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-0044121
Owner:	The Procter & Gamble Paper Products Company
Address:	2 P&G Plaza, Cincinnati, OH, 45202
Continuing Authority:	The Procter & Gamble Paper Products Company
Address:	P.O. Box 400, Cape Girardeau, MO 63701
Facility Name:	The Procter & Gamble Paper Products Company
Facility Address:	14484 State Hwy 177, Jackson, MO 63755
Legal Description:	See following page(s)
UTM Coordinates:	See following page(s)
Receiving Stream:	See following page(s)
First Classified Stream and ID:	See following page(s)
USGS Basin & Sub-watershed No.:	See following page(s)

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 following pages.

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

April 1, 2019;	February 1, 2021	February 1, 2022
Effective Date	First Modification	Second Modification

March 31, 2024
Expiration Date

Chris Wieberg
Chris Wieberg, Director, Water Protection Program

FACILITY DESCRIPTION (CONTINUED)

Procter & Gamble Company produces diapers, tissues, and towels.

OUTFALL #001 – Non-Contact cooling water, Fire Protection Water, Stormwater; SIC # 2676; NAICS # 322291
Receives non-contact cooling water generated from the evaporative cooling unit and the heating/ventilation/air conditioning systems. Non-contact cooling water is pumped from wells. Fire protection water would also discharge through this outfall in the event it was necessary. This outfall also receives stormwater which is not industrially exposed.

Legal Description:	Sec.05, T32N, R14E, Cape Girardeau County
UTM Coordinates:	X = 808590, Y = 4153801
Receiving Stream:	Tributary to Indian Creek
First Classified Stream and ID:	Indian Creek (P); WBID# 1828
USGS Basin & Sub-watershed No.:	(07140105-0501)
Design Flow:	0.03 MGD
Average flow:	Dependent of Precipitation

OUTFALL # 002 – Removed in 2020 permit modification. This outfall receives stormwater which is not industrially exposed, therefore monitoring is not required. This outfall previously received treated domestic wastewater; however, in a modification of this permit in 2020, the facility moved this discharge to outfall #004.

Legal Description:	Sec.04, T32N, R14E, Cape Girardeau County
UTM Coordinates:	X = 808759, Y = 4153877
Receiving Stream:	Tributary to Indian Creek
First Classified Stream and ID:	Indian Creek; (P) WBID# 1828
USGS Basin & Sub-watershed No.:	(07140105-0501)

OUTFALL # 02A – Added in 2022 permit modification. This outfall serves to monitor the domestic wastewater prior to combining with outfall #004 which is monitored separately from outfall #004. Two cell, extended aeration, UV disinfection. Discharges through the infrastructure serving outfall #004.

Legal Description:	Land Grant 0819, Cape Girardeau County
UTM Coordinates:	X = 808759, Y = 4153877
Receiving Stream:	Mississippi River (P)
First Classified Stream and ID:	Mississippi River (P); WBID# 3701
USGS Basin & Sub-watershed No.:	(07140105-0405)
Design Flow:	0.14 MGD
Average flow:	0.015 MGD
Design Sludge Production:	6.4 dry tons/year

OUTFALL #003 – Non-Contact Cooling Water, Fire Protection Water; SIC # 2676; NAICS # 322291
Receives non-contact cooling water generated from the evaporative cooling unit and the heating/ventilating/air conditioning systems. Non-contact cooling water is pumped from wells. Fire protection water would also discharge through this outfall in the event it was necessary. This outfall also receives stormwater which is not industrially exposed.

Legal Description:	Sec.04, T32N, R14E, Cape Girardeau County
UTM Coordinates:	X = 808891, Y = 4154201
Receiving Stream:	Tributary to Indian Creek
First Classified Stream and ID:	Indian Creek (P); WBID# 1828
USGS Basin & Sub-watershed No.:	(07140105-0501)
Design Flow:	0.027 MGD + Stormwater Flow
Average flow:	Dependent of Precipitation

OUTFALL #004 – Process water, Cooling Towers, and Domestic Wastewater (monitored separately); SIC #2676, #4952; NAICS# 322291, 221320. Receives process water from paper machines, boilers, cooling towers, fiber recovery, and miscellaneous other sources. Water originates from a horizontal collector well and is sent through a clarifier and automatic backwash filters before being sent to the paper machines. Water for the boilers is softened and sent through a reverse osmosis unit. After use, process water is sent to an equalization tank, and then undergoes pH adjustment and diffused air flotation before discharging from the outfall. All sludge is hauled offsite by a contract company. Sludge at from this outfall is currently hauled to a landfill.

Legal Description:	Land Grant 0819, Cape Girardeau County
UTM Coordinates:	X = 809986, Y = 4154605
Receiving Stream:	Mississippi River (P)
First Classified Stream and ID:	Mississippi River (P); WBID# 3701
USGS Basin & Sub-watershed No.:	(07140105-0405)
Design Flow:	4.54 MGD
Average flow:	1.94 MGD

FACILITY DESCRIPTION (CONTINUED)

OUTFALL #005- Non-contact cooling water, fire protection test water; SIC #2676; NAICS# 322291
Receives process non-contact cooling water generated from the evaporative cooling units and the heating/ventilation/air conditioning systems. Non- contact cooling water is pumped from wells. Fire protection water would also discharge through this outfall in the event it was necessary. This outfall also receives stormwater which is not industrially exposed.

Legal Description:	Sec.04, T32N, R14E, Cape Girardeau County
UTM Coordinates:	X = 808916, Y = 4154351
Receiving Stream:	Tributary to Indian Creek
First Classified Stream and ID:	Indian Creek (P); WBID# 1828
USGS Basin & Sub-watershed No.:	(07140105-0501)
Design Flow:	0.027 MGD + Stormwater flow
Average flow:	Dependent of Precipitation

OUTFALL #006- Non-contact cooling water, Fire protection water; SIC 2676; NAICS # 322291
Receives non-contact cooling water generated from the evaporative cooling unit and the heating/ventilating/air conditioning systems. Non-contact cooling water is pumped from wells. Fire protection water would also discharge through this outfall in the event it was necessary. This outfall also receives stormwater which is not industrially exposed.

Legal Description:	Sec.04, T32N, R14E, Cape Girardeau County
UTM Coordinates:	X = 808817, Y = 4154640
Receiving Stream:	Tributary to Opossum Creek
First Classified Stream and ID:	8-20-13 MUDD V.1.0 (C); WBID# 3960; locally known as Opossum Creek
USGS Basin & Sub-watershed No.:	(07140105-0501)
Design Flow:	0.027 MGD + stormwater flow
Average flow:	Dependent of Precipitation

OUTFALL #007- Non-contact cooling water, Fire protection water; SIC# 2676; NAICS # 322291
Receives non-contact cooling water generated from evaporative cooling unit and the heating/ventilation/air conditioning systems. Non- contact cooling water is pumped from wells. Fire protection water would also discharge through this outfall in the event it was necessary. This outfall also receives stormwater which is not industrially exposed.

Legal Description:	Sec.04, T32N, R14E, Cape Girardeau County
UTM Coordinates:	X = 808650, Y = 4154719
Receiving Stream:	Tributary to Turkey Creek
First Classified Stream and ID:	Turkey Creek (P); WBID# 1829
USGS Basin & Sub-watershed No.:	(07140105-0501)
Design Flow:	0.027 MGD + stormwater Flow
Average flow:	Dependent of Precipitation

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALL #001 & #006 *Non- Contact Cooling Water*	**TABLE A-1** **INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. In accordance with 10 CSR 20-7.031, the final effluent limitations outlined in Table A-2 must be achieved as soon as possible but no later than **April 1, 2020**. These interim effluent limitations are effective beginning **April 1, 2019** and remain in effect through **March 31, 2020** or as soon as possible. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETERS	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
PHYSICAL						
Flow	MGD	*		*	once/month	24 hr. total
Temperature	°F	90		90	once/month	measured
CONVENTIONAL						
pH Ω	SU	6.5-9.0		6.5-9.0	once/month	grab
Other						
Chlorine, Total Residual (TRC) ††	µg/L	*		*	once/month	grab
Oxygen, Dissolved β	mg/L	*		*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE MAY 28, 2019. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
METALS						
Thallium, Total Recoverable	µg/L	*		*	once/quarter◊	grab
NUTRIENTS						
Ammonia as N	mg/L	*		*	once/quarter◊	grab
Other						
Surfactants	mg/L	*		*	once/quarter◊	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JULY 28, 2019. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

OUTFALL #001 & #006 *Non- Contact Cooling Water*	**TABLE A-2** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on **April 1, 2020** and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
PHYSICAL						
Flow	MGD	*		*	once/month	24 hr. total
Temperature	°F	90		90	once/month	measured
CONVENTIONAL						
pH Ω	SU	6.5-9.0		6.5-9.0	once/month	grab
Other						
Chlorine, Total Residual (TRC) ††	µg/L	17		8	once/month	grab
Oxygen, Dissolved β	mg/L	*		*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE MAY 28, 2020. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
METALS						
Thallium, Total Recoverable	µg/L	*		*	once/quarter◊	grab
NUTRIENTS						
Ammonia as N	mg/L	*		*	once/quarter◊	grab
Other						
Surfactants	mg/L	*		*	once/quarter◊	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JULY 28, 2020. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALL #003, #005, #007 *Non- Contact Cooling Water*	**TABLE A-3** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**				
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on **April 1, 2019** and remain in effect until expiration of the permit. Such discharges shall be controlled, limited, and monitored by the permittee as specified below:					
EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
PHYSICAL						
Flow	MGD	*		*	once/month	24 hr. total
Temperature	°F	90		90	once/month	measured
CONVENTIONAL						
pH Ω	SU	6.5-9.0		6.5-9.0	once/month	grab
Other						
Chlorine, Total Residual (TRC) ††	µg/L	*		*	once/month	grab
Oxygen, Dissolved β	mg/L	*		*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE MAY 28, 2019. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
METALS						
Thallium, Total Recoverable	µg/L	*		*	once/quarter◊	grab
NUTRIENTS						
Ammonia as N	mg/L	*		*	once/quarter◊	grab
Other						
Surfactants	mg/L	*		*	once/quarter◊	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JULY 28, 2019. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALL #004 *Process Wastewater*	**TABLE A-4** **INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**				
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. In accordance with 10 CSR 20-7.031, the final effluent limitations outlined in Table A-2 must be achieved as soon as possible but no later than **April 1, 2020**. These interim effluent limitations are effective beginning **April 1, 2019** and remain in effect through **March 31, 2020** or as soon as possible. Such discharges shall be controlled, limited and monitored by the permittee as specified below:					
EFFLUENT PARAMETERS	UNITS	INTERIM LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM		MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
PHYSICAL						
Flow	MGD	*		*	once/month	24 Hr total
CONVENTIONAL						
Biochemical Oxygen Demand	lbs/day	11,340		5,508	twice/week	composite ¥
Oil & Grease	mg/L	15		10	twice/week	grab
pH Ω	SU	6.5 to 9.0		6.5 to 9.0	twice/week	grab
Total Suspended Solids	lbs/day	9,720		4,212	twice/week	composite ¥
OTHERS						
Chlorine, Total Residual ††	µg/L	*		*	once/month	grab
Cyanide, amenable to Chlorination	µg/L	*		*	once/month	grab
Oxygen, Dissolved - minimum β	mg/L	*		*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE MAY 28, 2019. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
NUTRIENTS						
Ammonia as N	mg/L	*		*	once/quarter ◊	grab
Nitrogen, Total (TN)	mg/L	*		*	once/quarter ◊	grab
Phosphorus, Total (TP)	mg/L	*		*	once/quarter ◊	grab
OTHER						
Chloroform	mg/L	*		*	once/quarter ◊	grab
Surfactants	mg/L	*		*	once/quarter ◊	grab
Pentachlorophenol	mg/L	0.21		0.21	once/quarter ◊	grab
Pentachlorophenol	lbs/day	4.5		4.5	once/quarter ◊	calculation
2,4,5-Trichlorophenol	mg/L	0.07		0.07	once/quarter ◊	grab
2,4,5-Trichlorophenol	lbs/day	1.6		1.6	once/quarter ◊	calculation
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JULY 28, 2019. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Whole Effluent Toxicity, Acute See special condition #1	TU_A	*			twice/year φ	composite
MONITORING REPORTS SHALL BE SUBMITTED TWICE PER YEAR; THE FIRST REPORT IS DUE JULY 28, 2019. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALL #004 *Process Wastewater*	**TABLE A-5** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**				
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on **April 1, 2020** and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:					
EFFLUENT PARAMETERS	UNITS	FINAL LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
PHYSICAL					
Flow	MGD	*	*	Twice/week	24 Hr total
CONVENTIONAL					
Biochemical Oxygen Demand	lbs/day	11,340	5,508	twice/week	composite ¥
Oil & Grease	mg/L	15	10	twice/week	grab
pH Ω	SU	6.5 to 9.0	6.5-9.0	twice/week	grab
Total Suspended Solids	lbs/day	9,720	4,212	twice/week	composite ¥
NUTRIENTS					
Ammonia as N	mg/L	*	*	once/month	grab
Nitrite plus Nitrate	mg/L	*	*	once/month	grab
Nitrogen, Total as N (TN)	mg/L	*	*	once/month	grab
Phosphorus, Total (TP)	mg/L	*	*	once/month	grab
Total Kjeldahl Nitrogen (TKN)	mg/L	*	*	once/month	grab
OTHERS					
Chlorine, Total Residual ††	µg/L	209	86.1	once/month	grab
Cyanide, amenable to Chlorination	µg/L	*	*	once/month	grab
Oxygen, Dissolved - minimum β	mg/L	*	*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE MAY 28, 2020. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.					
METALS					
Copper, Total Recoverable	µg/L	*	*	once/quarter ◊	grab
Lead, Total Recoverable	µg/L	*	*	once/quarter ◊	grab
OTHER					
Chloroform	mg/L	*	*	once/quarter ◊	grab
Surfactants	mg/L	*	*	once/quarter ◊	grab
Pentachlorophenol	mg/L	0.21	0.21	once/quarter ◊	grab
Pentachlorophenol	lbs/day	4.5	4.5	once/quarter ◊	calculation
2,4,5-Trichlorophenol	mg/L	0.07	0.07	once/quarter ◊	grab
2,4,5-Trichlorophenol	lbs/day	1.6	1.6	once/quarter ◊	calculation
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JULY 28, 2020. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.					
Whole Effluent Toxicity, Acute See special condition #1	TU_A	*		twice/year φ	composite
MONITORING REPORTS SHALL BE SUBMITTED TWICE PER YEAR; THE FIRST REPORT IS DUE JULY 28, 2020. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.					

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALL #02A *Domestic Wastewater*	**TABLE A-6** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The facility is authorized to discharge from outfall(s) as specified. The final effluent limitations shall become effective on **February 1, 2022** and remain in effect until expiration of the permit. Discharges shall be controlled, limited and monitored by the facility as specified below:

EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: M					
PHYSICAL					
Flow	MGD	*	*	once/month	24 hr. total
CONVENTIONAL					
Biochemical Oxygen Demand – 5 day	mg/L	45	30	once/month	composite ¥
Chlorine, Total Residual	µg/L	*	*	once/month	grab
Escherichia Coliform (*E. coli*)[ǂ]	#/100 ml	1030	206	once/month	grab
pH [†]	SU	6.5 to 9.0	-	once/month	grab
Total Suspended Solids	mg/L	45	30	once/month	composite ¥
NUTRIENTS					
Ammonia as N – Jan, Feb, Mar, Nov	mg/L	187.3	187.3	once/month	grab
Ammonia as N – April	mg/L	158.7	158.7	once/month	grab
Ammonia as N – May	mg/L	252.6	252.6	once/month	grab
Ammonia as N – June, July, Sept	mg/L	158.7	158.7	once/month	grab
Ammonia as N – August	mg/L	133.4	133.4	once/month	grab
Ammonia as N – October	mg/L	111.3	111.3	once/month	grab
Ammonia as N – December	mg/L	158.8	158.8	once/month	grab
Kjeldahl Nitrogen, Total (TKN)	mg/L	*	*	once/month	grab
Nitrate plus Nitrite as N	mg/L	*	*	once/month	grab
Phosphorus, Total P (TP)	mg/L	*	*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE MARCH 28, 2022. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.					
LIMIT SET: A					
TOXICITY					
Acute Whole Effluent Toxicity See Special Condition #1	TUa	*	-	once/year	composite ¥
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2023. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.					

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

* Monitoring and reporting requirement only.

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

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

† Final limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean.

†† This permit contains a Total Residual Chlorine (TRC) limits or monitoring requirements. The monthly average effluent limit is below the minimum quantification level (ML) of the most sensitive EPA approved CLTRC methods. The Department has determined the current acceptable ML for total residual chlorine to be 130 µg/L when using the DPD Colorimetric Method #4500 – CL G. from Standard Methods for the Examination of Waters and Wastewater. The permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. Measured values greater than or equal to the minimum quantification level of 130 µg/L will be considered violations of the permit and values less than the minimum quantification level of 130 µg/L will be considered to be in compliance with the permit limitation. The minimum quantification level does not authorize the discharge of chlorine in excess of the effluent limits stated in the permit.

β Dissolved Oxygen is a minimum value. The facility will report the minimum value for the daily report.

◊ Quarterly sampling

MINIMUM QUARTERLY SAMPLING REQUIREMENTS			
QUARTER	MONTHS	QUARTERLY EFFLUENT PARAMETERS	REPORT IS DUE
First	January, February, March	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	October 28th
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28th

φ Twice yearly sampling schedule:

MINIMUM BI-ANNUAL SAMPLING REQUIREMENTS			
	MONTHS	WET TEST	REPORT IS DUE
First Half of Year	January, February, March, April, May, June	Sample at least once during any month of the half year	July 28th
Second Half of Year	July, August, September, October, November, December	Sample at least once during any month of the half year	January 28th

B. SCHEDULE OF COMPLIANCE

Schedules of compliance are allowed per 40 CFR 122.47. The facility shall attain compliance with final effluent limitations for copper as established in this permit as soon as reasonably achievable:

1. The permittee shall submit interim progress reports detailing progress made in attaining compliance with the final effluent limits every 12 months from August 1, 2017.

2. By August 1, 2020 the permittee shall attain compliance with the final effluent limits at outfall #002, for Copper

In addition to the previously established schedule of compliance. The facility shall attain compliance with final effluent limitations for Total Residual Chlorine for outfalls #001 #004 and #006 as established in this permit as soon as reasonably achievable but no more than one (1) year from the effective date of this permit.

Please submit progress reports via the electronic reporting system.

C. STANDARD CONDITIONS

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

D. SPECIAL CONDITIONS

1. **Outfall #02A and #004:** Acute Whole Effluent Toxicity (WET) tests shall be conducted as follows:
   (a) Freshwater Species and Test Methods: Species and short-term test methods for estimating the acute toxicity of NPDES effluents are found in the most recent edition of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA/821/R-02/012; Table IA, 40 CFR Part 136). The permittee shall concurrently conduct 48-hour, static, non-renewal toxicity tests with the following species:
      - The fathead minnow, *Pimephales promelas* (Acute Toxicity EPA Test Method 2000.0).
      - The daphnid, *Ceriodaphnia dubia* (Acute Toxicity EPA Test Method 2002.0).

   (b) Chemical and physical analysis of the upstream control sample and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping. Where upstream receiving water is not available or known to be toxic, other approved control water may be used.
   (c) Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.
   (d) The Allowable Effluent Concentration (AEC) for this facility is 9.1% with the dilution series being: 81.8%, 27.3%, 9.1%, 3.0%, and 1.0%.
   (e) All chemical and physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% effluent concentration.
   (f) The laboratory shall not chemically dechlorinate the sample prior to analysis.
   (g) The facility must submit a full laboratory report for all toxicity testing. The report must include a quantification of acute toxic units ($TU_a = 100/LC_{50}$) reported according to the test methods manual chapter on report preparation and test review. The Lethal Concentration 50 Percent (LC_{50}) is the effluent concentration that would cause death in 50 percent of the test organisms at a specific time.
   (h) Effluent limitations for outfall #004 are implemented upon permit expiration; on the date of April 1, 2024. The effluent limits for outfall #004 for the Acute WET Test are 11 TUa for both species.

2. Electronic Discharge Monitoring Report (eDMR) Submission System. Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent monitoring data and any report required by the permit (unless specifically directed otherwise by the permit), shall be submitted via an electronic system to ensure timely, complete, accurate, and nationally consistent set of data for the NPDES program. The eDMR system is currently the only Department-approved reporting method for this permit unless specified elsewhere in this permit, or a waiver is granted by the Department. The facility must register in the Department's eDMR system through the Missouri Gateway for Environmental Management (MoGEM) before the first report is due.

3. Bypasses are not authorized at this facility unless they meet the criteria in 40 CFR 122.41(m). If a domestic wastewater bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3), and with Standard Condition Part I, Section B, subsection 2.b. Bypasses are to be reported to the Southeast Regional Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. Once an electronic reporting system compliant with 40 CFR Part 127, the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, is available all bypasses must be reported electronically via the new system. Blending, which is the practice of combining a partially-treated wastewater process stream with a fully-treated wastewater process stream prior to discharge, is not considered a form of bypass. If the permittee wishes to utilize blending, the permittee shall file an application to modify this permit to facilitate the inclusion of appropriate monitoring conditions.

4. The discharge from the wastewater treatment facility shall be conveyed to the receiving stream via a closed pipe or a paved or rip-rapped open channel. Sheet or meandering drainage is not acceptable. The outfall sewer shall be protected against the effects of floodwater, ice or other hazards as to reasonably insure its structural stability and freedom from stoppage. The outfall shall be maintained so that a sample of the effluent can be obtained at a point after the final treatment process and before the discharge mixes with the receiving waters.

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

6. Report as no-discharge when a discharge does not occur during the report period. It is a violation of this permit to report no-discharge when a discharge has occurred.

D. SPECIAL CONDITIONS (CONTINUED)

7. Permittee shall adhere to the following minimum Best Management Practices (BMPs):
   (a) Prevent the spillage or loss of fluids, oil, grease, fuel, etc. from vehicle maintenance, equipment cleaning, warehouse activities, and other areas 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 these materials are not exposed to stormwater or provide other prescribed BMPs 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. Any spills should be noted in the SWPPP.
   (d) Provide good housekeeping practices on the site to keep trash from entry into waters of the state.
   (e) Provide sediment and erosion control sufficient to prevent or control sediment loss off of the property
   (f) Ensure adequate provisions are provided to prevent, and to protect embankments from erosion.

8. The full implementation of this operating permit, which includes implementation of any applicable schedules of compliance, shall constitute compliance with all applicable federal and state statutes and regulations in accordance with §644.051.16, RSMo, and the CWA section 402(k); however, this permit may be reopened and modified, or alternatively revoked and reissued to 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 contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or controls any pollutant not limited in the permit.

9. Changes in Discharges of Toxic Pollutant
   In addition to the reporting requirements under §122.41(1), all existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:
   (a) That an activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, 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;
      (3) Five hundred micrograms per liter (500 µg/L) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol;
      (4) One milligram per liter (1 mg/L) for antimony;
      (5) Five (5) times the maximum concentration value reported for the pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or
      (6) The notification level established by the Department in accordance with 40 CFR 122.44(f).
   (b) That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
      (1) Five hundred micrograms per liter (500 µg/l);
      (2) One milligram per liter (1 mg/l) for antimony;
      (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with §122.21(g)(7).
      (4) The level established by the Director in accordance with §122.44(f).

10. Reporting of Non-Detects
   (a) An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way the precision and accuracy of the analyzed result can be enumerated.
   (b) The permittee shall not report a sample result as "non-detect" without also reporting the detection limit of the test or the reporting limit of the laboratory. Reporting as "non-detect" without also including the detection/reporting limit will be considered failure to report, which is a violation of this permit.
   (c) The permittee shall report the non-detect result using the less than "<" symbol and the laboratory's detection/reporting limit (e.g. <6).
   (d) Where the permit contains a Minimum Level (ML) and the permittee is granted authority in the permit to report zero in lieu of the < ML for a specified parameter, then zero (0) is reported for the parameter.
   (e) See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.
   (f) When calculating monthly averages, one-half of the minimum detection limit (MDL) should be used instead of a zero. Where all data are below the MDL, the "<MDL" shall be reported as indicated in item (C).

