.99 \text{ mg/L}$   
 $LTA_a = 12.1 \text{ mg/L} (0.199) = 2.41 \text{ mg/L}$

[CV = 1.03, 99<sup>th</sup> Percentile, 30 day avg.]  
 [CV = 1.03, 99<sup>th</sup> Percentile]

Use most protective number of LTA<sub>c</sub> or LTA<sub>a</sub>.

MDL = 0.99 mg/L (5.02) = 5.0 mg/L  
 AML = 0.99 mg/L (1.33) = 1.3 mg/L

[CV = 1.03, 99<sup>th</sup> Percentile]  
 [CV = 1.03, 95<sup>th</sup> Percentile, n =30]

**Winter: October 1 – March 31**

Chronic WLA:  $C_e = ((0.0465 + 0.0)3.1 - (0.0 * 0.01))/0.0465$   
 $C_e = 3.1 \text{ mg/L}$

Acute WLA:  $C_e = ((0.0465 + 0.0)12.1 - (0.0 * 0.01))/0.0465$   
 $C_e = 12.1 \text{ mg/L}$

$LTA_c = 3.1 \text{ mg/L} (0.701) = 2.42 \text{ mg/L}$   
 $LTA_a = 12.1 \text{ mg/L} (0.231) = 3.89 \text{ mg/L}$

[CV = 0.87, 99<sup>th</sup> Percentile, 30 day avg.]  
 [CV = 0.87, 99<sup>th</sup> Percentile]

Use most protective number of LTA<sub>c</sub> or LTA<sub>a</sub>.

MDL = 2.42 mg/L (4.33) = 9.4 mg/L  
 AML = 2.42 mg/L (1.28) = 1.3 mg/L

[CV = 0.87, 99<sup>th</sup> Percentile]  
 [CV = 0.87, 95<sup>th</sup> Percentile, n =30]

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

- **pH.** –6.5-9.0 SU. Technology based effluent limitations of 6.0-9.0 SU [10 CSR 20-7.015] are not protective of the Water Quality Standard, which states that water contaminants shall not cause pH to be outside the range of 6.5-9.0 SU. No mixing zone is allowed due to the classification of the receiving stream, therefore the water quality standard must be met at the outfall.
- **Total Residual Chlorine (TRC).** Warm-water Protection of Aquatic Life CCC = 10 µg/L, CMC = 19 µg/L [10 CSR 20-7.031, Table A]. Background TRC = 0.0 µg/L.

Chronic WLA:  $C_e = ((0.0465 + 0.0)10 - (0.0 * 0.0))/0.0465$   
 $C_e = 10 \mu\text{g/L}$

Acute WLA:  $C_e = ((0.0465 + 0.0)19 - (0.0 * 0.0))/0.0465$   
 $C_e = 19 \mu\text{g/L}$

$LTA_c = 10 (0.527) = 5.3 \mu\text{g/L}$  [CV = 0.6, 99<sup>th</sup> Percentile]  
 $LTA_a = 19 (0.321) = 6.1 \mu\text{g/L}$  [CV = 0.6, 99<sup>th</sup> Percentile]

Use most protective number of  $LTA_c$  or  $LTA_a$ .

MDL = 5.3 (3.11) = **17 µg/L** [CV = 0.6, 99<sup>th</sup> Percentile]  
 AML = 5.3 (1.55) = **8 µg/L** [CV = 0.6, 95<sup>th</sup> Percentile, n = 4]

The Water Quality Based Effluent Limit for Total Residual Chlorine was calculated to be 17 µg/L (daily maximum limit) and 8 µg/L (monthly average limit). These limits are below the minimum quantification level (ML) of the most common and practical EPA approved CLTRC methods. The Department has determined the current acceptable ML for total residual chlorine to be 130 µg/L when using the DPD Colorimetric Method #4500 – CL G. from Standard Methods for the Examination of Waters and Wastewater. The 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 of 130 µg/L will be considered violations of the permit and values less than the minimum quantification level of 130 µg/L will be considered to be in compliance with the permit limitation.

**Whole Effluent Toxicity**

- **Acute Whole Effluent Toxicity.** Monitoring requirement only. Monitoring is required to determine if reasonable potential exists for this facility’s discharge to exceed water quality standards. Where no mixing is allowed, the acute criterion must be met at the end of the pipe. However, when using an LC50 as the test endpoint, the acute toxicity test has an upper sensitivity level of 100% effluent, or 1.0 TUa. If less than 50% of the test organisms die at 100% effluent, the true LC50 value for the effluent cannot be measured, effectively acting as a detection limit. Therefore, when the allowable effluent concentration is 100% a limit of 1.0 TUa will apply. If more than 50% of the organisms survive at 100% effluent, the permittee should report TUa <1.

Acute WLA:  $C_e = ((0.0465 + 0.0)0.3 - (0.0 * 0.0))/0.0465$   
 $C_e = 0.3 \text{ TUa}$

$LTA_a = 0.3\text{TUa} (0.321) = 0.0963 \text{ TUa}$  [CV = 0.6, 99<sup>th</sup> Percentile]

MDL = 0.0963 TUa (3.11) = 0.3 TUa [CV = 0.6, 99<sup>th</sup> Percentile]

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

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

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

- **Removal of Temperature.** The Department of Natural Resources has concluded that domestic wastewater treatment facilities have no reasonable potential for exceed Water Quality Standards for temperature. Due to the fact that this facility will have minimal effect on temperature, this parameter has been removed.

**Sampling Frequency Justification:**

Sampling and Reporting Frequency was changed from previous permit. Due to the size of this facility, the design flow of this facility and the historical compliance with DMRs, the monitoring frequency has been changed to quarterly from monthly. The department has concluded that this change in frequency is as protective of water quality as the frequency in the previous permit. Sampling for *E. coli* is set at quarterly per 10 CSR 20-7.015(9)(D)6.C.

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

**Acute Whole Effluent Toxicity**

-No less than **ONCE/PERMIT CYCLE:**

-Municipality with a design flow  $\geq$  22,500 gpd, but less than 1.0 MGD.

**Sampling Type Justification:**

As per 10 CSR 20-7.015, BOD<sub>5</sub>, TSS, and WET test samples collected for mechanical plants shall be a 24 hour modified composite sample. Due to the small size of this facility this composite sample shall be made up from a minimum of four grab samples collected within a 24-hour period with a minimum of two hours between each grab sample. Grab samples, however, must be collected for pH, Ammonia as N, *E. coli*, TRC, and Oil & Grease. This is due to the holding time restriction for *E. coli*, the volatility of Ammonia and TRC, and the fact that pH cannot be preserved and must be sampled in the field. As Ammonia and Oil & Grease samples must be immediately preserved, these samples are to be collected as a grab.

**Part VIII – Cost Analysis for Compliance**

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

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

- The Department is not required to determine Cost Analysis for Compliance because the permit contains no new conditions or requirements that convey a new cost to the facility.

## **Part IX – Administrative Requirements**

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

### **PERMIT SYNCHRONIZATION:**

The Department of Natural Resources is currently undergoing a synchronization process for operating permits. Permits are normally issued on a five-year term, but to achieve synchronization many permits will need to be issued for less than the full five years allowed by regulation. The intent is that all permits within a watershed will move through the Watershed Based Management (WBM) cycle together will all expire in the same fiscal year. This will allow further streamlining by placing multiple permits within a smaller geographic area on public notice simultaneously, thereby reducing repeated administrative efforts. This will also allow the Department to explore a watershed based permitting effort at some point in the future. Renewal applications must continue to be submitted within 180 days of expiration, however, in instances where effluent data from the previous renewal is less than 4 years old, that data may be re-submitted to meet the requirements of the renewal application. If the permit provides a schedule of compliance for meeting new water quality based effluent limits beyond the expiration date of the permit, the time remaining in the schedule of compliance will be allotted in the renewed permit. This permit will expire in the 3<sup>rd</sup> Quarter of calendar year 2019.

### **PUBLIC NOTICE:**

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

- The Public Notice period for this operating permit was from March 25, 2016 to April 25, 2016. No comments were received.

**DATE OF FACT SHEET:** FEBRUARY 8, 2016

### **COMPLETED BY:**

**ADAM PAIGE, ENVIRONMENTAL SPECIALIST  
MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM  
OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT  
(573) 526-2445  
Adam.Paige@dnr.mo.gov**

**Appendices**

**APPENDIX - CLASSIFICATION WORKSHEET:**

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
Maximum Population Equivalent (P.E.) served (Max 10 pts.)	1 pt./10,000 PE or major fraction thereof.	
Maximum: 10 pt Design Flow (avg. day) or peak month; use greater (Max 10 pts.)	1 pt. / MGD or major fraction thereof.	
<b>EFFLUENT DISCHARGE RECEIVING WATER SENSITIVITY:</b>		
Missouri or Mississippi River	0	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	
<b>PRELIMINARY TREATMENT – Headworks</b>		
Screening and/or comminution	3	3
Grit removal	3	
Plant pumping of main flow (lift station at the headworks)	3	3
<b>PRIMARY TREATMENT</b>		
Primary clarifiers	5	
Combined sedimentation/digestion	5	
Chemical addition (except chlorine, enzymes)	4	
<b>REQUIRED LABORATORY CONTROL – performed by plant personnel (highest level only)</b>		
Push – button or visual methods for simple test such as pH, Settleable solids	3	3
Additional procedures such as DO, COD, BOD, titrations, solids, volatile content	5	
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	7	
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph	10	
<b>ALTERNATIVE FATE OF EFFLUENT</b>		
Direct reuse or recycle of effluent	6	
Land Disposal – low rate	3	
High rate	5	
Overland flow	4	
<b>Total from page ONE (1)</b>	----	9

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

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
<b>VARIATION IN RAW WASTE (highest level only) (DMR exceedances and Design Flow exceedances)</b>		
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	
<b>SECONDARY TREATMENT</b>		
Trickling filter and other fixed film media with secondary clarifiers	10	
Activated sludge with secondary clarifiers (including extended aeration and oxidation ditches)	15	15
Stabilization ponds without aeration	5	
Aerated lagoon	8	
Advanced Waste Treatment Polishing Pond	2	
Chemical/physical – without secondary	15	
Chemical/physical – following secondary	10	
Biological or chemical/biological	12	
Carbon regeneration	4	
<b>DISINFECTION</b>		
Chlorination or comparable	5	5
Dechlorination	2	
On-site generation of disinfectant (except UV light)	5	
UV light	4	
<b>SOLIDS HANDLING - SLUDGE</b>		
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 <b>TWO (2)</b>	----	20
Total from page <b>ONE (1)</b>	---	9
<b>Grand Total</b>	---	29

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

**APPENDIX – RPA RESULTS:**

Parameter	CMC*	RWC Acute*	CCC*	RWC Chronic*	n**	Range max/min	CV***	MF	RP Yes/No
Total Ammonia as Nitrogen (Summer) mg/L	12.1	20.11	1.5	3.33	30.00	7.3/0.5	1.03	2.90	YES
Total Ammonia as Nitrogen (Winter) mg/L	12.1	18.14	3.1	3.01	17.00	5.7/0.5	0.87	3.35	YES

N/A – Not Applicable

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

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

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

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

n – Is the number of samples.

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

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

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



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MISSOURI CLEAN WATER COMMISSION  
REVISED  
AUGUST 1, 2014

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

## Part I – General Conditions

### Section A – Sampling, Monitoring, and Recording

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

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

### Section B – Reporting Requirements

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



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

## Section C – Bypass/Upset Requirements

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

## Section D – Administrative Requirements

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



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



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



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MAY 1, 2013

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

**1. Definitions**

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

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

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

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

**2. Identification of Industrial Discharges**

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

**3. Application Information**

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

**4. Notice to the Department**

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

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

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

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

**STANDARD CONDITIONS FOR NPDES PERMITS**  
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**THE MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**MISSOURI CLEAN WATER COMMISSION**  
**March 1, 2015**

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

**SECTION A – GENERAL REQUIREMENTS**

1. This permit pertains to sludge requirements under the Missouri Clean Water Law and regulation for domestic wastewater and industrial process wastewater. This permit also incorporates applicable federal sludge disposal requirements under 40 CFR 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR 503 for domestic wastewater. EPA has reviewed and accepted these standard sludge conditions. EPA may choose to issue a separate sludge addendum to this permit or a separate federal sludge permit at their discretion to further address the federal requirements.
2. These PART III Standard Conditions apply only to sludge and biosolids generated at domestic wastewater treatment facilities, including public owned treatment works (POTW), privately owned facilities and sludge or biosolids generated at industrial facilities.
3. Sludge and Biosolids Use and Disposal Practices:
  - a. The permittee is authorized to operate the sludge and biosolids treatment, storage, use, and disposal facilities listed in the facility description of this permit.
  - b. The permittee shall not exceed the design sludge volume listed in the facility description and shall not use sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
  - c. The permittee is authorized to operate the storage, treatment or generating sites listed in the Facility Description section of this permit.
4. Sludge Received from other Facilities:
  - a. Permittees may accept domestic wastewater sludge from other facilities including septic tank pumpings from residential sources as long as the design sludge volume is not exceeded and the treatment facility performance is not impaired.
  - b. The permittee shall obtain a signed statement from the sludge generator or hauler that certifies the type and source of the sludge
5. These permit requirements do not supersede nor remove liability for compliance with county and other local ordinances.
6. These permit requirements do not supersede nor remove liability for compliance with other environmental regulations such as odor emissions under the Missouri Air Pollution Control Law and regulations.
7. This permit may (after due process) be modified, or alternatively revoked and reissued, to comply with any applicable sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Act under Chapter 644 RSMo.
8. In addition to STANDARD CONDITIONS, the Department may include sludge limitations in the special conditions portion or other sections of a site specific permit.
9. Alternate Limits in the Site Specific Permit.

Where deemed appropriate, the Department may require an individual site specific permit in order to authorize alternate limitations:

  - a. A site specific permit must be obtained for each operating location, including application sites.
  - b. To request a site specific permit, an individual permit application, permit fee, and supporting documents shall be submitted for each operating location. This shall include a detailed sludge/biosolids management plan or engineering report.
10. Exceptions to these Standard Conditions may be authorized on a case-by-case basis by the Department, as follows:
  - a. The Department will prepare a permit modification and follow permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR 124.10, and 40 CFR 501.15(a)(2)(ix)(E). This includes notification of the owner of the property located adjacent to each land application site, where appropriate.
  - b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR 503.

## **SECTION B – DEFINITIONS**

1. Best Management Practices include agronomic loading rates, soil conservation practices and other site restrictions.
2. Biosolids means organic fertilizer or soil amendment produced by the treatment of domestic wastewater sludge.
3. Biosolids land application facility is a facility where biosolids are spread onto the land at agronomic rates for production of food or fiber. The facility includes any structures necessary to store the biosolids until soil, weather, and crop conditions are favorable for land application.
4. Class A biosolids means a material that has met the Class A pathogen reduction requirements or equivalent treatment by a Process to Further Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
5. Class B biosolids means a material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
6. Domestic wastewater means wastewater originating from the sanitary conveniences of residences, commercial buildings, factories and institutions; or co-mingled sanitary and industrial wastewater processed by a (POTW) or a privately owned facility.
7. Industrial wastewater means any wastewater, also known as process water, not defined as domestic wastewater. Per 40 CFR Part 122, process water means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.
8. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including septic tanks, sand filters, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological discs, and other similar facilities. It does not include wastewater treatment lagoons and constructed wetlands for wastewater treatment.
9. Operating location as defined in 10 CSR 20-2.010 is all contiguous lands owned, operated or controlled by one (1) person or by two (2) or more persons jointly or as tenants in common.
10. Plant Available Nitrogen (PAN) is the nitrogen that will be available to plants during the growing seasons after biosolids application.
11. Public contact site is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.
12. Sludge is the solid, semisolid, or liquid residue removed during the treatment of wastewater. Sludge includes septage removed from septic tanks or equivalent facilities. Sludge does not include carbon coal byproducts (CCBs)
13. Sludge lagoon is part of a mechanical wastewater treatment facility. A sludge lagoon is an earthen basin that receives sludge that has been removed from a wastewater treatment facility. It does not include a wastewater treatment lagoon or sludge treatment units that are not a part of a mechanical wastewater treatment facility.
14. Septage is the material pumped from residential septic tanks and similar treatment works (with a design population of less than 150 people). The standard for biosolids from septage is different from other sludges.

## **SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES**

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

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

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

## **SECTION E – INCINERATION OF SLUDGE**

1. Sludge incineration facilities shall comply with the requirements of 40 CFR 503 Subpart E; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
2. Permittee may be authorized under the facility description of this permit to store incineration ash in lagoons or ash ponds. This permit does not authorize the disposal of incineration ash. Incineration ash shall be disposed in accordance with 10 CSR 80; or if the ash is determined to be hazardous with 10 CSR 25.
3. In addition to normal sludge monitoring, incineration facilities shall report the following as part of the annual report, quantity of sludge incinerated, quantity of ash generated, quantity of ash stored, and ash used or disposal method, quantity, and location. Permittee shall also provide the name of the disposal facility and the applicable permit number.

## **SECTION F – SURFACE DISPOSAL SITES AND SLUDGE LAGOONS**

1. Surface disposal sites of domestic facilities shall comply with the requirements in 40 CFR 503 Subpart C; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
2. Sludge storage lagoons are temporary facilities and are not required to obtain a permit as a solid waste management facility under 10 CSR 80. In order to maintain sludge storage lagoons as storage facilities, accumulated sludge must be removed routinely, but not less than once every two years unless an alternate schedule is approved in the permit. The amount of sludge removed will be dependent on sludge generation and accumulation in the facility. Enough sludge must be removed to maintain adequate storage capacity in the facility.
  - a. In order to avoid damage to the lagoon seal during cleaning, the permittee may leave a layer of sludge on the bottom of the lagoon, upon prior approval of the Department; or
  - b. Permittee shall close the lagoon in accordance with Section H.

## **SECTION G – LAND APPLICATION**

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

Permittees who wish to apply Class A biosolids to public contact sites must obtain approval from the Department after two years of proper operation with acceptable testing documentation that shows the biosolids meet Class A criteria. A shorter length of testing will be allowed with prior approval from the Department. Authorization for land applications must be provided in the special conditions section of this permit or in a separate site specific permit.

  - a. After Class B biosolids have been land applied, public access must be restricted for 12 months.
  - b. Class B biosolids are only land applied to root crops, home gardens or vegetable crops whose edible parts will not be for human consumption.
6. Agricultural and Silvicultural Sites:

Septage – Based on Water Quality guide 422 (WQ422) published by the University of Missouri

  - a. Haulers that land apply septage must obtain a state permit
  - b. Do not apply more than 30,000 gallons of septage per acre per year.
  - c. Septage tanks are designed to retain sludge for one to three years which will allow for a larger reduction in pathogens and vectors, as compared to other mechanical type treatment facilities.
  - d. To meet Class B sludge requirements, maintain septage at 12 pH for at least thirty (30) minutes before land application. 50 pounds of hydrated lime shall be added to each 1,000 gallons of septage in order to meet pathogen and vector stabilization for septage biosolids applied to crops, pastures or timberland.
  - e. Lime is to be added to the pump truck and not directly to the septic tanks, as lime would harm the beneficial bacteria of the septic tank.

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

- a. Biosolids shall be monitored to determine the quality for regulated pollutants
- b. The number of samples taken is directly related to the amount of sludge produced by the facility (See Section I of these Standard Conditions). Report as dry weight unless otherwise specified in the site specific permit. Samples should be taken only during land application periods. When necessary, it is permissible to mix biosolids with lower concentrations of biosolids as well as other suitable Department approved material to reach the maximum concentration of pollutants allowed.
- c. Table 1 gives the maximum concentration allowable to protect water quality standards

**TABLE 1**

Biosolids ceiling concentration <sup>1</sup>	
Pollutant	Milligrams per kilogram dry weight
Arsenic	75
Cadmium	85
Copper	4,300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7,500

<sup>1</sup> Land application is not allowed if the sludge concentration exceeds the maximum limits for any of these pollutants

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

**TABLE 2**

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

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

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

**TABLE 3**

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

<sup>1</sup> Total cumulative loading limits for soils with equal or greater than 6.0 pH (salt based test) or 6.5 pH (water based test)

**TABLE 4** - Guidelines for land application of other trace substances <sup>1</sup>

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

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

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

<sup>3</sup> Total Dioxin Toxicity Equivalents (TEQ) in soils, based on a risk assessment under 40 CFR 744, May 1998.

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

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

- a. Use best management practices when applying biosolids.
- b. Biosolids cannot discharge from the land application site
- c. Biosolid application is subject to the Missouri Department of Agriculture State Milk Board concerning grazing restrictions of lactating dairy cattle.
- d. Biosolid application must be in accordance with section 4 of the Endangered Species Act.
- e. Do not apply more than the agronomic rate of nitrogen needed.
- f. The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop removal when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) When biosolids are land applied at an application rate greater than two dry tons per acre per year.
  - i. PAN can be determined as follows and is in accordance with WQ426  
(Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor<sup>1</sup>).  
<sup>1</sup>Volatilization factor is 0.7 for surface application and 1 for subsurface application.
- g. Buffer zones are as follows:
  - i. 300 feet of a water supply well, sinkhole, lake, pond, water supply reservoir or water supply intake in a stream;
  - ii. 300 feet of a losing stream, no discharge stream, stream stretches designated for whole body contact recreation, wild and scenic rivers, Ozark National Scenic Riverways or outstanding state resource waters as listed in the Water Quality Standards, 10 CSR 20-7.031;
  - iii. 150 feet if dwellings;
  - iv. 100 feet of wetlands or permanent flowing streams;
  - v. 50 feet of a property line or other waters of the state, including intermittent flowing streams.
- h. Slope limitation for application sites are as follows;
  - i. A slope 0 to 6 percent has no rate limitation
  - ii. Applied to a slope 7 to 12 percent, the applicator may apply biosolids when soil conservation practices are used to meet the minimum erosion levels
  - iii. Slopes > 12 percent, apply biosolids only when grass is vegetated and maintained with at least 80 percent ground cover at a rate of two dry tons per acre per year or less.
- i. No biosolids may be land applied in an area that it is reasonably certain that pollutants will be transported into waters of the state.
- j. Do not apply biosolids to sites with soil that is snow covered, frozen or saturated with liquid without prior approval by the Department.
- k. Biosolids / sludge applicators must keep detailed records up to five years.

