

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-0131008

Owner: Mid-Missouri Energy, LLC
Address: 15311 North Saline 65 Highway, Malta Bend, MO 65339

Continuing Authority: Same as above
Address: Same as above

Facility Name: Mid-Missouri Energy, LLC
Facility Address: 15311 North Saline 65 Highway, Malta Bend, MO 65339

Legal Description: SEE PAGE TWO
UTM Coordinates: SEE PAGE TWO

Receiving Stream: SEE PAGE TWO
First Classified Stream and ID: SEE PAGE TWO
USGS Basin & Sub-watershed No.: SEE PAGE TWO

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

FACILITY DESCRIPTION

SEE PAGE TWO

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

August 26, 2011 August 15, 2012
Effective Date Modified


Sara Parker Pauley, Director, Department of Natural Resources

August 25, 2016
Expiration Date


John Madras, Director, Water Protection Program

FACILITY DESCRIPTION (continued)

Outfall #001 – Ethanol for Fuel Manufacturing – SIC # 2869 – Internal Monitoring Point
Non-contact cooling tower blowdown
Design flow is 156,000 gallons per day
Actual flow is 118,000 gallons per day

Legal Description: NE ¼, SE ¼, NW ¼, Sec. 24, T51N, R23W, Saline County
UTM Coordinates: X=466972.734, Y=4338639.859

Outfall #002 – Ethanol for Fuel Manufacturing – SIC # 2869 – Internal Monitoring Point
Reverse osmosis reject water
Design flow is 144,000 gallons per day
Actual flow is 67,000 gallons per day

Legal Description: NE ¼, SE ¼, NW ¼, Sec. 24, T51N, R23W, Saline County
UTM Coordinates: X=466972.734, Y=4338639.859

Outfall #003 – Ethanol for Fuel Manufacturing – SIC # 2869 – Internal Monitoring Point
Water softener system
Design flow is 2,800 gallons per day
Actual flow is 800 gallons per day

Legal Description: NE ¼, SE ¼, NW ¼, Sec. 24, T51N, R23W, Saline County
UTM Coordinates: X=466972.734, Y=4338639.859

Outfall #004 – Ethanol for Fuel Manufacturing – SIC # 2869
Stormwater runoff / Stormwater collection basin
Design flow 824,000 gallons per day
Actual flow is 1,418,000 gallons per day – discharges are batch releases and are not continuous

Legal Description: NW ¼, SW ¼, NW ¼, Sec. 24, T51N, R23W, Saline County
UTM Coordinates: X=466448.404, Y=4338729.299

Outfall #005 – Ethanol for Fuel Manufacturing – SIC # 2869
Combined flows from Outfalls #001, #002, and #003
Design flow is 465,800 gallons per day
Actual flow is 186,000 gallons per day

Legal Description: SW ¼, SE ¼, NW ¼, Sec. 24, T51N, R23W, Saline County
UTM Coordinates: X=466956.177, Y=4338612.336

Outfalls #001, #002, #003, #004, & #005

Receiving Stream: Tributary to Salt Fork (U)
First Classified Stream and ID: Salt Fork (C) (00899)
USGS Basin & Sub-watershed No.: (10300104-0405)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					PAGE NUMBER 3 of 14	
					PERMIT NUMBER MO-0131008	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #001 – Non-contact cooling tower blowdown (Note 1)						
Flow	MGD	*		*	once/month	24 hr. estimate
Temperature	° F	*		*	once/month	grab
pH – Units	SU	*		*	once/month	grab
Total Residual Chlorine	mg/L	*		*	once/month	grab
Oil & Grease	mg/L	*		*	once/month	grab
Outfall #002 – Reverse osmosis reject water (Note 2)						
Flow	MGD	*		*	once/month	24 hr. estimate
Chloride + Sulfate	mg/L	*		*	once/month	grab
Chloride	mg/L	*		*	once/month	grab
Total Residual Chlorine	mg/L	*		*	once/month	grab
pH – Units	SU	*		*	once/month	grab
Ammonia as N	mg/L	*		*	once/month	grab
Total Suspended Solids	mg/L	100		50	once/month	grab
Oil & Grease	mg/L	20		15	once/month	grab
Outfall #003 – Water softener system (Note 2)						
Flow	MGD	*		*	once/month	24 hr. estimate
Chloride	mg/L	*		*	once/month	grab
pH – Units	SU	*		*	once/month	grab
Total Suspended Solids	mg/L	100		50	once/month	grab
Oil & Grease	mg/L	20		15	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> THE FIRST REPORT IS DUE <u>AUGUST 28, 2012</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
B. STANDARD CONDITIONS						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>PART I</u> STANDARD CONDITIONS DATED <u>October 1, 1980 and August 15, 1994</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

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

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #004 – Stormwater Basin</u>						
Flow	MGD	*			once/quarter****	24 hr. estimate
Biochemical Oxygen Demand ₅ (Note 3)	mg/L	*			once/quarter****	grab
Chemical Oxygen Demand (Note 3)	mg/L	*			once/quarter****	grab
Total Suspended Solids (Note 3)	mg/L	*			once/quarter****	grab
Oil and Grease (Note 3)	SU	*			once/quarter****	grab
pH – Units (Note 3)	mg/L	*			once/quarter****	grab
Ethanol (Note 3)	mg/L	*			once/quarter****	grab
Precipitation	inches	*			once/quarter****	grab

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MINIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #004 – Stormwater Basin</u>						
Dissolved Oxygen (Note 3)	mg/L	*			once/quarter****	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY THE FIRST REPORT IS DUE OCTOBER 28, 2012. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

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

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

- * Monitoring requirement only.
- **** See table below for quarterly sampling

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

Note 1 - See Special Condition #17.

Note 2 – In addition to the monthly monitoring requirements, the permittee is required to sample the effluent twice per year immediately following when the reverse osmosis and water softener units are cleaned, which includes cleaning in place and major maintenance activities. The sample shall be collected at the time of cleaning and no later than 10 minutes after the end of the cleaning event. The results from the samples are to be reported with the monthly discharge monitoring report. The reason for the additional sampling and reporting requirements is due to the potential of an increased load of pollutants being discharged during the cleaning process.

Note 3 - The parameters for Outfall #004 have benchmark limitations. See Section C – Sampling Requirements, Benchmarks, and Reporting of Benchmark Exceedances for further information.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					PAGE NUMBER 5 of 14	
					PERMIT NUMBER MO-0131008	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #005</u> – Combine flows from outfalls #001,#002, and #003						
Flow	MGD	*		*	once/month	24 hr. estimate
Biochemical Oxygen Demand ₅	mg/L	30		30	once/month	grab
Chemical Oxygen Demand	mg/L	*		*	once/month	grab
Total Suspended Solids	mg/L	45		30	once/month	grab
Chloride	mg/L	345.5		198.5	once/month	grab
Chloride + Sulfate	mg/L	1000			once/month	grab
Ammonia as N (May 1 – Oct 31) (Nov 1 – April 30)	mg/L	3.9 8.8		1.4 2.8	once/month	grab
Temperature	° F	90		90	once/month	grab
Oil and Grease	mg/L	15		10	once/month	grab
Total Residual Chlorine (Note 4)	mg/L	0.012 (0.13ML)		0.009 (0.13ML)	once/month	grab
pH – Units	SU	**		**	once/month	grab
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MINIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Dissolved Oxygen	mg/L	*		*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> THE FIRST REPORT IS DUE <u>AUGUST 28, 2012</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Whole Effluent Toxicity (WET) test	% Survival	See Special Conditions #18			once/year	Composite*****
Aluminum, Total Recoverable (Note 5)	µg/L	*		*	twice/year***	grab
Iron, Total Recoverable (Note 5)	µg/L	*		*	twice/year***	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> THE FIRST REPORT IS DUE <u>OCTOBER 28, 2012</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
B. STANDARD CONDITIONS						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>PART I</u> STANDARD CONDITIONS DATED <u>October 1, 1980 and August 15, 1994</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

- * Monitoring requirement only.
- ** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.5-9.0 pH units.
- *** Samples must be collected twice per year for the reporting period of October 1st to September 30th.
- ***** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampler.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

Note 4 - This permit contains a Total Residual Chlorine (TRC) limit. This effluent limit is below the minimum quantification level (ML) of the most common and practical EPA approved CLTRC methods. The Department has determined the current acceptable ML for total residual chlorine to be 0.13 mg/L when using the DPD Colorimetric Method #4500 – CL G. from Standard Methods for the Examination of Waters and Wastewater. The permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. Measured values greater than or equal to the minimum quantification level of 0.13 mg/L will be considered violations of the permit and values less than the minimum quantification level of 0.13 mg/L will be considered to be in compliance with the permit limitation. The minimum quantification level does not authorize the discharge of chlorine in excess of the effluent limits stated in the permit. Do not chemically dechlorinate if it is not needed to meet the limits in your permit.

Note 5 – See Special Condition #16.

C. SAMPLING REQUIREMENTS, BENCHMARKS, AND REPORTING OF BENCHMARK EXCEEDANCES

1. The Department may require additional sampling and reporting as a result of illegal discharges, compliance issues, complaint investigations, or evidence of off site impacts from activities at the facility. If such an action is needed, the Department will specify in writing the sampling requirements, including such information as location and extent. It is a violation of this permit to fail to comply with said written notification.
2. This permit stipulates pollutant benchmarks applicable to the facility’s discharge from Outfall #004. The benchmarks do not constitute direct numeric effluent limitations. A benchmark exceedance alone, therefore, is not a permit violation. If a sample exceeds an effluent limitation or a benchmark concentration, the permittee must review the facility’s Stormwater Pollution Prevention Plan (SWPPP) and associated Best Management Practices (BMPs) to determine whether any improvements and/or additional controls are needed to reduce that pollutant in the facility’s stormwater discharge(s). Failure to review the SWPPP and determine whether BMPs need to be improved and implement the necessary changes at the facility in order to achieve compliance with Effluent and/or Benchmark limits is a permit violation.
3. The following Benchmarks are considered necessary to protect existing water quality. These shall be sampled as specified in “Table A” above. The BMPs at the facility shall be designed to meet these Benchmark limitations.

Parameter	Benchmark Limits
Biochemical Oxygen Demand	30 mg/L
Chemical Oxygen Demand	90 mg/L
Total Suspended Solids	30 mg/L
Oil & Grease	10 mg/L
pH	The benchmark limit shall be a range of 6.5 to 9.0 standard units as an instantaneous grab sample. The resulting pH is not to be averaged. An exceedance would be outside this range.
Ethanol	4.1 mg/L
Dissolved Oxygen	5.0 mg/L as a minimum.

4. If any of the sampling results from Outfall #004 show any exceedance of a numeric benchmark limitation listed within this permit, written notification shall be made to the Missouri Department of Natural Resources and submitted with the next Discharge Monitoring Report. Notification shall indicate the date(s) of sample collection, the analytical results, and permit number, and shall include a detailed statement concerning the revisions or modifications in BMPs that are being implemented to address the exceedance that occurred. Please also refer to Special Condition #15 for additional reporting concerning any event that may endanger health or the environment

D. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
 - (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
 - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
 - (2) controls any pollutant not limited in the permit.
 - (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
 - (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.
The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.
2. All outfalls must be clearly marked in the field.
3. Permittee will cease discharge of the process wastewater by connection to a facility with an area-wide management plan per 10 CSR 20-6.010(3)(B)1. or 2. within 90 days of notice of its availability.
4. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:
 - (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
 - (1) One hundred micrograms per liter (100 µg/L);
 - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
 - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
 - (4) The level established in Part A of the permit by the Director.
 - (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.
5. Report as no-discharge when a discharge does not occur during the report period.
6. Water Quality Standards
 - (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
 - (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
 - (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
 - (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
 - (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
 - (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
 - (5) There shall be no significant human health hazard from incidental contact with the water;
 - (6) There shall be no acute toxicity to livestock or wildlife watering;
 - (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
 - (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

D. SPECIAL CONDITIONS (continued)

7. The permit requires development and implementation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP must be prepared within 60 days and implemented within 90 days of the permit issuance. The SWPPP must be kept on-site and should not be sent to the Department unless specifically requested. The permittee shall select, install, use, operate, and maintain the Best Management Practices (BMPs) prescribed in the SWPPP in accordance with the concepts and methods described in the following document:

Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators, (Document number EPA 833-B-09-002) published by the United States Environmental Protection Agency (USEPA) in February 2009.