D. SPECIAL CONDITIONS (CONTINUED)

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

11. To protect the general criteria found at 10 CSR 20-7.031(4), before releasing water accumulated in secondary containment areas, it must be examined for hydrocarbon odor and presence of sheen. If the presence of odor or sheen is indicated, the water shall be treated using an appropriate method or disposed of in accordance with legally approved methods, such as being sent to a wastewater treatment facility. Following treatment, the water shall be tested for oil and grease, benzene, toluene, ethylbenzene, and xylene using 40 CFR part 136 methods. All pollutant levels must be below the most protective, applicable standards for the receiving stream, found in 10 CSR 20-7.031 Table A. Records of all testing and treatment of water accumulated in secondary containment shall be stored with permit records to be available on demand to DNR and EPA personnel.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
JANUARY 2022 MODIFICATION STATEMENT OF BASIS
FOR
MO-0044121
PROCTER & GAMBLE COMPANY

This Statement of Basis (Statement) gives pertinent information regarding modifications to the above listed operating permit. A Statement is not an enforceable part of a Missouri State Operating Permit. Changes found here supersede previous fact sheet determinations. The permit was revised as appropriate to reflect changes enumerated in this modification.

PART I. FACILITY INFORMATION

Major, industrial, >1 MGD. All previously identified information regarding this facility is still correct except for the following. To provide an internal monitoring point to the facility for the domestic wastewater outfall; to properly provide a representative sample of only the domestic wastewater outfall; and to ensure all samples taken are only from the domestic wastewater outfall and not mixed with other effluent. All information in this statement of basis supersedes previous information regarding the domestic wastewater outfall. The continuing authority, F00128544, is in good standing with the Secretary of State.

PART II. MODIFICATION RATIONALE

This operating permit is hereby modified to reflect the addition of a sampling point for the domestic wastewater flows removed from outfall #004, moved to outfall #02A. Outfall #02A is a wholly separate outfall and can not be monitored as combined with outfall #004 wastewater. Antidegradation review information was continued for the domestic wastewater outfall.

Nutrient monitoring was updated to comply with 10 CSR 20-7.015(9)(D)(8), also found as requirements in the antidegradation review. Nitrate + nitrite and total Kjeldahl nitrogen (TKN) are added at a frequency of once per month; additionally, frequency was increased on phosphorus and total nitrogen monitoring to once per month to comply with 10 CSR 20-7.015(9)(D)(8).

Special condition #2, related to eDMR use, was updated to reflect the current version of the eDMR system information.

DISCHARGE MONITORING REPORTING – ELECTRONIC (EDMR) SUBMISSION SYSTEM:

The U.S. Environmental Protection Agency (EPA) promulgated a final rule on October 22, 2015, to modernize Clean Water Act reporting for municipalities, industries, and other facilities by requiring electronic data reporting. To comply with the federal rule, the Department is requiring all facilities to submit discharge monitoring data and reports online. To review historic data, the Department's database has a publically facing search engine, available at https://apps5.mo.gov/mocwis_public/dmrDisclaimer.do

Registration and other information regarding MoGEM can be found at https://dnr.mo.gov/mogem. Information about the eDMR system can be found at https://dnr.mo.gov/env/wpp/edmr.htm.The first user shall register as an Organization Official and the association to the facility must be approved by the Department. To access the eDMR system, use: https://apps5.mo.gov/mogems/welcome.action For assistance using the eDMR system, contact edmr@dnr.mo.gov or call 855-789-3889 or 573-526-2082. To assist the facility in entering data into the eDMR system, the permit describes limit sets designators in each table in Part A of the permit. Facility personnel will use these identifiers to ensure data entry is being completed appropriately. For example, M for monthly, Q for quarterly, A for annual, and others as identified.

Per 40 CFR 127.15 and 127.24, permitted facilities may request a temporary waiver for up to 5 years or a permanent waiver from electronic reporting from the Department. To obtain an electronic reporting waiver, a facility must first submit an eDMR Waiver Request Form: http://dnr.mo.gov/forms/780-2692-f.pdf. A request must be made for each operating permit. An approved waiver is not transferable. The Department must review and notify the facility within 120 calendar days of receipt if the waiver request has been approved or rejected [40 CFR 124.27(a)]. During the Department review period as well as after a waiver is granted, the facility must continue submitting a hard-copy of any reports required by their permit. The Department will enter data submitted in hard-copy from those facilities allowed to do so, and electronically submit the data to the EPA on behalf of the facility.

GENERAL CRITERIA CONSIDERATIONS:

In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into permits for pollutants determined to cause, have reasonable potential to cause, or to contribute to, an excursion above any water quality standard, including narrative water quality criteria. In order to comply with this regulation, the permit writer has completed a reasonable potential determination on whether discharges have reasonable potential to cause, or contribute to an excursion of the general criteria listed in 10 CSR 20-7.031(4). In instances where reasonable potential exists, the permit includes limitations to address the reasonable potential. In discharges where reasonable potential does not exist, the permit may include monitoring to later determine the discharge's potential to impact the narrative criteria.

Additionally, 644.076.1 RSMo, as well as Part I §D – Administrative Requirements of Standard Conditions included in this permit state it shall be unlawful for any person to cause or allow any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of §§644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule, or regulation promulgated by the commission. See Part IV for specific determinations.

NUTRIENT MONITORING:
Nutrient monitoring is required for facilities characteristically or expected to discharge nutrients (nitrogenous compounds and/or phosphorus) when the design flow is equal to or greater than 0.1 MGD per 10 CSR 20-7.015(9)(D)8. This requirement is applicable to all Missouri waterways.

- ✓ The total design flow for this facility is >1 MGD and the facility discharges nutrients, therefore nutrient monitoring is required on a monthly basis per 10 CSR 20-7.015(9)(D)8.B. for discharges equal to or greater than 1 MGD This facility is required to monitor for ammonia, total Kjeldahl nitrogen, nitrate plus nitrite, and phosphorus.

PERMIT SHIELD:
Enforceable conditions, generally called permit shield, are found under CWA section 402(k) or Section 644.051.16, RSMo. All permits issued by the State of Missouri protect both the permittee and issuer from legal intervention, but only when all discharges and activities are clearly divulged by the facility; and when the issuer evaluates all discharges and activities during the renewal (or modification) process. During the facility review of the permit draft, it is both the facility's and Department's responsibility to ensure all types of effluent the facility wishes to discharge, or qualified activities the facility wishes to perform (such as land application), are authorized in some manner. Authorization may be either through an outfall established in the permit under the facility description heading, or after reviewing the fact sheet which should include a mention of the discharge (or activity) and endorsing the discharge (or activity) as de minimis or through some other described determination. The Department must issue a legally binding and enforceable permit, which can only be completed through a thorough review from both parties.

MODIFICATION SUMMARY:
The permit writer reviewed the modification application materials, including the antidegradation review (attached after the 2020 statement of basis). Minor formatting and realignment throughout the permit was completed. No other changes were made to the permit at this time. The 2020 modification statement of basis and the original factsheet is retained below this modification for informational purposes.

OUTFALL #02A – DOMESTIC WASTEWATER LIMIT DERIVATION
Table A-6 was added to the permit.

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVG.	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL						
FLOW	MGD	*	*	ONCE/MONTH	MONTHLY	24 HR. TOT
CONVENTIONAL						
BOD_5	mg/L	45	30	ONCE/MONTH	MONTHLY	composite ¥
CHLORINE, TOTAL RESIDUAL	µg/L	*	*	ONCE/MONTH	MONTHLY	GRAB
E. COLI †	#/100mL	1030	206	ONCE/MONTH	MONTHLY	GRAB
PH Ω	SU	6.5 TO 9.0	-	ONCE/MONTH	MONTHLY	GRAB
TOTAL SUSPENDED SOLIDS (TSS)	mg/L	45	30	ONCE/MONTH	MONTHLY	composite ¥
NUTRIENTS						
AMMONIA AS N – JAN, FEB, MAR, NOV	mg/L	187.3	187.3	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – APRIL	mg/L	158.7	158.7	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – MAY	mg/L	252.6	252.6	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – JUNE, JULY, SEPT	mg/L	158.7	158.7	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – AUGUST	mg/L	133.4	133.4	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – OCTOBER	mg/L	111.3	111.3	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – DECEMBER	mg/L	158.8	158.8	ONCE/MONTH	MONTHLY	GRAB
KJELDAHL NITROGEN, TOTAL (TKN)	mg/L	*	*	ONCE/MONTH	MONTHLY	GRAB
NITRATE PLUS NITRITE AS N	mg/L	*	*	ONCE/MONTH	MONTHLY	GRAB
PHOSPHORUS, TOTAL P (TP)	mg/L	*	*	ONCE/MONTH	MONTHLY	GRAB
OTHER						
WET TEST - ACUTE	TUa	*	-	ONCE/YEAR	ANNUALLY	composite ¥

PHYSICAL:

Flow
In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to ensure compliance with permitted effluent limitations. If the facility is unable to obtain effluent flow, then it is the responsibility of the facility to inform the Department, which may require the submittal of an operating permit modification. The facility will report the total flow in millions of gallons per day (MGD), monthly monitoring is required for this outfall based on the design flow of 0.2 MGD (9/2018 application) to coincide with the nutrient monitoring requirements pursuant to 10 CSR 20-7.015(9)(D)(8).

CONVENTIONAL:

Biochemical Oxygen Demand - 5 Day (BOD_5)
45 mg/L daily maximum, 30 mg/L monthly average per 10 CSR 20-7.015(2) for the Missouri or Mississippi River. Weekly effluent limits can only be applied to Publically Owned Treatment Works (POTWs) pursuant to 40 CFR 122.45(d)(1).

Escherichia coli (E. coli)
Daily maximum limit of 1030 colony forming units per 100 mL [10 CSR 20-7.015(9)(B)1.E.] and a monthly geometric mean limit of 206 bacteria per 100 mL [10 CSR 20-7.031 Table A1] during the recreational season from April 1 through October 31 only [10 CSR 20-7.031(5)(C)], to protect Whole Body Contact (B) [10 CSR 20-7.031(C)2.A.(II)] designated use of the receiving stream. Monthly monitoring required; additional samples may need to be obtained to meet the monthly average requirement. An effluent limit for both daily maximum and monthly geometric mean is required by 40 CFR 122.45(d). The geometric mean is calculated by multiplying all of the data points and then taking the n^{th} root of this product, where n = # of samples collected. For example: Five *E. coli* samples were collected with results of 1, 4, 5, 6, and 10 (#/100 mL). Geometric mean = 5^{th} root of (1)(4)(5)(6)(10) = 5^{th} root of 1,200 = 4.1 #/100 mL.

Given that E. coli is only present in the domestic wastewater at this site, and no other sources are expected, and that it is properly limited at this outfall, *E. coli* is removed at outfall #004.

pH
6.5 to 9.0 SU per 10 CSR 20-7.031(5)(E). Technology based limits [10 CSR 20-7.015(2)] were not approved under the antidegradation review therefore water quality limits are applicable to this outfall. pH is a fundamental water quality indicator. Additionally, ammonia availability in wastewater is dependent on pH. Limitations in this permit will protect against aquatic organism toxicity, downstream water quality issues, human health hazard contact, and negative physical changes in accordance with the general criteria at 10 CSR 20-7.031(4) and the Clean Water Act's (CWA) goal of 100% fishable and swimmable rivers and streams.

Total Residual Chlorine (TRC)
Monitoring only. On the previous application the permittee reported chlorinating the water at outfall #002 before use. As no change of operation was disclosed monitoring is being retained to determine the reasonable potential for this pollutant to exceed water quality standards at this outfall.

Total Suspended Solids (TSS)
45 mg/L daily maximum, 30 mg/L monthly average per 10 CSR 20-7.015(2) for the Missouri or Mississippi River. There are no established water quality standards for this parameter; the permit writer has determined the technology limits are the most applicable limits to this discharge. There are no water quality limitations established in Missouri for this parameter, therefore the technology limits are applied. The technology limits established are also expected to protect for water quality. Weekly effluent limits can only be applied to Publically Owned Treatment Works (POTWs) pursuant to 40 CFR 122.45(d)(1).

NUTRIENTS:

Ammonia, Total as Nitrogen
Ammonia is a parameter of concern in domestic wastewater. Early life stages present [10 CSR 20-7.031(5)(B)7.C & Table B3], salmonids absent based on WWH designation of stream; total ammonia nitrogen criteria apply. Background total ammonia nitrogen assumption = 0.01 mg/L. Previous domestic wastewater limits were 5.6 mg/L daily maximum, 1.3 mg/L monthly average when the discharge was going to a small stream; this permit provides limits for the Mississippi River with no SOC because the facility will be able to meet the new limits. Currently, there is no outfall specific data for ammonia. Limits are provided for this permit term until a finding of RP can be made. When the acute limit is lower than the chronic calculation, the acute limit is applied for both.

January
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.6]))+(58.4/(1+10^(pH[7.6]-7.204)) = 17 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.6]))+(2.487/(1+10^pH[7.6]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[7.2]))) = 3.9 mg/L
Acute WLA: ((0.309 cfsDF + 3.094 cfs1Q10ZID) * 17 CMC – (3.094 cfs1Q10ZID * 0.01 bkg)) / 0.30944572 cfsDF = 187.3 mg/L
Chronic WLA: ((0.309 cfsDF + 17236.25 cfs30Q10MZ) * 3.928 CCC – (17236.25 cfs30Q10MZ * 0.01 bkg)) / 0.309 cfsDF = 218223.7 mg/L

February
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.6]))+(58.4/(1+10^(pH[7.6]-7.204)) = 17 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.6]))+(2.487/(1+10^pH[7.6]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[7]))) = 3.9 mg/L
Acute WLA: Ce = ((0.309 cfsDF + 3.094 cfs1Q10ZID) * 17 CMC – (3.094 cfs1Q10ZID * 0.01 bkg)) / 0.30944572 cfsDF = 187.3 mg/L
Chronic WLA: ((0.309 cfsDF + 17236.25 cfs30Q10MZ) * 3.928 CCC – (17236.25 cfs30Q10MZ * 0.01 bkg)) / 0.309 cfsDF = 218223.7 mg/L

March
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.6]))+(58.4/(1+10^(pH[7.6]-7.204)) = 17 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.6]))+(2.487/(1+10^pH[7.6]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[12.5]))) = 3.9 mg/L
Acute WLA: Ce = ((0.309 cfsDF + 3.094 cfs1Q10ZID) * 17 CMC – (3.094 cfs1Q10ZID * 0.01 bkg)) / 0.30944572 cfsDF = 187.3 mg/L
Chronic WLA: ((0.309 cfsDF + 17236.25 cfs30Q10MZ) * 3.928 CCC – (17236.25 cfs30Q10MZ * 0.01 bkg)) / 0.309 cfsDF = 218223.7 mg/L

April
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.7]))+(58.4/(1+10^(pH[7.7]-7.204)) = 14.4 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.7]))+(2.487/(1+10^pH[7.7]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[18]))) = 2.8 mg/L
Acute WLA: ((0.309 cfsDF + 3.094 cfs1Q10ZID) * 14.4 CMC – (3.094 cfs1Q10ZID * 0.01 bkg)) / 0.30944572 cfsDF = 158.7 mg/L
Chronic WLA: ((0.309 cfsDF + 17236.25 cfs30Q10MZ) * 2.822 CCC – (17236.25 cfs30Q10MZ * 0.01 bkg)) / 0.309 cfsDF = 156610.9 mg/L

May
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.4]))+(58.4/(1+10^(pH[7.4]-7.204)) = 23 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.4]))+(2.487/(1+10^pH[7.4]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[22]))) = 2.9 mg/L
Acute WLA: ((0.309 cfsDF + 3.094 cfs1Q10ZID) * 23 CMC – (3.094 cfs1Q10ZID * 0.01 bkg)) / 0.30944572 cfsDF = 252.6 mg/L
Chronic WLA: ((0.309 cfsDF + 17236.25 cfs30Q10MZ) * 2.907 CCC – (17236.25 cfs30Q10MZ * 0.01 bkg)) / 0.309 cfsDF = 161389.8 mg/L

June
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.7]))+(58.4/(1+10^(pH[7.7]-7.204)) = 14.4 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.7]))+(2.487/(1+10^pH[7.7]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[26.4]))) = 1.7 mg/L
Acute WLA: ((0.309 cfsDF + 3.094 cfs1Q10ZID) * 14.4 CMC – (3.094 cfs1Q10ZID * 0.01 bkg)) / 0.30944572 cfsDF = 158.7 mg/L
Chronic WLA: ((0.309 cfsDF + 17236.25 cfs30Q10MZ) * 1.654 CCC – (17236.25 cfs30Q10MZ * 0.01 bkg)) / 0.309 cfsDF = 91570.1 mg/L

July
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.7]))+(58.4/(1+10^(pH[7.7]-7.204)) = 14.4 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.7]))+(2.487/(1+10^pH[7.7]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[29.3]))) = 1.4 mg/L
Acute WLA: ((0.309 cfsDF + 3.094 cfs1Q10ZID) * 14.4 CMC – (3.094 cfs1Q10ZID * 0.01 bkg)) / 0.30944572 cfsDF = 158.7 mg/L
Chronic WLA: ((0.309 cfsDF + 17236.25 cfs30Q10MZ) * 1.377 CCC – (17236.25 cfs30Q10MZ * 0.01 bkg)) / 0.309 cfsDF = 76137.3 mg/L

August
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.8]))+(58.4/(1+10^(pH[7.8]-7.204)) = 12.1 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.8]))+(2.487/(1+10^pH[7.8]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[29.2]))) = 1.2 mg/L
Acute WLA: ((0.309 cfsDF + 3.094 cfs1Q10ZID) * 12.1 CMC – (3.094 cfs1Q10ZID * 0.01 bkg)) / 0.30944572 cfsDF = 133.4 mg/L
Chronic WLA: ((0.309 cfsDF + 17236.25 cfs30Q10MZ) * 1.232 CCC – (17236.25 cfs30Q10MZ * 0.01 bkg)) / 0.309 cfsDF = 68041.1 mg/L

September
Acute AQL WQS: (0.411/(1+10^7.204- pH[7.7]))+(58.4/(1+10^(pH[7.7]-7.204)) = 14.4 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.7]))+(2.487/(1+10^pH[7.7]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[26.1]))) = 1.7 mg/L
Acute WLA: ((0.309 cfsDF + 3.094 cfs1Q10ZID) * 14.4 CMC – (3.094 cfs1Q10ZID * 0.01 bkg)) / 0.30944572 cfsDF = 158.7 mg/L
Chronic WLA: ((0.309 cfsDF + 17236.25 cfs30Q10MZ) * 1.686 CCC – (17236.25 cfs30Q10MZ * 0.01 bkg)) / 0.309 cfsDF = 93337.5 mg/L

October
Acute AQL WQS: (0.411/(1+10^7.204- pH[7.9]))+(58.4/(1+10^(pH[7.9]-7.204)) = 10.1 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.9]))+(2.487/(1+10^pH[7.9]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[19.1]))) = 2 mg/L
Acute WLA: ((0.309 cfsDF + 3.094 cfs1Q10ZID) * 10.1 CMC – (3.094 cfs1Q10ZID * 0.01 bkg)) / 0.30944572 cfsDF = 111.3 mg/L
Chronic WLA: ((0.309 cfsDF + 17236.25 cfs30Q10MZ) * 2.042 CCC – (17236.25 cfs30Q10MZ * 0.01 bkg)) / 0.309 cfsDF = 113190.5 mg/L

November
Acute AQL WQS: (0.411/(1+10^7.204- pH[7.6]))+(58.4/(1+10^(pH[7.6]-7.204)) = 17 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.6]))+(2.487/(1+10^pH[7.6]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[14]))) = 3.9 mg/L
Acute WLA: ((0.309 cfsDF + 3.094 cfs1Q10ZID) * 17 CMC – (3.094 cfs1Q10ZID * 0.01 bkg)) / 0.30944572 cfsDF = 187.3 mg/L
Chronic WLA: ((0.309 cfsDF + 17236.25 cfs30Q10MZ) * 3.928 CCC – (17236.25 cfs30Q10MZ * 0.01 bkg)) / 0.309 cfsDF = 218223.7 mg/L

December
Acute AQL WQS: (0.411/(1+10^7.204- pH[7.7]))+(58.4/(1+10^(pH[7.7]-7.204)) = 14.4 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.7]))+(2.487/(1+10^pH[7.7]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[8]))) = 3.5 mg/L
Acute WLA: ((0.309 cfsDF + 3.094 cfs1Q10ZID) * 14.4 CMC – (3.094 cfs1Q10ZID * 0.01 bkg)) / 0.30944572 cfsDF = 158.8 mg/L
Chronic WLA: ((0.309 cfsDF + 17236.25 cfs30Q10MZ) * 3.524 CCC – (17236.25 cfs30Q10MZ * 0.01 bkg)) / 0.309 cfsDF = 195749.5 mg/L

Kjeldahl Nitrogen, Total (TKN)
Nitrogen is expected to be present in domestic wastewater therefore monthly monitoring is required per 10 CSR 20-7.015(9)(D)8.B.

Nitrate plus Nitrite as N
Nitrogen is expected to be present in domestic wastewater therefore monthly monitoring is required per 10 CSR 20-7.015(9)(D)8.B.

Phosphorus, Total P (TP)
Phosphorus is expected to be present in domestic wastewater therefore monthly monitoring is required per 10 CSR 20-7.015(9)(D)8.B.

OTHER:

Whole Effluent Toxicity (WET) Test
Monitoring is required to determine if reasonable potential exists for the discharge to cause toxicity within the receiving stream. A WET test is a quantifiable method to conclusively determine if discharges from the facility cause toxicity to aquatic life by itself, in combination with, or through synergistic responses, when mixed with receiving stream water. Under the CWA §101(a)(3), requiring WET testing is reasonably appropriate for site-specific Missouri State Operating Permits to quantify toxicity. WET testing is also required by 40 CFR 122.44(d)(1). WET testing ensures the provisions in 10 CSR 20-6 and Missouri's Water Quality Standards in 10 CSR 20-7 are being met. Under 10 CSR 20-6.010(8)(A)4, the Department may require other terms and conditions it deems necessary to ensure compliance with the CWA and related regulations of the Missouri Clean Water Commission. Missouri Clean Water Law (MCWL) RSMo 644.051.3 requires the Department to set permit conditions complying with the MCWL and CWA. 644.051.4 RSMo specifically references toxicity as an item the Department must consider in permits (along with water quality-based effluent limits); and RSMo 644.051.5 is the basic authority to require testing conditions. WET tests are required by all facilities meeting any of the following criteria:

- ✓ Facility is a designated a Major
- ✓ Facility has water quality-based effluent limitations for toxic substances
- ✓ Annual testing is the minimum testing frequency; monitoring requirements promulgated in 40 CFR 122.44(i)(2) state "requirements to report monitoring results shall be established on a case-by-case basis with a frequency dependent on the nature and effect of the discharge, but in no case less than once per year."

OUTFALL #004 – PROCESS WASTEWATER

Data were reviewed for the wastewater at outfall #004. It was noted that the acute WET tests showed some transient toxicity; at this time, a reasonable potential determination has been made that there is WET RP; Special condition #1 was modified to include effluent limits which begin upon permit expiration. The new effluent limits will be established in the next renewal without an SOC because there is significant time within this permit to determine the cause of toxicity and provide remedies to the toxic wastewater. When a determination has been made for reasonable potential; in this instance resultant values were submitted over the proposed effluent limitations; then the permit must contain a limit for that parameter pursuant to 40 CFR 122.44(d)(1)(iii).

The TUa limit was developed as follows: the AEC is 9.1 for the acute test. The LC50 is 100/AEC = 100/9.1 = 10.989 = 11 TUa. One data point were over the proposed limit; monitoring period ending 12/31/2019 for *Ceriodaphnia dubia* was 19.2 TUa.

This change is an allowable change under the reopener clause pursuant to 40 CFR 122.62(a)(2).

PART III. ADMINISTRATIVE REQUIREMENTS

On the basis of preliminary staff review, and utilizing current applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue this permit subject to specified effluent limitations, schedules, and special conditions. The changes contained herein require a public notice comment period per 10 CSR 20-6.020. The proposed determinations are tentative pending public comment.

PUBLIC NOTICE:

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

- ✓ The Public Notice period for this operating permit was from December 17, 2021 to January 18, 2022. No comments were received.

DATE OF FACT SHEET: JANUARY 19, 2022

COMPLETED BY:

PAM HACKLER – ENVIRONMENTAL SCIENTIST
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION – INDUSTRIAL WASTEWATER
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MISSOURI DEPARTMENT OF NATURAL RESOURCES
2020 MODIFICATION STATEMENT OF BASIS
FOR
MO-0044121
PROCTER & GAMBLE COMPANY

This Statement of Basis (Statement) gives pertinent information regarding modification(s) to the above listed operating permit. A Statement is not an enforceable part of a Missouri State Operating Permit. Changes found here supersede previous fact sheet determinations. The permit was revised as appropriate to reflect changes enumerated in this modification.

PART I. FACILITY INFORMATION

Procter & Gamble Company produces diapers, tissues, and towels. It has five outfalls (#001, #003, #005, #006, and #007) which receive non-contact cooling water and non-industrial stormwater. The stormwater received by these outfalls is non-industrial, therefore, the pollutants monitored on these outfalls reflect only those which are believed to be present in the cooling water. All stormwater at these outfalls comes from the roof of the facility, administrative buildings, and employee parking lots. Outfalls #001, #003, #005, #006, and #007 should be sampled only when stormwater is not discharging. Fire suppression water would also discharge from these outfalls in the event it was necessary. Outfall #002 receives only non-industrial stormwater.

