STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

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

Permit No.	MO-0136131
Owner:	KCP&L Greater Missouri Operations Company
Address:	P.O. Box 418679, Kansas City, MO 64141
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Sibley Generating Station Utility Waste Landfill
Facility Address:	33200 E. Johnson Road, Sibley, MO 64088
Legal Description:	NE¼, NW¼, Sec. 1, T50N, R30W, Jackson County
UTM(X/Y):	399206/4336965
Receiving Stream:	Missouri River (P)
First Classified Stream and ID:	Missouri River (P) (0356)
USGS Basin & Sub-watershed No.:	(10300101-080002)

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 #020 - Industrial SIC #4911 **No Certified Operator Required.**
Utility Waste Landfill Leachate Pond

Design flow is 12,300 gallons per day.

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

December 3, 2010
Effective Date

Kip A. Stetzler, Acting Director, Department of Natural Resources

December 2, 2015
Expiration Date

Dorothy E. Franklin, Acting Director Kansas City Regional Office

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

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

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #020						
Flow	MGD	*		*	once/quarter***	24 hr. estimate
Total Suspended Solids	mg/L	100		30	once/quarter***	grab
pH – Units	SU	**		**	once/quarter***	grab
Oil & Grease	mg/L	15		10	once/quarter***	grab
Sulfate	mg/L	*		*	once/quarter***	grab

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

Whole Effluent Toxicity (WET) test	% Survival	See Special Conditions	once/permit cycle	grab

MONITORING REPORTS SHALL BE SUBMITTED ONCE/PERMIT CYCLE; THE FIRST REPORT IS DUE December 28, 2014.

B. STANDARD CONDITIONS

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

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

* Monitoring requirement only.
** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.5-9.0 pH units.
*** See table below for quarterly sampling.

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

C. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
   (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
   (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

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

C. SPECIAL CONDITIONS (continue)

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

3. 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.

4. Changes in Discharges of Toxic Substances

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

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

6. Water Quality Standards
   (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
   (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
      (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
      (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
      (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
      (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
      (5) There shall be no significant human health hazard from incidental contact with the water;
      (6) There shall be no acute toxicity to livestock or wildlife watering;
      (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
      (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

7. The permittee shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must be prepared within 30 days and implemented within 90 days of permit issuance. The SWPPP must be kept on-site and should not be sent to DNR unless specifically requested. The SWPPP must be reviewed and updated, if needed, every five (5) years or as site conditions change. The permittee shall select, install, use, operate, and maintain the Best Management Practices prescribed in the SWPPP in accordance with the concepts and methods described in the following document:

   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.

   The SWPPP must include the following:

   (a) An assessment of all storm water discharge associated with this facility. This must include a list of potential contaminants and an annual estimate of amounts that will be used in the described activities.

C. SPECIAL CONDITIONS (continue)

(b) A listing of specific Best Management Practices (BMPs) and a narrative explaining how BMPs will be implemented to control and minimize the amount of potential contaminants that may enter storm water. Minimum BMPs are listed in SPECIAL CONDITIONS #8 below.
(c) The SWPPP must include a schedule for a twice per month site inspection and a brief written report. The inspections must include observation and evaluation of BMP effectiveness. Deficiencies must be corrected within seven (7) days and the actions taken to correct the deficiencies shall be included with the written report, including photographs. Any corrective measure that necessitates major construction may also need a construction permit. Inspection reports must be kept on site with the SWPPP and maintained for a period of five (5) years. These must be made available to DNR personnel upon request.
(d) A provision for designating an individual to be responsible for environmental matters.
(e) A provision for providing training to all personnel involved in material handling and storage, and housekeeping of maintenance and cleaning areas. Proof of training shall be submitted on request of DNR.

8. Permittee shall adhere to the following minimum Best Management Practices:

(a) Prevent the spillage or loss of fluids, oil, grease, fuel, etc. from vehicle maintenance, equipment cleaning, or warehouse activities and thereby prevent the contamination of storm water from these substances.
(b) Provide collection facilities and arrange for proper disposal of waste products including but not limited to petroleum waste products, and solvents.
(c) Store all paint, solvents, petroleum products and petroleum waste products (except fuels), and storage containers (such as drums, cans, or cartons) so that these materials are not exposed to storm water or provide other prescribed BMP's such as plastic lids and/or portable spill pans to prevent the commingling of storm water with container contents. Commingled water may not be discharged under this permit. Provide spill prevention control, and/or management sufficient to prevent any spills of these pollutants from entering waters of the state. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall also prevent the contamination of groundwater.
(d) Provide good housekeeping practices on the site to keep trash from entry into waters of the state.
(e) Provide sediment and erosion control sufficient to prevent or control sediment loss off of the property. This could include the use of straw bales, silt fences, or sediment basins, if needed, to comply with effluent limits.

9. All fueling facilities present on the site shall adhere to applicable federal and state regulations concerning underground storage, above ground storage, and dispensers, including spill prevention, control and counter measure.

10. Before releasing water that has accumulated in secondary containment areas it must be examined for hydrocarbon odor and presence of a sheen. When the presence of hydrocarbons is indicated, and at a minimum of once/quarter, this water must be tested for all hydrocarbon parameters listed in Effluent Limitations and Monitoring Requirements. Water shall be taken to a WWTP for treatment before release if it does not meet state requirements.

11. Substances, regulated by federal law under the Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), that are transported, stored, or used for maintenance, cleaning or repair, shall be managed according to RCRA and CERCLA.

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

SUMMARY OF ACUTE WET TESTING FOR THIS PERMIT				
OUTFALL	AEC	FREQUENCY	SAMPLE TYPE	MONTH
020	10%	Once/Permit Cycle	Grab	Sample any month, report in December 2014

Dilution Series							
AEC%	4X AEC	2X AEC	AEC	½ AEC	¼ AEC	(Control) 100% upstream, if available	(Control) 100% Lab Water, also called synthetic water

C. SPECIAL CONDITIONS (continue)

(a) Test Schedule and Follow-Up Requirements

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(4) Failure of a WET test is a violation of this permit.

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

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

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

C. SPECIAL CONDITIONS (continue)

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

(b) PASS/FAIL procedure and effluent limitations:
(1) To pass a multiple-dilution test:
(i) For facilities with a computed percent effluent at the edge of the zone of initial dilution, Allowable Effluent Concentration (AEC) OF 30% OR LESS, the AEC must be less than three-tenths (0.3) of the LC_{50} concentration for the most sensitive of the test organisms; **OR**,
(ii) For facilities with an AEC greater than 30%, the LC50 concentration must be greater than 100%; **AND**,
(iii) All effluent concentrations equal to or less than the AEC must be nontoxic. Mortality observed in all effluent concentrations equal to or less than the AEC shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS or other federal guidelines as appropriate or required.

(c) Test Conditions
(1) Test Type: Acute Static non-renewal
(2) All tests, including repeat tests for previous failures, shall include both test species listed below.
(3) Test species: Ceriodaphnia dubia and Pimephales promelas (fathead minnow). Organisms used in WET testing shall come from cultures reared for the purpose of conducting toxicity tests and cultured in a manner consistent with the most current USEPA guidelines. All test animals shall be cultured as described in the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms.
(4) Test period: 48 hours at the "Allowable Effluent Concentration" (AEC) specified above.
(5) Upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.
(6) Unless otherwise specified above, multiple-dilution tests will be run with:
(i) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;
(ii) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
(iii) Reconstituted water.
(7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.
(8) If upstream control mortality exceeds 10%, the entire test will be rerun using reconstituted water as the dilutant.

D. OTHER REQUIREMENTS

1. Manage the leachate ponds to ensure that there is enough capacity to capture run-off from a 25-year/24-hour storm event.

2. Water from the leachate pond should be utilized for dust suppression on the landfill, if possible.

E. PERMIT TRANSFER

This permit may be transferred to a new owner by submitting an “Application for Transfer of Operating Permit” signed by the seller and buyer of the facility, along with the appropriate modification fee.

E. PERMIT RENEWAL REQUIREMENTS

Unless this permit is terminated, the permittee shall submit an application for the renewal of this permit no later than six (6) months prior to the permit's expiration date. Failure to apply for renewal may result in termination of this permit and enforcement action to compel compliance with this condition and the Missouri Clean Water Law.

F. TERMINATION

In order to terminate this permit, the permittee shall notify the department by submitting Form J, included with the State Operating Permit. The permittee shall complete Form J and mail it to the department at the address noted in the cover letter of this permit. Proper closure of any storage structure is required prior to permit termination. A closure plan shall be submitted to the department and approved prior to initiating closure activities.

G. DUTY OF COMPLIANCE

The permittee shall comply with all conditions of this permit. Any noncompliance with this permit constitutes a violation of Chapter 644, Missouri Clean Water Law, and 10 CSR 20-6. Noncompliance may result in enforcement action, termination of this authorization, or denial of the permittee's request for renewal.

SUMMARY OF TEST METHODOLOGY FOR ACUTE WHOLE-EFFLUENT TOXICITY TESTS

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

Test conditions for Ceriodaphnia dubia:

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

Test conditions for Pimephales promelas:

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

Missouri Department of Natural Resources
Fact Sheet For
Sibley Generating Station Utility Waste Landfill
NPDES #: MO-0136131

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

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

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

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

Part I – Facility Information

Facility Type: Industrial Utility Waste Landfill
Facility SIC #: 4911

Facility Description:
The Sibley Generating Station consists of three coal-fired steam units used to generate electric power. By-products from the coal combustion process are disposed of in the on-site utility waste landfill. Landfill leachate is collected and ultimately discharged to the Missouri River. The existing landfill was constructed on approximately 36 acres to include the landfill, sediment pond for non-contact stormwater, perimeter roads, and drainage ditches. The landfill expansion is designed to provide approximately 4.65 million cubic yards of additional airspace for the disposal of utility waste primarily generated by the Sibley Generating Station. The final landfill will require approximately 90 acres to include the new waste cells, existing landfill, leachate pond, perimeter roads, borrow areas, and drainage ditches. The total waste footprint of the combined existing and proposed expansion receiving waste is approximately 46.5 acres.