The SWPPP must include the following:

- (a) An assessment of all stormwater discharges associated with the facility. This must include a list of potential contaminants and an annual estimate of amounts that will be used in the described activities.
 - (b) A listing of Best Management Practices and a narrative explaining how BMPs will be implemented to control and minimize the amount of potential contaminants that may enter stormwater.
 - (c) A schedule for implementing the BMPs.
 - (d) An assessment of all chemical handling and storage procedures are required to be addressed under the conditions of this section.
 - (e) Provisions for preventing the spillage or loss of fluids, oil, grease, fuel, etc. from vehicle maintenance, equipment cleaning, or warehousing activities and prevent the contamination of stormwater from these substances.
 - (f) A provision for providing training to all personnel involved in material handling and storage, and housekeeping of areas having materials exposed to stormwater. Proof of training shall be submitted on request of the Department.
 - (g) The SWPPP must contain a list of all benchmark testing and modifications to the SWPPP based on exceedances of those benchmarks. Only data within the previous five years is required to be maintained.
 - (h) The SWPPP must include a schedule for twice per month site inspections and brief written reports. At least one of the monthly inspections must be conducted after a precipitation event that causes runoff to occur onsite, including snow melt. If runoff does not occur during the month, the facility shall conduct an inspection within the last three business days of the month regardless of precipitation. The inspections must include observations and evaluations of BMP effectiveness, deficiencies, and corrective measures that will be taken. Deficiencies must be corrected within seven days and the actions taken to correct the deficiencies shall be included with the written report. Any corrective measure that necessitates major construction may also need a construction permit.
 - (i) A provision for designating an individual to be responsible for environmental matters. The provision shall also include alternates in the event that the primary responsible person is not available.
 - (j) Inspection reports must be kept on site with the SWPPP and retained in accordance with the Records, Retention, and Recording section listed below. These must be made available to DNR personnel upon request.
 - (k) Provisions that prevent contamination of stormwater runoff from delivery vehicles/railcars that carry significant materials (e.g. corn, distillers grains, etc) to and from the facility, and how the facility will deal with leakage or spillage from vehicles/railcars or containers.
8. Permittee shall adhere to the following minimum Best Management Practices:
- (a) Prevent the spillage or loss of fluids, oil, grease, fuel, etc. from vehicle maintenance, equipment cleaning, or warehouse activities and thereby prevent the contamination of stormwater 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 stormwater or provide other prescribed BMP's such as plastic lids and/or portable spill pans to prevent the commingling of stormwater 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 solid waste from entry into waters of the state.
 - (e) Provide sediment and erosion control sufficient to prevent or control sediment loss off of the property.
9. The purpose of the SWPPP and the BMPs listed therein is the prevention of pollution of waters of the state. A deficiency of a BMP means it was not effective in preventing pollution [10 CSR 20-2.010(56)] of waters of the state, and corrective action means the facility took steps to eliminate the deficiency.

D. SPECIAL CONDITIONS (continued)

10. An annual operating report must be submitted to the appropriate Regional Office by October 28th of each year (notwithstanding any reporting requirements contained in the attached "Standard Conditions"). The report shall detail any unusual occurrences such as spills, tank failures or overflows, ruptured piping, fish kills, fire fighting activities, or other upsets which resulted in any loss of product. Product includes, but is not limited to, ethanol, fuels, oils, and paints. The report shall also detail any remedial work undertaken to recover product or clean up the site. The report must also indicate if nothing unusual has occurred.
11. Effluent shall not elevate or depress the temperature of the first classified receiving stream more than five degrees Fahrenheit.
12. All fueling facilities present on the site shall adhere to applicable federal and state regulations concerning underground storage, above ground storage, and dispensers, including spill prevention, control and counter measures.
13. Substances, regulated by federal law under the Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERLA), that are transported, stored, or used for maintenance, cleaning or repair, shall be managed according to RCRA and CERLA.
14. 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.
15. In accordance with, and in addition to, Standard Conditions Part I, the permittee is to notify the Department by telephone within 24 hours of becoming aware of any event that may endanger health or the environment. Leaving a message on a Department staff member's voicemail does not satisfy this reporting requirement. During holidays, during the weekends, after normal business hours, or if the permit holder cannot reach regional office staff for any reason, the permit holder is instructed to report the situation to the Department's 24 hour Environmental Emergency Response hotline at (573) 634-2436. In addition, the permittee shall submit to the Department a written report with five (5) days of the time the permittee becomes aware of the circumstances. The written report shall include a description of the discharge or situation and cause of any noncompliance, the period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the non-complying discharge. These events include but are not limited to (a) any spill, of any material, that leaves the property of the facility and (b) any spill, of any material outside of secondary containment and exposed to precipitation, greater than 25 gallons or an equivalent volume of solid material.

Federal Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.
16. 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. A method is "sufficiently sensitive" when (1) the method quantitation level is at or below the level of the applicable water quality criterion for the pollutant or (2) the method quantitation 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. These methods are even required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established.

D. SPECIAL CONDITIONS (continued)

17. APPENDIX A TO 40 CFR PART 423—126 PRIORITY POLLUTANTS

The facility must sample Outfall #001 at least once per year and there shall be no detectable amount of the 126 Priority Pollutants contained in chemicals added for cooling tower maintenance as listed in Appendix A to Part 423 [40 CFR 423.15(j)(1)], except as allowed in the regulation for Total Chromium (0.2 mg/L) and zinc (1.0 mg/L). The sample results shall be included in an annual report submitted to the Department by **October 28th of each year**, and shall be for the reporting period of October 1st to September 30th.

001 Acenaphthene	044 Methylene chloride (dichloromethane)	089 Aldrin
002 Acrolein	045 Methyl chloride (dichloromethane)	090 Dieldrin
003 Acrylonitrile	046 Methyl bromide (bromomethane)	091 Chlordane (technical mixture and metabolites)
004 Benzene	047 Bromoform (tribromomethane)	092 4,4-DDT
005 Benzdine	048 Dichlorobromomethane	093 4,4-DDE (p,p-DDX)
006 Carbon tetrachloride (tetrachloromethane)	051 Chlorodibromomethane	094 4,4-DDD (p,p-TDE)
007 Chlorobenzene	052 Hexachlorobutadiene	095 Alpha-endosulfan
008 1,2,4-trichlorobenzene	053 Hexachloromyclopentadiene	096 Beta-endosulfan
009 Hexachlorobenzene	054 Isophorone	097 Endosulfan sulfate
010 1,2-dichloroethane	055 Naphthalene	098 Endrin
011 1,1,1-trichloroethane	056 Nitrobenzene	099 Endrin aldehyde
012 Hexachloroethane	057 2-nitrophenol	100 Heptachlor
013 1,1-dichloroethane	058 4-nitrophenol	101 Heptachlor epoxide (BHC-hexachlorocyclohexane)
014 1,1,2-trichloroethane	059 2,4-dinitrophenol	
015 1,1,2,2-tetrachloroethane	060 4,6-dinitro-o-cresol	102 Alpha-BHC
016 Chloroethane	061 N-nitrosodimethylamine	103 Beta-BHC
018 Bis(2-chloroethyl) ether	062 N-nitrosodiphenylamine	104 Gamma-BHC (lindane)
019 2-chloroethyl vinyl ether (mixed)	063 N-nitrosodi-n-propylamin	105 Delta-BHC (PCB-polychlorinated biphenyls)
020 2-chloronaphthalene	064 Pentachlorophenol	106 PCB-1242 (Arochlor 1242)
021 2,4, 6-trichlorophenol	065 Phenol	107 PCB-1254 (Arochlor 1254)
022 Parachlorometa cresol	066 Bis(2-ethylhexyl) phthalate	108 PCB-1221 (Arochlor 1221)
023 Chloroform (trichloromethane)	067 Butyl benzyl phthalate	109 PCB-1232 (Arochlor 1232)
024 2-chlorophenol	068 Di-N-Butyl Phthalate	110 PCB-1248 (Arochlor 1248)
025 1,2-dichlorobenzene	069 Di-n-octyl phthalate	111 PCB-1260 (Arochlor 1260)
026 1,3-dichlorobenzene	070 Diethyl Phthalate	112 PCB-1016 (Arochlor 1016)
027 1,4-dichlorobenzene	071 Dimethyl phthalate	113 Toxaphene
028 3,3-dichlorobenzidine	072 1,2-benzanthracene (benzo(a) anthracene)	114 Antimony
029 1,1-dichloroethylene	073 Benzo(a)pyrene (3,4-benzo-pyrene)	115 Arsenic
030 1,2-trans-dichloroethylene	074 3,4-Benzofluoranthene (benzo(b) fluoranthene)	116 Asbestos
031 2,4-dichlorophenol	075 11,12-benzofluoranthene (benzo(b) fluoranthene)	117 Beryllium
032 1,2-dichloropropane	076 Chrysene	118 Cadmium
033 1,2-dichloropropylene (1,3-dichloropropene)	077 Acenaphthylene	119 Chromium
	078 Anthracene	120 Copper
034 2,4-dimethylphenol	079 1,12-benzoperylene (benzo(ghi) perylene)	121 Cyanide, Total
035 2,4-dinitrotoluene	080 Fluorene	122 Lead
036 2,6-dinitrotoluene	081 Phenanthrene	123 Mercury
037 1,2-diphenylhydrazine	082 1,2,5,6-dibenzanthracene (dibenzo(h) anthracene)	124 Nickel
038 Ethylbenzene	083 Indeno (,1,2,3-cd) pyrene (2,3-o-pheynylene pyrene)	125 Selenium
039 Fluoranthene	084 Pyrene	126 Silver
040 4-chlorophenyl phenyl ether	085 Tetrachloroethylene	127 Thallium
041 4-bromophenyl phenyl ether	086 Toluene	128 Zinc
042 Bis(2-chloroisopropyl) ether	087 Trichloroethylene	129 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD)
043 Bis(2-chloroethoxy) methane	088 Vinyl chloride (chloroethylene)	

D. SPECIAL CONDITIONS (continued)

18. Whole Effluent Toxicity (WET) tests shall be conducted as follows:

SUMMARY OF ACUTE WET TESTING FOR THIS PERMIT				
OUTFALL	AEC	FREQUENCY	SAMPLE TYPE	MONTH
005	100 %	ANNUAL	24 hr. composite*	Any

* A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30-minute intervals by an automatic sampler.

