



Jeremiah W. (Jay) Nixon, Governor \* Kip A. Stetzler, Acting Director

## DEPARTMENT OF NATURAL RESOURCES

dnr.mo.gov

The Empire District Electric Company  
602 S. Joplin St.  
Joplin, MO 64801

Dear Permittee:

Pursuant to the Federal Water Pollution Control Act, under the authority granted to the State of Missouri and in compliance with the Missouri Clean Water Law, we have issued and are enclosing your State Operating Permit to discharge from The Energy Center, Jasper County, Missouri.

Please read your permit and enclosed Standard Conditions. They contain important information on monitoring requirements, effluent limitations, sampling frequencies and reporting requirements.

Monitoring reports required by the special conditions must be submitted on a periodic basis. The required forms are enclosed. Please make copies for your use. Completed forms should be mailed to this office.

This permit is both your Federal NPDES Permit and your new Missouri State Operating Permit and replaces all previous State Operating Permits issued for this facility under this permit number. In all future correspondence regarding this facility, please refer to your State Operating Permit number and facility name as shown on page one of the permit.

**Please be aware that nothing in this permit relieves the permittee of any other legal obligations or restrictions, such as other federal or state laws, court orders, or county or other local ordinances or restrictions.**

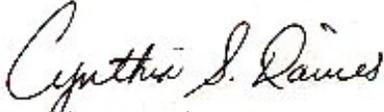
If you were adversely affected by this decision, you may be entitled to an appeal before the administrative hearing commission pursuant to 10 CSR 20-1.020 and Section 621.250, RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission. Any appeal shall be directed to: Administrative Hearing Commission, Truman Building, Room 640, 301 W. High Street, P.O. Box 1557, Jefferson City, MO 65102, Phone: 573-751-2422, Fax: 573-751-5018, website: [www.oa.mo.gov/ahc](http://www.oa.mo.gov/ahc).

The Energy Center  
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If you have questions concerning this permit please contact Ms. Gwenda J. Bassett of my staff by calling 417-891-4300 or via mail at Southwest Regional Office, 2040 W. Woodland, Springfield, MO 65807-5912.

Sincerely,

SOUTHWEST REGIONAL OFFICE

A handwritten signature in cursive script that reads "Cynthia S. Davies".

Cynthia S. Davies  
Regional Director

CSD/gbk

Enclosures

STATE OF MISSOURI  
**DEPARTMENT OF NATURAL RESOURCES**  
MISSOURI CLEAN WATER COMMISSION



## MISSOURI STATE OPERATING PERMIT

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

|   |  |
|---|--|
| Permit No.  | MO-0116874   |
| Owner:<br>Address:  | The Empire District Electric Company<br>602 S. Joplin Street, Joplin, MO 64801 |
| Continuing Authority:<br>Address:   | Same as Above<br>Same as Above   |
| Facility Name:<br>Facility Address:   | The Energy Center<br>2537 Fir Road, Sarcoxie, MO 64862                         |
| Legal Description:<br>UTM (X/Y):  | See page 2<br>See page 2   |
| Receiving Stream:<br>First Classified Stream and ID:<br>USGS Basin & Sub-watershed No.: | See page 2<br>See page 2<br>See page 2   |

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

### FACILITY DESCRIPTION

See Page 2

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

November 24, 2010  
Effective Date

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

November 23, 2015  
Expiration Date

  
\_\_\_\_\_  
Cynthia S. Davies, Regional Director, Southwest Regional Office

FACILITY DESCRIPTION (continued)

Outfall #001 – Power Plant -SIC #4911

Stormwater only; actual flow is dependent upon rainfall.

Legal Description: SE $\frac{1}{4}$ , NE $\frac{1}{4}$ , SW $\frac{1}{4}$ , Sec. 16, T28N, R29W, Jasper County  
UTM (X/Y): 402078 / 4111012

Receiving Stream: Unnamed Tributary to Cave Spring Branch (U)  
First Classified Stream and ID: Cave Spring Branch (C) (3162)  
USGS Basin & Sub-watershed No.: (11070207-140001)

Outfall #002 – Power Plant -SIC #4911

Non-contact process water from the old reverse osmosis unit  
Design flow is 0.045500 MGD.