## SECTION H – CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical, industrial, and lagoons) and sludge or biosolids storage and treatment facilities and incineration ash ponds. It does not apply to land application sites.
2. Permittees of a domestic wastewater facility who plan to cease operation must obtain Department approval of a closure plan which addresses proper removal and disposal of all residues, including sludge, biosolids. Mechanical plants, sludge lagoons, ash ponds and other storage structures must obtain approval of a closure plan from the Department. Permittee must maintain this permit until the facility is closed in accordance with the approved closure plan per 10 CSR 20 – 6. 010 and 10 CSR 20 – 6.015.
3. Residuals that are left in place during closure of a lagoon or earthen structure or ash pond shall not exceed the agricultural loading rates as follows:
  - a. Residuals shall meet the monitoring and land application limits for agricultural rates as referenced in Section H of these standard conditions.
  - b. If a wastewater treatment lagoon has been in operation for 15 years or more without sludge removal, the sludge in the lagoon qualifies as a Class B biosolids with respect to pathogens due to anaerobic digestion, and testing for fecal coliform is not required. For other lagoons, testing for fecal coliform is required to show compliance with Class B biosolids limitations. In order to reach Class B biosolids requirements, fecal coliform must be less than 2,000,000 colony forming units or 2,000,000 most probable number. All fecal samples must be presented as geometric mean per gram.
  - c. The allowable nitrogen loading that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. For a grass cover crop, the allowable PAN is 300 pounds/acre.
    - i. PAN can be determined as follows:  
$$(\text{Nitrate} + \text{nitrite nitrogen}) + (\text{organic nitrogen} \times 0.2) + (\text{ammonia nitrogen} \times \text{volatilization factor}^1).$$

<sup>1</sup> Volatilization factor is 0.7 for surface application and 1 for subsurface application.
4. When closing a domestic wastewater treatment lagoon with a design treatment capacity equal or less than 150 persons, the residuals are considered “septage” under the similar treatment works definition. See Section B of these standard conditions. Under the septage category, residuals may be left in place as follows:
  - a. Testing for metals or fecal coliform is not required
  - b. If the wastewater treatment lagoon has been in use for less than 15 years, mix lime with the sludge at a rate of 50 pounds of hydrated lime per 1000 gallons (134 cubic feet) of sludge.
  - c. The amount of sludge that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. 100 dry tons/acre of sludge may be left in the basin without testing for nitrogen. If 100 dry tons/acre or more will be left in the lagoon, test for nitrogen and determine the PAN using the calculation above. Allowable PAN loading is 300 pounds/acre.
5. Residuals left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, the lagoon berm shall be demolished, and the site shall be graded and contain  $\geq 70\%$  vegetative density over 100% of the site so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
6. Lagoons and/or earthen structure and/or ash pond closure activities shall obtain a storm water permit for land disturbance activities that equal or exceed one acre in accordance with 10 CSR 20-6.200
7. When closing a mechanical wastewater and/or industrial process wastewater plant; all sludge must be cleaned out and disposed of in accordance with the Department approved closure plan before the permit for the facility can be terminated.
  - a. Land must be stabilized which includes any grading, alternate use or fate upon approval by the Department, remediation, or other work that exposes sediment to stormwater per 10 CSR 20-6.200. The site shall be graded and contain  $\geq 70\%$  vegetative density over 100% of the site, so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
  - b. Per 10 CSR 20-6.015(4)(B)6, Hazardous Waste shall not be land applied or disposed during industrial and mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations under 10 CSR 25.
  - c. After demolition of the mechanical plant / industrial plant, the site must only contain clean fill defined in RSMo 260.200 (5) as uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the Department for fill or other beneficial use. Other solid wastes must be removed.
8. If sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or H, a landfill permit or solid waste disposal permit must be obtained if the permittee chooses to seek authorization for on-site sludge disposal under the Missouri Solid Waste Management Law and regulations per 10 CSR 80, and the permittee must comply with the surface disposal requirements under 40 CFR 503, Subpart C.

**SECTION I – MONITORING FREQUENCY**

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

**TABLE 5**

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

<sup>1</sup> Test total Kjeldahl nitrogen, if biosolids application is 2 dry tons per acre per year or less.

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

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

<sup>4</sup> One sample for each 1,000 dry tons of sludge.

Note 1: Total solids: A grab sample of sludge shall be tested one per day during land application periods for percent total solids.

This data shall be used to calculate the dry tons of sludge applied per acre.

Note 2: Total Phosphorus: Total phosphorus and total potassium shall be tested at the same monitoring frequency as metals.

Note 3: Table 5 is not applicable for incineration

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

**SECTION J – RECORD KEEPING AND REPORTING REQUIREMENTS**

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

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

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

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

5. Annual report contents. The annual report shall include the following:
- a. Sludge and biosolids testing performed. Include a copy or summary of all test results, even if not required by the permit.
  - b. Sludge or biosolids quantity shall be reported as dry tons for quantity generated by the wastewater treatment facility, the quantity stored on site at the end of the year, and the quantity used or disposed.
  - c. Gallons and % solids data used to calculate the dry ton amounts.
  - d. Description of any unusual operating conditions.
  - e. Final disposal method, dates, and location, and person responsible for hauling and disposal.
    - i. This must include the name, address for the hauler and sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name of that facility.
    - ii. Include a description of the type of hauling equipment used and the capacity in tons, gallons, or cubic feet.
  - f. Contract Hauler Activities:

If contract hauler, provide a copy of a signed contract from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate sludge or biosolids use permit.
  - g. Land Application Sites:
    - i. Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as a legal description for nearest ¼, ¼, Section, Township, Range, and county, or UTM coordinates. The facility shall report PAN when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
    - ii. If the “Low Metals” criteria are exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative pollutant loading which has been reached at each site.
    - iii. Report the method used for compliance with pathogen and vector attraction requirements.
    - iv. Report soil test results for pH, CEC, and phosphorus. If none was tested during the year, report the last date when tested and results.



**MECO ENGINEERING COMPANY**  
ENGINEERS - SURVEYORS

3120 HIGHWAY W HANNIBAL, MO 63401  
(573) 221-4048 FAX (573) 221-4377  
mecoh@mecoengineering.com  
www.mecoengineering.com

**LETTER OF TRANSMITTAL**

DATE	Jan. 8, 2016	JOB NO.	366-004
ATTENTION	Terry Nelson		
RE:	City of Portage Des Sioux		
	The Wastewater Treatment Plant and		
	Collection System Improvements		
	RECEIVED		
	JAN 12 2016		
	Water Protection Program		

**TO** Missouri Dept. of Natural Resources  
Attn: Terry Nelson  
Water Protection Program  
PO Box 176  
Jefferson City, Missouri 65102-0176

- WE ARE SENDING YOU**
- |   |  |   |   |
|---|--|---|---|
| <input type="checkbox"/> Shop Drawings  | <input checked="" type="checkbox"/> Attached | <input type="checkbox"/> Under separate cover via _____ | the following items:                    |
| <input type="checkbox"/> Copy of Letter | <input type="checkbox"/> Prints              | <input type="checkbox"/> Plans                          | <input type="checkbox"/> Samples        |
|   | <input type="checkbox"/> Change Order        | <input type="checkbox"/> Other                          | <input type="checkbox"/> Specifications |

COPIES	DATE	NO.	DESCRIPTION
2			No Degradation Evaluation Form
2			Form B - Permit renewal
2			Form B - Permit modification
1			Permit Application Fee, Check #3410 \$200
2			Financial Questionnaire
2			Cost Estimate
2			Community Supplemental Survey
2			Specification for Packaged Plant

**THESE ARE TRANSMITTED as checked below:**

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> For approval     | <input type="checkbox"/> No exception taken               | <input type="checkbox"/> Submit _____ copies for distribution |
| <input type="checkbox"/> For your use                | <input type="checkbox"/> Make correction noted            | <input type="checkbox"/> Return _____ corrected prints        |
| <input type="checkbox"/> As requested                | <input type="checkbox"/> Resubmit _____ copies for review |   |
| <input type="checkbox"/> For review and comment      | <input type="checkbox"/> _____                            |   |
| <input type="checkbox"/> For Bids Due _____ 20 _____ | <input type="checkbox"/> Prints returned after loan to us |   |

**REMARKS:**

Terry,

We are currently working on the EPA Violations and Order of Compliance deadline and will send you the update as soon as we get it.

**COPY TO** \_\_\_\_\_  
JBM:jbm

**SIGNED**   
J. Brian Martin

RECEIVED

JAN 12 2016

Water Protection Program



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH  
**NO DEGRADATION EVALUATION**  
**CONCLUSION OF ANTIDegradation REVIEW**  
(Submit this form with the appropriate Permit Application)

<b>1. FACILITY</b>			
NAME City of Portage Des Sioux Wastewater Treatment Plant		COUNTY St. Charles	
ADDRESS (PHYSICAL) NE Corner of 2nd Street and LeClair Street	CITY Portage Des Sioux	STATE MO	ZIP CODE 63373
FACILITY CONTACT: Mark Warner		TELEPHONE NUMBER WITH AREA CODE 636-753-2235	

<b>2. NO DEGRADATION OPTIONS</b>										
<input type="checkbox"/>	Renewal without changes									
<input type="checkbox"/>	Sewer extensions									
<input type="checkbox"/>	CSO elimination projects									
<input type="checkbox"/>	No-discharge with land application									
<input type="checkbox"/>	No-discharge with subsurface irrigation									
<input type="checkbox"/>	Recycle or reuse of effluent									
<input type="checkbox"/>	Discharge to a regional wastewater collection and treatment system.									
<input type="checkbox"/>	Addition or replacement of disinfection system for an existing wastewater facility: Ultraviolet or Ozone The facility will be required to meet regulatory effluent limits for bacteria.									
<input type="checkbox"/>	Addition or replacement for chlorination or dechlorination disinfection system of existing facility. The chlorination or dechlorination disinfection treatment system design must be for total removal of Total Residual Chlorine. Therefore, the facility will be required to meet the water quality-bases effluent limits determined by the permit writer or the following water quality-bases effluent limits:									
<table border="1"> <thead> <tr> <th>Beneficial Use of Classified Water</th> <th>MDL (µg/l)</th> <th>AML (µg/l)</th> </tr> </thead> <tbody> <tr> <td>Warm-water fishery</td> <td>17</td> <td>8.2</td> </tr> <tr> <td>Cold-water fishery</td> <td>3.3</td> <td>1.6</td> </tr> </tbody> </table>		Beneficial Use of Classified Water	MDL (µg/l)	AML (µg/l)	Warm-water fishery	17	8.2	Cold-water fishery	3.3	1.6
Beneficial Use of Classified Water	MDL (µg/l)	AML (µg/l)								
Warm-water fishery	17	8.2								
Cold-water fishery	3.3	1.6								
<p>Note: These compliance limits for Total Residual Chlorine are much less than minimum quantification level, or ML, of 0.13. The facility will be required to meet regulatory effluent limits for bacteria.</p>										
<input checked="" type="checkbox"/>	Other, please describe: <u>New treatment facility that will have increased capacity and lower concentration effluent loading</u>									

Consulted with Water Protection Staff:	
NAME	DATE

<b>3. NO DEGRADATION PROPOSED PROJECT SUMMARY</b>
<p>The project will construct a new mechanical activated sludge, extended aeration treatment plant. The new treatment plant is designed at 56,000 gpd and have an effluent below 15 mg/L BOD, 15 mg/L SS and ammonia at 0.6 mg/L for summer and 2.1 mg/L winter. The total load will be less with the new treatment facility. Currently the MSOP limits are monthly average of 30 mg/L BOD, 30 mg/L SS with a design flow of 30,000gpd.</p> <p>With the current permit the facility is designed to create 7.5 lbs/day of both BOD and SS. The new treatment facility will produce less than 7.0 lbs/day of both BOD and SS approximately 7% less.</p>

**CONSULTANT:** I have prepared or reviewed this form and all attached reports and documentation. The conclusion proposed is consistent with the Antidegradation Implementation Procedure and current state and federal regulations.

SIGNATURE <i>Max F. Middendorf</i>	DATE 1-7-16
---------------------------------------	----------------

PRINT NAME MAX F. MIDDENDORF	E-MAIL ADDRESS EM.12-31-17
---------------------------------	-------------------------------

TELEPHONE NUMBER WITH AREA CODE 573-221-4048	E-MAIL ADDRESS m Middendorf@meecoengineering.com
---	---

**Owner:** I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE <i>Mark D. Warner</i>	DATE 1-5-16
------------------------------------	----------------

TELEPHONE NUMBER WITH AREA CODE 636-753-2235	E-MAIL ADDRESS
---	----------------

**Continuing Authority:** Continuing Authority is the permanent organization that will be responsible for the operation, maintenance and modernization of the facility. The regulatory requirement regarding continuing authority is available at [www.sos.mo.gov/adrules/csr/current/10csr/10c20-6a.pdf](http://www.sos.mo.gov/adrules/csr/current/10csr/10c20-6a.pdf).

I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE <i>Mark D. Warner</i>	DATE 1-5-16
------------------------------------	----------------

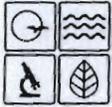
TELEPHONE NUMBER WITH AREA CODE 636-753-2235	E-MAIL ADDRESS
---	----------------

**Return completed form with the appropriate Permit Application to:**

Missouri Department of Natural Resources  
Water Protection Program  
Water Pollution Control Branch  
P.O. Box 176  
Jefferson City, MO 65102

RECEIVED

JAN 12 2016



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM  
**Water Protection Program**  
**FORM B: APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW LESS THAN OR EQUAL TO 100,000 GALLONS PER DAY**

FOR AGENCY USE ONLY		
CHECK NUMBER		
DATE RECEIVED	FEE SUBMITTED	
1-12-16	E SB	

**READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM**

**1. THIS APPLICATION IS FOR:**

- An operating permit for a new or unpermitted facility. Construction Permit # \_\_\_\_\_  
(Include completed antidegradation review or request for antidegradation review, see instructions)
- A new site-specific operating permit formerly general permit #MOG \_\_\_\_\_
- A site-specific operating permit renewal: Permit #MO- 0107328 Expiration Date 9/26/2014
- A site-specific operating permit modification: Permit #MO- \_\_\_\_\_ Reason: \_\_\_\_\_
- General permit (MOGD – Non POTWs discharging < 50,000 GPD or MOG823 – Land Application of Domestic Wastewater):  
Permit #MO- \_\_\_\_\_ Expiration Date \_\_\_\_\_

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

**2. FACILITY**

NAME City of Portage Des Sioux Wastewater Treatment Plant		TELEPHONE NUMBER WITH AREA CODE (636) 753-2335	
ADDRESS (PHYSICAL) NE Corner of 2nd Street and LeClair Street		CITY Portage Des Sioux	STATE MO
		ZIP CODE 63373	
2.1	Legal description: <u>Surrey 154</u> ¼, ¼, ¼, Sec. , T , R	County <u>St. Charles</u>	
2.2	UTM Coordinates Easting (X): <u>(X) 864,409.351</u> Northing (Y): <u>(Y) 1,126,570.759</u>	For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)	
2.3	Name of receiving stream: Mississippi River		
2.4	Number of outfalls: <u>1</u>	Wastewater outfalls: 1	Stormwater outfalls: _____
			Instream monitoring sites: _____

**3. OWNER**

NAME City of Portage Des Sioux		EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE (636) 753-2335
ADDRESS PO Box 118		CITY Portage Des Sioux	STATE MO
		ZIP CODE 63373	
3.1	Request review of draft permit prior to public notice? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
3.2	Are you a publicly owned treatment works? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
	If yes, is the Financial Questionnaire attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
3.3	Are you a privately owned treatment works? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
3.4	Are you a privately owned treatment facility regulated by the Public Service Commission? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		

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

NAME City of Portage Des Sioux		EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE (636) 753-2335
ADDRESS PO Box 118		CITY Portage Des Sioux	STATE MO
		ZIP CODE 63373	

If the continuing authority is different than the owner, include a copy of the contract agreement between the two parties and a description of the responsibilities of both parties within the agreement.

**5. OPERATOR**

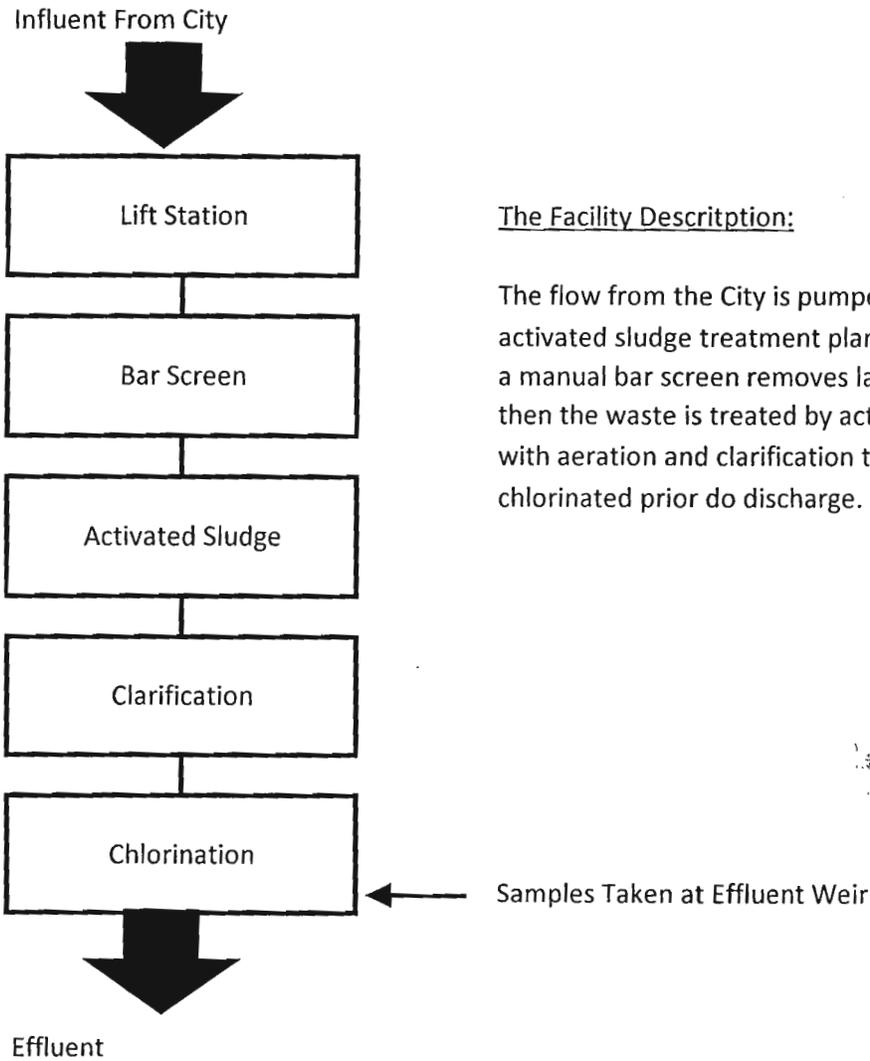
NAME Everette Jones	TITLE Operator	CERTIFICATE NUMBER 5764
EMAIL ADDRESS everette@joneswater.com		TELEPHONE NUMBER WITH AREA CODE (314) 486-4606

**6. FACILITY CONTACT**

NAME <u>Mark Warner</u>		TITLE <u>Mayor</u>	
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE <u>636-753-2235</u>	
ADDRESS <u>City Hall</u>	CITY <u>Portage Des Sioux</u>	STATE <u>MO</u>	ZIP CODE <u>63373</u>

**7. DESCRIPTION OF FACILITY**

**7.1 Process Flow Diagram or Schematic:** Provide a diagram showing the processes of the treatment plant. Show all of the treatment units, including disinfection (e.g. – chlorination and dechlorination), influents, and outfalls. Specify where samples are taken. Indicate any treatment process changes in the routing of wastewater during dry weather and peak wet weather. Include a brief narrative description of the diagram. Attach sheets as necessary.

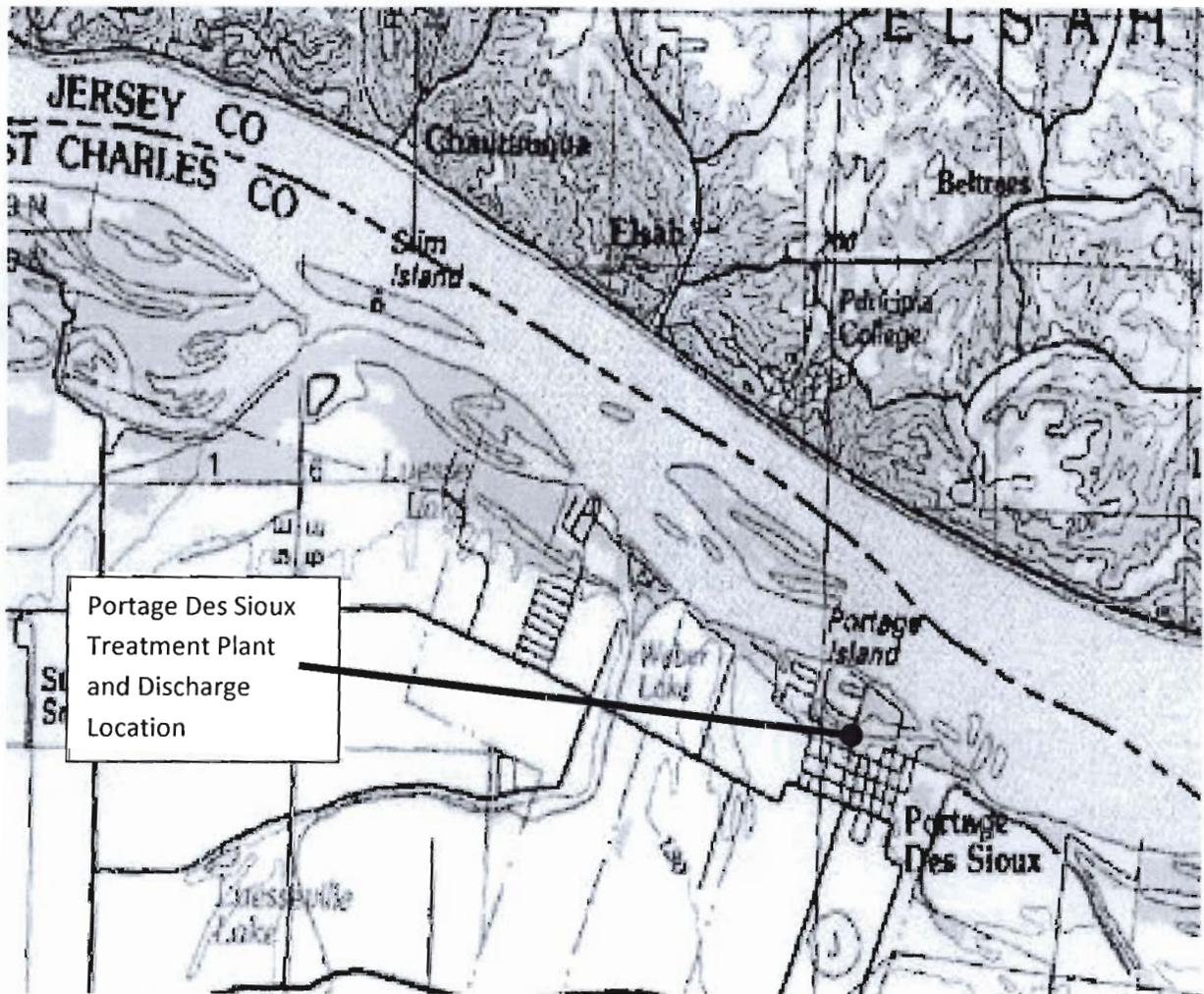


The Facility Description:

The flow from the City is pumped into the activated sludge treatment plant where a manual bar screen removes large debris then the waste is treated by activated sludge with aeration and clarification then chlorinated prior do discharge.

**7.2** Attach an aerial photograph or USGS topographic map showing the location of the facility and outfall.

7.2 – Portage Des Sioux Facility and Discharge Location Map



**8. ADDITIONAL FACILITY INFORMATION**

8.1 Facility SIC code: 4952 Discharge SIC code: 4952

8.2 Number of people presently connected or population equivalent (P.E.) 328 Design P.E. 354

8.3 Connections to the facility:

Number of units presently connected:

Homes 138 Trailers \_\_\_\_\_ Apartments \_\_\_\_\_ Other (including industrial) \_\_\_\_\_

Number of commercial establishments: 3 \_\_\_\_\_

8.4 Design flow: 30,000 gpd Actual flow: 15,000 gpd average

8.5 Will discharge be continuous through the year?  Yes  No

Discharge will occur during the following months:

How many days of the week will discharge occur? 7

8.6 Is industrial wastewater discharged to the facility?  Yes  No

If yes, attach a list of the industries that discharge to your facility

8.7 Does the facility accept or process leachate from landfills?  Yes  No

8.8 Is wastewater land applied?  Yes  No

If yes, is Form I attached?  Yes  No

8.9 Does the facility discharge to a losing stream or sinkhole?  Yes  No

8.10 Has a wasteload allocation study been completed for this facility?  Yes  No

**9. LABORATORY CONTROL INFORMATION****LABORATORY WORK CONDUCTED BY PLANT PERSONNEL**

Lab work conducted outside of plant.  Yes  No

Push-button or visual methods for simple test such as pH, settleable solids.  Yes  No

Additional procedures such as dissolved oxygen, chemical oxygen demand, biological oxygen demand, titrations, solids, volatile content.  Yes  No

More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.  Yes  No

Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph.  Yes  No

**10. COLLECTION SYSTEM**

10.1 Length of pipe in the sewer collection system? \_\_\_\_\_ Feet, or 2.5 Miles (either unit is appropriate)

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

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

The City smoke tested the sewer system and included the problem areas in the current improvement project to be lined and grouted.

