



March 22, 2017

ULNRC-06355

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

10 CFR 51.41

Ladies and Gentlemen:

**DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
UNION ELECTRIC CO.
RENEWED FACILITY OPERATING LICENSE NPF-30
REVISED NPDES DISCHARGE PERMIT**

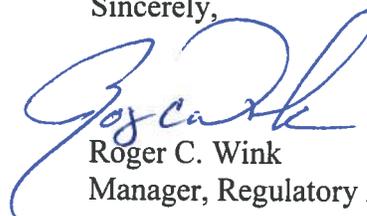
In accordance with Callaway Plant Operating License NPF-30, Appendix B, Section 3.2, Union Electric Company (Ameren Missouri) hereby submits the enclosed revision of the National Pollutant Discharge Elimination System (NPDES) Missouri State Operating Permit for the Callaway Plant (MO-0098001). The revised permit became effective on March 1, 2017.

The permit was modified to reflect a change in use of biocides and to allow continual [or otherwise more than the two hours per unit per day limited by 40 CFR 423.12(b)(8)] biocide treatment. The permit modified Tables A-2 and A-4, Note 1 to those tables, and special condition #C.23 to reflect changes required by the modification, as well as special conditions #C.6b, #C.11, #C.21, and #C.25 to reflect current standard template language and the change to electronic reporting. Throughout the document, the word molluskicide was changed to biocide as the latter is more representative of the chemicals being used onsite. Non-substantial formatting and page numbering changes were also completed.

This letter does not contain new commitments.

If there are any questions, please contact Mr. Tom Elwood at 314-225-1905.

Sincerely,


Roger C. Wink
Manager, Regulatory Affairs

PIN
6381

Enclosure

cc: Mr. Kriss M. Kennedy
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
1600 East Lamar Boulevard
Arlington, TX 76011-4511

Senior Resident Inspector
Callaway Resident Office
U.S. Nuclear Regulatory Commission
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Index and send hardcopy to QA File A160.0761

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Mr. Steve Feeler (DNR)
Mr. Robert Stout (DNR)
G. P. Gary

Enclosure too
ULNRC06355

Revised Callaway NPDES Permit for Change in Biocides

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-0098001
Owner: Ameren Missouri
Address: P.O. Box 66149, MC-602, St. Louis, MO 63166-6149
Continuing Authority: Same as above
Address: Same as above
Facility Name: Ameren Missouri-Callaway Energy Center
Facility Address: P.O. Box 620, Fulton, MO 65251
Legal Description: See Pages Two through Four (2-4)
UTM Coordinates: See Pages Two through Four (2-4)
Receiving Stream: See Pages Two through Four (2-4)
First Classified Stream and ID: See Pages Two through Four (2-4)
USGS Basin & Sub-watershed No.: (13000102-1605)

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 Pages 2-4 for facility description. Ameren Missouri-Callaway Energy Center is a steam electrical generation plant primarily engaged in the generation of electricity for distribution and sale. The plant consists of one generating unit with a capability of 1,190 megawatts (MW). Annual production is 9.8-10.7 million MW-hours. This facility has twelve (12) permitted features. The Callaway Power Plant combined discharge line (Outfalls #001, #002, #016) has a cumulative daily average flow of 7.74 MGD and a daily maximum flow of 14.4 MGD. The facility is located in Callaway County. A certified operator not required for this facility. SIC # 4911

This permit authorizes only wastewater and stormwater 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 Sections 640.013, 621.250, and 644.051.6 of the Law.

July 1, 2015 Effective Date
March 1, 2017 Modification Date

Signature of Steven Feeler
Steven Feeler, Acting Director, Division of Environmental Quality

June 30, 2020 Expiration Date

Signature of David J. Lamb
David J. Lamb, Acting Director, Water Protection Program

FACILITY DESCRIPTION (CONTINUED)

Outfall #001: Radwaste Treatment System - SIC #4911 (Piped to Missouri River)

This liquid radwaste system serves to collect, process, store, recycle and discharge treated waste water generated at Callaway. In addition, radioactive solids removed by this system are prepared for disposal and transported to a licensed off-site disposal facility.

The Boron Recycle System receives reactor coolant for the purpose of recovering the boric acid for reuse in the plant. Boric acid is used as a neutron absorber/moderator in the primary loop. The Liquid Radwaste System collects and processes floor and equipment drains from the containment, auxiliary building, fuel building and radwaste buildings during normal operation. The Laundry and Hot Shower system collects waste generated from washing radioactively contaminated protective gear and clothing and personnel decontamination shower wastewater. These wastes are then transferred to the liquid Radwaste system for treatment. The Secondary Liquid Waste system is used to process condensate demineralizer regeneration wastes and potentially radioactive liquid waste collected from the turbine building. The condensate demineralizer regeneration waste is divided into two waste streams; High TDS waste from the acid and caustic rinses used when chemically regenerating spent resin, and low TDS waste which results from the initial backflushing of unregenerated resin and the final rinsing of the regenerated resin to remove acid and caustic substances.

Steam Generator Blowdown is normally recycled back to the main condenser for reuse in the secondary cycle. Provisions also exist to discharge the treated blowdown via #001. The following wastewater treatment systems are used as required to treat this waste stream for recycle or discharge in compliance with NRC requirements and are also available as auxiliary or backup treatment systems to treat this discharge for compliance with NPDES permit limitations: Evaporation and/or Mixing and/or Filtration and/or Carbon Absorption and/or Ion Exchange and/or Neutralization and/or Reuse/Recycle of Treated Effluent. All processing in the Radwaste Treatment System is done on a batch basis except steam generator blowdown. After monitoring for radioactive content, release rates are controlled administratively to ensure the "as low as practicable" radioactive discharge criteria are met.

Design flow is 0.190 MGD

Daily average flow is 0.054 MGD.

UTM Coordinates: X= 606040; Y= 4291049

Legal Description: NE ¼, NE ¼, Sec. 14, T46N, R8W, Callaway

Receiving Stream: Missouri River (P)

First Classified Stream and ID: Missouri River (P) (00701)

USGS Basin & Sub-watershed No.: (10300102-1605)

Outfall #002: - Cooling Tower Blowdown (Piped to Missouri River)

This outfall consists of water from the Circulating Water System, the Service Water System, and the Essential Service Water (ESW) System. Blowdown from the cooling tower is necessary to maintain the dissolved solids concentration in the recirculating water system within acceptable operating limits. The ESW System is not routinely used, however water from the ESW System does mix with the other systems as it is periodically run to demonstrate operability. Additionally, the ESW System can be used to maintain proper freeboard in the ultimate heat sink pond (Outfall #017) by transferring water to the Service Water System.

Design flow is 14.4 MGD.

Daily average flow is 5.37 MGD.

UTM Coordinates: X= 606218; Y= 4291158

Legal Description: NW ¼, NW ¼, Sec. 13, T46N, R8W, Callaway

Receiving Stream: Missouri River (P)

First Classified Stream and ID: Missouri River (P) (00701)

USGS Basin & Sub-watershed No.: (10300102-1605)

Outfall #003: Water Treatment Plant Wastes (Piped to Missouri River)

Outfall #003 consists of supernatant from a wastewater treatment lagoon that treats wastewater to remove solids. The wastewater that is treated in the lagoon is mainly from the blowdown of accumulated river solids in the water treatment plant clarifiers. The sand and carbon filter backwash, oil water separator and demineralizer system wastewater is also routed to this treatment lagoon. The oil water separator flow consists of wastewater from some plant sumps as well as flow from an oil recovery well that is being used to remediate a historic on-site release. Outfall #003 is normally recycled by routing it back to the head of the water treatment plant, averaging 0.42 MGD.

Design flow is 1.645 MGD.

Daily average flow is 0.0 MGD.

UTM Coordinates: X= 606183; Y= 4289944

Legal Description: SW ¼, SW ¼, Sec. 13, T46N, R8W, Callaway

Receiving Stream: Missouri River (P)

First Classified Stream and ID: Missouri (P) (00701)

USGS Basin & Sub-watershed No.: (10300102-1606)

FACILITY DESCRIPTION (CONTINUED)

Outfall #004: Demineralizer System Wastes was rerouted to Outfall #003, removed prior to the 1996 permit renewal.

Outfall #007 – 3 Cell Flow Through Lagoon (Piped to Missouri River)

This outfall consists of a 3-cell lagoon designed to receive only sanitary, on-site cafeteria, and laboratory waste from the plant. Sludge will be stored in the lagoon. The effluent will then be discharged to a constructed wetland. The monitoring location will be at the third treatment cell. Outfall #007 is normally recycled by routing it to the water treatment plant headworks, averaging 0.025 MGD. Design flow is 0.040 MGD.

Design Population Equivalent is 400.

Daily average flow is 0.0 MGD.

UTM Coordinates: X= 606400; Y=4290125

Legal Description: SW ¼, SW ¼, Sec. 13, T46N, R8W, Callaway

Receiving Stream: Missouri River (P)

First Classified Stream and ID: Missouri (P) (00701)

USGS Basin & Sub-watershed No.: (10300102-1606)

Outfall #009: Intake Heater Blowdown (Located right on Missouri River)

The river intake structure contains two recirculating electric heaters which are used to prevent ice formation on the intake bar screens during the winter months. Outfall #009 consists of discharges from the infrequent blowdown or drainage of these boilers.

Design flow is 0.006 MGD.

Daily average flow 0 MGD.

UTM Coordinates: X=609694; Y=4284633

Legal Description: NW ¼, NW ¼, Sec. 5, T45N, R7W, Callaway

Receiving Stream: Missouri River (P)

First Classified Stream and ID: Missouri River (P) (00701)

USGS Basin & Sub-watershed No.: (10300102-1606)

Outfalls #010, #011, #012, #014 and #015 - Stormwater Runoff

Once in 10 year rainfall event is 38.5 MGD.

Average rainfall event is 0.7 MGD.

"Non-process" discharges that will be discharged to stormwater ponds include three intermittent sources. Two sources are the quarterly testing of the fire protection drains and the infrequent draining of the demineralized water storage tank. The third source is the pumping of manholes, transformer and tank containments at the plant.

Outfall #010:

Stormwater settling pond drains 108 acres, 16.2 acres of which is impervious surface. Drainage area includes the cooling water chemical control building, the quality control building, the former Unit #2 excavation and the area of the plant west of the radwaste system. The pond has a retention time greater than 24 hours.

Design flow is 4.6 MGD

Daily average flow is dependent on precipitation.

UTM Coordinates: X=606515; Y= 4291869

Legal Description: SW ¼, SW ¼, Sec. 12, T46N, R8W, Callaway

Receiving Stream: Tributary to Logan Creek (U)

First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)

USGS Basin & Sub-watershed No.: (10300102-1605)

Outfall #011:

Stormwater settling pond drains 425 acres, 8.5 acres of which is impervious surface. Drainage area includes the water treatment plant, radwaste building, operation support facility, demineralizer portable water building and the circulating and service water pumphouse. The pond has retention time of less than 24 hours.

Design storm flow is 19.7 MGD

Daily average flow is dependent on precipitation.

UTM Coordinates: X= 607139; Y= 4291930

Legal Description: NW ¼, SE ¼, Sec. 12, T46N, R8W, Callaway

Receiving Stream: Tributary to Logan Creek

First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)

USGS Basin & Sub-watershed No.: (10300102-1605)

FACILITY DESCRIPTION (CONTINUED)

Outfall #012:

Stormwater settling pond drains 87 acres, 22 acres of which is impervious surface. Drainage area includes most of the plant area including the parking lots, office buildings, switch yards, the turbine building, the outage maintenance building, and the Stores I building. The pond has retention time of less than 24 hours.

Design storm flow is 6.6 MGD

Daily average flow is dependent on precipitation.

UTM Coordinates: X= 605884; Y= 4290257

Legal Description: NE ¼, SE ¼, Sec. 14, T46N, R8W, Callaway

Receiving Stream: Tributary to Mud Creek

First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)

USGS Basin & Sub-watershed No.: (10300102-1606)

Outfall #013: terminated in 2009 permit renewal.

Outfall #014:

Stormwater settling pond drains 100 acres, 4 acres of which is impervious surface. Drainage area includes half of the construction parking lot, the Stores II building, and the maintenance shop annex. The pond has a retention time less than 24 hours.

Daily average flow is dependent on precipitation.

Design storm flow is 4.8 MGD

UTM Coordinates: X=605569; Y= 4291979

Legal Description: NW ¼, SE ¼, Sec. 11, T46N, R8W, Callaway

Receiving Stream: Tributary to Cow Branch

First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)

USGS Basin & Sub-watershed No.: (10300102-1504)

Outfall #015: Stormwater

Stormwater settling pond drains 60 acres, 0.6 acres of which is impervious surface. Drainage area includes paved roadways. The pond has a retention time greater than 24 hours.

Design storm flow is 2.8 MGD

Daily average flow is dependent on precipitation.

UTM Coordinates: X= 605918; Y= 4292305

Legal Description: SE ¼, NE ¼, Sec. 11, T46N, R8W, Callaway

Receiving Stream: Tributary to Cow Branch

First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)

USGS Basin & Sub-watershed No.: (10300102-1504)

Outfall #016: Cooling Tower Bypass (piped to Missouri River)

This outfall consists of clarified river water and wastewater that has been recycled through the water treatment plant. It is used to moderate flow through the water treatment plant and to provide carrier water in the discharge line when discharging from Outfall #001.

Design flow is 14.4 MGD.

Daily average flow is 2.32 MGD.

Legal Description: NW ¼, NW ¼, Sec. 13, T46N, R8W, Callaway

UTM Coordinates: X=606175; Y= 4290754

Receiving Stream: Missouri River (P)

First Classified Stream and ID: Missouri (P) (00701)

USGS Basin & Sub-watershed No.: (10300102-1605)

Outfall #017 - Ultimate Heat Sink

No Discharge. The Ultimate Heat Sink is a cooling pond that can provide cooling water to various plant systems during other than normal conditions. Outfall #017 is the overflow from the Ultimate Heat Sink to Stormwater Retention Basin at Outfall #011.

UTM Coordinates: X=606094; Y= 4290861

Legal Description: SE ¼, NE ¼, Sec. 14, T46N, R8W, Callaway

Receiving Stream: Tributary to Logan Creek

First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)

USGS Basin & Sub-watershed No.: (10300102-280004)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL #001	TABLE A-1 Radwaste System. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
	The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on July 1, 2015 and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:					
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow	MGD	*		*	once/daily per each batch	each batch total
Boron, Total Recoverable	mg/L	*		*	once/daily per each batch	grab
Total Suspended Solids	mg/L	45		30	once/daily per each batch	grab
pH	SU	**		**	once/daily per each batch	grab
Total Residual Chlorine	µg/L	200		104	once/month	grab
Temperature	°F	*			once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY ; THE FIRST REPORT IS DUE OCTOBER 28, 2015 . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Biochemical Oxygen Demand ₅	mg/L	*		*	once/quarter***	grab
Oil & Grease	mg/L	15		10	once/quarter***	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY ; THE FIRST REPORT IS DUE OCTOBER 28, 2015 . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

* Monitoring requirement only.

** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units

*** See table below for quarterly sampling.

Minimum Sampling Requirements			
Quarter	Months	Effluent Parameters	Report is Due
First	January, February, March	Sample at least once during any month of the quarter	April 28 th
Second	April, May, June	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	October 28th
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28th

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
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 March 1, 2017 and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
Flow	MGD	*		*	once/day	24 hr. total
Temperature	°F	*		*	once/day	grab
pH (Note 2)	SU	**		**	continuous	24 hr
pH – Minutes of Exceedances (Note 2)	minutes			446	continuous	continuous
pH – Number of Excursions (Note 2)	Count			0	continuous	continuous
Total Suspended Solids	mg/L	*		*	once/week	grab
Total Dissolved Solids	mg/L	*		*	once/week	grab
Total Residual Chlorine – Standard §	µg/L	200		104	once/week	grab
Total Residual Chlorine/Biocides–Daily §	µg/L	50		50	daily §	grab
Total Residual Chlorine – Time §	hours	2			recorded	sum
Ammonia as N (Note 3)	mg/L	*		*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE APRIL 28, 2017 . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Total Phosphorus	mg/L	*		*	once/quarter***	grab
Total Nitrogen	mg/L	*		*	once/quarter***	grab
Oil & Grease	mg/L	15		10	once/quarter***	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE OCTOBER 28, 2015 . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Iron, Total Recoverable	µg/L	*			unscheduled [ⓧ]	grab
Whole Effluent Toxicity, Acute [»]	TUa	*			unscheduled [ⓧ]	grab
REPORTS SHALL BE SUBMITTED NO MORE THAN 60 DAYS FROM DISCHARGE.						

- * Monitoring requirement only
- ** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units
- *** See table on page 8 for quarterly sampling.
- » See special condition #21
- § See special condition #23. Enter “0” if this activity not performed for the entire reporting period.
- ⓧ Unscheduled means the facility will sample when:
 - a. Iron: the facility will sample at a minimum frequency of once per week for total recoverable iron when using products containing iron.
 - b. WET testing will be completed when the facility is using biocides. The facility is not required to sample more than once per year.

Note 1: Removed at modification. ML not necessary.