Legal Description: NE $\frac{1}{4}$ , SE $\frac{1}{4}$ , SW $\frac{1}{4}$ , Sec. 16, T28N, R29W, Jasper County  
UTM (X/Y): 401997 / 4110828

Receiving Stream: Unnamed Tributary to Cave Spring Branch (U)  
First Classified Stream and ID: Cave Spring Branch (C) (3162)  
USGS Basin & Sub-watershed No.: (11070207-140001)

Outfall #003 – Power Plant -SIC #4911

Non-contact process water from the new reverse osmosis unit  
Design flow is 0.115700 MGD.

Legal Description: NE $\frac{1}{4}$ , SE $\frac{1}{4}$ , SW $\frac{1}{4}$ , Sec. 16, T28N, R29W, Jasper County  
UTM (X/Y): 401903 / 4110812

Receiving Stream: Unnamed Tributary to Cave Spring Branch (U)  
First Classified Stream and ID: Cave Spring Branch (C) (3162)  
USGS Basin & Sub-watershed No.: (11070207-140001)

| A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS   |         |                              |                | PAGE NUMBER 3 of 10      |                         |                 |
|---|---------|------------------------------|----------------|--------------------------|-------------------------|-----------------|
|   |         |                              |                | PERMIT NUMBER MO-0116874 |                         |                 |
| The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective upon issuance and remain in effect until <b>December 31, 2011</b> . Such discharges shall be controlled, limited and monitored by the permittee as specified below:               |         |                              |                |                          |                         |                 |
| OUTFALL NUMBER AND EFFLUENT PARAMETER(S)  | UNITS   | INTERIM EFFLUENT LIMITATIONS |                |                          | MONITORING REQUIREMENTS |                 |
|   |         | DAILY MAXIMUM                | WEEKLY AVERAGE | MONTHLY AVERAGE          | MEASUREMENT FREQUENCY   | SAMPLE TYPE     |
| <u>Outfall #001</u> - Stormwater  |         |                              |                |                          |                         |                 |
| Flow  | MGD     | *                            |                | *                        | twice/year**            | 24 hr. estimate |
| pH – Units  | SU      | ***                          |                | ***                      | twice/year **           | grab            |
| Oil and Grease  | mg/L    | 15                           |                | 10                       | twice/year **           | grab            |
| Iron, Total Recoverable   | mg/L    | *                            |                | *                        | twice/year **           | grab            |
| Settleable Solids   | mL/L/hr | *                            |                | *                        | twice/year **           | grab            |
| Rainfall*****   | inches  | *                            |                | *                        | daily                   | total           |
| MONITORING REPORTS SHALL BE SUBMITTED <b>BI-ANNUALLY</b> ; THE FIRST REPORT IS DUE <b>JULY 28, 2011</b> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.   |         |                              |                |                          |                         |                 |
| The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on <b>January 1, 2012</b> and remain in effect until the expiration of this permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below: |         |                              |                |                          |                         |                 |
| OUTFALL NUMBER AND EFFLUENT PARAMETERS(S)   | UNITS   | FINAL EFFLUENT LIMITATIONS   |                |                          | MONITORING REQUIREMENTS |                 |
|   |         | DAILY MAXIMUM                | WEEKLY AVERAGE | MONTHLY AVERAGE          | MEASUREMENT FREQUENCY   | SAMPLE TYPE     |
| <u>Outfall #001</u> - Stormwater  |         |                              |                |                          |                         |                 |
| Flow  | MGD     | *                            |                | *                        | twice/year**            | 24 hr. estimate |
| pH – Units  | SU      | ***                          |                | ***                      | twice/year **           | grab            |
| Oil and Grease  | mg/L    | 15                           |                | 10                       | twice/year **           | grab            |
| Iron, Total Recoverable   | mg/L    | *                            |                | *                        | twice/year **           | grab            |
| Settleable Solids   | mL/L/hr | 3.0                          |                | 1.5                      | twice/year **           | grab            |
| Rainfall*****   | inches  | *                            |                | *                        | daily                   | total           |
| MONITORING REPORTS SHALL BE SUBMITTED <b>BI-ANNUALLY</b> ; THE FIRST REPORT IS DUE <b>JULY 28, 2012</b> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.   |         |                              |                |                          |                         |                 |