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

(a) Test Schedule and Follow-Up Requirements

- (1) Perform a MULTIPLE-dilution acute WET test in the months and at the frequency specified above. For tests which are successfully passed, submit test results using the Department's WET test report form #MO-780-1899 along with complete copies of the test reports as received from the laboratory, including copies of chain-of-custody forms within 30 calendar days of availability to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102. If the effluent passes the test, do not repeat the test until the next test period.
 - (a) For discharges of stormwater, samples shall be collected within three hours from when discharge first occurs.
 - (b) Samples submitted for analysis of stormwater discharges shall be collected as a grab.
 - (c) For discharges of non-stormwater, samples shall be collected only when precipitation has not occurred for a period of forty-eight hours prior to sample collection. In no event shall sample collection occur simultaneously with the occurrence of precipitation excepting for stormwater samples.
 - (d) A twenty-four hour composite sample shall be submitted for analysis of non-stormwater discharges.
 - (e) Upstream receiving water samples, where required, shall be collected upstream from any influence of the effluent where downstream flow is clearly evident.
 - (f) Samples submitted for analysis of upstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.
 - (g) Chemical and physical analysis of the upstream control and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping.
 - (h) Any and all chemical or physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% Effluent concentration in addition to analyses performed upon any other effluent concentration.
 - (i) All chemical analyses included in the Missouri Department of Natural Resources WET test report form #MO-780-1899 shall be performed and results shall be recorded in the appropriate field of the report form.
 - (j) Where flow-weighted composite sample is required for analysis, the samples shall be composited at the laboratory where the test is to be performed.
 - (k) Where in stream testing is required downstream from the discharge, sample collection shall occur immediately below the established Zone of Initial Dilution in conjunction with or immediately following a release or discharge.
 - (l) Samples submitted for analysis of downstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.
 - (m) All instream samples, including downstream samples, shall be tested for toxicity at the 100% concentration in addition to any other assigned AEC for in-stream samples.
- (2) All failing test results along with complete copies of the test reports as received from the laboratory, INCLUDING THOSE TESTS CONDUCTED UNDER CONDITION (3) BELOW, shall be reported to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.
- (3) If the effluent fails the test, a multiple dilution test shall be performed for BOTH test species within 30 calendar days and biweekly thereafter (for stormwater, tests shall be performed on the next and subsequent stormwater discharges as they occur, but not less than 7 days apart) until one of the following conditions are met:
 - (a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
 - (b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.
- (4) The permittee shall submit a summary of all test results for the test series along with complete copies of the test reports as received from the laboratory to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.

D. SPECIAL CONDITIONS (continued)

- (5) Additionally, the following shall apply upon failure of the third MULTIPLE DILUTION test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall contact THE WATER PROTECTION PROGRAM within 14 calendar days from availability of the test results to ascertain as to whether a TIE or TRE is appropriate. The permittee shall submit a plan for conducting a TIE or TRE to the WATER PROTECTION PROGRAM within 60 calendar days of the date of DNR's direction to perform either a TIE or TRE. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.
 - (6) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.
 - (7) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.
 - (8) When WET test sampling is required to run over one DMR period, each DMR report shall contain a copy of the Department's WET test report form that was generated during the reporting period.
 - (9) Submit a concise summary in tabular format of all WET test results with the annual report.
- (b) PASS/FAIL procedure and effluent limitations:
- (1) To pass a multiple-dilution test:
 - (a) For facilities with a computed percent effluent at the edge of the zone of initial dilution, Allowable Effluent Concentration (AEC) OF 30% OR LESS, the AEC must be less than three-tenths (0.3) of the LC₅₀ concentration for the most sensitive of the test organisms; **OR**,
 - (b) For facilities with an AEC greater than 30%, the LC₅₀ concentration must be greater than 100%; **AND**,
 - (c) all effluent concentrations equal to or less than the AEC must be nontoxic. Mortality observed in all effluent concentrations equal to or less than the AEC shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS or other federal guidelines as appropriate or required. Failure of one multiple-dilution test may be considered an effluent limit violation.
- (c) Test Conditions
- (1) Test Type: Acute Static non-renewal
 - (2) All tests, including repeat tests for previous failures, shall include both test species listed below.
 - (3) Test species: Ceriodaphnia dubia and Pimephales promelas (fathead minnow). Organisms used in WET testing shall come from cultures reared for the purpose of conducting toxicity tests and cultured in a manner consistent with the most current USEPA guidelines. All test animals shall be cultured as described in the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms.
 - (4) Test period: 48 hours at the "Acceptable Effluent Concentration" (AEC) specified above.
 - (5) Upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.
 - (6) Multiple-dilution tests will be run with:
 - (a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;
 - (b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
 - (c) reconstituted water.
 - (7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.
 - (8) If upstream control mortality exceeds 10%, the entire test will be rerun using reconstituted water as the dilutant.

SUMMARY OF TEST METHODOLOGY FOR ACUTE WHOLE-EFFLUENT TOXICITY TESTS

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

Test conditions for Ceriodaphnia dubia:

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

Test conditions for Pimephales promelas:

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

REPORTING OF EFFLUENT VIOLATIONS

If any of the sampling results from any of the outfalls show any violation of the permit discharge limitations, written notification shall be made to the Department of Natural Resources within five (5) days of notification of analytical results. Notification shall indicate the date(s) of sample collection, the analytical results, and permit number, and shall include a statement concerning the revisions or modifications in management practices that are being implemented to address the violation of the limitations that occurred.

After a violation has been reported, a sample shall be collected at the outfall(s) for which the violation occurred. For Outfall #004, the sample shall be collected at the next discharge event. Analytical results of this sample shall be submitted in writing to the Department of Natural Resources (this section supersedes Standard Conditions Part I, Section B: Noncompliance Notification).

RECORDS, RETENTION, AND RECORDING

Monitoring reports shall be submitted within 28 days after the end of each reporting period. All sampling data and inspection reports shall be maintained by the permittee for a period of five (5) years and shall be supplied to the Department of Natural Resources upon request (supersedes Standard Conditions Part I, Section A, #7 - Records Retention). A copy of all of the sampling data must be submitted with an application for reissuance of this permit.

PERMIT TRANSFER

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

PERMIT RENEWAL REQUIREMENTS

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

TERMINATION

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

DUTY OF COMPLIANCE

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

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET
FOR THE PURPOSE OF RENEWAL
OF
MO-0131008
MID-MISSOURI ENERGY, LLC.

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

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

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

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

Part I – Facility Information

Facility Type: Industrial Wastewater and Industrial Stormwater
 Facility SIC Code(s): 2869

Facility Description:

Mid-Missouri Energy is a corn-based ethanol plant in Malta Bend, Missouri, formed and owned by corn farmers. The facility started distilling corn in early 2005 and has the ability to produce up to 52 million gallons per year of denatured fuel grade ethanol. Dried Distillers Grain and Solubles and carbon dioxide are by-products of the process. Process wastewater is treated and recycled back into the process. Non-process/utility water including cooling tower blowdown, water softener, and reverse osmosis wastewater is discharged along with stormwater to the Salt Fork.

Permit Modification

On June 6, 2012 Mid Missouri Energy LLC had submitted an application for modification to increase the design flow for outfall #005 from 0.3003 MGD to 0.4658 MGD. The facility had applied and received the antidegradation review document for the proposed expansion on January 7, 2012 as listed on appendix B. The planned expansion is to add an additional fermenter and cooling tower cell. The addition of the fermenter and cooling water cell will increase non-contact water flows by approximately 25%, along with some increase in the reverse osmosis wastewater

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?
 - No.

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (GPD)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
#001	156,000	BMPs*	Industrial Wastewater	0
#002	144,000	BMPs*	Industrial Wastewater	0
#003	2,800	BMPs*	Industrial Wastewater	0
#004	824,000	BMPs*	Industrial Stormwater	0
#005	300,300	Chemical, BMPs*	Industrial Wastewater	0

* - Best Management Practices

Outfall #001

NE ¼, SE ¼, NW ¼, Sec. 24, T51N, R23W, Saline County
UTM Coordinates: X=466972.734, Y=4338639.859

Outfall #002

NE ¼, SE ¼, NW ¼, Sec. 24, T51N, R23W, Saline County
UTM Coordinates: X=466972.734, Y=4338639.859

Outfall #003

NE ¼, SE ¼, NW ¼, Sec. 24, T51N, R23W, Saline County
UTM Coordinates: X=466972.734, Y=4338639.859

Outfall #004

NW ¼, SW ¼, NW ¼, Sec. 24, T51N, R23W, Saline County
UTM Coordinates: X=466448.404, Y=4338729.299

Outfall #005

SW ¼, SE ¼, NW ¼, Sec. 24, T51N, R23W, Saline County
UTM Coordinates: X=466956.177, Y=4338612.336

Outfalls #001, #002, #003, #004, and #005

Receiving Stream: Tributary to Salt Fork (U)

First Classified Stream and ID: Salt Fork (C) (00899)

USGS Basin & Sub-watershed No.: (10300104-0405)

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

No stream surveys have been conducted for the receiving stream. The facility failed to meet effluent limits at Outfall #005 on the October 2005 DMR for Biochemical Oxygen Demand and on the November 2005, July 2006, August 2006, and November 2006 DMRs for Total Suspended Solids.

Comments:

The instream monitoring requirements from the previous permit have been removed from the permit as Chloride limits has been established for Outfall #005 and Dissolved Oxygen monitoring has been established for Outfall #005 to provide more accurate data to the Department to determine if limits may need to be applied. The facility injects sodium bisulfite into the wastewater stream after Outfalls #001, #002, and #003 but prior to the discharge at Outfall #005. Sodium bisulfite is used to treat the chlorine in the wastewater stream.

The previous permit contained numeric limits for Outfall #004, however, numeric limitations for stormwater are difficult to justify. Even so, when converting to non-numeric limitations (and associated benchmarks), it is still necessary to ensure the facility is meeting both the water-quality-based effluent limits and required technology-based effluent limits. In the State of Missouri, Water Quality Standards can be obtained from Missouri Clean Water Commission regulation 10 CSR 20-7.031. In regards to Technology-based limits, normally a permit writer would refer to 10 CSR 20-7.015 (the effluent regulations regarding discharges from domestic sources and from Publically Owned Treatment Works (POTWs)), however this regulation does not adequately address stormwater discharges, Regulation 10 CSR 20-6.200 (regulations regarding stormwater permitting) does not address technology-based limits either, though section (6)(B)2. B. and C. respectively state that effluent limitations shall be based in part on "effluent guidelines promulgated by the department or Environmental Protection Agency" and "best professional judgment of the permit writer."

Numeric effluent limitations are not always feasible for industrial stormwater discharges as such discharges pose challenges not presented by the vast majority of NPDES-regulated discharges. Stormwater discharges can be highly intermittent, are usually characterized by very high flows occurring over relatively short time intervals, and carry a variety of pollutants whose source, nature and extent varies. The variability of effluent and efficacy of appropriate control measures makes setting uniform effluent limits for stormwater extremely difficult. Because it is often not reasonable to use traditional wastewater treatment technologies to control industrial stormwater discharges due to the absence of a steady flow of wastewater, control measures for such discharges tend to focus on pollution prevention and BMPs. EPA therefore determined that it is not feasible for the Agency to calculate numeric, technology-based limits for many of the discharges covered under the EPA 2008 Multi-Sector General Permit (MSGP) permit and, based on the authority of 40 CFR 122.44(k), chose to adopt non-numeric effluent limits. The BAT/BPT/BCT effluent limits in the MSGP are therefore expressed as specific pollution prevention requirements for minimizing the pollutant levels in the discharge. In the context of the MSGP, these requirements represent the best technologically available and economically practicable and achievable controls. According to the fact sheet of the MSGP, EPA has long maintained that the combination of pollution prevention approaches and structural management practices required by the narrative limits are the most environmentally sound way to control the discharge of pollutants in stormwater runoff from industrial facilities to meet the effluent limits.