Note 2: Callaway Energy Center has continuous pH measurement on Outfall #002. With continuous pH measurement, the facility may have excursions of the set pH for up to 446 minutes (7 hours, 26 minutes) in any calendar month; however the facility is not allowed to have an individual excursion lasting more than 60 minutes. The permittee shall report the minutes per month exceeding the pH effluent limits, along with number of excursions lasting sixty (60) minutes or more.

Note 3: The facility may report no discharge for ammonia as N when not using monochloramine or ammonium bromide for the entire reporting period.

OUTFALLS #003, #007, #009, #010, #011, #012, #014, & #015		TABLE A-3 FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS				
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on July 1, 2015 and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #003-Water Treatment Plant						
Flow	gpd	*		*	once/month when discharging	24 hr. total
Total Suspended Solids	mg/L	100		30	once/ month when discharging	grab
Oil & Grease	mg/L	15		10	once/month when discharging	grab
Total Residual Chlorine	µg/L	200		104	once/ month when discharging	grab
pH	SU	**		**	once/month when discharging	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>OCTOBER 28, 2015</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Outfall #007- Sanitary Wastewater						
Flow	gpd	*		*	once/quarter when discharging***	24 hr. total
Biochemical Oxygen Demand ₅	mg/L		65	45	once/quarter when discharging***	grab
Total Suspended Solids	mg/L		110	70	once/quarter when discharging***	grab
Ammonia as N	mg/L	*		*	once/quarter when discharging***	grab
Oil & Grease	mg/L	15		10	once/quarter when discharging***	grab
<i>E. coli</i>	#colonies/100mL	*		*	once/quarter when discharging***	grab
pH	SU	**		**	once/quarter when discharging***	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>OCTOBER 28, 2015</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Outfall #009-Intake Heater Blowdown						
Flow	gpd	*		*	once/week when discharging	24 hr. total
Total Suspended Solids	mg/L	100		30	once/week when discharging	grab
Oil & Grease	mg/L	15		10	once/week when discharging	grab
pH	SU	**		**	once/week when discharging	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>OCTOBER 28, 2015</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
OUTFALLS #010-#012, #014 AND #015- STORMWATER, SEE SPECIAL CONDITIONS #13 THROUGH #15						
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> , THE FIRST REPORT IS DUE <u>OCTOBER 28, 2015</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

* Monitoring requirement only

** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.

OUTFALL #016		TABLE A-4 COOLING TOWER BYPASS FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS				
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on March 1, 2017 and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow	MGD	*		*	once/quarter***	24 hr. total
Total Suspended Solids	mg/L	100		30	once/quarter***	grab
Total Residual Chlorine (Note 1) §	µg/L	200		104	once/quarter***	grab
Temperature	°F	*		*	once/quarter***	grab
Oil & Grease	mg/L	15		10	once/quarter***	grab
Total Phosphorus	mg/L	*		*	once/quarter***	grab
Total Nitrogen	mg/L	*		*	once/quarter***	grab
pH	SU	**		**	once/quarter***	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JULY 28, 2017. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Whole Effluent Toxicity, Acute »	TUa	*			conditional ^x	grab
WET TEST REPORTS SHALL BE SUBMITTED CONDITIONALLY; REPORTS ARE DUE NO MORE THAN 60 DAYS FROM DATE OF DISCHARGE.						

- * Monitoring requirement only
- ** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units
- *** See table below for quarterly sampling

Minimum Sampling Requirements			
Quarter	Months	Effluent Parameters	Report is Due
First	January, February, March	Sample at least once during any month of the quarter	April 28 th
Second	April, May, June	Sample at least once during any month of the quarter	July 28 th
Third	July, August, September	Sample at least once during any month of the quarter	October 28 th
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28 th

- » See special condition #21
 - ^x Unscheduled means the facility will sample when:
 - a. Iron: the facility will sample at a minimum frequency of once per week for total recoverable iron when using products containing iron.
 - b. WET testing will be completed when the facility is using biocides. The facility is not required to sample more than once per year.
- Note 1: ML removed at 2016 modification. The facility's test methods can consistently reach 50 µg/L; both the technology and water quality limitations are above the facility's detection limitations.

B. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached PART I standard conditions dated August 1, 2014, and hereby incorporated as though fully set forth herein.

C. SPECIAL CONDITIONS

1. In issuing this permit, the Missouri Clean Water Commission and the Missouri Department of Natural Resources has not determined whether or not the radioactive discharges from this plant will affect waters of the state. Radioactive discharges are the responsibility of the Nuclear Regulatory Commission, and any discharges of these constituents will be under their regulation
2. Outfall #017: There shall be no discharge from this outfall to waters of the State of Missouri.

C. SPECIAL CONDITIONS (CONTINUED)

3. 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.
4. All outfalls must be clearly marked in the field
5. Water Quality Standards
 - (a) To the extent required by law, discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
 - (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
 - (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
 - (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
 - (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
 - (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
 - (5) There shall be no significant human health hazard from incidental contact with the water;
 - (6) There shall be no acute toxicity to livestock or wildlife watering;
 - (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
 - (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.
6. 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 by the Director in accordance with 40 CFR 122.44(f).
 - (b) That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - (1) Five hundred micrograms per liter (500 µg/l);
 - (2) One milligram per liter (1 mg/l) for antimony;
 - (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with §122.21(g)(7).
 - (4) The level established by the Director in accordance with §122.44(f).
7. Report as no-discharge when a discharge does not occur during the report period.
8. There shall be no discharge of polychlorinated biphenyl (PCB) compounds such as those commonly used for transformer fluid.

C. SPECIAL CONDITIONS (CONTINUED)

9. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).
10. 40 CFR 125.98(b)(1): "Nothing in this permit authorizes take for the purposes of a facility's compliance with the Endangered Species Act."
11. Reporting of Non-Detects
 - (a) An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
 - (b) The permittee shall not report a sample result as "Non-Detect" without also reporting the detection limit of the test. Reporting as "Non-Detect" without also including the detection limit will be considered failure to report, which is a violation of this permit.
 - (c) The permittee shall report the "Non-Detect" result using the less than sign and the minimum detection limit (e.g. <10).
 - (d) Where the permit contains a Minimum Level (ML) and the permittee is granted authority in the permit to report zero in lieu of the < ML for a specified parameter (conventional, priority pollutants, metals, etc.), then zero (0) is to be reported for that parameter.
 - (e) See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.
 - (f) When calculating monthly averages, one-half of the minimum detection limit (MDL) should be used instead of a zero. Where all data are below the MDL, the "<MDL" shall be reported as indicated in item (C).
12. Any pesticide discharge from any point source shall comply with the requirements of Federal Insecticide, Fungicide and Rodenticide Act, as amended (7 U.S.C. 136 ET. SEQ.) and the use of such pesticides shall be in a manner consistent with its label.
13. The permittee shall implement a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP must be prepared and implemented upon permit issuance. The SWPPP must be kept on-site and should not be sent to the department 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) 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 stormwater. The BMPs at the facility should be designed to meet this value during rainfall event up to the 10 year, 24 hour rain event.
 - (b) The SWPPP must include a schedule for quarterly site inspections and brief written reports. The inspection report must include precipitation information for the entire period since last inspection, as well as observations and evaluations 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. 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 department personnel upon request.
 - (c) A provision for designating an individual to be responsible for environmental matters.
 - (d) 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 the department.
14. Permittee shall adhere to the following minimum Best Management Practices (BMPs):
 - (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 BMPs 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.
 - (f) Ensure that adequate provisions are provided to prevent surface water intrusion into the storage basin, to divert stormwater runoff around the storage basin, and to protect embankments from erosion.

C. SPECIAL CONDITIONS (CONTINUED)

15. Stormwater outfalls #010, #011, #012, #014, and #015: This permit stipulates pollutant benchmarks applicable to Callaway Energy Center stormwater discharges. The benchmarks do not constitute direct numeric effluent limitations; therefore, a benchmark exceedance alone is not a permit violation. Benchmark monitoring and visual inspections shall be used to determine the overall effectiveness of SWPPP and to assist in knowing when additional corrective action may be necessary to protect water quality. Benchmark sampling must occur at least quarterly. Sampling results must be submitted by April 28th, July 28th, October 28th, and January 28th for the preceding quarterly sampling event. Visual inspections must occur at a minimum of quarterly, as designated in Special Condition #13.

Outfalls #010, #011, #012, #014, #015		
Parameter	Units	Daily Maximum Benchmark
Settleable Solids	mL/L/hr	1.5
Chemical Oxygen Demand	mg/L	90
pH	SU	6.5-9.0
Oil and Grease	mg/L	10

Any time a benchmark exceedance occurs a Corrective Action Report (CAR) must be completed. A CAR is a document that records the efforts undertaken by the facility to improve BMPs to meet benchmarks in future samples. CARs must be retained with the SWPPP and available to the department upon request. If the efforts taken by the facility are not sufficient and subsequent exceedances of a benchmark occur, the facility must contact the department if a benchmark value cannot be achieved. Failure to take corrective action to address a benchmark exceedance and failure to make measureable progress towards achieving the benchmarks is a permit violation.

16. Before releasing water that has accumulated in secondary containment areas containing petroleum products, it must be examined for hydrocarbon odor and presence of sheen. On-site remediation may take place prior to testing. If the presence of hydrocarbons is indicated, this water must be tested for Total Petroleum Hydrocarbons (TPH). The analytical method for testing TPH must comply with EPA approved testing methods listed in [40 CFR 136] and the water must be tested prior to release to ensure compliance with water quality standards. If the concentration for TPH exceeds 10mg/L, the water shall be taken to a WWTP for treatment, treated onsite, or hauled off by a contract hauler.
17. Release of a hazardous substance must be reported to the department in accordance with 10 CSR 24-3.010. A record of each reportable spill shall be retained with the SWPPP and made available to the department upon request.
18. The department may also require sampling and reporting as a result of illegal discharges, compliance issues, complaint investigations, or evidence of off-site impacts from activities from this facility. If such an action is needed, the department will specify in writing the sampling requirement, including such information as location and extent. It is a violation of this permit to fail to comply with said written notification to sample.
19. 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. Ameren is exempt from Clean Water Act, Section 311, reporting for sodium hydroxide, sodium hypochlorite, sulfuric acid and hydrazine as per 40 CFR 117.12.

C. SPECIAL CONDITIONS (CONTINUED)

20. 316(b) Cooling Water Intake Structure
- (a) Ameren is required to continue operating the makeup water intake structure per the Department’s approval dated April 15, 1987. Ameren has installed closed cycle cooling at the Callaway Energy Center, which per 40 CFR 122.21(r), represents the best technology available.
 - (b) Ameren shall continue to operate in a manner that minimizes impingement and entrainment.
 - (c) Ameren is required to submit the following studies under 40 CFR 122.21(r);
 - (1) Source Water Physical Data Report, 40 CFR 122.21(r)(2);
 - (2) Cooling Water Intake Structure Data Report, 40 CFR 122.21(r)(3);
 - (3) Source Water Baseline Biological Characterization Data Report, 40 CFR 122.21(r)(4);
 - (4) Cooling Water System Data Report, 40 CFR 122.21(r)(5); and
 - (5) Operational Status, 40 CFR 122.21(r)(8) C.
 - (d) Ameren shall submit annual status reports by February 28 each year, detailing the progress of the previous year in completing the required studies.
 - (e) Six months prior to permit expiration, Ameren shall submit their application for 316(b) detailing the results of the studies listed above.
 - (f) This permit may be reopened and modified, or alternatively revoked and reissued to: incorporate new or modified requirements applicable to existing cooling water intake structures under Section 316(b) of the Clean Water Act. In the event that, it is necessary for this permit to be reopened and modified, or alternatively revoked and reissued, permittee shall comply with any such new or modified requirements or standards applicable to existing cooling water intake structures under 316(b) of the Clean Water Act.
21. Acute Whole Effluent Toxicity (WET) tests shall be conducted as follows:
- (a) Freshwater Species and Test Methods: Species and short-term test methods for estimating the acute toxicity of NPDES effluents are found in the most recent edition of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA/821/R-02/012; Table IA, 40 CFR Part 136). The permittee shall concurrently conduct 48-hour, static, non-renewal toxicity tests with the following species:
 - o The fathead minnow, *Pimephales promelas* (Acute Toxicity EPA Test Method 2000.0).
 - o The daphnid, *Ceriodaphnia dubia* (Acute Toxicity EPA Test Method 2002.0).
 - (b) Chemical and physical analysis of the upstream control sample and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping. Where upstream receiving water is not available or known to be toxic, other approved control water may be used.
 - (c) Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.
 - (d) The Allowable Effluent Concentration (AEC) for this facility is 9% with the dilution series is: 81%, 27%, 9%, 3%, and 1%.
 - (e) All chemical and physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% effluent concentration.
 - (f) All chemical analyses shall be performed and results shall be recorded in the appropriate field of the report form. The parameters for chemical analysis include Temperature (°F), pH (SU), Conductivity (µmohs/cm), Dissolved Oxygen (mg/L), Total Residual Chlorine (mg/L), Un-ionized Ammonia (mg/L), Total Alkalinity (mg/L), and Total Hardness (mg/L).
 - (g) The facility must submit a full laboratory report for all toxicity testing. The report must include a quantification of acute toxic units (TU_a = 100/LC₅₀) reported according to the test methods manual chapter on report preparation and test review. The Lethal Concentration 50 Percent (LC₅₀) is the effluent concentration that would cause death in 50 percent of the test organisms at a specific time.
22. Callaway shall sample the following discharges from liquid radwaste discharge, along with the surface water and drinking water supply. The results of the monitoring programs shall be reported to the Department by supplying a copy of the Annual Radiological Environmental Operating Report per Technical Specification 5.6.2 and the Annual Radioactive Effluent Release Report per Technical Specification 5.6.3 by May 1, at the same time the reports are supplied to NRC. All data information shall be available for inspection during normal working hours. The permittee shall conduct the following radiological monitoring:
- a) Liquid Radwaste discharge, surface water and drinking water supply:

Location	Frequency	Sample Type	Parameters
Radwaste –batch releases	prior to each batch	representative grab sample of each batch discharge	Batch: tritium, I-131, gamma isotopic;
Radwaste-steam generator blowdown	once per day when discharging	grab	Quarterly composite of each batch: Sr-89, Sr-90, and Fe-55
Upstream of the Discharge Line	once/month	grab	tritium , gamma isotopic
Downstream of the Discharge Line at Portland, MO	daily with monthly composite analysis	composite	tritium , gamma isotopic

C. SPECIAL CONDITIONS (CONTINUED)

#22 continued...

- b) Aquatic biota - semiannual sampling of the edible flesh of up to five commercially or recreationally important species of fish of sufficient quantity to yield a sufficient sample. Samples are to be taken at the locations specified upstream of the discharge line and downstream of the discharge line at Portland, MO. Samples are to be analyzed by gamma isotopic analysis. Catfish need not be included in sample.
- c) Bottom Sediment - semiannual samples of bottom sediment from the locations specified in upstream of the discharge line and downstream of the discharge line at Portland, MO. Samples are to be analyzed by gamma isotopic analysis.
- d) The Department of Natural Resources of the State of Missouri, and any other state agency or officer designated in the State's emergency response plan or any other plan to protect its citizens from radioactive liquid discharge from the Callaway Energy Center, shall receive within one hour of the event, notice of any unplanned or uncontrolled liquid radioactive release in accordance with 10 CFR 50.72(a) and notification of reportable events per 10 CFR 20.2203 that involve off-site releases of liquid radioactive material

The following conditions are new for the 2016 modification.

23. The technology based limitations imposed in this permit are more stringent than the ELG language found at 40 CFR 423.12(b)(8) "neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine in any one time unless the utility can demonstrate to the [state] the units in a particular location cannot operate at or below this level or chlorination". This permit protects for both the ELG language and continuous feed with dechlorination situations.
- This permit allows the facility to use biocides and chlorinated products as necessary to prevent biofouling. No product may be discharged in amounts which are toxic to aquatic life in either acute or chronic amounts. The facility has authorization to use the following compounds: chlorine dioxide (sodium chlorate, hydrogen peroxide, and sulfuric acid), bromide activated chloramine (ammonium bromide and sodium hypochlorite), monochloramine (ammonia and sodium hypochlorite), sodium bisulfite, and ferrous chloride.
- (a) Total Residual Chlorine – Standard: The facility shall adhere to TRC limitations according to 40 CFR 423.12(b)(8) best practicable control technology when controlling for biological growth using sodium hypochlorite/bromine for less than two hours per day without using chlorine removal technologies. Standard reflects the ELG limitations.
 - (b) Total Residual Chlorine – Daily: The facility takes one grab sample daily when using dechlorination. The facility may use a 40 CFR 136 equivalent method for measuring TRC continuously* if the technology is comparable and available. Daily monitoring will reflect the conditions at the facility when using dechlorination products. *Continuous measurements, by nature, are not absolutely continuous but occur much more frequently than once per day. The facility shall not discharge TRC at detectable levels (above 50 µg/L) when using continuous feed or feeding biocide for greater than two hours per day of monochloramine, chlorine dioxide, or bromine activated chloramine and also using chlorine removal technologies as needed to comply with chlorine limitations. Continuous de-chlorination will be performed when feeding biocide at WTP and may not be necessary to meet the TRC limitations during biocide treatment for short periods such as equipment outages. Should a detection occur, the facility shall adhere to 40 CFR 423.12(b)(8) time limited by (c):
 - (c) The facility may not discharge detectable levels of chlorine (greater than 50 µg/L Total Residual Chlorine – TRC) for more than 120 minutes per day
 - (d) Samples taken to determine compliance with TRC limits when continuously treating makeup water with biocides may be taken from either the existing Cooling Tower Blowdown (Outfall 002) sample location or alternately at Manhole 86-2. When using this alternate sampling location, no other effluent including Outfall 016 will be discharged into the effluent pipe upstream of this location to ensure monitoring is fully representative of Outfall 002. When discharge from Outfall 016 is necessary, continuous biocide treatment at the WTP will be terminated in advance to allow monitoring and compliance from the normal Outfall 016 sample point prior to discharge. Internal monitoring to assure TRC is absent above the detection limit will determine when releases to the Missouri River can occur.
 - (e) When monitoring via standard monitoring, the facility will report no-discharge for daily monitoring; when monitoring daily, the facility will report no-discharge for standard. If both procedures were used during the month, the facility will report both.
24. The facility shall not discharge chemical metal cleaning wastes [40 CFR 423.13(e)] to waters of the state.