| <b>A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS</b> (continued)  |            |                            |                            |                 | PAGE NUMBER 4 of 10      |              |
|---|------------|----------------------------|----------------------------|-----------------|--------------------------|--------------|
|   |            |                            |                            |                 | PERMIT NUMBER MO-0116874 |              |
| 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 of this permit and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below: |            |                            |                            |                 |                          |              |
| OUTFALL NUMBER AND EFFLUENT PARAMETERS(S)   | UNITS      | FINAL EFFLUENT LIMITATIONS |                            |                 | MONITORING REQUIREMENTS  |              |
|   |            | DAILY MAXIMUM              | WEEKLY AVERAGE             | MONTHLY AVERAGE | MEASUREMENT FREQUENCY    | SAMPLE TYPE  |
| <u>Outfalls #002 and #003- Non-contact Process Water</u>  |            |                            |                            |                 |                          |              |
| Flow  | MGD        | *                          |                            | *               | once/quarter****         | 24 hr. total |
| Total Suspended Solids  | mg/L       | 60                         |                            | 30              | once/quarter****         | grab         |
| Temperature   | °C         | 32                         |                            | 32              | once/quarter****         | grab         |
| pH- Units   | SU         | ***                        |                            | ***             | once/quarter****         | grab         |
| Chloride + Sulfate  | mg/L       | *                          |                            | *               | once/quarter****         | grab         |
| MONITORING REPORTS SHALL BE SUBMITTED <b>QUARTERLY</b> ; THE FIRST REPORT IS DUE <b>APRIL 28, 2011</b> . 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 #10 |                 | once / year              | grab         |
| MONITORING REPORTS SHALL BE SUBMITTED <b>ANNUALLY</b> ; THE FIRST REPORT IS DUE <b>JANUARY 28, 2012</b> .   |            |                            |                            |                 |                          |              |
| <b>B. STANDARD CONDITIONS</b>   |            |                            |                            |                 |                          |              |
| IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <b>PART I</b> STANDARD CONDITIONS DATED <u>October 1, 1980 and August 15, 1994</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.  |            |                            |                            |                 |                          |              |

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

\* Monitoring requirement only.

\*\* All samples shall be collected from a discharge resulting from a precipitation event greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable precipitation event. Sampling shall occur twice per year in the periods of January through June and July through December, please note that monitoring reports shall be submitted no later than the 28<sup>th</sup> day of the month following the monitoring period (July 28<sup>th</sup>, and January 28<sup>th</sup>, respectively). If a precipitation event does not occur within the reporting period, report as no discharge.

\*\*\* pH is measured in pH units and is not to be averaged. The pH for all facilities except lagoons is limited to the range of 6.5-9.0 pH units.

\*\*\*\* Sampling shall occur once per quarter in the periods of January through March, April through June, July through September, and October through December, please note that monitoring reports shall be submitted no later than the 28th day of the month following the monitoring period (April 28th, July 28th, October 28th, and January 28th, respectively).

\*\*\*\*\* The total precipitation for the event sampled shall be reported.

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.

C. SPECIAL CONDITIONS (continued)

- (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.

- 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;

D. SPECIAL CONDITIONS (continued)

- (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 SWPPP must be prepared and implement within 30 days of permit issuance. The SWPPP must be kept on-site and should not be sent to DNR unless specifically requested. 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 discharges associated with vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning, and chemical deicing/anti-icing activities. This must include a list of potential contaminants and an annual estimate of amounts that will be used in the described activities.
  - (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 #7 below.
  - (c) The SWPPP must include a schedule for a bi-monthly site inspection and a brief written report. The inspections must include observation and evaluation of BMP effectiveness, deficiencies, and corrective measures that will be taken. Deficiencies must be corrected within seven days. Inspection reports must be kept on site with the SWPPP. 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.

C. SPECIAL CONDITIONS (continued)

9. Substances, regulated by federal law under the Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERLA), that are transported, stored, or used for maintenance, cleaning or repair, shall be managed according to RCRA and CERLA.
10. Whole Effluent Toxicity (WET) tests shall be conducted as follows:

| OUTFALL | AEC  | FREQUENCY | SAMPLE TYPE | MONTH                            |
|---------|------|-----------|-------------|----------------------------------|
| 002     | 100% | once/year | Grab        | Any time between May - September |
| 003     | 100% | once/year | Grab        | Any time between May - September |