According to the MSGP, EPA generally does not mandate the specific control measures operators must select, design, install and implement. It is up to the operator to determine what must be done to meet the applicable effluent limits. For example, Part 2.1.2.1 of the MSGP requires operators to minimize the exposure of raw, final, and waste materials to stormwater and runoff. How this is achieved will vary by facility. If feasible, some or all activities may be moved indoors. Even if activities or products cannot be moved indoors, they may be "covered" by roofing and/or tarps. In addition, some activities may be limited to times when exposure to precipitation is not likely. Each of these control measures is acceptable and appropriate in some circumstances. In this respect, the non-numeric effluent limits in the MSGP are analogous to more traditional numeric effluent limits, which also do not require specific control technologies as long as the limits are met. Moreover, the MSGP requires permittees to comply with non-numeric technology-based effluent limits by implementing control measures. Control measures can be actions (including processes, procedures, schedules of activities, prohibitions on practices and other management practices), or structural or installed devices to prevent or reduce water pollution. The achievement of these non-numeric limits will result in the reduction or elimination of pollutants from the operator's stormwater discharge. Such limits constitute this permit's technology-based limits, expressed narratively per 40 CFR 122.44(k), and are developed using best professional judgment (BPJ).

Part II – Operator Certification Requirements

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

Part III – Receiving Stream Information

APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:

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

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

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

RECEIVING STREAM(S) TABLE:

WATERBODY NAME	CLASS	WBID	DESIGNATED USES*	8-DIGIT HUC	EDU**
Tributary to Salt Fork	U	N/A	N/A		
Salt Fork	C	00899	LWW, AQL, WBC-B***	10300104	Central Plains/Blackwater/Lamine

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

** - Ecological Drainage Unit

*** - UAA conducted in 2005 and approved in 2005 as WBCR designation.

RECEIVING STREAM MONITORING REQUIREMENTS:

No receiving water monitoring requirements recommended at this time.

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

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:

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

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

ANTI-BACKSLIDING:

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

- The modifications in this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR 122.44. Please see the individual justifications contained within the Derivation and Discussion of Limits/Monitoring sections for each outfall.

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.

AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:

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

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.

REASONABLE POTENTIAL ANALYSIS (RPA):

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

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

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

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.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

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

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

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

Applicable ; A SWPPP shall be developed and implemented for each site and shall incorporate required practices and provide for maintenance and adherence to the plan.

VARIANCE:

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

Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

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

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:

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

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

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

Where C = downstream concentration

Cs = upstream concentration

Qs = upstream flow

Ce = effluent concentration

Qe = effluent flow

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

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

Number of Samples "n":

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

WLA MODELING:

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

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

WATER QUALITY STANDARDS:

Per [10 CSR 20-7.031(3)], General Criteria shall be applicable to all waters of the state at all times including mixing zones.

Additionally, [40 CFR 122.44(d)(1)] directs the Department to establish in each NPDES permit to include conditions to achieve water quality established under Section 303 of the Clean Water Act, including State narrative criteria for water quality.

WHOLE EFFLUENT TOXICITY (WET) TEST:

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

Applicable ;

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

an item we must consider in writing permits (along with water quality-based effluent limits, pretreatment, etc...); and 644.051.5 is the basic authority to require testing conditions. WET test will be required by all facilities meeting the following criteria:

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

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

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

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

Part V – Effluent Limits Determination

Outfall #001 - Internal Monitoring Point

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
Flow	MGD	9	*		*	NO	S
Temperature	°F	9	*		*	NO	S
pH	SU	9	*		*	NO	S
Chlorine, Total Residual	mg/L	9	*		*	YES	***
Oil & Grease	mg/L	9	*		*	NO	S
APPENDIX A TO 40 CFR PART 423 – 126 PRIORITY POLLUTANTS	No detectable amount of the 126 Priority Pollutants contained in chemicals added for cooling tower maintenance as listed in Appendix A to Part 423 [40 CFR 423.15(j)(1)], except as allowed in the regulation for Total Chromium (0.2 mg/L) and zinc (1.0 mg/L).						
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.

S – Same as previous operating permit

Basis for Limitations Codes:

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

Outfall #001 – Cooling Tower Blowdown Internal Monitoring Point – Derivation and Discussion of Limits:

Internal Monitoring Points are established due to the separate industrial wastewater flows that are discharged. Outfall #001 is for the discharge of non-contact cooling tower blowdown. The previous permit contained monitoring requirements for Conductivity and Total Dissolved Solids. These were removed from this permit as the parameters had no associated water quality standards.

- **Flow**. Monitoring requirement only.

- **Temperature.** Monitoring requirement only. The monitoring of this parameter allows the Department to determine if the discharge from the outfall is having an impact on the effluent limits at Outfall #005.
- **Total Residual Chlorine (TRC).** Monitoring requirement only. The monitoring of this parameter allows the Department to determine if the discharge from the outfall is having an impact on the effluent limits at Outfall #005.
- **Oil & Grease.** Monitoring requirement only. The monitoring of this parameter allows the Department to determine if the discharge from the outfall is having an impact on the effluent limits at Outfall #005.
- **pH.** Monitoring requirement only. The monitoring of this parameter allows the Department to determine if the discharge from the outfall is having an impact on the effluent limits at Outfall #005.

BEST PROFESSIONAL JUDGMENT TECHNOLOGY-BASED EFFLUENT LIMITS:

There are no applicable ELGs for Ethanol Plants. Because there are no available ELGs, staff must consider the use of Best Professional Judgment (BPJ) for the development of effluent limitations, as per 40 CFR Part 125.3. In order to determine appropriate effluent limitations, staff took into consideration (1) what has been used for past effluent limit determination from cooling water blowdown and (2) is there any similar ELG that can be used or should new limitations (with the potential for new pollutants) be developed.

Federal ELG, 40 CFR 423.15 for cooling water blowdown, is based on studies of cooling water blowdown, which is the case for the outfall serving the facility. As blowdown discharges from cooling towers contain the same contaminants, the ELG found in 40 CFR 423.15 is being applied to the outfall as a Best Professional Judgment.

- **Appendix A to 40 CFR Part 423 – 126 Priority Pollutants**
No detectable amount of the 126 Priority Pollutants contained in chemicals added for cooling tower maintenance as listed in Appendix A to Part 423 [40 CFR 423.15(j)(1)], except as allowed in the regulation for chromium and zinc. This limit is applied to the facility based on the effluent guidelines set forth in 40 CFR 423.15(j)(1) and best professional judgment.
- **Minimum Sampling and Reporting Frequency Requirements.**

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
Flow	once/month	once/month
Temperature	once/month	once/month
pH	once/month	once/month
Total Residual Chlorine	once/month	once/month
Oil & Grease	once/month	once/month
126 Priority Pollutants	once/year	once/year

Outfall #002 - Internal Monitoring Point

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
Flow	MGD	9	*		*	NO	S
Chloride + Sulfate	mg/L	9	*		*	NO	S
Chloride	mg/L	9	*		*	YES	***
Chlorine, Total Residual	mg/L	9	*		*	NO	*
pH	SU	1/9	*		*	NO	S
Ammonia as N	mg/L	9	*		*	YES	***
Total Suspended Solids	mg/L	1/9	100		50	YES	***
Oil & Grease	mg/L	1/9	20		15	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.

S – Same as previous operating permit

Basis for Limitations Codes:

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

Outfall #002 – Reverse Osmosis Reject Water Internal Monitoring Point – Derivation and Discussion of Limits:

Internal Monitoring Points are established due to the separate industrial wastewater flows that are discharged. Outfall #002 is for the discharge of reverse osmosis reject water. The previous permit contained monitoring requirements for Conductivity, Temperature, and Total Dissolved Solids. Conductivity and Total Dissolved Solids were removed from this permit as the parameters had no associated water quality standards and Temperature was removed as the reject water is not heated. In addition to the monthly monitoring requirements, the permittee is required to sample the effluent twice per year when the reverse osmosis units are cleaned. The results from the samples are to be reported with the monthly discharge monitoring report. The reason for the additional sampling and reporting requirements is due to the potential of an increased load of pollutants being discharged during the cleaning process.

- **Flow.** Monitoring requirement only.
- **Chloride + Sulfate.** Monitoring requirement only. The monitoring of this parameter allows the Department to determine if the discharge from the outfall is having an impact on the effluent limits at Outfall #005.
- **Chloride.** Monitoring requirement only. The monitoring of this parameter allows the Department to determine if the discharge from the outfall is having an impact on the effluent limits at Outfall #005.
- **Total Residual Chlorine (TRC).** Monitoring requirement only. The monitoring of this parameter allows the Department to determine if the discharge from the outfall is having an impact on the effluent limits at Outfall #005.
- **pH.** Monitoring requirement only. The monitoring of this parameter allows the Department to determine if the discharge from the outfall is having an impact on the effluent limits at Outfall #005.
- **Ammonia as N.** Monitoring requirement only. This parameter was added due to the elevated levels of ammonia listed on Form C of the renewal application. The monitoring of this parameter allows the Department to determine if the discharge from the outfall is having an impact on the effluent limits at Outfall #005.

BEST PROFESSIONAL JUDGMENT TECHNOLOGY-BASED EFFLUENT LIMITS:

There are no applicable ELGs for Ethanol Plants. Because there are no available ELGs, staff must consider the use of Best Professional Judgment (BPJ) for the development of effluent limitations, as per 40 CFR Part 125.3. In order to determine appropriate effluent limitations, staff took into consideration (1) what has been used for past effluent limit determination from cooling water blowdown and (2) is there any similar ELG that can be used or should new limitations (with the potential for new pollutants) be developed.

Federal ELG, 40 CFR 423.15 for low volume waste sources, which includes reverse osmosis reject water, is based on studies of low volume waste sources, which is the case for the outfall serving the facility. As low volume waste sources, which includes reverse osmosis reject water contain the same contaminants, the ELG found in 40 CFR 423.15 is being applied to the outfall as a Best Professional Judgment.

- **Total Suspended Solids.** Effluent limitation of 50 mg/L monthly average, 100 mg/L daily maximum. This limit is applied to the facility based on the effluent guidelines set forth in 40 CFR 423.15(c) and best professional judgment.
- **Oil & Grease.** Effluent limitation of 15 mg/L monthly average, 20 mg/L daily maximum. This limit is applied to the facility based on the effluent guidelines set forth in 40 CFR 423.15(c) and best professional judgment.

Minimum Sampling and Reporting Frequency Requirements.

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
Flow	once/month	once/month
Chloride + Sulfate	once/month	once/month
Chloride	once/month	once/month
Total Residual Chlorine	once/month	once/month
Ammonia as N	once/month	once/month
pH	once/month	once/month
Total Suspended Solids	once/month	once/month
Oil & Grease	once/month	once/month

Outfall #003 - Internal Monitoring Point

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
Flow	MGD	9	*		*	NO	S
Chloride	mg/L	9	*		*	NO	S
pH	SU	1/9	*		*	NO	S
Total Suspended Solids	mg/L	1/9	100		50	YES	***
Oil & Grease	mg/L	1/9	20		15	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.

S - Same as previous operating permit

Basis for Limitations Codes:

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

Outfall #003 – Water Softener System Internal Monitoring Point – Derivation and Discussion of Limits:

Internal Monitoring Points are established due to the separate industrial wastewater flows that are discharged. Outfall #003 is for the discharge from the water softener system. The previous permit contained monitoring requirements for Settleable Solids. Settleable Solids was removed from this permit as the parameter had no associated water quality.

- **Flow.** Monitoring requirement only.
- **Chloride.** Monitoring requirement only. The monitoring of this parameter allows the Department to determine if the facility is meeting effluent limits at Outfall #005 due to dilution by the other waste streams.
- **pH.** Monitoring requirement only. The monitoring of this parameter allows the Department to determine if the discharge from the outfall is having an impact on the effluent limits at Outfall #005.

BEST PROFESSIONAL JUDGMENT TECHNOLOGY-BASED EFFLUENT LIMITS:

There are no applicable ELGs for Ethanol Plants. Because there are no available ELGs, staff must consider the use of Best Professional Judgment (BPJ) for the development of effluent limitations, as per 40 CFR Part 125.3. In order to determine appropriate effluent limitations, staff took into consideration (1) what has been used for past effluent limit determination from cooling water blowdown and (2) is there any similar ELG that can be used or should new limitations (with the potential for new pollutants) be developed.