C. SPECIAL CONDITIONS (CONTINUED)

25. Electronic Discharge Monitoring Report (eDMR) Submission System
- (a) Discharge Monitoring Reporting Requirements. The permittee must electronically submit compliance monitoring data via the eDMR system. In regards to Standard Conditions Part I, Section B, #7, the eDMR system is currently the only Department approved reporting method for this permit.
 - (b) Programmatic Reporting Requirements. The following reports (if required by this permit) must be electronically submitted as an attachment to the eDMR system until such a time when the current or a new system is available to allow direct input of the data:
 - (1) CWA Section 316(b) Annual Reports; and
 - (2) Any additional report required by the permit excluding bypass reporting.
After such a system has been made available by the department, required data shall be directly input into the system by the next report due date.
 - (c) Other actions. The following shall be submitted electronically after such a system has been made available by the department:
 - (1) General Permit Applications/Notices of Intent to discharge (NOIs);
 - (2) Notices of Termination (NOTs);
 - (3) No Exposure Certifications (NOEs);
 - (d) Electronic Submissions. To access the eDMR system, use the following link in your web browser: <https://edmr.dnr.mo.gov/edmr/E2/Shared/Pages/Main/Login.aspx>.

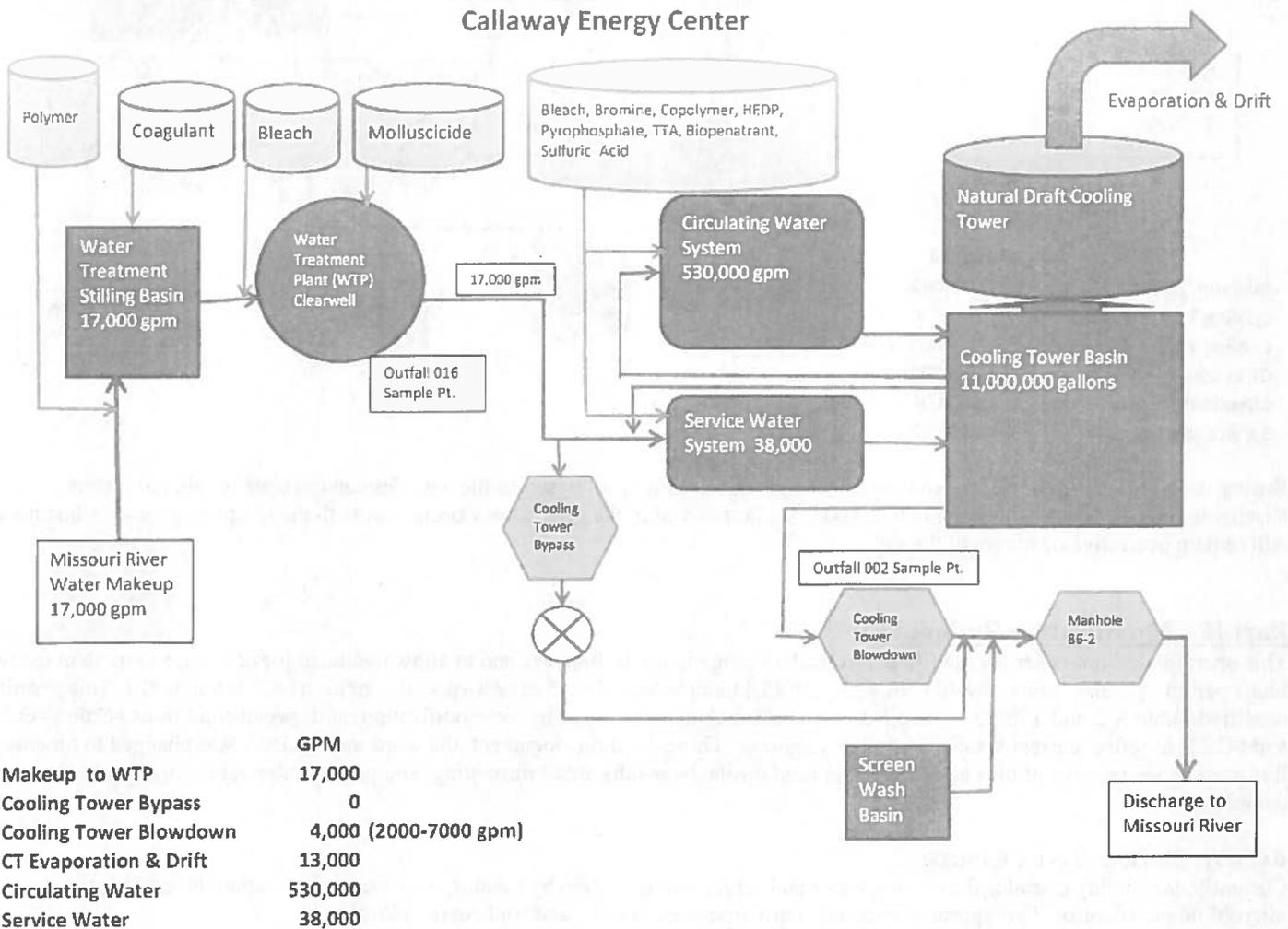
**MISSOURI DEPARTMENT OF NATURAL RESOURCES
 MODIFICATION STATEMENT OF BASIS
 MO-0098001
 AMEREN MISSOURI – CALLAWAY ENERGY CENTER**

This Statement of Basis (Statement) gives pertinent information regarding the major modification(s) to the above listed operating permit with the need for a public comment process. A statement of basis is not an enforceable part of a Missouri State Operating Permit.

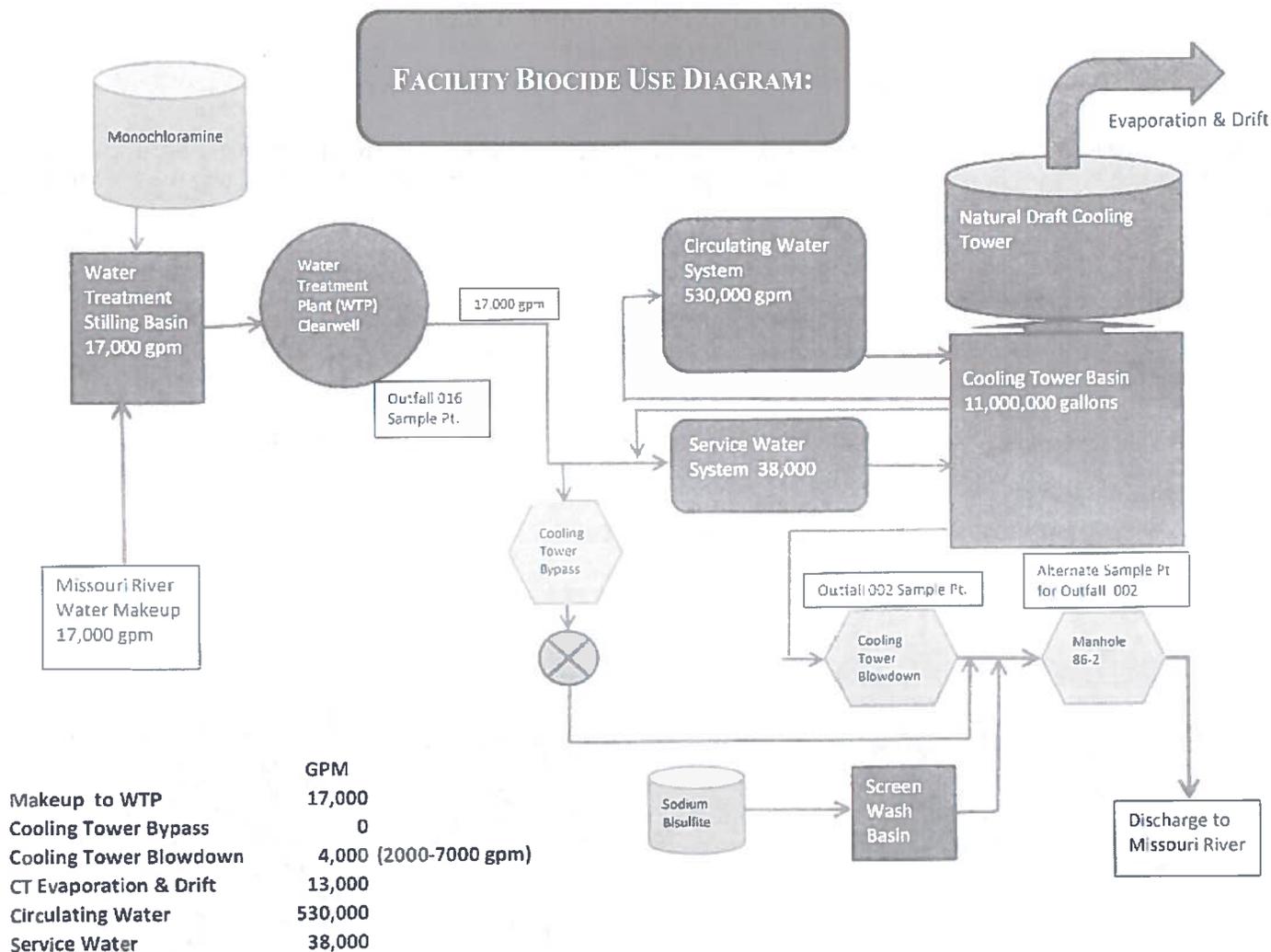
Part I – Facility Information

Facility Type: Major Categorical Industrial
 Facility SIC Code: 4911
 Facility NAICS Code: 221113
 Facility Description: This facility is a power plant engaged in the generation and sale of electricity from nuclear sources.

FACILITY FLOW DIAGRAM:



Normal operations:
 Outfall #002 is the cooling tower blowdown discharge.
 Outfall #016 is the cooling tower bypass discharge.
 The facility has indicated additional variances upon this diagram are possible; no variation changes the composition of the discharge.



During the addition of biocide, the cooling tower bypass valves will be closed so the biocides can circulate within the system. Discharge typically occurs through outfall #002. Variations within the system may occur, but with the sampling protocols instituted, will remain protective of waters of the state.

Part II – Modification Rationale

This operating permit is hereby modified to reflect a change in use of biocides and to allow continual [or otherwise more than the two hours per unit per day limited by 40 CFR 423.12(b)(8)] biocide treatment. See new special conditions #23 through #25. This permit modified Table A-2 and Table A-4, and Note 1 to reflect changes required by the modification; and special conditions #C.6b., #C.11., and #C.21. to reflect current standard template language. Throughout the document, the word molluskicide was changed to biocide as it is more representative of the chemicals being used onsite. Non-substantial formatting, and page numbering changes were also completed.

FACILITY OPERATIONAL CHANGES:

Currently, the facility operates the cooling water and service water system by treating with bleach and sodium bromide for microbiological control. This approach increases corrosion rates of mild steel and copper alloys.

The facility plans on beginning their trials in spring 2017. Trials will continue until a method is found to sufficiently prevent biological buildup in the cooling system, the facility will be attempting treatment methods as allowed, see table below.

The facility has provided an updated flow diagram (above). The new treatment schema assures treatment by chlorinated biocides will be subsequently dechlorinated prior to discharge. Additionally, as marked by the red encircled X above, the facility will isolate the cooling system during treatment and will be checked for chlorine residuals prior to discharge.

DISCUSSION:

Chlorine dioxide is generated on-site at the water treatment plant by the reaction of sodium chlorate and hydrogen peroxide with sulfuric acid. Chlorine dioxide is fed continuously at the water treatment plant to achieve a target concentration of 0.5 to 1.0 µg/L at the clearwell. After reacting in the service water, circulating water systems, and in the cooling tower, the remaining byproduct chlorite will be consumed by feeding sodium bisulfite or ferrous chloride to the screen wash basin. This ensures Callaway meets the NPDES permitting requirements for discharges of chlorine byproducts.

Ammonium bromide (Fuzzicide Solution) is utilized as a biocide for cooling water treatment systems. Ammonium bromide is combined with sodium hypochlorite (1:2; AMBr:HOCl) to convert bromide activated chloramine. The combination is expected to be fed intermittently (once per hour or twice per day) at the water treatment plant.

Monochloramine (MCA) is formed by the reaction of hypochlorous acid and ammonia [NH₃ + HOCl → NH₂Cl + H₂O]. Despite being a weaker oxidant than chlorine and other mixed amines, MCA has a number of benefits when compared to these compounds. Dosage requirement is not impacted by high demand (both organic and inorganic) in either the makeup water or from system contaminants, thus reducing overall oxidant requirement for good microbial control. MCA is very effective in removing biofilms, as MCA does not react with and is not consumed by the extracellular polymeric substances (EPS) such as polysaccharide or protein layers. The MCA can then reach the living bacterial cells for a greater kill. Unlike chlorine and bromine chemistry, MCA is not subject to pH dissociation effect, therefore making it suitable for high pH systems.

CHEMICAL TREATMENT PROGRAM FOR CALLAWAY COOLING WATER SYSTEMS:

PRODUCT ADDED	WTP STILLING BASIN OR CLARIFIERS	SERVICE WATER (PUMP BAY)	CIRCULATING WATER SYSTEM	OTHER
coagulant	continuous ~55 gallons/day varies with river solids			may apply further upstream of WTP
sodium hypochlorite	~100 gallons 3x/week (Tues, Wed, Thur) June - Oct.*	~15-30 min/day ~65 gal/day	~30-60 min/day + shock treatments ~135 gal/day	
sodium bromide		added with bleach ~15 gal/day	added with bleach ~30 gal/day	
molluskicide	3-4 treatments during spring and fall (~55 gallons each treatment)*			1-2 times per year at the river intake as needed, 8 gal/bay with bays isolated
algaeicide	3x/week in summer (~13 gal each 8 hour treatment)*			
coagulant aid	3 months dec – feb ~20-30 gal/day			
monochloramine, chlorine dioxide, or bromide activated chloramine	continuous feed at a target of 0.5-1.0 ppm at the clearwell as TRO*			
copolymer		continuously ~50 gal/day		
hydroxyethylidene disphosphonic acid		continuously ~23 gal/day		
pyrophosphate		continuously in summer months ~40 gal/day		
sodium tolytriazole		continuously ~5 gal/day		
biopenatrant		1-2 adds/week ~400 gal/month	shock treatments 3/year	
sulfuric acid		continuously ~1550 gal/day		
sodium bisulfite or ferrous chloride for de-chlorination				continuous to CT Blowdown 0.4 – 2.5 gal/day

*Discharge from Outfall 016 is isolated during this treatment.

CT = Cooling Tower

During future treatment with addition of approved biocides, Callaway expects to eliminate the use of sodium hypochlorite, sodium bromine, triazine and molluscicide at the Water Treatment Plant (WTP) and to gradually reduce or eliminate the addition of sodium hypochlorite and sodium bromine to the circulating and service waters.

The facility does not plan on using any additional chemicals if the monochloramine trials are successful.

In an email dated December 9, 2016, the facility affirmed Callaway Energy Center does not utilize zinc or chromium containing treatment products in cooling water systems that discharge from outfall #002 (cooling tower blowdown) or from outfall #016 (cooling tower bypass). In addition, sample results submitted for recent permit re-applications indicated the presence of very low levels of zinc and chromium in these outfalls (near detection limits). Therefore, in this modification, chromium and zinc will not be added to the sampling regimen.

Part III. Rationale And Derivation Of Effluent Limitations & Permit Conditions

COOLING TOWER BLOWDOWN:

Per Babcock and Wilcox Co. "Steam" (ISBN 978-0-9634570-2-8), cooling tower blowdown is defined as the wastewater generated when heated cooling water from the steam condenser is cooled in an evaporative cooling tower generating a buildup of dissolved solids and suspended matter. Most of the buildup is removed from the system by cooling tower blowdown. Some of the suspended matter can settle out in the cooling tower basin and is removed at infrequent intervals. Blowdown flow is adjusted to keep the concentration of dissolved and suspended solids below the limits which would lead to condenser tube fouling and corrosion. Sources of chemical pollutants in blowdown include chlorine, organic chemicals for biofouling control, corrosion inhibitors, chemicals for scale control, and products of corrosion.