The utility waste includes fly ash, scrubber sludge, bottom ash, slag, and miscellaneous (e.g. water treatment waste). The majority of the waste disposed in the existing landfill is fly ash which is removed from the facility's fly ash pond, dewatered, and disposed in the landfill. The existing landfill leachate from the landfill gravity drained to the ash settling ponds through a HPDE discharge line which parallels the landfill access road. Non-contact storm water collects in the sediment pond and gravity drains to the fly ash pond through the leachate discharge line. Fluids in the ash ponds discharge to the Missouri River under NPDES permit MO-0004871.

Design of the expanded landfill has leachate and contact storm water being collected in a leachate collection system above the liner and pumped to a leachate pond located north of the landfill. The leachate will discharge to the Missouri River. Non-contact storm water run off from closed or vegetated areas of the expansion will be collected in a series of channels and perimeter ditches and conveyed to letdown ditches.

Receiving Water Body's Water Quality & Facility Performance History:
New outfall and permit for the outfall. The Missouri River was on the 2002 303(d) list for chlordane and PCB's. A TMDL was approved for the Missouri River on November 3, 2006. Sibley Generating Station Utility Waste Landfill is not a source of the impairment or expected to contribute to the impairment.

Comments:
The department incorrectly applied the fly ash and bottom ash transport water technology based effluent limits (TBELs) to the utility waste landfill leachate pond outfall. The TBELs for fly ash and bottom ash transport water (federal effluent guideline 40 CFR Part 423, Steam Electric Power Generating Point Source Category) were identified as applicable, per best professional judgment, to the outfall within the effluent limit determination section of the fact sheet attached to the operating permit public noticed on March 26,

2010. The correct TBELs for the utility waste landfill leachate pond outfall should have come directly from 40 CFR 423.12(b)(3) best practicable control technology (BPT) for low volume waste sources. The TBELs for fly ash and bottom ash transport water and low volume waste sources are identical, therefore the fact sheet was only revised to identify the source for the TBELs as low volume waste sources. "Low volume waste sources means, taken collectively as if from one source, wastewater from all sources except those for which specific limitations are otherwise established in this part (40 CFR Part 423). Low volume wastes sources include, but are not limited to: wastewaters from wet scrubber air pollution control systems, ion exchange water treatment system, water treatment evaporator blowdown, laboratory and sampling streams, boiler blowdown, floor drains, cooling tower basin cleaning wastes, and recirculating house service water systems.[1]"

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
020	0.019	Primary	Landfill Leachate	0.0

Outfall #020
Legal Description: NE ¼, NW ¼, Sec. 1, T50N, R30W, Jackson County
UTM Coordinates: 399206/4336965
Receiving Stream: Missouri River (P)
First Classified Stream and ID: Missouri River (P) (0356)
USGS Basin & Sub-watershed No.: (10300101 – 080002)

Part II – Operator Certification Requirements

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], permittees shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions and regulations. Operators or supervisors of operations at regulated wastewater treatment facilities shall be certified in accordance with [10 CSR 20-9.020(2)] and any other applicable state law or regulation. As per [10 CSR 20-9.010(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems, if applicable.

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

Part III – Receiving Stream Information

APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:
As per Missouri's Effluent Regulations [10 CSR 20-7.015], the waters of the state are divided into the below listed seven (7) categories. Each category 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)]: ☒
Lake or Reservoir [10 CSR 20-7.015(3)]: ☐
Losing [10 CSR 20-7.015(4)]: ☐
Metropolitan No-Discharge [10 CSR 20-7.015(5)]: ☐
Special Stream [10 CSR 20-7.015(6)]: ☐
Subsurface Water [10 CSR 20-7.015(7)]: ☐
All Other Waters [10 CSR 20-7.015(8)]: ☐

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

RECEIVING STREAM(S) TABLE:

WATERBODY NAME	CLASS	WBID	DESIGNATED USES*	8-DIGIT HUC	EDU**
Missouri River	P	0356	AQL, DWS, IND, IRR, LWW, SCR, WBC(B)***	10300101	Central Plains/Blackwater/Lamine

* - Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL), Cool Water Fishery(CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND), Groundwater (GRW). ** - Ecological Drainage Unit *** - UAA has not been conducted.

[1] 40 CFR Part 423.11(b)

RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:

RECEIVING STREAM (U, C, P)	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Missouri River	6,037	11,674	19,393

MIXING CONSIDERATIONS TABLE:

MIXING ZONE (CFS) [10 CSR 20-7.031(4)(A)…]		ZONE OF INITIAL DILUTION (CFS) [10 CSR 20-7.031(4)(A)…]	
7Q10	30Q10	1Q10	7Q10
2,919	4,848	0.19	0.19

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

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

RECEIVING STREAM MONITORING REQUIREMENTS:

No receiving water monitoring requirements recommended at this time.

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

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

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

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

☒ - New facility, backsliding does not apply.

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

☒ - New and/or expanded discharge, please see **APPENDIX A – WATER QUALITY AND ANTIDEGRADATION REVIEW.**

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

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

Not Applicable ☒; This condition is not applicable to the permittee for this specific facility.

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.

Not Applicable ☒;
The permittee/facility is not currently under Water Protection Program enforcement action.

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

Not Applicable ☒;
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)(iii)] if the permit writer determines that any give pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

Applicable ☒;
A RPA was conducted on appropriate parameters. Please see **APPENDIX A – WATER QUALITY AND ANTIDEGRADATION REVIEW.**
The RPA was completed and referenced in the attached water quality and antidegradation review

REMOVAL EFFICIENCY:
Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. Please see the United States Environmental Protection Agency's (EPA) website for interpretation of percent removal requirements for National Pollutant Discharge Elimination System Permit Application Requirements for Publicly Owned Treatment Works and Other Treatment Works Treating Domestic Sewage @ www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm .

Not Applicable ☒;
Influent monitoring is not being required to determine percent removal.

Sanitary Sewer Overflows (SSOs), Bypasses, Inflow & Infiltration (I&I) – Prevention/Reduction:
Sanitary Sewer Systems (SSSs) are municipal wastewater collection systems that convey domestic, commercial, and industrial wastewater, and limited amounts of infiltrated groundwater and storm water (i.e. I&I), to a POTW. SSSs are not designed to collect large amounts of storm water runoff from precipitation events.

Untreated or partially treated discharges from SSSs are commonly referred to as SSOs. SSOs have a variety of causes including blockages, line breaks, sewer defects that allow excess storm water and ground water to overload the system, lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. A SSOs is defined as an untreated or partially treated sewage release from a SSS. SSOs can occur at any point in an SSS, during dry weather or wet weather. SSOs include overflows that reach waters of the state. SSOs also include overflows out of manholes and onto city streets, sidewalks,

and other terrestrial locations. SSSs can back up into buildings, including private residences. When sewage backups are caused by problems in the publicly-owned portion of an SSS, they are considered SSOs.

Not Applicable ☒;
This facility is not required to develop or implement a program for maintenance and repair of the collection system; however, it is a violation of Missouri State Environmental Laws and Regulations to allow untreated wastewater to discharge to waters of the state.

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

Not Applicable ☒;
This permit does not contain a SOC.

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

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

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

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

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

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

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

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

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

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

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

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

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.

Not Applicable ☒;
A WLA study was either not submitted or determined not applicable by department staff.

WATER QUALITY STANDARDS:
Per [10 CSR 20-7.031(3)], General Criteria shall be applicable to all waters of the state at all times including mixing zones. Additionally, [40 CFR 122.44(d)(1)] directs the department to establish in each NPDES permit to include conditions to achieve water quality established under Section 303 of the Clean Water Act, including State narrative criteria for water quality.

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

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

☐ Facility is a designated Major.
☐ Facility continuously or routinely exceeds its design flow.
☐ Facility (industrial) that alters its production process throughout the year.
☐ Facility handles large quantities of toxic substances, or substances that are toxic in large amounts.
☐ Facility has Water Quality-based Effluent Limitations for toxic substances (other than NH_3)
☐ Facility is a municipality or domestic discharger with a Design Flow ≥ 22,500 gpd.
☒ Other – potential toxic nature of the coal combustion residue being disposed of at the utility waste landfill.

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

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

Applicable ☒;
Missouri River is listed on the 2002 Missouri 303(d) List for chlordane and PCB's. The *Total Maximum Daily Loads (TMDLs) for Chlordane and Polychlorinated Biphenyls in the Missouri River* was approved on November 3, 2006.

☒ – This facility is not considered to be a source of the above listed pollutant(s) or considered to contribute to the impairment of Missouri River. There is no source for PCBs from the Sibley Generating Station entering the landfill.

Part V – Effluent Limits Determination

Outfall #020 – 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 supercedes the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE: OUTFALL #020

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	GPD	1	*		*	N	NEW PERMIT
TSS	MG/L	1	100		30	N	NEW PERMIT
PH	SU	1	6.5-9.0		6.5-9.0	N	NEW PERMIT
OIL & GREASE (MG/L)	MG/L	1	15		10	N	NEW PERMIT
SULFATE	MG/L	9	*		*	N	NEW PERMIT
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

* - Monitoring requirement only.

Basis for Limitations Codes:

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

OUTFALL #020 – 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.

- **Total Suspended Solids (TSS).** 30 mg/L monthly average, 100 mg/L daily maximum. Effluent limitations have been derived from the TBELs found in the federal effluent guidelines for low volume waste sources, in accordance with 40 CFR Part 423, *Steam Electric Power Generating Point Source Category*.