Federal ELG, 40 CFR 423.15 for low volume waste sources, which includes water softener system discharge water, is based on studies of low volume waste sources, which is the case for the outfall serving the facility. As low volume waste sources, which includes water softener system discharge water contain the same contaminants, the ELG found in 40 CFR 423.15 is being applied to the outfall as a Best Professional Judgment.

- **Total Suspended Solids.** Effluent limitation of 50 mg/L monthly average, 100 mg/L daily maximum. This limit is applied to the facility based on the effluent guidelines set forth in 40 CFR 423.15(c) and best professional judgment.
- **Oil & Grease.** Effluent limitation of 15 mg/L monthly average, 20 mg/L daily maximum. This limit is applied to the facility based on the effluent guidelines set forth in 40 CFR 423.15(c) and best professional judgment.
- **Minimum Sampling and Reporting Frequency Requirements.**

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
Flow	once/month	once/month
Chloride	once/month	once/month
pH	once/month	once/month
Total Suspended Solids	once/month	once/month
Oil & Grease	once/month	once/month

Outfall #004

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

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
Flow	MGD	1	*		*	NO	S
Biochemical Oxygen Demand ₅	mg/L	9	*		*	YES	30/30
Chemical Oxygen Demand ₅	mg/L	9	*		*	YES	***
Total Suspended Solids	mg/L	9	*		*	YES	45/30
Oil & Grease	mg/L	1/3	*		*	YES	15/10
pH	SU	1	*		*	YES	6.0-9.0
Ethanol	mg/L	9	*		*	YES	***
Dissolved Oxygen (DO) **	mg/L	9	*		*	YES	***
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

* - Monitoring requirement only.

** - For DO the Daily Maximum is a Daily Minimum and the Monthly Average is a Monthly Average Minimum.

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

N/A – Not applicable

S – Same as previous operating permit

Basis for Limitations Codes:

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

Outfall #004 – Stormwater Basin Derivation and Discussion of Limits:

Outfall #004 is for the discharge from the stormwater basin. The previous permit contained monitoring requirements for Chloride. Chloride was removed from this permit as a Reasonable Potential Determination showed that the parameter had no reasonable potential to violate water quality standards.

Discussion of Benchmarking as used for this outfall

The inclusion of benchmarking was taken from the MO-R23A general permit template for facilities engaged in chemical manufacturing. The benchmark limitations were set to the water quality standard, because this outfall discharges only stormwater, which may be contaminated with the listed pollutants. In this case, the establishing of non-numeric, technology-based effluent limits and other BMPs via a SWPPP are the primary treatment technology used for controlling stormwater discharges. The permitting authority is then required to consider whether TBEL are sufficient to maintain WQS. The inclusion of benchmark limits in this permit will require the facility to review their SWPPP and associated BMPs to see if a change is necessary when an exceedance occurs. The benchmarks were set, when possible, at the acute water quality standard.

The goal of the permittee should be to keep pollutants (potentially generated from any onsite operations/activities/handling or as a result of the storage of any material) from getting into the stormwater in the first place rather than treating stormwater after it has been contaminated (prior to discharge). This permit includes narrative non-numeric effluent limitations that are intended to serve this purpose. Numeric effluent limitations contained in the previous permit are being removed, since the imposed technology based, non numeric effluent limits contained within this permit are considered sufficient.

- **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).** Monitoring only (benchmark limitation). This parameter is being required in order to correlate the effluent concentration with dissolved oxygen. In addition, this facility has identified materials stored onsite that have the potential to contribute a biochemical oxygen demand in the receiving stream. Monitoring this parameter will ensure that the facility monitors its discharge for oxygen-reducing pollutants. The benchmark was set at 30 mg/L as stormwater discharges typically do not contain a significant amount of biological matter as compared to domestic wastewater. Domestic wastewater treatment plants have a daily technology based limit for BOD₅ of 30 mg/L. The numeric limitation was removed from this permit, as there is no reasonable potential for this discharge to violate water quality. The average concentration reported from 2005 to 2010 was 7.8 mg/L with a maximum daily concentration of 29 mg/L. Backsliding is not an issue, since there is no reasonable potential (40 CFR 122.44(l)(2)(i)(B)(2)). In addition, there is no water quality standard for Biochemical Oxygen Demand. This parameter should not have been included in this permit as a numeric effluent limitation. This parameter should be re-evaluated at renewal.
- **Chemical Oxygen Demand (COD).** Monitoring only (benchmark limitation). Monitoring this parameter will ensure that the facility monitors its discharge for oxygen-reducing pollutants. In addition, this parameter is listed as a benchmark in the MO-R23A general permit. The fact sheet for the MO-R23A permit stated the following: “Effluent limits consistent with other industrial stormwater facilities. These effluent limits have been demonstrated to be attainable with SWPPPs & existing technology, and are deemed protective of instream water quality.” The benchmark was set at the same benchmark in the MO-R23A permit, which is 90 mg/L.
- **Total Suspended Solids (TSS).** Monitoring only (benchmark limitation). This parameter is being required, since these are stormwater discharges that will likely pick up particulates as the water flows along the ground to the outfalls. Monitoring for this parameter with a benchmark limit will require the permittee to review and improve their BMPs in order to protect general water quality in the receiving stream. Monitoring is being required as a basis for monitoring BMP effectiveness. The BMPs should be designed so that they remove the majority of the solids prior to discharge. The benchmark limitation is set to 50 mg/L, which is based on the benchmark set in the MO-R23A general permit. The average concentration reported from 2005 to 2010 was 11.4 mg/L with a single maximum of 20 mg/L. Backsliding is not an issue, since there is no reasonable potential (40 CFR 122.44(l)(2)(i)(B)(2)). In addition, there is no water quality standard for Total Suspended Solids except for General Criteria. This parameter should not have been included in this permit as a numeric effluent limitation. This parameter should be re-evaluated at renewal.
- **Oil & Grease.** Monitoring only (benchmark limitation). The facility is being required to monitor for this pollutant with benchmark limits set for protection of aquatic life. Benchmark is set to 10 mg/L. The numeric limitation was removed from this permit, as there is no reasonable potential for this discharge to violate water quality. The facility reported non-detect with a detection limit of 5 mg/L 2005 to present. Backsliding is not an issue, since there is no reasonable potential (40 CFR 122.44(l)(2)(i)(B)(2)).
- **pH.** Monitoring only (benchmark limitation). This is deemed required, since pH is a common pollutant in almost every Missouri State Operating Permit and is a water quality standard. Benchmark range is from 6.5 to 9.0 standard pH units (SU) as per regulation [10 CSR 20 7.031(E), which is based on the benchmark set in the MO-R23A general permit. The facility has never violated the effluent range for this parameter.
- **Ethanol.** Monitoring only (benchmark limitation). This is deemed required, since the facility produces ethanol and has the potential to have spillage or leakage. The benchmark limitation is set to 4.1 mg/L, which is based on the daily maximum technology based effluent limitation set in 40 CFR 439.15 which is for pharmaceutical companies that discharge process wastewaters that contain ethanol by the use of a fermentation process.

- **Dissolved Oxygen.** Monitoring only (benchmark limitation). Protection of aquatic life. [10 CSR 20-7.031(4)(J) and Table A]. The benchmark is set to the water quality criterion as the facility discharges to the classified section of the waterbody. The benchmark is set to the criterion for warm-water fisheries and is a daily minimum of 5 mg/L.
- **Minimum Sampling and Reporting Frequency Requirements.**

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
Flow	once/quarter	once/quarter
BOD ₅	once/quarter	once/quarter
TSS	once/quarter	once/quarter
Oil & Grease	once/quarter	once/quarter
pH	once/quarter	once/quarter
Ethanol	once/quarter	once/quarter
Dissolved Oxygen	once/quarter	once/quarter

Outfall #005

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 supercede the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
Flow	MGD	1	*		*	NO	S
Biochemical Oxygen Demand ₅	mg/L	9	30		30	NO	S
Total Suspended Solids	mg/L	9	45		30	NO	S
Chloride	mg/L	1/2/3	345.5		198.5	YES	860/230
Chloride + Sulfate	mg/L	1/3	1000			YES	***
Ammonia as N (May 1 – Oct 31)	mg/L	2/3/5	3.9		1.4	YES	3.0/3.0
Ammonia as N (Nov 1 – Apr 30)	mg/L	2/3/5	8.8		2.8	YES	3.0/3.0
Temperature	°F	1/5/9	90		90	NO	S
Oil & Grease	mg/L	1/3	15		10	NO	S
Chlorine, Total Residual	mg/L	1/2/3	.012		.009	YES	.019/.019
pH	SU	1	6.5 – 9.0		6.5 – 9.0	YES	6.0-9.0
Dissolved Oxygen (DO) **	mg/L	9	*		*	YES	***
Iron, Total Recoverable	µg/L	9	*		*	YES	***
Aluminum, Total Recoverable	µg/L	9	*		*	YES	***
Whole Effluent Toxicity (WET) Test	% Survival	11	Please see WET Test in the Derivation and Discussion Section below.				
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

* - Monitoring requirement only.

** - For DO the Daily Maximum is a Daily Minimum and the Monthly Average is a Monthly Average Minimum.

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

N/A – Not applicable

S – Same as previous operating permit

Basis for Limitations Codes:

- | | |
|--|-------------------------------|
| 1. State or Federal Regulation/Law | 7. Antidegradation Policy |
| 2. Water Quality Standard (includes RPA) | 8. Water Quality Model |
| 3. Water Quality Based Effluent Limits | 9. Best Professional Judgment |

- | | |
|----------------------------|------------------------------------|
| 4. Lagoon Policy | 10. TMDL or Permit in lieu of TMDL |
| 5. Ammonia Policy | 11. WET Test Policy |
| 6. Dissolved Oxygen Policy | 12. Antidegradation Review |

OUTFALL #005 – DERIVATION AND DISCUSSION OF LIMITS:

Outfall #005 is for the combined discharge from Outfalls #001, #002, and #003. The previous permit contained monitoring requirements for Conductivity and Total Dissolved Solids. Conductivity and Total Dissolved Solids were removed from this permit as the parameters had no associated water quality standards or technology based requirements.

- **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).** 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).** 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.**
- **Chloride.** Warm-water Protection of Aquatic Life CCC = 230 mg/L, CMC = 860 mg/L [10 CSR 20-7.031, Table A].
Background Chloride = 0.0 mg/L.
Chronic WLA: $C_e = ((0.465 + 0.0)230 - (0.0 * 0.0))/0.465$
 $C_e = 230 \text{ mg/L}$
Acute WLA: $C_e = ((0.465 + 0.0)860 - (0.0 * 0.0))/0.465$
 $C_e = 860 \text{ mg/L}$

LTA_c = 230 (0.6185) = **142.26 mg/L** [CV = 0.438, 99th Percentile]
LTA_a = 860 (0.4117) = 354.1 mg/L [CV = 0.438, 99th Percentile]

Use most protective number of LTA_c or LTA_a.
MDL = 142.26 (2.42876) = **345.5 mg/L** [CV = 0.438, 99th Percentile]
AML = 142.26 (1.395) = **198.5 mg/L** [CV = 0.438, 95th Percentile, n = 66]
- **Chloride + Sulfate.** Effluent limitation of 1000 mg/L as a Daily Maximum is applicable as per [10 CSR 20-7.031(L)1.].
- **pH.** Effluent limitation range is 6.5 to 9.0 Standard pH Units (SU), as per the applicable section of 10 CSR 20-7.015. pH is not to be averaged.
- **Temperature.** 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 Ammonia Nitrogen.** Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3] default pH 7.8 SU Background total ammonia nitrogen = 0.01 mg/L.