- ✓ This facility adds treatment chemicals to the cooling tower basin such as acids, dispersants, hypochlorite, sodium bromide, and corrosion inhibitors. BAT and BPT applies.

EFFLUENT LIMITATION GUIDELINE:

Effluent Limitation Guidelines, or ELGs, are found at 40 CFR 400-499. These are limitations established by the EPA based on the SIC code and the type of work a facility is conducting. Most ELGs are for process wastewater and some address stormwater. All are technology based limitations which must be met by the applicable facility at all times.

- ✓ This facility has an associated Effluent Limit Guideline (ELG) which is applicable to the wastewater and stormwater discharge at this facility. The following table shows the limits in the ELG at 40 CFR 423. Should water-quality derived effluent limits be more protective of the receiving water's quality and RP exists, the WQS will be used as the limiting factor.

PARAMETER	40 CFR 423	DAILY MAXIMUM	MONTHLY AVERAGE
TSS	BPT (low volume wastes, ash transport water, metal cleaning wastes)	100 mg/L	30 mg/L
Oil and Grease	BPT (low volume wastes, ash transport water, metal cleaning wastes)	20 mg/L	15 mg/L
Copper, Total Recoverable	BPT – Metal Cleaning Wastes	1 mg/L	1 mg/L
Iron, Total Recoverable	BPT – Metal Cleaning Wastes	1 mg/L	1 mg/L
Chlorine, Free Available	BPT – Once-Through Cooling Water & Cooling Tower Blowdown	0.5 mg/L	0.2 mg/L
Chlorine, Total Residual	BAT – Once-Through Cooling Water	0.2 mg/L	n/a
Chromium, Total Recoverable	BAT – Cooling Tower Blowdown	0.2 mg/L	0.2 mg/L
Zinc, Total Recoverable	BAT – Cooling Tower Blowdown	1 mg/L	1 mg/L

MINIMUM LEVEL (ML):

During this modification, the facility expressed the ML is not necessary, as the method used to determine TRC maintains a detection limit of 50 µg/L. MLs removed. The facility must continue to use sufficiently sensitive methods. The site specific detection limit is to be maintained at or below 50 µg/L.

MIXING CONSIDERATIONS (OUTFALLS #002 AND #016):

Design flow discharge = 14.4 MGD = 22.28 cfs

7Q10 = 39,013 cfs

ZID = 39,013 / 4 * 0.1 = 975.3 however, ZID cannot be more than 10X the DF, therefore ZID = 222.8 cfs

MZ = 9753 cfs

OUTFALL #002 – COOLING TOWER BLOWDOWN

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	BASIS FOR LIMITS	DAILY MAX	MONTHLY AVG	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	MINIMUM REPORTING FREQUENCY	SAMPLE TYPE
CONVENTIONAL								
CHLORINE, TOTAL RESIDUAL §	µg/L	1, 3	200	104	SAME	ONCE/WEEK	ONCE/MONTH	GRAB
CHLORINE, TOTAL RESIDUAL § (BIOCIDES)	µg/L	1, 3	50	50	NEW	DAILY	ONCE/MONTH	GRAB
TRC – TIME LIMITATION	hour	1	2	n/a	NEW	SUM	ONCE/MONTH	SUM
METALS								
IRON, TOTAL RECOVERABLE	µg/L	6	*	*	NEW	CONDITIONAL ‡	CONDITIONAL ‡	GRAB
NUTRIENTS								
AMMONIA AS N	MG/L	6	*	*	NEW	ONCE/MONTH	ONCE/MONTH	GRAB
OTHER								
WET TEST, ACUTE	TUA	1	*	n/a	MODIFIED	CONDITIONAL ‡	CONDITIONAL ‡	GRAB

* - Monitoring requirement only

‡ - conditional monitoring means the facility does not report no-discharge each month; the facility will report only when necessary.

NEW - Parameter not established in previous state operating permit – new during MOD.

Basis for Limitations Codes:

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

DERIVATION AND DISCUSSION OF NEW, NOTABLE, AND REVISED CONDITIONS AND LIMITS:

CONVENTIONAL:

Chlorine, Total Residual (TRC)

TRC limitation is required for once-through cooling water by the steam electric effluent limitation guideline at 40 CFR 423.13 for best technology economically achievable (BAT) as described in the previous fact sheet. However, this is multi-pass technology (see FAC below). Regardless, the previous limitations were established at **200 µg/L** daily maximum, and **104 µg/L** monthly average. As the derivation was not shown in the original fact sheet, the limits as derived previously are shown below.

Water quality standards are 19 µg/L daily maximum, 10 µg/L monthly average.

Acute WLA: $C_e = ((22.3 + 223.2) 19) / 22.3$ $C_e = 209 \mu\text{g/L}$

Chronic WLA: $C_e = ((22.3 + 9753) 10) / 22.3$ $C_e = 4380 \mu\text{g/L}$

$LTA_a = 209 (0.321) = 67.1 \mu\text{g/L}$ [CV = 0.6, 99th Percentile]

$LTA_c = 4380 (0.527) = 2310 \mu\text{g/L}$ [CV = 0.6, 99th Percentile]

Use most protective number of LTA_a or LTA_c .

MDL = $67.1 (3.11) = 209 \mu\text{g/L}$ [CV = 0.6, 99th Percentile]

AML = $67.1 (1.55) = 104 \mu\text{g/L}$ [CV = 0.6, 95th Percentile, n = 4]

Limitations retained from original permit as those remain protective of water quality. Monitoring retained at weekly.

Antibacksliding regulations prohibit removal of this parameter as the facility is using chlorine based biocides.

The facility has requested continuous chlorine feed because operation of the plant was hindered by biological growth which could not be effectively controlled with a simple two hour application of biocides. The department has agreed that using biocides more than two hours a day may be performed if the facility also dechlorinated. To achieve these goals, the facility may use the listed (or equivalent) biocides in conjunction with an slight overfeed of dechlorinating agents. The department has determined more frequent monitoring is necessary to assure limitations are being met. Those limits were determined to be 50 µg/L. The detection limit used by the facility is 50 µg/L; any value above the detection limit is considered a discharge and traditional TRC limitations as shown above and within special condition #C.21. are applicable.

The facility is also subject to free available chlorine limitations but the test for TRC encompasses the FAC test. Additional monitoring not necessary. See below.

Chlorine, Free Available (FAC)

FAC is required per BPT at 40 CFR 423.12 (b)(7) for recirculating cooling systems. 0.5 mg/L daily maximum and 0.2 mg/L monthly average (expressed as 500 µg/L daily maximum and 200 µg/L monthly average). However, the facility is testing for TRC which encompasses FAC; TRC limitations in this permit are more stringent than FAC therefore are used in place of FAC.

METALS:

Iron, Total Recoverable

The facility is using a dechlorination product which likely discharges small amounts of iron. Monitoring one time each week when using these products is required to assure the facility is not violating WQS. This is a conditional monitoring requirement therefore the facility is not required to submit no-discharge each month; only submit data when used. Missouri water quality standards are shown below for informational purposes only, although the facility should target meeting the below values. A decreased sampling frequency is allowed (even though this is a new parameter) because the facility is unlikely to exceed WQS at any time.

Acute AQL WQS:	none	
Chronic AQL WQS:	1000 µg/L	
Acute WLA:	n/a	
Chronic WLA:	$C_e = ((22.32 + 9753.25) 1000) / 22.3$	$C_e = 437,974 \mu\text{g/L}$
LTA _a :	n/a	
LTA _c :	$437,974 (0.527) = 231,002 \mu\text{g/L}$	[CV = 0.6, 99 th Percentile]
MDL:	$231,002 (3.11) = 719,445 \mu\text{g/L}$	[CV = 0.6, 99 th Percentile]
AML:	$231,002 (1.55) = 358,613 \mu\text{g/L}$	[CV = 0.6, 95 th Percentile, n = 4]

NUTRIENTS:

Ammonia as N

The facility is using products which may discharge ammonia. Monitoring is required to determine if reasonable potential exists to cause or contribute to in-stream exceedances of ammonia. Calculations shown below are for informational purposes only, although the facility should target for the calculated values. The facility requested quarterly monitoring; however, the department has requested the facility sample monthly until permit renewal in 2020 as 1) ammonia is a new permit requirement; 2) new WQS will be promulgated and are quite stringent even with the maximum mixing considerations afforded to the permittee. Monitoring frequencies for this parameter are based on the permit writer’s manual at https://www.epa.gov/sites/production/files/2015-09/documents/pwm_chapt_06.pdf because frequency of possible WQS excursions has not yet been determined. See also http://dnr.mo.gov/env/wpp/permits/manual/docs/11_3.pdf.

Current WQS:

Shown below are the effluent targets for ammonia based on the following variables:

Early life stages present, salmonids absent; default pH 7.8 SU; background total ammonia nitrogen = 0.01 mg/L, no current site specific performance data.

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

Summer: April 1 – September 30

MDL = 12.1 mg/L [CV = 0.6, 99th Percentile]
AML = 4.6 mg/L [CV = 0.6, 95th Percentile, n = 30]

Winter: October 1 – March 31

MDL = 12.1 mg/L [CV = 0.6, 99th Percentile]
AML = 4.6 mg/L [CV = 0.6, 95th Percentile, n=30]

Proposed WQS:

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

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

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

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

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

Under the new EPA criteria, where mussels of the family Unionidae are present or expected to be present, the estimated effluent limitations for a facility in a location such as this that discharges to a receiving stream with the mixing consideration listed in the fact sheet will be:

Summer: April 1 – September 30

MDL = 3.4 mg/L

AML = 1.3 mg/L

[CV = 0.6, 99th Percentile]

[CV = 0.6, 95th Percentile, n = 30]

Winter: October 1 – March 31

MDL = 13 mg/L

AML = 5 mg/L

[CV = 0.6, 99th Percentile]

[CV = 0.6, 95th Percentile, n = 30]

Actual effluent limits will depend in part on the actual performance of the facility.

OUTFALLS #002 AND #016 – WET TESTING MODIFICATIONS

WET TESTING:

The facility is required to conduct WET testing on outfall #002 and #016 concurrently of biocide use. Conditional monitoring and reporting. WET testing requirements were changed on outfalls #002 and #016 from chronic to acute. Because this is a moderate discharge to a large river, mixing is expected to occur quickly and completely. The organisms understood to be most affected by any toxicity would be in the immediate vicinity of the discharge; this indicates an acute WET test to be more applicable to the discharges from this facility. In this situation, acute testing is more stringent than chronic. All other samples are grab at these outfalls therefore the WET sampling protocol was also changed to grab per the DNR permit writer’s manual at <http://dnr.mo.gov/env/wpp/permits/manual/permit-manual.htm>.

WET TESTING EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	BASIS FOR LIMITS	DAILY MAX	MONTHLY AVG	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	MINIMUM REPORTING FREQUENCY	SAMPLE TYPE
OTHER								
WET TEST, ACUTE	TUA	I	*	n/a	MODIFIED	CONDITIONAL ‡	CONDITIONAL ‡	GRAB

* - Monitoring requirement only

‡ The facility will report the minimum and maximum pH values; pH is not to be averaged.

NEW - Parameter not established in previous state operating permit – new during MOD.

Basis for Limitations Codes:

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

Whole Effluent Toxicity (WET) Test, Acute

Monitoring is required to determine if reasonable potential exists for the discharge to cause toxicity within the receiving stream. For classified permanent streams with other than default mixing considerations, the Allowable Effluent Concentration (AEC)% is determined as follows:

$$\text{Acute AEC\%} = [DF_{cfs} \div (ZID_{7Q10} + DF_{cfs})] \times 100\% = \#\%$$

$$\text{AEC}_a\% = [22.28 \div (222.8 + 22.28)] * 100\% = 9\%$$

The unmodified permit determined 10% to be the AEC for a chronic test. It is unknown how that number was derived but appears to not have been calculated using current methods.

10 CSR 20-7.015((9)(L)4.A. states the dilution series must be proportional. Each dilution was determined by multiplying or dividing 3 from the AEC and then each consecutive value.

The dilution series is: 81%, 27%, 9%, 3%, 1%

Conditional monitoring of WET is implemented. This means the facility is not required to report this parameter until (or if) it is sampled for. The facility will sample for WET concurrently of biocide use but is not required more than once per year.

Part IV – Administrative Requirements

This facility is required to submit their DMR data online. A new special condition informs the permittee of this requirement.

SUBMISSION FREQUENCIES WERE CHANGED TO MATCH SAMPLING FREQUENCIES TO ALLOW THE PERMITTEE TO SUBMIT DATA THROUGH THE EDMR SYSTEM. THE FACILITY'S SAMPLING FREQUENCIES WERE NOT CHANGED.

Outfall #002, monthly sampling/quarterly reporting – changed to monthly reporting
Outfall #003, conditional monthly sampling/quarterly reporting – changed to monthly reporting
Outfall #009, conditional weekly sampling/quarterly reporting – changed to monthly reporting

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 modification has been prepared and its issuance is pending. <http://dnr.mo.gov/env/wpp/permits/pn/index.html> 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 12/23/2016 through 1/23/2017. No comments were received. Typographical errors were fixed in the statement of basis for modification. The permit writer changed special condition #C.25 to be applicable to the permittee (collection system maintenance reports are not required hence removed). Units were changed from minutes to hours for time of chlorine discharge. Facility may enter fractions of hours. These changes do not require an additional public notice period.

DATE OF STATEMENT OF BASIS: JANUARY 25, 2017

COMPLETED BY:

PAM HACKLER, ENVIRONMENTAL SCIENTIST
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MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET
FOR THE PURPOSE OF RENEWAL & MODIFICATION
OF
MO-0098001
AMEREN MISSOURI-CALLAWAY ENERGY CENTER

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. Major ; Industrial Facility ; and/or permit with widespread public interest .

Part I – Facility Information

Facility Type: Industrial Facility SIC Code(s): 4911-Electrical Power Generation

FACILITY DESCRIPTION:

Ameren Missouri-Callaway Energy Center is a steam electrical generation plant primarily engaged in the generation of electricity for distribution and sale. The Callaway Energy Center is located outside Fulton, MO on 7,200 acres. Ameren leases 6,300 acres of their property to the Missouri Department of Conservation for the Reform Conservation Area. The plant consists of one generating unit with a capability of 1,190 megawatts (MW). Annual production is 9.8-10.7 million MW-hours. This facility has twelve (12) permitted features. Callaway Energy Center pipes its major discharges back to the Missouri River, approximately 5 miles away. Intake water comes from the Missouri River at Mile Marker 115.4.

Callaway Energy Center uses a Standardized Nuclear Unit Power Plant System (SNUPPS), using a Westinghouse four-loop pressurized water reactor and a Alstom turbine-generator. The plant went fully operational in 1984. More information is available on the NRC webpages: <http://www.nrc.gov/info-finder/reactor/call.html> and <http://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/call.html>.

Other environmental permits and identification numbers associated with Ameren Callaway Energy Center, include:

- Title V Air Permit from the department's Air Pollution Control Program (2907100003)
- Small Quantity Hazardous Waste Generator under the department's Hazardous Waste Program (MOD079933198)
- Major Water User from the department's Water Resources Program (071300005)
- EPA identifies Ameren Callaway with the following EPA ID number: 110017986759
- NRC facility operating license NPF-30

The Annual Environmental Operating Report and the Annual Radiological Effluent Report for the calendar year 2014 were submitted April 30, 2015. The Annual Reports are available on the NRC webpage: <http://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/call.html>.

Chemical Usage at the Plant

In the renewal application, Ameren provided a list of chemicals used or stored onsite at Callaway. All chemicals used are covered under the facility's Spill Prevention Control and Countermeasures Plan. Ameren may want to incorporate the spill plan in with the stormwater prevention pollution plan, to ensure accidental releases are controlled onsite.

Outfall #001: Radwaste Treatment System

The Radwaste Treatment System is made up of five subsystems: the boron recycle system, the liquid radwaste system, the laundry and hot shower system, secondary liquid waste, and the steam generator blowdown.

- This liquid radwaste system serves to collect, process, store, recycle and discharge treated waste water generated at Callaway. In addition, radioactive solids removed by this system are prepared for disposal and transported to a licensed off-site disposal facility. Five general sub-systems can be defined as described below.
 - The Boron Recycle System receives reactor coolant for the purpose of recovering the boric acid for reuse in the plant. Boric acid is used as a neutron absorber/moderator in the primary loop.
 - The Liquid Radwaste System collects and processes floor and equipment drains from the containment, auxiliary building, fuel building and radwaste buildings during normal operation.
 - The Laundry and Hot Shower system collects waste generated from washing radioactively contaminated protective gear and clothing and personnel decontamination shower wastewater. These wastes are then transferred to the liquid Radwaste system for treatment.
 - The Secondary Liquid Waste system is used to process condensate demineralizer regeneration wastes and potentially radioactive liquid waste collected from the turbine building. The condensate demineralizer regeneration waste is divided into two waste streams; High TDS waste from the acid and caustic rinses used when chemically regenerating spent resin, and low TDS waste which results from the initial backflushing of unregenerated resin and the final rinsing of the regenerated resin to remove acid and caustic.
 - Steam Generator Blowdown is normally recycled back to the main condenser for reuse in the secondary cycle. Provisions also exist to discharge the treated blowdown via #001.