**11. BYPASSING**

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

If yes, explain:

**12. SLUDGE HANDLING, USE AND DISPOSAL**

12.1 Is the sludge a hazardous waste as defined by 10 CSR 25?  Yes  No

12.2 Sludge production, including sludge received from others: 17.0 Design dry tons/year 8.85 Actual dry tons/year

12.3 Capacity of sludge holding structures:  
 Sludge storage provided: \_\_\_\_\_ cubic feet; \_\_\_\_\_ days of storage; \_\_\_\_\_ average percent solids of sludge;  
 No sludge storage is provided.  Sludge is stored in lagoon.

12.4 Type of Storage:  Holding tank  Building  
 Basin  Lagoon  
 Concrete Pad  Other (Describe) \_\_\_\_\_

12.5 Sludge Treatment:  
 Anaerobic Digester  Lagoon  Composting  
 Storage Tank  Aerobic Digester  Other (Attach description)  
 Lime Stabilization  Air or Heat Drying

12.6 Sludge Use or Disposal:  
 Land Application  Surface Disposal (Sludge Disposal Lagoon, Sludge held for more than two years)  
 Contract Hauler  Hauled to Another treatment facility  
 Incineration  Sludge Retained in Wastewater treatment lagoon  
 Solid waste landfill

12.7 Person responsible for hauling sludge to disposal facility:  
 By applicant  By others (complete below)

NAME <i>Commercial Pumping Systems</i>		EMAIL ADDRESS	
ADDRESS <i>2508 Bethmen Rd.</i>	CITY <i>St. Charles</i>	STATE <i>MO</i>	ZIP CODE <i>63302</i>
CONTACT PERSON <i>Lisa Highfill</i>	TELEPHONE NUMBER WITH AREA CODE <i>636-255-0009</i>	PERMIT NO. MO-	

12.8 Sludge use or disposal facility  
 By applicant  By others (Complete below.)

NAME <i>Merrill Bros</i>		EMAIL ADDRESS	
ADDRESS <i>6400 McKissock Ave.</i>	CITY <i>St. Louis</i>	STATE <i>MO</i>	ZIP CODE <i>63147</i>
CONTACT PERSON <i>Ty Thomas</i>	TELEPHONE NUMBER WITH AREA CODE <i>574-699-7782</i>	PERMIT NO. MO- <i>1043376500-21</i>	

12.9 Does the sludge or biosolids disposal comply with federal sludge regulations under 40 CFR 503?  
 Yes  No (Explain)

**13. CERTIFICATION**

I certify that I am familiar with the information contained in the application, that to the best of my knowledge and belief such information is true, complete and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders and decisions, subject to any legitimate appeal available to applicant under the Missouri Clean Water Law.

NAME (TYPE OR PRINT) <i>Mark D. Warner</i>	OFFICIAL TITLE <i>Mayor</i>	TELEPHONE NUMBER WITH AREA CODE <i>636-753-2235</i>
SIGNATURE <i>Mark D Warner</i>		DATE SIGNED <i>1-5-16</i>

RECEIVED

CA# 3410 Returned - NO Fee Due 1<sup>st</sup> time of Renewal  
 JAN 12 2016



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM  
**FORM B: APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW LESS THAN OR EQUAL TO 100,000 GALLONS PER DAY**

FOR AGENCY USE ONLY	
CHECK NUMBER	
DATE RECEIVED	FEE SUBMITTED
1-12-16	

**READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM**

**1. THIS APPLICATION IS FOR:**

An operating permit for a new or unpermitted facility. Construction Permit # \_\_\_\_\_  
 (Include completed antidegradation review or request for antidegradation review, see instructions)

A new site-specific operating permit formerly general permit #MOG \_\_\_\_\_

A site-specific operating permit renewal: Permit #MO- \_\_\_\_\_ Expiration Date \_\_\_\_\_

A site-specific operating permit modification: Permit #MO- 0107328 Reason: Facility Upgrade

General permit (MOGD - Non POTWs discharging < 50,000 GPD or MOG823 - Land Application of Domestic Wastewater):  
 Permit #MO- \_\_\_\_\_ Expiration Date \_\_\_\_\_

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

**2. FACILITY**

NAME City of Portage Des Sioux Wastewater Treatment Plant		TELEPHONE NUMBER WITH AREA CODE (636) 753-2335	
ADDRESS (PHYSICAL) NE Corner of 2nd Street and LeClair Street		CITY Portage Des Sioux	STATE MO
		ZIP CODE 63373	
<b>2.1</b>	Legal description: <u>Survey 154</u> 1/4, 1/4, 1/4, Sec. , T , R	County <u>St. Charles</u>	
<b>2.2</b>	UTM Coordinates Easting (X): Northing (Y): For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)	<u>(X) 864,409.351</u> <u>(Y) 4,126,570.759</u>	
<b>2.3</b>	Name of receiving stream: Mississippi River		
<b>2.4</b>	Number of outfalls: <u>1</u>	Wastewater outfalls: 1	Stormwater outfalls: Instream monitoring sites:

**3. OWNER**

NAME City of Portage Des Sioux		EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE (636) 753-2335	
ADDRESS PO Box 118		CITY Portage Des Sioux	STATE MO	ZIP CODE 63373	
<b>3.1</b>	Request review of draft permit prior to public notice?		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
<b>3.2</b>	Are you a publicly owned treatment works?		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
	If yes, is the Financial Questionnaire attached?		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
<b>3.3</b>	Are you a privately owned treatment works?		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
<b>3.4</b>	Are you a privately owned treatment facility regulated by the Public Service Commission?		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		

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

NAME City of Portage Des Sioux		EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE (636) 753-2335	
ADDRESS PO Box 118		CITY Portage Des Sioux	STATE MO	ZIP CODE 63373	

If the continuing authority is different than the owner, include a copy of the contract agreement between the two parties and a description of the responsibilities of both parties within the agreement.

**5. OPERATOR**

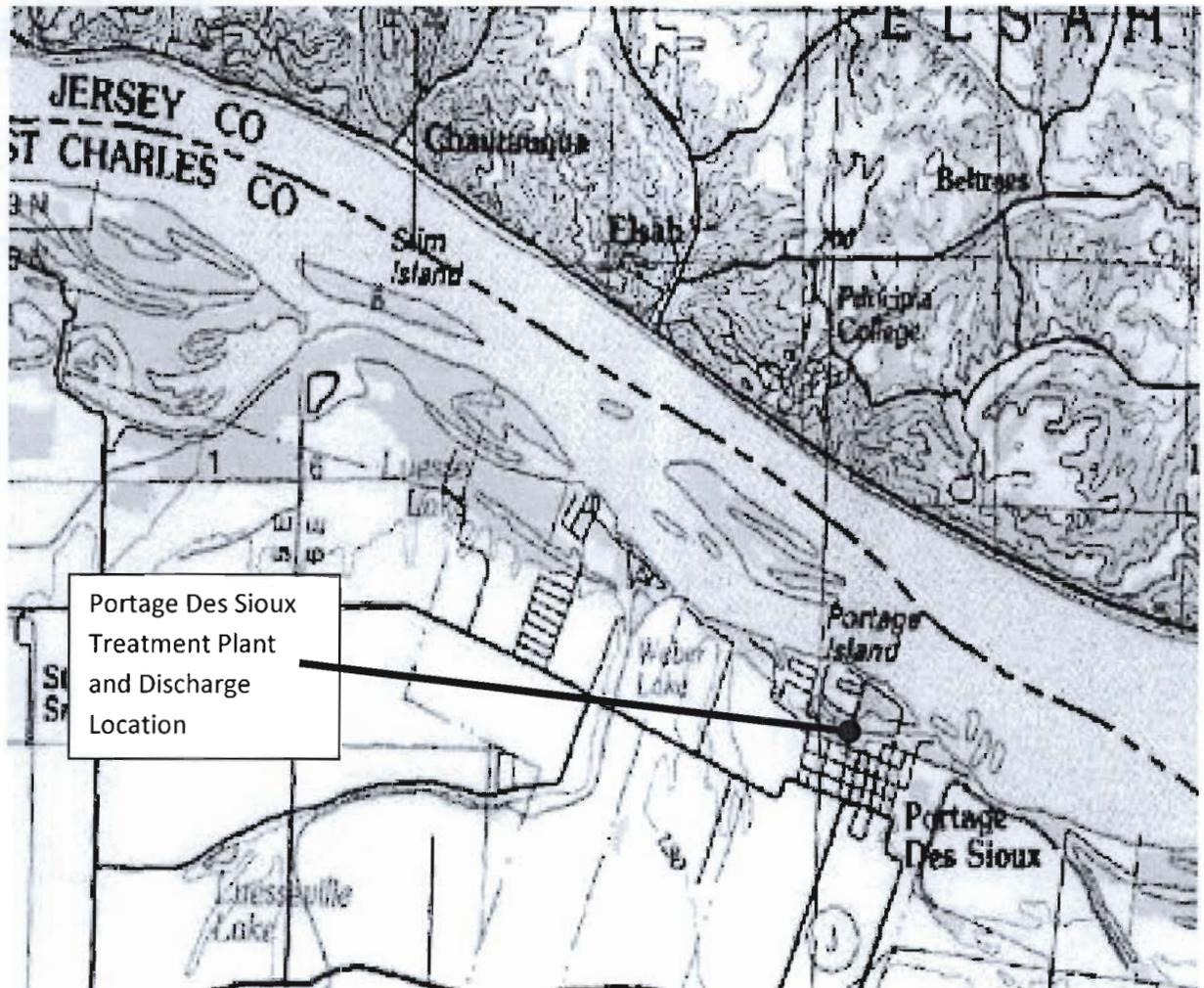
NAME Everette Jones	TITLE Operator	CERTIFICATE NUMBER 5764
EMAIL ADDRESS everette@joneswater.com		TELEPHONE NUMBER WITH AREA CODE (314) 486-4606

**6. FACILITY CONTACT**

NAME <u>Mark Warner</u>		TITLE <u>Mayor</u>	
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE <u>636-753-2235</u>	
ADDRESS <u>City Hall</u>	CITY <u>Portage Des Sioux</u>	STATE <u>MO</u>	ZIP CODE <u>63373</u>



7.2 – Portage Des Sioux Facility and Discharge Location Map



**8. ADDITIONAL FACILITY INFORMATION**8.1 Facility SIC code: 4952 Discharge SIC code: 4952

8.2 Number of people presently connected or population equivalent (P.E.) 328 Design P.E. 560

8.3 Connections to the facility:

Number of units presently connected:

Homes 138 Trailers \_\_\_\_\_ Apartments \_\_\_\_\_ Other (including industrial) \_\_\_\_\_

Number of commercial establishments: 3 \_\_\_\_\_

8.4 Design flow: 56,000 Actual flow:

8.5 Will discharge be continuous through the year?  Yes  No

Discharge will occur during the following months:

How many days of the week will discharge occur? 78.6 Is industrial wastewater discharged to the facility?  Yes  No

If yes, attach a list of the industries that discharge to your facility

8.7 Does the facility accept or process leachate from landfills?  Yes  No8.8 Is wastewater land applied?  Yes  NoIf yes, is Form I attached?  Yes  No8.9 Does the facility discharge to a losing stream or sinkhole?  Yes  No8.10 Has a wasteload allocation study been completed for this facility?  Yes  No**9. LABORATORY CONTROL INFORMATION**

## LABORATORY WORK CONDUCTED BY PLANT PERSONNEL

Lab work conducted outside of plant.  Yes  NoPush-button or visual methods for simple test such as pH, settleable solids.  Yes  NoAdditional procedures such as dissolved oxygen, chemical oxygen demand, biological oxygen demand, titrations, solids, volatile content.  Yes  NoMore advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.  Yes  NoHighly sophisticated instrumentation, such as atomic absorption and gas chromatograph.  Yes  No**10. COLLECTION SYSTEM**10.1 Length of pipe in the sewer collection system? \_\_\_\_\_ Feet, or 2.5 Miles (either unit is appropriate)10.2 Does significant infiltration occur in the collection system?  Yes  No

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

The City smoke tested the sewer system and included the problem areas in the current improvement project to be lined and grouted.

**11. BYPASSING**Does any bypassing occur in the collection system or at the treatment facility?  Yes  No

If yes, explain:

**12. SLUDGE HANDLING, USE AND DISPOSAL**

12.1 Is the sludge a hazardous waste as defined by 10 CSR 25?  Yes  No

12.2 Sludge production, including sludge received from others: 18.23 Design dry tons/year 8.85 Actual dry tons/year

12.3 Capacity of sludge holding structures:  
 Sludge storage provided: 1680 cubic feet; \_\_\_\_\_ days of storage; \_\_\_\_\_ average percent solids of sludge;  
 No sludge storage is provided.  Sludge is stored in lagoon.

12.4 Type of Storage:  Holding tank  Building  
 Basin  Lagoon  
 Concrete Pad  Other (Describe) \_\_\_\_\_

12.5 Sludge Treatment:  
 Anaerobic Digester  Lagoon  Composting  
 Storage Tank  Aerobic Digester  Other (Attach description)  
 Lime Stabilization  Air or Heat Drying

12.6 Sludge Use or Disposal:  
 Land Application  Surface Disposal (Sludge Disposal Lagoon, Sludge held for more than two years)  
 Contract Hauler  Hauled to Another treatment facility  
 Incineration  Sludge Retained in Wastewater treatment lagoon  
 Solid waste landfill

12.7 Person responsible for hauling sludge to disposal facility:  
 By applicant  By others (complete below)

NAME: Commercial Pumping Systems EMAIL ADDRESS: \_\_\_\_\_

ADDRESS: 2508 Bethmer Rd CITY: St. Charles STATE: MO ZIP CODE: 63302

CONTACT PERSON: Lisa Highfill TELEPHONE NUMBER WITH AREA CODE: 636-255-0009 PERMIT NO. MO- \_\_\_\_\_

12.8 Sludge use or disposal facility  By applicant  By others (Complete below.)

NAME: Memell Boos EMAIL ADDRESS: \_\_\_\_\_

ADDRESS: 6400 McMissock Ave. CITY: St. Louis STATE: MO ZIP CODE: 63147

CONTACT PERSON: Ty Thomas TELEPHONE NUMBER WITH AREA CODE: 574-688-7782 PERMIT NO. MO- 1043376500-2.1

12.9 Does the sludge or biosolids disposal comply with federal sludge regulations under 40 CFR 503?  
 Yes  No (Explain)

**13. CERTIFICATION**

I certify that I am familiar with the information contained in the application, that to the best of my knowledge and belief such information is true, complete and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders and decisions, subject to any legitimate appeal available to applicant under the Missouri Clean Water Law.

NAME (TYPE OR PRINT): Mark D. Warner OFFICIAL TITLE: Mayor TELEPHONE NUMBER WITH AREA CODE: 636-753-2235

SIGNATURE: Mark D. Warner DATE SIGNED: 1-5-16



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM  
**FINANCIAL QUESTIONNAIRE**

RECEIVED

JAN 12 2016

Water Protection Program

<b>NOTE ►</b>	<b>FINANCIAL INFORMATION THAT IS NOT PROVIDED THROUGH THIS FORM WILL BE OBTAINED BY THE DEPARTMENT FROM READILY AVAILABLE SOURCES.</b>	
<b>1. GENERAL INFORMATION</b>		
FACILITY NAME City of Portage Des Sioux Wastewater Treatment Plant	PERMIT NUMBER #MO- 0107328	
CITY Portage Des Sioux	COUNTY St. Charles	
<input checked="" type="checkbox"/> PERMIT RENEWAL/MODIFICATION <input type="checkbox"/> STATE REVOLVING FUND APPLICATION	SRF PROJECT NUMBER (IF APPLICABLE) C295	
<b>2. GENERAL FINANCIAL INFORMATION (ALL FACILITIES)</b>		
2.1 Number of connections to the facility: Residential <u>138</u> Commercial <u>3</u> Industrial <u>0</u>		
2.2 Current sewer user rate: Based on a 5,000 gallon per month usage    \$ <u>63.89</u>	The sewer user rate is (check one): <input checked="" type="checkbox"/> Rate Capacity (set rate) <input type="checkbox"/> Pay as You Go	
2.3 Current operating costs for the facility (excludes depreciation):	\$78,539.68	
2.4 Bond Rating (if applicable):	n/a	
2.5 Bonding Capacity: <i>General obligation bond capacity allowed by constitution: cities=up to 20% of taxable tangible property; sewer districts=up to 5% of taxable tangible property</i>	20%	
2.6 Current outstanding debt relating to wastewater collection and treatment: <i>Debt information is typically available from your community's annual financial statements</i>	0	
2.7 Amount of current user rate per household per month used toward payments on wastewater debt:	0	
2.8 Net direct debt: <i>Net direct debt is the total amount of outstanding general obligation debt, including notes and short-term financing.</i>	0	
2.9 Overlapping debt: <i>Overlapping debt is the financial obligations of one political jurisdiction that also falls partly on a nearby jurisdiction.</i>	0	
2.10 Overall net debt: <i>Overall net debt is defined as debt repaid by property taxes within a utility/municipality's service area. It excludes debt that is repaid by special user fees (e.g. revenue bonds). Overall net debt = Net direct debt + Overlapping debt. Debt information is typically available from your community's annual financial statements</i>	0	
2.11 Attach any relevant financial statements.		
<b>3. FINANCIAL INFORMATION SPECIFIC TO MUNICIPALITIES</b>		
3.1 Municipality's Full Market Property Value (FMPV): <i>FMPV data is typically available through your community or state assessor's office</i>	\$3,642,134.00	
3.2 Municipality's property tax revenues: <i>Property tax revenues are typically available from your community's annual financial statements</i>	\$42,977.45	
3.3 Municipality's property tax collection rate: <i>To determine the collection rate, you will need to divide property tax revenues by the property taxes levied. To calculate property taxes levied, multiply the assessed value of real property within your community/service area by the property tax rate. This information is typically available through your community or state assessor's office. Property tax revenues are typically available in your community's annual financial statements.</i>	0.6900	

**4. FINANCIAL INFORMATION SPECIFIC TO SEWER DISTRICTS**

4.1 Total connections to the sewer district: Residential \_\_\_\_\_ Commercial \_\_\_\_\_ Industrial \_\_\_\_\_

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

**5. OTHER CONSIDERATIONS (ALL FACILITIES)**

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

None

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

None

**6. CERTIFICATION**

FINANCIAL CONTACT

*Mark D. Warner*

OFFICIAL TITLE

*Mayor*

EMAIL ADDRESS

TELEPHONE NUMBER WITH AREA CODE

*636-753-2235*

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

OWNER OR AUTHORIZED REPRESENTATIVE

*Mark D. Warner*

OFFICIAL TITLE

*Mayor*

SIGNATURE

*Mark D. Warner*

DATE SIGNED

*1-5-16*

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

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

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

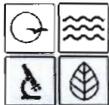
This completed form and any attachments should be submitted to one of the following:

For Submittal of Permit Renewal/Modification:

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

For Submittal of SRF Applications:

Department of Natural Resources  
Water Protection Program  
ATTN: Financial Assistance Center  
P.O. Box 176  
Jefferson City, MO 65102



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

1. Are there any significant transportation corridors within 20 miles of your community?  
 If yes, please explain. (Example: major interstate, railroad center)  
 Interstate 270, Interstate 70, MO 370, Mississippi River

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

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

<b>Elementary</b>	<input type="checkbox"/> Within your community	<input checked="" type="checkbox"/> Within 20 miles	<input type="checkbox"/> Farther than 20 miles
<b>Middle School</b>	<input type="checkbox"/> Within your community	<input checked="" type="checkbox"/> Within 20 miles	<input type="checkbox"/> Farther than 20 miles
<b>High School</b>	<input type="checkbox"/> Within your community	<input checked="" type="checkbox"/> Within 20 miles	<input type="checkbox"/> Farther than 20 miles

4. Considering your community's tax base, debt level, ability to bond capital improvement projects, or repay loans, how likely is it that your community could afford to pay for the following:	Very Unlikely	Unlikely	Likely	Very Likely
4.1 An upgrade or replacements to your wastewater system costing \$50,000				✓
4.2 An upgrade or replacements to your wastewater system costing \$250,000				✓
4.3 An upgrade or replacements to your wastewater system costing \$1 million	✓			

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

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

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

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

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

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

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

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

6.7 It is \_\_\_\_\_ for the community to meet its debt obligations.  
 Difficult     Somewhat Difficult     Somewhat Easy     Easy     No Debt

7. What other issues or information should be considered when determining population stability or the financial ability for your community to pay for significant capital investments? Attach sheets as necessary.  
 (Example: Seasonal population changes, natural resources (lakes, rivers), age of infrastructure, significant employment changes, etc.)  
 None

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



# MECO ENGINEERING COMPANY

3120 PALMYRA ROAD HANNIBAL, MO 63401 PHONE: (573) 221-4048 FAX: (573) 221-4377

366-004

October 29, 2015

JBM

## CITY OF PORTAGE DES SIOUX WASTEWATER TREATMENT PLANT AND COLLECTION SYSTEM IMPROVEMENTS

NO.	DESCRIPTION	QUANTITIES	UNITS	CONTRACT UNIT COST	TOTAL
1	MECHANICAL PLANT EQUIPMENT	1	LS	\$350,000.00	\$ 350,000.00
2	CONCRETE BASIN(S)	1	LS	\$200,000.00	\$ 200,000.00
3	EQUIPMENT INSTALLATION AND START UP	1	LS	\$250,000.00	\$ 250,000.00
4	DEMOLITION OF EXISTING PLANT	1	LS	\$50,000.00	\$ 50,000.00
5	LIFT STATION MODIFICATION	1	LS	\$125,000.00	\$ 125,000.00
6	SEWER FORCE MAIN	1	LS	\$7,500.00	\$ 7,500.00
7	NEW MANHOLES	3	EA	\$5,000.00	\$ 15,000.00
8	STORM SEWER REALIGNMENT	1	LS	\$75,000.00	\$ 75,000.00
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>					<b>\$ 1,072,500.00</b>

### WASTEWATER COLLECTION SYSTEM IMPROVEMENTS

NO.	DESCRIPTION	QUANTITIES	UNITS	CONTRACT UNIT COST	TOTAL
1	PRE-LINING CCTV INSPECTION AND CLEANING	2367	LF	\$5.00	\$ 11,835.00
2	GRAVITY SEWER MAIN GROUTING	500	LF	\$15.00	\$ 7,500.00
3	LATERAL GROUTING	27	EA	\$800.00	\$ 21,600.00
4	CIPP GRAVITY SEWER LINING	2367	LF	\$38.00	\$ 89,946.00
5	FINAL MAIN LINE CCTV INSPECTION	2367	LF	\$1.50	\$ 3,550.50
<b>ESTIMATED CONSTRUCTION COST SUB-TOTAL</b>					<b>\$ 134,431.50</b>
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>					<b>\$ 1,206,931.50</b>

TOTAL PROJECT COSTS AND CONSTRUCTION COSTS PROVIDED HEREIN ARE MADE ON THE BASIS OF ENGINEER'S EXPERIENCE AND QUALIFICATIONS AND REPRESENT THE ENGINEER'S BEST JUDGMENT. HOWEVER, THE ENGINEER CANNOT AND DOES NOT GUARANTEE THAT BIDS OR ACTUAL TOTAL PROJECT OR CONSTRUCTION COSTS WILL NOT VARY FROM THE ESTIMATE OF PROBABLE CONSTRUCTION COST. THIS ESTIMATE IS INTENDED TO ASSIST IN BUDGETARY ASSESSMENT AND DOES NOT GUARANTEE THAT ACTUAL PROJECT COSTS WILL NOT EXCEED OR BE LOWER THAN THE AMOUNTS STATED IN THIS ESTIMATE.