- **pH**. pH shall be maintained in the range from six to nine (6.5-9.0) standard units [10 CSR 20-7.031(4)(E)].

- **Oil & Grease**. Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum. 20 mg/l daily maximum and 15 mg/l monthly average as TBEL found in the federal effluent guidelines for low volume waste sources, in accordance with 40 CFR Part 423, *Steam Electric Power Generating Point Source Category*. 10 CSR 20-7 Table A sets more stringent limits for the protection of aquatic life, thus the AML = 10 mg/l and the MDL = 15 mg/l.

- **Sulfate.** Monitoring only to determine "reasonable potential" to violate Water Quality Standards. General Warm Water Fishery Protection of Drinking Water Standard CCC = 250 mg/L.

- **Other Potential Pollutants of Concern.** Discussion taken from Appendix A – Water Quality and Antidegradation Review. The facility expected the discharge from the proposed outfall to be identical to the existing landfill, in pollutants present and in concentration. In the expanded testing completed on the existing landfill's outfall's leachate, the facility recorded non-detects for cobalt, copper, lead, mercury, nickel, silver, thallium, and zinc using EPA approved test methods. Boron, cadmium, chromium and selenium were identified as potential pollutants of concern as part of the water quality and antidegradation review.

  The department calculated water quality based effluent limits for those potential pollutants of concern.

  Metals
  Effluent limitations for total recoverable metals were developed using methods and procedures outlined in the "Technical Support Document For Water Quality-based Toxic Controls" (EPA/505/2-90-001) and "The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion" (EPA 823-B-96-007). General warm-water fishery criteria apply and a water hardness of 162 mg/L is used in the conversion below.

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

METAL	CONVERSION FACTORS	
	ACUTE	CHRONIC
Cadmium	0.924	0.889
Chromium VI	0.982	0.962

Conversion factors for Cd and Pb are hardness dependent. Values calculated using equation found in Section 1.3 of EPA 823-B-96-007 and hardness = 162 mg/L.

Boron, Total Recoverable. General Warm Water Fishery Protection of Irrigation Chronic Criteria = 2 mg/L. Background assumed to be 0.106 mg/L

Chronic WLA: $C_e = ((0.019 + 2919)2 – (2919 * 0.106))/0.019$
$C_e = 290{,}980$ mg/L

$LTA_c = 290{,}980\ (0.527) = 153{,}346$ **m**g/L [CV = 0.6, 99th Percentile]

MDL = 153,346 (3.11) = 476,907 mg/L [CV = 0.6, 99th Percentile]
AML = 153,346 (1.55) = 237,686 mg/L [CV = 0.6, 95th Percentile, n = 4]

Cadmium, Total Recoverable. General Warm Water Fishery Protection of Aquatic Life Acute Criteria = 7.6 µg/L, Chronic Criteria = 0.34 µg/L. Background assumed to be 0.16 µg/L.

Acute = 7.60/0.924 =8.23 µg/L
Chronic =0.34/0.889 =0.38 µg/L

Chronic WLA: $C_e = ((0.019 + 2919)0.38 – (2919 * 0.16))/0.019$
$C_e = 35336$ µg/L

Acute WLA: $C_e = ((0.019 + 0.19)8.23 – (0.19 * 0.16))/0.019$
$C_e = 89.5$ µg/L

$LTA_c = 35336\ (0.527) = 18{,}622$ µg/L [CV = 0.6, 99th Percentile]
$LTA_a = 89.5\ (0.321) = 28.7$ µg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

MDL = 28.7 (3.11) = 89.3 µg/L [CV = 0.6, 99th Percentile]
AML = 28.7 (1.55) = 44.5 µg/L [CV = 0.6, 95th Percentile, n = 4]

Chromium VI, Total Recoverable. General Warm Water Fishery Protection of Aquatic Life Acute Criteria = 15 µg/L, Chronic Criteria = 10 µg/L. Background assumed to be 10 µg/L.

Acute = 15/0.982 =15.3 µg/L
Chronic =10/0..962 =10.4 µg/L

Chronic WLA: $C_e = ((0.019 + 2919)10.4 – (2919 * 10))/0.019$
$C_e = 61{,}463$ µg/L

Acute WLA: $C_e = ((0.019 + 0.19)15.3 – (0.19 * 10))/0.019$

C_e = 68.3 µg/L

LTA_c = 61,463 (0.527) = 32,391 µg/L [CV = 0.6, 99th Percentile]
LTA_a = 68.3 (0.321) = 21.9 µg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

MDL = 21.9 (3.11) = 68.1 µg/L [CV = 0.6, 99th Percentile]
AML = 21.9 (1.55) = 34.0 µg/L [CV = 0.6, 95th Percentile, n = 4]

Selenium, Total Recoverable. General Warm Water Fishery Protection of Aquatic Life Chronic Criteria = 5 µg/L. Background assumed to be 2.5 µg/L

Chronic WLA: $C_e = ((0.019 + 2919)5 – (2919 * 2.5))/0.019$
C_e = 384,083 µg/L

LTA_c = 384,083 (0.527) = 202,412 µg/L [CV = 0.6, 99th Percentile]

MDL = 202,412 (3.11) = 629,501 µg/L [CV = 0.6, 99th Percentile]
AML = 202,412 (1.55) = 313,739 µg/L [CV = 0.6, 95th Percentile, n = 4]

The department compared the expected discharge concentrations to the water quality based effluent limits for the potential pollutants of concern.

Pollutant of Concern	Expected Discharge Concentration (mg/L)*	Water Quality Based Effluent Limits (mg/L)
Boron	56.1	476,907
Cadmium	0.0513	0.0893
Chromium VI	0.01	0.0681
Selenium	0.023	629

*- Expected Discharge Concentrations taken from the Water Quality and Antidegradation Review in Appendix A.

The above metal water quality based effluent limts calculations were included for reference only. A reasonable potential analysis was conducted based on a sample from the existing landfill and there is not the potential to violate Water Quality Standards. Based on the RPA, the expected discharge concentrations, Water Quality Based Effluent Limits and the percentage of FAC available; MDNR is not requiring monitoring for metals.

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

☒ Acute (default)

☒ No less than **ONCE/PERMIT CYCLE:**
- ☐ Municipality or domestic facility with a design flow ≥ 22,500 gpd, but less than 1.0 MGD.
- ☒ Other – potential toxic nature of the coal combustion residue being disposed of at the utility waste landfill.

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

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

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

Acute AEC% = ((design $flow_{cfs}$ + ZID_{7Q10}) / design $flow_{cfs}$)$^{-1}$] x 100 = [(0.019 cfs)/(0.019 cfs + 0.19 cfs)] x 100 = 9.1% under 10% so 10% default AEC is used.

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

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
FLOW	ONCE/QUARTER	ONCE/QUARTER
TSS	ONCE/QUARTER	ONCE/QUARTER
PH	ONCE/QUARTER	ONCE/QUARTER
OIL & GREASE	ONCE/QUARTER	ONCE/QUARTER
SULFATE	ONCE/QUARTER	ONCE/QUARTER

Part VI – Administrative Requirements

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

PUBLIC NOTICE:
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 26, 2010 to April 26, 2010. Responses to the Public Notice of this operating permit warrant the modification of effluent limits and/or the terms and conditions of this permit. The following changes to the operating permit and fact sheet were completed in response to comments received during the public notice period.

1. Whole Effluent Toxicity (WET) testing was added to the operating permit due to the potential toxic nature of the coal combustion residue being disposed of into the utility waste landfill. WET testing was a requirement for outfall #007 in MSOP MO-0004871 which covers the existing landfill; therefore the department believes that it is appropriate to continue the WET testing for the expanded landfill and new outfall under MO-0136131.

2. The Fact Sheet was revised to expand the discussion of the analysis completed to develop effluent limitations for the utility waste landfill leachate pond.

3. The department incorrectly applied the fly ash and bottom ash transport water TBELs to the utility waste landfill leachate pond outfall. The TBELs for fly ash and bottom ash transport water (federal effluent guideline 40 CFR Part 423, Steam Electric Power Generating Point Source Category) were identified as applicable, per best professional judgment, to the outfall within the effluent limit determination section of the fact sheet attached to the operating permit public noticed on March 26, 2010. The correct TBELs for the utility waste landfill leachate pond outfall should have come directly from 40 CFR 423.12(b)(3) best practicable control technology (BPT) for low volume waste sources. The TBELs for fly ash and bottom ash transport water and low volume waste sources are identical, therefore the fact sheet was only revised to identify the source for the TBELs as low volume waste sources. "Low volume waste sources means, taken collectively as if from one source, wastewater from all sources except those for which specific limitations are otherwise established in this part (40 CFR Part 423). Low volume wastes sources include, but are not limited to: wastewaters from wet scrubber air pollution control systems, ion exchange water treatment system, water treatment evaporator blowdown, laboratory and sampling streams, boiler blowdown, floor drains, cooling tower basin cleaning wastes, and recirculating house service water systems.[2]"

[2] 40 CFR Part 423.11(b)

Date of Fact Sheet: January 25, 2010
Revised Date of Fact Sheet: November 12, 2010

Scott F. Honig, P.E. EE-II
Kansas City Regional Office
(816) 622-7011
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Part V – Appendices

APPENDIX A – WATER QUALITY AND ANTIDEGRADATION REVIEW

STATE OF MISSOURI
Jeremiah W. (Jay) Nixon, Governor • Mark N. Templeton, Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.mo.gov

NOV 13 2009

Mr. Daniel Rembold
Plant Manager
KCP&L GMO- Sibley Generating Station
33200 Johnson Road
Sibley, Missouri 64106

RE: Water Quality Review / Antidegradation Review Preliminary Determination on *Antidegradation Report Proposed Wastewater Treatment Facility for KC P&L GMO - Sibley Station Utility Waste Landfill*

Dear Mr. Rembold:

Enclosed please find the finalized Water Quality and Antidegradation Review (WQAR) for the *KC P&L GMO - Sibley Station Utility Waste Landfill* in Jackson County. The WQAR contains pertinent antidegradation review information based on the use of existing water quality, effluent limitations and monitoring requirements for the facility discharge. It was developed in accordance with 10 CSR 20-7.031, the Clean Water Commission approved *Missouri Antidegradation Rule and Implementation Procedure* (AIP) dated May 7, 2008, U.S. Environmental Protection Agency (US EPA) guidance, the applicant-supplied antidegradation review documentation, and the State of Missouri's effluent regulations (10 CSR 20-7.015). Please refer to the *General Assumptions of the Water Quality and Antidegradation Review* section of the enclosed WQAR. The WQAR is preliminary and subject to change as new information becomes available during future permit application processing.