Outfall #004 receives industrial process wastewater and domestic wastewater. Domestic wastewater enters the treatment plant from a lift station and is sent to one of two extended aeration system cells. It is finally treated by a UV light disinfection system before being discharged to outfall #004 where it comingles with process wastewater from the facility. Outfall #004 is the outfall that receives process wastewater, and discharges after treatment to the Mississippi River. The process wastewater originates from the paper machines, boilers, cooling towers, fiber recovery, and other miscellaneous process sources. The process wastewater is supplied from a horizontal collector well, which is then sent through a clarifier and automatic backwash filters before being sent to the paper machines. Water for the boilers is softened and sent through a reverse osmosis unit. After use, process wastewater is sent to an equalization tank, and then undergoes pH adjustment and diffused air flotation before discharging from the outfall. Currently sludge produced by processes served by outfall 004 is hauled offsite to a landfill. Sludge produced at outfall 002 is hauled offsite by a contract hauler.

PART II. MODIFICATION RATIONALE

This operating permit is hereby modified to reflect the diversion of domestic wastewater flows from outfall #002 to outfall #004, and to remove Outfall #002 from monitoring due to it receiving only non-industrial stormwater after the diversion of the domestic flows. Tables for outfall #002 were removed, necessitating a renumbering of all table numbers in the permit. New parameters were added to Table A-5 (Previously Table A-8) for the final monitoring requirements at outfall #004. Table A-4 (previously Table A-7) for interim requirements at outfall #004 is not altered, as the interim period expired 03-31-2020. It is not deleted and remains in the permit for informational/reference purposes only.

Nutrient monitoring was updated to comply with 10 CSR 20-7.015(9)(D)(8), also found as requirements in the antidegradation review. Nitrate + nitrite and total Kjeldahl nitrogen (TKN) are added at a frequency of once per month; additionally, frequency was increased on phosphorus and total nitrogen monitoring to once per month to comply with 10 CSR 20-7.015(9)(D)(8).

Special condition #2, related to eDMR use, was updated to reflect the current eDMR system's web address.

The permit limits for pentachlorophenol and 2,4,5-Trichlorophenol were retained from the previous permit rather than be adjusted to those contained in the antidegradation analysis. It is the permit writer's best professional judgment they be retained at the previous levels, as the antidegradation analysis included the domestic flow in the total flow when determining the technology based limits from the ELG. The ELG calculations must be done based only on the process wastewater design flow for the specific wastewater type, which is not proposed to be increased in this permit mod; therefore, the limitations determined in the permit previously still apply. The antidegradation analysis did not propose changes to other pollutants found in the ELG.

The permit writer reviewed the modification application materials, including the antidegradation review (attached after this statement of basis). In the permit writer's best professional judgment, the domestic waste does not add substantial additional pollutants regulated by the ELG to the waste stream; therefore, an additional internal monitoring point for ELG compliance is unnecessary. This is supported by the determinations of the antidegradation review, which places the technology limits found in the ELG at the discharge point for outfall #004.

No other changes were made to the permit at this time. The original factsheet is retained below this modification for informational purposes.

LIST OF PERMIT OR CONSTRUCTION APPROVALS UNDER ANY ENVIRONMENTAL REGULATORY AUTHORITY
The following is an amendment to the fact sheet only; the previous permit did not include a list of environmental permits also held by the facility. The information is included here in accordance with 40 CFR 122.21(f)(6).

Regulatory Authority	Permit Number
Waste Management Program (RCRA); DNR	#001202
Safe Drinking Water Act; DNR	MO-4180589
Clean Air Act; DNR	OP2011-013

PART III. ADMINISTRATIVE REQUIREMENTS

On the basis of preliminary staff review, and utilizing current applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue this permit subject to specified effluent limitations, schedules, and special conditions. The changes contained herein require a public notice comment period per 10 CSR 20-6.020. 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 started December 23, 2020 and ended January 25, 2021. No comments were received.

DATE OF FACT SHEET: 11/06/2020

COMPLETED BY:
AMBERLY SCHULZ, ENVIRONMENTAL ANALYST
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Water Quality and Antidegradation Review

For the Protection of Water Quality and Determination of Effluent Limits for Discharge to the Mississippi River ***by***

The Proctor & Gamble Paper Products Company Wastewater Treatment Facility

July, 2020

1. FACILITY INFORMATION

FACILITY NAME: The Proctor & Gamble WWTF NPDES #: MO-0044121

FACILITY TYPE: Industrial – Sanitary Paper Products – SIC #2676
FACILITY DESCRIPTION: The applicant's proposed modification involves diverting the treated wastewater from Outfall #002 into Outfall #004 while Outfall #002 will discharge stormwater only. The proposed new design flow for Outfall #004 will be 4.54 million gallons per day (MGD) and Outfall #002 will discharge stormwater only.

Outfall #002 currently receives domestic wastewater with a design flow of 0.14 MGD and discharges to the tributary to Indian Creek. The water enters the treatment plant from a lift station and is sent to one of two extended aeration system cells. Wastewater

is finally treated by a UV light disinfection system. Sludge is hauled offsite by a contract company. This outfall receives stormwater which is not industrially exposed.

Outfall #004 discharges to the Mississippi River and currently receives process water from paper machines, boilers, cooling towers, fiber recovery, and miscellaneous other sources with a design flow of 4.4 MGD. Water originates from a horizontal collector well and is sent through a reverse osmosis unit. After use, process water is sent to an equalization tank, and then undergoes pH adjustment and diffused air floatation before discharging from the outfall. All sludge is hauled offsite by a contract company. Sludge from this outfall is currently hauled to a landfill.

COUNTY:	Cape Girardeau	UTM COORDINATES:	X= 809986 / Y= 4154605
12- DIGIT HUC:	07140105-0405	LEGAL DESCRIPTION:	Landgrant 00819, Cape Girardeau County
EDU*:	Ozark/Apple/Joachim	ECOREGION:	Interior River Valleys and Hills

* - Ecological Drainage Unit

2. WATER QUALITY INFORMATION

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(3)] and federal antidegradation policy at Title 40 Code of Federal Regulation (CFR) Section 131.12 (a), the Missouri Department of Natural Resources (Department) 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, and revised July 13, 2016, a facility is required to use *Missouri's Antidegradation Implementation Procedure (AIP)* for new and expanded wastewater discharges.

2.1. WATER QUALITY HISTORY:

Existing Water Quality (EWQ) for the Mississippi River at Outfall 004 was obtained from Missouri's Water Quality Data Search with August 30, 2008 as a baseline. The applicant established EWQ using two upstream locations including Neely's Landing (Site Code 3701/70.8) and Chester, Illinois (Site Code 3701/110.6). Chester, Illinois is approximately 34.5 miles upstream of Outfall 004. MDNR provided supplemental EWQ for 10 years at Chester, Illinois (Site Code 3701/110.6). There is no enforcement history for this facility and operating permit. The Mississippi River is a high priority TMDL river for Chlordane and PCBs extending through sixteen counties from Clark County to Pemiscot County including Cape Girardeau County. This facility does not discharge to an impaired segment of a 303(d) listed river.

The Discharge Monitoring Reports (DMR) history for Outfall #004 shows a high performance level of the treatment process and supporting operators. Over the past 5 years, DMR records show only a single daily limit value exceedance for Oil and Grease that occurred during July of 2017. Outfall #002 has a similar performance record. The current operating permit establishes final effluent limits of 22 µg/L for daily maximum copper and 11 µg/L for a monthly average at Outfall #002 for copper becoming effective on August 1, 2020. The proposed upgrade will enhance the facility's ability to provide treatment for total recoverable copper discharging from Outfall #002.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
004	7.024	Combined Domestic and Process Wastewater	Mississippi River	0.0

3. RECEIVING WATERBODY INFORMATION

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)*			DESIGNATED USES**
			1Q10	7Q10	30Q10	
Mississippi River	P	3701	59,038	62,901	68,945	General Criteria, WWH (ALP), DWS, IND, IRR, LWW, SCR, WBC-B, HHP

* Low flow values were obtained from USGS gaging Station #07020500 near Chester, IL Data were obtained from January 1, 1969 through January 11, 2017 and were calculated using a departmentally developed spreadsheet.

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

RECEIVING WATER BODY SEGMENT #1: Mississippi River
Upper end segment* UTM coordinates: X= 809986 / Y= 4154605 (Outfall)
Lower end segment* UTM coordinates: X= 810110 / Y=4154651(meets classified))
*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

Prepared, on behalf of The Proctor & Gamble Paper Products Company, the *Missouri State Operating Permit No MO-0044121 Minimal Antidegradation Review Report* dated January 29, 2020.

Applicant elected to determine that all pollutants of concern (POC) are minimally degrading in the receiving stream using existing water quality. This 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 D was used to develop this review document.

A Geohydrological Evaluation was submitted for this facility upgrade. The stream is gaining for discharge purposes. A map of the facility and Outfall #004 is included in Appendix A and the Geohydrological Evaluation for this site is included in Appendix C.

Dissolved oxygen (DO) modeling analysis was not submitted for review. MDNR developed a dissolved oxygen model to evaluate the reasonable potential for the DO concentration in the receiving water to fall below the water quality standard. The results of this model are presented in Appendix E and Section 10.2.

A Missouri Department of Conservation (MDC) Natural Heritage Review Report was obtained by the applicant; MDC found records of wildlife preserves, critical habitats, or state or federal endangered-list species records within one mile of the site. The Natural Heritage Review Report identified several federal and state listed endangered species with habitats in the vicinity of the project site including the Bald Eagle, Indiana Bat, Pallid Sturgeon, Lake Sturgeon and the Crystal Darter. Itemized recommendations can be found in the Natural Heritage Review Report included in Appendix B.

5. Antidegradation Review Information

The following is a review of the *Missouri State Operating Permit No MO-0044121 Minimal Antidegradation Review Report* dated January 29, 2020.

5.1. Tier Determination

Below is a list of POCs reasonably expected to be in the discharge. 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 determined for all POCs (see Appendix D).

Table 1. Pollutants of Concern and Tier Determination

Pollutants of Concern	Tier	Degradation	Comment
BOD_5 / DO	2	Insignificant	40 CFR 430.125
Total Suspended Solids (TSS)	**	Insignificant	40 CFR 430.125
Ammonia as N	2	Insignificant	
pH	***	Insignificant	Permit limits applied
Escherichia coli (*E. coli*)	*	Insignificant	
Copper	2	Insignificant	
Lead	2	Insignificant	
Nitrate + Nitrite as Nitrogen	2	Insignificant	
Nitrogen, Total (TN)	2	Insignificant	
Phosphorus (TP)	2	Insignificant	
Kjeldahl Nitrogen, Total	2	Insignificant	
Oil and Grease	*	Insignificant	Permit limits applied
Chlorine, Total Residual	*	Insignificant	Permit limits applied
Pentachlorophenol	2	Insignificant	40 CFR 430.125
2,4,5- Trichlorophenol	2	Insignificant	40 CFR 430.125
Chloroform	2	Insignificant	
Surfactants	**	Insignificant	
Cyanide, Amenable to Chloride	2	Insignificant	

* 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:
For pollutants of concern, the attachments are:
☒ Attachment B, Tier 2 with minimal degradation.

5.2. EXISTING WATER QUALITY

Existing water quality data was submitted. MDNR included additional EWQ data in order to establish 10 years of water quality history at Chester, Illinois (Site Code 3701/110.6). All POCs were considered to be Tier 2 based on the submitted tier analysis.

Existing water quality was presented at the following locations:

1) Neely's Landing (Site Code 3701/70.8)
2) Chester, Illinois (Site Code 3701/110.6)

The site at Chester, Illinois provided the most substantial EWQ of this segment of the Mississippi River. 90th percentile values of the water quality parameters were used to support minimally degrading effluent limit calculations and reasonable potential analysis. These 90th percentile values from the Chester, Illinois location are listed below.

TABLE 2. EXISTING WATER QUALITY FOR CHESTER, ILLINOIS (SITE CODE 3701/110.6)

PARAMETER	90TH PERCENTILE CONCENTRATION	UNIT
Ammonia-nitrogen	0.165	mg/L
Copper, Dissolved	4.766	µg/L
Cyanides amenable to chlorination	1.395	µg/L
Lead, Dissolved	5	µg/L
Pentachlorophenol	0.4	µg/L
Hardness (Ozark/Apple/Joachim)	210	mg/L

5.3. NO DISCHARGE EVALUATION

According to 10 CSR 20-6.010 (4)(A)5.B., reports for the purpose of constructing a wastewater treatment facility shall consider the feasibility of constructing and operating a no discharge facility. Because Missouri's antidegradation implementation procedures specify that if the proposed activity does not result in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are not required. For this reason, the no discharge evaluation should be completed during the submittal of engineering report or facility plan for the purpose of obtaining a construction permit.

A regionalization alternative was not presented in this application. The Cape Girardeau WWTF is a capable public owned treatment works in the vicinity of the Proctor & Gamble and has additional capacity to accept wastewater; however, Cape Girardeau WWTF is over 14 miles away from the Proctor & Gamble Cape Girardeau plant. The large costs associated with construction and obtaining right of ways will make this alternative infeasible.

5.4 LOSING STREAM ALTERATIVE DISCHARGE LOCATION

Under 10 CSR 20-7.015(4) (A), *discharges to losing stream shall be permitted only after other alternatives including land application, discharge to gaining stream and connection to a regional facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons*. The discharge does not discharge to a losing stream segment or will not discharge with 2 miles of a losing stream segment.

5.5. FACILITY ASSIMILATIVE CAPACITY CALCULATIONS

Depending on the POC, the calculated consumption of assimilative capacities were shown to be much less than 10%. *Missouri's Antidegradation Implementation Procedure* considers the use of less than 10% of the facility's available assimilative capacity as insignificant degradation.

5.6. DEMONSTRATION OF NECESSITY AND SOCIAL AND ECONOMIC IMPORTANCE

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

6. GENERAL ASSUMPTIONS OF THE WATER QUALITY AND ANTIDEGRADATION REVIEW

1. A Water Quality and Antidegradation Review (WQAR) assumes that [10 CSR 20-6.010(2) Continuing Authorities and 10 CSR 20-6.010(4)(A)5.B., 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): One-quarter (1/4) of the stream volume of flow; length one-quarter (1/4) mile. [10 CSR 20-7.031(5)(A)4.B.(III)(a)].

Zone of Initial Dilution (ZID): One-tenth (0.1) of the mixing zone volume of flow, not to exceed 10 times the effluent design flow. [10 CSR 20-7.031(5)(A)4.B.(III)(b)].

Mixing Zone:

Per 10 CSR 20-4.031(4)(a)4.B.(III)(b), a ZID is 1/10 of the mixing zone, but no more than 10 times the design flow.

	FLOW (CFS)	MZ (CFS)	ZID (CFS)
7Q10	62,901	15,725	70.24
1Q10	59,038	14,760	70.24
30Q10	68,945	17,236	70.24

8. PERMIT LIMITS AND MONITORING INFORMATION

WASTELOAD ALLOCATION STUDY CONDUCTED (Y OR N): N

USE ATTAINABILITY ANALYSIS CONDUCTED (Y OR N): N

WHOLE BODY CONTACT USE RETAINED (Y OR N): Y

OUTFALL #004

WET TEST (Y OR N): Y FREQUENCY: ONCE/YEAR AEC: 9.1 % METHOD: MULTIPLE

TABLE 3. EFFLUENT LIMITS FOR OUTFALL 004

PARAMETER	UNITS	DAILY MAXIMUM	MONTHLY AVERAGE	BASIS FOR LIMIT (NOTE 2)	MONITORING FREQUENCY
FLOW	MGD	*	*	NA	DAILY
BIOCHEMICAL OXYGEN DEMAND$_5$	LBS/DAY	11,340	5,508	TBEL	TWICE/WEEK
TOTAL SUSPENDED SOLIDS	LBS/DAY	9,720	4,212	TBEL	TWICE/WEEK
PH	SU	6.5– 9.0	6.5 – 9.0	FSR	TWICE/WEEK
OIL & GREASE	MG/L	15	10	FSR	TWICE/WEEK
AMMONIA AS N	MG/L	*	*	FSR	ONCE/MONTH
NITROGEN, TOTAL AS N (TN)	MG/L	*	*	FSR	ONCE/QUARTER
PHOSPHORUS, TOTAL AS P(TP)	MG/L	*	*	FSR	ONCE/QUARTER
KJELDAHL NITROGEN	MG/L	*	*	FSR	ONCE/QUARTER
NITRATE + NITRITE AS N	MG/L	*	*	FSR	ONCE/QUARTER
CHLORINE, TOTAL RESIDUAL	µG/L	209	86.1	WQBEL	ONCE/MONTH
CHLOROFORM	µG/L	*	*	FSR	ONCE/QUARTER
CYANIDE, AMEN. TO CHL.	µG/L	*	*	FSR	ONCE/MONTH
OXYGEN, DISSOLVED (MINIMUM)	MG/L	*	*	FSR	ONCE/MONTH
PENTACHLOROPHENOL	LBS/DAY MG/L	4.5 0.29	4.5 0.29	TBEL	ONCE/QUARTER
2,4,5-TRICHLOROPHENOL	LBS/DAY MG/L	1.6 0.10	1.6 0.10	TBEL	ONCE/QUARTER

PARAMETER	UNITS	DAILY MAXIMUM	MONTHLY AVERAGE	BASIS FOR LIMIT (NOTE 2)	MONITORING FREQUENCY
SURFACTANTS	MG/L	*	*	FSR	ONCE/QUARTER
COPPER	µG/L	*	*	FSR	ONCE/QUARTER
LEAD	µG/L	*	*	FSR	ONCE/QUARTER
WET TESTING - ACUTE	TU_A	*		FSR	TWICE/YEAR
ESCHERICHIA COLIFORM (*E. COLI*)	NOTE 1	1,030**	206**	FSR	ONCE/WEEK

Note 1 – Colonies/100 mL
Note 2– Water Quality-based Effluent Limitation – WQBEL; or Minimally Degrading Effluent Limit –MDEL; or Preferred Alternative Effluent Limit – PEL; or Technology-based Effluent Limit – TBEL; or No Degradation effluent Limit – NDEL; or Federal/State Regulation – FSR; or Not Applicable – N/A. Also, please see the GENERAL ASSUMPTIONS OF THE WQAR #4 & #5.

* Monitoring requirements only.

** The Monthly Average for *E. coli* shall be reported as a Geometric Mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

9. RECEIVING WATER MONITORING REQUIREMENTS

No receiving water monitoring requirements recommended at this time.

10. DERIVATION AND DISCUSSION OF LIMITS

Wasteload allocations and limits were calculated using two methods:

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

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

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

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID). Water quality-based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

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

Expanding Facility:

$C_{004+002} = ([C_c*(Q_s+Q_{004+002})-C_s*(Q_s+Q_{004})*CF]\ FAC_{ratio}+Q_{004}*C_{004})/Q_{004+002}$

Where: C_c = downstream concentration, the Water Quality Standard (WQS)
Q_s = Stream 7Q10 flow (ft^3/s)
Q_{004} = Current effluent design flow (ft^3/s)
$Q_{004+002}$ = Proposed effluent design flow (ft^3/s)
C_s = combined stream concentrations (calculated using EWQ, permitted discharges)
C_{004} = effluent concentration of the current facility
$C_{004+002}$ = effluent concentration of the proposed facility
FAC_{ratio} = facility assimilative capacity ratio (calculated or assumed)
CF = Conversion factors for assimilative capacity calculations are: 0.0054 for µg/L, 5.4 for mg/L

Chronic wasteload allocations (WLA_c) were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and upstream stream flow without mixing considerations. Acute wasteload allocations are only determined in the absence of applicable chronic criteria.

For most toxic and conventional POCs, the minimally-degrading maximum daily limits are determined by applying the WLA_c (or applicable WLA_a) as the maximum daily mass limitation (MDL). The WLA mass limitation must be applied as the maximum daily limit because the Antidegradation Implementation Procedure typically applies the FAC as pounds per day.

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

10.1. OUTFALL #004 – PROCESS WATER AND COOLING TOWERS OUTFALL WITH DOMESTIC WASTEWATER

10.2. LIMIT DERIVATION

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

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

2) The next step is to develop water quality-based effluent limits. The water quality-based maximum daily and average monthly limit will be compared to the MDEL maximum daily limit as a concentration value. If the MDEL concentration value is greater than the water quality-based maximum and average monthly limits, only the water quality limits will apply. If the MDEL concentration value is less than the water quality-based maximum and average monthly limits, the water quality-based limits and the MDEL maximum daily as a mass limit will apply.

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

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

To determine the need for permit limits of the various pollutants of concern, a reasonable potential analysis was conducted. MDNR completed the statistical analysis of the raw discharge monitoring data. The reasonable potential to exceed (RPTE calculation) below was determined. The RPA should be conducted such that the maximum daily limit will not exceed the receiving water concentration. No POC exceeded the maximum daily limit.

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

Biochemical Oxygen Demand (BOD_5) Daily maximum limit of 11,340 lbs/day, monthly average limit of 5,508 lbs/day. Twice per week monitoring is required. 40 CFR 430.125 subpart L establishes a technology based daily maximum limitation of 7.0 lbs/1000 lbs of product and a monthly average limit of 3.4 lbs/1000 lbs of product. There are no water quality standards for BOD and the discharge enters the Mississippi River which would have an assimilative capacity for BOD; therefore the technology limits are applied.

Daily maximum BOD_5 = (lbs of product) * (ELG)
Daily maximum BOD_5 = (1,620,000 lbs) * (7.0 lbs/1000 lbs of product)
Daily maximum BOD_5 = 11,340 lbs/day

Monthly average BOD_5 = (lbs of product) * (ELG)
Monthly average BOD_5 = (1,620,000 lbs) * (3.4 lbs/1000 lbs of product)
Monthly average BOD_5 = 5,508 lbs/day

To protect the beneficial uses of the Mississippi River, MDNR conducted a Streeter Phelps analysis for this segment. Streeter Phelps modeling simulated using the proposed design flow indicated a 0.15 mg/L dissolved oxygen deficit below the calculated dissolved oxygen saturation value. This modeled difference is insignificant. The modeled lowest dissolved oxygen or critical dissolved oxygen sag was 7.87 mg/L.

As a result of this analysis, Department staff concludes that the above mentioned effluent limits are protective of beneficial uses and existing water quality. Influent monitoring may be required for this facility in its Missouri State Operating Permit.

Minimally Degrading Effluent Limits were not calculated for BOD_5 since no existing water quality was available for this parameter.

Total Suspended Solids (TSS). Daily maximum limit of 9,720 lbs/day, monthly average limit of 4,212 lbs/day. Twice per week monitoring is required. 40 CFR 430.125 subpart L establishes a technology based daily maximum limitation of 6.0 lbs/1000 lbs of product and a monthly average limit of 2.6 lbs/1000 lbs of product. There are no water quality standards for TSS and the discharge enters the Mississippi River which would have an assimilative capacity for TSS; therefore the technology limits are applied.

Daily maximum TSS = (lbs of product) * (ELG)
Daily maximum TSS = (1,620,000 lbs) * (6.0 lbs/1000 lbs of product)
Daily maximum TSS = 9,720 lbs/day

Monthly average TSS = (lbs of product) * (ELG)
Monthly average TSS = (1,620,000 lbs) * (2.6 lbs/1000 lbs of product)
Monthly average TSS = 4,212 lbs/day

Minimally Degrading Effluent Limits were not calculated for TSS since there is no in stream standard for TSS.

pH 6.5 - 9.0 SU continued from the previous permit. Twice per week monitoring is required. The Water Quality Standard at 10 CSR 20-7.031(5)(E) states water contaminants shall not cause pH to be outside of the range of 6.5 to 9.0 standard pH units. 10 CFR 430.125 subpart L establishes a technology based limitation for pH of 5.0-9.0; however, Missouri Water Quality Standards are more protective, and will be applied in this permit.

Dissolved Oxygen Monthly monitoring requirement only; monitoring for dissolved oxygen is included to determine whether reasonable potential exists to fall below water quality standards. During the previous permit renewal process, it was disclosed to the permit writer the facility uses bromide activated chloramine treatment as a biocide in the cooling towers of this facility. As no change of process has been disclosed this process is assumed to still be implemented. DO below water quality standards is a pollutant of concern in discharges that utilize this kind of treatment.

Total Ammonia Nitrogen Monitoring requirement only. Monitoring is included to determine whether "reasonable potential" to exceed water quality standards exists after the discharge is modified. Reasonable potential analysis was conducted with DMR data from Outfall 004, 97% of the expanded discharge. There is currently no reasonable potential that the discharge will cause an exceedance of water quality standards. WQBEL calculations for Total Ammonia Nitrogen are included below.