The following wastewater treatment systems are used as required to treat this waste stream for recycle or discharge in compliance with NRC requirements and are also available as auxiliary or backup treatment systems to treat this discharge for compliance with NPDES permit limitations: Evaporation and/or Mixing and/or Filtration and/or Carbon Absorption and/or Ion Exchange and/or Neutralization and/or Reuse/Recycle of Treated Effluent. All processing in the Radwaste Treatment System is done on a batch basis except steam generator blowdown. After monitoring for radioactive content, release rates are controlled administratively to ensure the "as low as practicable" radioactive discharge criteria are met.

The radwaste system is designed for flexibility to achieve Nuclear Regulatory Commission (NRC) limits. Actual treatment of any batch of wastewater is determined by

1. the level of radiological contamination and corresponding NRC mandated discharge criteria;
2. NPDES permit discharge limits;
3. the most effective waste treatment scheme that will give the smallest volume of solid radwaste;
4. overall wastestream management; and
5. the need, feasibility, and economics of recycle vs. discharge.

Outfall #002: Cooling Tower

The cooling tower at Callaway is 553 feet tall and 430 feet in diameter at the base. It cools approximately 585,000 gallons of water per minute when the facility is operating at full power. About 11,000 gallons per minute are lost from the top through evaporation, and up to another 5,000 gallons per minute are sent to the Missouri River as "blowdown" to flush suspended solids from the cooling tower basin. This water is replaced with water from the river, which is five miles south of the energy center. The cooling tower basin holds 11 million gallons of water. The water is 12 feet deep under the tower, and 20 feet deep at the intake to the circulating water pumps that pump the water through the energy center. The temperature of the water going into the tower is 125 °Fahrenheit. The tower cools it to 95°Fahrenheit.

Outfall #003: Water Treatment Plant

The water treatment plant clarifies Missouri River water for cooling tower makeup and other plant cooling water systems. Sludge from the clarification process is routed through the sedimentation lagoon for solids removal. There are currently 4 sedimentation basins, the fourth being built in 2000 (CP-MO26-3351). Callaway submitted a construction permit application December 2014 to build two more sedimentation basins (CP0001707). Demineralizer system waste streams and oil/water separator discharges are routed to the sedimentation basin. The demineralizer waste stream includes wastes generated from resin regeneration; sand and carbon filter backwash, floor drains, and wet well overflows. Outfall #003 has been recycled for more than 15 years by routing back to the head of the water treatment plant. Previously the permit required scheduled monitoring; however this permit reduces the monitoring frequency to when discharging.

With the construction of the new sedimentation lagoons, the discharge and design flow is not expected to increase. The construction permit was issued June 6, 2015. Appendix A-2 contains the flow diagram for Outfall #003.

Outfall #007: Sanitary Wastewater Treatment Plant

Primary treatment is provided in a three-cell lagoon. Effluent from the final cell is routed (in series) through two wetland basins. Both the wetlands are constructed wetlands created by conversion of filled water treatment plant sedimentation lagoons. The connection from the discharge of the final wetland to the pump station was made in conjunction with the construction of the sedimentation lagoon #4. Outfall #007 is recycled back to the head of the water treatment plant. Previously the permit required scheduled monitoring; however this permit reduces the monitoring frequency to when discharging.

Outfall #009: Intake Heater Blowdown

The river intake structure contains two recirculating electric heaters, which are used to prevent ice formation on the intake bar screens during winter months. This discharge would contain blowdown or drainage from the boilers; however the boilers are currently in dry lay-up and no discharge has occurred in the last 25 years. This outfall remains permitted in case, the boilers were reinstalled, in use, and would need to discharge. Previously the permit required scheduled monitoring; however this permit reduces the monitoring frequency to when discharging.

Outfall #010: Stormwater

Stormwater settling pond drains 108 acres, 16.2 acres of which is impervious surface. Drainage area includes the cooling water chemical control building, the quality control building, the former Unit #2 excavation and the area of the plant west of the radwaste system. The pond has a retention time greater than 24 hours. Non-stormwater sources of intermittent water include fire water testing, manhole discharges, eye wash showers, and Unit 2 basin discharge.

Outfall #011: Stormwater

Stormwater settling pond drains 425 acres, 8.5 acres of which is impervious surface. Drainage area includes the water treatment plant, radwaste building, operation support facility, demineralizer portable water building and the circulating and service water pumphouse. The pond has retention time of less than 24 hours. Non-stormwater sources of intermittent water include fire water test and tank drain, manhole discharges, eye wash/shower, and air conditioning condensate

Outfall #012: Stormwater

Stormwater settling pond drains 87 acres, 22 acres of which is impervious surface. Drainage area includes most of the plant area including the parking lots, office buildings, switch yards, the turbine building, the outage maintenance building, and the Stores I building. The pond has retention time of less than 24 hours. Non-stormwater sources intermittent water include fire water test, manhole discharges, eye wash/shower, and air conditioning condensate

Outfall #014: Stormwater

Stormwater settling pond drains 100 acres, 4 acres of which is impervious surface. Drainage area includes half of the construction parking lot, the Stores II building, and the maintenance shop annex. The pond has a retention time less than 24 hours. Non-stormwater sources intermittent water include fire water test and air conditioning condensate

Outfall #015: Stormwater

Stormwater settling pond drains 60 acres, 0.6 acres of which is impervious surface. Drainage area includes paved roadways. The pond has a retention time greater than 24 hours.

Outfall #016: Cooling Tower Bypass

Outfall #016 consists of clarified river water and wastewater that has been recycled through the water treatment plant. It is used to moderate flow through the water treatment plant and to provide carrier water in the discharge line, if necessary. Outfall #016 is an intermittent discharge.

Outfall #017: Ultimate Heat Sink

The ultimate heat sink is a cooling pond that has the ability to provide cooling water to various plant systems during other than normal conditions. This is operated as a no-discharge outfall.

Application Date: 08/06/2013 CP Application date: 12/16/2014 Expiration Date: 02/14/2014
Last Inspection: 06/06/2013

FACILITY COMMENTS:

- Outfalls #001, #002, and #016 are the only process outfalls that discharge; however Ameren wants to main the ability to discharge through Outfalls #003, #007, and #009 if the need exists.
- Outfalls #003 and #007 are recycled back through the plant. Since Outfalls #003 and #007 are operated with recycle, monitoring was changed from scheduled to unscheduled, as a discharge is not expected to occur, the same was done with Outfall #009.
- Oil and grease effluent limits were reduced to match the Water Quality Standard of 10 mg/L monthly average. In review of the discharge monitoring reports, the facility could already meet the 10 mg/L limit.
- Total residual chlorine effluent limits were converted to micrograms per liter reporting rather than milligrams per liter reporting.
- As Outfall #002 as continuous pH monitoring, the provisions from 40 CFR 401.17 which allows for 446 minutes per calendar month of exceedance of pH values, with no individual excursion lasting more than 60 minutes.
- Total Nitrogen and Total Phosphorus monitoring were added on Outfalls #002 and #016 per 10 CSR 20-7.015(9)(D)7.
- Stormwater monitoring was reestablished in this permit cycle to verify the best management practices are in place and are being maintained.
- For Outfall #001, BOD₅ and Oil and Grease monitoring was reduced to quarterly.
- For Outfall #002, Oil and Grease monitoring was reduced to quarterly.

- There was a typo present in the public notice for BOD₅, monitoring only remains on Outfall #001 for BOD₅.
- Total Residual Chlorine for Outfall #001's monitoring frequency was adjusted to once/week.
- Total Nitrogen and Total Phosphorus monitoring frequency was reduced from the draft operating permit to the minimum required in 10 CSR 20-7.015 on a quarterly basis.
- Special condition #16 was updated from the public notice version to reflect that the testing for petroleum products needs to occur on secondary containment containing petroleum products.

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (MGD)	TREATMENT LEVEL	EFFLUENT TYPE
#001	0.190	Ion exchange/Multimedia filtration/Neutralization	Radwaste system
#002	14.40	Disinfection/Cooling water	Cooling tower blowdown
#003	1.6	Sedimentation/Filtration/Separation and Recycle	Water Treatment Plant
#007	0.05	Equivalent to Secondary/Recycle	Sanitary Wastewater
#009	0.006	Neutralization/No discharge	Process wastewater
#010*	4.6	BMPS, settling	Stormwater, incidental process wastewater
#011*	19.7	BMPS, settling	Stormwater, incidental process wastewater
#012*	6.6	BMPS, settling	Stormwater, incidental process wastewater
#014*	4.8	BMPS, settling	Stormwater, incidental process wastewater
#015*	2.8	BMPS, settling	Stormwater, incidental process wastewater
#016	14.4	Recycle cooling water	Cooling tower bypass
#017	0	No discharge	Cooling water

*Based on 1 in 10 year storm event, is the design flow

Part II – 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 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. As per Missouri's Stormwater Regulations [10 CSR 20.6.200(6)(B)2.], the department shall establish effluent limits as necessary to protect waters of the state. Effluent limitations for stormwater are established using best professional judgment based on the category and designated uses of the receiving stream.

Missouri or Mississippi River:

All Other Waters:

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 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:

OUTFALL	WATERBODY NAME	CLASS	WBID	DESIGNATED USES	DISTANCE TO CLASSIFIED SEGMENT	12-DIGIT HUC
#001	Missouri River (piped)	P	701	AQL, IRR, IND, LWW, SCR, WBC(B)	0.0	10300102-1605
#002	Missouri River (piped)	P	701	AQL, IRR, IND, LWW, SCR, WBC(B)	0.0	10300102-1605
#003	Missouri River (piped)	P	701	AQL, IRR, IND, LWW, SCR, WBC(B)	0.0	10300102-1606
#007	Missouri River (piped)	P	701	AQL, IRR, IND, LWW, SCR, WBC(B)	0.0	10300102-1606

#009	Missouri River (piped)	P	701	AQL, IRR, IND, LWW, SCR, WBC(B)	0.0	10300102-1606
#010	Tributary to Logan Creek	--	--	General Criteria	0.58	10300102-1605
#011	Tributary to Logan Creek	C	3906	AQL, HHP, IRR, IND, LWW, SCR, WBC(B)	0.0	10300102-1605
#012	Tributary to Mud Creek	C	3906	AQL, HHP, IRR, IND, LWW, SCR, WBC(B)	0.0	10300102-1606
#014	Tributary to Cow Branch	--	--	General Criteria	0.95	10300102-1504
#015	Tributary to Cow Branch	--	3906	AQL, HHP, IRR, IND, LWW, SCR, WBC(B)	0.0	10300102-1504
#016	Missouri River (piped)	P	701	AQL, IRR, IND, LWW, SCR, WBC(B)	0.0	10300102-1605
#017	Tributary to Logan Creek	--	--	General Criteria	1.3	10300102-1605

AQL= Protection of Warm Water Aquatic Life and Human Health-Fish Consumption; C= Streams may cease flow in dry periods; CDF= Cold Water Fishery; CLF= Cool Water Fishery; DWS= Drinking Water Supply; E= Ephemeral stream; GEN= General; GRW = Groundwater; HUC= Hydrologic Unit Code; IND= Industrial; IRR=Irrigation; LWW= Livestock & Wildlife Watering; P= Permanent; SCR= Secondary Contact Recreation; W= Wetland; WBC= Whole Body Contact Recreation; WBID= Water Body Identification Number

RECEIVING STREAM(S) LOW-FLOW VALUES:

RECEIVING STREAM	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Tributary to Mud Creek, Cow Branch, Logan Creek	0.0	0.0	0.0
8-20-13 MUDD V1.0 (C) (3906)	0.0	0.0	0.1
Missouri River (P)(701) ^a	23,337	39,013	55,169

^a Missouri River flow data is from USGS Gaging station 06934500 at Hermann, MO from July 1969 to July 2012.

MIXING CONSIDERATIONS - THERMAL:

Missouri's Water Quality Standards [10 CSR 20-7.031(4)(A)1.], specifically state that mixing considerations for toxics do not apply to thermal mixing considerations and that thermal mixing considerations are located in [10 CSR 20-7.031(4)(D)6.], which states thermal mixing considerations are limited to 25% of the cross-sectional area or volume of a river, unless a biological survey performed in accordance with 316(a) of the Clean Water Act indicate no significant adverse effect on aquatic life. For the purpose of mixing considerations, the department typically uses the 25% of the daily flow vs cross-sectional area.

RECEIVING STREAM MONITORING REQUIREMENTS:

Ameren conducts upstream and downstream monitoring as part of their environmental commitments with NRC. Information from that sampling is available in the annual report, <http://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/call.html>.

303(D) LIST:

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.

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

TOTAL MAXIMUM DAILY LOAD (TMDL):

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 is not associated with a TMDL.

Part III – 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.

- ✓ Limitations in this operating permit for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.
- ✓ The Department determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b).
 - This permit changes WET test requirements for the facility from a pass/fail requirement to monitoring only for toxic units. This change reflects modifications to Missouri's Effluent Regulation found at 10 CSR 20-7.015. 40 CFR 122.44(d)(1)(ii) requires the department to establish effluent limitations that control all parameters which have the reasonable potential to cause or contribute to an excursion above any state water quality standard, including state narrative criteria. The previous permit imposed a pass/fail limitation without collecting sufficient data to make a reasonable potential determination. Furthermore, the method of reporting associated with the pass/fail limitation prevented the department from gathering the data necessary to make a finding of reasonable potential. Implementation of the toxic unit monitoring requirement will allow the department to implement numeric acute criteria in accordance with water quality standards established under §303 of the CWA.
 - The WET test from Outfall #001 was removed as there is not a lab available to perform the tests.
 - Outfalls #003 and #007 are operated in recycle mode and have not discharged in 15 years, monitoring was changed from scheduled to unscheduled, as a discharge is not expected to occur, the same was done with Outfall #009 as it has not discharged in 25 years.
 - Monitoring for oil and grease was reduced from monthly to quarterly, as a review of the previous permit discharge monitoring reports do not show an exceedance of the effluent limits.
 - Biochemical Oxygen Demand₅ was reduced from monthly to quarterly on Outfall #001, as Outfall #001 does not receive sanitary waste and the BOD₅ effluent limit is an indicator parameter. The facility is in compliance with their BOD₅ effluent limit.

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.

- ✓ Renewal no degradation proposed and no further review necessary.

BIOSOLIDS & SEWAGE SLUDGE:

Biosolids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works. Additional information regarding biosolids and sludge is located at the following web address: <http://extension.missouri.edu/main/DisplayCategory.aspx?C=74>, items WQ422 through WQ449.

- ✓ Not applicable; this condition is not applicable to the permittee for this 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.

CWA 316(b) COOLING WATER INTAKE STRUCTURE:

Section 316(b) of the Clean Water Act (CWA) applies to new or existing facilities operating a cooling water intake structure (CWIS). Section 316(b) requires that location, design, construction, and capacity of CWISs reflect the best technology available (BTA) for minimizing adverse environmental impacts (AEI). Under current regulations, existing facilities are subject to section 316(b) conditions that reflect BTA for minimizing AEI on a case-by-case, best professional judgment (BPJ) basis.

The Environmental Protection Agency's (EPA) Phase II Section 316(b) Existing Facilities Rule was remanded to the EPA in *Riverkeeper, Inc, et al. v EPA 475 F.3d 83* (2d Cir. 2007). The Federal Water Pollution Control Act Amendments of 1972 require cooling water intake structures to reflect the best technology available for minimizing adverse environmental impact. Best technology available must consider intake design, location, construction, and capacity. The EPA has finalized the 316(b) standards and they became effective on October 16, 2014 (<http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/index.cfm>).

The Ameren Callaway Energy Center is located about 5 miles inland with an intake structure on the north bank of the Missouri River at river mile 115.4. The intake structure is located directly on the bank of the river. The main channel and greatest depth of the river occur immediately offshore of the intake structure.

When Callaway was built, the technology decision in 1984 established closed cycle cooling as the best achievable technology. In the 2014, final 316(b) rules, closed cycle cooling is still the best achievable technology. Closed cycle cooling is considered the best achievable technology under the new 316(b) regulations, 40 CFR 122.21(r) and 40 CFR 125. The original CWA 316b demonstration for Callaway Energy Center was approved by the department by letter dated August 1987 as "Best Technology Available". The report concluded that the estimated annual number of fish lost to impingement had no impact on the ecology or sport fishery of the Missouri River with respect to maintaining a balanced indigenous fish population. One reason for the relatively low numbers of fish collected during the impingement study was the location of the plant intake structure (i.e., main channel). This area of the river is characterized by swift current and shifting substratum which does not present a preferred fish habitat. Because the intake structure equipment and operation are essentially the same as the time of the original study, Ameren believes that the conclusion of the 1984 and 1986 studies are still valid.

EPA consulted with the US Fish and Wildlife Service and the National Marine Fisheries Service under the Endangered Species Act rules. The Services concluded that the new 316(b) rule is not likely to jeopardize the continued existence of listed species or result in adverse modification of designated critical habitat. However the Services added a number of conditions to the final rule. The rules require that facilities identify all Federally-listed threatened and endangered species and designated critical habitat that are present in the zone of influence area of the intake. This condition includes all listed species not just fish and shellfish. Additional control measures, monitoring and reporting requirements may be established to minimize incidental take. The Services will have 60 days to review and comment on measures related to listed species and critical habitat.