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

$$AEC\% = 0.179 / (0 + 0.179) \times 100 = 100\%$$

(a) Test Schedule and Follow-Up Requirements

- (1) Perform a MULTIPLE-dilution acute WET test in the months and at the frequency specified above. For tests which are successfully passed, submit test results using the Department's WET test report form #MO-780-1899 along with complete copies of the test reports as received from the laboratory, including copies of chain-of-custody forms within 30 calendar days of availability to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102. If the effluent passes the test, do not repeat the test until the next test period.
- (a) For discharges of stormwater, samples shall be collected within three hours from when discharge first occurs.
  - (b) Samples submitted for analysis of stormwater discharges shall be collected as a grab.
  - (c) For discharges of non-stormwater, samples shall be collected only when precipitation has not occurred for a period of forty-eight hours prior to sample collection. In no event shall sample collection occur simultaneously with the occurrence of precipitation excepting for stormwater samples.
  - (d) A twenty-four hour composite sample shall be submitted for analysis of non-stormwater discharges.
  - (e) Upstream receiving water samples, where required, shall be collected upstream from any influence of the effluent where downstream flow is clearly evident.
  - (f) Samples submitted for analysis of upstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.
  - (g) Chemical and physical analysis of the upstream control and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping.
  - (h) Any and all chemical or physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% Effluent concentration in addition to analyses performed upon any other effluent concentration.
  - (i) All chemical analyses included in the Missouri Department of Natural Resources WET test report form #MO-780-1899 shall be performed and results shall be recorded in the appropriate field of the report form.
  - (j) Where flow-weighted composite sample is required for analysis, the samples shall be composited at the laboratory where the test is to be performed.
  - (k) Where in stream testing is required downstream from the discharge, sample collection shall occur immediately below the established Zone of Initial Dilution in conjunction with or immediately following a release or discharge.

C. SPECIAL CONDITIONS (continued)

- (l) Samples submitted for analysis of downstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.
  - (m) All instream samples, including downstream samples, shall be tested for toxicity at the 100% concentration in addition to any other assigned AEC for in-stream samples.
  - (2) All failing test results along with complete copies of the test reports as received from the laboratory, INCLUDING THOSE TESTS CONDUCTED UNDER CONDITION (3) BELOW, shall be reported to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.
  - (3) If the effluent fails the test, a multiple dilution test shall be performed for BOTH test species within 30 calendar days and biweekly thereafter (for storm water, tests shall be performed on the next and subsequent storm water discharges as they occur, but not less than 7 days apart) until one of the following conditions are met:
    - (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 at least two multiple-dilution tests during any period of accelerated monitoring violates the permit narrative requirement for aquatic life protection.
  - (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.
  - (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.
  - (9) When WET test sampling is required to run over one DMR period, each DMR report shall contain a copy of the Department's WET test report form that was generated during the reporting period.
  - (10) Submit a concise summary in tabular format of all WET test results with the annual report.
- (b) PASS/FAIL procedure and effluent limitations:
- (1) To pass a multiple-dilution test:
    - (a) For facilities with a computed percent effluent at the edge of the zone of initial dilution, Allowable Effluent Concentration (AEC) OF 30% OR LESS, the AEC must be less than three-tenths (0.3) of the LC<sub>50</sub> concentration for the most sensitive of the test organisms; **OR**,
    - (b) For facilities with an AEC greater than 30%, the LC<sub>50</sub> concentration must be greater than 100%; **AND**,
    - (c) all effluent concentrations equal to or less than the AEC must be nontoxic. Mortality observed in all effluent concentrations equal to or less than the AEC shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS or other federal guidelines as appropriate or required. Failure of one multiple-dilution test may be considered an effluent limit violation.

C. SPECIAL CONDITIONS (continued)

(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 "Acceptable 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) 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.

C. SPECIAL CONDITIONS (continued)

**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<br>2 (minimum) multiple dilution method   |
| No. of organisms/concentration:  | 40 (minimum) single dilution method<br>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**  
**Statement of Basis**  
**The Energy Center**  
**MSOP #: MO-0116874**  
**Jasper County**

A Statement of Basis (Statement) gives pertinent information regarding the applicable regulations and rationale for the development of the NPDES Missouri State Operating Permit (operating permit). This Statement includes Wasteload Allocations, Water Quality Based Effluent Limitations, and Reasonable Potential Analysis calculations as well as any other calculations that effect the effluent limitations of this operating permit. This Statement does not pertain to operating permits that include sewage sludge land application plans and variance procedures, and does not include the public comment process for this operating permit.