January
Chronic WLA: Ce = ((7.037 + 17,236.25)3.1 – (17,236.25 * 0.165)) / 7.037
Ce = 7246.1 mg/L
Acute WLA: Ce = ((7.037 + 70.37)12.1 – (70.37 * 0.165)) / 70.37
Ce = 131.9 mg/L
AML = WLA_c = 7,246.1 mg/L
MDL = WLA_a = 131.9 mg/L
As the AML is less stringent than the MDL, the AML is set to equal the MDL
AML = MDL = 131.9 mg/L

February
Chronic WLA: Ce = ((7.037 + 17,236.25)3.1 – (17,236.25 * 0.165)) / 7.037
Ce = 7,246.1 mg/L
Acute WLA: Ce = ((7.037 + 70.37)12.1 – (70.37 * 0.165)) / 70.37
Ce = 131.9 mg/L
AML = WLA_c = 7,246.1 mg/L
MDL = WLA_a = 131.9 mg/L
As the AML is less stringent than the MDL, the AML is set to equal the MDL
AML = MDL = 131.9 mg/L

March
Chronic WLA: Ce = ((7.037 + 17,236.25)2.7 – (17,236.25 * 0.165)) / 7.037
Ce = 6,289.1 mg/L
Acute WLA: Ce = ((7.037 + 70.37)10.1 – (70.37 * 0.165)) / 70.37
Ce = 109.8 mg/L
AML = WLA_c = 6,289.1 mg/L
MDL = WLA_a = 109.8 mg/L
As the AML is less stringent than the MDL, the AML is set to equal the MDL
AML = MDL = 109.8 mg/L

April
Chronic WLA: Ce = ((7.037 + 17,236.25)2.1 – (17,236.25 * 0.165)) / 7.037
Ce = 4,831.5 mg/L
Acute WLA: Ce = ((7.037 + 70.37)8.4 – (70.37 * 0.165)) / 70.37

Ce = 90.8 mg/L
AML = WLA_c = 4,831.5 mg/L
MDL = WLA_a = 90.8 mg/L
As the AML is less stringent than the MDL, the AML is set to equal the MDL
AML = MDL = 90.8 mg/L

May
Chronic WLA: Ce = ((7.037 + 17,236.25)2.1 – (17,236.25 * 0.165)) / 7.037
Ce = 4,628.4 mg/L
Acute WLA: Ce = ((7.037 + 70.37)12.1 – (70.37 * 0.165)) / 70.37
Ce = 131.9 mg/L
AML = WLA_c = 4,628.4 mg/L
MDL = WLA_a = 131.9 mg/L
As the AML is less stringent than the MDL, the AML is set to equal the MDL
AML = MDL = 131.9 mg/L

June
Chronic WLA: Ce = ((7.037 + 17,236.25)1.3 – (17,236.25 * 0.165)) / 7.037
Ce = 2,834.4 mg/L
Acute WLA: Ce = ((7.037 + 70.37)10.1 – (70.37 * 0.165)) / 70.37
Ce = 109.8 mg/L
AML = WLA_c = 2,834.4 mg/L
MDL = WLA_a = 109.8 mg/L
As the AML is less stringent than the MDL, the AML is set to equal the MDL
AML = MDL = 109.8 mg/L

July
Chronic WLA: Ce = ((7.037 + 17,236.25)0.9 – (17,236.25 * 0.165)) / 7.037
Ce = 1,871.7 mg/L
Acute WLA: Ce = ((7.037 + 70.37)8.4 – (70.37 * 0.165)) / 70.37
Ce = 90.8 mg/L
AML = WLA_c = 1,871.7 mg/L
MDL = WLA_a = 90.8 mg/L
As the AML is less stringent than the MDL, the AML is set to equal the MDL
AML = MDL = 90.8 mg/L

August
Chronic WLA: Ce = ((7.037 + 17,236.25)0.9 – (17,236.25 * 0.165)) / 7.037
Ce = 1,885.8 mg/L
Acute WLA: Ce = ((7.037 + 70.37)8.4 – (70.37 * 0.165)) / 70.37
Ce = 90.8 mg/L
AML = WLA_c = 1,885.8 mg/L
MDL = WLA_a = 90.8 mg/L
As the AML is less stringent than the MDL, the AML is set to equal the MDL
AML = MDL = 90.8 mg/L

September
Chronic WLA: Ce = ((7.037 + 17,236.25)1.2 – (17,236.25 * 0.165)) / 7.037
Ce = 2,477.1 mg/L
Acute WLA: Ce = ((7.037 + 70.37)8.4 – (70.37 * 0.165)) / 70.37
Ce = 90.8 mg/L
AML = WLA_c = 2,477.1 mg/L
MDL = WLA_a = 90.8 mg/L
As the AML is less stringent than the MDL, the AML is set to equal the MDL
AML = MDL = 90.8 mg/L

October
Chronic WLA: Ce = ((7.037 + 17,236.25)1.8 – (17,236.25 * 0.165)) / 7.037
Ce = 3927.4 mg/L
Acute WLA: Ce = ((7.037 + 70.37)8.4 – (70.37 * 0.165)) / 70.37
Ce = 90.8 mg/L

AML = WLA_c = 3,927.4 mg/L
MDL = WLA_a = 90.8 mg/L
As the AML is less stringent than the MDL, the AML is set to equal the MDL
AML = MDL = 90.8 mg/L

November
Chronic WLA: Ce = ((7.037 + 17,236.25)2.4 – (17,236.25 * 0.165)) / 7.037
Ce = 5,383.2 mg/L
Acute WLA: Ce = ((7.037 + 70.37)8.4 – (70.37 * 0.165)) / 70.37
Ce = 90.8 mg/L
AML = WLA_c = 5,383.2 mg/L
MDL = WLA_a = 90.8 mg/L
As the AML is less stringent than the MDL, the AML is set to equal the MDL
AML = MDL = 90.8 mg/L

December
Chronic WLA: Ce = ((7.037 + 17,236.25)2.7 – (17,236.25 * 0.165)) / 7.037
Ce = 6,289.1 mg/L
Acute WLA: Ce = ((7.037 + 70.37)10.1 – (70.37 * 0.165)) / 70.37
Ce = 109.8 mg/L
AML = WLA_c = 6,289.1 mg/L
MDL = WLA_a = 109.8 mg/L
As the AML is less stringent than the MDL, the AML is set to equal the MDL
AML = MDL = 109.8 mg/L

Minimally Degrading Calculations – Total Ammonia Nitrogen (September) – Expanding Facility
EWQ = 0.165 mg/L Total Ammonia Nitrogen 90th percentile existing water quality
CF = 5.4 (lb/day) / (CFS x mg/L) = Conversion Factor
Q_{S1} = 62,901 CFS = stream flow (7Q10)
$Q_{004+002} = Q_{004} + Q_{002}$ = 6.8 CFS + 0.21 CFS = 7.02 CFS
WQC = 1.2 mg/L = Chronic Aquatic Water Quality Criteria
C_{002} = 1.3 mg/L AML
C_{004} = 90.8 mg/L AML (Outfall 004 – Calculated WQBEL)
C_{MDEL} = Minimally Degrading Effluent Limitation at FAC_{RATIO}
FAC_{RATIO} = 10 % increase in loading

Q_{S2} = New Outfall + Stream Low Flow
$Q_{S2} = Q_{S1} + Q_{004+002}$ = 62,901 CFS + 7.02 CFS = 62,908 CFS

Stream Load = EWQ · Q_{S1} · CF = 0.165 mg/L · 62,901 CFS · (5.4 (lb/day) / (CFS x mg/L))
Stream Load = 55,980 lbs/day

Current Discharge Load = [$C_{004} \cdot Q_{004} + C_{002} \cdot Q_{002}$] CF
Current Discharge Load = (90.8 mg/L · 6.8 CFS + 1.3 mg/L · 0.21 CFS) · (5.4 (lb/day) / (CFS x mg/L))
Current Discharge Load = 3,335.67 lbs/day

Total Load = Stream Load + Current Discharge Load
Total Load = 55,980.15 lbs/day + 3,335.67 lbs/day
Total Load = 59,315.82 lbs/day

C_s = Total Load / (Q_{S2} · CF) = (59,315.82 lbs/day) / (62,908 CFS · (5.4 (lb/day) / (CFS x mg/L)))
C_s = 0.17481 mg/L

FAC = [WQC · ($Q_{S1} + Q_{004+002}$) – C_s · ($Q_{S1} + Q_{004+002}$)] · CF
FAC = [1.2 mg/L · (62,908 CFS) – 0.17481 mg/L · (62,908 CFS)] · (5.4 (lb/day) / (CFS x mg/L))
FAC = 347,857.98 lbs/day
FAC_{RATIO} = 0.10

C_{MDEL} = (FAC · FAC_{RATIO} / CF + $Q_{004} \cdot C_{004}$) / $Q_{004+002}$
C_{MDEL} = (347,857.98 lbs/day · 0.10 / (5.4 (lbs/day) / (CFS · mg/L)) + 6.8078 CFS ·90.8 mg/L) / 7.02442 CFS
C_{MDEL} = 918.12 mg/L

C_{MDEL} AML = 918.12 mg/L
C_{MDEL} MDL = C_{MDEL} AML · 1.55 = 1.55 · 918.12 mg/L
C_{MDEL} MDL = 1,423.08 mg/L

The September WQBEL AML and MDL of 90.8 mg/L are more stringent than the MDEL AML of 918.12 mg/L and MDL of 1,423.08 mg/L. This is because WQBELs are limited by a maximum mixing zone of 10 times the effluent design flow. There are similar results for other months. A monitoring requirement will be retained in the permit so that a reasonable potential analysis can be conducted at permit renewal.

Surfactants While Missouri currently does not have a water quality standard for surfactants, general criteria will still apply. Surfactants have the ability to impair general criteria due to toxicity to aquatic life and ability to produce sheen and foam on the water's surface. Monitoring is being recommended in order to determine if the facility has reasonable potential to cause a violation of general criteria.

Total Residual Chlorine (TRC) Warm-water Protection of Aquatic Life CCC = 11 µg/L, CMC = 19 µg/L [10 CSR 20-7.031, Table A1]. Background TRC = 0.0 µg/L.

Water quality based effluent limits:
$C_e = (((Q_e+Q_s)*C) - (Q_s*C_s))/Q_e$

Acute WLA: Ce = ((7.024 cfsDF + 70.24417844 cfsZID) * 19 – (70.244 cfsZID * 0 background)) / 7.024 cfsDF = 209 µg/L
Chronic WLA: Ce = ((7.024 cfsDF + 15,725.25 cfsMZ) * 11 – (15,725.25 cfsMZ * 0 background)) / 7.024 cfsDF = 24,636.208 µg/L

LTA_a: WLA_a * LTA_a multiplier = 209 * 0.221 = 46.272 □g/L [CV: 0.913, 99th percentile]
LTA_c: WLA_c * LTA_c multiplier = 24,636.208 * 0.4 = 9,845.508 □g/L [CV: 0.913, 99th percentile]
Use most protective LTA: **46.272 µg/L**

Daily Maximum: MDL = LTA * MDL multiplier = 46.272 * 4.517 = **209 µg/L** [CV: 0.913, 99th percentile]
Monthly Average: AML = LTA * AML multiplier = 46.272 * 1.861 = **86.1 µg/L** [CV: 0.913, 95th percentile, n=4]

The water quality based effluent limits are 0.209 mg/L daily maximum, 0.0861 mg/L monthly average.

If chlorine is used as a disinfectant, standard compliance language for TRC, including the minimum level (ML), should be included in the permit.

Pentachlorophenol Daily maximum limit of 4.5 lbs/day and 0.29 mg/L, with the same being applied as a monthly average limit. The daily maximum limits will be applied as monthly average limits, as the ELG does not require specific monthly average limits.

40 CFR 430.125 subpart L establishes a technology based daily maximum limitation of 0.0028 lbs/1000 lbs of product, and a concentration daily maximum based on discharge. The permittee reported on the renewal application they produce 1.62 million pounds per day of paper product. The design flow of the new outfall is 4.54 MGD and the average actual flow is 1.86 MGD calculated from 5 year DMR.

lbs/day:
Daily maximum Pentachlorophenol = (lbs of product) * (ELG)
Daily maximum Pentachlorophenol = (1,620,000 lbs) * (0.0028 lbs/1,000 lbs of product)
Daily maximum Pentachlorophenol = 4.5 lbs/day

mg/L:
Daily maximum Pentachlorophenol = [(0.035) * (19.1)]/y
y = (Average flow in Gallons/day)(CF)/(810 tons of product per day)
y = (1,860,000)(1 kgal/1,000 gallons)/810
y = 2.3 kgal/tonkgal/ton
Daily maximum Pentachlorophenol = [(0.035) * (19.1)]/2.3
Daily maximum Pentachlorophenol = 0.29 mg/L

Water Quality Calculations:
Pentachlorophenol's toxicity varies based on pH. The water quality data from Chester, IL gives an average pH of 8.0. The acute aquatic life protection level water quality standard at 8.0 SU is 23 µg/L, HHP is 8 µg/L and DWS is 1 µg/L. DWS is the most

restrictive and will be applied. The following is the calculation of the water quality based limit, afforded Mississippi River mixing:

WLA = C_e = ((7.04 + 15,725)1.0 - (15,725 * 0))/7.04 = 2,234 µg/L

Technology based limitations found in the ELG are more protective than the most stringent water quality standard; therefore the technology based limitations are applied. Sampling is quarterly.

Minimally Degrading Calculations – Pentachlorophenol - Expanding Facility

EWQ = 0.0004 mg/L pentachlorophenol 90th percentile existing water quality
CF = 5.4 (lb/day) / (CFS x mg/L) = Conversion Factor
Q_{S1} = 62,901 CFS = stream flow (7Q10)
$Q_{004+002} = Q_{004} + Q_{002}$ = 6.8 CFS + 0.21 CFS = 7.02 CFS
WQC = 0.001 mg/L = Drinking Water Quality Criteria
C_{002} = 0.6685 mg/L Calculated TBEL MDL for Outfall 002 at an average flow of 0.01513 MGD
C_{004} = 0.21 mg/L MDL Effluent Limit for Outfall 004
C_{MDEL} = Minimally Degrading Effluent Limitation at FAC_{RATIO}
FAC_{RATIO} = 10 % increase in loading

Q_{S2} = New Outfall + Stream Low Flow
$Q_{S2} = Q_{S1} + Q_{004+002}$ = 62,901 CFS + 7.02 CFS = 62,908 CFS

Stream Load = EWQ · Q_{S1} · CF = 0.0004 mg/L · 62,901 CFS · (5.4 (lb/day) / (CFS x mg/L))
Stream Load = 135.71 lbs/day

Current Discharge Load = [$C_{004} \cdot Q_{004} + C_{002} \cdot Q_{002}$] CF
Current Discharge Load = (0.21 mg/L · 6.8 CFS + 0.6685 mg/L · 0.21 CFS) · (5.4 (lb/day) / (CFS x mg/L))
Current Discharge Load = 8.49 lbs/day

Total Load = Stream Load + Current Discharge Load
Total Load = 135.71 lbs/day + 8.49 lbs/day
Total Load = 144.20 lbs/day

C_s = Total Load / ($Q_{S2} \cdot$ CF) = (144.20 lbs/day) / (62,908 CFS · (5.4 (lb/day) / (CFS x mg/L)))
C_s = 0.0004250 mg/L

FAC = [WQC · ($Q_{S1} + Q_{004+002}$) – $C_s \cdot (Q_{S1} + Q_{004+002})$] · CF
FAC = [0.001 mg/L · 62,908 CFS – 0.0004250 mg/L · (62,908 CFS)] · (5.4 (lb/day) / (CFS x mg/L))
FAC = 195.11 lbs/day

FAC_{RATIO} = 0.10

C_{MDEL} = (FAC · FAC_{RATIO} / CF + $Q_{004} \cdot C_{004}$) / $Q_{004+002}$
C_{MDEL} = (195.11 lbs/day · 0.10 / (5.4 (lbs/day) / (CFS · mg/L)) + 6.8078 CFS · 0.21 mg/L) / 7.02442 CFS
C_{MDEL} = 0.514 mg/L
C_{MDEL} MDL = 0.514 mg/L

The DWS effluent limit of 2.234 mg/L is less stringent than the MDEL MDL of 0.514 mg/L.

2,4,5 - Trichlorophenol Daily maximum limit of 1.6 lbs/day and 0.10 mg/L, with the same being applied as a monthly average limit. The daily maximum limits will be applied as monthly average limits, as the ELG does not require specific monthly average limits.

40 CFR 430.125 subpart L establishes a technology based daily maximum limitation of 0.00096 lbs/1000lbs of product, and a concentration daily maximum based on discharge. The permittee reported on the renewal application they produce 1.62 million pounds per day of paper product. The design flow of the new outfall is 4.54 MGD and the average actual flow is 1.86 MGD

lbs/day:
Daily maximum 2,4,5–Trichlorophenol = (lbs of product) * (ELG)
Daily maximum 2,4,5–Trichlorophenol = (1,620,000 lbs) * (0.00096 lbs/1000 lbs of product)
Daily maximum 2,4,5–Trichlorophenol = 1.6 lbs/day

mg/L:
Daily maximum 2,4,5–Trichlorophenol = [(0.012) * (19.1)]/y
y = (Average flow in Gallons/day)(CF)/(810 tons of product per day)
y = (1,860,000)(1 kgal/1000 gallons)/810
y = 2.3 kgal/tonkgal/ton
Daily maximum 2,4,5–Trichlorophenol = [(0.012) * (19.1)]/2.3
Daily maximum 2,4,5–Trichlorophenol = 0.10 mg/L

Water Quality Calculations:
The DWS standard is the most protective at 2,600 □g/L
WLA = C_e = ((7.04 + 15,725)2,600 - (15,725 * 0))/7.04 = 5,810,127 □g/L

Technology based limitations found in the ELG are significantly more protective than the most stringent water quality standard (DWS); therefore the technology based limitations are applied. Sampling is quarterly.

No existing water quality data was available for 2,4,5–trichlorophenol at either Chester, IL or Neely's Landing and MDEL were not developed. The MDEL calculation is not necessary because it is clear that this pollutant change is minimally degrading.

Chloroform Quarterly monitoring only. Quarterly monitoring is being retained to determine if reasonable potential exists to violate water quality standards for chloroform.

Cyanide, Amenable to Chlorination
Acute AQL: 22 µg/L
Chronic AQL: 5.2 µg/L

Water quality based effluent limits:
$C_e = (((Q_e+Q_s)*C) - (Q_s*C_s))/Q_e$

Acute WLA: Ce = ((7.024 cfsDF + 70.24417844 cfsZID) * 22 – (70.244 cfsZID * 1.395 background)) / 7.024 cfsDF = 228.05 µg/L
Chronic WLA: Ce = ((7.024 cfsDF + 15,725.25 cfsMZ) * 5.2 – (15,725.25 cfsMZ * 1.395 background)) / 7.024 cfsDF = 8,523.283 µg/L

LTA_a: WLA_a * LTA_a multiplier = 228.05 * 1 = **228.05 µg/L** [CV: 0, 99th percentile]
LTA_c: WLA_c * LTA_c multiplier = 8,523.283 * 1 = 8,523.283 µg/L [CV: 0, 99th percentile]
Use most protective LTA: **228.05 µg/L**

Daily Maximum: MDL = LTA * MDL multiplier = 228.05 * 1 = **228.1 µg/L** [CV: 0, 99th percentile]
Monthly Average: AML = LTA * AML multiplier = 228.05 * 1 = **228.1 µg/L** [CV: 0, 95th percentile, n=4]

Reasonable Potential Analysis was conducted with data from Outfall 004 only, 97% of the expanded design flow. RPA concluded there is no reasonable potential the discharge will cause an exceedance of water quality standards. Monthly monitoring is being retained since cyanide is a pollutant of concern.

Escherichia coli (E. coli). Monthly average of 206 CFU/100 mL as a geometric mean and Daily Maximum of 1030 CFU/100 mL during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (B) designated use of the receiving stream, as per 10 CSR
20-7.031(5)(C). An effluent limit for both monthly average and daily maximum is required by 40 CFR 122.45(d).

For facilities greater than 100,000 gpd, a minimum of one sample shall be collected for E.coli analysis each calendar week during the recreational season from April 1 through October 31. Compliance with the E.coli standard established in subsection (5)(C) of 10 CSR 20-7.031 shall be determined each calendar month by calculating the geometric mean of all samples collected calendar month. The weekly average requirement is consistent with EPA federal regulation 40 CFR 122.45(d). Please see **GENERAL ASSUMPTIONS OF THE WQAR #7.**

Acute Whole Effluent Toxicity. Monitoring is required to determine if reasonable potential exists for the discharge to cause toxicity within the receiving stream.

For classified permanent streams with other than default mixing considerations, the Allowable Effluent Concentration (AEC) % is determined as follows:

Acute AEC% = [DF_{CFS} ÷ (ZID_{7Q10} + DF_{CFS})] x 100%
Acute AEC% = [7.04 / (70.24 + 7.04)] x 100% = 9.1 %

10 CSR 20-7.015(9)(L)4.A. states the dilution series must be proportional. Each dilution was determined by multiplying or dividing 3.0 from the AEC and then each consecutive value.

The dilution series is:

DILUTION SERIES						
81.8%	27.3%	9.1%	3.0%	1.0%	(Control) 100% upstream, if available	(Control) 100% Lab Water, also called synthetic water

Oil & Grease. Conventional pollutant, [10 CSR 20-7.031, Table A1]. Effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.

Kjeldahl Nitrogen, Total (TKN). Monitoring required for facilities greater than 100,000 gpd design flow per 10 CSR 20-7.015(9)(D)8. Once per quarter sampling for one permit cycle or up to 5 years if permit cycle is less than 5 years.

Nitrate plus Nitrite as Nitrogen. Monitoring required for facilities greater than 100,000 gpd design flow per 10 CSR 20-7.015(9)(D)8. Once per quarter sampling for one permit cycle or up to 5 years if permit cycle is less than 5 years.

Total Nitrogen (TN). Monitoring required for facilities greater than 100,000 gpd design flow per 10 CSR 20-7.015(9)(D)8. Once per quarter sampling for one permit cycle or up to 5 years if permit cycle is less than 5 years.

Total Phosphorus (TP) Monitoring required for facilities greater than 100,000 gpd design flow per 10 CSR 20-7.015(9)(D)8. Once per quarter sampling for one permit cycle or up to 5 years if permit cycle is less than 5 years.

Metals

Hardness Dependent Metals:

Effluent limitations for total recoverable metals were developed using methods and procedures outlined in EPA/505/2-90-001 and "The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion" (EPA 823-B-96-007). General warm-water fishery criteria apply and water hardness = 210 mg/L. Hardness was determined from regional data for the Ozark/Apple/Joachim EDU in the Interior River Valleys and Hills region.

Due to the absence of contemporaneous effluent and instream data for total recoverable metals, dissolved metals, hardness, and total suspended solids with which to calculate metals translators,

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

METAL	CONVERSION FACTORS	
	ACUTE	CHRONIC
Copper	0.960	0.960
Lead	0.683	0.683

Conversion factors for Lead are hardness dependent. Values were calculated using equation found in Section 1.3 of EPA 823-B-96-007 with an Ozark/Apple/Joachim regional hardness = 210 mg/L.

Copper, Total Recoverable

Water quality based effluent limits:
$C_e = (((Q_e+Q_s)*C) - (Q_s*C_s))/Q_e$
Acute AQL: $e^{(0.9422 * \ln 210 - 1.700300)}$ * (0.960) = 27.029 µg/L [at hardness 210]
Chronic AQL: $e^{(0.78545 * \ln 210 - 1.702)}$ * (0.960) = 16.882 µg/L [at hardness 210]
Acute TR Conversion: AQL/Translator = 27.029 / 0.96 = 28.156 [at hardness 210]
Chronic TR Conversion: AQL/Translator = 16.882 / 0.96 = 17.586 [at hardness 210]
Acute WLA: Ce = ((7.024 cfsDF + 70.24417844 cfsZID) * 28.156 – (70.244 cfsZID * 4.76 background)) / 7.024 cfsDF = 262.051 µg/L

Chronic WLA: Ce = ((7.024 cfsDF + 15,725.25 cfsMZ) * 17.443 – (15,725.25 cfsMZ * 4.76 background)) / 7.024 cfsDF = 28,717.16 µg/L
LTA_a: WLA_a * LTA_a multiplier = 262.051 * 0.443 = **116.321 µg/L** [CV: 0.394, 99th percentile]
LTA_c: WLA_c * LTA_c multiplier = 28,717.16 * 0.647 = 18,582.52 µg/L [CV: 0.394, 99th percentile]
use most protective LTA: **116.321 µg/L**
Daily Maximum: MDL = LTA * MDL multiplier = 117.832 * 2.201 = **262.1 µg/L**
[CV: 0.394, 99th percentile]
Monthly Average: AML = LTA * AML multiplier = 117.832 * 1.34 = **157.4 µg/L** [CV: 0.394, 95th percentile, n=4]

Reasonable potential analysis was conducted with data from Outfall 002 only, 3% of the expanded design flow. Monitoring requirements are included to determine if there is reasonable potential to exceed water quality standards after the proposed modification.