This operating permit contain language indicating that the permit may be reopened and modified, or alternatively revoked and reissued to: incorporate new or modified requirements applicable to existing cooling water intake structures under Section 316(b) of the Clean Water Act consistent with any standard established pursuant to section 1311 or section 1316 of 33 USC 1326. In the event that, it is necessary for this permit to be reopened and modified, or alternatively revoked and reissued, permittee shall comply with any such new or modified requirements or standards applicable to existing cooling water intake structures under 316(b) of the Clean Water Act.

To meet the 316(b) requirements, Ameren will be required to conduct some of the studies required under 40 CFR 122.21(r). As the intake is less than 125 MGD, the entrainment decision is a best professional judgment decision not requiring all the studies. For impingement, Callaway has already installed one of the approved technologies, cooling towers. With the installed cooling towers, that is one of the approved methods for showing compliance with the Impingement Mortality requirements in 40 CFR 122.21(r).

As part of the request for NRC license renewal under the Environmental Impact Section, Ameren agreed to conduct impingement and entrainment studies at Callaway for the 2015 and 2016. As a result of those studies, along with the other studies required with 316(b), if recommendations are made for operational changes that are in compliance with the NRC regulations, they will be incorporated upon permit renewal. Ameren Missouri will perform a one-year pallid sturgeon entrainment and impingement study for the Callaway Plant Unit 1 closed-cycle make-up water intake structure. The impingement study will consist of a once-per-week sample over a 52 consecutive week period. The sample will be obtained from the traveling screen wash trough of the plant closed cycle make-up water intake structure, with the exception that three (3) samples per week will be obtained and processed during May through July. Samples will be taken on nonconsecutive days, when possible.

The entrainment study will be conducted in either 2015 or 2016 and will require a weekly sample to be obtained and processed in the second half of March, April, August, and September. In addition, three (3) samples per week will be obtained and processed throughout May through July. Samples will be taken on non-consecutive days, when possible. Entrainment samples will be obtained and processed from the plant closed-cycle make-up water intake structure on the discharge side of the traveling screens.

Missouri River sampling will be conducted at three (3) locations opposite the intake structure during four (4) consecutive weeks (during May or June based on monitored water temperatures favorable for sturgeon spawning) on a once per week basis. A final report documenting the study results will be provided by March 31, 2017.(submitted by Ameren to the NRC on October 31, 2014).

Based on the results of the studies being conducted as part of the NRC license renewal, and the additional studies required under 40 CFR 122.21(r), operational changes may be recommended at permit renewal for protection of aquatic life. However any changes may require the NRC's approval to ensure safety remains high.

Under 40 CFR 122.21, the required studies at Callaway will include:

- i. **Source Water Physical Data Report, 40 CFR 122.21(r)(2):** This report requires a description and scaled drawings showing the physical configuration of the water body, including areal dimensions, depths, and temperature regimes, identification and characterization of the source waterbody's hydrological and geomorphological features, estimate the intake's area of influence within the waterbody and locational maps.
- ii. **Cooling Water Intake Structure Data Report, 40 CFR 122.21(r)(3):** This report requires information on the design of the intake structure and its location in the water column. It includes design intake flows, daily hours of operation, number of days of the year in operation and seasonal changes, if applicable; a flow distribution and water balance diagram that includes all sources of water to the facility, recirculating flows, and discharges, and engineering drawings of the cooling water intake structure.
- iii. **Source Water Baseline Biological Characterization Data Report, 40 CFR 122.21(r)(4):** This report characterizes the biological community in the vicinity of the cooling water intake structure.
- iv. **Cooling Water System Data Report, 40 CFR 122.21(r)(5):** This report provides information on the operation of the cooling water system including descriptions of reductions in water withdrawals, recycled water, proportion of the source waterbody withdrawn.
- v. **Operational Status, 40 CFR 122.21(r)(8):** The operational status report includes descriptions of each unit's operating status including age of the unit, capacity utilization for the previous 5 years, and any major upgrades completed within the last 15 years, including boiler replacement, condenser replacement, turbine replacement, fuel change.

EFFLUENT LIMIT GUIDELINES:

The EPA in 2009 published the "Steam Electrical Power Generating Point Source Category: Final Detailed Study Report (2009 Final Report). The 2009 Final Report summarizes data collected and analyzed from the EPA to review discharges from steam electrical power generating industry and to determine whether the current effluent guidelines (ELGs) for this industry should be revised. From the 2009 Final Report, it determined a need existed to update the current effluent regulations specific to Steam Electrical Power Generating Point Sources [40 CFR Part 423]. The 2009 Final Report also concluded the last updated version of this 1982 regulation does not adequately address the pollutants being discharged and have not kept pace with changes that have occurred in the power industry. EPA published a draft rule for comment in 2013. EPA has indicated that it will be finalized in September 2015. Nuclear power is included in the Steam Electric Guidelines.

GROUNDWATER MONITORING:

Groundwater Monitoring at Callaway is covered by the NRC environmental plans. Callaway Energy Center has an extensive groundwater monitoring network meeting the industry standard established in NEI 07-07 (<http://pbadupws.nrc.gov/docs/ML0726/ML072610036.pdf>). Numerous groundwater monitoring wells have been installed surrounding the power block area to monitor plant systems, structures, and components. In addition, monitoring wells have been installed along the discharge line and elsewhere on the plant site. Monitoring wells are sampled for tritium and gamma emitters. Additional information about groundwater monitoring at Callaway is available online through the NRC: <http://pbadupws.nrc.gov/docs/ML0831/ML083150703.pdf>

INDUSTRIAL SLUDGE:

Industrial sludge is solids, semi-solids, or liquid residue generated during the treatment of industrial process wastewater in a treatment works; including but not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment process; scum and solids filtered from water supplies and backwashed; and a material derived from industrial sludge.

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

INTAKE WATER CREDITS (NET LIMITS):

In accordance with federal regulation 40 CFR 122.45(g), technology-based effluent limitations or standards shall be adjusted to reflect credit for pollutants in the discharge's intake water if: (1) The applicable effluent limitations and standards contained in 40 CFR subchapter N specifically provide that they shall be applied on a net basis; or (2) The discharger demonstrates that the control system it proposes or uses to meet applicable technology-based limitations and standards would, if properly installed and operated, meet the limitations and standards in the absence of pollutants in the intake waters. Additionally, credit for conventional pollutants such as biochemical oxygen demand (BOD) or total suspended solids (TSS) should not be granted unless the permittee demonstrates that the constituents of the generic measure in the effluent are substantially similar to the constituents of the generic measure in the intake water or unless appropriate additional limits are placed on process water pollutants either at the outfall or elsewhere. Credit shall be granted only to the extent necessary to meet the applicable limitation or standard, up to a maximum value equal to the influent value.

Additional monitoring may be necessary to determine eligibility for credits and compliance with permit limits. Credit (Net Limits) do not apply to the discharge of raw water clarifier sludge generated from the treatment of intake water.

As Ameren continuously recycles water through the system, net intake credits are not being granted for Outfalls #001, #002, #003, #009 or #016. Based on the reasonable potential analysis completed for Outfalls #001, #002, #009 and #016, the facility can meet the effluent previously established without intake credit provisions.

REASONABLE POTENTIAL ANALYSIS (RPA):

Federal regulation [40 CFR Part 122.44(d)(1)(i)] requires effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard. In accordance with [40 CFR Part 122.44(d)(1)(iii)] if the permit writer determines that any 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 B: RPA RESULTS**.

Pollutants Typically Associated with Steam Electric Industry Discharges:

The US EPA *Interim Detailed Study Report for the Steam Electric Power Generating Point Source Category* (Interim Study Report) utilized available data to characterize the waste streams discharged from steam electric facilities, as well as the technologies and practices used in the industry to control the discharge of waste pollutants (Chapter 5). EPA is expected to release the updated effluent limit guidelines in September 2015. Table 5-1 in Chapter 5 of the Interim Study Report presents an overview of the types of pollutants associated with the various waste streams. Pollutants contained in the Interim Study Report are based on data previously collected by the EPA during the 1974 and 1982 rulemaking efforts and the 1996 Preliminary Data Summary, data provided by the Utility Water Act Group (UWAG) and Electric Power Research Institute (EPRI). Staff has reviewed the Discharge Monitoring Reports (DMRs) and renewal applications Forms C and D for each of the outfalls in this operating permit. Effluent testing results contained in Forms C and D for each outfall were compared directly with pollutants associated with the various waste streams for each of the outfalls. Below is the list of pollutants based on process waste streams for this facility:

- Cooling Water: Once-Through or Cooling Tower Blowdown (Outfall #002): Chlorine, Iron, Copper, Nickel, Aluminum, Boron, Chlorinated Organic Compounds, Suspended Solids, Brominated Compounds, and Non-Oxidizing Biocides.
- Other Low-Volume Waste Streams (Outfall #001): Suspended Solids, Dissolved Solids, Oil and Grease, Phosphates, Surfactants, Acidity, Methylene Chloride, Phthalates, BOD₅, COD, Fecal Coliform and Nitrates.

For the above pollutants, staff drafting this operating permit only compared the applicable pollutants based on Missouri's Water Quality Standards criteria and designated uses. For any of the outfalls that do not contain one of the process wastewater types above, these pollutants were not reviewed (i.e., Outfalls #003 - #015). For stormwater outfalls, staff drafting this permit and fact sheet reviewed the applicable Forms 2F, C, and D to determine if effluent from this outfall had potential to exceed Missouri's Water Quality Standards for the tested pollutants.

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.

SPILL REPORTING:

Per 10 CSR 24-3.010, any emergency involving a hazardous substance must be reported to the department's 24 hour Environmental Emergency Response hotline at (573) 634-2436 at the earliest practicable moment after discovery. The department may require the submittal of a written report detailing measures taken to clean up a spill. These reporting requirements apply whether or not the spill results in chemicals or materials leaving the permitted property or reaching waters of the state. This requirement is in addition to the Noncompliance Reporting requirement found in Standard Conditions Part I.

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.
 - Quarterly monitoring and sampling for benchmarks is established in this permit, as under the previous permit cycle, stormwater monitoring was waived. The quarterly monitoring frequency is developed based on the guidance provided in the Department’s Permit Writer’s Manual Section 6.1.2 (http://dnr.mo.gov/env/wpp/permits/manual/docs/6_1_2.pdf) and in EPA’s multi-sector general permit- Sections 6.1 and 6.2 (pgs. 32-35). (http://water.epa.gov/polwaste/npdes/stormwater/upload/msgp2013_proposedpermit1-7.pdf)
 - The stormwater retention ponds have been in operation more than 35 years and often times there is little or no discharge during a normal storm event, which is why this permit does not contain the condition to sample within 60 minutes of the first flush or the start of a precipitation event. The stormwater ponds have the capacity to have retention times of 24 hours or longer.

TEMPERATURE LIMITS CONSIDERATIONS:

Missouri’s Water Quality Standards establish Temperature Criteria that provide several forms of protection from the impacts of heat energy on receiving water bodies. The purpose of the Temperature Limit Guidance is to provide an approach to help both permit writers and the public understand the Temperature Criteria and how temperature requirements are applied in Missouri State Operating Permits. This approach assumes that the receiving water consumes 100% of the heat energy being discharged. At any time the permittee has reason to believe the discharge may exceed their permit temperature limits or if the permittee does exceed their permit limit, the permittee may determine it necessary to take action that may include, but is not limited to, seeking a 316(a) Variance, a Mixing Zone Study, or conducting a “Heat Model”. If action is taken by the permittee that warrants a modification to this operating permit, then the permittee will need to submit an application for a permit modification. Submitting an application for permit modification does not guarantee approval of said action and does not directly indicate that the result of said action will be implemented into an operating permit. A Quality Assurance Project Plan (QAPP) must be submitted for any alternative compliance approach.

Temperature monitoring is being maintained. The results of the RPA demonstrate that there is not reasonable potential to exceed the water quality standard of 90°F or the ±Δ 5°F at the edge of the mixing zone. However as this is an energy center discharging water at 95°F prior to mixing, the monitoring requirement will remain at monthly monitoring.

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:

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

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).

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

WLA MODELING:

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

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

WHOLE EFFLUENT TOXICITY (WET) TEST:

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(4)(D),(F),(G),(I)2.A & B are being met. Under [10 CSR 20-6.010(8)(A)4], the Department may require other terms and conditions that it deems necessary to assure compliance with the Clean Water Act and related regulations of the Missouri Clean Water Commission. In addition the following MCWL apply: §§644.051.3 requires the Department to set permit conditions that comply with the MCWL and CWA; 644.051.4 specifically references toxicity as an item we must consider in writing permits (along with water quality-based effluent limits, pretreatment, etc...); and 644.051.5 is the basic authority to require testing conditions. WET test will be required by ALL facilities meeting the following criteria:

- Facility is a designated Major.
- Facility continuously or routinely exceeds its design flow.
- Facility (whether primarily domestic or industrial) that alters its production process throughout the year.
- Facility handles large quantities of toxic substances, or substances that are toxic in large amounts.
- Facility has Water Quality-Based Effluent Limitations for toxic substances (other than NH₃)
- Facility is a municipality with a Design Flow ≥ 22,500 gpd.

- The WET Test from #001 was removed as there is not a Lab available to conduct the test on the radiological test.
- Outfalls #002 is an unscheduled chronic WET test if they must use a biocide or other toxic pollutants to remove organisms from intake structures, WET testing shall be conducted once per year.
- Outfall #016 is an annual chronic WET test.
- WET test were not established for Outfalls #003, #007, and #009 because these outfalls do not discharge as they are operated in recycle mode.

Part IV – Effluent Limits Determination

Outfall #001 – Main Facility Outfall

Radwaste Treatment System - SIC #4911 (Piped to Missouri River) Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including effluent limitations, of this operating permit.

#001 EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMIT	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	MGD	1	*		*	NO	SAME
BOD ₅	MG/L	1	*		*	NO	SAME
TSS	MG/L	1	45		30	NO	SAME
PH	SU	1	6-9		6-9	NO	SAME
CHLORINE, TOTAL RESIDUAL	µG/L	3	200		104	NO	0.2/0.1 MG/L
OIL & GREASE	MG/L	1,2	15		10	YES	20/15
BORON, TOTAL RECOVERABLE	MG/L	3	*		*	NO	SAME
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

*Monitoring only

Basis for Limitations Codes:

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

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **Flow.** In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the department, which may require the submittal of an operating permit modification.
- **Boron, total recoverable.** Monitoring only retained from previous permit, and is deemed to be protective. While RP does not exist, Appendix B, as one of the main treatment systems uses boron, monitoring is maintained.
- **Biochemical Oxygen Demand (BOD₅).** Monitoring only. Effluent limitations have been retained from previous state operating permit, and is deemed to be protective.
- **Total Suspended Solids (TSS).** Limit from 40 CFR 423 .13. Effluent limitations have been retained from previous state operating permit and is deemed to be protective.
- **pH.** Limit from 40 CFR 423.13. Effluent limitations have been retained from previous state operating permit, and is deemed to be protective. Water Quality Standard is 6.5-9.0. Piped to the Missouri River, mixing considerations are applicable, thus pH is limited to 6.0-9.0 SU.
- **Total Residual Chlorine (TRC).** 40 CFR 423 governs this analyte in addition to the calculated limits below. Effluent limitations have been retained from previous state operating permit, and are deemed to be protective. Total Residual Chlorine water quality based effluent limits are 209 µg/L daily maximum, 104 µg/L monthly average. Since limits at 40 CFR 423 are more protective than the 209 µg/L, the limit of 200 µg/L will be used for daily.
- **Oil & Grease.** 40 CFR 423.13 sets the effluent limit at 20 mg/L maximum daily and 15 mg/L monthly average. The water quality standard is 10 mg/L monthly average. The water quality standard is more protective than the Effluent Limit Guideline. Average monthly effluent limit= 10 mg/L; maximum daily effluent limit = 15 mg/L.
- **Temperature.** Monitoring Only, change from °C to °F reporting. Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream's Water Quality. The facility employs best available control technology with cooling towers; which after the water leaves the cooling towers, the water is stored for reuse at the plant or for discharge back to the Missouri River. 10 CSR 20-7.031(4)(D)5 states that temperature shall not exceed the monthly temperature criteria established of 90°F at the edge of the mixing zone.

- **Minimum Sampling and Reporting Frequency Requirements.** Sampling and reporting frequency requirements have been retained from previous state operating permit, except for BOD₅ and oil and grease monitoring was reduced to quarterly for Total Residual Chlorine. TRC monitoring frequency was reduced from daily to once/week.
- **Parameter Removed:** Whole Effluent Toxicity test removed from Outfall #001, as there are no labs available to conduct the test.