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: May 1 – October 31

Chronic WLA: $C_e = ((0.465 + 0.0)1.5 - (0.0 * 0.01))/0.465$
 $C_e = 1.5 \text{ mg/L}$

Acute WLA: $C_e = ((0.465 + 0.0)12.1 - (0.0 * 0.01))/0.465$
 $C_e = 12.1 \text{ mg/L}$

LTA_c = 1.5 mg/L (0.762) = **1.14 mg/L** [CV = 0.659, 99th Percentile, 30 day avg.]
LTA_a = 12.1 mg/L (0.296) = 3.58 mg/L [CV = 0.659, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

$$\text{MDL} = 1.14 \text{ mg/L (3.38)} = \mathbf{3.9 \text{ mg/L}}$$

$$\text{AML} = 1.14 \text{ mg/L (1.21)} = \mathbf{1.4 \text{ mg/L}}$$

[CV = 0.659, 99th Percentile]

[CV = 0.659, 95th Percentile, n =30]

Winter: November 1 – April 30

$$\text{Chronic WLA: } C_e = ((0.465 + 0.0)3.1 - (0.0 * 0.01))/0.465$$
$$C_e = 3.1 \text{ mg/L}$$

$$\text{Acute WLA: } C_e = ((0.465 + 0.0)12.1 - (0.0 * 0.01))/0.465$$
$$C_e = 12.1 \text{ mg/L}$$

$$\text{LTA}_c = 3.1 \text{ mg/L (0.728)} = \mathbf{2.26 \text{ mg/L}}$$

$$\text{LTA}_a = 12.1 \text{ mg/L (0.257)} = 3.11 \text{ mg/L}$$

[CV = 0.773, 99th Percentile, 30 day avg.]

[CV = 0.773, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

$$\text{MDL} = 2.26 \text{ mg/L (3.89)} = \mathbf{8.8 \text{ mg/L}}$$

$$\text{AML} = 2.26 \text{ mg/L (1.25)} = \mathbf{2.8 \text{ mg/L}}$$

[CV = 0.773, 99th Percentile]

[CV = 0.773, 95th Percentile, n =30]

- **Dissolved Oxygen**. Monitoring requirement only. Monitoring for Dissolved Oxygen is included to determine whether “reasonable potential” to exceed water quality standards exists.
- **Total Residual Chlorine (TRC)**. Warm-water Protection of Aquatic Life CCC = 10 µg/L, CMC = 19 µg/L [10 CSR 20-7.031, Table A]. Background TRC = 0.0 µg/L.

$$\text{Chronic WLA: } C_e = ((0.465 + 0.0)10 - (0.0 * 0.0))/0.465$$
$$C_e = 10 \text{ µg/L}$$

$$\text{Acute WLA: } C_e = ((0.465 + 0.0)19 - (0.0 * 0.0))/0.465$$
$$C_e = 19 \text{ µg/L}$$

$$\text{LTA}_c = 10 (0.846) = \mathbf{8.46 \text{ µg/L}}$$

$$\text{LTA}_a = 19 (0.721) = 13.7 \text{ µg/L}$$

[CV = 0.146, 99th Percentile]

[CV = 0.146, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

$$\text{MDL} = 8.46 (1.39) = \mathbf{12 \text{ µg/L}}$$

$$\text{AML} = 8.46 (1.12) = \mathbf{9 \text{ µg/L}}$$

[CV = 0.146, 99th Percentile]

[CV = 0.146, 95th Percentile, n = 45]

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

Metals

- **Iron, Total Recoverable**. Monitoring requirement only. This parameter needs further monitoring to determine if it has potential to violate Missouri’s WQS due to the iron content in their raw water supply.
- **Aluminum, Total Recoverable**. Monitoring requirement only. This parameter needs further monitoring to determine if it has potential to violate Missouri’s WQS due to the aluminum content in their raw water supply.
- **WET Test**. WET Testing schedules and intervals are established in accordance with the Department’s Permit Manual; Section 5.2 *Effluent Limits / WET Testing for Compliance Bio-monitoring*. It is recommended that WET testing be conducted during the period of lowest stream flow.

Acute

No less than ONCE/YEAR:

Facility is designated as a Major facility or has a design flow ≥ 1.0 MGD.

Facility continuously or routinely exceeds their design flow.

Facility exceeds its design population equivalent (PE) for BOD₅ whether or not its design flow is being exceeded.

Facility has Water Quality-based effluent limitations for toxic substances (other than NH₃).

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

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

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
Flow	once/month	once/month
BOD ₅	once/month	once/month
TSS	once/month	once/month
Chloride	once/month	once/month
Chloride + Sulfate	once/month	once/month
Ammonia as N (May 1 – Oct 31)	once/month	once/month
Ammonia as N (Nov 1 – Apr 30)	once/month	once/month
Temperature	once/month	once/month
Oil & Grease	once/month	once/month
Total Residual Chlorine	once/month	once/month
pH	once/month	once/month
Dissolved Oxygen	once/month	once/month
Iron, Total Recoverable	twice/year	once/year
Aluminum, Total Recoverable	twice/year	once/year

Part VI – Administrative Requirements

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

PUBLIC NOTICE:

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

The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit.

For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

- The Public Notice period for this operating permit is in process.

- The Public Notice period for this operating permit was from (DATE) to (DATE). Responses to the Public Notice of this operating permit warrant the modification of effluent limits and/or the terms and conditions of this permit. (Please explain). (Also if applicable – Due to the major modifications of this permit, this operating permit is to be placed on Public Notice again, which is tentatively scheduled to begin on (DATE) or is in process.

- The Public Notice period for this operating permit was from (DATE) to (DATE). No responses received or responses to the Public Notice of this operating permit do not warrant the modification of effluent limits and/or the terms and conditions of this permit.

DATE OF FACT SHEET: JULY 12, 2011

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Part VII – Appendices

APPENDIX A – RPA RESULTS:

Outfall #004

Parameter	CMC*	RWC Acute*	CCC*	RWC Chronic*	n**	Range max/min	CV***	MF	RP Yes/No
Chloride mg/L	860	93.52	230	93.52	19	36/3	0.686	2.598	No

Outfall #005

Parameter	CMC*	RWC Acute*	CCC*	RWC Chronic*	n**	Range max/min	CV***	MF	RP Yes/No
Total Ammonia as Nitrogen (Summer) mg/L	12.1	4.374	1.5	4.374	35	2.17/0.17	0.659	2.016	Yes
Total Ammonia as Nitrogen (Winter) mg/L	12.1	6.91	3.1	6.91	32	3/0.12	0.773	2.303	Yes
Chloride mg/L	860	264.9	230	264.9	66	187/0.01	0.438	1.417	Yes
Total Residual Chlorine	19	23.22	10	23.22	45	20/10	0.146	1.161	Yes

N/A – Not Applicable

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

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

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

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

n – Is the number of samples.

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

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

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

Water Quality and Antidegradation Review

*For the Protection of Water Quality and Determination of Effluent Limits for Discharge to Salt
Fork
by
Mid-Missouri Energy, LLC.*



January 2012

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1. FACILITY INFORMATION

FACILITY NAME: Mid-Missouri Energy, LLC. NPDES #: MO-0131008

FACILITY TYPE/DESCRIPTION: Mid-Missouri Energy is a corn-based ethanol plant in Malta Bend, Missouri, formed and owned by corn farmers. The facility started distilling corn in early 2005. Process wastewater is treated and recycled back into the facility's process. The planned expansion is to add an additional fermenter and cooling tower cell. The addition of the fermenter and cooling tower cell will increase non-contact water flows by approximately 25%, along with some increase in the reverse osmosis system and the water softener areas. Outfall 005 contains the combined flows from Outfalls 001-003. Outfalls 001-003 contain non-process/utility water including cooling tower blowdown, water softener, and reverse osmosis wastewater. Outfall 004 is stormwater. Outfalls 004 and 005 are sampled at the facility and then piped from the plant to discharge to Salt Fork. Proposed expansion design flow is 0.4658 MGD at Outfall 005. UTM coordinates and legal description below are for the sampling location; UTM coordinates for the stream discharge are listed under Segment #1.

COUNTY: Saline UTM COORDINATES: x= 466956; y= 4338612
12-DIGIT HUC: 10300104-0405 LEGAL DESCRIPTION: SE 1/4, NW 1/4, Section 24, T 51N, R23W
ECOREGION: Plains/ Loess Hills EDU*: Central Plains/ Blackwater/ Lamine

* - Ecological Drainage Unit

2. WATER QUALITY INFORMATION

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

2.1. WATER QUALITY HISTORY:

No stream surveys have been conducted for Salt Fork. Facility's permit was renewed in August 2011. The facility had total suspended solids exceedances at Outfall #005 in July, August, and November 2006.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
005	0.7219	Chemical, bmps	Salt Fork	0.0

3. RECEIVING WATERBODY INFORMATION

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)			DESIGNATED USES*
			1Q10	7Q10	30Q10	
Salt Fork	C	00899	0.0	0.0	0.01	AQL, LWW, WBC(B)**

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

**UAA conducted in 2005 and 2007

RECEIVING WATER BODY SEGMENT #1: Salt Fork from pipe to confluence with Malta Bend's discharge

Upper end segment* UTM coordinates: x= 467099; y= 4337650 (pipe confluence with Salt Fork)

Lower end segment*UTM coordinates: x= 469347; y= 4336805 (Confluence with Malta Bend's discharge)

*Segment is the portion of the stream where discharge occurs. Segment is used to track changes in assimilative capacity and is bound at a minimum by existing sources and confluences with other significant water bodies.

4. GENERAL COMMENTS

Air Resources Specialists, Inc. prepared, on behalf of Mid-Missouri Energy, the *Antidegradation Report Proposed Expansion of Mid-Missouri Energy, LLC* dated December 8, 2011. A Geohydrological Evaluation was not required to be submitted with the request, as the facility is existing. The receiving stream is gaining for discharge purposes (Appendix A: Map). A Missouri Department of Conservation Natural Heritage Review was obtained by the applicant; and no endangered species were found to be impacted by the discharge (Appendix B). Applicant elected to assume that all pollutants of concern (POC) are significantly degrading the receiving stream in the absence of existing water quality. An alternative analysis was conducted to fulfill the requirements of the AIP. Information that was provided by the applicant in the submitted report and summary forms in Appendix C was used to develop this review document. Domestic wastewater is treated with an onsite system.

5. ANTIDegradation REVIEW INFORMATION

The following is a review of the *Antidegradation* dated December 8, 2011.

5.1. TIER DETERMINATION

Below is a list of pollutants of concern reasonably expected to be in the discharge (see Appendix C: Tier Determination and Effluent Limit Summary). Pollutants of concern are defined as those pollutants “proposed for discharge that affects beneficial use(s) in waters of the state. POCs include pollutants that create conditions unfavorable to beneficial uses in the water body receiving the discharge or proposed to receive the discharge.” (AIP, Page 7). Tier 2 was assumed for all POCs (see Appendix C). Proposed effluent limits match the newly issued renewal permit.

Table 1. Pollutants of Concern and Tier Determination

POLLUTANTS OF CONCERN	TIER*	DEGRADATION	COMMENT
BOD ₅ /DO	2	Significant	Monitoring only
Total Suspended Solids (TSS)	**	Significant	Permit limits applied
Ammonia	2	Significant	Permit limits applied
pH	***	Significant	Permit limits applied
Chloride	2	Significant	Permit limits applied
Chloride + Sulfate	2	Significant	Permit limits applied
Oil and Grease	2	Significant	Permit limits applied
Total Residual Chlorine	2	Significant	Permit limits applied

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

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

- Tier Determination and Effluent Summary
- Attachment A, Tier 2 with significant degradation.