Minimally Degrading Calculations – Copper, Total Recoverable – Expanding Facility

EWQ = 0.004766 mg/L dissolved copper 90th percentile existing water quality
CF = 5.4 (lb/day) / (CFS x mg/L) = Conversion Factor
Q_{S1} = 62,901 CFS = stream flow (7Q10)
$Q_{004+002} = Q_{004} + Q_{002}$ = 6.8 CFS + 0.21 CFS = 7.02 CFS
WQC = 0.016745 mg/L = Chronic Aquatic Water Quality Criteria
C_{002} = 0.011 mg/L Monthly Average Limit
C_{004} = 0.157 mg/L Calculated WQBEL AML at Outfall 004 before expansion
C_{MDEL} = Minimally Degrading Effluent Limitation at FAC_{RATIO}
FAC_{RATIO} = 10 % increase in loading
Q_{S2} = New Outfall + Stream Low Flow
$Q_{S2} = Q_{S1} + Q_{004+002}$ = 62,901 CFS + 7.02 CFS = 62,908 CFS

Stream Load = EWQ · Q_{S1} · CF = 0.004766 mg/L · 62,901 CFS · (5.4 (lb/day) / (CFS x mg/L))
Stream Load = 1,616.98 lbs/day

Current Discharge Load = [$C_{004} \cdot Q_{004} + C_{002} \cdot Q_{002}$] CF
Current Discharge Load = (0.157 mg/L · 6.8 CFS + 0.011 mg/L · 0.21 CFS) · (5.4 (lb/day) / (CFS x mg/L))
Current Discharge Load = 5.79 lbs/day

Total Load = Stream Load + Current Discharge Load
Total Load = 1,616.98 lbs/day + 5.79 lbs/day
Total Load = 1,622.77 lbs/day

C_s = Total Load / (Q_{S2} · CF) = (1,622.77 lbs/day) / (62,908 CFS · (5.4 (lb/day) / (CFS x mg/L)))
C_s = 0.0049994 mg/L

FAC = [WQC · ($Q_{S1} + Q_{004+002}$) – $C_s \cdot (Q_{S1} + Q_{004+002})$] · CF
FAC = [0.016745 mg/L · (62,908 CFS) – 0.0049994 mg/L · (62908 CFS)] · (5.4 (lb/day) / (CFS x mg/L))
FAC = 4,059.00 lbs/day

FAC_{RATIO} = 0.10

C_{MDEL} = (FAC · FAC_{RATIO} / CF + $Q_{004} \cdot C_{004}$) / $Q_{004+002}$
C_{MDEL} = (4,059.00 lbs/day · 0.10 / (5.4 (lbs/day) / (CFS · mg/L)) + 6.8078 CFS · 0.157 mg/L) / 7.02442 CFS
C_{MDEL} = 10.713 mg/L

C_{MDEL} AML = 10.713 mg/L
C_{MDEL} MDL = C_{MDEL} AML · 1.55 = 1.55 · 10.713 mg/L
C_{MDEL} MDL = 16.605 mg/L

The WQBEL AML of 157.4 µg/L and MDL of 262.1 µg/L are more stringent than the MDEL AML of 10,713 µg/L and MDL of 16,605 µg/L. This is because WQBELs are limited by a maximum mixing zone of 10 times the effluent design flow.

Lead, Total Recoverable

Water quality based effluent limits:
$C_e = (((Q_e+Q_s)*C) - (Q_s*C_s))/Q_e$
Acute AQL: $e^{(1.273 * \ln 210 - 1.460448)}$ * (1.46203 – ln210 * 0.145712) = 143.309 µg/L [at hardness 210]

Chronic AQL: $e^{(1.273 * \ln 210 - 4.704797)}$ * (1.46203 – ln210 * 0.145712) = 5.588 µg/L [at hardness 210]
TR Conversion: AQL/Translator = 143.309 / 0.683 = 209.856 [at hardness 210]
TR Conversion: AQL/Translator = 5.588 / 0.683 = 8.183 [at hardness 210]
Acute WLA: Ce = ((7.024 cfsDF + 70.24417844 cfsZID) * 209.856 – (70.244 cfsZID * 5 background)) / 7.024 cfsDF = 2,258.412
Chronic WLA: Ce = ((7.024 cfsDF + 15,725.25 cfsMZ) * 8.183 – (15,725.25 cfsMZ * 5 background)) / 7.024 cfsDF = 7,134.044

LTA_a: WLA_a * LTA_a multiplier = 2,258.412 * 0.321 = 725.138 [CV: 0.6, 99th Percentile]
LTA_c: WLA_c * LTA_c multiplier = 7,134.044 * 0.527 = 3,762.733 [CV: 0.6, 99th Percentile]
use most protective LTA: **725.138 µg/L**
Daily Maximum: MDL = LTA * MDL multiplier = 725.138 * 3.114 = **2,258.4 µg/L** [CV: 0.6, 99th Percentile]
Monthly Average: AML = LTA * AML multiplier = 725.138 * 1.552 = **1,125.7 µg/L** [CV: 0.6, 95th Percentile, n=4]

Reasonable potential analysis was conducted with data from Outfall 002 only, 3% of the expanded design flow. Monitoring requirements are included to determine if reasonable potential exists to exceed water quality standards after the proposed modification.

Minimally Degrading Calculations – Lead, Total Recoverable – Expanding Facility

EWQ = 0.005 mg/L dissolved lead 90th percentile existing water quality
CF = 5.4 (lb/day) / (CFS x mg/L) = Conversion Factor
Q_{S1} = 62,901 CFS = stream flow (7Q10)
$Q_{004+002} = Q_{004} + Q_{002}$ = 6.8 CFS + 0.21 CFS = 7.02 CFS
WQC = 0.005532 mg/L = Chronic Aquatic Water Quality Criteria
C_{002} = 0.0067 mg/L Calculated WQBEL AML for Outfall 002
C_{004} = 1.1257 mg/L Calculated WQBEL AML for Outfall 004
C_{MDEL} = Minimally Degrading Effluent Limitation at FAC_{RATIO}
FAC_{RATIO} = 10 % increase in loading

Q_{S2} = New Outfall + Stream Low Flow
$Q_{S2} = Q_{S1} + Q_{004+002}$ = 62,901 CFS + 7.02 CFS = 62,908 CFS

Stream Load = EWQ · Q_{S1} · CF = 0.005 mg/L · 62,901 CFS · (5.4 (lb/day) / (CFS x mg/L))
Stream Load = 1,696.37 lbs/day

Current Discharge Load = $[C_{004} \cdot Q_{004} + C_{002} \cdot Q_{002}]$ CF
Current Discharge Load = (1.1257 mg/L · 6.8 CFS + 0.0067 mg/L· 0.21 CFS) · (5.4 (lb/day) / (CFS x mg/L))
Current Discharge Load = 41.34 lbs/day

Total Load = Stream Load + Current Discharge Load
Total Load = 1,696.37 lbs/day + 41.34 lbs/day
Total Load = 1,737.71 lbs/day

C_s = Total Load / (Q_{S2} · CF) = (1,737.71 lbs/day) / (62,908 CFS · (5.4 (lb/day) / (CFS x mg/L)))
C_s = 0.0051213 mg/L

FAC = $[(WQC \cdot (Q_{S1} + Q_{004+002}) - C_s \cdot (Q_{S1} + Q_{004+002})] \cdot CF$
FAC = [0.005532 mg/L · 62,908 CFS – 0.0051213 mg/L · (62,908 CFS)] · (5.4 (lb/day) / (CFS x mg/L))
FAC = 139.36 lbs/day

FAC_{RATIO} = 0.10

$C_{MDEL} = (FAC \cdot FAC_{RATIO} / CF + Q_{004} \cdot C_{004}) / Q_{004+002}$
C_{MDEL} = (139.36 lbs/day · 0.10 / (5.4 (lbs/day) / (CFS · mg/L)) + 6.8078 CFS · 1.1257 mg/L) / 7.02442 CFS
C_{MDEL} = 0.3678 mg/L

C_{MDEL} AML = 0.3678 mg/L
C_{MDEL} MDL = C_{MDEL} AML · 1.55 = 1.55 · 0.3678 mg/L
C_{MDEL} MDL = 0.5701 mg/L

The WQBEL AML of 1,125.7 µg/L and MDL of 2,258.4 µg/L are less stringent than the MDEL AML of 367.8 µg/L and MDEL MDL of 570.1 µg/L. This is because WQBELs are limited by a maximum mixing zone of 10 times the effluent design flow.

10.3 Comparison of Categorical Effluent Limits, Water Quality Based Effluent Limits, and Minimally Degrading Effluent Limits

The final step in the limit determination process is the comparison of the water quality-based effluent limit (WQBEL), categorical effluent limits from 40 CFR 430.125 Subpart L, and the minimally degrading effluent limit. Table 4 shows the comparison between WQBEL and categorical effluent limits for the POCs. Table 5 shows the comparison of WQBEL and MDEL. The most stringent effluent limits are listed in bold font. The summary of all effluent limitations and monitoring requirements are summarized in Table 3: Effluent Limitations for Outfall 004.

Table 4. Comparison of Categorical Effluent Limits in 40 CFR 430.125 Subpart L and Water Quality Based Effluent Limits

Pollutant of Concern	WQBEL	Limit Type	Categorical Effluent Limits	Limit Type
BOD_5	NA	NA	11,340 lb/day 5,508 lb/day	MDL AML
TSS	NA	NA	9,720 lb/day 4,212 lb/day	MDL AML
pH	6.5 - 9.0 SU	NA	5.0 - 9.0 SU	NA
Pentachlorophenol	0.4 mg/L	MDL	4.5 lb/day 0.29 mg/L	MDL MDL
2,4,5-Trichlorophenol	5,810 mg/L	MDL	1.6 lb/day 0.10 mg/L	MDL MDL

MDL = Maximum Daily Limit AML = Average Monthly Limit

Table 5. Comparison of Water Quality Based Effluent Limits and Minimally Degrading Effluent Limits

Pollutant of Concern	WQBEL	Limit Type	MDEL	Limit Type
Ammonia as N September	90.8 mg/L	MDL=AML	1,423.08 mg/L 918.12 mg/L	MDL AML
Lead	2,258.4 µg/L 1,125.7 µg/L	MDL AML	570.1 µg/L 367.8 µg/L	MDL AML
Copper	262.1 µg/L 157.4 µg/L	MDL AML	16,605 µg/L 10,713 µg/L	MDL AML
Pentachlorophenol	2.234 mg/L	DWS	0.514 mg/L	MDL

MDL = Maximum Daily Limit AML = Average Monthly Limit MDEL = Minimally Degrading Effluent Limit

11. Antidegradation Review Preliminary Determination

The proposed Outfall 004 discharge, The Proctor & Gamble Paper Products Company Plant WWTF, 4.54 MGD discharge, will result in minimal degradation of the segment identified in the Mississippi River. Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to retain the remaining assimilative capacity. The Department has determined that the submitted review is sufficient and meets the requirements of the AIP. No further analysis is needed for this discharge.

Reviewer: Steve Hamm, P.E.
Date: July 2020
Unit Chief: John Rustige, P.E.

Appendix A: Map of Discharge Location

Appendix B: Natural Heritage Review

Missouri Department of Conservation

Natural Heritage Review Report

March 10, 2020 -- Page 1 of 5

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Project type:	Wastewater
Location/Scope:	T32N R14E S04
County:	Cape Girardeau
Query reference:	Proctor & Gamble Antidegradation
Query received:	3/4/2020

This NATURAL HERITAGE REVIEW is not a site clearance letter. Rather, it identifies public lands and sensitive resources known to have been located close to and/or potentially affected by the proposed project. On-site verification is the responsibility of the project. Natural Heritage records were identified at some date and location. This report considers records near but not necessarily at the project site. Animals move and, over time, so do plant communities. To say "there is a record" does not mean the species/habitat is still there. To say that "there is no record" does not mean a protected species will not be encountered. These records only provide one reference and other information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Look for additional information about the biological and habitat needs of records listed in order to avoid or minimize impacts. More information is at http://mdc.mo.gov/discover-nature/places-go/natural-areas and mdc4.mdc.mo.gov/applications/mofwis/mofwis_search1.aspx.

Level 3 issues: Records of federal-listed (these are also state-listed) species or critical habitats near the project site:

Scientific Name	Common Name	Listed Status	Proximity (miles)
Haliaeetus leucocephalus	Bald Eagle	Protected	0.79
Myotis sodalis	Indiana Bat	Endangered	0.78
Scaphirhynchus albus	Pallid Sturgeon	Endangered	2.33

Mississippi River: The Mississippi River (together with its tributary mouths) is home to a number of aquatic species of state and federal concern, including federal-listed Pallid Sturgeon, several mussel species in the pooled reaches upstream of the Missouri confluence, and Interior least terns in the lower Mississippi; and state-listed Lake Sturgeon, and Flathead Chubs. All these are sampled at points but must be assumed to be present in suitable habitats through extended river reaches. Bluffs, banks, and floodplains may also include habitat used by listed gray bats, Indiana bats and bald eagles.

- Terrestrial projects that manage construction and include operation plans to avoid runoff of sediment or pollutants are unlikely to affect the aquatic species.
- Regulations enforced by other agencies to protect water quality and human health are generally adequate to protect the needs of wildlife as well.
- Projects that place fill in or discharge water to the river are subject to federal permits, and strict observance of conditions required in those permits is important to minimize risk of damage to endangered species.
- See General Recommendations for additional information on ways to minimize impacts to aquatic resources.

Bald Eagles: Bald Eagles (*Haliaeetus leucocephalus*) nest near streams or water bodies in the project area. Nests are large and fairly easy to identify. While no longer listed as endangered, eagles continue to be protected by the federal government under the Bald and Golden Eagle Protection Act. Work managers should be alert for nesting areas within 1500 meters of project activities, and follow federal guidelines at: https://www.fws.gov/midwest/eagle/permits/index.html if eagle nests are seen.

Indiana Bats occur in Cape Girardeau County and could occur in the project area. Indiana Bats *(Myotis sodalis*, federal and state-listed endangered) hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves known to harbor Indiana bats, especially from September to April. **Please contact the U.S. Fish and Wildlife Service (Ecological Services, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 Ext. 100 for Ecological Services) for further coordination under the Endangered Species Act.**

Pallid Sturgeon: Pallid Sturgeons (*Scaphirhynchus albus*, federal and state-listed endangered) are big river fish that range widely in the Mississippi and Missouri River system (including parts of major tributaries). Any project that modifies big river habitat or impacts water quality should consider the possible impact to Pallid Sturgeon populations. See https://mdc.mo.gov/sites/default/files/downloads/Pallid%20Sturgeon.pdf for Best Management Practices.

*FEDERAL LIST species/habitats are protected under the Federal Endangered Species Act. **Contact the U.S. Fish and Wildlife Service** (101 Park Deville Drive Suite A, Columbia, Missouri 65203-0007; 573-234-2132) for Endangered Species Act coordination and concurrence information).*

Level 2 issues: Records of state-listed (not federal-listed) endangered species AND / OR state-ranked (not state-listed endangered) species and natural communities of conservation concern. The Department tracks these species and natural communities due to population declines and/or apparent vulnerability.

Natural Heritage records indicate the following State-listed Endangered species near the project area:

Scientific Name	Common Name	Proximity (miles)
Acipenser fulvescens	Lake Sturgeon	5.87
Crystallaria asprella	Crystal Darter	8.89

Lake Sturgeon: Lake Sturgeon (*Acipenser fulvescens*) are widely distributed in North America. In Missouri, they are found in the Mississippi and Missouri Rivers but have also been known to occur in the larger tributaries of those two rivers. Lake Sturgeon are listed as either threatened or endangered throughout most of its original range in the United States. Over-harvest appears to have been responsible for the greatest decline in abundance of the Lake Sturgeon. Pollution and restriction of migratory movements due to construction of dams have compounded the problems of over-exploitation. Best management for this species can be found at https://mdc.mo.gov/sites/default/files/downloads/9547.pdf .

Crystal Darter: Crystal Darter (*Crystallaria asperella*, State-listed Endangered) have a large historic range, stretching from river basins in West Virginia west to Missouri and Minnesota south to the Gulf of Mexico. In east-central to southeastern Missouri, they inhabit open channels of large, clear streams with low to moderate gradients and long stretches of silt-free sand and small gravel substrate. See https://mdc.mo.gov/sites/default/files/downloads/Crystal%20Darter.pdf for Best Management Practices regarding this species.

Natural Heritage records indicate the following State-ranked species near the project area:

Scientific Name	Common Name	State Rank	Proximity (miles)
Ammocrypta clara	Western Sand Darter	S2S3	2.30
Carex laxiflora var. laxiflora	A Carex species	S1	1.85
Carpiodes velifer	Highfin Carpsucker	S2	9.59
Centrarchus macropterus	Flier	S3	1.09
Epifagus virginiana	Beech Drops	S2	3.43
Hybognathus nuchalis	Mississippi Silvery Minnow	S3S4	0.67
Hybognathus placitus	Plains Minnow	S2	10.20
Lasionycteris noctivagans	Silver-haired Bat	S3	0.78
Lilium superbum	Turk's Cap Lilly	S1	3.30
Macrhybopsis gelida	Sturgeon Chub	S3	1.03
Macrobrachium ohione	Ohio Shrimp	S1	1.03
Myotis lucifugus	Little Brown Bat	S2	0.19
Notropis buchanani	Ghost Shiner	S2	10.22
Obolaria virginica	Virginia Pennywort	S2	0.92
Ochrotomys nuttalli	Golden Mouse	S3	1.66
Opsopoeodus emiliae	Pugnose Minnow	S4	1.33
Percina shumardi	River Darter	S3	6.79

Natural Heritage records indicate the following communities of conservation concern near the project area:

Community Type	State Rank	Proximity (miles)
Dry-mesic Chert Forest	S4	0.08
Mesic Loess/Glacial Till Forest	S3	0.15
Wet-mesic Bottomland Forest	S2	0.31

State Rank Definitions:

- S1: Critically imperiled in the state because of extreme rarity of or because of some factor(s) making it especially vulnerable to extirpation from the state. Typically, 5 or fewer occurrence or very few remaining individuals.
- S2: Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state. (6 to 20 occurrences or few remaining individuals).
- S3: Vulnerable in the state means this species is rare and uncommon, or found only in a restricted range (even if abundant in some locations), or because of other factors making it vulnerable to extirpation. Typically, 21 to 100 occurrences or between 3,000 and 10,000 individuals.
- S4: Uncommon but not rare, and usually widespread in the nation or state. Possibly of long-term concern. Usually more than 100 occurrences and more than 10,000 individuals.

- SU: Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

There are no regulatory requirements associated with this status, but we encourage voluntary stewardship for all these species to minimize the risk of further decline that could lead to listing.

See http://mdc.mo.gov/145 for a complete list of species and communities of conservation concern.

STATE ENDANGERED species are listed in and protected under the Wildlife Code of Missouri (3CSR10-4.111).

General recommendations related to this project or site, or based on information about the historic range of species (unrelated to any specific Natural Heritage records):

- **Conservation Opportunity Areas:** The project is adjacent to the Cape Hills Conservation Opportunity Area. COAs are key landscapes that represent the greatest opportunities for sustainable conservation of the Missouri's diverse flora and fauna and the natural communities they depend upon, including: grasslands (including prairie and savanna), glades, forests and woodlands, wetlands, caves and karst, and rivers and streams. COAs have been identified based on several factors, including the diversity and rarity of species and natural communities present, and the comparative likelihood/importance of projects to maintain them in the area over time. COAs have no regulatory role, but do reflect interest as a planning tool from multiple government agencies, non-governmental organizations and citizen groups to facilitate conservation in the area. Maintenance of high quality natural terrestrial and aquatic communities will help provide important habitat for the COA's biodiversity. Funding might be available to manage for important habitats within the COA. Please contact Missouri Department of Conservation for more information.

- **Gray Bats:** Gray Bats (*Myotis grisescens*, federal and state-listed endangered) occur in Cape Girardeau County and could occur in the project area, as they forage over streams, rivers, and reservoirs. Avoid entry or disturbance of any cave inhabited by gray bats and when possible retain forest vegetation along the stream and from the gray bat cave opening to the stream.

- **Interior Least Tern:** Interior Least Terns (*Sterna antillarum athalassos,* federally and state listed endangered) forage along this stretch of the Mississippi River. Habitat loss and diminishing water quality can impact least tern populations. See https://mdc.mo.gov/sites/default/files/downloads/Interior%20Least%20Tern.pdf for best management recommendations.

- Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment, so inspect and clean equipment thoroughly before moving between project sites.
  - Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
  - Drain water from boats and machinery that has operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
  - When possible, wash and rinse equipment thoroughly with hard spray or HOT water (≧140° F, typically available at do-it-yourself carwash sites), and dry in the hot sun before using again.

- **Karst:** Cape Girardeau County has known karst geologic features (e.g. caves, springs, and sinkholes, all characterized by subterranean water movement). Few karst features are recorded in Natural Heritage records, and ones not noted here may be encountered at the project site or

affected by the project. Cave fauna (many of which are species of conservation concern) are influenced by changes to water quality, so check your project site for any karst features and make every effort to protect groundwater in the project area.

- **Northern Long-eared Bats** Northern Long-eared bats (*Myotis septentrionalis,* federal-listed threatened) hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves known to harbor Northern Long-Eared Bats, especially from September to April. **If any trees need to be removed by your project, please contact the U.S. Fish and Wildlife Service (Ecological Services, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 Ext. 100 for Ecological Services) for further coordination under the Endangered Species Act.**

- **Wastewater:** Clean Water Act permits issued by other agencies (Missouri DNR or US Army Corps of Engineers) regulate both construction and operation of wastewater systems, and provide many important protections for fish and wildlife resources throughout the project area and at some distance downstream. Fish and wildlife almost always benefit when unnatural pollutants are removed from water, and concerns are minimal if construction is managed to minimize erosion and sedimentation/runoff to nearby streams and lakes, including adherence to any "Clean Water Permit" conditions.

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

  Management Recommendations for Construction Projects Affecting Missouri Streams and Rivers is a Conservation Department publication available at https://mdc.mo.gov/sites/default/files/downloads/page/Streams.pdf

These recommendations are ones project managers might prudently consider based on a general understanding of species needs and landscape conditions. Natural Heritage records largely reflect sites visited by specialists in the last 30 years. Many privately owned tracts have not been surveyed and could host remnants of species once but no longer common.

Appendix C: Geohydrological Evaluation

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Michael L. Parson, Governor
Carol S. Comer, Director

LWE20053
Cape Girardeau County

April 01, 2020

Stacy Arner
300 Chastain Center Blvd., Suite 395
Kennesaw, GA 30144

RE: The Procter & Gamble Paper Products Company

Dear Stacy Arner:

On March 04, 2020, the Missouri Geological Survey received a request to perform a geohydrologic evaluation for the above referenced project located in Cape Girardeau County. Included with this letter is a report that details the geologic and hydrologic conditions at the site and the potential for groundwater contamination in the event of wastewater treatment failure.

Thank you for the evaluation request. If you are in need of further assistance or have questions regarding the report, please contact our office at P.O Box 250, Rolla, Mo 65402-0250, by telephone at 573-368-2100 or gspgeol@dnr.mo.gov.