**DIVISION 11 - EQUIPMENT****SECTION 11860****PACKAGED BIOLOGICAL WASTEWATER TREATMENT PLANT****1.00 GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 1 Specification Sections, apply to this Section.

**1.02 DESCRIPTION OF WORK**

- A. The contractor shall furnish and install one package biological wastewater treatment system, complete and ready for operation in accordance with the plans and specifications stated herein. The wastewater treatment system shall include one (1) Tipton Series Model TEII-560-PIPFESHAMCC equipment package for a concrete extended aeration process wastewater treatment system as manufactured by RWL WATER USA, Golden Valley, Minnesota, U.S.A. All concrete structures shall be provided by the contractor. The package wastewater treatment system will have a total design flow of 56,000 gallons per day domestic waste. The aeration chamber shall have a volume of 84,000 gallons. The clarifier shall be of the circular mechanical type based on a four hour retention of the average design flow. The package wastewater treatment system shall include the necessary tank vessels, internal piping, valving, weirs, baffles and all items of equipment as listed below. The secondary treatment system shall be complete with a flow equalization chamber, sludge holding, dual anoxic zones, aeration chamber and a gravity hopper type clarifier chamber and with tablet type chlorination. The secondary treatment system shall be complete with all necessary tank vessels, component equipment necessary for efficient and proper plant operation. The electrical power shall be 230 volt, 3 phase 60 Hz.
- B. The equipment package for the concrete wastewater treatment system shall be factory prefabricated and assembled, so far as possible, taking into consideration shipping and erection limitations. Because of the total system length the equipment shall be shipped to the project site in several truckloads.
- C. The basic equipment furnished by the manufacturer shall include, but not be limited to, internal piping and valving, blower motor unit assemblies, service walkways, pumps and electrical control equipment.
- D. The plans and specifications have been based on the Tipton Series wastewater treatment system equipment package, as manufactured by RWL Water USA., Golden Valley, Minnesota, U.S.A.
- E. General Contractor Field Services - The General Contractor shall perform the installation of the TIPTON Series wastewater treatment system, supplying and installing all concrete tank structures. The following is a brief description of the general contractor's responsibilities regarding the installation:
1. Provide a concrete foundation pad for the system.
  2. Provide a crane and other equipment for off loading and setting of the wastewater treatment system equipment.
  3. Once the system has been set into position the equipment which has been disconnected for shipping such as the piping, valving, grating, handrails and electrical controls must be reassembled.
  4. The general contractor's electrical field crew shall install at the location shown on the drawings the electrical consoles such as; Model CP-1 (Main Control Panel), CP-2 (flow equalization) and CP-3 (Mechanical Clarifier Drive Unit). In addition, they shall run the electrical wiring and conduit to the appropriate ancillary components within the wastewater treatment structure.

5. All areas requiring touch up painting shall be painted by the Contractors field crew.
6. An adequate access road to the plant site shall be provided to enable the lowboy truck into the project site and for off loading.
7. Provide facilities and crane for off loading and setting of the wastewater treatment system and it's ancillary equipment onto its concrete foundation pad.
8. All site utilities to the system shall be tied-in to the system. The electrical power requirements shall be provided at each power block of each control console. The main power to the wastewater treatment system shall be supplied through an electrical power meter, main disconnect, and disconnect for the sub-panels – CP-1 CP-2 and CP-3. This disconnect shall be supplied by the owner's field electrical contractor. Any of the sub-panels shall be supplied with a power block to receive the electrical power from these disconnects. The power shall be 230 volts, 3 phase, 60 Hz. A total of three sub-panels, shall be provided. The necessary control voltage of 120 volt, 1 phase for the ancillary equipment shall be obtained through transformers.
9. The foundation pad, with anchor facilities, for setting the system on shall be furnished by the field contractor.
10. Finish grade and placement of gravel around the clarifier shall be performed by the field contractor. Clarifier walls and floor shall be provided in concrete by the field contractor.
11. All field piping and wiring shall be by the field contractor.

### **1.03 DEFINITIONS (NONE)**

### **1.04 PERFORMANCE REQUIREMENTS**

- A. The wastewater treatment system will have a total design flow of 56,000 gallons per day of domestic wastewater. All chambers shall be constructed of concrete and shall be supplied by the contractor. The following design criteria were used in sizing the wastewater treatment system:
1. Flow Equalization Chamber Criteria
    - a) Aeration Chamber Holding Volume = 16000 gallons
    - b) Air Supplied = One (1) blowers at 50 SCFM @ 5 psi
    - c) Controlled by a time clock
  2. Aeration Chamber Criteria
    - a) Aeration Chamber Holding Volume = 84,000 gallons
    - b) Air Supplied = Two (2) blowers at 550 SCFM @ 5 psi each
    - c) Controlled by a time clock
  3. Sludge Holding Criteria
    - a) Holding Volume = 21,000 gallons
    - b) Air Supplied from main blower motor units
  4. Pre-Anoxic Criteria

a) Holding Volume = 7,000 gallons

5. Clarifier Criteria

- a) Design Flow Rate = 56,000 GPD
- b) Clarifier Chamber Dimensions = 15' diameter with a 12' SWD
- c) Circular Mechanical type
- d) One (1) Sludge return system for clarifier
- e) One (1) Bridge with walkway
- f) One (1) Stilling Well
- g) One (1) Drive Unit with controls
- h) One (1) Rake assembly
- i) Air Supplied for clarifier from main secondary blower units

6. Post Anoxic Criteria

a) Holding Volume = 7,000 gallons

7. Chlorine Contact Chamber Criteria

- a) Holding Volume = 1166 gallons
- b) One (1) Hypo-chlorination unit

**1.05 SUBMITTALS**

A. Product Data: Include the following:

- 1. Product literature
- 2. Manuals
- 3. Complete product description
- 4. Affidavits of compliance with referenced standards and codes.
- 5. Manufacturer's warranty
- 6. A list of all deviations from drawings and specifications.

B. Shop Drawings: All shop drawing submittals shall be in accordance with the General Conditions and Division 1 and include the following:

- 1. Dimensions and required clearances
- 2. Weights and forces
- 3. Layout for all equipment including installation details

C. Operation and Maintenance Data: Two (2) copies of the manufacturer's Maintenance and Operating Instructions Manual shall be provided with the equipment at the time of delivery. Three (3) copies that include all revisions made during start-up shall be provided after final acceptance.

D. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

E. Control Panel Submittal: A master wiring diagram for the control panel shall be submitted for Engineer's review and approval before beginning construction. This diagram shall be drawn in standard ladder logic format. All ladder rungs shall be numbered in the left hand margin, and all relay contacts referenced to these numbers in the right hand margin. Each electrical node in the control schematic shall have a different wire number. A bill of materials and a layout drawing shall be placed in the door (or inner door or inner bracket). All components shall appear on this drawing with a listing of nameplates pertaining to the

components. Included in the submittal package shall be data sheets of all equipment used in the control panel, as listed in the bill of materials. Submittal drawings may be on 11" x 17" paper.

- F. Control Panel As-Built Drawing: Final As-Built drawings shall be on full-size 17" x 22" or 24" or 36" paper, as required. A waterproof reduced copy of the master "as-built" wiring diagram shall be laminated in clear plastic and permanently fastened to the inside of the panel door. As-built drawing shall be placed in the panel.

#### 1.06 QUALITY ASSURANCE

- A. In order to assure uniform quality, ease of maintenance and minimal parts storage, it is the intent of these specifications that all equipment called for under this Section shall be supplied by a single manufacturer. The equipment manufacturer shall, in addition to the Contractor, assume the responsibility for proper installation and functioning of the equipment.
- B. The Contract Documents represent the minimum acceptable standards for equipment specified in this section on this project. All equipment shall conform fully in every respect to the requirements of the respective parts and sections of the drawings and specifications. If not named, the equipment which is a "standard product" with that manufacturer shall be modified, redesigned from the standard mode and shall be furnished with special features, accessories, materials of construction or finishes as may be necessary to conform to the quality mandated by the technical and performance requirements of the specification.
- C. Factory Tests: Manufacturer shall factory assemble equipment to detect any defects and demonstrate that they will function satisfactory under all conditions specified. Manufacturer shall prepare and submit a written report on the results of remedial action taken, if any.
  - 1. Pump Test: The pump manufacturer shall perform the following inspections and tests on each pump before shipment from factory:
    - a) Impeller, motor rating, and electrical connections shall first be checked for compliance to the customer's purchase order.
    - b) A motor and cable insulation test for moisture content or insulation defects.
    - c) Prior to submergence, the pump shall be run dry to establish correct rotation and mechanical integrity.
    - d) The pump shall be ran for 30 minutes submerged a minimum of 6 feet under water.
    - e) After Operational Test (d.), the Insulation Test (b.) is to be performed again.
  - 2. A written report stating the foregoing have been done, shall be supplied with each pump at the time of shipment. The pump cable end will then be fitted with a shrink fit rubber boot to protect it prior to electrical installation.
- D. Reference Standards: Comply with all applicable provisions and recommendations of the following, except as otherwise shown or specified.
  - 1. National Electrical Code (NEC).
  - 2. National Electrical Manufacturers Association (NEMA)
  - 3. Occupational Safety and Health Act (OSHA)
  - 4. American Society of Testing and Materials (ASTM)
  - 5. American Welding Society (AWS)
  - 6. American Institute of Steel Construction (AISC)
  - 7. American Society of Civil Engineers (ASCE)
  - 8. Steel Structures Painting Council (SSPC)
  - 9. American Gear Manufacturers Association (AGMA)

10. American National Standards Institute (ANSI)

### 1.07 DELIVERY, STORAGE, AND HANDLING

A. Preparation for Transport: Prepare all equipment according to the following:

1. Ensure that all the equipment is dry and protected.
2. Package all the equipment to protect from damage while in transport, loading, and unloading.

B. Storage:

1. Carefully prepare for storage and label all equipment and materials after they have been inspected.
2. Store materials to permit easy access for inspection and identification. Support all material off of the ground and protect steel members and package material from corrosion and deterioration as per manufacturer's instructions.

C. Handling: Handle all equipment as per manufacturer's instructions.

D. Inspect all equipment and materials against reviewed shop drawings at the time of delivery.

E. Equipment and materials damaged or not meeting the requirements of the reviewed shop drawings shall be immediately returned for replacement or repair.

### 1.09 COORDINATION

A. Coordinate Work on this section with interfacing and adjoining Work for proper sequencing of each installation.

### 2.00 PRODUCTS

A. Flow Equalization System

1. To control the peak hourly flow rates a 16,000 gallon flow equalization system shall be provided at the influent end of the wastewater treatment system. The influent peak flow rates shall enter into the flow equalization system where it is held and aerated until the secondary treatment system is ready to process it. Once the influent has been received by the flow equalization chamber it shall be processed by dual flow equalization pumps, pumping it to the flow-proportioning chamber. This chamber shall be so designed that it will allow the average daily flow to be processed and pass through the chamber into the aeration chamber. To control the flow rate from the flow equalization pumps a series of a v-notch weir and a flat weir, which is adjustable, to be provided. The flow equalization control system shall be complete with bar screen, dual flow equalization pumps, liquid level control system, flow proportioning chamber, electrical controls, air blower, coarse air diffuser with air manifold.

RWL WATER USA shall provide the following equipment for the flow equalization chamber:

- |     |      |   |
|-----|------|---|
| (A) | One  | Flow Equalization Air Blower Unit, 50 SCFM @ 5 psi. 230/3/60        |
| (B) | One  | Flow Equalization Electrical Control Panel Model CP-2 230/3/60      |
| (C) | Four | Liquid Level Sensors, narrow angle type controlling the surge pumps |
| (D) | One  | Time clock for controlling the surge blower                         |
| (E) | One  | Lot of Coarse Air Diffusers with drop assemblies                    |
| (F) | Two  | Flow equalization pumps P-1, P-2 . 230/3/50                         |
| (G) | One  | Mechanical bar screen mounted atop the flow equalization chamber    |
| (H) | One  | Flow Proportioning Chamber  |

B. Inlet Connection

1. An influent connection to the wastewater system shall be provided. It shall consist of one 6" inlet entering into the flow equalization chamber. The influent shall be discharged into the bar screen

and the design flow shall be pumped from the flow equalization chamber to the flow proportioning chamber by dual flow equalization pumps.

C. Bar Screen

1. Bar screen shall be provided as shown on the contract drawings located in the flow equalization chamber. Its purpose is to remove any unusually large solids from the incoming crude sewage flow rate. The bar screen shall be fabricated from one-half inch diameter bars spaced one-inch apart and arranged as shown on the drawings. The bars shall be sloped to permit easy cleaning of accumulating debris. A large drying area shall be provided.

D. Air Supply for Flow Equalization system

1. For supplying the air requirements of the Flow Equalization System, one (1) Model BMU-50-R22 Blower Motor Unit shall be provided as shown on the drawings. The voltage shall be 230 volts, 3 phase, 60 Hz. The unit shall have the capacity of providing 100% of the air requirements for the flow equalization system. The blower unit shall be installed at the location shown on the drawings. The unit shall be completely factory built and tested before shipping. The blower unit shall be installed within one Fiberglass Enclosure complete with fiberglass hood. The inlet filter silencer, pressure relief valve, pressure gauge, with only the blower discharge rubber hose connection being provided as a single line hook up for the blower. The necessary electrical connection from the blower to CP-2 shall be provided and pre-wired. The enclosure shall have ivory finish. The blower motor enclosure unit shall be mounted on four (4) vibration pad dampers tagged VP-1. This will help reduce blower vibration and noise transmission. The Blower system shall be equipped with one 1" blower discharge pipe with a 1" marine rubber hose with stainless steel clamps.
2. The blower unit shall be a Model BMU-50-R22 shall be furnished for supplying all the air requirements needed for the flow equalization Basin. The unit shall be capable of delivering 50 SCFM at an operating pressure of 5 psi.
3. The blower shall be of the positive displacement type and shall manufactured by Roots Division of Dresser Industries, Inc., Connersville, Indiana or approval equal. The Model number of the blower will be a URAI-22 and equipped with a 1" discharge.
4. The motor shall be 2 Hp for operation on 460 volt, 3 phase, 60 Cycle Service, and 1800 RPM. The motor shall be of the TEFC type. The wiring to this motor from the control panel shall be provided and installed by the field contractor.
5. For determining the blower performance, and/or diffuser condition, a pressure relief valve and pressure gauge. These items shall be premounted and piped within the blower enclosure.

E. Electrical control Console CP-2

1. An electrical control center, for the flow equalization system shall be the Model CP-2. This control panel shall be installed within a NEMA 4X fiberglass electrical weatherproof enclosure complete with floor mounting facilities installation atop the package wastewater treatment system as shown on the drawings. The voltage shall be 230 volts, 3 phase, 60 Hz. and shall be supplied to each panel at the power block.
2. A step down transformer shall be supplied to step the electrical power down from 230 volt to 120-volt power for control voltages for the secondary power.
3. The electrical control center Model CP-2 shall control the operation of the following equipment:
  - a) Flow Equalization Blower Motor Unit BM-3, 2 HP, 230/3/60
  - b) Sludge Holding Blower motor unit BM-4, 2hp, 230/3/60.
  - c) Time Clock
  - d) Flow Equalization Pump No. 1: P-1, 3/4 HP, 230/3/60
  - e) Flow Equalization Pump No. 2: P-2, 3/4 HP, 230/3/60
  - f) Liquid level sensors -4 level sensors narrow angle

- g) Pre-anoxic mixer
4. Flow Equalization Blower Motor Unit - The Flow Equalization blower unit operation shall be controlled by the wide-angle liquid level condition of the flow equalization basin. The blower shall turn on when the on liquid level sensor side is activated on when the water level reach the on level and de-activates when the water level is lowered to the off level.
  5. Flow Equalization Tank Pumps Control - The Flow Equalization pumps shall operate on a duplex pump alternator operation I mode where as pump one will operate alternately with pump no 1 and 2 on cycles. The pump operation shall be controlled by four (4) encapsulated mercury float Switches (narrow angle) each individually adjustable for the following:
    - a) All Pumps off
    - b) Lead Pump on
    - c) Lag Pump on
    - d) High Level Alarm
  6. The Flow Equalization pumps shall operate on a lead-lag with the two pumps alternating. If the liquid level reaches lag pump on level, both pumps shall operate. If the liquid level reaches the high water level, the alarm will be activated.
  7. All wiring, terminal blocks, supports and accessories required for the operations of the control panel shall be provided in compliance with the National Electric Code.
  8. Flow Equalization Pumps Tagged P-1, P-2, The voltage shall be 460 volts, 3 phase, 60 Hz. The Flow Equalization pumps shall be of the Gould's submersible type. Each pump shall be as manufactured by the Gould's pump company, a Xylem Company. The pump shall have a 3/4 horsepower motor which will operate on 230 volt, 3 phase, 60 Hz. Each Flow Equalization pumps shall be supplied with a 2-inch discharge.
  9. For easy removal of the flow equalization pumps, a hoist shall be provided adjacent to the pump location.

F. Aeration Chamber

1. There shall be supplied an aeration chamber to work in conjunction with the clarifier chamber and sludge holding chamber of secondary treatment system. The aeration chamber shall conform to the following specifications:
2. The aeration chamber shall have a volume of 84,000 gallons. The vessel shall be shaped in such a way to prevent sludge accumulation, enhancing the rotation of the vessel contents, and to prevent scum and froth accumulation. To insure maximum retention time and eliminate short circuiting, the aeration chamber shall be constructed with air diffusers, placed longitudinally along one side of the chamber so as to, in conjunction with flow control baffles, enhance the spiral rotation of the chamber contents. To ensure adequate circulation velocity, the proportion of the chamber width to depth, in the direction of rotation, shall not exceed 1.33 to 1. The velocity of rotation shall be sufficient to scour the bottom and prevent sludge filleting. In addition prevent the escape of minuscule air diffusion bubbles to the surface, thus causing their entrapment to provide maximum oxygenation efficiency.
3. An air distribution manifold shall be installed longitudinally on one side of the tank with diffuser drop assemblies connected thereto. This manifold shall be designed to create a bank of air to supply the air needs of the system, and other ancillary equipment such as the air diffusers, airlift pumps, and scum skimmer to draw from this bank of air.
4. Each diffuser drop assembly shall be equipped with an air regulating and/or shutoff valve, a disconnecting union and air diffuser nozzles mounted on the tee. The airflow per diffuser shall range from 1 to 5 CFM. This minimum air velocity shall be maintained to insure sufficient velocity

for self-cleaning. The diffusers shall be parallel to and near the base of the vessel sidewall and at an elevation, which will provide the optimum diffusion and mixing of the vessel contents. The oxygen transfer capacity of each diffuser shall be such that an adequate supply of oxygen will be maintained in the aeration chamber to meet treatment requirements of the design sewage load. CYCLONE stainless steel coarse bubble diffusers shall be provided, as well as stainless steel air headers, and header supports as manufactured by RWL Water of Golden Valley, Minnesota, USA. Each diffuser shall be designed to provide wide band aeration. Air shall be released through a series of ports on the diffuser. The diffuser shall incorporate open ends to eliminate clogging. All air headers shall be constructed of thin wall stainless steel and shall minimize pressure drop.

The CYCLONE diffuser shall be diamond shape with a series of small air outlet ports on top of the diamond and a series of large air outlet ports on the lower portion of the diamond. The diamond construction shall promote bubble shear.

- a) The body of the diffuser shall be constructed of 304 stainless steel. A cast end cap shall be provided with an integral 3/4" NPT male pipe connection equivalent to schedule 80 pipe.
- b) A bottom deflector shall be incorporated into the diffuser to prevent foreign material from entering and clogging the air ports. The deflector shall deflect liquid across the outer walls of the diffuser and help shear bubbles as they rise.
- c) The diffuser ends shall be partially open to allow air to escape should the normal air ports be plugged. This open end arrangement shall prevent clogging and provide a different bubble pattern at the surface.
- d) A balancing orifice shall be provided as required within the 3/4" NPT male pipe connection to assure proper head loss and uniform distribution of the air throughout the system.

#### G. Mechanical Clarifier Chamber

1. There shall be furnished a mechanical clarifier chamber to work in conjunction with the aeration chamber and sludge holding chamber of the system. The mechanical clarifier chamber shall conform to the following specifications, with the concrete chamber being provided by the field contractor:

The mechanical clarifier chamber shall have proper baffling to prevent short-circuiting and to provide maximum uniform solids settling area. Wastewater shall enter the clarifier from the aeration chamber by a 4-inch inlet pipe.

The torque tube shall be 4 inch and shall be attached to the sludge collection equipment. The purpose of the sludge collection equipment is to scrape the settled sludge from the floor of the clarifier to the center well where it is picked up by the 4" airlift sludge return pump. Settled sludge shall be returned from the clarifier sludge well to the sludge holding chamber by the positive sludge return systems, consisting of airlift pump. A scum collection system shall be provided within the clarifier chamber. The clarifier effluent shall pass over the edge of the baffled adjustable effluent weir into the effluent trough and then, out of the system. The weir plate will be constructed of galvanized steel, and will be gasketed with neoprene strips.

The purpose of the stilling well is to reduce the influent velocity and prevent short-circuiting. The stilling well shall be fabricated of 1/4 inch steel plate rolled. It shall be supported off of the stilling well. There shall be supplied a drive unit complete with controls for rotating the rake arm of the system.

#### H. Airlift Sludge Recirculation System

PACKAGED BIOLOGICAL WASTEWATER TREATMENT PLANT

11860/8

1. Installed within the clarifier chamber for returning the settled sludge consisting of a positive sludge re-circulation system. It consists of one (1) 4" diameter airlift sludge return assembly meeting the following specifications: The airlift pump system shall have the This system shall allow the sludge to be directed to head of aeration chamber or sludge holding chamber. Re-circulation capacity ranging from 0% to 200% of the design flow. The airlift sludge pump shall be embedded in the floor of the mechanical clarifier by the concrete grout floor, which the contractor shall be providing. The air supply line and riser pipe of the mechanical clarifier sludge return pump shall be exterior to the tank sidewall. The air line supplying air to the pump shall be equipped with a regulating valve varying the capacity of the pump. The airlift pump shall be firmly supported and shall be equipped with a clean-out plug to allow for easy cleaning and maintenance.

#### **I. Airlift Scum Recirculation System**

1. Installed within the mechanical clarifier chamber for controlling, and returning to floatable and scum from the water surface of the clarifier is a positive scum and skimming system. This system shall consist of a skimmer arm, scum box, scum trough, collection well, and one, 3-inch diameter airlift skimming device.
2. For collecting the surface scum of the mechanical clarifier a scum wiper shall be attached to the torque tube. The scum wiper shall move in conjunction with the mechanical clarifier scraper mechanism pushing the floatable scum to the scum beach where the scum shall be pushed up the scum beach into the scum trough. The scum trough shall collect the scum.
3. For transferring the scum from the scum trough a scum well shall be provided equipped with an airlift skimming device. This device shall be a positive airlift pump type, located in the scum well to return floating material to the aeration chamber. The air line supplying air to the skimming device shall be equipped with a regulating valve to tune the airlift skimming pump.