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

**Part I – Facility Information**

Facility Type: IND  
Facility SIC Code(s): 4911

Facility Description: Power Plant

**OUTFALL(S) TABLE:**

| OUTFALL | DESIGN FLOW (CFS) | TREATMENT LEVEL | EFFLUENT TYPE                                  | DISTANCE TO CLASSIFIED SEGMENT (MI) |
|---------|-------------------|-----------------|--|-------------------------------------|
| 001     | Variable          | Primary         | Stormwater                                     | 0.60                                |
| 002     | 0.07              | Primary         | Non-contact process water from reverse osmosis | 0.71                                |
| 003     | 0.18              | Primary         | Non-contact process water from reverse osmosis | 0.77                                |

Receiving Water Body's Water Quality & Facility Performance History:

A review of Discharge Monitoring Reports (DMRs) submitted during the most recent permit cycle (September 2005 through recent) was conducted. According to the Missouri Clean Water Information System, The Energy Center has submitted all required DMRs over the past five (5) years. No effluent limit exceedances have occurred during the timeframe reviewed.

This is for an industrial process water and stormwater permit renewal.

Comments: The facility was last inspected on May 3, 2005. The conditions of the facility at the time of inspection were found to be satisfactory.

This facility is classified as a power plant (SIC #4911). The facility consists of two simple-cycle combustion turbines and two Twin Pac combustion turbine units consisting of two turbines coupled to a single electrical generator. All units may be fired with either natural gas or distillate fuel. Two reverse osmosis units provide treated non-contact water injection to control NO<sub>x</sub> air emissions at each turbine unit. A permit is necessary for stormwater discharges (Outfall #001) because the facility has oil storage outside. The storage area is surrounded by secondary containment. The plant also discharges process water (Outfalls #002 and #003) which consists of reject water from two reverse osmosis treatment units.

This permit has been modified from the original Public Noticed permit. The following modifications were made:

- A interim table was added to allow settleable solid monitoring before limits take effect on January 1, 2013.
- The WET test sample type was changed to grab because due to variable flow conditions from the reverse osmosis unit, a 24-hr composite sample was deemed inappropriate.

- The daily maximum limit for TSS was changed from 100 to 60 ppm due to comments received from the Water Quality Monitoring and Assessment Unit.
- The units for iron was changed from µg/L to mg/L.

**Part II – Operator Certification Requirements**

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 list effluent limitations for specific parameters, which are presented in each outfall’s Effluent Limitation Table and further discussed in the Derivation & Discussion of Limits section.

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 1<sup>st</sup> classified receiving stream’s beneficial water uses to be maintained are located in the Receiving Stream Table located below in accordance with [10 CSR 20-7.031(3)].

**RECEIVING STREAM(S) TABLE:**

| WATERBODY NAME                          | CLASS | WBID  | DESIGNATED USES*                  | 8-DIGIT HUC | EDU**         |
|---|-------|-------|-----------------------------------|-------------|---------------|
| Unnamed Tributary to Cave Spring Branch | U     | N/A   | General Criteria                  | 11070207    | Ozark/ Neosho |
| Cave Spring Branch                      | C     | 03162 | General Criteria, AQL, LWW, 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).

\*\* - Ecological Drainage Unit

**RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:**

| RECEIVING STREAM (U, C, P)                  | LOW-FLOW VALUES (CFS) |      |       |
|---|-----------------------|------|-------|
|   | 1Q10                  | 7Q10 | 30Q10 |
| Unnamed Tributary to Cave Spring Branch (U) | 0                     | 0    | 0     |

**MIXING CONSIDERATIONS**

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

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

**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.

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

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

As per [10 CSR 20-6.010(8)(A)10.], when a Continuing Authority under paragraph 10 CSR 20-6.010(3)(B)1. or 2. is expected to be available for connection within the next five (5) years, any operating permit issued to a permittee under this paragraph, located within the service area of the paragraph (3)(B)1. or 2. facility, shall contain the following special condition... This language is contained in Special Condition #3 of this operating permit.

**ANTIDegradation:**

Policies which ensure protection of water quality for a particular water body where the water quality exceeds levels necessary to protect fish and wildlife propagation and recreation on and in the water. This also includes special protection of waters designated as outstanding natural resource waters. Antidegradation requirements are consistent with 40 CFR 131.12 that outlines methods used to assess activities that may impact the integrity of a water and protect existing uses. This policy may compel the state to maintain a level of water quality above those mandated by criteria.

Not Applicable .

Renewal no degradation proposed and no further review necessary.

**APPLICABLE PERMIT PARAMETERS:**

Effluent parameters for conventional, non-conventional, and toxic pollutants have been obtained from the previous NPDES operating permit for this facility, technology based effluent limits, and from appropriate sections of the renewal application.

**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.

Additional information regarding biosolids and sludge is located at the following web address:

<http://dnr.mo.gov/env/wpp/pub/index.html>, items WQ422 through WQ449.