Based on the Missouri Department of Natural Resources' (department's) initial review, preliminary determination is that the applicant-supplied antidegradation review documentation satisfies the requirements of the AIP. This WQAR/preliminary determination may be appealed within 30 days of this letter in accordance with the AIP Section II.F.4.

You may proceed with submittal of an application for an operating permit and antidegradation review public notice, an engineering report, or a complete application for a construction permit. These submittals must reflect the design flow, facility description, and general treatment components of this WQAR or this preliminary determination may have to be revisited.

Following the department's public notice of draft Missouri State Operating Permit including the antidegradation review findings and preliminary determination, the department will review any

public notice comments received. If significant comments are made, the project may require another public notice and potentially another antidegradation review.

If no comments are received or comments are resolved without another public notice, these findings and determinations will be considered final.

Following issuance of the construction permit and completion of the actual facility construction, the department will proceed with the issuance of the operating permit.

If you should have questions regarding the enclosed WQAR, please contact Lease Meyers by telephone at (573) 751-7906 by e-mail at lease.meyers@dnr.mo.gov, or by mail at the Missouri Department of Natural Resources, Water Protection Program, PO Box 176, Jefferson City, Missouri 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM

Refaat Mefrakis, P.E., Chief
NPDES Permits & Engineering Section

RM/lml

Enclosure

c: Mr. Bob Beck, KC P&L, P.O. Box 418679, Kansas City, MO 64141
Ms. Andrea Collier, KCRO

Water Quality and Antidegradation Review

For the Protection of Water Quality and Determination of Effluent Limits for Discharge to the Missouri River

by

KCP&L Greater Missouri Operations Company-Sibley Station Utility Waste Landfill

November 05, 2009

Table of Contents

1. FACILITY INFORMATION

FACILITY NAME: KC P&L GMO - Sibley Station Utility Waste Landfill NPDES #: NEW

FACILITY TYPE/DESCRIPTION:
Expanded utility waste landfill at KCP&L Greater Missouri Operations Company (KCP&L GMO)) Sibley Station in Sibley, MO. KCP&L is proposing a site-specific permit for the expanded utility waste landfill. The effluent will be landfill leachate, with a design flow of 0.0123 MGD (0.020 cfs).

EDU*: Central Plains/ Blackwater/ Lamine 8- DIGIT HUC: 10300101 COUNTY: Jackson
* - Ecological Drainage Unit

LEGAL DESCRIPTION: NE ¼ NE ¼ NE ¼ Section 1, T50 N, R30W LATITUDE/LONGITUDE: +39.1760342/-94.1668828

2. WATER QUALITY INFORMATION

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

2.1. WATER QUALITY HISTORY:
New Outfall and permit for the outfall.
The Missouri River is on the 303(d) list for chlordane and PCB's. A TMDL was approved for the Missouri River on November 3, 2006. Sibley Station Utility Waste Landfill is not a source of the impairment or expected to contribute to the impairment.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
20*	0.02	NONE	MISSOURI RIVER	0.0

* Rather than Outfall 001, the Facility prefers the outfall be labeled #20 to prevent confusion with the existing permit for the Sibley Generating Station Permit.

3. RECEIVING WATERBODY INFORMATION

WATERBODY NAME	CLASS	WBID	7Q10LOW-FLOW VALUES (CFS)	DESIGNATED USES**
MISSOURI RIVER	P	0356	11,674	AQL, DWS, IND, IRR, LWW, SCR, WBC(B)

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

RECEIVING WATER BODY SEGMENT #1: Missouri River
Upper end segment* UTM or Lat/Long coordinates: +39.1760342/ -94.1668828
Lower end segment* UTM or Lat/Long coordinates: +39.174562/-94.140798 (Fishing River confluence with MO River)
*Segment is the portion of the stream where discharge occurs. Segment is used to track changes in assimilative capacity and is bound at a minimum by existing sources and confluences with other significant water bodies.

4. General Comments

KCP&L Greater Missouri Operations Company (KCP&L GMO) has proposed building an expansion to the utility waste landfill at their Sibley Station in Sibley, MO. Their current landfill is nearing the end of its capacity. For the landfill expansion, KCP&L GMO is proposing to receive a new Missouri State Operating Permit specific to the landfill. A Geohydrological Evaluation was completed for the site to gain approval to build from the Solid Waste Management Program. A copy of the approval letter is included in Appendix B. The discharge is to the Missouri River, which is a gaining stream (Appendix A: Map). Information found in the submitted report and in the summary forms provided by the applicant in Appendix C was used to develop this review document.

5. Antidegradation Review Information

The following is a review of the *KCP&L Sibley Station Utility Waste Landfill Antidegradation Report* dated October 2009.

5.1. Tier Determination

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

Table 1: Pollutants of Concern and Tier Determination

Pollutants of Concern	Tier	Degradation	Comment
Total Suspended Solids (TSS)	*	Not determined	
pH	**	Not determined	Permit limits apply only
Oil and Grease		Not determined	Permit limits apply only
Boron	2	Minimal	
Cadmium	2	Minimal	
Chromium VI	2	Minimal	
Selenium	2	Minimal	
Sulfate	2	Minimal	

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

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

- ☒ Tier Determination and Effluent Summary
- ☒ Attachment B, Tier 2 with minimal degradation.

5.2. Existing Water Quality

Existing water quality for the Missouri River was determined using analytical results obtained during the NPDES Permit renewal process for the Sibley Generating Station at Outfall 004 (approximately 1 mile upstream of the proposed new discharge point). The results collected by KCP&L GMO during the renewal process were compared with data from upstream and downstream of the facility USGS gaging stations, with the sample results being reflective of both Kansas City, MO (20 miles upstream; gaging station # 6893000) and Waverly, MO (20 miles downstream; gaging station # 6895500).

5.3. ASSIMILATIVE CAPACITY CALCULATIONS

Depending on the POC, calculated assimilative capacities were much less than 0.01%. *Missouri's Antidegradation Rule and Implementation Procedure* considers the use of less than 10% of the facility's available assimilative capacity as insignificant.

For potential pollutants, KCP&L GMO used sampling results from the existing Sibley landfill, prior to discharge. The potential pollutant results were not subject to the mixing of the Missouri River that this landfill will have. The expected effluent concentrations in the table below are at end of pipe prior to discharge. The sampling demonstrated a number of potential pollutants were not detected. Pollutants detected that were near the water quality standards were included in the Antidegradation Report as the list of potential pollutants of concern (POCs). Those POCs included Sulfate, Selenium, Cadmium, and Boron. Chromium VI was included as a potential POC because the sampling completed was for Total Chromium and the method detection limit for Total Chromium is equal to the water quality criteria for Chromium VI. A reasonable potential analysis was completed based on the sample and there was not potential to violate the water quality standards for metals. 40 CFR Part 423 establishes effluent limits for pH, Oil and Grease, and Total Suspended Solids for discharges involving coal combustion wastes. As Boron, Cadmium, Chromium VI, Selenium, and Sulfate demonstrate extremely minimal impact to the receiving stream, KCP&L GMO proposed monitoring only for the pollutants listed in 40 CFR 423: pH, Oil and Grease, and Total Suspended Solids. MDNR is proposing monitoring only for Sulfate, and Flow. MDNR is proposing effluent limits for pH, Total Suspended Solids and Oil and Grease.

TABLE 2: ASSIMILATIVE CAPACITY CALCULATIONS FOR THE MISSOURI RIVER

Pollutant of Concern	Water Quality Standard AQL (mg/l)	Existing Water Quality (mg/l)	Expected Effluent Concentration (mg/l)	Facility Assimilative Capacity (lbs/day)	New Discharge Load (lbs/day)	Percent of FAC used
Boron*	2.0	0.106	56.1	119,397	6.06	0.0051%
Cadmium	**	0.00016	0.0513	304	0.0055	0.0018%
Chromium VI	0.01	0.0025	0.01	473	0.00108	0.0002%
Selenium	0.005	0.0025	0.023	158	0.00248	0.0016%
Sulfate***	250	151	1,444	6,240,947	155.95	0.0025%

Water Quality Standards from 10 CSR 20-7 Table A; Q_s= 11,674 cfs; Q_d= 0.02 cfs; *Boron has Irrigation and Groundwater standards; (AQL procedure was used to calculate limits. ** AQL is hardness dependant; *** WQS for Sulfate is the Drinking Water Standard.

5.4. DEMONSTRATION OF NECESSITY AND SOCIAL AND ECONOMIC IMPORTANCE

Missouri's antidegradation implementation procedures specify that if the proposed activity does not result in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are not required.

6. GENERAL ASSUMPTIONS OF THE WATER QUALITY AND ANTIDEGRADATION REVIEW

1. A Water Quality and Antidegradation Review (WQAR) assumes that [10 CSR 20-6.010(3), Continuing Authorities and 10 CSR 20-6.010(4) (D), consideration for no discharge] has been or will be addressed in a Missouri State Operating Permit or Construction Permit Application.
2. A WQAR does not indicate approval or disapproval of alternative analysis as per [10 CSR 20-7.015(4) Losing Streams], and/or any section of the effluent regulations.