#### **J. Sludge Scraper Assembly**

1. Installed within the clarifier chamber for collecting the settled sludge a sludge scraper assembly consisting of two scraping arms fabricated of steel angle and frames, which are attached to the torque tube.
2. The scraper arms shall be fabricated from steel angles, 1/4" thick minimum and have a neoprene squeegee blade attached to each angle to allow for sufficient movement of the sludge into the center sludge collection pit.
3. The bottom of the clarifier shall be grouted with concrete, which conforms to the dimensions as shown on the contract drawings. The design and installation of the concrete shall be the responsibility of the field contractor. All concrete and reinforcing steel shall be furnished by the field contractor.
4. The clarifier shall be furnished with a drive unit. The drive unit shall be furnished with a drive motor, 1/2 hp, 230 volt, 3 phase, 60 hz.
5. A 4" diameter sludge discharge coupling shall be supplied. The rake arm shall be attached to the drive shaft with a hinged joint to allow adjustment of the rake arm end.

K. Effluent Weir Assembly

1. The clarifier manufacturer shall furnish a double-sided steel weir trough with serrated weir plates fabricated from 3/16 inch galvanized steel plate. The weir shall be vertically adjustable, allowing for one (1) inch of adjustment in either direction. The weir trough shall be firmly fastened to the clarifier wall, using neoprene strips.
2. In addition, a scum baffle shall be provided in order to prevent scum from being carried over the weir.

L. Mechanical Clarifier Drive Unit

1. The mechanical clarifier drive unit provided will consist of a vertical weather proof motorized triple reduction speed reducer driven by a ½ HP, 230 volt, 3 phase motor, as manufactured by DBS. The speed reducer will include an integral torque control unit. The drive unit will be flanged coupled to the scraper torque shaft.
2. The combination of motor to gear reducer to drive the scraper arm at a speed not to exceed 5 feet per minute at the tip of the sludge collector.

M. Sludge holding Chamber

1. There shall be supplied an aerated sludge holding chamber to work in conjunction with the aeration chambers and clarifier chambers of the secondary treatment system. The aerated sludge holding chamber shall be an integral section of the package wastewater treatment system as shown on the drawings.
2. The sludge holding chamber shall be of sufficient capacity to provide a total volume minimum chamber volume of 21,000 gallons.
3. The sludge holding chamber shall be equipped with a supernatant decant airlift to transfer the supernatant back to the secondary treatment system for processing and to concentrate the sludge within the sludge holding chamber.
4. For supplying the air requirements of the sludge holding chamber, one (1) Model BMU-50-R22 Blower Motor Unit shall be provided as shown on the drawings. The voltage shall be 230 volts, 3 phase, 60 Hz. The unit shall have the capacity of providing 100% of the air requirements for the flow equalization system. The blower unit shall be installed at the location shown on the drawings. The unit shall be completely factory built and tested before shipping. The blower unit shall be installed within one Fiberglass Sound Enclosure, along with the flow equalization blower unit. The enclosure shall be complete with two lockable doors, one on each side of the enclosure, for easy access to either blower unit. The inlet filter silencer, pressure relief valve, pressure gauge, with only the blower discharge rubber hose connection being provided as a single line hook up for the blower. The necessary electrical connection from the blower to CP-2 shall be provided and pre-wired. The enclosure shall have ivory finish. The blower motor enclosure unit shall be mounted on four (4) vibration pad dampers tagged VP-1. This will help reduce blower vibration and noise transmission. The Blower system shall be equipped with one 1" blower discharge pipe with a 1" marine rubber hose with stainless steel clamps.
5. The blower unit shall be a Model BMU-50-R22 shall be furnished for supplying all the air requirements needed for the flow equalization Basin. The unit shall be capable of delivering 50 SCFM at an operating pressure of 5 psi.

6. The blower shall be of the positive displacement type and shall manufactured by Roots Division of Dresser Industries, Inc., Connersville, Indiana or approval equal. The Model number of the blower will be a URAI-22 and equipped with a 1" discharge.
7. The motor shall be 2 Hp for operation on 460 volt, 3 phase, 60 Cycle Service, and 1800 RPM. The motor shall be of the TEFC type. The wiring to this motor from the control panel shall be provided and installed by the field contractor.
8. For determining the blower performance, and/or diffuser condition, a pressure relief valve and pressure gauge. These items shall be premounted and piped within the blower enclosure.

N. Pre-Anoxic Chamber

1. There shall be supplied a pre-anoxic chamber to work in conjunction with aeration chamber and clarifier chamber of the system. The pre-anoxic chamber shall conform to the following specifications and shall be constructed of concrete and provided by the field contractor.
2. The pre-anoxic chamber shall be of sufficient capacity to provide nitrate reduction with a minimum volume of 7000 gallons.
3. In addition an air distribution manifold shall be installed longitudinally on one side of the tank with diffuser drop assemblies connected thereto with shut off valves. During periods whereas the anoxic chamber is not required for use this chamber can be used for additional aeration volume by manually opening and shutting valves. The air would be provided from the main blower motor units.
4. For anoxic operation of this chamber, a static mixer shall be provided and installed within the pre-anoxic chamber. This would occur when this chamber is not being aerated. The mixer shall be sized at 2 hp, 230 volt, 3 phase, 60Hz.

O. Air Supply System Secondary Treatment System

1. For supplying the air requirements of the secondary wastewater treatment system, are two (2) main aeration blowers of the positive displacement type model BMU-550-R59. Each unit shall have the capacity of providing 100% of the air requirements for the secondary system. The two (2) blower units shall each be installed within blower motor unit fiberglass sound enclosure housing, complete with double, lockable doors, for mounting at the location shown on the drawings. The blower speed and horsepower has been corrected for this elevation levels at the project site. The discharge piping of the blowers shall be positioned both within the enclosure and exterior of the enclosure to help reduce the vibration and the noise created by the air discharged. The check valves shall all be located at the discharge of the blower. Each blower shall discharge into the air plantum with a discharge rubber hose connection being provided for each blower. The blower motor enclosure unit shall be mounted on four (4) vibration pad dampers tagged VP-1. This will help reduce blower vibration and noise transmission. The Fiberglass sound enclosure shall be equipped with a blower discharge pipe with a marine rubber hose with stainless steel clamps. Each blower unit shall be completely factory built and tested before shipping.
2. The blower motor units shall be capable of delivering 550 SCFM at an operating pressure of 5 psi.
3. The blower shall be of the positive displacement type and shall be manufactured by Roots Division of Dresser Industries, Inc., Connersville, Indiana or equal Sutorbilt Blower Division Company, Compton, California; or approved equal.
4. The motor shall be 20 HP for operation on 230 Volt, 3 phase, 60 Cycle Service, and 1,800 RPM. The wiring to this motor from the control panel shall be provided and installed by the field

contractor.

5. For determining the blower performance, and/or diffuser condition, a pressure relief valve and pressure gauge shall be provided. These items shall be premounted and piped within the sound enclosure housing of each blower unit.

**P. Secondary Treatment Electrical Control Panel, CP-1**

1. An electrical control panel, Model CP-1, shall be installed within a NEMA 4X fiberglass weatherproof enclosure complete with legs and installed as shown on the drawing.
2. A step down transformer shall be supplied to step the electrical power down from 230 volt to 120-volt control voltage.
3. The electrical control panel shall control the operation of the following secondary system equipment:
  - a) Blower Motor Unit BM-1, 20 HP. 230/3/60 Main Secondary
  - b) Blower Motor Unit BM-2, 20 HP. 230/3/60 Main Secondary
  - c) Post Anoxic Mixer
  - d) Time Clock Control
4. The electrical control panel shall control the operation of all the ancillary component equipment requiring electrical power. The blower motor unit operation time will be intermittent and controlled by the main blower timers. The plant operator shall control the operation time to obtain the correct air control. The necessary selector switches shall be provided to allow either automatic or manual operation of the auxiliary equipment.

**Q.** The enclosure shall be NEMA type 4X fiberglass or equal. The electrical controls shall consist of IEC motor starters, timers, and selector switches. Properly sized circuit breakers or fuses shall protect all electrical equipment and circuitry.

1. All wire and conduit required between the control panel and the electrical power service should be furnished by and installed by the field controller. The main power supply shall be 230 Volt, 3 phase, 60 Cycle. Power to the control panel shall be 120 volt, 1 phase. A power block in the control panel shall be supplied for the main electrical connection.
2. The control panel shall be a Model CP-1 and shall be completely factory assembled and tested prior to shipment.
3. Controls shall be mounted to a removable sub-panel within the enclosure and shall be wired and spaced in accordance with the latest National Electric Code.
4. Blower Operation Controls Method: Each blower for the aeration chamber shall be able to be controlled by the programmable timers. A selector switch within the control panel shall be used to select between automatic operation or manual operation. The two main blowers for the secondary treatment system shall be controlled by two (2) 24-hour, 7-day time clock and an alternator and shall be capable of being programmed to control the blower run cycle and to adjust both the start set point every 15 minutes on the 24 hour cycle.

**R. Post Anoxic Chamber**

1. There shall be supplied a post anoxic chamber to work in conjunction with aeration chamber and clarifier chamber of the system. The pre-anoxic chamber shall conform to the following specifications and shall be constructed of concrete and provided by the field contractor :
2. The post anoxic chamber shall be of sufficient capacity to provide nitrate reduction with a minimum volume of 7000 gallons.
3. In addition an air distribution manifold shall be installed longitudinally on one side of the tank with diffuser drop assemblies connected thereto with shut off valves. During periods whereas the anoxic chamber is not required for use this chamber can be used for additional aeration volume by manually opening and shutting valves. The air would be provided from the main blower motor units.
4. For anoxic operation of this chamber, a static mixer shall be provided and installed within the post anoxic chamber. This would occur when this chamber is not being aerated. The mixer shall be sized at 2 hp, 230 volt, 3 phase, 60Hz.

**S. Service Walkway**

1. A service walkway shall be provided for service area only to service the plant equipment. Grating panels shall be constructed of non-skid galvanized . All grating panels shall be constructed of galvanized steel with maximum yield strength of 37,000 psi. Each grating panel has a standard 9-inch surface width, and a 2-1/2-inch rib depth. Furthermore, each panel shall have a safe uniform load carrying capacity of 120 pounds per square foot.
2. Handrail shall be provided around the perimeter of the service walkway. The handrail system shall consist of aluminum pipe with a triple center cable guard, as shown on the drawings.

**T. Disinfection System DISINFECTION SYSTEM**

1. A concrete UV Chamber shall be provided by the contractor.
2. An ultrasonic flow meter shall be provided at the effluent of the wastewater treatment system.

**U. Effluent Connection**

1. The effluent connection of the wastewater treatment system shall be located as shown on the plans and shall consist of one (1) 6" diameter standard flanged pipe at the location shown.

**3.01 EXECUTION**

**3.02 GENERAL**

- A. The pump unit shall arrive at the job site ready for installation. The hookup to the sewer shall conform to the drawings and the specifications. The Contractor shall be responsible for furnishing and installing units of the depth as shown on the drawings.
- B. Equipment Manufacturer:
1. All fabricated steel parts (excluding stainless steel) shall be commercially cleaned and given one (1) shop coat of rust inhibitive primer.
  2. All items such as motors, reducers, and equipment completely shop assembled and ready for installation shall be given one (1) coat of the manufacturer's machinery enamel.
- C. General Contractor:

1. The General Contractor shall furnish and install all piping as shown on the drawings.
2. The General Contractor shall furnish and install all field wiring required including proper sized wire, conduit, fittings, and supports.
3. The General Contractor shall furnish and install all electrical items required but not specifically called for as furnished by the equipment manufacturer.
4. The General Contractor shall furnish and apply all touch-up of the prime coat and all finish coatings; and be responsible for compatibility of the primer with finish coatings.
5. The General Contractor shall place the anchorage in accordance with certified prints supplied by the equipment manufacturer.

### **3.03 ELECTRICAL INSTALLATION**

- A. All wiring shall be in complete conformity with the National Electric Code and state and local NEMA standards.
- B. The entire installation of the pumps, electrical connections and any other work associated therewith shall adhere to the manufacturer's instructions, and shall be in compliance with all applicable codes.

### **3.04 CORROSION PROTECTION**

- A. Non-stainless steel portions of the pump casting and appurtenant iron castings shall be pretreated with all metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a polyester resin paint finish on the exterior of the pump.
- B. The interior of the pump volute and passageways shall be painted as described herein. Other exposed surfaces subject to corrosion within the pump basin shall be protected either by painting, industry standards, or other acceptable methods.

### **3.05 FIELD TESTING**

- A. The Contractor shall, at his own expense, provide the necessary facilities to provide hydraulic and electrical performance tests on each of the pumps as shipped and/or assembled on the construction site.
- B. The specifications for hydraulic and electrical characteristics as stated elsewhere in this section are minimum requirements. Any pump failing to meet the minimum requirements shall be rejected. All rejected equipment shall be removed from this project and substituted with brand new merchandise.
- C. The performance test instruments to be used shall measure amperes, volts, feet of head, and flow. The instruments used shall have full scale accuracy of at least 1.5%. The minimum number of instruments required are one each with ranges so indicated:
  1. Ampere meter, ranges 0 to 20 amperes, and 0 to 100 amperes, direct reading, clamp on type.
  2. Volt meter, direct reading capable of reading 0 to 500 volts.
- D. The Contractor may elect for a properly equipped independent testing laboratory to perform the required performance testing. The Contractor shall submit to the Engineer a list of gauges and meters to be used in the testing and drawings of the proposed layout for performing the test, prior to testing for his approval. The Contractor shall notify the Engineer no less than 24 hours prior to when testing is to be done.
- E. Each pump may be subjected to a 24-hour operation test before acceptance as follows:
  1. Preparation: The unit under test shall be properly installed in the wet well, firmly upon its discharge connection after determination (a) proper service voltage is being supplied and (b) proper rotation of the impeller. No cooling by forced or circulated air shall be allowed.

2. Dry pumping test (all sizes): Liquid shall be at a level sufficient to keep the pump volute submerged during the test. Pump shall be operated at full load for one hour unsubmerged without failure or damage to the windings.
3. Supplier may be allowed to provide independent documentation of such capabilities. The use of thermal sensors to protect the motor shall not be considered as an acceptable means of meeting this requirement.

### **3.06 LIMITED WARRANTY**

- A. The furnished equipment shall be guaranteed against defects in materials or workmanship for a minimum period of five (5) years following date of start-up. During the warranty period, all defective equipment shall be repaired or replaced without cost or obligation to the Owner the first year, with a stair stepped warranty for the remaining four years.

**END OF SECTION 11860**



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH  
**NO DEGRADATION EVALUATION**  
**CONCLUSION OF ANTIDegradation REVIEW**  
 (Submit this form with the appropriate Permit Application)

RECEIVED  
 JAN 12 2016

Water Protection Program

**1. FACILITY**

NAME City of Portage Des Sioux Wastewater Treatment Plant		COUNTY St. Charles	
ADDRESS (PHYSICAL) NE Corner of 2nd Street and LeClair Street	CITY Portage Des Sioux	STATE MO	ZIP CODE 63373
FACILITY CONTACT: Mark Warner		TELEPHONE NUMBER WITH AREA CODE 636-753-2235	

**2. NO DEGRADATION OPTIONS**

- Renewal without changes
- Sewer extensions
- CSO elimination projects
- No-discharge with land application
- No-discharge with subsurface irrigation
- Recycle or reuse of effluent
- Discharge to a regional wastewater collection and treatment system.
- Addition or replacement of disinfection system for an existing wastewater facility: Ultraviolet or Ozone  
The facility will be required to meet regulatory effluent limits for bacteria.
- Addition or replacement for chlorination or dechlorination disinfection system of existing facility.  
The chlorination or dechlorination disinfection treatment system design must be for total removal of Total Residual Chlorine. Therefore, the facility will be required to meet the water quality-bases effluent limits determined by the permit writer or the following water quality-bases effluent limits:

Beneficial Use of Classified Water	MDL (µg/l)	AML (µg/l)
Warm-water fishery	17	8.2
Cold-water fishery	3.3	1.6

Note: These compliance limits for Total Residual Chlorine are much less than minimum quantification level, or ML, of 0.13. The facility will be required to meet regulatory effluent limits for bacteria.

- Other, please describe: New treatment facility that will have increased capacity and lower concentration effluent loading

Consulted with Water Protection Staff:

NAME	DATE
------	------

**3. NO DEGRADATION PROPOSED PROJECT SUMMARY**

The project will construct a new mechanical activated sludge, extended aeration treatment plant. The new treatment plant is designed at 56,000 gpd and have an effluent below 15 mg/L BOD, 15 mg/L SS and ammonia at 0.6 mg/L for summer and 2.1 mg/L winter. The total load will be less with the new treatment facility. Currently the MSOP limits are monthly average of 30 mg/L BOD, 30 mg/L SS with a design flow of 30,000gpd.

With the current permit the facility is designed to create 7.5 lbs/day of both BOD and SS.  
 The new treatment facility will produce less than 7.0 lbs/day of both BOD and SS approximately 7% less.

**CONSULTANT:** I have prepared or reviewed this form and all attached reports and documentation. The conclusion proposed is consistent with the Antidegradation Implementation Procedure and current state and federal regulations.

SIGNATURE *Max F. Middendorf* DATE 1-7-16

PRINT NAME MAX F. MIDDENDORF NUMBER E-26008 E.A. 12-31-17

TELEPHONE NUMBER WITH AREA CODE 573-221-4048 E-MAIL ADDRESS *mmiddendorf@mece-engineering.com*

**Owner:** I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE *Mark D. Warner* DATE 1-5-16

TELEPHONE NUMBER WITH AREA CODE 636-753-2235 E-MAIL ADDRESS

**Continuing Authority:** Continuing Authority is the permanent organization that will be responsible for the operation, maintenance and modernization of the facility. The regulatory requirement regarding continuing authority is available at [www.sos.mo.gov/adrules/csr/current/10csr/10c20-6a.pdf](http://www.sos.mo.gov/adrules/csr/current/10csr/10c20-6a.pdf).

I have read and reviewed the prepared documents and agree with this submittal.

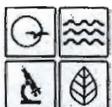
SIGNATURE *Mark D. Warner* DATE 1-5-16

TELEPHONE NUMBER WITH AREA CODE 636-753-2235 E-MAIL ADDRESS

**Return completed form with the appropriate Permit Application to:**  
Missouri Department of Natural Resources  
Water Protection Program  
Water Pollution Control Branch  
P.O. Box 176  
Jefferson City, MO 65102

RECEIVED

JAN 12 2016



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM  
**FORM B: APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW LESS THAN OR EQUAL TO 100,000 GALLONS PER DAY**

FOR AGENCY USE ONLY	
CHECK NUMBER	
DATE RECEIVED	FEE SUBMITTED

**READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM**

**1. THIS APPLICATION IS FOR:**

An operating permit for a new or unpermitted facility. Construction Permit # \_\_\_\_\_  
 (Include completed antidegradation review or request for antidegradation review, see instructions)

A new site-specific operating permit formerly general permit #MOG \_\_\_\_\_

A site-specific operating permit renewal: Permit #MO- 0107328 Expiration Date 9/26/2014

A site-specific operating permit modification: Permit #MO- \_\_\_\_\_ Reason: \_\_\_\_\_

General permit (MOGD – Non POTWs discharging < 50,000 GPD or MOG823 – Land Application of Domestic Wastewater):  
 Permit #MO- \_\_\_\_\_ Expiration Date \_\_\_\_\_

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

**2. FACILITY**

NAME City of Portage Des Sioux Wastewater Treatment Plant		TELEPHONE NUMBER WITH AREA CODE (636) 753-2335	
ADDRESS (PHYSICAL) NE Corner of 2nd Street and LeClair Street		CITY Portage Des Sioux	STATE ZIP CODE MO 63373
2.1	Legal description: <u>Surrey 15 1/4</u> , 1/4, 1/4, Sec. , T , R	County <u>St. Charles</u>	
2.2	UTM Coordinates Easting (X): Northing (Y): <u>(X) 864,409.351 (Y) 1,126,570.759</u>	For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)	
2.3	Name of receiving stream: Mississippi River		
2.4	Number of outfalls: <u>1</u>	Wastewater outfalls: 1	Stormwater outfalls: Instream monitoring sites:

**3. OWNER**

NAME City of Portage Des Sioux		EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE (636) 753-2335
ADDRESS PO Box 118		CITY Portage Des Sioux	STATE ZIP CODE MO 63373
3.1	Request review of draft permit prior to public notice? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
3.2	Are you a publicly owned treatment works? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If yes, is the Financial Questionnaire attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
3.3	Are you a privately owned treatment works? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
3.4	Are you a privately owned treatment facility regulated by the Public Service Commission? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		

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

NAME City of Portage Des Sioux		EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE (636) 753-2335
ADDRESS PO Box 118		CITY Portage Des Sioux	STATE ZIP CODE MO 63373

If the continuing authority is different than the owner, include a copy of the contract agreement between the two parties and a description of the responsibilities of both parties within the agreement.