Not applicable;

This condition is not applicable to the permittee for this facility.

**COMPLIANCE AND ENFORCEMENT:**

Action taken by the department to resolve violations of the Missouri Clean Water Law, its implementing regulations, and/or any terms and condition of an operating permit.

Not Applicable .

The permittee/facility is not under enforcement action and is considered to be in compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and condition of an operating permit.

**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)].

Not Applicable ;

At this time, the permittee is not required to implement and enforce a Pretreatment Program.

**REASONABLE POTENTIAL ANALYSIS (RPA):**

Limitations must control all pollutants or pollutant parameters that are or may be discharged at a level which will cause, have reasonable potential to cause, or contribute to an excursion above the Missouri Water Quality Standards.

Applicable ;

A RPA was conducted for this facility for (parameters) and determined that this facility has the potential to cause or contribute to violations of Water Quality. Please see **APPENDIX A – RPA RESULTS**.

**REMOVAL EFFICIENCY:**

Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD<sub>5</sub>) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs). 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](http://www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm)

Not Applicable ;

This facility is not a POTW. 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 system 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 *Storm Water Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices* [EPA 832-R-92-006] (Storm Water Management), 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.

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

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

Not Applicable ;

Wasteload allocations were not calculated.

**WLA MODELING:**

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 are 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 RSMo apply: §644.051.3 requires the Department to set permit conditions that comply with the MCWL and CWA; §644.051.4 specifically references toxicity as an item we must consider in writing permits (along with water quality-based effluent limits, pretreatment, etc...); and §644.051.5 is the basic authority to require testing conditions. WET test will be required by all facilities meeting the following criteria:

- Facility is a designated Major.
- Facility 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<sub>3</sub>)
- Facility is a municipality or domestic discharger with a Design Flow  $\geq$  22,500 gpd.

Other – facility is a power plant that discharges non-contact process water from two reverse osmosis treatment units. Reverse osmosis treatment produces reject water that may be high in certain ions and effluent regulations do not exist for power plants. A WET test is more appropriate to determine the toxicity of the effluent.

**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.

Not Applicable ;

This facility does not discharge to a 303(d) listed stream.

**Adjusted Design Flow:**

10 CSR 20-6.011(1)(B)1. provides for an Adjusted Design Flow when calculating permit fees on human sewage treatment facilities. If the average flow is sixty percent (60%) or less than the system’s design flow, the average flow may be substituted for the design flow when calculating the permit fee on human sewage treatment facilities. If the facility's actual average flow is consistently 60% or less than the permitted design flow, the facility may qualify for a reduction in your fee when:

- The facility has a valid permit, or has applied for re-issuance, is in compliance with the terms, conditions and effluent limitations of the permit, and the facility has a good compliance history; and
- Flow is not expected to exceed 60% of design flow for the remaining term of the existing operating permit.

Not Applicable ;

Municipalities, POTWs, and Industrials do not qualify for Adjusted Design flows.

**Outfall #001 – Stormwater Outfall Main outfall**

**EFFLUENT LIMITATIONS TABLE:**

| PARAMETER               | UNIT   | BASIS FOR LIMITS | DAILY MAXIMUM | WEEKLY AVERAGE | MONTHLY AVERAGE | MODIFIED | PREVIOUS PERMIT LIMITATIONS |
|-------------------------|--|------------------|---------------|----------------|-----------------|----------|-----------------------------|
| FLOW                    | GPD  | 1                | *             |                | *               | NO       | S                           |
| SS                      | ML/L/HR  | 8                | 3.0           |                | 1.5             | ****     | ****                        |
| PH (S.U.)               | SU   | 3, 8             | 6.5-9.0       |                | 6.5-9.0         | YES      | 6.0-9.0                     |
| OIL AND GREASE          | MG/L   | 3, 8             | 15            |                | 10              | NO       | S                           |
| IRON, TOTAL RECOVERABLE | µG/L   | 8                | *             |                | *               | ****     | ****                        |
| RAINFALL                | INCHES   | 1                | *             |                | *               | NO       | S                           |
| MONITORING FREQUENCY    | Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below. |                  |               |                |                 |          |                             |

**10. - Monitoring requirement only**

\*\*\* - # of colonies/100mL; the Monthly Average for Fecal Coliform is a geometric mean.