5.2. EXISTING WATER QUALITY

Instream data collected by the facility during the previous permit cycle was reviewed. All POCs were considered to be Tier 2 and significantly degraded in the absence of existing water quality.

5.3. DEMONSTRATION OF NECESSITY AND SOCIAL AND ECONOMIC IMPORTANCE

Missouri’s antidegradation implementation procedures specify that if the proposed activity does result in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are required. Six alternatives from non-degrading to less degrading to degrading alternatives were evaluated. MME chose to review the following alternatives for the Antidegradation Analysis. It has also been assumed that MME would combine the current permitted effluent, which is a non-contact discharge, with the new non-contact discharge for which this alternative analysis is being required. Therefore, each alternative is looking at the total amount of non-contact water being discharged daily, not just the 29,500 gallons of new discharge from the addition of a new cooling tower cell

The first alternative and MME's preferred alternative is to discharge the increase of non-contact water discharge to the existing permitted Outfall 005. This option is most practical since MME is currently discharging their existing non-contact cooling tower water to Outfall 005, which enters the Salt Fork. With this option, there are no additional POCs being added to the current POC list and this proposed discharge would adhere to the existing non-contact discharge limits. Since MME currently routes non-contact discharge to Outfall 005, the additional cost of piping the new cooling tower cell and minimal softener system and reverse osmosis water to this location is \$36,000. Based on the fact that this is currently the route of discharging non-contact water from the existing cooling tower cells and at the minimal cost of connecting the new cooling tower cell to the existing discharge, this is the preferred alternative. The base case (preferred) option of routing the new non-contact cooling water discharge to the existing non-contact discharge from Outfall 005 is the most practical and economically efficient alternative.

The second alternative evaluated was sending the non-contact discharge to a publicly owned treatment plant for treatment. The POTW in Malta Bend, which is 1 mile east cannot accommodate the increased flow of MME's non-contact discharge, therefore, MME would be required to send their non-contact water to the POTW in Marshall, MO, which is located 11 miles southeast of the facility. This discharge would either be routed via underground pipeline to the POTW or via truck transfer with multiple trips per day. With this option, the nature of the pollutants being discharged would be consistent with the base case option; just that these pollutants of concern would be released from a POTW. Per the JF Construction Services, LLC, the initial pipeline construction costs are estimated at \$640,000. This does not include the right-of-way costs associated with at least a dozen landowner crossings, 3 railroad crossings, 3 highway crossings, and up to 15 county road crossings. Additionally, the POTW would require a \$2,000 tie in fee and annual expenses for an approximate annual operating cost of \$163,000. This does not take into consideration any maintenance or treatment to the pipeline. This would be a large ongoing expense for MME, particularly in light of the fact that no real improvement in water quality would occur under this option. Additionally, transferring of the non-contact discharge via tanker truck would require MME constructing a holding tank to store the non-contact discharge on weekends and holidays. Routing the non-contact discharge to a nearby POTW would cost more than 20% above the base case option of discharging the new non-contact discharge with the existing permitted non-contact discharge to Outfall 005.

The third alternative evaluated was land application of the discharge. Land application of MME's cooling tower discharge would create a potentially beneficial use for the water as it would replace irrigation water otherwise applied for the growing of crops by nearby agricultural interests. However, this option comes with a number of technical challenges. The first challenge is locating a nearby agricultural water consumer who would be willing to use MME's non-contact discharge as a replacement for other agricultural waters. Crop irrigation is not uncommon but the feasibility of locating a willing user for MME's wastewater is uncertain. Another challenge is assuring that the cooling water supplied by MME is suitable for agronomic purposes. The primary concern is the concentration of minerals and other solids that buildup as these waters cycle through the cooling towers and other equipment. It is estimated that a seven acre, twenty five foot depth pond would be required for storage, during the non-growing winter months. It has not been determined whether or not a suitable storage location for a 7 acre water storage pond exists at the MME site. MME would need to have approximately 220 acres available for land application. The capital costs for the water storage pond as estimated are almost one million dollars. This does not include any costs for land which might need to be purchased to accommodate such a large water storage pond at the MME site. Also, these costs are the bare minimum as the analysis has not considered the need for any buffer in sizing the pond to handle variations in non-contact production or water demand by the end users. Based on the preliminary estimates of storage pond excavation, pond linear costs, and pipeline construction for land application of the non-contact discharge, this option is not economically efficient in comparison to the base case option. Creating a holding pond and applying the non-contact discharge to land would cost more than 20% above the base case option of discharging the new non-contact water with the existing permitted discharge to Outfall 005.

The fourth alternative evaluated was to incorporate a zero liquid discharge (ZLD) technology design into the plant. This alternative would allow the MME non-contact cooling water to be reused in the ethanol production process. This option is a practical alternative as no discharge of non-contact cooling tower water would occur from the facility. Therefore, no POCs would enter any stream and the reliability and discharge timing and duration would not be of concern. This option would require extensive treatment of the MME discharge in order to bring the water quality up to the levels required for plant re-use. The end product of the ZLD technology is a sludge byproduct that would require appropriate disposal under the Missouri solid waste regulations. The implementation of the ZLD technology essentially trades impacts to water quality for added environmental impacts at a nearby solid waste landfill. The initial capital investment of a ZLD system was estimated from \$12 to \$15 million. In addition to the initial construction costs, the major operating costs include the sludge byproduct disposal and added electrical costs for operating the ZLD equipment. Based on the initial cost of the ZLD system, this option is not economically efficient in comparison to the base case option. Redesigning and constructing

a ZLD system would exceed 20% of the base case option of discharging the new non-contact discharge with the existing permitted non-contact discharge to Outfall 005.

The fifth alternative evaluated was the reuse of the non-contact discharge by a nearby industrial customer. This option is only practical if MME can locate an industrial water consumer nearby that will consume MME's non-contact discharge as is. For an industrial user, the City of Marshall provides more diversity and potential need for water. Based on the fact that the water treatment requirements for any nearby industrial user would be required to reuse the non-contact discharge for MME, the economic costs would be consistent with the ZLD option discussed above. Then there would be the additional costs of pipeline construction to the end user. Using the \$11 per linear foot costs referenced previously and assuming the end user is in Marshall, MO, the cost of pipeline construction is approximately \$640,000 in addition to the \$12-\$15 million dollar ZLD system. Based on the initial cost of the ZLD system, this reuse option by a nearby industrial water consumer is not economically efficient in comparison to the base case option. This option is not more affordable in terms of practicability and economic efficiency than the base option. Routing MME's new non-contact discharge to a third party industrial user would cost more than 20% above the base case option of discharging the new non-contact discharge with the existing permitted non-contact discharge to Outfall 005.

The sixth alternative evaluated was deep well injection of wastewater. This alternative was quickly eliminated as not feasible because Missouri law does not allow for Class I wells. This alternative was not evaluated for cost as it is illegal in Missouri.

The antidegradation analysis concludes that the proposed option, which is the base case of discharging the new non-contact discharge with the existing permitted non-contact discharge of cooling tower water, softener system regeneration, and reverse osmosis reject water to Outfall 005, is the best option for the new effluent stream. Table 2 below compares the alternatives based on initial cost, economically efficient and practicability.

With the addition of a new cooling tower cell at MME's ethanol production facility, an increased amount of denatured ethanol can be produced. While, one new cooling tower cell will not add any additional jobs at the facility, there are numerous benefits to the community. First off, construction of a new cooling tower cell and an additional fermentation tank at MME would require construction crews for temporary employment. This benefits the local communities by offering employment opportunities to contractors and skilled laborers. Even if construction crews were brought into the area for the work, local businesses would benefit by servicing these temporary laborers from lodging to meals and incidentals they would require. MME will also need to purchase the additional corn from local area farmers to produce more ethanol. This has a profound local effect since the grain for ethanol production is coming from surrounding communities. When local farmers make more money off of their grain, they have more money to spend within their communities thus increasing the tax base locally and benefitting local businesses. The taxes that MME pays contribute to public programs such as schools, libraries, fire and police services, parks, etc., of which all citizens of any economic class have the ability to utilize. The addition of a new cooling tower cell to MME's ethanol production facility would have a positive net impact on the socio-economic viability of the surrounding communities.

Table 2: Alternatives Analysis Comparison

	Discharge through 005	Discharge to POTW	Land Application	Zero Liquid Discharge	Discharge to Industrial User
Practical	Yes	Yes	No	Yes	No
Economical	Yes	No	No	No	No
Initial Cost	\$36,000	\$640,000	\$1,500,000	\$13,500,000	\$13,500,000
Ratio	Base Case	1,777%	4,166%	37,500%	37,500%

5.3.1. REGIONALIZATION ALTERNATIVE

Within Section II B 1. of the AIP, discussion of the potential for discharge to a regional waste water collection system is mentioned. The applicant provided discussion of this alternative. The alternative analysis mentions Marshall WWTF as the regional treatment plant. The City of Marshall is eleven miles from the plant. Malta Bend is closer, but does not have the capacity to accept the flows from the facility.

6. GENERAL ASSUMPTIONS OF THE WATER QUALITY AND ANTIDegradation REVIEW

1. A Water Quality and Antidegradation Review (WQAR) assumes that [10 CSR 20-6.010(3) Continuing Authorities and 10 CSR 20-6.010(4) (D), consideration for no discharge] has been or will be addressed in a Missouri State Operating Permit or Construction Permit Application.
2. A WQAR does not indicate approval or disapproval of alternative analysis as per [10 CSR 20-7.015(4) Losing Streams], and/or any section of the effluent regulations.
3. Changes to Federal and State Regulations made after the drafting of this WQAR may alter Water Quality Based Effluent Limits (WQBEL).
4. Effluent limitations derived from Federal or Missouri State Regulations (FSR) may be WQBEL or Effluent Limit Guidelines (ELG).
5. WQBEL supersede ELG only when they are more stringent. Mass limits derived from technology based limits are still appropriate.
6. A WQAR does not allow discharges to waters of the state, and shall not be construed as a National Pollution Discharge Elimination System or Missouri State Operating Permit to discharge or a permit to construct, modify, or upgrade.
7. Limitations and other requirements in a WQAR may change as Water Quality Standards, Methodology, and Implementation procedures change.
8. Nothing in this WQAR removes any obligations to comply with county or other local ordinances or restrictions.
9. If the proposed treatment technology is not covered in 10 CSR 20-8 Design Guides, the treatment process may be considered a new technology. As a new technology, the permittee will need to work with the review engineer to ensure equipment is sized properly. The operating permit may contain additional requirements to evaluate the effectiveness of the technology once the facility is in operation. This Antidegradation Review is based on the information provided by the facility and is not a comprehensive review of the proposed treatment technology. If the review engineer determines the proposed technology will not consistently meet proposed effluent limits, the permittee will be required to revise their Antidegradation Report.