3. Changes to Federal and State Regulations made after the drafting of this WQAR may alter Water Quality Based Effluent Limits (WQBEL).
4. Effluent limitations derived from Federal or Missouri State Regulations (FSR) may be WQBEL or Effluent Limit Guidelines (ELG).
5. WQBEL supercede ELG only when they are more stringent. Mass limits derived from technology based limits are still appropriate.
6. A WQAR does not allow discharges to waters of the state, and shall not be construed as a National Pollution Discharge Elimination System or Missouri State Operating Permit to discharge or a permit to construct, modify, or upgrade.
7. Limitations and other requirements in a WQAR may change as Water Quality Standards, Methodology, and Implementation procedures change.
8. Nothing in this WQAR removes any obligations to comply with county or other local ordinances or restrictions.

7. MIXING CONSIDERATIONS

Mixing considerations were only used for water quality-based effluent limit; otherwise, complete mixing or total flow was assumed for facility assimilative capacity and minimal degradation limit determination.

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

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

	Flow (cfs)	MZ (cfs)	ZID (cfs)
1Q10	6,037	1,509	0.19
7Q10	11,674	2,919	0.19
30Q10	19,393	4,848	0.19
60Q10*	21,599	5,400	0.19

*The 60Q10 was calculated as the Protection for Aquatic Life Criteria is based on the 60Q10 for sulfates-chlorides. 10 CSR 20-7.031(4)(L)2.

8. PERMIT LIMITS AND INFORMATION

OUTFALL #020

WASTELOAD ALLOCATION STUDY CONDUCTED (Y OR N):	N	USE ATTAINABILITY ANALYSIS CONDUCTED (Y OR N):	*		WHOLE BODY CONTACT USE RETAINED (Y OR N):	Y

* Comments received during Public Notice May 21, 2008 – August 31, 2008. Whole Body Use Recreation exists; thus no UAA conducted

WET TEST (Y OR N):	N	FREQUENCY:	NA	AEC:	NA	METHOD:	MULTIPLE

TABLE 3: EFFLUENT LIMITS

PARAMETER	UNITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	BASIS FOR LIMIT (NOTE 1)	MONITORING FREQUENCY
FLOW	GPD	*		*	FSR	ONCE/YEAR
PH	SU	**		**	FSR	ONCE/YEAR
TSS	MG/L	100		30	FSR	ONCE/YEAR
OIL & GREASE	MG/L	15		10	FSR	ONCE/YEAR
SULFATE	MG/L	*		*	BPJ	ONCE/YEAR

* - Monitoring requirements only.
**- pH shall not be averaged. pH shall be maintained between 6.0-9.0 SU.
NOTE 1 – WATER QUALITY-BASED EFFLUENT LIMITATION --WQBEL; OR MINIMALLY DEGRADING EFFLUENT LIMIT--MDEL; OR TECHNOLOGY-BASED EFFLUENT LIMIT-TBEL; OR NO DEGRADATION LIMIT--NDL; OR FSR --FEDERAL/STATE REGULATION; OR BPJ – BEST PROFESSIONAL JUDGMENT; OR N/A--NOT APPLICABLE. ALSO, PLEASE SEE THE **GENERAL ASSUMPTIONS OF THE WQAR #4 & #5.**

9. RECEIVING WATER MONITORING REQUIREMENTS

No receiving water monitoring requirements recommended at this time.

10. DERIVATION AND DISCUSSION OF LIMITS

Wasteload allocations and limits were calculated using two methods:

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

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

Where C = downstream concentration
C_s = upstream concentration
Q_s = upstream flow
C_e = effluent concentration
Q_e = effluent flow

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).

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

New Facility:

$$C_d = [FAC_{ratio} * ((C_c * (Q_s + Q_d)) - (EWQ * Q_s))]/Q_d$$

Where: C_c = downstream concentration, the Water Quality Standard (WQS)
Q_s = Stream 7Q10 flow (ft^3/s), 30Q10 or 30Q5 flow. Where: 7Q10 flow is used for toxics; 30Q10 flow is used chronic calculations of ammonia and 30Q5, for human health chronic calculations. Acute ammonia calculations use the 1Q10 flow.
Q_d = Proposed effluent design flow (ft^3/s)) – static value in the spreadsheet
EWQ = upstream concentration
C_d = effluent concentration of the proposed facility. C_d with no permitted level and permitted level. For POCs with no permitted discharge, Cd is based on monitoring data. The 99th percentile value of the pollutant monitoring concentrations should be used for C_d for pollutants with monitoring only. A reasonable potential analysis should be conducted

for these POCs. For POCs with permitted levels, C_d should be the concentration in the permit.

FAC_{ratio} = facility assimilative capacity (FAC) ratio (calculated or assumed)

Chronic wasteload allocations (WLA_c) were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and upstream stream flow without mixing considerations. Acute wasteload allocations were determined using applicable acute water quality criteria.

The minimally-degrading effluent average monthly and daily maximum limits are determined by applying the WLA_c as the daily maximum (MDL) and dividing the MDL by 1.5 to derive the average monthly limit. This is an accepted procedure that is defined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

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

10.1. OUTFALL #020 – MAIN FACILITY OUTFALL

- **Flow**. In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from the 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.

- **Total Suspended Solids (TSS).** 30 mg/L monthly average, 100 mg/L daily maximum. Effluent limitations have been derived from the TBELs found in the federal effluent guidelines for fly ash and bottom ash transport water, in accordance with 40 CFR Part 423, *Steam Electric Power Generating Point Source Category*. Although this process and associated TBELs are not exactly the same as the affected facility, these limits were chosen using BPJ because they are reasonably similar. [10 CSR 20-7.015(2)(B)1].

- **pH.** pH shall be maintained in the range from six to nine (6.0 – 9.0) standard units [10 CSR 20-7.015 (8)(B)2 and 40 CFR 423.].

- **Oil & Grease**. Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum. 20 mg/l daily maximum and 15 mg/l monthly average as TBEL found in the federal effluent guidelines for fly ash and bottom ash transport water, in accordance with 40 CFR Part 423, *Steam Electric Power Generating Point Source Category*. 10 CSR 20-7 Table A sets more stringent limits for the protection of aquatic life, thus the AML= 10 mg/l and the MDL= 15 mg/l.

- **Sulfate.** Monitoring only to determine "reasonable potential" to violate Water Quality Standards. General Warm Water Fishery Protection of Drinking Water Standard CCC = 250mg/L.

- **Metals**
  The water quality based effluent limits are determined below; however this information is included for reference only. A reasonable potential analysis was conducted based on a sample from the existing landfill and there is not the potential to violate Water Quality Standards. Based on the RPA, the expected discharge concentrations, Water Quality Based Effluent Limits and the percentage of FAC available; MDNR is not requiring monitoring for metals.

Minimally degrading and water quality based effluent limits were determined for these metals. Effluent limitations for total recoverable metals were developed using methods and procedures outlined in EPA/505/2-90-001 and "The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion" (EPA 823-B-96-007). General warm-water fishery criteria apply and water hardness = 162 mg/L.

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

METAL	CONVERSION FACTORS	
	ACUTE	CHRONIC
Cadmium	0.924	0.889
Chromium VI	0.982	0.962

Conversion factor for Cd is hardness dependent. Values calculated using equation found in Section 1.3 of EPA 823-B-96-007 and hardness = 162 mg/L.

$$C_e = \frac{(((Q_e + Q_s) * C) - (Q_s * C_s))}{Q_e}$$

- **Boron Total Recoverable.** General Warm Water Fishery Protection of Irrigation CCC = 2 mg/L.

$$WLA_c = \frac{(((0.019 + 2919) * 2) - (2919 * 0.106))}{0.019} = 290282$$

LTA_c = 290,282(0.527) = 152,978 mg/L [CV = 0.6,99th Percentile]
MDL = 152,978 (3.11) = 475,761 mg/l [CV = 0.6, 99th Percentile]
AML = 152,978(1.55)=237,116 mg/l [CV = 0.6, 95th Percentile, n = 4]
MDL= (0.0123)(8.34)(475,761)= 48,804 lbs/day
AML= (0.0123)(8.34)(237,116)= 24,324 lbs/day

- **Cadmium, Total Recoverable.** General Warm Water Fishery Protection of Aquatic Life CCC 7.60 µg/L, CMC = 0.34 µg/L (total dissolved). Background assumed to be 0.16 µg/L.
  Acute, total recoverable: 7.60/0.924= 8.23 µg/L
  Chronic, total recoverable: 0.34/0.889= 0.39 µg/L

$$WLA_a = \frac{(((0.019 + 0.19) * 8.23) - (0.19 * 0.16))}{0.019} = 88.93$$

$$WLA_c = \frac{(((0.019 + 2919) * 0.39) - (2919 * 0.16))}{0.019} = 35329$$

LTA_a = 88.89(0.321) = 28.54 µg/L [CV = 0.6,99th Percentile]
LTA_c = 35,329(0.527) = 18,619 µg/L [CV = 0.6,99th Percentile]
MDL = 28.54 (3.11) = 88.76 µg/L [CV = 0.6, 99th Percentile]
AML = 28.54 (1.55) = 44.2 µg/L [CV = 0.6, 95th Percentile, n = 4]
MDL= (0.0123)(8.34)(0.08876)= 0.009 lbs/day

AML= (0.0123)(8.34)(0.0442)= 0.0045lbs/day

- **Chromium VI, Total Recoverable.** General Warm Water Fishery Protection of Aquatic Life CCC 10 µg/L, CMC = 15 µg/L (total dissolved). Background assumed to the detection limit at 10 µg/L.
  Acute, total recoverable: 15/0.982= 15.3 µg/L
  Chronic, total recoverable: 10/0.962= 10.4 µg/L

$$WLA_a = \frac{(((0.019 + 0.19) * 15.3) - (0.19 * 10))}{0.019} = 68.3 \quad \mu g/L$$

$$WLA_c = \frac{(((0.019 + 2919) * 10.4) - (2919 * 10))}{0.019} = 61453 \quad \mu g/L$$