Sincerely,

MISSOURI GEOLOGICAL SURVEY

Fletcher N. Bone
Geologist
Environmental Geology Section

STATE OF MISSOURI
FLETCHER N BONE
RG
2019001287
REGISTERED GEOLOGIST

04/01/2020

c: Han Oh
WPP
Southeast Regional Office

Missouri Department Of Natural Resources
Missouri Geological Survey
Geological Survey Program
Environmental Geology Section

Project ID Number
LWE20053
County
Cape Girardeau

Request Details

Project: The Procter & Gamble Paper Products Company

Legal Description: 04 T32N R14E
Quadrangle: CAPE GIRARDEAU NE
Latitude: 37 28 50.65
Longitude: -89 30 24.34

Organization Official
Name: Han Oh
Address: 14484 State Hwy 177
City: Jackson
State: MO Zip: 63755
Phone: 573-332-3486
Email:

Preparer
Name: Stacy Arner
Address: 300 Chastain Center Blvd., Suite 395
City: Kennesaw
State: GA Zip: 30144
Phone: 724-996-4037
Email: sarner@all4inc.com

Project Details

Report Date: 04/01/2020
Date of Field Visit: 03/26/2020
Previous Reports: Not Applicable

Facility Type
- [X] Mechanical treatment plant
- [ ] Recirculating filter bed
- [ ] Land application
- [ ] Lagoon or storage basin
- [ ] Subsurface soil absorption system
- [ ] Lagoon or storage basin W/Land App
- [ ] Lagoon or storage basin W/SSAS
- [ ] Other type of facility

Type of Waste
- [ ] Animal
- [X] Human
- [ ] Process or industrial
- [ ] Leachate
- [ ] Other waste type

Funding Source
- [X] IWT
- [ ] WWL-SRF

Additional Information
- [ ] Plans were submitted
- [ ] Site was investigated by NRCS
- [ ] Soil or geotechnical data were submitted

Geologic Stream Classification: [X] Gaining [ ] Losing [ ] No discharge

Overall Geologic Limitations
- [X] Slight
- [ ] Moderate
- [ ] Severe

Collapse Potential
- [X] Not applicable
- [ ] Slight
- [ ] Moderate
- [ ] Severe

Topography
- [X] <4%
- [ ] 4% to 8%
- [ ] 8% to 15%
- [ ] >15%

Landscape Position
- [ ] Broad uplands
- [ ] Ridgetop
- [ ] Hillslope
- [ ] Narrow ravine
- [X] Floodplain
- [X] Alluvial plain
- [ ] Terrace
- [ ] Sinkhole

Bedrock: The uppermost bedrock at the site is Devonian-age Bailey Formation

Surficial Materials: The surficial materials consist of Quaternary-age alternating layers of gravel, sand, silt, and clay alluvium

Missouri Department Of Natural Resources
Missouri Geological Survey
Geological Survey Program
Environmental Geology Section

Project ID Number
LWE20053
County
Cape Girardeau

Recommended Construction Procedures for Earthen Facility	Determine Overburden Properties	Determine Hydrologic Conditions
☐ Installation of clay pad and Compaction	☐ Particle size analysis	☐ Groundwater elevation
☐ Diversion of subsurface flow	☐ Atterberg limits	☐ Direction of groundwater flow
☐ Artificial sealing	☐ 95% Max. dry density test method	☐ 25-Year flood level
☐ Rock excavation	☐ Overburden thickness	☐ 100-Year flood level
☐ Limit excavation depth	☐ Permeability coefficient-undisturbed	
	☐ Permeability coefficient-remolded	

Remarks:

On March 26, 2020, a site visit was conducted by a geologist from the Missouri Geological Survey (MGS) to perform a geohydrologic evaluation for the Proctor & Gamble Paper Products current outfall that is proposed to be rerouted and associated with piping for outfall #4. The purpose of the site visit was to observe the geologic and hydrologic elements of the site and determine the potential for groundwater contamination in the event of treatment failure.

There is no bedrock exposed at the site, however, nearby exposures and areal geologic mapping indicate that the uppermost bedrock below the site is Devonian-age Bailey Formation. The bedrock at this site, is insignificant as it pertains to groundwater contamination, as it is at least 65 feet below the Quaternary-age alluvial material. The surficial materials are Quaternary-age alternating layers of gravel, sand, silt, and clay alluvium that exhibit low to high permeability.

The proposed outfall associated with outfall #4 will discharge into Indian Creek, which has been previously classified as gaining. The geologist confirmed the gaining classification during the site visit. Indian Creek remains gaining to its confluence with the Mississippi River, which exhibits gaining characteristics.

There are no springs, sinkholes, or geologic structures located within one mile of the facility.

Based on the geologic and hydrologic characteristics observed, the site receives a slight geologic limitations rating. In the event of treatment failure, the local, shallow groundwater aquifer may be adversely impacted, and the surface waters of Indian Creek.

Appendix D: Antidegradation Review Summary Attachments

The attachments that follow contain summary information provided by the applicant. Department staff determined that changes must be made to the information contained within these attachments. The following were modified and can be found within the Department's WQAR:

1) Antidegradation Review Summary / Request Form.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH
ANTIDEGRADATION REVIEW SUMMARY / REQUEST

FOR DEPARTMENT USE ONLY	
APP NO. PCT 724	
FEE RECEIVED	CHECK NO.
DATE RECEIVED	

1. FACILITY

NAME			
The Procter & Gamble Paper Products Company		COUNTY: Cape Girardeau	
ADDRESS (PHYSICAL): 14484 State Hwy 177	CITY: Jackson	STATE: MO	ZIP CODE: 63755
PERMIT NUMBER: MO-0044121	PROPOSED DESIGN FLOW: 4.54 MGD	SIC / NAICS CODE: 2676/322291	

2. OWNER

NAME			
The Procter & Gamble Paper Products Company			
ADDRESS: 2 P&G Plaza	CITY: Cincinnati	STATE: OH	ZIP CODE: 45202
EMAIL ADDRESS: bryant.rd@pg.com		TELEPHONE NUMBER WITH AREA CODE: (573) 332-3486	

3. CONTINUING AUTHORITY The regulatory requirement regarding continuing authority is found in 10 CSR 20-6.010(2).

NAME	SECRETARY OF STATE CHARTER NUMBER		
The Procter & Gamble Paper Products Company	F00128544		
ADDRESS: P.O. Box 400	CITY: Cape Girardeau	STATE: MO	ZIP CODE: 63701
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE	

4. CONSULTANT

PREPARER NAME	COMPANY NAME		
Amanda Essner	ALL4 LLC		
ADDRESS: 2393 Kimberton Road	CITY: Kimberton	STATE: PA	ZIP CODE: 19442
EMAIL ADDRESS: aessner@all4inc.com		TELEPHONE NUMBER WITH AREA CODE: (610) 933-5246 x129	

5. RECEIVING WATER BODY SEGMENT #1

NAME: Outfall #004

5.1 Upper end of segment – Location of discharge
UTM: X= 809986, Y= 4154605 OR Lat _____, Long _____

5.2 Lower end of segment –
UTM: X= _____, Y= _____ OR Lat _____, Long _____

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

6. WATER BODY SEGMENT #2 (IF APPLICABLE, Use another form if a third segment is needed)

NAME:

6.1 Upper end of segment – End of Segment #1
UTM: X= _____, Y= _____ OR Lat _____, Long _____

6.2 Lower end of segment –
UTM: X= _____, Y= _____ OR Lat _____, Long _____

7. DECHLORINATION

If chlorination and dechlorination is the existing or proposed method of disinfection treatment, will the effluent discharged be equal to or less than the Water Quality Standards for Total Residual Chlorine stated in Table A1 of 10 CSR 20-7.031?
☑ Yes ☐ No – What is the proposed method of disinfection?

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

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8. SUMMARIZE THE FEASIBILITY OF CONSTRUCTING A NO-DISCHARGE TREATMENT WASTEWATER FACILITY

According to the Antidegradation Implementation Procedure Sections I.B. and II.B.1., the feasibility of no-discharge alternatives must be considered. No-discharge alternatives may include connection to a regional treatment facility, surface land application, subsurface land application, and recycle or reuse.

According to the Antidegradation Implementation Procedure Sections I.B. and II.B.1., for discharges likely to cause a significant degradation, non-degrading and less-degrading alternatives must be evaluated. The proposed project results in minimal degradation of the receiving stream (i.e., the Mississippi River); therefore, the Plant is not required to evaluate non-degrading and less-degrading alternatives.

9. ADDITIONAL REQUIREMENTS

Complete and submit the following with this submittal:

- ☑ Copy of the Geohydrologic Evaluation – Submit request through the Missouri Geological Survey website
- ☑ Copy of the Missouri Natural Heritage from the Missouri Department of Conservation website
- ☑ Attach your Antidegradation Review Report and all supporting documentation as these forms are only a summary.
- ☑ If applicable, submit a copy of any Existing Water Quality data used in this process. Include the date range of the data, source(s) of the data, and location of data collection relative to the outfall. If using your own collected water quality data, submit a copy of the Quality Assurance Project Plan (QAPP) approved by the department's Watershed Protection Section. For more detailed information, see the Missouri Antidegradation Implementation Procedure (AIP), Section II.A.1.

10. PATH / TIER REVIEW ATTACHMENTS ENCLOSED

Path A: Tier 2 – Non-Degradation Mass Balance	☐ **Yes**	☑ **No**
Path B: Tier 2 – Minimal Degradation	☑ **Yes**	☐ **No**
Path C: Tier 2 – Significant Degradation	☐ **Yes**	☑ **No**
Path D: Tier 1 – Preliminary Review Request	☐ **Yes**	☑ **No**
Path E: Temporary Degradation	☐ **Yes**	☑ **No**

11. APPLICANT PROPOSED ANTIDEGRADATION REVIEW EFFLUENT LIMITS

Preliminary effluent limits for the proposed project are dependent upon the path selected:

Applicable Pollutants of Concern	Concentration*		Path / Tier Review Attachment Used for POC Evaluation	Average Monthly Limit	Daily Maximum Limit or Average Weekly Limit
	mg/L	µg/L			
BOD_5	X		Not Applicable	5,508	11,340
TSS	X		Not Applicable	4,212	9,720
Ammonia (Summer)	X		Tier 2	Monitor	Monitor
Ammonia (Winter)	X		Tier 2	Monitor	Monitor
Total Phosphorus	X		Tier 2	Monitor	Monitor
Total Copper		X	Tier 2	Monitor	Monitor
Total Lead		X	Tier 2	Monitor	Monitor
Nitrate + Nitrite	X		Tier 2	Monitor	Monitor
Kjeldahl Nitrogen	X		Tier 2	Monitor	Monitor
E. Coli (#/100 mL)			Tier 2	206	1,030
pH (unitless)			Not Applicable	6.5 to 9.0	6.5 to 9.0
Total Residual Chlorine		X	Not Applicable	104	208
Surfactants	X		Not Applicable	Monitor	Monitor

* Place an X in appropriate box for the concentration units for each Pollutant of Concern.

12. PROPOSED PROJECT SUMMARY

Please refer to the cover letter for a summary of the proposed project.

Applicants choosing to use a new wastewater technology that are considered an "unproven technology" in Missouri must comply with the requirements set forth in the *New Technology Definitions and Requirements fact sheet.*

13. CONTINUING AUTHORITY WAIVER (For New Discharges)

In accordance with 10 CSR 20-6.010(2)(C), applicants proposing use of a lower preference continuing authority, when the higher level authority is available, must submit a waiver from the existing higher authority one or other documentation for the department's review, provided it does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or by the Missouri Clean Water Commission. Is the waiver necessary? ☐ Yes ☐ No
If yes, provide a copy.

14. APPLICATION FEE

☐ CHECK NUMBER ☒ JETPAY CONFIRMATION NUMBER 20014396

15. SIGNATURE

I am authorized and hereby certify that I am familiar with the information contained in this document and to the best of my knowledge and belief such information is true, complete and accurate.

SIGNATURE	DATE
Han L. Oh	1/31/20
PRINT NAME	**TITLE**
Han Oh	Plant Manager

PLEASE IDENTIFY YOUR STATUS FOR THIS PROJECT: ☐ OWNER ☑ CONTINUING AUTHORITY ☐ CONSULTANT

2) Attachment B:

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

ANTIDEGRADATION REVIEW SUMMARY
PATH B: TIER 2 – MINIMAL DEGRADATION

1. FACILITY

NAME	COUNTY
The Procter & Gamble Paper Products Company	Cape Girardeau

2. EXISTING WATER QUALITY SUMMARY

If using your own collected water quality data, submit a copy of the Quality Assurance Project Plan (QAPP) to the Watershed Protection Section for approval and then submit the collected data for their approval prior to Antidegradation submittal. When using existing sources of water quality data (eg. USGS), the Engineering Section will conduct the review. For more detailed information, see the Missouri Antidegradation Implementation Procedure (AIP), Section II.A.1.

Provide all the relevant data and reports for approval by the Watershed Protection Section.

Name of Receiving Stream: Mississippi River

Source of Existing Water Quality Data: Neely's Landing

Distance of outfall to Existing Water Quality Data sampling location: 1 mile

Is outfall upstream or downstream of the sampling location? Downstream

Date range of the Existing Water Quality Data: August 6, 2008

What is the design flow of the proposed facility? 4.54 MGD

Critical Low-Flow Receiving Stream Values	1Q10	7Q10	30Q10
Flow (cfs)	59038	62901	68945

Existing Water Quality and Water Quality Standard for Each Pollutant of Concern

Pollutants of Concern	Concentration*		1Q10	7Q10	30Q10	Water Quality Standard
	mg/L	µg/L				
Ammonia as N	X			2.70E-02		1.50
Nitrate plus Nitrite Nitrogen	X			1.59		10.00
Nitrogen	X			2.44		11.50
Phosphorus	X			0.38		0.50

* Place an X in appropriate box for the concentration units for each Pollutant of Concern

Comments/Discussion:

N/A

3. ASSIMILATIVE CAPACITY

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

Pollutant of Concern	Facility Assimilative Capacity	New Load		Percent of Facility Assimilative Capacity
	(lbs/day)	(mg/L)	(lbs/day)	(%)
Ammonia as N	500,348	0.36	6.24	0.0003
Nitrate plus Nitrite Nitrogen	2,858,119	6.07	105.44	0.0037
Nitrogen	3,076,082	13.45	233.44	0.0034
Phosphorus	39,408	0.76	13.22	0.0283

Assimilative capacity summary

N/A

Is degradation considered minimal for all pollutants of concern? ☑ Yes ☐ No

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

Comments/Discussion

N/A

4. PROPOSED PROJECT SUMMARY

Please refer to the cover sheet for the project summary.

Appendix E: Dissolved Oxygen Modeling

Streeter-Phelps analysis of critical dissolved oxygen sag.

The Proctor and Gamble Company Outfall 004 - June 4, 2020

INPUT

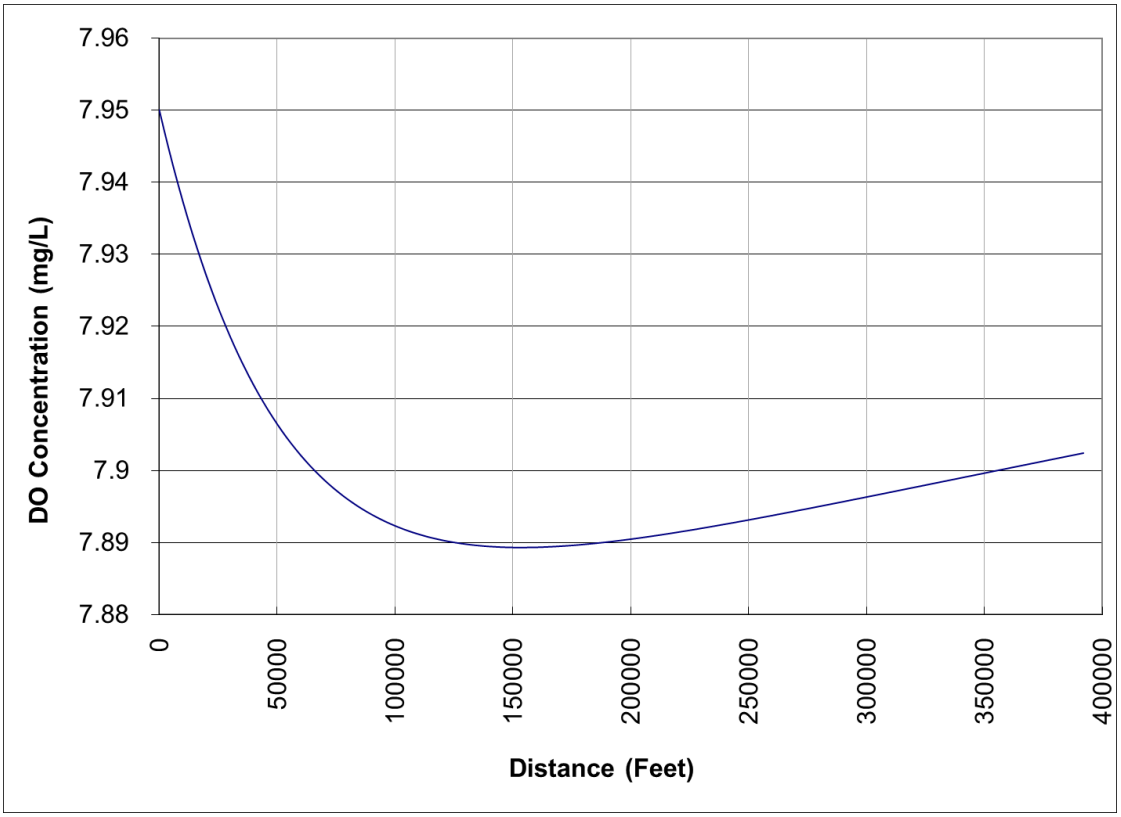
1. EFFLUENT CHARACTERISTICS		
Discharge (cfs):		7.037
CBOD5 (mg/L):		300
Ammonia as Nitrogen (mg/L):		8
NBOD (mg/L):		36.56
Dissolved Oxygen (mg/L):		8.4
Temperature (deg C):		18
2. RECEIVING WATER CHARACTERISTICS		
Upstream Discharge (cfs):		62901
Upstream CBOD5 (mg/L):		2.0
Upstream NBOD (mg/L):		2
Upstream Dissolved Oxygen (mg/L):		7.95
Upstream Temperature (deg C):		26
Elevation (ft NGVD):		320
Downstream Average Channel Slope (ft/ft):		0.0003
Downstream Average Channel Depth (ft):		3.050047149
Downstream Average Channel Velocity (fps):		9.526496621
3. REAERATION RATE (Base e) AT 20 deg C (day^-1):	**Applicable value below here:**	15.95

Reference	Applic. Vel (fps)	Applic. Dep (ft)	Suggested Values
Churchill	1.5 - 6	2 - 50	15.95
O'Connor and Dobbins	.1 - 1.5	2 - 50	7.51
Owens	.1 - 6	1 - 2	12.43
Tsivoglou-Wallace	.1 - 6	.1 - 2	5.54

4. BOD DECAY RATE (Base e) AT 20 deg C (day^-1):	0.46

Reference	Suggested Value
Wright and McDonnell, 1979	0.46

OUTPUT	
1. INITIAL MIXED RIVER CONDITION	
CBOD5 (mg/L):	2.0
NBOD (mg/L):	2.0
Dissolved Oxygen (mg/L):	8.0
Temperature (deg C):	26.0
2. TEMPERATURE ADJUSTED RATE CONSTANTS (Base e)	
Reaeration (day^-1):	18.39
BOD Decay (day^-1):	0.61
3. CALCULATED INITIAL ULTIMATE CBODU AND TOTAL BODU	
Initial Mixed CBODU (mg/L):	3.0
Initial Mixed Total BODU (CBODU + NBOD, mg/L):	5.0
4. INITIAL DISSOLVED OXYGEN DEFICIT	
Saturation Dissolved Oxygen (mg/L):	8.022
Initial Deficit (mg/L):	0.07
5. TRAVEL TIME TO CRITICAL DO CONCENTRATION (days):	0.161282
6. DISTANCE TO CRITICAL DO CONCENTRATION (feet):	132749.26
7. CRITICAL DO DEFICIT (mg/L):	0.15
8. CRITICAL DO CONCENTRATION (mg/L):	7.87



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET FOR THE PURPOSE OF RENEWAL OF
MO-0044121
THE PROCTER & GAMBLE COMPANY

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollutant 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 for less.

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)(A)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 (MSOP or operating permit) listed below. A factsheet is not an enforceable part of an operating permit.

PART I. FACILITY INFORMATION

Facility Type:	Industrial – Major Industrial
SIC Code(s):	2676, 4952
NAICS Code(s):	322291
Application Date:	September 24, 2018
Expiration Date:	March 31, 2019
Last Inspection:	September 26, 2016

FACILITY DESCRIPTION:
Procter & Gamble Paper Products Company manufactures disposable paper products: diapers, tissues, and towels. It has five outfalls (#001, #003, #005, #006, and #007) which receive non-contact cooling water and stormwater. The stormwater received by these outfalls is non-industrial, and not regulated under the NPDES program; therefore, the pollutants monitored on these outfalls reflect only those which are believed to be present in the cooling water. A previous permit writer inspected the facility and determined no industrial materials were exposed to stormwater. All stormwater at these outfalls comes from the roof of the facility, administrative buildings, and employee parking lots. Outfalls #001, #003, #005, #006, and #007 should be sampled only when stormwater is not discharging. Fire suppression water would also discharge from these outfalls in the event it was necessary. In the best professional judgment of the permit writer, the parameters found on these outfalls also reflect pollutants found in fire suppression water. Outfall #002 receives domestic wastewater and unregulated stormwater. It enters the treatment plant from a lift station and is sent to one of two extended aeration system cells. It is finally treated by a UV light disinfection system before being discharged to a tributary of Indian Creek. Outfall #004 is the only process wastewater outfall, and discharges after treatment to the Mississippi River. The process water originates from the paper machines, boilers, cooling towers, fiber recovery, and other miscellaneous process sources. The process water is supplied from a horizontal collector well, which is then sent through a clarifier and automatic backwash filters before being sent to the paper machines. Water for the boilers is softened and sent through a reverse osmosis unit. After use, process water is sent to an equalization tank, and then undergoes pH adjustment and diffused air flotation before discharging from the outfall. Currently sludge produced by processes served by outfall 004 is hauled offsite to a landfill. Sludge produced at outfall 002 is hauled offsite by a contract hauler.

The charter number for the continuing authority for this facility is F00128544; this number was verified by the permit writer to be associated with the facility and precisely matches the continuing authority reported by the facility.

RECEIVING STREAM LOW-FLOW VALUES:

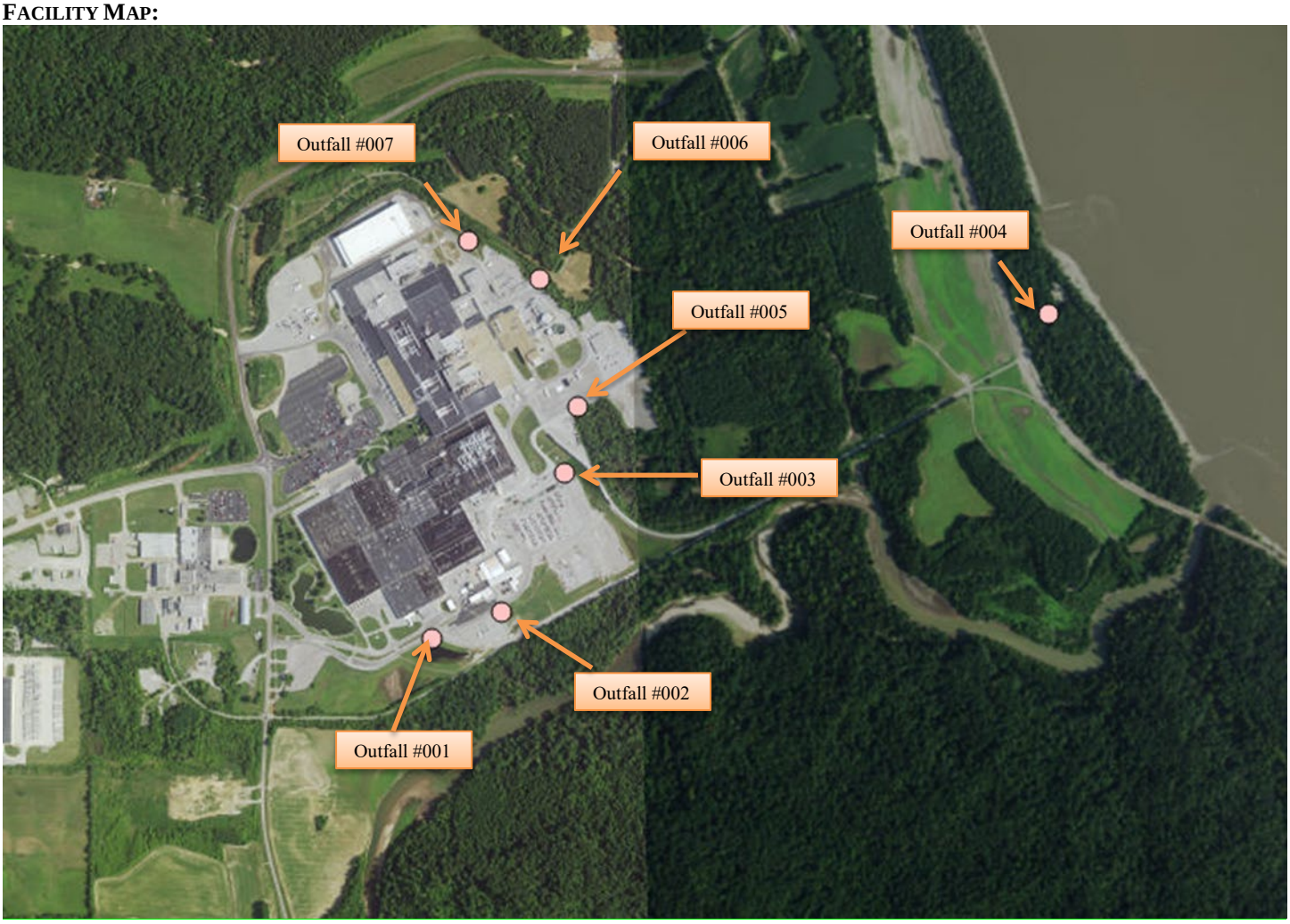
OUTFALL	RECEIVING STREAM (C, P)	LOW-FLOW VALUES (CFS)		
		1Q10	7Q10	30Q10**
#001, #002, #003, #005	Tributary to Indian Creek	0	0	0
#004	Mississippi River (P)	59038*	62901*	68945*

OUTFALL	RECEIVING STREAM (C, P)	LOW-FLOW VALUES (CFS)		
		1Q10	7Q10	30Q10**
#006	Tributary to Opossum Creek	0	0	0
#007	Tributary to Turkey Creek	0	0	0

* Low flow values were obtained from USGS Gaging Station #07020500 near Chester, IL. Data were obtained from 01/01/1969 through 01/11/2017 and were calculated using a department developed spreadsheet (available upon request).
** Used for ammonia calculations only

FACILITY PERFORMANCE HISTORY & COMMENTS:
The electronic discharge monitoring reports were reviewed for the last five years. During this time period two effluent limits were reported as exceeded. Both were at outfall #004 and exceeded the effluent limit for oil and grease. No other effluent limit violations were reported during this time period. The most recent inspection of this facility was conducted on September 26, 2016. The facility at the time of inspection was found to be in compliance.