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

N/A – Not applicable

S – Same as previous operating permit

Basis for Limitations Codes:

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

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

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

**Settleable Solids (SS):** Discharges to unclassified streams in previous permits have had Settleable Solid limits of 1.5 ml/L/hr. The monthly average limit is 1.5 ml/L/hr and the daily maximum effluent limit is 3.0 ml/L/hr. The daily maximum is calculated by  $(1.5 \text{ AML})(\text{LTAc}/1.5524 \text{ AML})(3.113/\text{LTAc})=3.0 \text{ ml/L/hr}$  daily maximum. This method is outlined in SWRO-WP17-01.

**Total Suspended Solids (TSS).** Monitoring requirement removed. Review of the past five (5) years of Discharge Monitoring Reports (DMRs) shows that total suspended solids is not present in the storm water runoff at concentrations that have the potential to exceed Effluent Limitations, as per [10 CSR 20-7.031(8)]. A better indicator for run-off is Settleable Solids which was added.

**pH.**

– pH is limited to the range of 6.5 – 9.0 pH units, as per [10 CSR 20-7.031(4)(E)]. pH is measured in pH units and is not to be averaged.

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

**Sulfate:** Monitoring requirement removed. The source of the sulfate is well water used in the reverse osmosis filter units. Water Quality Standards for sulfate (only) are for DWS designated waters. The first classified stream is not designated DWS. There is no source for Sulfate in the storm water.

**Iron, Total Recoverable.** Monitoring requirement only. Parameter added because this metal is shown to be present in stormwater discharges per Form C, submitted for application renewal, and laboratory analysis results. During the next permit renewal review, it will be determined if effluent limits are needed or if the parameter can be removed.

**Rainfall.** The discharge is dependent upon precipitation. To determine discharge events, rainfall data is needed.

**Minimum Sampling and Reporting Frequency Requirements. (Outfall #001)**

| PARAMETER               | SAMPLING FREQUENCY | REPORTING FREQUENCY |
|-------------------------|--------------------|---------------------|
| FLOW                    | BI-ANNUALLY        | BI-ANNUALLY         |
| SETTLEABLE SOLIDS       | BI-ANNUALLY        | BI-ANNUALLY         |
| PH                      | BI-ANNUALLY        | BI-ANNUALLY         |
| OIL & GREASE            | BI-ANNUALLY        | BI-ANNUALLY         |
| IRON, TOTAL RECOVERABLE | BI-ANNUALLY        | BI-ANNUALLY         |
| RAINFALL                | DAILY              | BI-ANNUALLY         |

**Outfall #002 and #003- Non-contact Process Water from Reverse Osmosis Treatment**  
**EFFLUENT LIMITATIONS TABLE:**

| PARAMETER                          | UNIT   | BASIS FOR LIMITS | DAILY MAXIMUM | WEEKLY AVERAGE | MONTHLY AVERAGE | MODIFIED | PREVIOUS PERMIT LIMITATIONS |
|------------------------------------|--|------------------|---------------|----------------|-----------------|----------|-----------------------------|
| FLOW                               | GPD  | 1                | *             |                | *               | NO       | S                           |
| TEMPERATURE                        | °C   | 1                | 32            |                | 32              | NO       | S                           |
| SULFATE                            | MG/L   | -                | -             |                | -               | YES      | REMOVED                     |
| FLUORIDE                           | MG/L   | -                | -             |                | -               | YES      | REMOVED                     |
| TOTAL DISSOLVED SOLIDS             | MG/L   | -                | -             |                | -               | YES      | REMOVED                     |
| OIL AND GREASE                     | MG/L   | -                | -             |                | -               | YES      | REMOVED                     |
| TSS                                | MG/L   | 8                | 60            |                | 30              | NO       | S                           |
| PH (S.U.)                          | SU   | 1                | 6.5-9.0       |                | 6.5-9.0         | YES      | 6.0-9.0                     |
| CHLORIDE + SULFATE                 | MG/L   | 3                | *             |                | *               | YES      | ****                        |
| WHOLE EFFLUENT TOXICITY (WET) TEST | Please see WET Test in the Derivation and Discussion Section below.  |                  |               |                |                 |          |                             |
| MONITORING FREQUENCY               | Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below. |                  |               |                |                 |          |                             |

**\* - Monitoring requirement only**

\*\*\* - # of colonies/100mL; the Monthly Average for Fecal Coliform is a geometric mean.

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

N/A – Not applicable

S – Same as previous operating permit

**Basis for Limitations Codes:**

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

**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.

**Temperature.** Conventional pollutant, limitations for protection of aquatic life; 32°C monthly average and daily maximum.