LTA_a = 68.3(0.321) = 21.92 µg/L [CV = 0.6,99th Percentile]
LTA_c = 61,453(0.527) =32,385 µg/L [CV = 0.6,99th Percentile]
MDL = 21.92 (3.11) = 68.2 µg/L [CV = 0.6, 99th Percentile]
AML = 21.92 (1.55) = 34 µg/L [CV = 0.6, 95th Percentile, n = 4]
MDL= (0.0123)(8.34)(0.068)= 0.007lbs/day
AML= (0.0123)(8.34)(0.034)= 0.0035 lbs/day

- **Selenium Total Recoverable.** General Warm Water Fishery Protection of Aquatic Life CCC = 5 µg/L (total recoverable). Background assumed to be = 2.5 µg/L.

$$WLA_c = \frac{(((0.019 + 2919) * 5) - (2919 * 2.5))}{0.019} = 384{,}018 \quad \mu g/L$$

LTA_c = 384,018(0.527) = 202,378 µg/L [CV = 0.6,99th Percentile]
MDL = 202,378 (3.11) = 629,394 µg/L [CV = 0.6, 99th Percentile]
AML = 202,378 (1.55) = 313,685 µg/L [CV = 0.6, 95th Percentile, n = 4]
AML = (0.0123)(8.34)(313.685)= 32 lbs/day
MDL = (0.0123)(8.34)(629.394)= 65 lbs/day

10.2. LIMIT DERIVATION

The process for limit derivation for POCs that are minimally degrading is as follows:

1. Determine using method #2 outlined above for all applicable POCs the minimally degrading wasteload allocation and effluent limits (MDEL) that retains the remaining assimilative capacity and does not exceed 10% of the FAC.

2. Determine the need for permit limits of various POCs using reasonable potential analysis. While this process is applied to all applicable POCs, this process is particularly important for POCs having monitoring only requirements for an existing discharge. No POC will exceed the maximum daily limit (MDL). Limits that exceed the MDL of the MDEL may have MDEL applied. Some POCs may have the limit applied under certain circumstances.

3. To determine if any of the above proposed limits are protective of water quality standards, the final step is to develop water quality-based effluent limits. The more stringent of the MDEL and WQBEL will be applied.

The Table 4 below compares the expected discharge with the daily maximum WQBEL, for all pollutants except oil and grease and TSS.

TABLE 4: COMPARISON BETWEEN EXPECTED LIMITS AND MAXIMUM WQBEL

Pollutant of Concern	Expected Degradation		Water Quality Based Effluent Limits*	
	Concentration (mg/l)	% FAC used	Concentration (mg/l)	% FAC used
Boron	56.1	0.0004%	475,761	40.8%
Cadmium	0.0513	0.0018%	0.089	0.003%
Chromium VI	0.01	0.0002%	0.68	0.001%
Selenium	0.023	0.0016%	629	41.1%

* WQBEL are Maximum Daily Values; for Average Monthly Values-see 10.1 Derivation and Discussion of effluent limits.

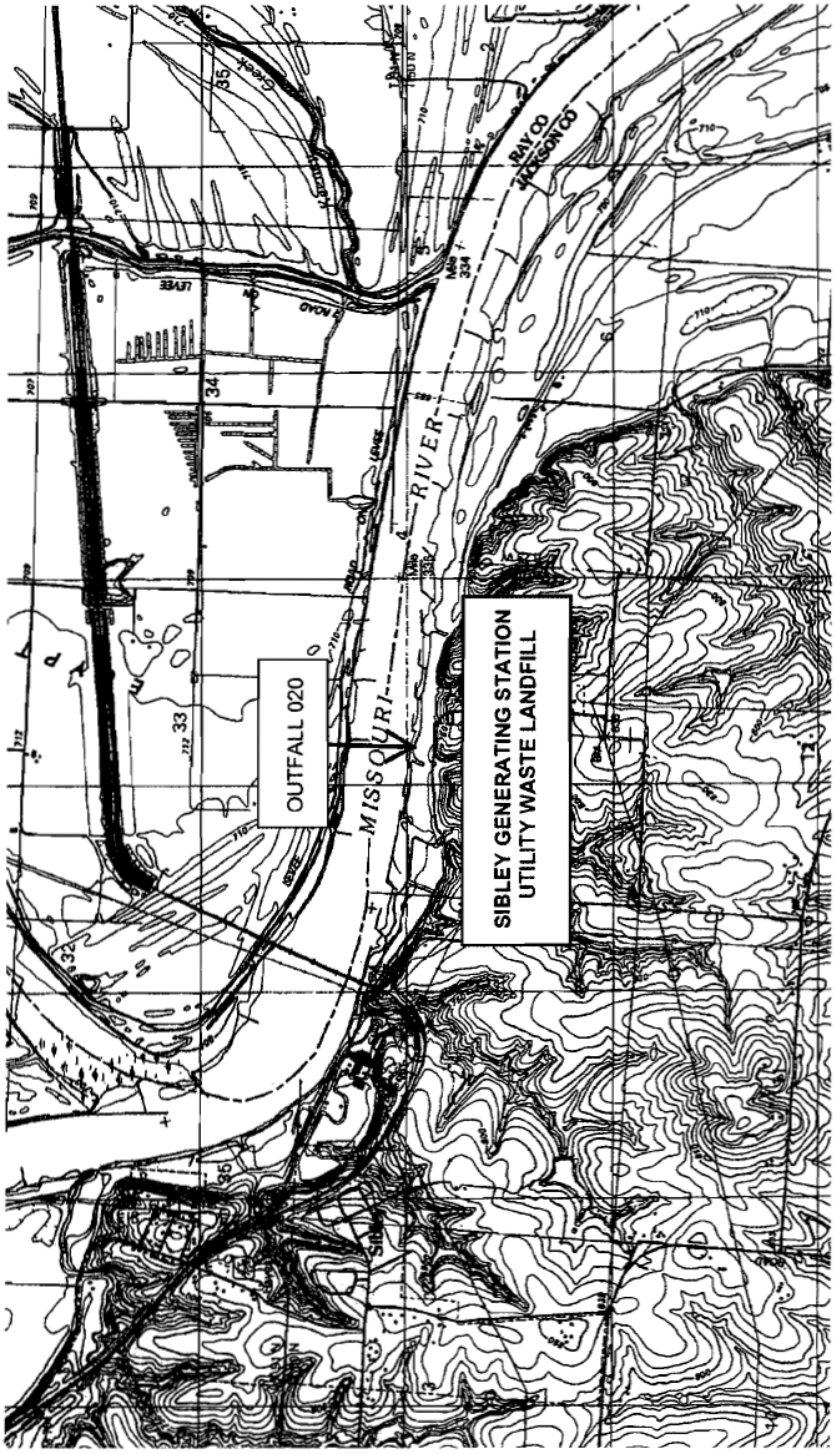
11. ANTIDEGRADATION REVIEW PRELIMINARY DETERMINATION

The proposed discharge from the expanded KCP&L GMO - Sibley Generating Station Utility Waste Landfill of 0.0123 MGD will result in minimal degradation of the segment identified in the Missouri River. Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to retain the remaining assimilative capacity. MDNR has determined that the submitted review is sufficient and meets the requirements of the AIP. No further analysis is needed for this discharge.

Reviewer: Leasue Meyers LGM
Date: 11/05/09
Unit Chief: John Rustige, PE
Section Chief: Refaat Mefrakis, PE

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

Appendix A: Map of Discharge Location



Appendix B: DGLS Approval Letter

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

July 3, 2008

CERTIFIED MAIL # 7005 3110 0004 3989 0860
RETURN RECEIPT REQUESTED

Mr. Mark L. Finney, P.G.
Shaw Environmental, Inc.
4400 College Blvd., Suite 350
Overland Park, KS 66211

Re: Detailed Site Investigation Report for the Sibley Generating Station, Utility Waste Landfill Expansion (Section 1, Township 50 North, Range 30 West, Buckner Quadrangle, Jackson County)

Dear Mr. Finney,

The Geological Survey Program (GSP), Environmental Geology Section has reviewed the *Detailed Site Investigation Report, Utility Waste Landfill Expansion, Sibley Generating Station, Sibley, Missouri* submitted by Shaw Environmental, Inc. and received on June 16, 2008. The investigation has been conducted under the requirements of 10 CSR 80-2 Appendix 1 – "Guidance for Conducting and Reporting Detailed Geologic and Hydrologic Investigations at a Proposed Solid-Waste Disposal Area."

The GSP concludes that the report adequately characterizes the geology and hydrology at the proposed site and the report is accepted. The geologic and hydrologic data presented in the report indicates that the groundwater can be monitored for this 28-acre expansion area in conjunction with the monitoring program of the previously permitted areas. Therefore, the Detailed Site Investigation report and the tract it describes are hereby approved. The expansion area may advance to the permitting stage by contacting the Solid Waste Management Program. Questions regarding this review (Report ID F00608, enclosed) may be directed to Jeffrey Crews at 573-368-2356, P.O. Box 250, Rolla, MO 65402.

Sincerely,

DIVISION OF GEOLOGY AND LAND SURVEY

Joe Gillman, Director
Geological Survey Program

c: Mimi Garstang, Director, DGLS
SWMD - Region E
SWMP - Jim Hull
KCRO

Recycled Paper

Appendix C: Antidegradation Review Summary Attachments

The attachments that follow contain summary information provided by the applicant, Kansas City Power and Electric- Sibley Generating Station. MDNR staff determined that changes must be made to the information contained within these attachments. The following were modified and can be found within the MDNR WQAR:

1) Tier Determination and Effluent Limit Summary Sheet: Monitoring added for sulfate; effluent limits set for oil and grease and TSS.