FACILITY MAP:



PART II. RECEIVING WATERBODY INFORMATION

RECEIVING WATERBODY'S WATER QUALITY:
The receiving waterbody has no concurrent water quality data available.

303(D) LIST:
Section 303(d) of the federal Clean Water Act requires each state identify waters 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 impaired waters not addressed by normal water pollution control programs. http://dnr.mo.gov/env/wpp/waterquality/303d/303d.htm
✓ Not applicable; this facility does not discharge to an impaired segment of a 303(d) listed stream.

TOTAL MAXIMUM DAILY LOAD (TMDL):
A TMDL is a calculation of the maximum amount of a given pollutant a water body can absorb before its water quality is affected; hence, the purpose of a TMDL is to determine the pollutant loading a specific waterbody can assimilate without exceeding water quality standards. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan or TMDL may be developed. The TMDL shall include the WLA calculation. http://dnr.mo.gov/env/wpp/tmdl/
✓ Applicable; Mississippi River is associated with the 2006 EPA approved TMDL for Chlordane and PCB's.
- This facility is not considered to be a source of the above listed pollutant(s) or considered to contribute to the impairment.

APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:
Per Missouri's Effluent Regulations [10 CSR 20-7.015(1)(B)], waters of the state are divided into seven categories. Each category lists effluent limitations for specific parameters, which are presented in each outfall's effluent limitation table and further discussed in Part IV: Effluents Limits Determinations
✓ Missouri or Mississippi River
✓ All Other Waters

RECEIVING WATERBODY TABLE:

OUTFALL	WATERBODY NAME	CLASS	WBID	DESIGNATED USES	DISTANCE TO SEGMENT	12-DIGIT HUC
#001	Tributary to Indian Creek	n/a	n/a	GEN	0.21	07140105-0501 Little Indian Creek
	Indian Creek	P	1828	GEN, HHP, IRR, LWW, SCR, WBC-B, WWH (ALP)		
#002	Tributary to Indian Creek	n/a	n/a	GEN	0.17	
	Indian Creek	P	1828	GEN, HHP, IRR, LWW, SCR, WBC-B, WWH (ALP)		
#003	Tributary to Indian Creek	n/a	n/a	GEN	0.49	
	Indian Creek	P	1828	GEN, HHP, IRR, LWW, SCR, WBC-B, WWH (ALP)		
#004	Mississippi River	P	3701	GEN, WWH (ALP), DWS, IND, IRR, LWW, SCR, WBCB, HHP	0.0	07140105-0405 Neelys Creek - Mississippi
#005	Tributary to Indian Creek	n/a	n/a	GEN	0.51	07140105-0501 Little Indian Creek
	Indian Creek	P	1828	GEN, HHP, IRR, LWW, SCR, WBC-B, WWH (ALP)		
#006	Tributary to Opossum Creek	n/a	n/a	GEN	0.07	
	Opossum Creek	C	3960	GEN, WWH (ALP), IRR, LWW, SCR, WBCB, HHP		
#007	Tributary to Turkey Creek	n/a	n/a	GEN	0.15	
	Turkey Creek	P	1829	GEN, WWH (ALP), IRR, LWW, SCR, WBCB, HHP		

Notes:

n/a not applicable

Classes are hydrologic classes as defined in 10 CSR 20-7.031(1)(F). L1: Lakes with drinking water supply - wastewater discharges are not permitted to occur to L1 watersheds per 10 CSR 20-7.015(3)(C); L2: major reservoirs; L3: all other public and private lakes; P: permanent streams; C: streams which may cease flow in dry periods but maintain pools supporting aquatic life; E: streams which do not maintain surface flow; and W: wetland. Losing streams are defined in 10 CSR 20-7.031(1)(O) and are designated on the Losing Stream dataset or determined by the Department to lose 30% or more of flow to the subsurface.

WBID = Waterbody Identification: Missouri Use Designation Dataset per 10 CSR 20-7.031(1)(Q) and (S) as 8-20-13 MUDD V1.0 or newer; data can be found as an ArcGIS shapefile on MSDIS at ftp://msdis.missouri.edu/pub/Inland_Water_Resources/MO_2014_WQS_Stream_Classifications_and_Use_shp.zip; New C streams described on the dataset per 10 CSR 20-7.031(2)(A)3. as 100K Extent Remaining Streams.

Per 10 CSR 20-7.031, the Department defines the Clean Water Commission's water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and 1st classified receiving stream's beneficial water uses are to be maintained in the receiving streams in accordance with [10 CSR 20-7.031(1)(C)]. Uses which may be found in the receiving streams table, above:

10 CSR 20-7.031(1)(C)1.: **ALP** = Aquatic Life Protection (formerly AQL; current uses are defined to ensure the protection and propagation of fish shellfish and wildlife, further subcategorized as: WWH = Warm Water Habitat; CLH = Cool Water Habitat; CDH = Cold Water Habitat; EAH = Ephemeral Aquatic Habitat; MAH = Modified Aquatic Habitat; LAH = Limited Aquatic Habitat. This permit uses ALP effluent limitations in 10 CSR 20-7.031 Table A1-A2 for all habitat designations unless otherwise specified.

10 CSR 20-7.031(1)(C)2.: Recreation in and on the water

WBC = Whole Body Contact recreation where the entire body is capable of being submerged;

WBC-A = whole body contact recreation supporting swimming uses and has public access;

WBC-B = whole body contact recreation not supported in WBC-A;

SCR = Secondary Contact Recreation (like fishing, wading, and boating)

10 CSR 20-7.031(1)(C)3. to 7.:

HHP (formerly HHF) = Human Health Protection as it relates to the consumption of fish and drinking of water;

IRR = irrigation for use on crops utilized for human or livestock consumption

LWW = Livestock and Wildlife Watering (current narrative use is defined as LWP = Livestock and Wildlife Protection);

DWS = Drinking Water Supply

IND = industrial water supply

10 CSR 20-7.031(1)(C)8-11.: Wetlands (10 CSR 20-7.031 Tables A1-B3 currently does not have corresponding habitat use criteria for these defined uses): WSA = storm- and flood-water storage and attenuation; WHP = habitat for resident and migratory wildlife species; WRC = recreational, cultural, educational, scientific, and natural aesthetic values and uses; WHC = hydrologic cycle maintenance.

10 CSR 20-7.031(6): **GRW** = Groundwater

MIXING CONSIDERATIONS:

For all outfalls #001, #002, #003, #005, #006, #007 mixing zone and zone of initial dilution are not allowed per 10 CSR 20-7.031(5)(A)4.B.(I)(a) and (b), as the base stream flow does not provide dilution to the effluent.

RECEIVING STREAM LOW-FLOW VALUES:

OUTFALL	RECEIVING STREAM	LOW-FLOW VALUES (CFS)*			
		GAGING STATION	1Q10	7Q10	30Q10
#004	Mississippi River	Chester IL #07020500	59038	62901	68945

* Low flow data was retained from the previous permit renewal due to permit synchronization which resulted in the previous permit being issued for a full permit cycle. As of the 2017 renewal data were obtained for the last 20 years and were calculated using a Department developed spreadsheet (available upon request).

** Low flow values were obtained from USGS Gaging Station #07020500 near Chester, IL. Data were obtained from 01/01/1969 through 01/11/2017 and were calculated using a departmentally developed spreadsheet (available upon request).

MIXING CONSIDERATIONS TABLE: MISSISSIPPI RIVER

MIXING ZONE (CFS) (CHRONIC) [10 CSR 20-7.031(5)(A)5.A.4.B.(III)(a)]			ZONE OF INITIAL DILUTION (CFS) (ACUTE) [10 CSR 20-7.031(5)(A)4.B.(III)(b)]		
1Q10	7Q10	30Q10	1Q10	7Q10	30Q10
1476 cfs	15725 cfs	17236 cfs	68.1 cfs	68.1 cfs	68.1 cfs

*Per 10 CSR 20-7.031(4)(a)4.B(III)(b), a ZID is 1/10 of the mixing zone, but no more than 10 times the effluent design flow.

RECEIVING WATERBODY MONITORING REQUIREMENTS:

No receiving water monitoring requirements are recommended at this time.

PART III. RATIONALE AND DERIVATION OF EFFLUENT LIMITATIONS & PERMIT CONDITIONS

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

✓ Not applicable; the facility does not discharge to a losing stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility.

ANTIBACKSLIDING:
Federal Regulations [CWA §303(d)(4); CWA §402(c); 40 CFR Part 122.44(l)] require a reissued permit to be as stringent as the previous permit with some exceptions. Backsliding (a less stringent permit limitation) is only allowed under certain conditions.

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

ANTIDEGRADATION REVIEW:
Process water discharges with new, altered, or expanding flows, the Department is to document, by means of antidegradation review, if the use of a water body's available assimilative capacity is justified. In accordance with Missouri's water quality regulations for antidegradation [10 CSR 20-7.031(3)], degradation may be justified by documenting the socio-economic importance of a discharge after determining the necessity of the discharge. Facilities must submit the antidegradation review request to the Department prior to establishing, altering, or expanding discharges. See http://dnr.mo.gov/env/wpp/permits/antideg-implementation.htm

✓ Not applicable; the facility has not submitted information proposing expanded or altered process water discharge; no further degradation proposed therefore no further review necessary.

For stormwater discharges with new, altered, or expanding discharges, the stormwater BMP chosen for the facility, through the antidegradation analysis performed by the facility, must be implemented and maintained at the facility. Failure to implement and maintain the chosen BMP alternative is a permit violation; see SWPPP.

✓ Not applicable; the facility does not have stormwater discharges or the stormwater outfalls onsite have no industrial exposure.

CHANGES IN DISCHARGES OF TOXIC POLLUTANT:
This special condition reiterates the federal rules found in 40 CFR 122.44(f) and 122.42(a)(1). In these rules, the facility is required to report changes in amounts of toxic substances discharged. Toxic substances are defined in 40 CFR 122.2 as "…any pollutant listed as toxic under section 307(a)(1) or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing section 405(d) of the CWA." Section 307 of the clean water act then refers to those parameters found in 40 CFR 401.15. The permittee should also consider any other toxic pollutant in the discharge as reportable under this condition.

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.

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

✓ The facility has an associated Effluent Limit Guideline (ELG) which is applicable to the wastewater/stormwater discharge at this site and is applied under 40 CFR 125.3(a). The following table shows the limits in the ELG at 40 CFR 400-499. Should Reasonable Potential be established for any particular parameter and water-quality derived effluent limits are more protective of the receiving water's quality, the WQS will be used as the limiting factor in accordance with 40 CFR 122.44(d) and 10 CSR 20-7.015(9)(A). See Part IV: EFFLUENT LIMITS DETERMINATION.

SUBPART L

[NSPS for non-integrated mills where tissue papers are produced from purchased pulp]

Pollutant or pollutant property	Kg/kkg (or pounds per 1,000 lb) of product		
	Continuous dischargers		Non-continuous dischargers (annual average)
	Maximum for any 1 day	Average of daily values for 30 consecutive days	
BOD5	7.0	3.4	2.3
TSS	6.0	2.6	1.6
pH	(1)	(1)	(1)

	Maximum for any 1 day	
	Kg/kkg (or pounds per 1,000 lb) of product	Milligrams/liter
Pentachlorophenol	0.0028	(0.035)(19.1)/y
Trichlorophenol	0.00096	(0.012)(19.1)/y
y = wastewater discharged in kgal per ton at all times.		

[1]Within the range of 5.0 to 9.0 at all times.

GROUNDWATER MONITORING:
Groundwater is a water of the state according to 10 CSR 20-2.010(82), and is subject to regulations at 10 CSR 20-7.015(7) and 10 CSR 20-7.031(6) and must be protected accordingly.
✓ This facility is not required to monitor groundwater for the water protection program.

MAJOR WATER USER:
Any surface or groundwater user with a water source and the equipment necessary to withdraw or divert 100,000 gallons (or 70 gallons per minute) or more per day combined from all sources from any stream, river, lake, well, spring, or other water source is considered a major water user in Missouri. All major water users are required by law to register water use annually (Missouri Revised Statues Chapter 256.400 Geology, Water Resources and Geodetic Survey Section). https://dnr.mo.gov/pubs/pub2337.htm
✓ Applicable; this facility is a major water user and is registered with the state.

NO-DISCHARGE LAND APPLICATION:
Land application of wastewater or sludge shall comply with the all applicable no-discharge requirements listed in 10 CSR 20-6.015 and all facility operations and maintenance requirements listed in 10 CSR 20-8.020(15). These requirements ensure appropriate operation of the no-discharge land application systems and prevent unauthorized and illicit discharges to waters of the state. Land applications by a contract hauler on fields the permittee has a spreading agreement on are not required to be in this permit. A spreading agreement does not constitute the field being rented or leased by the permittee as they do not have any control over management of the field.
✓ Not applicable; this permit does not authorize operation of a no-discharge land application system to treat wastewater or sludge.

REASONABLE POTENTIAL (RP):
Federal regulation [40 CFR Part 122.44(d)(1)(i)] requires effluent limitations for all pollutants which are (or may be) discharged at a level causing or have the reasonable potential to cause (or contribute to) an in-stream excursion above narrative or numeric water quality standards. Per 10 CSR 20-7.031(4), general criteria shall be applicable to all waters of the state at all times; however, acute toxicity criteria may be exceeded by permit in zones of initial dilution, and chronic toxicity criteria may be exceeded by permit in mixing zones. If the permit writer determines any given pollutant has the reasonable potential to cause or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for the pollutant per 40 CFR Part 122.44(d)(1)(iii) and the most stringent limits per 10 CSR 20-7.031(9)(A).
✓ An RPA calculation was conducted during the previous renewal process on applicable parameters. As the previous permit was issued for a shortened permit cycle effluent limit calculations and RPA results conducted during the previous renewal have been retained.

SCHEDULE OF COMPLIANCE (SOC):
A schedule of remedial measures included in a permit, including an enforceable sequence of interim requirements (actions, effluent limits, 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. SOCs are allowed under 40 CFR 122.47 providing certain conditions are met. A SOC is not allowed:
- For effluent limitations based on technology-based standards established in accordance with federal requirements, if the deadline for compliance established in federal regulations has passed. 40 CFR § 125.3.

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

In order to provide guidance in developing SOCs, and to attain a greater level of consistency, the department issued a policy on development of SOCs on October 25, 2012. The policy provides guidance to permit writers on standard time frames for schedules for common activities, and guidance on factors to modify the length of the schedule.

✓ Applicable; the time given for effluent limitations of this permit listed under Interim Effluent Limitation and Final Effluent Limitations were established in accordance with [10 CSR 20-7.031(12)]. The facility has been given a schedule of compliance to meet final effluent limits. The previous permit established a schedule of compliance for copper at outfall #002. The amount of time established during the previous renewal was three (3) years with final effluent limits becoming effective on August 1, 2020 See permit Sections A and B for compliance dates.

✓ A schedule of compliance for Total Residual Chlorine has been included during this renewal. A one (1) year schedule of compliance will provide adequate time for the facility to make any operational changes necessary to meet final effluent limits for TRC at outfall #001, 004 and #006.

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

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

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

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

✓ Permittee is not authorized to land apply industrial sludge. Industrial sludge is removed by contract hauler and taken to a landfill.

STANDARD CONDITIONS:
The standard conditions Part I attached to this permit incorporate all sections of 40 CFR 122.41(a) through (n) by reference as required by law. These conditions, in addition to the conditions enumerated within the standard conditions should be reviewed by the permittee to ascertain compliance with this permit, state regulations, state statues, federal regulations, and the Clean Water Act.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):
In accordance with 40 CFR 122.44(k), Best Management Practices (BMPs) must be used 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*, (EPA 833-B-09-002) published by the EPA in 2015 https://www.epa.gov/sites/production/files/2015-11/documents/swppp_guide_industrial_2015.pdf, BMPs are measures or practices used to reduce the amount of pollution entering waters of the state from a permitted facility. 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 storm water discharges. Additional information can be found in *Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices* (EPA 832-R-92-006; September 1992).

A SWPPP must be prepared by the permittee if the SIC code is found in 40 CFR 122.26(b)(14) and/or 10 CSR 20-6.200(2). A SWPPP may be required of other facilities where stormwater has been identified as necessitating better management. The purpose of a SWPPP

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

Areas which should be included in the SWPPP are identified in 40 CFR 122.26(b)(14). Once the potential sources of stormwater pollution have been identified, a plan should be formulated to best control the amount of pollutant being released and discharged by each activity or source. This should include, but is not limited to, minimizing exposure to stormwater, good housekeeping measures, proper facility and equipment maintenance, spill prevention and response, vehicle traffic control, and proper materials handling. Once a plan has been developed the facility will employ the control measures determined to be adequate to achieve the benchmark values discussed above. The facility will conduct monitoring and inspections of the BMPs to ensure they are working properly and re-evaluate any BMP not achieving compliance with permitting requirements. For example, if sample results from an outfall show values of TSS above the benchmark value, the BMP being employed is deficient in controlling stormwater pollution. Corrective action should be taken to repair, improve, or replace the failing BMP. This internal evaluation is required at least once per month but should be continued more frequently if BMPs continue to fail. If failures do occur, continue this trial and error process until appropriate BMPs have been established.

For new, altered, or expanded stormwater discharges, the SWPPP shall identify reasonable and effective BMPs while accounting for environmental impacts of varying control methods. The antidegradation analysis must document why no discharge or no exposure options are not feasible. The selection and documentation of appropriate control measures shall serve as an alternative analysis of technology and fulfill the requirements of antidegradation [10 CSR 20-7.031(3)]. For further guidance, consult the antidegradation implementation procedure (http://dnr.mo.gov/env/wpp/docs/AIP050212.pdf).

Alternative Analysis (AA) evaluation of the BMPs is a structured evaluation of BMPs which are reasonable and cost effective. The AA evaluation should include practices designed to be: 1) non-degrading; 2) less degrading; or 3) degrading water quality. The glossary of AIP defines these three terms. The chosen BMP will be the most reasonable and effective management strategy while ensuring the highest statutory and regulatory requirements are achieved and the highest quality water attainable for the facility is discharged. The AA evaluation must demonstrate why "no discharge" or "no exposure" is not a feasible alternative at the facility. This structured analysis of BMPs serves as the antidegradation review, fulfilling the requirements of 10 CSR 20-7.031(3) Water Quality Standards and *Antidegradation Implementation Procedure* (AIP), Section II.B.

If parameter-specific numeric benchmark exceedances continue to occur and the permittee feels there are no practicable or cost-effective BMPs which will sufficiently reduce a pollutant concentration in the discharge to the benchmark values established in the permit, the permittee can submit a request to re-evaluate the benchmark values. This request needs to include 1) a detailed explanation of why the facility is unable to comply with the permit conditions and unable to establish BMPs to achieve the benchmark values; 2) financial data of the company and documentation of cost associated with BMPs for review and 3) the SWPPP, which should contain adequate documentation of BMPs employed, failed BMPs, corrective actions, and all other required information. This will allow the Department to conduct a cost analysis on control measures and actions taken by the facility to determine cost-effectiveness of BMPs. The request shall be submitted in the form of an operating permit modification; the application is found at: https://dnr.mo.gov/forms/#WaterPollution

✓ Not applicable; a SWPPP is not required, the outfalls at this facility do not receive regulated stormwater.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS (TBEL):

One of the major strategies of the Clean Water Act (CWA) in making "reasonable further progress toward the national goal of eliminating the discharge of all pollutants" is to require effluent limitations based on the capabilities of the technologies available to control those discharges. Technology-based effluent limitations (TBELs) aim to prevent pollution by requiring a minimum level of effluent quality attainable using demonstrated technologies for reducing discharges of pollutants or pollution into the waters of the United States. TBELs are developed independently of the potential impact of a discharge on the receiving water, which is addressed through water quality standards and water quality-based effluent limitations (WQBELs).

✓ Applicable; The EPA has developed Effluent Limitation Guidelines for this industry. The ELG applicable to this facility is the New Source Performance Standard (NSPS) limits in the ELG at 40 CFR 430. The limits found in this ELG are applied as TBELs in this permit. See the "EFFLUENT LIMITATION GUIDELINE" section above for more information on specific ELG requirements.

UNDERGROUND INJECTION CONTROL (UIC):

The UIC program for all classes of wells in the State of Missouri is administered by the Missouri Department of Natural Resources and approved by EPA pursuant to section 1422 and 1425 of the Safe Drinking Water Act (SDWA) and 40 CFR 147 Subpart AA. Injection wells are classified based on the liquids which are being injected. Class I wells are hazardous waste wells which are banned by RSMo 577.155; Class II wells are established for oil and natural gas production; Class III wells are used to inject fluids to extract minerals; Class IV wells are also banned by Missouri in RSMo 577.155; Class V wells are shallow injection wells; some examples are

heat pump wells and groundwater remediation wells. Domestic wastewater being disposed of sub-surface is also considered a Class V well. In accordance with 40 CFR 144.82, construction, operation, maintenance, conversion, plugging, or closure of injection wells shall not cause movement of fluids containing any contaminant into Underground Sources of Drinking Water (USDW) if the presence of any contaminant may cause a violation of drinking water standards or groundwater standards under 10 CSR 20-7.031, or other health based standards, or may otherwise adversely affect human health. If the director finds the injection activity may endanger USDWs, the Department may require closure of the injection wells, or other actions listed in 40 CFR 144.12(c), (d), or (e). In accordance with 40 CFR 144.26, the permittee shall submit a Class V Well Inventory Form for each active or new underground injection well drilled, or when the status of a well changes, to the Missouri Department of Natural Resources, Geological Survey Program, P.O. Box 250, Rolla, Missouri 65402. The Class V Well Inventory Form can be requested from the Geological Survey Program or can be found at the following web address: http://dnr.mo.gov/forms/780-1774-f.pdf

✓ Not applicable; the permittee has not submitted materials indicating the facility will be performing UI at this site.

VARIANCE:

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; the operating permit is not drafted under premise of a petition for variance.

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:

As per [10 CSR 20-2.010(78)], the WLA is the amount of pollutant each discharger is allowed to discharge into the receiving stream without endangering water quality. Two general types of effluent limitations, technology-based effluent limits (TBELs) and water quality based effluent limits (WQBELs) are reviewed. If one limit does not provide adequate protection for the receiving water, then the other must be used per 10 CSR 20-7.015(9)(A).

✓ Applicable; wasteload allocations were calculated where relevant using water quality criteria or water quality model results and by applying the dilution equation below:

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

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

- Acute wasteload allocations designated as daily maximum limits (MDL) 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).
- Chronic wasteload allocations designated as monthly average limits (AML) 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).
- Water quality based MDL and AML effluent limitations were calculated using methods and procedures outlined in USEPA's *Technical Support Document For Water Quality-based Toxics Control* or TSD EPA/505/2-90-001; 3/1991.
- Number of Samples "n": In accordance with the TSD for water quality-based permitting, effluent quality is determined by the underlying distribution of daily values, which is determined by the Long Term Average (LTA) associated with a particular Wasteload Allocation (WLA) and by the Coefficient of Variation (CV) of the effluent concentrations. Increasing or decreasing the monitoring frequency does not affect this underlying distribution or treatment performance which should be, at a minimum, targeted to comply with the values dictated by the WLA. Therefore, it is recommended 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:

Permittees may submit site specific studies to better determine the site specific wasteload allocations applied in permits.