Outfall #002 - Cooling Tower Blowdown: (Piped to Missouri River)

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

#002 EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	GPD	1	*		*	NO	
TOTAL SUSPENDED SOLIDS	MG/L	1	*		*	NO	
TOTAL DISSOLVED SOLIDS	MG/L	1	*		*	NO	
PH	SU	1	6-9		6-9	NO	
PH	MIN	1			446	YES	***
PH	COUNT	1			0	YES	***
OIL & GREASE	MG/L	1,3	15		10	YES	20/15
TOTAL RESIDUAL CHLORINE	mg/L	2,3	200		104	NO	0.2/0.1 MG/L
TOTAL PHOSPHORUS	mg/L	2	*		*	YES	***
TOTAL NITROGEN	mg/L	2	*		*	YES	***
CHRONIC WET	TUc	8	*			YES	%SURVIVAL
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

* - Monitoring requirement only

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

Basis for Limitations Codes:

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

OUTFALL #002 – 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 Dissolved Solids.** Monitoring retained from previous permit, and is deemed to be protective.
- **Total Suspended Solids (TSS).** Monitoring only to determine contribution. Effluent limitations have been retained from previous state operating permit, and is deemed to be protective.
- **pH.** 6.0-9.0 SU. Technology based limits [10 CSR 20-7.015 and 40 CFR 423.13] are protective of the water quality standard [10 CSR 20-7.031(4)(E)], due to the buffering capacity of the mixing zone. Previous permit did not require the reporting of the minutes above the Water Quality Standard and the number of excursions lasting sixty or more minutes; the permittee shall report the minimum and maximum pH of the month.

- **pH- Minutes of Exceedance per month.** Callaway Energy Center has continuous pH measurement on Outfall 002. With continuous pH measurement, the facility may have excursions of the set pH for up to 446 minutes (7 hrs, 26 minutes) in any calendar month, per 40 CFR 401.17
- **pH- Number of Excursion of pH effluent limits.** Number of pH excursions lasting sixty or more minutes. Under 40 CFR 401.17, the permittee shall not have an individual pH excursion lasting sixty (60) minutes or more.
- **Oil & Grease.** 40 CFR 423.13 sets the effluent limit at 20 mg/L maximum daily and 15 mg/L monthly average. The water quality standard is 10 mg/L monthly average. The water quality standard is more protective than the Effluent Limit Guideline. Average monthly effluent limit= 10 mg/L; maximum daily effluent limit = 15 mg/L.
- **Temperature.** Monitoring Only. Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream's Water Quality. The facility employs best available control technology with cooling towers; which after the water leaves the cooling towers, the water is stored for reuse at the plant or for discharge back to the Missouri River. 10 CSR 20-7.031(4)(D)5 states that temperature shall not exceed the monthly temperature criteria established of 90°F at the edge of the mixing zone.
- **Total Residual Chlorine (TRC).** 40 CFR 423 governs this analyte in addition to the calculated limits below. Effluent limitations have been retained from previous state operating permit, and are deemed to be protective. Total Residual Chlorine water quality based effluent limits are 209 µg/L daily maximum, 104 µg/L monthly average. Since limits at 40 CFR 423 are more protective than the 209 µg/L, the limit of 200 µg/L will be used for daily.
- **Total Phosphorus and Total Nitrogen.** Monitoring required for facilities greater than 100,000 gpd design flow per 10 CSR 20-7.015(9)(D)7. Total Nitrogen shall be determined by testing for Total Kjeldahl Nitrogen (TKN) and Nitrate + Nitrite and reporting the sum of the results (reported as N). Nitrate + Nitrite can be analyzed together or separately.
- **Outfall #002 WET Tests.** Unscheduled WET test when biocides are used. 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
 - No less than ONCE/YEAR:**
 - Facility is designated as a Major facility or has a design flow ≥ 1.0 MGD.
- **Minimum Sampling and Reporting Frequency Requirements.** Sampling and reporting frequency requirements have been retained from previous state operating permit, except oil and grease monitoring was reduced to quarterly and total residual chlorine was reduced from daily to weekly monitoring. Total Phosphorus and Total Nitrogen shall have quarterly monitoring, as required in 10 CSR 20-7.015(9)(D)7.

Outfall #003 - Water Treatment Plant Wastes (Piped to the Missouri River)

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

#003 EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	GPD	1	*		*	NO	
TOTAL SUSPENDED SOLIDS	MG/L	1	100		30	NO	
pH	SU	1	6-9		6-9	NO	
OIL & GREASE (MG/L)	MG/L	1,3	15		10	YES	20/15
TOTAL RESIDUAL CHLORINE	µG/L	1,3	200		104	NO	0.2/0.1 MG/L
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

*- Monitoring only

Basis for Limitations Codes:

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

OUTFALL #003 – 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).** Limit from 423.13. Effluent limitations have been retained from previous state operating permit, and is deemed to be protective.
- **pH.** 6.0-9.0 SU. Technology based limits [10 CSR 20-7.015 and 40 CFR 423.13] are protective of the water quality standard [10 CSR 20-7.031(4)(E)], due to the buffering capacity of the mixing zone.
- **Total Residual Chlorine (TRC).** 40 CFR 423 governs this analyte in addition to the calculated limits below. Effluent limitations have been retained from previous state operating permit, and are deemed to be protective. Total Residual Chlorine water quality based effluent limits are 209 µg/L daily maximum, 104 µg/L monthly average. Since limits at 40 CFR 423 are more protective than the 209 µg/L, the limit of 200 µg/L will be used for daily.
- **Oil & Grease.** 40 CFR 423.13 sets the effluent limit at 20 mg/L maximum daily and 15 mg/L monthly average. The water quality standard is 10 mg/L monthly average. The water quality standard is more protective than the Effluent Limit Guideline. Average monthly effluent limit= 10 mg/L; maximum daily effluent limit = 15 mg/L.
- **Minimum Sampling and Reporting Frequency Requirements.** Sampling and reporting frequency requirements have been retained from previous state operating permit but have been made an unscheduled event as a discharge has not occurred in over 15 years from the Outfall.

Outfall #007 – Sanitary Waste; 3 Cell Flow Through Lagoon (Piped to the Missouri River)

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

#007 EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	GPD	1	*		*	NO	
BOD ₅	MG/L	1		65	45	NO	
TSS	MG/L	1		110	70	NO	
OIL AND GREASE	MG/L		15		10	NO	
PH	SU	1	6.0-9.0		6.0-9.0	NO	
AMMONIA AS N	MG/L	2	*		*	NO	
ESCHERICHIA COLI FORM	**	1,2,3	Please see Escherichia Coli (E. coli) in the Derivation and Discussion Section below.			YES	***/FECAL COLIFORM
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.					No	

- * - Monitoring requirement only.
- ** - # of colonies/100mL; the Monthly Average for *E. coli* is a geometric mean.
- *** - Parameter not previously established in previous state operating permit.

Basis for Limitations Codes:

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

OUTFALL #007– DERIVATION AND DISCUSSION OF LIMITS:

- **Flow.** In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the department, which may require the submittal of an operating permit modification.
- **Biochemical Oxygen Demand (BOD₅).** 65 mg/L weekly effluent limit; 45 mg/L average monthly limit. Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream’s Water Quality. Therefore, effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information**.
- **Total Suspended Solids (TSS).** 110 mg/L weekly average effluent limit; 70 mg/L average monthly limit. Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream’s Water Quality. Therefore, effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information**.
- **pH.** 6.0-9.0 SU. Technology based limits [10 CSR 20-7.015] are protective of the water quality standard [10 CSR 20-7.031(5)(E)], due to the buffering capacity of the mixing zone.
- **Total Ammonia Nitrogen.** Monitoring only. As the outfall #007 does not normally discharge, effluent limits are not being applied. However if the flows are not recycled and a discharge occurs, the facility must sample for ammonia as N concentrations. Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C.] default pH 7.8 SU. Background total ammonia nitrogen = 0.03 mg/L in the Missouri River.
- **Escherichia coliform (E. coli).** Monitoring only. As the outfall #007 does not normally discharge, effluent limits are not being applied. However if the flows are not recycled and a discharge occurs, the facility must sample for E. Coli concentrations during the Recreational Season (April 1 – October 31), to protect Whole Body Contact Recreation (B) designated use of the receiving stream, as per 10 CSR 20-7.031(4)(C). Design flow of the treatment plant is less than 100,000 gpd, thus the monitoring frequency is equal to the other parameters of once per quarter.
- **Minimum Sampling and Reporting Frequency Requirements.** Sampling and reporting frequency requirements have been retained from previous state operating permit but have been made an unscheduled event as a discharge has not occurred in over 15 years from the Outfall.

Outfall #009 - Intake Heater Blowdown: (Located on Missouri River)

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

#009 EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	MGD	1	*		*	NO	
TOTAL SUSPENDED SOLIDS	MG/L	1	100		30	NO	
PH	SU	1	6-9		6-9	NO	
OIL & GREASE	MG/L	1	15		10	YES	20/15
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 | 5. Water Quality Model |
| 2. Water Quality Standard (includes RPA) | 6. Best Professional Judgment |
| 3. Water Quality Based Effluent Limits | 7. TMDL or Permit in lieu of TMDL |
| 4. Antidegradation Review/Policy | 8. WET Test Policy |

OUTFALL #009 – 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).** Limit from 423.13. Effluent limitations have been retained from previous state operating permit, and is deemed to be protective.
- **pH.** 6.0-9.0 SU. Technology based limits [10 CSR 20-7.015 and 40 CFR 423.13] are protective of the water quality standard [10 CSR 20-7.031(4)(E)], due to the buffering capacity of the mixing zone.
- **Oil & Grease.** 40 CFR 423.13 sets the effluent limit at 20 mg/L maximum daily and 15 mg/L monthly average. The water quality standard is 10 mg/L monthly average. The water quality standard is more protective than the Effluent Limit Guideline. Average monthly effluent limit= 10 mg/L; maximum daily effluent limit = 15 mg/L
- **Minimum Sampling and Reporting Frequency Requirements.** Sampling and reporting frequency requirements have been retained from previous state operating permit but have been made an unscheduled event as a discharge has not occurred in over 15 years from the Outfall.

Outfalls #010, #011, #012, #014, #015 and #017 - Storm Water Runoff

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

Due to the nature of the discharges from these outfalls being stormwater, only a maximum daily limit (MDL) or monitoring requirement will be implemented for many of the parameters listed below. Stormwater events are acute occurrences that result in the greatest concentrations of pollutants being discharged in the first part of the runoff. This first flush can best be represented by a grab sample within the first hours of runoff. Additionally, stormwater events are highly variable. Recording an average monthly limit (AML) is not representative of the nature of these discharges. Many of these parameters that require just a MDL monitoring only requirement will now have a benchmark value associated with that monitoring only requirement. These benchmark values will be listed under the individual discussion and derivation of each parameter containing such a value.

BENCHMARKS

Benchmark concentrations are **not** effluent limitations; benchmark exceedance, therefore, is not a permit violation. Benchmark monitoring data is used to determine the overall effectiveness of control measures and to assist the permittee in knowing when additional corrective action(s) may be necessary to comply with the technology based effluent limitations (TBEL). Failure to take corrective action is a violation of the permit. Benchmark exceedance alone is not a permit violation.

The benchmarks listed in the derivation discussion below have been determined to be feasible, affordable and protective of water quality. These benchmark values are consistent with other stormwater permits including the EPA MSGP. The facility will be required to monitor for all these parameters and if the benchmarks are exceeded at all in the following permit cycle, then the permit writer will use best professional judgment to determine if effluent limitations will be necessary to protect water quality.

Outfalls #010 - #012, #014, & #015 – Stormwater Runoff, benchmarks

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM BENCHMARK	MODIFIED	PREVIOUS PERMIT LIMITATIONS
COD	MG/L	1,2,3	90	YES	**
SETTLABLE SOLIDS	ML/L/HR	1,2,3	1.5	YES	**
pH	SU	1	6.5-9.0	YES	**
OIL & GREASE	MG/L	1	10	YES	**
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.				

* - Monitoring requirement only.

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

Basis for Limitations Codes:

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

OUTFALLS #010 - #012,#014, & #015 – DERIVATION AND DISCUSSION OF LIMITS:

- **Chemical Oxygen Demand (COD₅).** Based on data submitted on Form 2F of the application for renewal, monitoring is included using the permit writer’s best professional judgment. There is no water quality standard for COD; however, increased oxygen demand may impact instream water quality. COD is also a valuable indicator parameter. COD monitoring allows the permittee to identify increases in COD that may indicate materials/chemicals coming into contact with stormwater that cause an increase in oxygen demand. Increases in COD may indicate a need for maintenance or improvement of BMPs. Additionally, a benchmark value will be implemented for this parameter. The benchmark value will be set at 90 mg/L. This value falls within the range of values implemented in other permits that have similar industrial activities and the Environmental Protection Agency’s (EPA’s) *Multi-Sector General Permit For Stormwater Discharges Associated With Industrial Activity* (MSGP).
- **Settleable Solids.** Effluent limitations from the previous state operating permit have been reassessed. Monitoring remains on the stormwater outfalls for settleable solids to ensure the best management practices are maintained and operating correctly. The permittee is required to develop and implement a SWPPP and adhere to Best Management Practices (BMPs).
- **pH.** pH shall be maintained within the range from 6.5 to 9.0 Standard Units (SU) as per 10 CSR 20-7.031(4)(E).
- **Oil & Grease.** 40 CFR 423.13 sets the effluent limit at 20 mg/L maximum daily and 15 mg/L monthly average. The water quality standard is 10 mg/L monthly average. The water quality standard is more protective than the Effluent Limit Guideline. Average monthly effluent limit= 10 mg/L; maximum daily effluent limit = 15 mg/L
- **Minimum Sampling and Reporting Frequency Requirements.** Sampling will be required at a minimum of quarterly to verify that the best management practices are being maintained and operated correctly. Reporting frequency will be quarterly. As its stormwater water, grab samples will be collected.

Outfall #016 - Cooling Tower Bypass (Piped to Missouri River)

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

#016 EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	GPD	1	*		*	NO	
TOTAL SUSPENDED SOLIDS	MG/L	1	100		30	NO	
PH	SU	1,3	6-9		6-9	NO	
OIL & GREASE	MG/L	1	15		10	YES	20/15
TOTAL RESIDUAL CHLORINE	µG/L	1,3	200		104	NO	0.2/0.104 MG/L
TOTAL PHOSPHORUS	MG/L	2	*		*	YES	**
TOTAL NITROGEN	MG/L	2	*		*	YES	**
TEMPERATURE	°F	1,3	*		*	NO	°C
CHRONIC WHOLE EFFLUENT TOXICITY	TUc	8	*			YES	%SURVIVAL
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

* - Monitoring requirement only

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

Basis for Limitations Codes:

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

OUTFALL #016 – 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).** Limit from 423.13. Effluent limitations have been retained from previous state operating permit, and is deemed to be protective.
- **Total Residual Chlorine (TRC).** 40 CFR 423 governs this analyte in addition to the calculated limits below. Effluent limitations have been retained from previous state operating permit, and are deemed to be protective. Total Residual Chlorine water quality based effluent limits are 209 µg/L daily maximum, 104 µg/L monthly average. Since limits at 40 CFR 423 are more protective than the 209 µg/L, the limit of 200 µg/L will be used for daily.
- **pH.** 6.0-9.0 SU. Technology based limits [10 CSR 20-7.015 and 40 CFR 423.13] are protective of the water quality standard [10 CSR 20-7.031(4)(E)], due to the buffering capacity of the mixing zone.
- **Oil & Grease.** 40 CFR 423.13 sets the effluent limit at 20 mg/L maximum daily and 15 mg/L monthly average. The water quality standard is 10 mg/L monthly average. The water quality standard is more protective than the Effluent Limit Guideline. Average monthly effluent limit= 10 mg/L; maximum daily effluent limit = 15 mg/L.
- **Temperature.** Monitoring Only. Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream's Water Quality. The facility employs best available control technology with cooling towers; which after the water leaves the cooling towers, the water is stored for reuse at the plant or for discharge back to the Missouri River. 10 CSR 20-7.031(4)(D)5 states that temperature shall not exceed the monthly temperature criteria established of 90°F at the edge of the mixing zone.
- **Total Phosphorus and Total Nitrogen.** Monitoring required for facilities greater than 100,000 gpd design flow per 10 CSR 20-7.015(9)(D)7. Total Nitrogen shall be determined by testing for Total Kjeldahl Nitrogen (TKN) and Nitrate + Nitrite and reporting the sum of the results (reported as N). Nitrate + Nitrite can be analyzed together or separately.
- **WET Test, Chronic.** Monitoring requirement only; monitoring is required to determine if reasonable potential exists for this facility's discharge to exceed water quality standards. 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.
 - **NO LESS THAN ONCE/YEAR:**
 - Industrial dischargers with toxic parameters in the discharge; that may alter production processes; or facilities which handle large quantities of toxic substances or substances that are toxic in large amounts shall conduct chronic WET test at a frequency annually. It will be reevaluated at permit renewal.

$$(22.32 \text{ cfs}) / ((15,250 \text{ cfs} \times 0.25 \times 0.1) + 22.32 \text{ cfs}) = 0.055 = 5.5\% = 10\%$$
- **Minimum Sampling and Reporting Frequency Requirements.** Sampling and reporting frequency requirements have been retained from previous state operating permit, and is deemed to be protective. Total Phosphorus and Total Nitrogen shall have quarterly monitoring, as required in 10 CSR 20-7.015(9)(D)7.