2009 WATER PROTECTION PROGRAM

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

WATER QUALITY REVIEW ASSISTANCE/ANTIDEGRADATION REVIEW REQUEST

PRE-CONSTRUCTION REVIEW FOR PROTECTION OF BENEFICIAL USES AND DEVELOPING EFFLUENT LIMITS

TYPE OF PROJECT
☐ Grant ☐ SRF Loan ☒ All Other Projects

REQUESTER	TELEPHONE NUMBER WITH AREA CODE
KCP&L ROBERT BECK SR ENVIRONMENTAL CONSULTANT	816-654-1767
PERMITTEE	**TELEPHONE NUMBER WITH AREA CODE**
KCP&L GREATER MISSOURI OPERATIONS COMPANY - SIBLEY GENERATING STATION UTILITY WASTE LANDFILL	816-650-2900

REASON FOR REQUEST

☒ New Discharge (See Instruction #9) ☐ Upgrade (No expansion) (See AIP) ☐ Expansion

DESCRIPTION OF PROPOSED ACTIVITY:
DISCHARGE OF LEACHATE FROM UTILITY WASTE LANDFILL

FACILITY INFORMATION

FACILITY NAME	MSOP NUMBER (IF APPLICABLE)
SIBLEY GENERATING STATION UTILITY WASTE LANDFILL	
COUNTY	**SIC / NAICS CODE**
JACKSON	4911

METHOD OF BACTERIA COMPLIANCE
☐ Chlorine Disinfection ☐ Ultraviolet Disinfection ☐ Ozone ☒ Not Applicable

WATER QUALITY ISSUES
NONE

Water quality issues include: effluent limit compliance issues, notice (s) of violation, water body beneficial uses not attained or supported, etc.

OUTFALL	LOCATION (LAT/LONG OR LEGAL DESCRIPTION)	MAPPED[1] (CHECK)	RECEIVING WATER BODY[2]
20	LATITUDE: 39.1760342/LONGITUTDE: -94.1668828	☒	MISSOURI RIVER
		☐	
		☐	

[1] Attach topographic map (See www.dnr.mo.gov/internetmapviewer/) with outfall location(s) clearly marked. For additional outfalls, attach a separate form.
[2] See general instructions for discharges to streams.

OUTFALL	NEW DESIGN FLOW ** (MGD)	TREATMENT TYPE	EFFLUENT TYPES*
20	0.0123	NONE	LANDFILL LEACHATE

* Describe predominating character of effluent. Example: domestic wastewater, municipal wastewater, industrial wastewater, storm water, mining leachate, etc.
** If expansion, indicate new design flow.

☒ Checked for rare or endangered species and provided determination with this request. See Instruction #8.

ANTIDEGRADATION REVIEW SUBMISSION:

See attached Antidegradation instructions. Applicant supplied a summary within:
☒ Tier Determination and Effluent Limit Summary
☐ Attachment A – Significant Degradation
☒ Attachment B – Minimal Degradation
☐ Attachment C – Temporary degradation
☐ Attachment D – Tier 1 Review
☐ No Degradation Evaluation – Conclusion of Antidegradation Review

MO 780-1893 (03-09)

See general instructions. Additional information may be needed to complete your request. Your request may be returned if items are missing. Revised submittal will be considered a new submittal.

SIGNATURE	DATE
Robert C Beck	9-29-09
PRINT NAME: ROBERT C. BECK	
E-MAIL ADDRESS: bob.beck@kcpl.com	

RECEIVED
OCT 05 2009
WATER PROTECTION PROGRAM

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

ANTIDEGRADATION REVIEW SUMMARY
TIER DETERMINATION AND EFFLUENT LIMIT SUMMARY

1. FACILITY

NAME	TELEPHONE NUMBER WITH AREA CODE
SIBLEY GENERATING STATION UTILITY WASTE LANDFILL	816-650-2900

ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE
33200 E. JOHNSON ROAD	SIBLEY	MO	64088

2. RECEIVING WATER BODY SEGMENT #1

NAME
MISSOURI RIVER

2.1 UPPER END OF SEGMENT (Location of discharge)
UTM _____ OR Lat 39.1760342, Long -94.1668828
2.2 LOWER END OF SEGMENT
UTM _____ OR Lat _____, Long _____

Per the Missouri Antidegradation Rule and Implementation Procedure, or AIP, the definition of a segment, "a segment is a section of water that is bound, at a minimum, by significant existing sources and confluences with other significant water bodies."

3. WATER BODY SEGMENT #2 (IF APPLICABLE)

NAME

3.1 UPPER END OF SEGMENT
UTM _____ OR Lat _____, Long _____
3.2 LOWER END OF SEGMENT
UTM _____ OR Lat _____, Long _____

4. WATER BODY SEGMENT #3 (IF APPLICABLE)

NAME

4.1 UPPER END OF SEGMENT
UTM _____ OR Lat _____, Long _____
4.2 LOWER END OF SEGMENT
UTM _____ OR Lat _____, Long _____

5. PROJECT INFORMATION

Is the receiving water body an Outstanding National Resource Water, an Outstanding State Resource Water, or drainage thereto?

☐ Yes ☒ No

In Tables D and E of 10 CSR 20-7.031, Outstanding National Resource Waters and Outstanding State Resource Water are listed. Per the Antidegradation Implementation Procedure Section 1.B.3., "any degradation of water quality is prohibited in these waters unless the discharge only results in temporary degradation." Therefore, if degradation is significant or minimal, the Antidegradation Review will be denied.

Will the proposed discharge of all pollutants of concern, or POCs, result in no net increase in the ambient water quality concentration of the receiving water after mixing?

☒ Yes ☐ No

If yes, submit a summary table showing the levels of each pollutant of concern before and after the proposed discharge in the receiving water and then complete Attachment B for the first downstream classified water body segment.

Will the discharge result in temporary degradation?

☐ Yes ☒ No

If yes, complete Attachment C.

Has the project been determined as non-degrading?

☐ Yes ☒ No

If yes, complete No Degradation Evaluation – Conclusion of Antidegradation Review form.
Submit with the appropriate Construction Permit Application as no antidegradation review is required.

If yes to one of the above questions, skip to Section 8 - Wet Weather.

MO 780-2025 (05-09)

6. EXISTING WATER QUALITY DATA OR MODEL SUMMARY

Obtaining Existing Water Quality is possible by three methods according to the Antidegradation Implementation Procedure Section II.A.1.: (1) using previously collected data with an appropriate Quality Assurance Project Plan, or QAPP (2) collecting water quality data by approved the Missouri Department of Natural Resources methodology or (3) using an appropriate water quality model. QAPPs must be submitted to the department for approval well in advance (six months) of the proposed activity. Provide all the appropriate corresponding data and reports which were approved by the department Water Quality Monitoring and Assessment Section.

Date existing water quality data was provided by the Water Quality Monitoring and Assessment Section:

Approval date of the QAPP by the Water Quality Monitoring and Assessment Section:

Approval date of the project sampling plan by the Water Quality Monitoring and Assessment Section:

Approval date of the data collected for all appropriate pollutants of concern by the Water Quality Monitoring and Assessment Section:

Comments/Discussion:

7. POLLUTANTS OF CONCERN AND TIER DETERMINATION(S)

Pollutants of Concern to be considered include those pollutants reasonably expected to be present in the discharge per the Antidegradation Implementation Procedure Section II.S. The tier protection levels are specified and defined in rule at 10 CSR 20-7.031 (2).

Water Body Segment One
Pollutants of Concern and Tier Determination(s)

Tier 1	Tier 2 with Minimal Degradation	Tier 2 with Significant Degradation
	BORON	
	CADMIUM	
	CHROMIUM VI	
	SELENIUM	
	SULFATE	

Note: Add an asterisk to items that you only assume are Tier 2 with significant degradation.

Water Body Segment Two
Pollutants of Concern and Tier Determination(s)

Tier 1	Tier 2 with Minimal Degradation	Tier 2 with Significant Degradation

- For pollutants of concern that are Tier 2 with significant degradation, complete Attachment A.
- For pollutants of concern that are Tier 2 with minimal degradation, complete Attachment B.
- For pollutants of concern that are Tier 1, complete Attachment D. Additionally, a Tier 2 review must be conducted for each pollutant of concern on the appropriate water body segment.

8. WET WEATHER ANTICIPATIONS

If an applicant anticipates excessive inflow or infiltration and pursues approval from the department to bypass secondary treatment, a feasibility analysis is required. The feasibility analysis must comply with the criteria of all applicable state and federal regulations including 40 CFR 122.41(m)(4). Attach the feasibility analysis to this report.

What is the Wet Weather Flow Peaking Factor in relation to design flow?

Wet Weather Design Summary:

9. SUMMARY OF THE PROPOSED ANTIDEGRADATION REVIEW EFFLUENT LIMITS

What are the proposed pollutants of concern and their respective effluent limits that the selected treatment option will comply with:

Pollutant of Concern	Units	Wasteload Allocation	Average Monthly Limit	Daily Maximum Limit
BOD5				
TSS				
Dissolved Oxygen				
Ammonia				
Bacteria (E. Coli)				

These proposed limits must not violate water quality standards, be protective of beneficial uses and achieve the highest statutory and regulatory requirements.

Attach the Antidegradation Review report and all supporting documentation.

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 regulation.