7. MIXING CONSIDERATIONS

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

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

8. PERMIT LIMITS AND MONITORING INFORMATION

OUTFALL #005

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

WET TEST (Y OR N): Y FREQUENCY: ONCE/YEAR AEC: 100% METHOD: MULTIPLE

TABLE 3: EFFLUENT LIMITS

PARAMETER	UNIT	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	BASIS FOR LIMIT (NOTE 1)	MONITORING FREQUENCY
FLOW	MGD	*		*	FSR	ONCE/MONTH
BIOCHEMICAL OXYGEN DEMAND ₅	MG/L	*		*	BPJ	TWICE/YEAR
CHEMICAL OXYGEN DEMAND	MG/L	*		*	BPJ	ONCE/MONTH
TOTAL SUSPENDED SOLIDS	MG/L	45		30	FSR	ONCE/MONTH
CHLORIDE	MG/L	345.5		198.5	WQBEL/PAL	ONCE/MONTH
CHLORIDE + SULFATE	MG/L	1000			WQBEL/PAL	ONCE/MONTH
AMMONIA AS N (APR 1 – SEPT 30)	MG/L	3.9		1.4	WQBEL/PAL	ONCE/MONTH
AMMONIA AS N (OCT 1 – MAR 31)	MG/L	8.8		2.8	WQBEL/PAL	ONCE/MONTH

TEMPERATURE	°F	90		90	FSR	ONCE/MONTH
OIL & GREASE	MG/L	15		10	WQBEL	ONCE/MONTH
CHLORINE, TOTAL RESIDUAL	MG/L	.012		.009	WQBEL/PAL	ONCE/MONTH
pH	SU	6.5–9.0		6.5–9.0	FSR	ONCE/MONTH
DISSOLVED OXYGEN (DO) **	MG/L	*		*	WQBEL/PAL	ONCE/MONTH
IRON, TOTAL RECOVERABLE	µg/L	*		*	WQBEL	TWICE/YEAR
ALUMINUM, TOTAL RECOVERABLE	µg/L	*		*	WQBEL	TWICE/YEAR
WHOLE EFFLUENT TOXICITY (WET) TEST	% Survival	Please see WET Test in the Derivation and Discussion Section below.				ONCE/YEAR

NOTE 1– WATER QUALITY-BASED EFFLUENT LIMITATION --WQBEL; OR MINIMALLY DEGRADING EFFLUENT LIMIT--MDEL; OR PREFERRED ALTERNATIVE EFFLUENT LIMIT--PEL; TECHNOLOGY-BASED EFFLUENT LIMIT--TBEL;OR NO DEGRADATION EFFLUENT LIMIT--NDEL; OR FSR --FEDERAL/STATE REGULATION; OR BPJ—BEST PROFESSIONAL JUDGMENT; OR N/A--NOT APPLICABLE. ALSO, PLEASE SEE THE **GENERAL ASSUMPTIONS OF THE WQAR #4 & #5**.

* - Monitoring requirement only.

** - For DO the Daily Maximum is a Daily Minimum and the Monthly Average is a Monthly Average Minimum.

9. RECEIVING WATER MONITORING REQUIREMENTS

No receiving water monitoring requirements recommended at this time.

10. DERIVATION AND DISCUSSION OF LIMITS

Wasteload allocations and limits were calculated using two methods:

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

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

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). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration). Water quality-based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA’s “Technical Support Document For Water Quality-based Toxics Control” (EPA/505/2-90-001).

2) Alternative Analysis-based – Using the preferred alternative’s treatment capacity for conventional pollutants such as BOD₅ and TSS that are provided by the consultant as the WLA, the significantly-degrading effluent average monthly and average weekly limits are determined by applying the WLA as the average monthly (AML) and multiplying the AML by 1.5 to derive the average weekly limit (AWL). For toxic and nonconventional pollutant such as ammonia, the treatment capacity is applied as the significantly-degrading effluent monthly average (AML). A maximum daily can be derived by dividing the AML by 1.19 to determine the long-term average (LTA). The LTA is then multiplied by 3.11 to obtain the maximum daily limitation. This is an accepted procedure that is defined in USEPA’s “Technical Support Document For Water Quality-based Toxics Control” (EPA/505/2-90-001).

Note: Significantly-degrading effluent limits have been based on the authority included in Section III. Permit Consideration of the AIP. Also under 40 CFR 133.105, permitting authorities shall require more stringent limitations than equivalent to secondary treatment limitations for 1) existing facilities if the permitting authority determines that the 30-day average and 7-day average BOD₅ and SS effluent values that could be achievable through proper operation and maintenance of the treatment works, and 2) new facilities if the permitting authority determines that the 30-day average and 7-day average BOD₅ and SS effluent values that could be achievable through proper operation and maintenance of the treatment works, considering the design capability of the treatment process.

10.1. OUTFALL #005 – MAIN FACILITY OUTFALL LIMIT DERIVATION

- **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).** Facility proposed effluent limits from their recently renewed permit of AML=30 mg/L and MDL= 30 mg/L. In review of the previous three years of discharge monitoring data, the facility has averaged a BOD₅ concentration of 5 mg/L. It is the Department’s recommendation that BOD monitoring be reduced to twice per year and monitoring for Chemical Oxygen Demand be added.
- **Chemical Oxygen Demand (COD).** In reviewing the facility’s discharge monitoring reports, biochemical oxygen demand does not appear to be the appropriate parameter for the plant. Chemical oxygen demand monitoring is being required for the facility. Upon renewal of the permit, a reasonable potential analysis will be conducted to determine if effluent limits are appropriate for the facility.
- **Total Suspended Solids (TSS).** Facility proposed effluent limits from their recently renewed permit of AML=30 mg/L and MDL= 45 mg/L.
- **Dissolved Oxygen.** The facility is required to monitor for dissolved oxygen currently. Under the previous permit, the facility was required to monitor DO concentrations up and downstream of the discharge into Salt Fork. In review of the previous permit data, the stream above and below the discharge averaged 10 mg/L. This is above the Water Quality Standard of 5.0 mg/L. The facility is required to monitor the dissolved oxygen discharge as part of this permit cycle to see if the potential exists to violate the Water Quality Standard.
- **Chloride.** Facility proposed using the recently issued water quality based effluent limits. Warm-water Protection of Aquatic Life CCC = 230 mg/L, CMC = 860 mg/L [10 CSR 20-7.031, Table A]. Background Chloride = 0.0 mg/L.

Chronic WLA: $C_e = ((0.7219 + 0.0)230 - (0.0 * 0.0)) / 0.7219$
 $C_e = 230 \text{ mg/L}$

Acute WLA: $C_e = ((0.7219 + 0.0)860 - (0.0 * 0.0)) / 0.7219$
 $C_e = 860 \text{ mg/L}$

$LTA_c = 230 (0.6185) = 142.26 \text{ mg/L}$ [CV = 0.438, 99th Percentile]
 $LTA_a = 860 (0.4117) = 354.1 \text{ mg/L}$ [CV = 0.438, 99th Percentile]
 $MDL = 142.26 (2.42876) = 345.5 \text{ mg/L}$ [CV = 0.438, 99th Percentile]
 $AML = 142.26 (1.395) = 198.5 \text{ mg/L}$ [CV = 0.438, 95th Percentile, n = 66]

- **Chloride + Sulfate.** Daily maximum effluent limit of 1,000 mg/L per [10 CSR 20-7.031(L)1.].
- **pH.** Effluent limitation range is 6.5 to 9.0 Standard pH Units (SU), as per 10 CSR 20-7.015 (8)(A).
- **Temperature.** Daily maximum and monthly average = 90°F.
- **Total Ammonia Nitrogen.** Facility proposed using the recently issued water quality based effluent limits. Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3] default pH 7.8 SU Background total ammonia nitrogen = 0.01 mg/L.

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 31

Chronic WLA: $C_e = ((0.7219 + 0.0)1.5 - (0.0 * 0.01)) / 0.7219$
 $C_e = 1.5 \text{ mg/L}$

Acute WLA: $C_e = ((0.7219 + 0.0)12.1 - (0.0 * 0.01)) / 0.7219$
 $C_e = 12.1 \text{ mg/L}$

$LTA_c = 1.5 \text{ mg/L} (0.762) = \mathbf{1.14} \text{ mg/L}$ [CV = 0.659, 99th Percentile, 30 day avg.]
 $LTA_a = 12.1 \text{ mg/L} (0.296) = 3.58 \text{ mg/L}$ [CV = 0.659, 99th Percentile]
 $MDL = 1.14 \text{ mg/L} (3.38) = \mathbf{3.9} \text{ mg/L}$ [CV = 0.659, 99th Percentile]
 $AML = 1.14 \text{ mg/L} (1.21) = \mathbf{1.4} \text{ mg/L}$ [CV = 0.659, 95th Percentile, n = 30]

Winter: October 1 – March 31

Chronic WLA: $C_e = ((0.7219 + 0.0)3.1 - (0.0 * 0.01)) / 0.7219$
 $C_e = 3.1 \text{ mg/L}$

Acute WLA: $C_e = ((0.7219 + 0.0)12.1 - (0.0 * 0.01)) / 0.7219$
 $C_e = 12.1 \text{ mg/L}$

$LTA_c = 3.1 \text{ mg/L} (0.728) = \mathbf{2.26} \text{ mg/L}$ [CV = 0.773, 99th Percentile, 30 day avg.]
 $LTA_a = 12.1 \text{ mg/L} (0.257) = 3.11 \text{ mg/L}$ [CV = 0.773, 99th Percentile]
 $MDL = 2.26 \text{ mg/L} (3.89) = \mathbf{8.8} \text{ mg/L}$ [CV = 0.773, 99th Percentile]
 $AML = 2.26 \text{ mg/L} (1.25) = \mathbf{2.8} \text{ mg/L}$ [CV = 0.773, 95th Percentile, n = 30]

- **Total Residual Chlorine (TRC)**. Facility proposed using the recently issued water quality based effluent limits. Warm-water Protection of Aquatic Life CCC = 10 µg/L, CMC = 19 µg/L [10 CSR 20-7.031, Table A]. Background TRC = 0.0 µg/L. Standard compliance language for TRC, including the minimum level (ML), should be included in the permit.

Chronic WLA: $C_e = ((0.7219 + 0.0)10 - (0.0 * 0.0)) / 0.7219$
 $C_e = 10 \text{ µg/L}$

Acute WLA: $C_e = ((0.7219 + 0.0)19 - (0.0 * 0.0)) / 0.7219$
 $C_e = 19 \text{ µg/L}$

$LTA_c = 10 (0.846) = \mathbf{8.46} \text{ µg/L}$ [CV = 0.146, 99th Percentile]
 $LTA_a = 19 (0.721) = 13.7 \text{ µg/L}$ [CV = 0.146, 99th Percentile]
 $MDL = 8.46 (1.39) = \mathbf{12} \text{ µg/L}$ [CV = 0.146, 99th Percentile]
 $AML = 8.46 (1.12) = \mathbf{9} \text{ µg/L}$ [CV = 0.146, 95th Percentile, n = 45]

- **Oil & Grease**. Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.
- **Iron, Total Recoverable**. Monitoring requirement only. This parameter needs further monitoring to determine if it has potential to violate Missouri's WQS due to the iron content in their raw water supply.
- **Aluminum, Total Recoverable**. Monitoring requirement only. This parameter needs further monitoring to determine if it has potential to violate Missouri's WQS due to the aluminum content in their raw water supply.
- **WET Test**. WET Testing schedules and intervals are established in accordance with the Department's Permit Manual; Section 5.2 *Effluent Limits / WET Testing for Compliance Bio-monitoring*. Sampling is conducted at 005, prior to the flows being piped to Salt Fork.

Acute

No less than ONCE/YEAR:

Facility has Water Quality-based effluent limitations for toxic substances (other than NH₃).

Acute and/or Chronic Allowable Effluent Concentrations (AECs) for facilities that discharge to Class C streams are 100%, 50%, 25%, 12.5%, & 6.25%.

11. ANTIDegradation Review Preliminary Determination

The proposed expanded facility discharge at Mid-Missouri Energy, 0.4658 MGD will result in significant degradation of the segment identified in Salt Fork Creek. Discharging through existing outfall 005 was determined to be the base case technology (lowest cost alternative that meets technology and water quality based effluent limitations). The cost effectiveness of the other technologies were evaluated, and continued discharging through 005 was found to be cost effective and was determined to be the preferred alternative.

Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to attain the highest statutory and regulatory requirements. MDNR has determined that the submitted review is sufficient and meets the requirements of the AIP. No further analysis is needed for this discharge.

Reviewer: Leasue J. Meyers

Date: 01/17/2012

Unit Chief: John Rustige, P.E.