Part V – Compliance with SWPPP Requirements to Achieve Benchmark Values

The purpose of a SWPPP is to comply with all applicable stormwater regulations by creating an adaptive management plan to control and mitigate pollution of stormwater runoff. Developing a SWPPP provides opportunities to employ appropriate BMPs to minimize the risk of pollutants being discharged with during storm events. The following paragraph outlines the general steps the permittee should take to determine which BMPs will work to achieve the benchmark values discussed in Part IV above. This section is not intended to be all encompassing or restrict the use of any physical BMP or operational and maintenance procedure that will assist in pollution control. Additional steps or revisions to the SWPPP may be required to meet the requirements of the permit. Additional information can be found in 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].

In order to effectively control the pollutants being discharged in stormwater runoff, potential stormwater pollution sources must be identified. Areas which should be included in the SWPPP are identified in 40 CFR 122.26(b)(14). The pollutants of concern that have already been identified in Part IV above can be used to assist in identifying potential sources. Once these potential sources of stormwater pollution have been identified, a plan should be formulated to best control the amount of pollutant being released and discharged by each activity or source. This should include, but is not limited to, minimizing exposure to stormwater, good housekeeping measures, proper facility and equipment maintenance, spill prevention and response, vehicle traffic control, and proper materials handling. Once a plan has been developed, employ the control measures that have been determined to be adequate to achieve the benchmark values discussed above. Conduct monitoring and inspections of the BMPs to ensure they are working properly. Re-evaluate any BMP that is not achieving compliance with permitting requirements. For example, if sample results from either outfall show values of TSS above the benchmark value, the BMP being employed is deficient in controlling stormwater pollution. Corrective action should be taken to repair, improve or replace the failing BMP. This internal evaluation is required at least once per month but should be continued more frequently if BMPs continue to fail. If failures do occur, continue this trial and error process until appropriate BMPs have been established. If failures continue to occur and the permittee feels there are no practicable or cost-effective BMPs that will sufficiently reduce a pollutant concentration in the discharge to the benchmark values established in the permit, the permittee can submit a request to re-evaluate the benchmark values. This request needs to include a detailed explanation of why the facility is unable to comply with the permit conditions and unable to establish BMPs to achieve the benchmark values. Provide financial data of the company and documentation of cost associated with BMPs for review. This will allow the department to conduct a cost analysis on control measures and actions taken by the facility to determine cost-effectiveness of BMPs. The request should also include the SWPPP, which should contain adequate documentation of BMPs employed, failed BMPs, corrective actions, and all other required information. The request shall be submitted in the form of an operating permit modification application. Appropriate application forms can be found on the Department's website: <http://dnr.mo.gov/forms/index.html>.

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.

PERMIT SYNCHRONIZATION:

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

PUBLIC NOTICE:

The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing.

The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit. For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

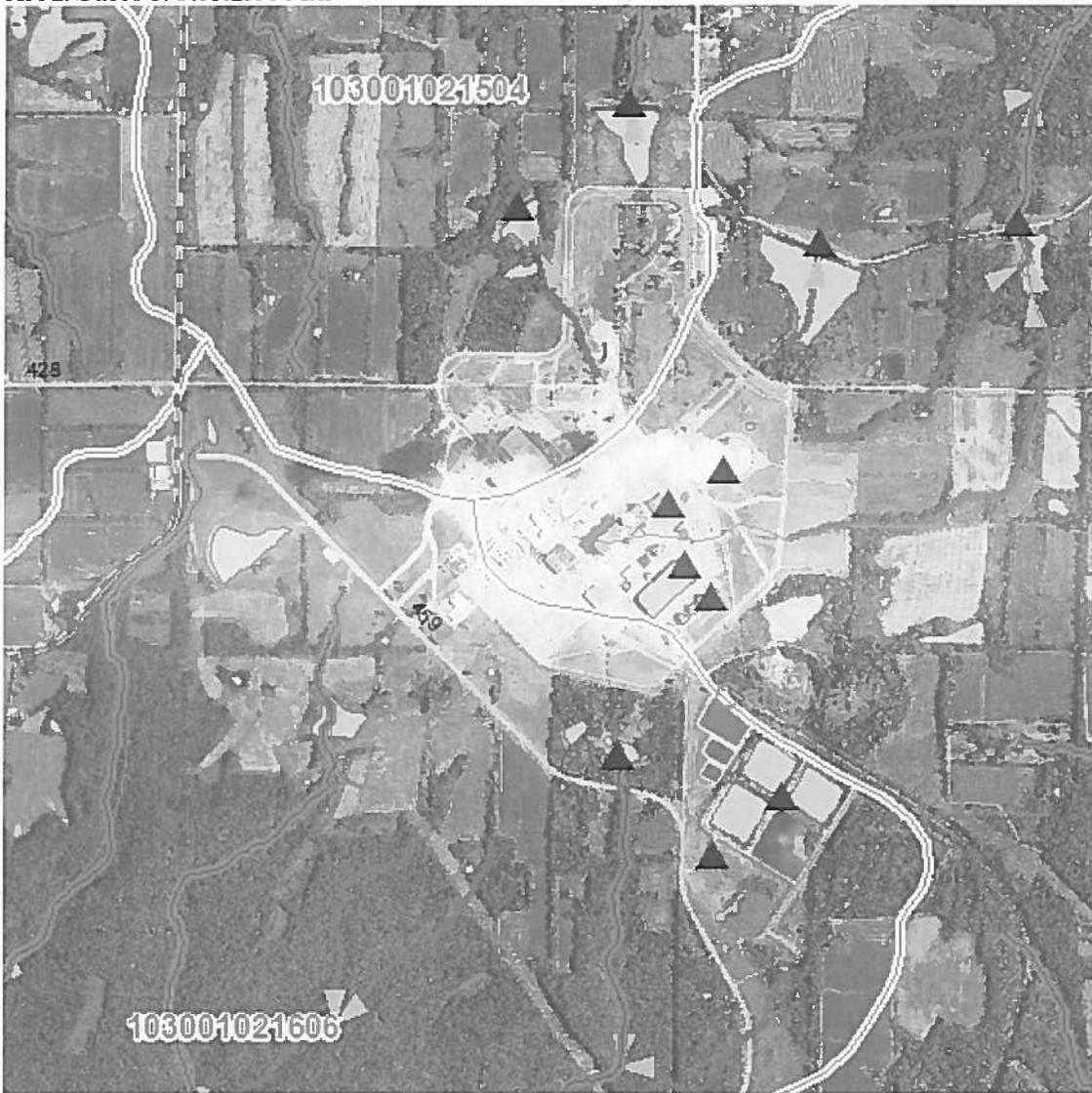
- The Public Notice period for this operating permit was from May 21, 2015 to June 21, 2015. No responses received.

DATE OF FACT SHEET: MARCH 11, 2015

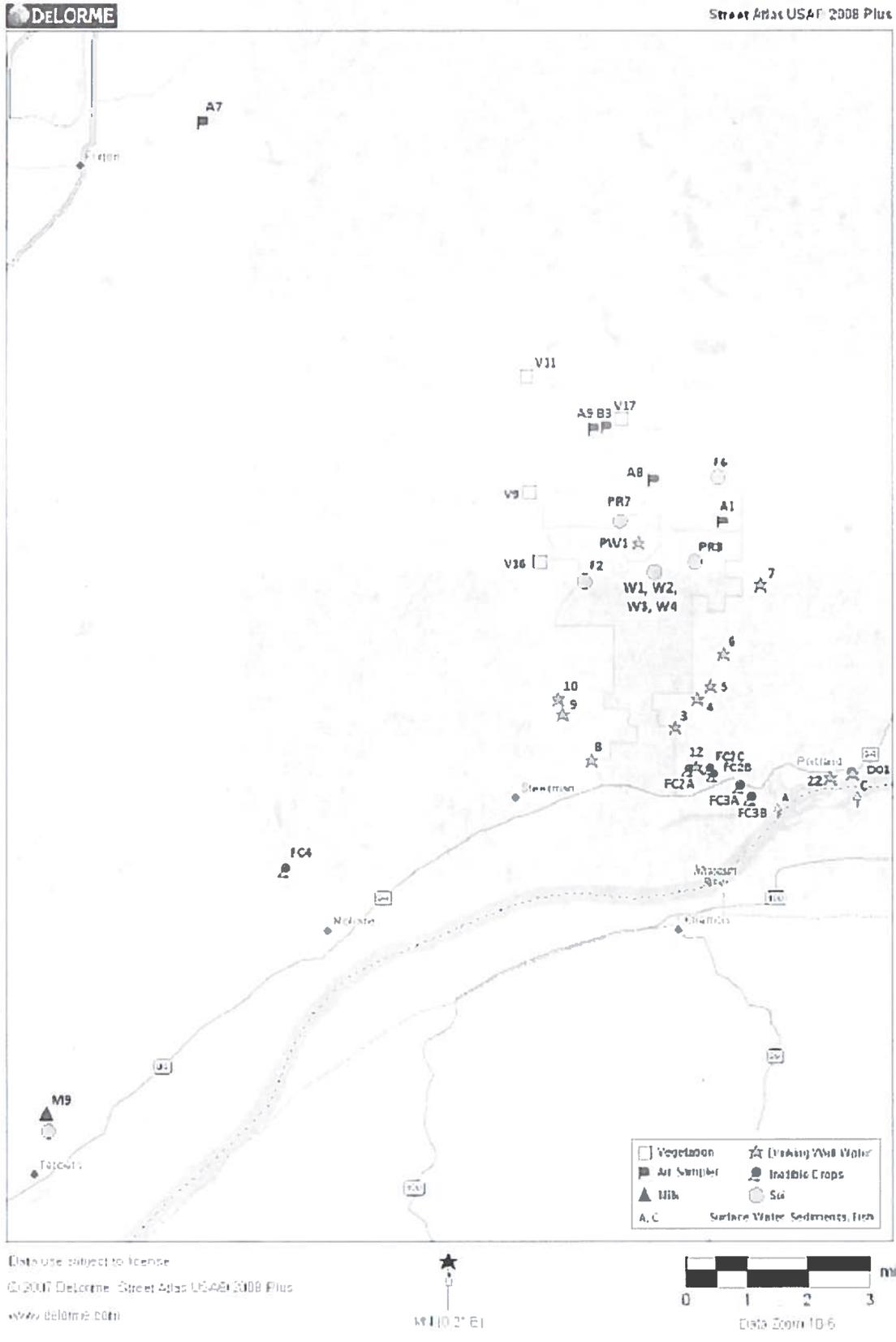
COMPLETED BY:

LEASUE MEYERS, EI
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
leasue.meyers@dnr.mo.gov

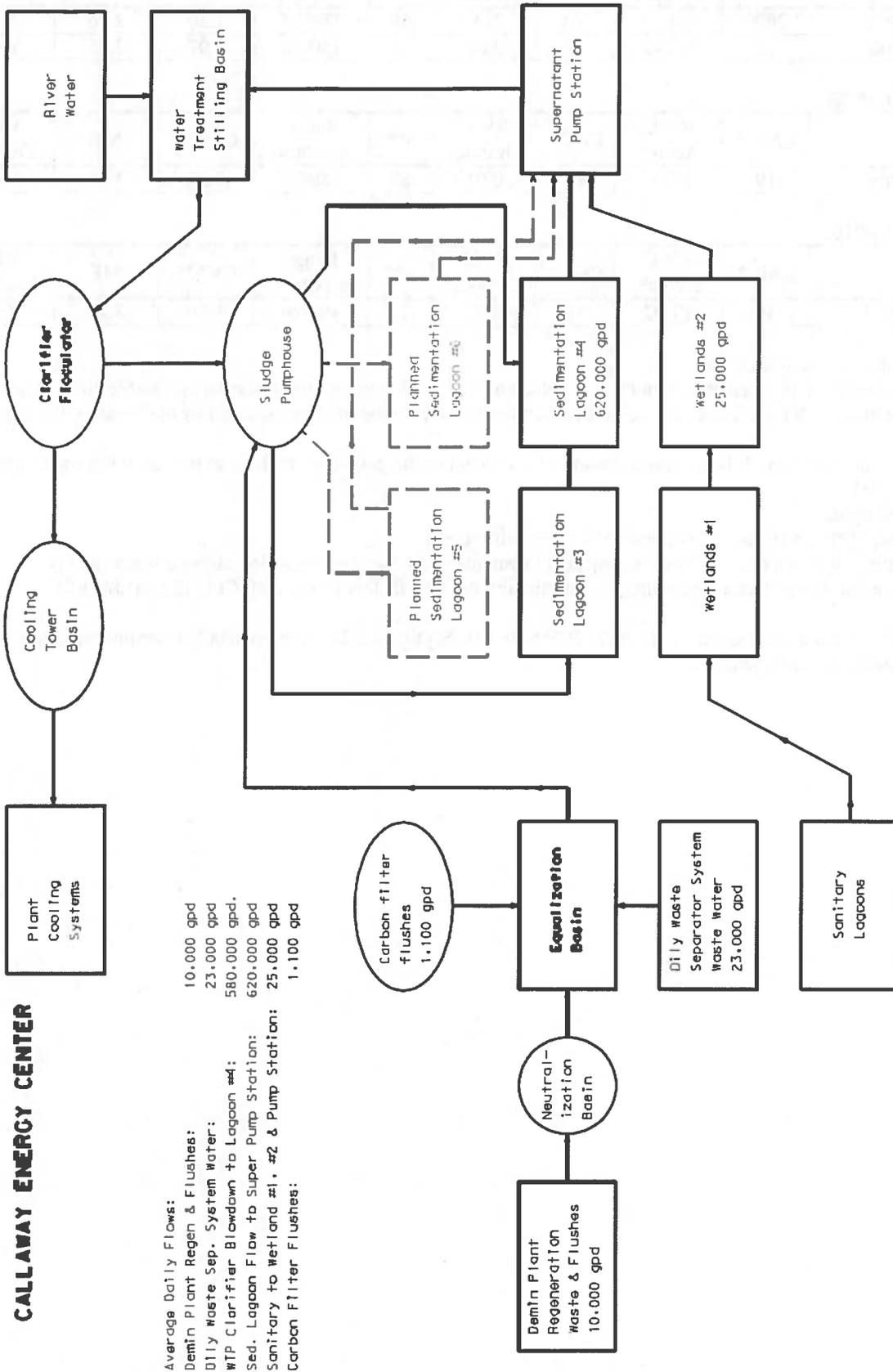
APPENDIX A: FACILITY DIAGRAM
APPENDIX A-1: FACILITY MAP



APPENDIX A-2: FACILITY MONITORING LOCATIONS FOR GROUNDWATER, SOIL, VEGETATION AND ATMOSPHERIC MONITORING.
 This map was provided in the 2014 Annual Environmental Operating Report.



APPENDIX A-3: FLOW DIAGRAM FOR OUTFALL #003



APPENDIX B: RPA RESULTS

RPA RESULTS FOR OUTFALL #001:

Parameter	CMC*	RWC Acute*	CCC*	RWC Chronic*	n**	Range max/min	CV***	MF	RP Yes/No
Boron, Total Recoverable	2000	158.54	NA	NA	68	773/0.5	1.30	2.26	No
Chlorine, Total Residual	19	27.93	10	0.01	67	150/10	1.07	2.05	Yes

RPA RESULTS FOR OUTFALL #002:

Parameter	CMC*	RWC Acute*	CCC*	RWC Chronic*	n**	Range max/min	CV***	MF	RP Yes/No
Chlorine, Total Residual	19	27.93	10	0.01	68	280/20	0.57	1.54	Yes

RPA RESULTS FOR OUTFALL #016:

Parameter	CMC*	RWC Acute*	CCC*	RWC Chronic*	n**	Range max/min	CV***	MF	RP Yes/No
Chlorine, Total Residual	19	27.93	10	0.01	23	400/20	1.20	3.82	Yes

N/A – Not Applicable

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

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

*** - 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.



STANDARD CONDITIONS FOR NPDES PERMITS
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MISSOURI CLEAN WATER COMMISSION
REVISED
AUGUST 1, 2014

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

Part I – General Conditions

Section A – Sampling, Monitoring, and Recording

1. Sampling Requirements.

- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b. All samples shall be taken at the outfall(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.

2. Monitoring Requirements.

- a. Records of monitoring information shall include:
 - i. The date, exact place, and time of sampling or measurements;
 - ii. The individual(s) who performed the sampling or measurements;
 - iii. The date(s) analyses were performed;
 - iv. The individual(s) who performed the analyses;
 - v. The analytical techniques or methods used; and
 - vi. The results of such analyses.
- b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department pursuant to Section B, paragraph 7.

3. **Sample and Monitoring Calculations.** Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

4. **Test Procedures.** The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is "sufficiently sensitive" when: 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility's discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.

5. **Record Retention.** Except for records of monitoring information required by the permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

6. Illegal Activities.

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

Section B – Reporting Requirements

1. Planned Changes.

- a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
 - i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
 - ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42;
 - iii. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
 - iv. Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.

2. Non-compliance Reporting.

- a. The permittee shall report any noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.



STANDARD CONDITIONS FOR NPDES PERMITS
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MISSOURI CLEAN WATER COMMISSION
REVISED
AUGUST 1, 2014

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

Section C – Bypass/Upset Requirements

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

Section D – Administrative Requirements

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



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THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
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AUGUST 1, 2014

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



STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
REVISED
AUGUST 1, 2014

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