SIGNATURE: Robert C Beck — DATE: 9-29-09

NAME AND OFFICIAL TITLES: ROBERT C. BECK SR ENVIRONMENTAL CONSULTANT

COMPANY NAME: KANSAS CITY POWER & LIGHT COMPANY

ADDRESS	CITY	STATE	ZIP CODE
P.O. Box 418679	Kansas City	Missouri	64141

TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
816-654-1767	BOB.BECK@KCPL.COM

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

SIGNATURE: David M Rembold — DATE: 9/29/09

NAME AND OFFICIAL TITLES: DANIEL F. REMBOLD PLANT MANAGER

ADDRESS	CITY	STATE	ZIP CODE
33200 E. Johnson Road	Sibley	Missouri	64106

TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
816-650-2900	dan.rembold@kcpl.com

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 found in 10 CSR 20-6.010(3) available at 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: David M Rembold — DATE: 9/29/09

NAME AND OFFICIAL TITLES: DANIEL F. REMBOLD PLANT MANAGER

ADDRESS	CITY	STATE	ZIP CODE
33200 E. Johnson Road	Sibley	Missouri	64106

TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
816-650-2900	DAN.REMBOLD@KCPL.COM

MO 780-2025 (05-09)

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

OCT 05 2009
WATER PROTECTION PROGRAM

ANTIDEGRADATION REVIEW SUMMARY
ATTACHMENT B: TIER 2 – MINIMAL DEGRADATION

1. FACILITY

NAME		TELEPHONE WITH AREA CODE	
SIBLEY GENERATING STATION UTILITY WASTE LANDFILL		816-650-2900	
ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE
33200 E. JOHNSON ROAD	SIBLEY	MO	64106

2. RECEIVING WATER BODY SEGMENT #1

NAME
MISSOURI RIVER

3. WATER BODY SEGMENT #2 (IF APPLICABLE)

NAME

4. ASSIMILATIVE CAPACITY TABLE

Determining the facility assimilative capacity, or FAC, and the segment assimilative capacity, or SAC for each pollutant of concern is explained in detail in the Antidegradation Implementation Procedure Section II.A.3. and Appendix 3. POCs to be considered include those pollutants reasonably expected to be present in the discharge per the Antidegradation Implementation Procedure Section II.A. Provide all calculations in the Antidegradation Review report.

Pollutant of Concern	Facility Assimilative Capacity (lbs/day)	New Load (lbs/day)	Percent of Facility Assimilative Capacity (%)
BORON	119,397	6.1	0.005
CADMIUM	284	0.006	0.002
CHROMIUM VI	473	0.001	0.0002
SELENIUM	158	0.003	0.002
SULFATE	6,240,947	156	0.003

Pollutant of Concern	Water Body Segment #1 SAC	Cumulative Net Increase in Load	Cumulative % of Water Body Segment #1 SAC	Water Body Segment #2 SAC	Cumulative Net Increase in Load	Cumulative % of Water Body Segment #2 SAC

Assimilative Capacity Summary

Is degradation considered minimal for all Pollutants of Concern? ☒ Yes ☐ No

Degradation is considered minimal if the new or proposed loading is less than 10 percent of the FAC and the cumulative degradation is less than 20 percent of the SAC according to the Antidegradation Implementation Procedure Section II.A.3. If yes, an alternatives analysis and a social and economic importance analysis are not required.

Comments/Discussion

MINIMAL DEGRADATION CALCULATIONS
CALCULATIONS ARE INCLUDED AS AN ATTACHMENT IN THE ANTIDEGRADATION REVIEW REPORT

5. OIL AND GREASE

Is this a publicly owned treatment works, or POTW, restaurant, school or other domestic wastewater treatment facility with oil and grease as a Pollutant of Concern? ☐ Yes ☒ No

In accordance with 10 CSR 20-7.031(3)(B), waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses. In accordance with 10 CSR 20-7.031 Table A, oil and grease has a chronic toxicity of 10 mg/L for protection of aquatic life. This facility will meet the effluent limits (MDL and AML of 15 mg/L and 10 mg/L, respectively).

6. DECHLORINATION

If Chlorination and Dechlorination is the existing or proposed method of disinfection treatment, will the effluent discharged be equal to or less than the Water Quality Standards for Total Residual Chlorine stated in Table A of 10 CSR 20-7.031?

☐ Yes ☐ No

Based on the disinfection treatment system being designed for total removal of Total Residual Chlorine, minimal degradation for Total Residual Chlorine is assumed and the facility will be required to meet the water quality based effluent limits. These compliance limits for Total Residual Chlorine are much less than the method detection limit of 0.13 mg/L.

7. PROPOSED PROJECT SUMMARY

SEE ATTACHED ANTIDEGRADATION REVIEW REPORT.

Attach the Antidegradation Review report and all supporting documentation.

CONSULTANT: I have prepared or reviewed this from and all attached reports and documentation. The conclusion proposed in consistent with the AIP and current state and federal regulations.

SIGNATURE	DATE
Robert C Beck	9-29-09

PRINT NAME: ROBERT C. BECK

TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
816-654-1767	bob.beck@kcpl.com

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

SIGNATURE	DATE
David A Rensbold	9/29/09

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

SIGNATURE	DATE
David A Rensbold	9/29/09

Natural Heritage Review
On-line LEVEL 1 REPORT

Print this page and use/attach as documentation that your project has consulted with the Missouri Department of Conservation and the U.S. Fish and Wildlife Service about species of conservation concern. No further consultation about this project is necessary.

August 26, 2009

Your login and project information below:

User ID:	1090
First Name	Robert
Last Name	Beck
Email Address:	bob.beck@kcpl.com
Business:	Kansas City Power & Light
Project:	Wastewater

Your query information below:

User ID	Response Level	Township	Range	Section	Direction	Latitude	Longitude	Point	Line	UTM North	UTM East	Rectangle	TimeStamp
1090										4336960	399207		8/26/2009 2:37:54 PM

Wastewater

Wastewater – storm sewer, sanitary sewer, treatment plant, discharge

Clean Water Act permits issued by other agencies regulate both construction and operation of wastewater and storm water systems, and provide many important protections for fish and wildlife resources throughout the project area and at some distance downstream.

Fish and wildlife almost always benefit when unnatural pollutants are removed from water, and concerns are minimal if (a) the project area includes no protected species or restricted habitat identified in this report, and (b) construction is managed to minimize erosion and sedimentation/runoff to nearby streams and lakes, including adherence to any "Clean Water Permit" conditions.

Revegetation of disturbed areas is recommended to minimize erosion, as is restoration with of native plant species compatible with the local landscape and for wildlife needs. Annual ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as crown vetch and sericea lespedeza.

Management Recommendations for Construction Projects Affecting Missouri Streams and Rivers is a Conservation Department publication available at http://www.mdc.mo.gov/documents/nathis/endangered/streams.pdf

Cautions related to species/habitats of concern or project type. Please reflect these concerns and recommendations in your plans :

• Even if records of species/habitats of concern do not exist, there is a possibility that your project will encounter a species of concern that is not on record. In Missouri, 93% of the land is in private ownership, and most of that has never been checked for endangered species. Animals move over varying ranges, and in time both animal and plant populations can move.

• If your project encounters and potentially affects a federally-listed species, immediately report it to the U.S. Fish and Wildlife Service or Missouri Department of Conservation.

No further consultation with the U.S. Fish and Wildlife Service or the Missouri Department of Conservation is necessary. Print this document to establish compliance with requirements to consult with U.S. Fish and Wildlife Service and the Missouri Department of Conservation about this project.

If you need additional information, please contact:

MDC Natural Heritage Review
Policy Coordination Unit
P.O. Box 180
Jefferson City , MO 65102-0180
(Phone 573-522-4115 ext. 3250)
www.mdc.mo.gov

U.S. Fish and Wildlife Service Ecological Services
101 Park Deville Drive , Suite A
Columbia , Missouri 65203-0007
(Phone 573-234-2132)

A HERITAGE REVIEW provides information about species and habitats of concern that could be affected by the project. Heritage records note things that were positively identified at some date and time, marked at a location that may be more or less precise. Animals move quickly but plant communities can move also. To say "there is a record" does not mean the species/habitat is still there. To say that "there is no record" does not mean the project may not encounter something. Because of this, reports include information about records near but not necessarily on the project site. Three different kinds of information are provided

• FEDERAL Concerns are species/habitats protected under the Federal Endangered Species Act and that have been known near enough to the project site to warrant consideration. For these, project managers must contact the U.S. Fish and Wildlife Service Ecological Services (101 Park Deville Drive Suite A, Columbia , Missouri 65203-0007 ; Phone 573-234-2132; Fax 573-234-2181) for consultation.

• STATE Concerns are species/habitats known to exist near enough to the project site to warrant concern and protected under the Wildlife Code of Missouri (RSMo 3 CSR 10). "State Endangered Status" is determined by the Missouri Conservation Commission under constitutional authority, with requirements expressed in the Missouri Wildlife Code, rule 3CSR10-4.111. "State Rank" is numeric rank of relative rarity, protected under general provisions of the Wildlife Code but not endangered.

• "Concerns & management recommendations" are things for which one might prudently look. There is no specific heritage record, but our knowledge of the surrounding landscape suggests consideration. 93% of Missouri 's land is in private ownership, so most sites have never been carefully inspected by conservation professionals

This report is not a site clearance letter. Rather, it provides an indication of whether or not public lands and sensitive resources are known to be (or are likely to be) located close to the proposed project. Incorporating information from our Heritage Database into project plans is an important step that can help reduce unnecessary impacts to Missouri's sensitive natural resources. However, the Heritage Database is only one reference that should be used to evaluate potential adverse impacts. Other types of information, such as wetland and soils maps and on-site inspections or surveys, should be considered. Reviewing current landscape and habitat information and species biological characteristics would additionally ensure that species of conservation concern are appropriately identified and addressed.

Additional information on rare, endangered and watched species may be found at http://www.mdc.mo.gov/nathis/endangered/. Detailed information about species mentioned may be accessed at http://mdc4.mdc.mo.gov/applications/mofwis/mofwis_search1.aspx . If you would like printed copies of best management practices cited as internet URLs, please contact us.

Appendix B – Map