**5. OPERATOR**

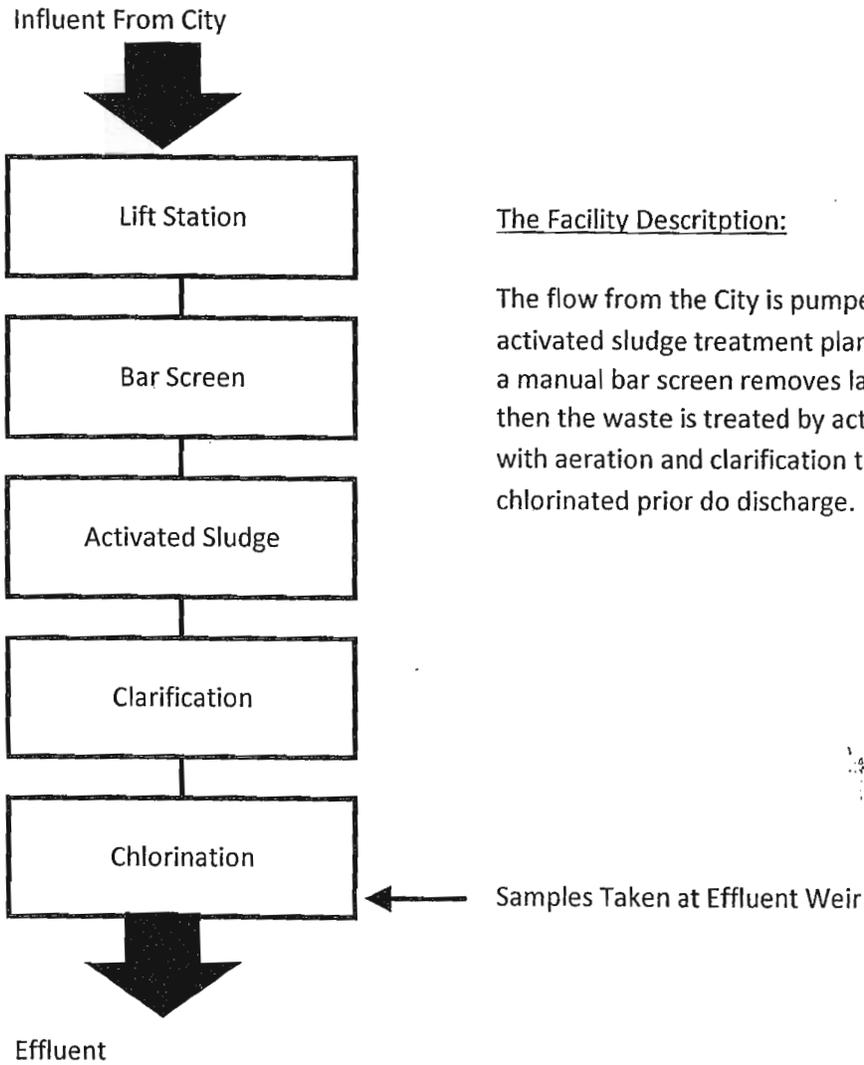
NAME Everette Jones	TITLE Operator	CERTIFICATE NUMBER 5764
EMAIL ADDRESS everette@joneswater.com		TELEPHONE NUMBER WITH AREA CODE (314) 486-4606

**6. FACILITY CONTACT**

NAME <u>Mark Warner</u>		TITLE <u>Mayor</u>	
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE <u>636-753-2235</u>	
ADDRESS <u>City Hall</u>		CITY <u>Portage Des Sioux</u>	STATE ZIP CODE <u>MO 63373</u>

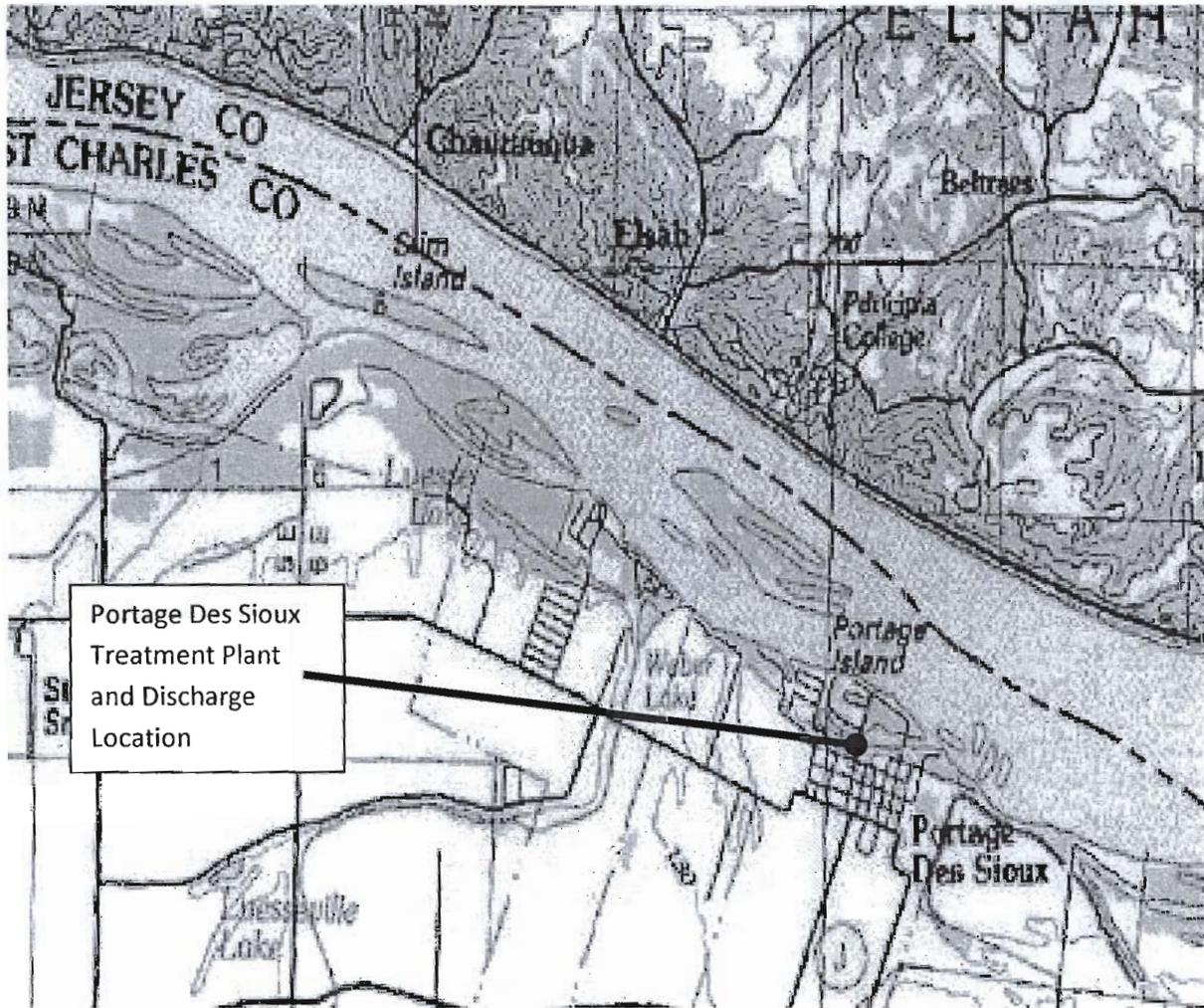
**7. DESCRIPTION OF FACILITY**

**7.1 Process Flow Diagram or Schematic:** Provide a diagram showing the processes of the treatment plant. Show all of the treatment units, including disinfection (e.g. – chlorination and dechlorination), influents, and outfalls. Specify where samples are taken. Indicate any treatment process changes in the routing of wastewater during dry weather and peak wet weather. Include a brief narrative description of the diagram. Attach sheets as necessary.



**7.2** Attach an aerial photograph or USGS topographic map showing the location of the facility and outfall.

7.2 – Portage Des Sioux Facility and Discharge Location Map



**8. ADDITIONAL FACILITY INFORMATION**8.1 Facility SIC code: 4952 Discharge SIC code: 49528.2 Number of people presently connected or population equivalent (P.E.) 328 Design P.E. 354

8.3 Connections to the facility:

Number of units presently connected:

Homes 138 Trailers \_\_\_\_\_ Apartments \_\_\_\_\_ Other (including industrial) \_\_\_\_\_Number of commercial establishments: 3 \_\_\_\_\_8.4 Design flow: 30,000 gpdActual flow: 15,000 gpd average8.5 Will discharge be continuous through the year?  Yes  No

Discharge will occur during the following months:

How many days of the week will discharge occur? 78.6 Is industrial wastewater discharged to the facility?  Yes  No

If yes, attach a list of the industries that discharge to your facility

8.7 Does the facility accept or process leachate from landfills?  Yes  No8.8 Is wastewater land applied?  Yes  NoIf yes, is Form I attached?  Yes  No8.9 Does the facility discharge to a losing stream or sinkhole?  Yes  No8.10 Has a wasteload allocation study been completed for this facility?  Yes  No**9. LABORATORY CONTROL INFORMATION**

## LABORATORY WORK CONDUCTED BY PLANT PERSONNEL

Lab work conducted outside of plant.  Yes  NoPush-button or visual methods for simple test such as pH, settleable solids.  Yes  NoAdditional procedures such as dissolved oxygen, chemical oxygen demand, biological oxygen demand, titrations, solids, volatile content.  Yes  NoMore advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.  Yes  NoHighly sophisticated instrumentation, such as atomic absorption and gas chromatograph.  Yes  No**10. COLLECTION SYSTEM**10.1 Length of pipe in the sewer collection system? \_\_\_\_\_ Feet, or 2.5 Miles (either unit is appropriate)10.2 Does significant infiltration occur in the collection system?  Yes  No

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

The City smoke tested the sewer system and included the problem areas in the current improvement project to be lined and grouted.

**11. BYPASSING**Does any bypassing occur in the collection system or at the treatment facility?  Yes  No

If yes, explain:

**12. SLUDGE HANDLING, USE AND DISPOSAL**

12.1 Is the sludge a hazardous waste as defined by 10 CSR 25?  Yes  No

12.2 Sludge production, including sludge received from others: 17.0 Design dry tons/year 8.85 Actual dry tons/year

12.3 Capacity of sludge holding structures:

Sludge storage provided: \_\_\_\_\_ cubic feet; \_\_\_\_\_ days of storage; \_\_\_\_\_ average percent solids of sludge;  
 No sludge storage is provided.  Sludge is stored in lagoon.

12.4 Type of Storage:  Holding tank  Building  
 Basin  Lagoon  
 Concrete Pad  Other (Describe) \_\_\_\_\_

12.5 Sludge Treatment:  
 Anaerobic Digester  Lagoon  Composting  
 Storage Tank  Aerobic Digester  Other (Attach description)  
 Lime Stabilization  Air or Heat Drying

12.6 Sludge Use or Disposal:  
 Land Application  Surface Disposal (Sludge Disposal Lagoon, Sludge held for more than two years)  
 Contract Hauler  Hauled to Another treatment facility  
 Incineration  Sludge Retained in Wastewater treatment lagoon  
 Solid waste landfill

12.7 Person responsible for hauling sludge to disposal facility:  
 By applicant  By others (complete below)

NAME <i>Commercial Pumping Systems</i>		EMAIL ADDRESS	
ADDRESS <i>2508 Bethmen Rd.</i>	CITY <i>St. Charles</i>	STATE <i>MO</i>	ZIP CODE <i>63302</i>
CONTACT PERSON <i>Lisa Highfill</i>	TELEPHONE NUMBER WITH AREA CODE <i>636-255-0009</i>	PERMIT NO. MO-	

12.8 Sludge use or disposal facility  
 By applicant  By others (Complete below.)

NAME <i>Merrell Bros</i>		EMAIL ADDRESS	
ADDRESS <i>6400 McKissock Ave.</i>	CITY <i>St. Louis</i>	STATE <i>MO</i>	ZIP CODE <i>63147</i>
CONTACT PERSON <i>Ty Thomas</i>	TELEPHONE NUMBER WITH AREA CODE <i>574-699-7782</i>	PERMIT NO. MO- <i>1043376500-21</i>	

12.9 Does the sludge or biosolids disposal comply with federal sludge regulations under 40 CFR 503?  
 Yes  No (Explain)

**13. CERTIFICATION**

I certify that I am familiar with the information contained in the application, that to the best of my knowledge and belief such information is true, complete and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders and decisions, subject to any legitimate appeal available to applicant under the Missouri Clean Water Law.

NAME (TYPE OR PRINT) <i>Mark D. Warner</i>	OFFICIAL TITLE <i>Mayor</i>	TELEPHONE NUMBER WITH AREA CODE <i>636-753-2235</i>
SIGNATURE <i>Mark D Warner</i>		DATE SIGNED <i>1-5-16</i>

RECEIVED

JAN 12 2016



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM

FORM B: APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT  
RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW LESS  
THAN OR EQUAL TO 100,000 GALLONS PER DAY

FOR AGENCY USE ONLY

CHECK NUMBER

DATE RECEIVED

FEE SUBMITTED

READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM

1. THIS APPLICATION IS FOR:

- An operating permit for a new or unpermitted facility. Construction Permit # \_\_\_\_\_  
(Include completed antidegradation review or request for antidegradation review, see instructions)
- A new site-specific operating permit formerly general permit #MOG \_\_\_\_\_
- A site-specific operating permit renewal: Permit #MO- \_\_\_\_\_ Expiration Date \_\_\_\_\_
- A site-specific operating permit modification: Permit #MO- 0107328 Reason: Facility Upgrade
- General permit (MOGD – Non POTWs discharging < 50,000 GPD or MOG823 – Land Application of Domestic Wastewater):  
Permit #MO- \_\_\_\_\_ Expiration Date \_\_\_\_\_

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

2. FACILITY

NAME City of Portage Des Sioux Wastewater Treatment Plant		TELEPHONE NUMBER WITH AREA CODE (636) 753-2335	
ADDRESS (PHYSICAL) NE Corner of 2nd Street and LeClair Street		CITY Portage Des Sioux	STATE ZIP CODE MO 63373
2.1 Legal description: <u>Survey 154</u> 1/4, 1/4, 1/4, Sec. , T , R		County <u>St. Charles</u>	
2.2 UTM Coordinates Easting (X): _____ Northing (Y): _____		<u>(X) 864,409.351</u> <u>(Y) 4,126,570.759</u>	
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)			
2.3 Name of receiving stream: Mississippi River			
2.4 Number of outfalls: <u>1</u>		Wastewater outfalls: 1	Stormwater outfalls: _____ Instream monitoring sites: _____

3. OWNER

NAME City of Portage Des Sioux		EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE (636) 753-2335
ADDRESS PO Box 118		CITY Portage Des Sioux	STATE ZIP CODE MO 63373
3.1 Request review of draft permit prior to public notice?		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
3.2 Are you a publicly owned treatment works?		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
If yes, is the Financial Questionnaire attached?		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
3.3 Are you a privately owned treatment works?		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
3.4 Are you a privately owned treatment facility regulated by the Public Service Commission?		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	

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

NAME City of Portage Des Sioux		EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE (636) 753-2335
ADDRESS PO Box 118		CITY Portage Des Sioux	STATE ZIP CODE MO 63373

If the continuing authority is different than the owner, include a copy of the contract agreement between the two parties and a description of the responsibilities of both parties within the agreement.

5. OPERATOR

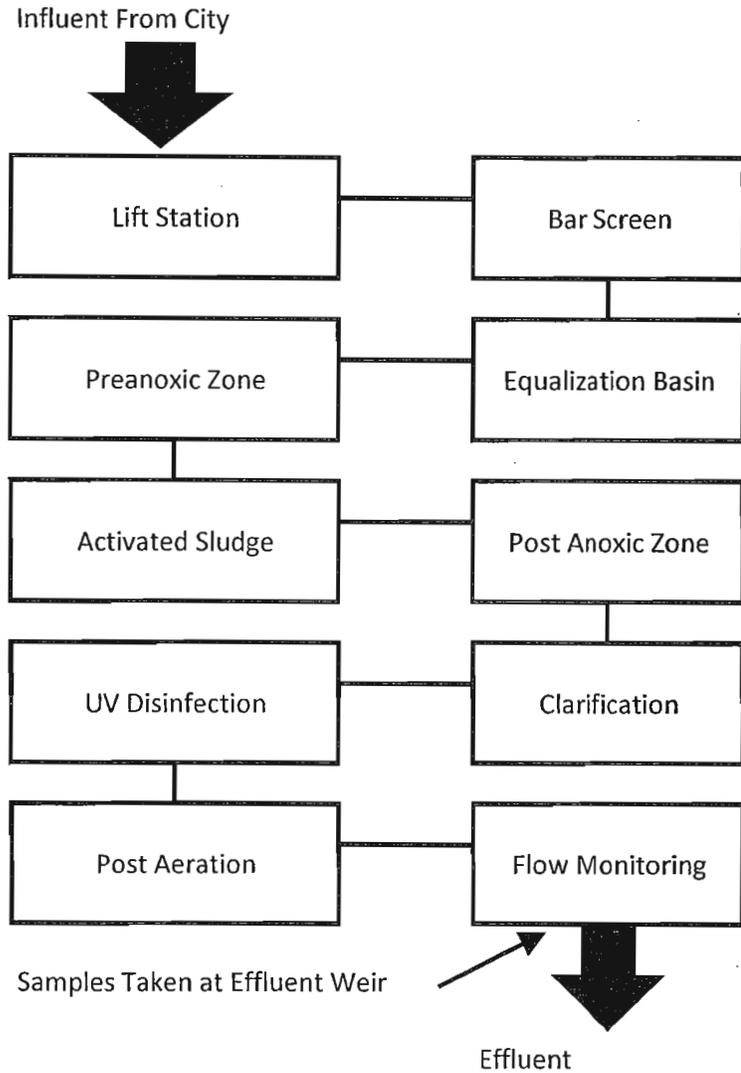
NAME Everette Jones	TITLE Operator	CERTIFICATE NUMBER 5764
EMAIL ADDRESS everette@joneswater.com		TELEPHONE NUMBER WITH AREA CODE (314) 486-4606

6. FACILITY CONTACT

NAME <u>Mark Warner</u>		TITLE <u>Mayor</u>	
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE <u>636-753-2235</u>	
ADDRESS <u>City Hall</u>	CITY <u>Portage Des Sioux</u>	STATE <u>MO</u>	ZIP CODE <u>63373</u>

**7. DESCRIPTION OF FACILITY**

**7.1 Process Flow Diagram or Schematic:** Provide a diagram showing the processes of the treatment plant. Show all of the treatment units, including disinfection (e.g. – chlorination and dechlorination), influents, and outfalls. Specify where samples are taken. Indicate any treatment process changes in the routing of wastewater during dry weather and peak wet weather. Include a brief narrative description of the diagram. Attach sheets as necessary.

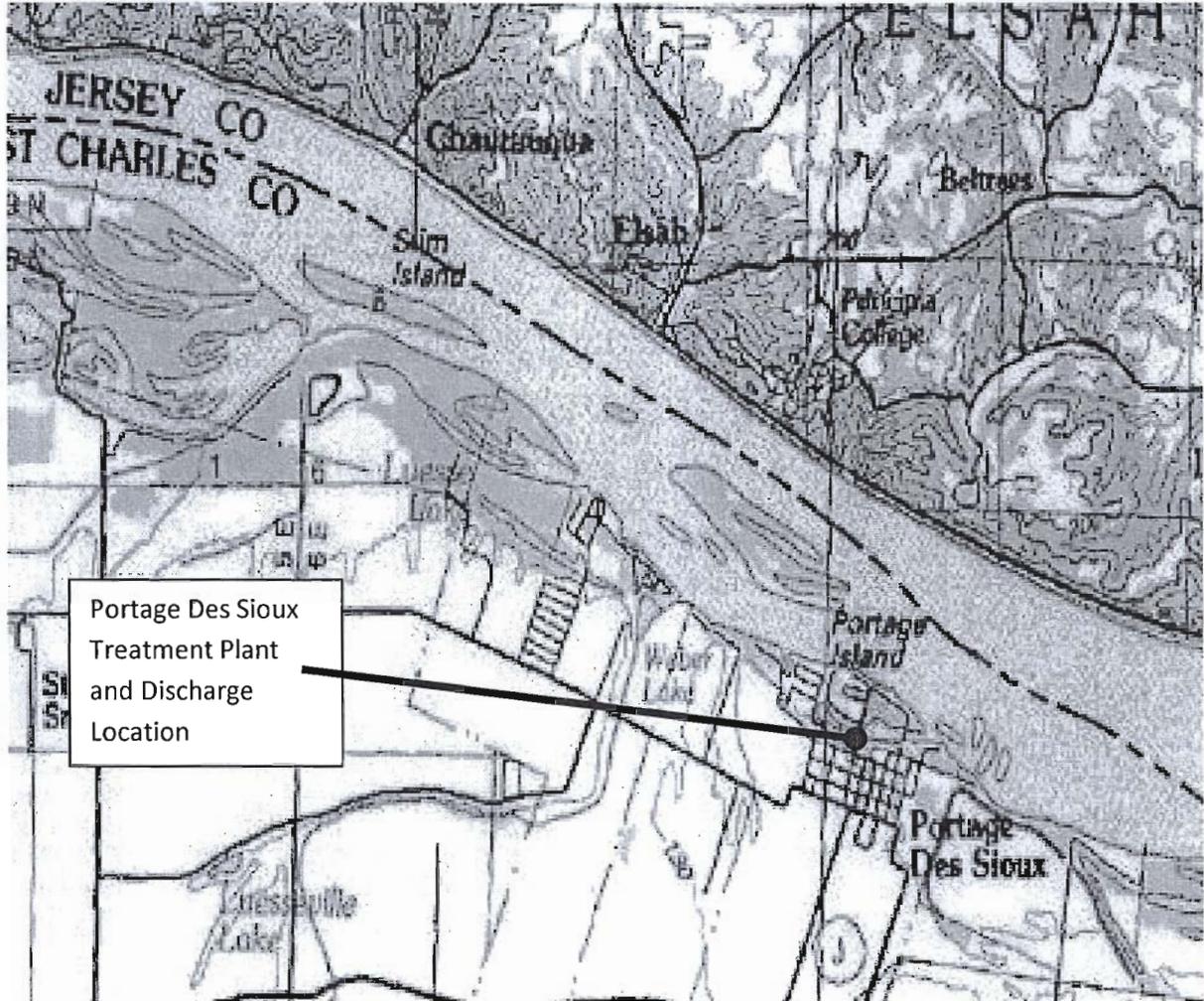


The Facility Description:

The flow from the City is pumped into the activated sludge treatment plant where a manual bar screen removes large debris and the flow is held in an equalization basin. The flow is then treated by activated sludge with aeration and clarification then disinfection using UV light prior to discharge

**7.2** Attach an aerial photograph or USGS topographic map showing the location of the facility and outfall.

7.2 – Portage Des Sioux Facility and Discharge Location Map



**8. ADDITIONAL FACILITY INFORMATION**8.1 Facility SIC code: 4952 Discharge SIC code: 49528.2 Number of people presently connected or population equivalent (P.E.) 328 Design P.E. 560

8.3 Connections to the facility:

Number of units presently connected:

Homes 138 Trailers \_\_\_\_\_ Apartments \_\_\_\_\_ Other (including industrial) \_\_\_\_\_Number of commercial establishments: 3 \_\_\_\_\_8.4 Design flow: 56,000

Actual flow:

8.5 Will discharge be continuous through the year?  Yes  No

Discharge will occur during the following months:

How many days of the week will discharge occur? 78.6 Is industrial wastewater discharged to the facility?  Yes  No

If yes, attach a list of the industries that discharge to your facility

8.7 Does the facility accept or process leachate from landfills?  Yes  No8.8 Is wastewater land applied?  Yes  NoIf yes, is Form I attached?  Yes  No8.9 Does the facility discharge to a losing stream or sinkhole?  Yes  No8.10 Has a wasteload allocation study been completed for this facility?  Yes  No**9. LABORATORY CONTROL INFORMATION**

## LABORATORY WORK CONDUCTED BY PLANT PERSONNEL

Lab work conducted outside of plant.  Yes  NoPush-button or visual methods for simple test such as pH, settleable solids.  Yes  NoAdditional procedures such as dissolved oxygen, chemical oxygen demand, biological oxygen demand, titrations, solids, volatile content.  Yes  NoMore advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.  Yes  NoHighly sophisticated instrumentation, such as atomic absorption and gas chromatograph.  Yes  No**10. COLLECTION SYSTEM**10.1 Length of pipe in the sewer collection system? \_\_\_\_\_ Feet, or 2.5 Miles (either unit is appropriate)10.2 Does significant infiltration occur in the collection system?  Yes  No

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

The City smoke tested the sewer system and included the problem areas in the current improvement project to be lined and grouted.

**11. BYPASSING**Does any bypassing occur in the collection system or at the treatment facility?  Yes  No

If yes, explain:

**12. SLUDGE HANDLING, USE AND DISPOSAL**

12.1 Is the sludge a hazardous waste as defined by 10 CSR 25?  Yes  No

12.2 Sludge production, including sludge received from others: 18.23 Design dry tons/year 8.85 Actual dry tons/year

12.3 Capacity of sludge holding structures:  
 Sludge storage provided: 1680 cubic feet; \_\_\_\_\_ days of storage; \_\_\_\_\_ average percent solids of sludge;  
 No sludge storage is provided.  Sludge is stored in lagoon.

12.4 Type of Storage:  Holding tank  Building  
 Basin  Lagoon  
 Concrete Pad  Other (Describe) \_\_\_\_\_

12.5 Sludge Treatment:  
 Anaerobic Digester  Lagoon  Composting  
 Storage Tank  Aerobic Digester  Other (Attach description)  
 Lime Stabilization  Air or Heat Drying

12.6 Sludge Use or Disposal:  
 Land Application  Surface Disposal (Sludge Disposal Lagoon, Sludge held for more than two years)  
 Contract Hauler  Hauled to Another treatment facility  
 Incineration  Sludge Retained in Wastewater treatment lagoon  
 Solid waste landfill

12.7 Person responsible for hauling sludge to disposal facility:  
 By applicant  By others (complete below)

NAME <i>Commercial Pumping Systems</i>		EMAIL ADDRESS	
ADDRESS <i>2508 Bethmer Rd</i>	CITY <i>St. Charles</i>	STATE <i>MO</i>	ZIP CODE <i>63302</i>
CONTACT PERSON <i>Lisa Highfill</i>	TELEPHONE NUMBER WITH AREA CODE <i>636-255-0009</i>	PERMIT NO. MO-	

12.8 Sludge use or disposal facility  
 By applicant  By others (Complete below.)

NAME <i>Memell Boos</i>		EMAIL ADDRESS	
ADDRESS <i>6400 McHissock Ave</i>	CITY <i>St. Louis</i>	STATE <i>MO</i>	ZIP CODE <i>63147</i>
CONTACT PERSON <i>Ty Thomas</i>	TELEPHONE NUMBER WITH AREA CODE <i>574-688-7782</i>	PERMIT NO. MO- <i>1043376500-21</i>	

12.9 Does the sludge or biosolids disposal comply with federal sludge regulations under 40 CFR 503?  
 Yes  No (Explain)

**13. CERTIFICATION**

I certify that I am familiar with the information contained in the application, that to the best of my knowledge and belief such information is true, complete and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders and decisions, subject to any legitimate appeal available to applicant under the Missouri Clean Water Law.