**pH.**

– pH is limited to the range of 6.5 – 9.0 pH units, as per [10 CSR 20-7.031(4)(E)]. pH is measured in pH units and is not to be averaged.

**Sulfate:** Monitoring requirement removed. The source of the sulfate is well water used in the reverse osmosis filter units. Water Quality Standards for sulfate (only) are for DWS designated waters. The first classified stream is not designated DWS. The monitoring parameter chlorides + sulfates is being added instead for protection of aquatic life.

**Fluoride:** Monitoring requirement removed. The source of the fluoride is well water used in the reverse osmosis filter units. A reasonable potential analysis (RPA) of data from the previous five (5) years shows that discharge does not have a reasonable potential to exceed water quality criteria (4 mg/L).

**Total Dissolved Solids.** Monitoring requirement removed. A water quality standard or effluent regulation does not exist for Total Dissolved Solids. To ensure water quality protection a WET test was added.

**Total Suspended Solids.** 10 CSR 20-7.015 for all waters of the state has TSS of 30 mg/L. The Daily maximum is twice the monthly average therefore 60 mg/L.

**Oil & Grease.** Monitoring requirement removed. Review of the DMRs from the previous permit cycle have shown that oil and grease is not present in the process water. All sample results for Outfalls #002 and #003 for oil and grease are non-detectable.

**Chloride + Sulfate:** Monitoring requirement only. The well water used in the reverse osmosis filter is a source of sulfates. The first classifies receiving stream does not have a designation for a sulfate limit (Water Quality Standards for sulfate (only) are for DWS designated waters). The monitoring parameter chlorides + sulfates is being added for protection of aquatic life which has a limit of 1000 mg/L. The permittee may request this parameter to be removed if three years of monitoring data can show that a reasonable potential to exceed chloride+sulfate water quality standards, does not exist.

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

- Chronic
- Acute
- No less than ONCE/PERMIT CYCLE:**
  - Municipality or domestic facility with a design flow  $\geq 22,500$  gpd, but less than 1.0 MGD.
  - Other- Facility is a power plant that discharges non-contact process water from two reverse osmosis treatment units. Reverse osmosis treatment produces reject water that may be high in certain ions and effluent regulations do not exist for power plants. A WET test is more appropriate to determine the toxicity of the effluent.

**Minimum Sampling and Reporting Frequency Requirements. (Outfalls#002 and #003)**

| PARAMETER                          | SAMPLING FREQUENCY | REPORTING FREQUENCY |
|------------------------------------|--------------------|---------------------|
| FLOW                               | QUARTERLY          | QUARTERLY           |
| TOTAL SUSPENDED SOLIDS             | QUARTERLY          | QUARTERLY           |
| TEMPERATURE                        | QUARTERLY          | QUARTERLY           |
| PH                                 | QUARTERLY          | QUARTERLY           |
| CHLORIDE + SULFATE                 | QUARTERLY          | QUARTERLY           |
| WHOLE EFFLUENT TOXICITY (WET) TEST | ANNUALLY           | ANNUALLY            |

**Sampling Frequency Justification:**

Bi-annual sampling for storm water is appropriate because the facility has had no violations in the past 5-years and storage outside consists of oil tanks with a secondary containment. Quarterly sampling for industrial process water is appropriate to obtain sufficient data points to conduct a RPA upon permit renewal.

**Sampling Type Justification**

Due to Outfall #001 discharge being storm water, a grab sample is appropriate. Outfalls #002 and #003 (non-contact process water) have variable flow therefore a grab sample is appropriate.

### **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.

**Date of Factsheet:** August 24, 2010

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WP Permitting and Assistance Unit

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**APPENDIX A – RPA RESULTS:**

| Parameter                 | CMC*   | RWC Acute * | CCC*   | RWC Chronic* | n** | Range max/min | CV* ** | MF    | RP Yes/No |
|---------------------------|--------|-------------|--------|--------------|-----|---------------|--------|-------|-----------|
| Fluoride – (Outfall #002) | 4 mg/L | 1 mg/L      | 4 mg/L | 1 mg/L       | 19  | 0.8/0.5       | 0.16   | 1.195 | No        |
| Fluoride – (Outfall #003) | 4 mg/L | 2 mg/L      | 4 mg/L | 2 mg/L       | 19  | 1.2/0.5       | 0.25   | 1.306 | No        |

N/A – Not Applicable

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

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

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

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

n – Is the number of samples.

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

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

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