NAME (TYPE OR PRINT) <i>Mark D. Warner</i>	OFFICIAL TITLE <i>Mayor</i>	TELEPHONE NUMBER WITH AREA CODE <i>636-753-2235</i>
SIGNATURE <i>Mark D. Warner</i>		DATE SIGNED <i>1-5-16</i>



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM  
**FINANCIAL QUESTIONNAIRE**

RECEIVED

JAN 12 2016

Water Protection Program

<b>NOTE ►</b>	<b>FINANCIAL INFORMATION THAT IS NOT PROVIDED THROUGH THIS FORM WILL BE OBTAINED BY THE DEPARTMENT FROM READILY AVAILABLE SOURCES.</b>	
<b>1. GENERAL INFORMATION</b>		
FACILITY NAME City of Portage Des Sioux Wastewater Treatment Plant	PERMIT NUMBER #MO-0107328	
CITY Portage Des Sioux	COUNTY St. Charles	
<input checked="" type="checkbox"/> PERMIT RENEWAL/MODIFICATION <input type="checkbox"/> STATE REVOLVING FUND APPLICATION	SRF PROJECT NUMBER (IF APPLICABLE) C295 _____	
<b>2. GENERAL FINANCIAL INFORMATION (ALL FACILITIES)</b>		
2.1	Number of connections to the facility: Residential <u>138</u> Commercial <u>3</u> Industrial <u>0</u>	
2.2	Current sewer user rate: Based on a 5,000 gallon per month usage    \$ <u>63.89</u>	The sewer user rate is (check one): <input checked="" type="checkbox"/> Rate Capacity (set rate) <input type="checkbox"/> Pay as You Go
2.3	Current operating costs for the facility (excludes depreciation):	\$78,539.68
2.4	Bond Rating (if applicable):	n/a
2.5	Bonding Capacity: <i>General obligation bond capacity allowed by constitution: cities=up to 20% of taxable tangible property; sewer districts=up to 5% of taxable tangible property</i>	20%
2.6	Current outstanding debt relating to wastewater collection and treatment: <i>Debt information is typically available from your community's annual financial statements</i>	0
2.7	Amount of current user rate per household per month used toward payments on wastewater debt:	0
2.8	Net direct debt: <i>Net direct debt is the total amount of outstanding general obligation debt, including notes and short-term financing.</i>	0
2.9	Overlapping debt: <i>Overlapping debt is the financial obligations of one political jurisdiction that also falls partly on a nearby jurisdiction.</i>	0
2.10	Overall net debt: <i>Overall net debt is defined as debt repaid by property taxes within a utility/municipality's service area. It excludes debt that is repaid by special user fees (e.g. revenue bonds). Overall net debt = Net direct debt + Overlapping debt. Debt information is typically available from your community's annual financial statements</i>	0
2.11	Attach any relevant financial statements.	
<b>3. FINANCIAL INFORMATION SPECIFIC TO MUNICIPALITIES</b>		
3.1	Municipality's Full Market Property Value (FMPV): <i>FMPV data is typically available through your community or state assessor's office</i>	\$3,642,134.00
3.2	Municipality's property tax revenues: <i>Property tax revenues are typically available from your community's annual financial statements</i>	\$42,977.45
3.3	Municipality's property tax collection rate: <i>To determine the collection rate, you will need to divide property tax revenues by the property taxes levied. To calculate property taxes levied, multiply the assessed value of real property within your community/service area by the property tax rate. This information is typically available through your community or state assessor's office. Property tax revenues are typically available in your community's annual financial statements.</i>	0.6900

**4. FINANCIAL INFORMATION SPECIFIC TO SEWER DISTRICTS**

4.1 Total connections to the sewer district: Residential \_\_\_\_\_ Commercial \_\_\_\_\_ Industrial \_\_\_\_\_

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

**5. OTHER CONSIDERATIONS (ALL FACILITIES)**

5.1 Provide a list of major infrastructure or other investments in environmental projects. Include project timing and costs and indicate any possible overlap or complications (attach sheets as necessary):  
None

5.2 Provide a list of any other relevant local community economic conditions that may impact the ability to afford new permit requirements or the proposed SRF project. (See Community Supplemental Survey on the following page):  
None

**6. CERTIFICATION**

FINANCIAL CONTACT <i>Mark D. Warner</i>	OFFICIAL TITLE <i>Mayor</i>
EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE <i>636-753-2235</i>

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

OWNER OR AUTHORIZED REPRESENTATIVE <i>Mark D. Warner</i>	OFFICIAL TITLE <i>Mayor</i>
SIGNATURE <i>Mark D. Warner</i>	DATE SIGNED <i>1-5-16</i>

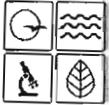
For additional guidance, see <http://usmayors.org/urbanwater/media/2013/0529-report-WaterAffordability.pdf>.

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

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

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

<p>For Submittal of Permit Renewal/Modification:</p> <p>Department of Natural Resources Water Protection Program ATTN: NPDES Operating Permits Section P.O. Box 176 Jefferson City, MO 65102</p>	<p>For Submittal of SRF Applications:</p> <p>Department of Natural Resources Water Protection Program ATTN: Financial Assistance Center P.O. Box 176 Jefferson City, MO 65102</p>
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**PLEASE ANSWER THE FOLLOWING APPLICABLE QUESTIONS. (ATTACH ADDITIONAL SHEETS AS NECESSARY)**

1. Are there any significant transportation corridors within 20 miles of your community?  
 If yes, please explain. (Example: major interstate, railroad center)  
 Interstate 270, Interstate 70, MO 370, Mississippi River

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

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

<b>Elementary</b>	<input type="checkbox"/> Within your community	<input checked="" type="checkbox"/> Within 20 miles	<input type="checkbox"/> Farther than 20 miles
<b>Middle School</b>	<input type="checkbox"/> Within your community	<input checked="" type="checkbox"/> Within 20 miles	<input type="checkbox"/> Farther than 20 miles
<b>High School</b>	<input type="checkbox"/> Within your community	<input checked="" type="checkbox"/> Within 20 miles	<input type="checkbox"/> Farther than 20 miles

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

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

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

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

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

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

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

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

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

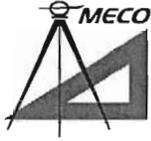
6.6 In the foreseeable future the tax base of the community will:  
 Significantly Decrease    Decrease    Remain the Same    Increase    Significantly Increase

6.7 It is \_\_\_\_\_ for the community to meet its debt obligations.  
 Difficult    Somewhat Difficult    Somewhat Easy    Easy    No Debt

7. What other issues or information should be considered when determining population stability or the financial ability for your community to pay for significant capital investments? Attach sheets as necessary.  
 (Example: Seasonal population changes, natural resources (lakes, rivers), age of infrastructure, significant employment changes, etc.)  
 None

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

	Very Unlikely	Unlikely	Likely	Very Likely
				✓



# MECO ENGINEERING COMPANY

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366-004  
October 29, 2015  
JBM

## CITY OF PORTAGE DES SIOUX WASTEWATER TREATMENT PLANT AND COLLECTION SYSTEM IMPROVEMENTS

NO.	DESCRIPTION	QUANTITIES	UNITS	CONTRACT	
				UNIT COST	TOTAL
1	MECHANICAL PLANT EQUIPMENT	1	LS	\$350,000.00	\$ 350,000.00
2	CONCRETE BASIN(S)	1	LS	\$200,000.00	\$ 200,000.00
3	EQUIPMENT INSTALLATION AND START UP	1	LS	\$250,000.00	\$ 250,000.00
4	DEMOLITION OF EXISTING PLANT	1	LS	\$50,000.00	\$ 50,000.00
5	LIFT STATION MODIFICATION	1	LS	\$125,000.00	\$ 125,000.00
6	SEWER FORCE MAIN	1	LS	\$7,500.00	\$ 7,500.00
7	NEW MANHOLES	3	EA	\$5,000.00	\$ 15,000.00
8	STORM SEWER REALIGNMENT	1	LS	\$75,000.00	\$ 75,000.00
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>					<b>\$ 1,072,500.00</b>

### WASTEWATER COLLECTION SYSTEM IMPROVEMENTS

NO.	DESCRIPTION	QUANTITIES	UNITS	CONTRACT	
				UNIT COST	TOTAL
1	PRE-LINING CCTV INSPECTION AND CLEANING	2367	LF	\$5.00	\$ 11,835.00
2	GRAVITY SEWER MAIN GROUTING	500	LF	\$15.00	\$ 7,500.00
3	LATERAL GROUTING	27	EA	\$800.00	\$ 21,600.00
4	CIPP GRAVITY SEWER LINING	2367	LF	\$38.00	\$ 89,946.00
5	FINAL MAIN LINE CCTV INSPECTION	2367	LF	\$1.50	\$ 3,550.50
<b>ESTIMATED CONSTRUCTION COST SUB-TOTAL</b>					<b>\$ 134,431.50</b>
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>					<b>\$ 1,206,931.50</b>

TOTAL PROJECT COSTS AND CONSTRUCTION COSTS PROVIDED HEREIN ARE MADE ON THE BASIS OF ENGINEER'S EXPERIENCE AND QUALIFICATIONS AND REPRESENT THE ENGINEER'S BEST JUDGMENT. HOWEVER, THE ENGINEER CANNOT AND DOES NOT GUARANTEE THAT BIDS OR ACTUAL TOTAL PROJECT OF CONSTRUCTION COSTS WILL NOT VARY FROM THE ESTIMATE OF PROBABLE CONSTRUCTION COST. THIS ESTIMATE IS INTENDED TO ASSIST IN BUDGETARY ASSESSMENT AND DOES NOT GUARANTEE THAT ACTUAL PROJECT COSTS WILL NOT EXCEED OR BE LOWER THAN THE AMOUNTS STATED IN THIS ESTIMATE.

**DIVISION 11 - EQUIPMENT****SECTION 11860****PACKAGED BIOLOGICAL WASTEWATER TREATMENT PLANT****1.00 GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 1 Specification Sections, apply to this Section.

**1.02 DESCRIPTION OF WORK**

- A. The contractor shall furnish and install one package biological wastewater treatment system, complete and ready for operation in accordance with the plans and specifications stated herein. The wastewater treatment system shall include one (1) Tipton Series Model TEII-560-PIPFESHAMCC equipment package for a concrete extended aeration process wastewater treatment system as manufactured by RWL WATER USA, Golden Valley, Minnesota, U.S.A. All concrete structures shall be provided by the contractor. The package wastewater treatment system will have a total design flow of 56,000 gallons per day domestic waste. The aeration chamber shall have a volume of 84,000 gallons. The clarifier shall be of the circular mechanical type based on a four hour retention of the average design flow. The package wastewater treatment system shall include the necessary tank vessels, internal piping, valving, weirs, baffles and all items of equipment as listed below. The secondary treatment system shall be complete with a flow equalization chamber, sludge holding, dual anoxic zones, aeration chamber and a gravity hopper type clarifier chamber and with tablet type chlorination. The secondary treatment system shall be complete with all necessary tank vessels, component equipment necessary for efficient and proper plant operation. The electrical power shall be 230 volt, 3 phase 60 Hz.
- B. The equipment package for the concrete wastewater treatment system shall be factory prefabricated and assembled, so far as possible, taking into consideration shipping and erection limitations. Because of the total system length the equipment shall be shipped to the project site in several truckloads.
- C. The basic equipment furnished by the manufacturer shall include, but not be limited to, internal piping and valving, blower motor unit assemblies, service walkways, pumps and electrical control equipment.
- D. The plans and specifications have been based on the Tipton Series wastewater treatment system equipment package, as manufactured by RWL Water USA., Golden Valley, Minnesota, U.S.A.
- E. General Contractor Field Services - The General Contractor shall perform the installation of the TIPTON Series wastewater treatment system, supplying and installing all concrete tank structures. The following is a brief description of the general contractor's responsibilities regarding the installation:
1. Provide a concrete foundation pad for the system.
  2. Provide a crane and other equipment for off loading and setting of the wastewater treatment system equipment.
  3. Once the system has been set into position the equipment which has been disconnected for shipping such as the piping, valving, grating, handrails and electrical controls must be reassembled.
  4. The general contractor's electrical field crew shall install at the location shown on the drawings the electrical consoles such as; Model CP-1 (Main Control Panel), CP-2 (flow equalization) and CP-3 (Mechanical Clarifier Drive Unit). In addition, they shall run the electrical wiring and conduit to the appropriate ancillary components within the wastewater treatment structure.

5. All areas requiring touch up painting shall be painted by the Contractors field crew.
6. An adequate access road to the plant site shall be provided to enable the lowboy truck into the project site and for off loading.
7. Provide facilities and crane for off loading and setting of the wastewater treatment system and it's ancillary equipment onto its concrete foundation pad.
8. All site utilities to the system shall be tied-in to the system. The electrical power requirements shall be provided at each power block of each control console. The main power to the wastewater treatment system shall be supplied through an electrical power meter, main disconnect, and disconnect for the sub-panels – CP-1 CP-2 and CP-3. This disconnect shall be supplied by the owner's field electrical contractor. Any of the sub-panels shall be supplied with a power block to receive the electrical power from these disconnects. The power shall be 230 volts, 3 phase, 60 Hz. A total of three sub-panels, shall be provided. The necessary control voltage of 120 volt, 1 phase for the ancillary equipment shall be obtained through transformers.
9. The foundation pad, with anchor facilities, for setting the system on shall be furnished by the field contractor.
10. Finish grade and placement of gravel around the clarifier shall be performed by the field contractor. Clarifier walls and floor shall be provided in concrete by the field contractor.
11. All field piping and wiring shall be by the field contractor.

**1.03 DEFINITIONS (NONE)**

**1.04 PERFORMANCE REQUIREMENTS**

A. The wastewater treatment system will have a total design flow of 56,000 gallons per day of domestic wastewater. All chambers shall be constructed of concrete and shall be supplied by the contractor. The following design criteria were used in sizing the wastewater treatment system:

1. Flow Equalization Chamber Criteria
  - a) Aeration Chamber Holding Volume = 16000 gallons
  - b) Air Supplied = One (1) blowers at 50 SCFM @ 5 psi
  - c) Controlled by a time clock
2. Aeration Chamber Criteria
  - a) Aeration Chamber Holding Volume = 84,000 gallons
  - b) Air Supplied = Two (2) blowers at 550 SCFM @ 5 psi each
  - c) Controlled by a time clock
3. Sludge Holding Criteria
  - a) Holding Volume = 21,000 gallons
  - b) Air Supplied from main blower motor units
4. Pre-Anoxic Criteria

- a) Holding Volume = 7,000 gallons
5. Clarifier Criteria
- a) Design Flow Rate = 56,000 GPD
  - b) Clarifier Chamber Dimensions = 15' diameter with a 12' SWD
  - c) Circular Mechanical type
  - d) One (1) Sludge return system for clarifier
  - e) One (1) Bridge with walkway
  - f) One (1) Stilling Well
  - g) One (1) Drive Unit with controls
  - h) One (1) Rake assembly
  - i) Air Supplied for clarifier from main secondary blower units
6. Post Anoxic Criteria
- a) Holding Volume = 7,000 gallons
7. Chlorine Contact Chamber Criteria
- a) Holding Volume = 1166 gallons
  - b) One (1) Hypo-chlorination unit

#### 1.05 SUBMITTALS

- A. Product Data: Include the following:
- 1. Product literature
  - 2. Manuals
  - 3. Complete product description
  - 4. Affidavits of compliance with referenced standards and codes.
  - 5. Manufacturer's warranty
  - 6. A list of all deviations from drawings and specifications.
- B. Shop Drawings: All shop drawing submittals shall be in accordance with the General Conditions and Division 1 and include the following:
- 1. Dimensions and required clearances
  - 2. Weights and forces
  - 3. Layout for all equipment including installation details
- C. Operation and Maintenance Data: Two (2) copies of the manufacturer's Maintenance and Operating Instructions Manual shall be provided with the equipment at the time of delivery. Three (3) copies that include all revisions made during start-up shall be provided after final acceptance.
- D. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.
- E. Control Panel Submittal: A master wiring diagram for the control panel shall be submitted for Engineer's review and approval before beginning construction. This diagram shall be drawn in standard ladder logic format. All ladder rungs shall be numbered in the left hand margin, and all relay contacts referenced to these numbers in the right hand margin. Each electrical node in the control schematic shall have a different wire number. A bill of materials and a layout drawing shall be placed in the door (or inner door or inner bracket). All components shall appear on this drawing with a listing of nameplates pertaining to the

components. Included in the submittal package shall be data sheets of all equipment used in the control panel, as listed in the bill of materials. Submittal drawings may be on 11" x 17" paper.

- F. Control Panel As-Built Drawing: Final As-Built drawings shall be on full-size 17" x 22" or 24" or 36" paper, as required. A waterproof reduced copy of the master "as-built" wiring diagram shall be laminated in clear plastic and permanently fastened to the inside of the panel door. As-built drawing shall be placed in the panel.

#### 1.06 QUALITY ASSURANCE

- A. In order to assure uniform quality, ease of maintenance and minimal parts storage, it is the intent of these specifications that all equipment called for under this Section shall be supplied by a single manufacturer. The equipment manufacturer shall, in addition to the Contractor, assume the responsibility for proper installation and functioning of the equipment.

- B. The Contract Documents represent the minimum acceptable standards for equipment specified in this section on this project. All equipment shall conform fully in every respect to the requirements of the respective parts and sections of the drawings and specifications. If not named, the equipment which is a "standard product" with that manufacturer shall be modified, redesigned from the standard mode and shall be furnished with special features, accessories, materials of construction or finishes as may be necessary to conform to the quality mandated by the technical and performance requirements of the specification.

- C. Factory Tests: Manufacturer shall factory assemble equipment to detect any defects and demonstrate that they will function satisfactory under all conditions specified. Manufacturer shall prepare and submit a written report on the results of remedial action taken, if any.

1. Pump Test: The pump manufacturer shall perform the following inspections and tests on each pump before shipment from factory:

- a) Impeller, motor rating, and electrical connections shall first be checked for compliance to the customer's purchase order.
- b) A motor and cable insulation test for moisture content or insulation defects.
- c) Prior to submergence, the pump shall be run dry to establish correct rotation and mechanical integrity.
- d) The pump shall be ran for 30 minutes submerged a minimum of 6 feet under water.
- e) After Operational Test (d.), the Insulation Test (b.) is to be performed again.

2. A written report stating the foregoing have been done, shall be supplied with each pump at the time of shipment. The pump cable end will then be fitted with a shrink fit rubber boot to protect it prior to electrical installation.

- D. Reference Standards: Comply with all applicable provisions and recommendations of the following, except as otherwise shown or specified.

1. National Electrical Code (NEC).
2. National Electrical Manufacturers Association (NEMA)
3. Occupational Safety and Health Act (OSHA)
4. American Society of Testing and Materials (ASTM)
5. American Welding Society (AWS)
6. American Institute of Steel Construction (AISC)
7. American Society of Civil Engineers (ASCE)
8. Steel Structures Painting Council (SSPC)
9. American Gear Manufacturers Association (AGMA)

10. American National Standards Institute (ANSI)

### 1.07 DELIVERY, STORAGE, AND HANDLING

A. Preparation for Transport: Prepare all equipment according to the following:

1. Ensure that all the equipment is dry and protected.
2. Package all the equipment to protect from damage while in transport, loading, and unloading.

B. Storage:

1. Carefully prepare for storage and label all equipment and materials after they have been inspected.
2. Store materials to permit easy access for inspection and identification. Support all material off of the ground and protect steel members and package material from corrosion and deterioration as per manufacturer's instructions.

C. Handling: Handle all equipment as per manufacturer's instructions.

D. Inspect all equipment and materials against reviewed shop drawings at the time of delivery.

E. Equipment and materials damaged or not meeting the requirements of the reviewed shop drawings shall be immediately returned for replacement or repair.

### 1.09 COORDINATION

A. Coordinate Work on this section with interfacing and adjoining Work for proper sequencing of each installation.

### 2.00 PRODUCTS

A. Flow Equalization System

1. To control the peak hourly flow rates a 16,000 gallon flow equalization system shall be provided at the influent end of the wastewater treatment system. The influent peak flow rates shall enter into the flow equalization system where it is held and aerated until the secondary treatment system is ready to process it. Once the influent has been received by the flow equalization chamber it shall be processed by dual flow equalization pumps, pumping it to the flow-proportioning chamber. This chamber shall be so designed that it will allow the average daily flow to be processed and pass through the chamber into the aeration chamber. To control the flow rate from the flow equalization pumps a series of a v-notch weir and a flat weir, which is adjustable, to be provided. The flow equalization control system shall be complete with bar screen, dual flow equalization pumps, liquid level control system, flow proportioning chamber, electrical controls, air blower, coarse air diffuser with air manifold.

RWL WATER USA shall provide the following equipment for the flow equalization chamber:

- |     |      |   |
|-----|------|---|
| (A) | One  | Flow Equalization Air Blower Unit, 50 SCFM @ 5 psi. 230/3/60        |
| (B) | One  | Flow Equalization Electrical Control Panel Model CP-2 230/3/60      |
| (C) | Four | Liquid Level Sensors, narrow angle type controlling the surge pumps |
| (D) | One  | Time clock for controlling the surge blower                         |
| (E) | One  | Lot of Coarse Air Diffusers with drop assemblies                    |
| (F) | Two  | Flow equalization pumps P-1, P-2 . 230/3/50                         |
| (G) | One  | Mechanical bar screen mounted atop the flow equalization chamber    |
| (H) | One  | Flow Proportioning Chamber  |

B. Inlet Connection

1. An influent connection to the wastewater system shall be provided. It shall consist of one 6" inlet entering into the flow equalization chamber. The influent shall be discharged into the bar screen

and the design flow shall be pumped from the flow equalization chamber to the flow proportioning chamber by dual flow equalization pumps.

C. Bar Screen

1. Bar screen shall be provided as shown on the contract drawings located in the flow equalization chamber. Its purpose is to remove any unusually large solids from the incoming crude sewage flow rate. The bar screen shall be fabricated from one-half inch diameter bars spaced one-inch apart and arranged as shown on the drawings. The bars shall be sloped to permit easy cleaning of accumulating debris. A large drying area shall be provided.

D. Air Supply for Flow Equalization system

1. For supplying the air requirements of the Flow Equalization System, one (1) Model BMU-50-R22 Blower Motor Unit shall be provided as shown on the drawings. The voltage shall be 230 volts, 3 phase, 60 Hz. The unit shall have the capacity of providing 100% of the air requirements for the flow equalization system. The blower unit shall be installed at the location shown on the drawings. The unit shall be completely factory built and tested before shipping. The blower unit shall be installed within one Fiberglass Enclosure complete with fiberglass hood. The inlet filter silencer, pressure relief valve, pressure gauge, with only the blower discharge rubber hose connection being provided as a single line hook up for the blower. The necessary electrical connection from the blower to CP-2 shall be provided and pre-wired. The enclosure shall have ivory finish. The blower motor enclosure unit shall be mounted on four (4) vibration pad dampers tagged VP-1. This will help reduce blower vibration and noise transmission. The Blower system shall be equipped with one 1" blower discharge pipe with a 1" marine rubber hose with stainless steel clamps.
2. The blower unit shall be a Model BMU-50-R22 shall be furnished for supplying all the air requirements needed for the flow equalization Basin. The unit shall be capable of delivering 50 SCFM at an operating pressure of 5 psi.
3. The blower shall be of the positive displacement type and shall manufactured by Roots Division of Dresser Industries, Inc., Connersville, Indiana or approval equal. The Model number of the blower will be a URAI-22 and equipped with a 1" discharge.
4. The motor shall be 2 Hp for operation on 460 volt, 3 phase, 60 Cycle Service, and 1800 RPM. The motor shall be of the TEFC type. The wiring to this motor from the control panel shall be provided and installed by the field contractor.
5. For determining the blower performance, and/or diffuser condition, a pressure relief valve and pressure gauge. These items shall be premounted and piped within the blower enclosure.

E. Electrical control Console CP-2

1. An electrical control center, for the flow equalization system shall be the Model CP-2. This control panel shall be installed within a NEMA 4X fiberglass electrical weatherproof enclosure complete with floor mounting facilities installation atop the package wastewater treatment system as shown on the drawings. The voltage shall be 230 volts, 3 phase, 60 Hz. and shall be supplied to each panel at the power block.
2. A step down transformer shall be supplied to step the electrical power down from 230 volt to 120-volt power for control voltages for the secondary power.
3. The electrical control center Model CP-2 shall control the operation of the following equipment:
  - a) Flow Equalization Blower Motor Unit BM-3, 2 HP, 230/3/60
  - b) Sludge Holding Blower motor unit BM-4, 2hp, 230/3/60.
  - c) Time Clock
  - d) Flow Equalization Pump No. 1: P-1, 3/4 HP, 230/3/60
  - e) Flow Equalization Pump No. 2: P-2, 3/4 HP, 230/3/60
  - f) Liquid level sensors -4 level sensors narrow angle

- g) Pre-anoxic mixer
- 4. Flow Equalization Blower Motor Unit - The Flow Equalization blower unit operation shall be controlled by the wide-angle liquid level condition of the flow equalization basin. The blower shall turn on when the on liquid level sensor side is activated on when the water level reach the on level and de-activates when the water level is lowered to the off level.
- 5. Flow Equalization Tank Pumps Control - The Flow Equalization pumps shall operate on a duplex pump alternator operation I mode where as pump one will operate alternately with pump no 1 and 2 on cycles. The pump operation shall be controlled by four (4) encapsulated mercury float Switches (narrow angle) each individually adjustable for the following:
  - a) All Pumps off
  - b) Lead Pump on
  - c) Lag Pump on
  - d) High Level Alarm
- 6. The Flow Equalization pumps shall operate on a lead-lag with the two pumps alternating. If the liquid level reaches lag pump on level, both pumps shall operate. If the liquid level reaches the high water level, the alarm will be activated.
- 7. All wiring, terminal blocks, supports and accessories required for the operations of the control panel shall be provided in compliance with the National Electric Code.
- 8. Flow Equalization Pumps Tagged P-1, P-2, The voltage shall be 460 volts, 3 phase, 60 Hz. The Flow Equalization pumps shall be of the Gould's submersible type. Each pump shall be as manufactured by the Gould's pump company, a Xylem Company. The pump shall have a 3/4 horsepower motor which will operate on 230 volt, 3 phase, 60 Hz. Each Flow Equalization pumps shall be supplied with a 2-inch discharge.
- 9. For easy removal of the flow equalization pumps, a hoist shall be provided adjacent to the pump location.

F. Aeration Chamber

- 1. There shall be supplied an aeration chamber to work in conjunction with the clarifier chamber and sludge holding chamber of secondary treatment system. The aeration chamber shall conform to the following specifications:
- 2. The aeration chamber shall have a volume of 84,000 gallons. The vessel shall be shaped in such a way to prevent sludge accumulation, enhancing the rotation of the vessel contents, and to prevent scum and froth accumulation. To insure maximum retention time and eliminate short circuiting, the aeration chamber shall be constructed with air diffusers, placed longitudinally along one side of the chamber so as to, in conjunction with flow control baffles, enhance the spiral rotation of the chamber contents. To ensure adequate circulation velocity, the proportion of the chamber width to depth, in the direction of rotation, shall not exceed 1.33 to 1. The velocity of rotation shall be sufficient to scour the bottom and prevent sludge filleting. In addition prevent the escape of minuscule air diffusion bubbles to the surface, thus causing their entrapment to provide maximum oxygenation efficiency.
- 3. An air distribution manifold shall be installed longitudinally on one side of the tank with diffuser drop assemblies connected thereto. This manifold shall be designed to create a bank of air to supply the air needs of the system, and other ancillary equipment such as the air diffusers, airlift pumps, and scum skimmer to draw from this bank of air.
- 4. Each diffuser drop assembly shall be equipped with an air regulating and/or shutoff valve, a disconnecting union and air diffuser nozzles mounted on the tee. The airflow per diffuser shall range from 1 to 5 CFM. This minimum air velocity shall be maintained to insure sufficient velocity

for self-cleaning. The diffusers shall be parallel to and near the base of the vessel sidewall and at an elevation, which will provide the optimum diffusion and mixing of the vessel contents. The oxygen transfer capacity of each diffuser shall be such that an adequate supply of oxygen will be maintained in the aeration chamber to meet treatment requirements of the design sewage load. CYCLONE stainless steel coarse bubble diffusers shall be provided, as well as stainless steel air headers, and header supports as manufactured by RWL Water of Golden Valley, Minnesota, USA. Each diffuser shall be designed to provide wide band aeration. Air shall be released through a series of ports on the diffuser. The diffuser shall incorporate open ends to eliminate clogging. All air headers shall be constructed of thin wall stainless steel and shall minimize pressure drop.

The CYCLONE diffuser shall be diamond shape with a series of small air outlet ports on top of the diamond and a series of large air outlet ports on the lower portion of the diamond. The diamond construction shall promote bubble shear.

- a) The body of the diffuser shall be constructed of 304 stainless steel. A cast end cap shall be provided with an integral 3/4" NPT male pipe connection equivalent to schedule 80 pipe.
- b) A bottom deflector shall be incorporated into the diffuser to prevent foreign material from entering and clogging the air ports. The deflector shall deflect liquid across the outer walls of the diffuser and help shear bubbles as they rise.
- c) The diffuser ends shall be partially open to allow air to escape should the normal air ports be plugged. This open end arrangement shall prevent clogging and provide a different bubble pattern at the surface.
- d) A balancing orifice shall be provided as required within the 3/4" NPT male pipe connection to assure proper head loss and uniform distribution of the air throughout the system.

#### G. Mechanical Clarifier Chamber

1. There shall be furnished a mechanical clarifier chamber to work in conjunction with the aeration chamber and sludge holding chamber of the system. The mechanical clarifier chamber shall conform to the following specifications, with the concrete chamber being provided by the field contractor:

The mechanical clarifier chamber shall have proper baffling to prevent short-circuiting and to provide maximum uniform solids settling area. Wastewater shall enter the clarifier from the aeration chamber by a 4-inch inlet pipe.

The torque tube shall be 4 inch and shall be attached to the sludge collection equipment. The purpose of the sludge collection equipment is to scrape the settled sludge from the floor of the clarifier to the center well where it is picked up by the 4" airlift sludge return pump. Settled sludge shall be returned from the clarifier sludge well to the sludge holding chamber by the positive sludge return systems, consisting of airlift pump. A scum collection system shall be provided within the clarifier chamber. The clarifier effluent shall pass over the edge of the baffled adjustable effluent weir into the effluent trough and then, out of the system. The weir plate will be constructed of galvanized steel, and will be gasketed with neoprene strips.

The purpose of the stilling well is to reduce the influent velocity and prevent short-circuiting. The stilling well shall be fabricated of 1/4 inch steel plate rolled. It shall be supported off of the stilling well. There shall be supplied a drive unit complete with controls for rotating the rake arm of the system.

#### H. Airlift Sludge Recirculation System

##### PACKAGED BIOLOGICAL WASTEWATER TREATMENT PLANT

11860/8

1. Installed within the clarifier chamber for returning the settled sludge consisting of a positive sludge re-circulation system. It consists of one (1) 4" diameter airlift sludge return assembly meeting the following specifications: The airlift pump system shall have the This system shall allow the sludge to be directed to head of aeration chamber or sludge holding chamber. Re-circulation capacity ranging from 0% to 200% of the design flow. The airlift sludge pump shall be embedded in the floor of the mechanical clarifier by the concrete grout floor, which the contractor shall be providing. The air supply line and riser pipe of the mechanical clarifier sludge return pump shall be exterior to the tank sidewall. The air line supplying air to the pump shall be equipped with a regulating valve varying the capacity of the pump. The airlift pump shall be firmly supported and shall be equipped with a clean-out plug to allow for easy cleaning and maintenance.

#### **I. Airlift Scum Recirculation System**

1. Installed within the mechanical clarifier chamber for controlling, and returning to floatable and scum from the water surface of the clarifier is a positive scum and skimming system. This system shall consist of a skimmer arm, scum box, scum trough, collection well, and one, 3-inch diameter airlift skimming device.
2. For collecting the surface scum of the mechanical clarifier a scum wiper shall be attached to the torque tube. The scum wiper shall move in conjunction with the mechanical clarifier scraper mechanism pushing the floatable scum to the scum beach where the scum shall be pushed up the scum beach into the scum trough. The scum trough shall collect the scum.
3. For transferring the scum from the scum trough a scum well shall be provided equipped with an airlift skimming device. This device shall be a positive airlift pump type, located in the scum well to return floating material to the aeration chamber. The air line supplying air to the skimming device shall be equipped with a regulating valve to tune the airlift skimming pump.

#### **J. Sludge Scraper Assembly**

1. Installed within the clarifier chamber for collecting the settled sludge a sludge scraper assembly consisting of two scraping arms fabricated of steel angle and frames, which are attached to the torque tube.
2. The scraper arms shall be fabricated from steel angles, ¼" thick minimum and have a neoprene squeegee blade attached to each angle to allow for sufficient movement of the sludge into the center sludge collection pit.
3. The bottom of the clarifier shall be grouted with concrete, which conforms to the dimensions as shown on the contract drawings. The design and installation of the concrete shall be the responsibility of the field contractor. All concrete and reinforcing steel shall be furnished by the field contractor.
4. The clarifier shall be furnished with a drive unit. The drive unit shall be furnished with a drive motor, ½ hp, 230 volt, 3 phase, 60 hz.
5. A 4" diameter sludge discharge coupling shall be supplied. The rake arm shall be attached to the drive shaft with a hinged joint to allow adjustment of the rake arm end.

K. Effluent Weir Assembly

1. The clarifier manufacturer shall furnish a double-sided steel weir trough with serrated weir plates fabricated from 3/16 inch galvanized steel plate. The weir shall be vertically adjustable, allowing for one (1) inch of adjustment in either direction. The weir trough shall be firmly fastened to the clarifier wall, using neoprene strips.
2. In addition, a scum baffle shall be provided in order to prevent scum from being carried over the weir.

L. Mechanical Clarifier Drive Unit

1. The mechanical clarifier drive unit provided will consist of a vertical weather proof motorized triple reduction speed reducer driven by a ½ HP, 230 volt, 3 phase motor, as manufactured by DBS. The speed reducer will include an integral torque control unit. The drive unit will be flanged coupled to the scraper torque shaft.
2. The combination of motor to gear reducer to drive the scraper arm at a speed not to exceed 5 feet per minute at the tip of the sludge collector.

M. Sludge holding Chamber

1. There shall be supplied an aerated sludge holding chamber to work in conjunction with the aeration chambers and clarifier chambers of the secondary treatment system. The aerated sludge holding chamber shall be an integral section of the package wastewater treatment system as shown on the drawings.
2. The sludge holding chamber shall be of sufficient capacity to provide a total volume minimum chamber volume of 21,000 gallons.
3. The sludge holding chamber shall be equipped with a supernatant decant airlift to transfer the supernatant back to the secondary treatment system for processing and to concentrate the sludge within the sludge holding chamber.
4. For supplying the air requirements of the sludge holding chamber, one (1) Model BMU-50-R22 Blower Motor Unit shall be provided as shown on the drawings. The voltage shall be 230 volts, 3 phase, 60 Hz. The unit shall have the capacity of providing 100% of the air requirements for the flow equalization system. The blower unit shall be installed at the location shown on the drawings. The unit shall be completely factory built and tested before shipping. The blower unit shall be installed within one Fiberglass Sound Enclosure, along with the flow equalization blower unit. The enclosure shall be complete with two lockable doors, one on each side of the enclosure, for easy access to either blower unit. The inlet filter silencer, pressure relief valve, pressure gauge, with only the blower discharge rubber hose connection being provided as a single line hook up for the blower. The necessary electrical connection from the blower to CP-2 shall be provided and pre-wired. The enclosure shall have ivory finish. The blower motor enclosure unit shall be mounted on four (4) vibration pad dampers tagged VP-1. This will help reduce blower vibration and noise transmission. The Blower system shall be equipped with one 1" blower discharge pipe with a 1" marine rubber hose with stainless steel clamps.
5. The blower unit shall be a Model BMU-50-R22 shall be furnished for supplying all the air requirements needed for the flow equalization Basin. The unit shall be capable of delivering 50 SCFM at an operating pressure of 5 psi.

6. The blower shall be of the positive displacement type and shall be manufactured by Roots Division of Dresser Industries, Inc., Connersville, Indiana or approval equal. The Model number of the blower will be a URAI-22 and equipped with a 1" discharge.
7. The motor shall be 2 Hp for operation on 460 volt, 3 phase, 60 Cycle Service, and 1800 RPM. The motor shall be of the TEFC type. The wiring to this motor from the control panel shall be provided and installed by the field contractor.
8. For determining the blower performance, and/or diffuser condition, a pressure relief valve and pressure gauge. These items shall be premounted and piped within the blower enclosure.

N. Pre-Anoxic Chamber

1. There shall be supplied a pre-anoxic chamber to work in conjunction with aeration chamber and clarifier chamber of the system. The pre-anoxic chamber shall conform to the following specifications and shall be constructed of concrete and provided by the field contractor.
2. The pre-anoxic chamber shall be of sufficient capacity to provide nitrate reduction with a minimum volume of 7000 gallons.
3. In addition an air distribution manifold shall be installed longitudinally on one side of the tank with diffuser drop assemblies connected thereto with shut off valves. During periods whereas the anoxic chamber is not required for use this chamber can be used for additional aeration volume by manually opening and shutting valves. The air would be provided from the main blower motor units.
4. For anoxic operation of this chamber, a static mixer shall be provided and installed within the pre-anoxic chamber. This would occur when this chamber is not being aerated. The mixer shall be sized at 2 hp, 230 volt, 3 phase, 60Hz.

O. Air Supply System Secondary Treatment System

1. For supplying the air requirements of the secondary wastewater treatment system, are two (2) main aeration blowers of the positive displacement type model BMU-550-R59. Each unit shall have the capacity of providing 100% of the air requirements for the secondary system. The two (2) blower units shall each be installed within blower motor unit fiberglass sound enclosure housing, complete with double, lockable doors, for mounting at the location shown on the drawings. The blower speed and horsepower has been corrected for this elevation levels at the project site. The discharge piping of the blowers shall be positioned both within the enclosure and exterior of the enclosure to help reduce the vibration and the noise created by the air discharged. The check valves shall all be located at the discharge of the blower. Each blower shall discharge into the air plantum with a discharge rubber hose connection being provided for each blower. The blower motor enclosure unit shall be mounted on four (4) vibration pad dampers tagged VP-1. This will help reduce blower vibration and noise transmission. The Fiberglass sound enclosure shall be equipped with a blower discharge pipe with a marine rubber hose with stainless steel clamps. Each blower unit shall be completely factory built and tested before shipping.
2. The blower motor units shall be capable of delivering 550 SCFM at an operating pressure of 5 psi.
3. The blower shall be of the positive displacement type and shall be manufactured by Roots Division of Dresser Industries, Inc., Connersville, Indiana or equal Sutorbilt Blower Division Company, Compton, California; or approved equal.

4. The motor shall be 20 HP for operation on 230 Volt, 3 phase, 60 Cycle Service, and 1,800 RPM. The wiring to this motor from the control panel shall be provided and installed by the field contractor.

contractor.

5. For determining the blower performance, and/or diffuser condition, a pressure relief valve and pressure gauge shall be provided. These items shall be premounted and piped within the sound enclosure housing of each blower unit.

**P. Secondary Treatment Electrical Control Panel, CP-1**

1. An electrical control panel, Model CP-1, shall be installed within a NEMA 4X fiberglass weatherproof enclosure complete with legs and installed as shown on the drawing.
2. A step down transformer shall be supplied to step the electrical power down from 230 volt to 120-volt control voltage.
3. The electrical control panel shall control the operation of the following secondary system equipment:
  - a) Blower Motor Unit BM-1, 20 HP. 230/3/60 Main Secondary
  - b) Blower Motor Unit BM-2, 20 HP. 230/3/60 Main Secondary
  - c) Post Anoxic Mixer
  - d) Time Clock Control
4. The electrical control panel shall control the operation of all the ancillary component equipment requiring electrical power. The blower motor unit operation time will be intermittent and controlled by the main blower timers. The plant operator shall control the operation time to obtain the correct air control. The necessary selector switches shall be provided to allow either automatic or manual operation of the auxiliary equipment.

**Q. The enclosure shall be NEMA type 4X fiberglass or equal. The electrical controls shall consist of IEC motor starters, timers, and selector switches. Properly sized circuit breakers or fuses shall protect all electrical equipment and circuitry.**

1. All wire and conduit required between the control panel and the electrical power service should be furnished by and installed by the field controller. The main power supply shall be 230 Volt, 3 phase, 60 Cycle. Power to the control panel shall be 120 volt, 1 phase. A power block in the control panel shall be supplied for the main electrical connection.
2. The control panel shall be a Model CP-1 and shall be completely factory assembled and tested prior to shipment.
3. Controls shall be mounted to a removable sub-panel within the enclosure and shall be wired and spaced in accordance with the latest National Electric Code.
4. Blower Operation Controls Method: Each blower for the aeration chamber shall be able to be controlled by the programmable timers. A selector switch within the control panel shall be used to select between automatic operation or manual operation. The two main blowers for the secondary treatment system shall be controlled by two (2) 24-hour, 7-day time clock and an alternator and shall be capable of being programmed to control the blower run cycle and to adjust both the start set point every 15 minutes on the 24 hour cycle.

**R. Post Anoxic Chamber**

1. There shall be supplied a post anoxic chamber to work in conjunction with aeration chamber and clarifier chamber of the system. The pre-anoxic chamber shall conform to the following specifications and shall be constructed of concrete and provided by the field contractor :
2. The post anoxic chamber shall be of sufficient capacity to provide nitrate reduction with a minimum volume of 7000 gallons.
3. In addition an air distribution manifold shall be installed longitudinally on one side of the tank with diffuser drop assemblies connected thereto with shut off valves. During periods whereas the anoxic chamber is not required for use this chamber can be used for additional aeration volume by manually opening and shutting valves. The air would be provided from the main blower motor units.
4. For anoxic operation of this chamber, a static mixer shall be provided and installed within the post anoxic chamber. This would occur when this chamber is not being aerated. The mixer shall be sized at 2 hp, 230 volt, 3 phase, 60Hz.

**S. Service Walkway**

1. A service walkway shall be provided for service area only to service the plant equipment. Grating panels shall be constructed of non-skid galvanized . All grating panels shall be constructed of galvanized steel with maximum yield strength of 37,000 psi. Each grating panel has a standard 9-inch surface width, and a 2-1/2-inch rib depth. Furthermore, each panel shall have a safe uniform load carrying capacity of 120 pounds per square foot.
2. Handrail shall be provided around the perimeter of the service walkway. The handrail system shall consist of aluminum pipe with a triple center cable guard, as shown on the drawings.

**T. Disinfection System DISINFECTION SYSTEM**

1. A concrete UV Chamber shall be provided by the contractor.
2. An ultrasonic flow meter shall be provided at the effluent of the wastewater treatment system.

**U. Effluent Connection**

1. The effluent connection of the wastewater treatment system shall be located as shown on the plans and shall consist of one (1) 6" diameter standard flanged pipe at the location shown.

**3.01 EXECUTION**

**3.02 GENERAL**

- A. The pump unit shall arrive at the job site ready for installation. The hookup to the sewer shall conform to the drawings and the specifications. The Contractor shall be responsible for furnishing and installing units of the depth as shown on the drawings.
- B. Equipment Manufacturer:
  1. All fabricated steel parts (excluding stainless steel) shall be commercially cleaned and given one (1) shop coat of rust inhibitive primer.
  2. All items such as motors, reducers, and equipment completely shop assembled and ready for installation shall be given one (1) coat of the manufacturer's machinery enamel.
- C. General Contractor:

1. The General Contractor shall furnish and install all piping as shown on the drawings.
2. The General Contractor shall furnish and install all field wiring required including proper sized wire, conduit, fittings, and supports.
3. The General Contractor shall furnish and install all electrical items required but not specifically called for as furnished by the equipment manufacturer.
4. The General Contractor shall furnish and apply all touch-up of the prime coat and all finish coatings; and be responsible for compatibility of the primer with finish coatings.
5. The General Contractor shall place the anchorage in accordance with certified prints supplied by the equipment manufacturer.

### **3.03 ELECTRICAL INSTALLATION**

- A. All wiring shall be in complete conformity with the National Electric Code and state and local NEMA standards.
- B. The entire installation of the pumps, electrical connections and any other work associated therewith shall adhere to the manufacturer's instructions, and shall be in compliance with all applicable codes.

### **3.04 CORROSION PROTECTION**

- A. Non-stainless steel portions of the pump casting and appurtenant iron castings shall be pretreated with all metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a polyester resin paint finish on the exterior of the pump.
- B. The interior of the pump volute and passageways shall be painted as described herein. Other exposed surfaces subject to corrosion within the pump basin shall be protected either by painting, industry standards, or other acceptable methods.

### **3.05 FIELD TESTING**

- A. The Contractor shall, at his own expense, provide the necessary facilities to provide hydraulic and electrical performance tests on each of the pumps as shipped and/or assembled on the construction site.
- B. The specifications for hydraulic and electrical characteristics as stated elsewhere in this section are minimum requirements. Any pump failing to meet the minimum requirements shall be rejected. All rejected equipment shall be removed from this project and substituted with brand new merchandise.
- C. The performance test instruments to be used shall measure amperes, volts, feet of head, and flow. The instruments used shall have full scale accuracy of at least 1.5%. The minimum number of instruments required are one each with ranges so indicated:
  1. Ampere meter, ranges 0 to 20 amperes, and 0 to 100 amperes, direct reading, clamp on type.
  2. Volt meter, direct reading capable of reading 0 to 500 volts.
- D. The Contractor may elect for a properly equipped independent testing laboratory to perform the required performance testing. The Contractor shall submit to the Engineer a list of gauges and meters to be used in the testing and drawings of the proposed layout for performing the test, prior to testing for his approval. The Contractor shall notify the Engineer no less than 24 hours prior to when testing is to be done.
- E. Each pump may be subjected to a 24-hour operation test before acceptance as follows:
  1. Preparation: The unit under test shall be properly installed in the wet well, firmly upon its discharge connection after determination (a) proper service voltage is being supplied and (b) proper rotation of the impeller. No cooling by forced or circulated air shall be allowed.

2. Dry pumping test (all sizes): Liquid shall be at a level sufficient to keep the pump volute submerged during the test. Pump shall be operated at full load for one hour unsubmerged without failure or damage to the windings.
3. Supplier may be allowed to provide independent documentation of such capabilities. The use of thermal sensors to protect the motor shall not be considered as an acceptable means of meeting this requirement.

### **3.06 LIMITED WARRANTY**

- A. The furnished equipment shall be guaranteed against defects in materials or workmanship for a minimum period of five (5) years following date of start-up. During the warranty period, all defective equipment shall be repaired or replaced without cost or obligation to the Owner the first year, with a stair stepped warranty for the remaining four years.

**END OF SECTION 11860**