✓ Not applicable; a WLA study was either not submitted or determined not applicable by Department staff.

PART IV. EFFLUENT LIMITS DETERMINATIONS

OUTFALL #001 AND #006– NON-CONTACT COOLING WATER OUTFALLS

PARAMETERS OUTFALL #001 & #006	UNIT	DAILY MAX	MONTHLY AVG	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	MINIMUM REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	*	SAME	ONCE/MONTH	ONCE/MONTH	24 HR. TOT
TEMPERATURE	°F	90	90	SAME	ONCE/MONTH	ONCE/MONTH	MEASURED
CONVENTIONAL							
pH ǂ	SU	6.5 TO 9.0	6.5 to 9.0	SAME	ONCE/MONTH	ONCE/MONTH	GRAB
METALS							
THALLIUM	µG/L	*	*	NEW	ONCE/QUARTER	ONCE/QUARTER	GRAB
NUTRIENTS							
AMMONIA AS N	MG/L	*	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
OTHER							
CHLORINE, TOTAL RESIDUAL	µg/L	<130	<130	*/*	ONCE/MONTH	ONCE/MONTH	GRAB
OXYGEN, DISSOLVED (DO) **	MG/L	*	*	SAME	ONCE/MONTH	ONCE/MONTH	GRAB
SURFACTANTS	MG/L	*	*	NEW	ONCE/QUARTER	ONCE/QUARTER	GRAB

* - Monitoring requirement only
** - For DO the Daily Maximum is a Daily Minimum and the Monthly Average is a Monthly Average Minimum.
ǂ The facility will report the minimum and maximum pH values; pH is not to be averaged.
NEW - Parameter not previously established in previous state operating permit.

DERIVATION AND DISCUSSION OF LIMITS:
These outfalls receive stormwater which was determined to be unregulated in the previous permit cycle after inspection by permitting staff. The previous permit writer inspected the facility and determined no industrial materials were exposed to stormwater. All stormwater at these outfalls comes from the roof of the facility, administrative buildings, and employee parking lots. The parameters on this outfall are representative of the pollutants of concern in the non-contact cooling water. The effluent sampling at these outfalls is to be performed when there is no influence of stormwater in the discharge.

PHYSICAL:

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. The facility will report the total flow in millions of gallons per day (MGD).

Temperature
In accordance with 10 CSR 20-7.031(5)(D), water contaminant sources shall not cause or contribute to stream temperature in excess of ninety degrees Fahrenheit (90 °F) or thirty-two and two-ninths degrees Celsius (32 2/9 °C). In order to reduce confusion and duplicative monitoring or reporting requirements, the permit will only require that temperature be monitored and reported in degrees Fahrenheit. It is not necessary to report in both Celsius and Fahrenheit.

CONVENTIONAL:

pH
6.5 to 9.0 SU. The Water Quality Standard at 10 CSR 20-7.031(5)(E) states water contaminants shall not cause pH to be outside the range of 6.5 to 9.0 standard pH units. This is continued from the previous permit.

METALS:

Thallium:
For outfalls #001, #003, #005, #006, #007 Thallium was listed as "believed present" by the applicant during renewal. Samples provided for these outfalls resulted in values ranging from <1.0 µg/L to 8.9 µg/L. The water quality standard is 2 µg/L for the

Human Health designated use which applies to each of these outfalls. As a result monitoring requirement are being included in order to determine if theses outfalls have reasonable potential to exceed water quality standards

NUTRIENTS:

Ammonia, as N

Monitoring only. Per best professional judgment of the permit writer. During the previous permit renewal process, it was disclosed to the permit writer the facility uses bromide activated chloramine treatment as a biocide in the cooling towers of this facility. Ammonia is a pollutant of concern with this treatment process.

OTHER:

Chlorine, Total Residual (TRC)

17 µg/L daily maximum and 8 µg/L monthly average; warm-water Protection of Aquatic Life CCC = 11 µg/L, CMC = 19 µg/L [10 CSR 20-7.031, Table A1]. Background = 0 µg/L. Standard compliance language for TRC, including the minimum level (ML), is described in the permit.

Acute WLA: $C_e = ((6.8\ cfs_{DF} + 0.0\ cfs_{ZID\ 7Q10})\ 19\ \mu g/L - (0.0\ cfs_{ZID\ 7Q10} * 0.0\ \mu g/L)) \div 6.8\ cfs_{DF}$ $C_e = 19\ \mu g/L$

Chronic WLA: $C_e = ((6.8\ cfs_{DF} + 0.0\ cfs_{MZ\ 7Q10})\ 10\ \mu g/L - (0.0\ cfs_{MZ\ 7Q10} * 0.0\ \mu g/L)) \div 6.8\ cfs_{DF}$ $C_e = 11\ \mu g/L$

LTA_a: 19 (0.321) = 6.1 µg/L [CV = 0.6, 99th Percentile]

LTA_c: 10 (0.527) = 5.3 µg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_a or LTA_c.

MDL: 5.3 (3.11) = 16.5 µg/L [CV = 0.6, 99th Percentile]

AML: 5.3 (1.55) = 8.2 µg/L [CV = 0.6, 95th Percentile, n = 4]

It has been determined that the facility has reasonable potential to violate water quality standards for Total Residual Chlorine for outfall #001 and #006 based on review of the facilities discharge monitoring reports. The facility has reported an exceedance of water quality standards for outfall 001 twice in the last 14 months of reports and has reported 6 exceedances of water quality standards for outfall #006 over the same period.

Oxygen, Dissolved

Monitoring only. This facility uses bromide activated chloramine treatment as a biocide in the cooling towers of this facility. This practice has the potential to affect the dissolved oxygen in the discharge effluent. Monitoring for dissolved oxygen is included to determine whether reasonable potential exists to exceed water quality standards.

Surfactants:

While Missouri currently does not have a water quality standard for surfactants other states do. General criteria still applies. Surfactants have the ability to impair general criteria due to toxicity to aquatic life and ability to produce a sheen and foam on the water's surface. Surfactants were identified by the applicant as "believed present" on the application for renewal. Levels reported as a part of the application for renewal are as follows, for outfall #001 0.6 mg/L, #003 1.4 mg/L, #006 0.17 mg/L Surfactants were listed as "believed present" for outfall #007 but were not tested for. In addition to the sample results submitted with the renewal application the permittee resampled on 11/19/2018 and submitted additional monitoring data for surfactants which was considered. The range of this data for outfall #001, #002, # 003, #004, #006 and #007 was from <0.1 mg/L to 0.46 mg/L. One sample was collected for each outfall. This monitoring is being include to evaluate the level of surfactants present in the effluent and to determine if reasonable potential exists to violate general criteria.

OUTFALL #003, #005, #007 – NON-CONTACT COOLING WATER OUTFALLS

PARAMETERS OUTFALL #003, #005, #007	UNIT	DAILY MAX	MONTHLY AVG	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	MINIMUM REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	*	SAME	ONCE/MONTH	ONCE/MONTH	24 HR. TOT
TEMPERATURE	°F	90	90	SAME	ONCE/MONTH	ONCE/MONTH	MEASURED
CONVENTIONAL							
PH ǂ	SU	6.5 TO 9.0	6.5 to 9.0	SAME	ONCE/MONTH	ONCE/MONTH	GRAB
METALS							
THALLIUM	µG/L	*	*	NEW	ONCE/QUARTER	ONCE/QUARTER	GRAB
NUTRIENTS							
AMMONIA AS N	MG/L	*	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
OTHER							
CHLORINE, TOTAL RESIDUAL	µg/L	*	*	SAME	ONCE/MONTH	ONCE/MONTH	GRAB
OXYGEN, DISSOLVED (DO) **	MG/L	*	*	SAME	ONCE/MONTH	ONCE/MONTH	GRAB
SURFACTANTS	MG/L	*	*	NEW	ONCE/QUARTER	ONCE/QUARTER	GRAB

* - Monitoring requirement only
** - For DO the Daily Maximum is a Daily Minimum and the Monthly Average is a Monthly Average Minimum.
ǂ The facility will report the minimum and maximum pH values; pH is not to be averaged.
NEW - Parameter not previously established in previous state operating permit.

DERIVATION AND DISCUSSION OF LIMITS:
These outfalls receive stormwater which was determined to be unregulated in the previous permit cycle after inspection by permitting staff. The previous permit writer inspected the facility and determined no industrial materials were exposed to stormwater. All stormwater at these outfalls comes from the roof of the facility, administrative buildings, and employee parking lots. The parameters on this outfall are representative of the pollutants of concern in the non-contact cooling water. The effluent sampling at these outfalls is to be performed when there is no influence of stormwater in the discharge.

PHYSICAL:

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. The facility will report the total flow in millions of gallons per day (MGD).

Temperature
In accordance with 10 CSR 20-7.031(5)(D), water contaminant sources shall not cause or contribute to stream temperature in excess of ninety degrees Fahrenheit (90 °F) or thirty-two and two-ninths degrees Celsius (32 2/9 °C). In order to reduce confusion and duplicative monitoring or reporting requirements, the permit will only require that temperature be monitored and reported in degrees Fahrenheit. It is not necessary to report in both Celsius and Fahrenheit.

CONVENTIONAL:

pH
6.5 to 9.0 SU. The Water Quality Standard at 10 CSR 20-7.031(5)(E) states water contaminants shall not cause pH to be outside the range of 6.5 to 9.0 standard pH units. This is continued from the previous permit.

METALS:

Thallium:
For outfalls #001, #003, #005, #006, #007 Thallium was listed as "believed present" by the applicant during renewal. Samples provided for these outfalls resulted in values ranging from <1.0 µg/L to 8.9 µg/L. The water quality standard is 2 µg/L for the Human Health designated use which applies to each of these outfalls. As a result monitoring requirement are being included in order to determine if theses outfalls have reasonable potential to exceed water quality standards

NUTRIENTS:

Ammonia, as N
Monitoring only. Per best professional judgment of the permit writer. During the previous permit renewal process, it was disclosed to the permit writer the facility uses bromide activated chloramine treatment as a biocide in the cooling towers of this facility. Ammonia is a pollutant of concern with this treatment process.

OTHER:

Total Residual Chlorine (TRC)
Monitoring only. On the previous application the permittee reported chlorinating the water at outfall #002 before use. As no change of operation was disclosed monitoring is being retained to determine the reasonable potential for this pollutant to exceed water quality standards at this outfall. The Department has determined the current acceptable ML for total residual chlorine to be 130 µg/L when using the DPD Colorimetric Method #4500 – CL G. from Standard Methods for the Examination of Waters and Wastewater. The permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values.

Oxygen, Dissolved
Monitoring only. This facility uses bromide activated chloramine treatment as a biocide in the cooling towers of this facility. This practice has the potential to affect the dissolved oxygen in the discharge effluent. Monitoring for dissolved oxygen is included to determine whether reasonable potential exists to exceed water quality standards.

Surfactants:
While Missouri currently does not have a water quality standard for surfactants other states do. General criteria still applies. Surfactants have the ability to impair general criteria due to toxicity to aquatic life and ability to produce a sheen and foam on the water's surface. Surfactants were identified by the applicant as "believed present" on the application for renewal. Levels reported as a part of the application for renewal are as follows, for outfall #001 0.6 mg/L, #003 1.4 mg/L, #006 0.17 mg/L Surfactants were listed as "believed present" for outfall #007 but were not tested for. In addition to the sample results submitted with the renewal application the permittee resampled on 11/19/2018 and submitted additional monitoring data for surfactants which was considered. The range of this data for outfall #001, #002, # 003, #004, #006 and #007 was from <0.1 mg/L to 0.46 mg/L. One sample was collected for each outfall. Monitoring is being include to evaluate the level of surfactants present in the effluent and to determine if reasonable potential exists to violate general criteria.

OUTFALL #002 –DOMESTIC WASTEWATER OUTFALL

Superseded in 2020 and 2021 modifications.

EFFLUENT LIMITATIONS TABLE:

PARAMETERS OUTFALL #002	UNIT	DAILY MAX	WEEKLY AVG.	MONTHLY AVG	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	MINIMUM REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL								
FLOW	MGD	*	--	*		ONCE/QUARTER	ONCE/QUARTER	24HR TOT
CONVENTIONAL								
BOD_5	MG/L	--	45	30	SAME	ONCE/QUARTER	ONCE/QUARTER	COMPOSITE
pH ǂ	SU	6.5 TO 9.0	--	6.5 TO 9.0	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
TSS	MG/L	--	45	30	SAME	ONCE/QUARTER	ONCE/QUARTER	COMPOSITE
NUTRIENTS								
AMMONIA AS N (APR 1 – SEPT 30)	MG/L	5.6	--	1.3	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
AMMONIA AS N (OCT 1 – MARCH 31)	MG/L	*	--	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
KJELDAHL NITROGEN	MG/L	*	--	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
NITRATE + NITRITE AS N	MG/L	*	--	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
NITROGEN, TOTAL (TN)	MG/L	*	--	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
PHOSPHORUS, TOTAL (TP)	MG/L	*	--	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
METALS								
COPPER, TOT. RECOVER.	µG/L	22	--	11	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
LEAD, TOT. RECOVER	µG/L	*	--	*	NEW	ONCE/QUARTER	ONCE/QUARTER	GRAB
OTHER								
CHLORINE (TRC)	µG/L	*	--	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
SURFACTANTS	MG/L	*	--	*	NEW	ONCE/QUARTER	ONCE/QUARTER	GRAB
BACTERIA								
E. COLI	‡	1030	--	206‡	SAME	ONCE/WEEK	ONCE/WEEK	GRAB
WET TEST								
ACUTE WET TEST	TUa	*	--	--	SAME	ONCE/PERMIT	ONCE/YEAR	GRAB

* - Monitoring requirement only
ǂ The facility will report the minimum and maximum pH values; pH is not to be averaged.
‡ # of colonies/100mL; the Monthly Average for *E. coli* is a geometric mean.
NEW - Parameter not previously established in previous state operating permit.

PHYSICAL:

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. The facility will report the total flow in millions of gallons per day (MGD).

CONVENTIONAL:

Biochemical Oxygen Demand (BOD_5)

Effluent limitations have been retained from previous state operating permit after being found to be protective of the receiving stream. Please see the APPLICABLE DESIGNATION OF WATERS OF THE STATE sub-section of the Part II. Receiving Stream Information.

NUTRIENTS:

Nitrogen, Total N (TN)

This permit institutes nutrient monitoring per 10 CSR 20-7.015(9)(D)7, which states nutrient monitoring shall be instituted on a quarterly basis for facilities with a design flow greater than 0.1 MGD. On outfall #002, additional reporting requirements are instituted for speciation of nitrogen, in accordance with the Missouri Nutrient Loss Strategy.

Total nitrogen is the sum of organic plus inorganic nitrogen. Total Nitrogen = Ammonia Nitrogen (NH3) + Organic Nitrogen (nitrogen in amino acids and proteins) + Nitrate (NO3) + Nitrite (NO2) or; Total Nitrogen = TKN + NO3 + NO2. TKN = Total Kjeldahl Nitrogen which is the sum of: NH3 + Organic Nitrogen. Reporting of the following species is required by the permit writer:

Ammonia, Total as Nitrogen

Daily maximum limit of 5.6 mg/L, with a monthly average limit of 1.3 mg/L from April 1st to September 30th; monitoring only from October 1st to March 31st. Limits in the previous permit were 3.7 mg/L daily maximum limit and 1.4 mg/L monthly average limit in the summer season, and 7.5 mg/L daily maximum limit and 2.8 mg/L monthly average limit in the winter season. The previous permit removed limits on the winter season due to no reasonable potential to exceed water quality standards in that season, per an RPA performed by the previous permit writer. Limits were raised on the summer season due to site specific data being used in the RPA. Due to the previous permit cycle being shortened due to synchronization resulting in the permit being issued for a period less than a full permit cycle previous RPA's and effluent limit calculations are being retained from the previous permit.

Early life stages present, salmonids absent; total ammonia nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3] default pH 7.8 SU; No mixing considerations allowed; therefore, WLA = appropriate criterion. See RPA (**APPENDIX #1 – AMMONIA RPA RESULTS OUTFALL #002).**

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

Summer: April 1 – September 30

Acute WLA: $C_e = ((0.22 + 0.0)12.1 – (0.0 * 0.01))/0.22$ $C_e = 12.1$ mg/L

Chronic WLA: $C_e = ((0.22 + 0.0)1.5 – (0.0 * 0.01))/0.22$ $C_e = 1.5$ mg/L

$LTA_a = 12.1$ mg/L (0.155) = 1.87 [CV = 1.37, 99th Percentile]

$LTA_c = 1.5$ mg/L (0.580) = **0.87 mg/L** [CV = 1.37, 99th Percentile, 30 day avg.]

Use most protective number of LTA_a or LTA_c.

MDL = 0.87 mg/L (6.45) = **5.6 mg/L** [CV = 1.37, 99th Percentile]

AML = 0.87 mg/L (1.46) = **1.3 mg/L** [CV = 1.37, 95th Percentile, n = 30]

Kjeldahl Nitrogen, Total (TKN)

Retained from the previous permit. The permit writer is requiring quarterly reporting of this parameter per best professional judgment.

Nitrate plus Nitrite as Nitrogen

The previous permit required quarterly reporting of this parameter per best professional judgment. The previous renewal application materials reported 52.8 mg/L of this nutrient at this outfall. This value is more than 2.5 times the drinking water standard for this pollutant. Drinking water is not a use designation of the receiving stream, and therefore this standard is not applicable to this discharge. However, the standard can be used as guidance for determining whether the pollutant is one of concern in the discharge. Monitoring requirements are being retained.

Phosphorous, Total P (TN)

Per 10 CSR 20-7.015(9)(D)7, nutrient monitoring shall be instituted on a quarterly basis for facilities with a design flow greater than 0.1 MGD.

METALS:

Effluent limitations for total recoverable metals were developed using methods and procedures outlined in the *Technical Support Document For Water Quality-based Toxic Controls* (EPA/505/2-90-001) and *The Metals Translator: Guidance For Calculating a Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007). General warm-water habitat criteria apply (WWH) designated as AQL in 10 CSR 20-7.031 Table A. Additional use criterion (HHP, DWS, GRW, IRR, or LWW) may also be used as applicable to determine the most protective effluent limit for the stream class and uses.

When ambient site specific hardness data is not available, standard water hardness of 162 mg/L is used in the conversion below. This value represents the 25th percentile of all watersheds in-stream hardness values throughout Missouri. Additionally, when there are no site specific translator studies, partitioning between the dissolved and absorbed phases is assumed minimal (Section 5.7.3, EPA/505/2-90-001). Freshwater criteria conversion factors for dissolved metals were used as the metals translator as recommended in guidance (Section 1.3, 1.5.3, and Table 1, EPA 823-B-96-007). If concurrent site-specific data for total recoverable metals, dissolved metals,

hardness, and total suspended solids are provided to the department, the department may integrate those findings into derivation of the water quality limits.

METAL	CONVERSION FACTORS USING HARDNESS OF 162 MG/L	
	ACUTE	CHRONIC
Copper	0.960	0.960

Copper, Total Recoverable

Daily maximum limit of 22 µg/L, monthly average limit of 11 µg/L. Application materials received 07/06/2015 reported 34 µg/L of copper at this outfall. This value exceeds water quality standards. Monitoring is included to determine whether this outfall has reasonable potential to exceed water quality standards for copper, with limits to protect the aquatic life water quality standard found in 10 CSR 20-7.031 Table A. Copper water quality standards are dependent on hardness. Site specific hardness was not available for this outfall, and a standard hardness of 162 mg/L was used to calculate limits. A schedule of compliance is provided to the facility to meet the new limits for this pollutant.

Acute AQL WQS:	$e^{(0.9422 * \ln 162 - 1.7003)} * 0.960 = 21.163$	[at Hardness 162]
Chronic AQL WQS:	$e^{(0.8545 * \ln 162 - 1.7020)} * 0.960 = 13.525$	[at Hardness 162]
Acute TR WQS:	$21.163 \div 0.96 = 22.048$	[Total Recoverable Conversion]
Chronic TR WQS:	$13.525 \div 0.96 = 14.089$	[Total Recoverable Conversion]
Acute WLA:	$C_e = 22.048$	[WLA=WQS when no mixing]
Chronic WLA:	$C_e = 14.089$	[WLA=WQS when no mixing]

Lead, Total Recoverable

Applicant reported lead results from outfall #002 at 20 µg/L during renewal. As site specific hardness data was not provided a hardness of 162mg/L was used. The chronic criteria for Aquatic Life Protection at this hardness is 4 µg/L. As this is above the water quality standard monitoring requirements are included to determine if reasonable potential exists to exceed water quality standards.

OTHER:

Total Residual Chlorine (TRC)

Monitoring only. On the previous application the permittee reported chlorinating the water at outfall #002 before use. As no change of operation was disclosed monitoring is being retained to determine the reasonable potential for this pollutant to exceed water quality standards at this outfall. The Department has determined the current acceptable ML for total residual chlorine to be 130 µg/L when using the DPD Colorimetric Method #4500 – CL G. from Standard Methods for the Examination of Waters and Wastewater. The permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values.

Surfactants:

While Missouri currently does not have a water quality standard for surfactants other states do. Surfactants have the ability to impair general criteria due to toxicity to aquatic life and ability to produce a sheen and foam on the water's surface. The applicant reported "believed present" for surfactants on the renewal application. Surfactant levels reported as a part of the application for renewal were reported as 0.6 mg/L for outfall #002. In addition to the sample results submitted with the renewal application the permittee resampled on 11/19/2018 and submitted additional monitoring data for surfactants which was considered. The range of this data for outfall #001, #002, # 003, #004, #006 and #007 was from <0.1 mg/L to 0.46 mg/L. One sample was collected for each outfall. Monitoring is being include to evaluate if the discharge has reasonable potential to cause a violation of general criteria.

BACTERIA:

E. Coli

Daily maximum limit of 1030 CFU/100 mL, with a monthly geometric mean of 206 CFU/100mL. These limits are continued from the previous permit and are in accordance with 10 CSR 20-7.031(5)(C) to protect the WBC-B designation of the first classified receiving stream. An effluent limit for both monthly average and daily maximum is required by 40 CFR 122.45(d). The geometric mean is calculated by multiplying all of the data points and then taking the n^{th} root of this product, where n = # of samples collected. For example: Five *E. coli* samples were collected with results of 1, 4, 5, 6, and 10 (#/100 mL). Geometric mean = 5^{th} root of (1)(4)(5)(6)(10) = 5^{th} root of 1,200 = 4.1 #/100 mL.

WET TEST:

Whole Effluent Toxicity (WET) Test, Acute

Once per permit cycle monitoring is required to determine if reasonable potential exists for the discharge to cause toxicity within the receiving stream. This is continued from the previous permit. WET testing was added to determine whether the whole effluent is toxic, i.e. if the mixed pollutants released at this outfall result in toxicity to aquatic life. These outfalls receive water chlorinated for domestic use.

The standard Allowable Effluent Concentration (AEC) for facilities discharging to unclassified, Class C, Class P (with default mixing considerations), or lakes [10 CSR 20-7.031(4)(A)4.B.(IV)(b)] is 100%.

The standard dilution series for facilities discharging to unclassified, Class C, Class P (with default mixing considerations), or lakes [10 CSR 20-7.031(4)(A)4.B.(IV)(b)] is 100%, 50%, 25%, 12.5%, & 6.25%.

OUTFALL #004 – PROCESS WATER OUTFALL

Effluent limitations derived and established in the below effluent limitations table are based on current operations of the facility. Effluent means both process water and stormwater. Any flow through the outfall is considered a discharge and must be sampled and reported as provided below. 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. Daily maximums and monthly averages are required under 40 CFR 122.45(d)(1) for continuous discharges not from a POTW.

EFFLUENT LIMITATIONS TABLE:

PARAMETERS OUTFALL #004	UNIT	DAILY MAX	MONTHLY AVG	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	MINIMUM REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	*	SAME	ONCE/DAY	ONCE/MONTH	24 HR. TOT
CONVENTIONAL							
BOD_5	LBS/DAY	11,340	5,508	SAME	TWICE/WEEK	ONCE/MONTH	COMPOSITE
OIL & GREASE	MG/L	15	10	SAME	TWICE/WEEK	ONCE/MONTH	GRAB
PH ǂ	SU	6.5 TO 9.0	6.5 to 9.0	SAME	TWICE/WEEK	ONCE/MONTH	GRAB
TSS	LBS/DAY	9,720	4,212	SAME	TWICE/WEEK	ONCE/MONTH	COMPOSITE
NUTRIENTS							
AMMONIA AS N	MG/L	*	*	SAME	ONCE/MONTH	ONCE/MONTH	GRAB
NITROGEN, TOTAL N (TN)	MG/L	*	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
PHOSPHORUS, TOTAL P (TP)	MG/L	*	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
OTHER							
ACUTE WET TEST	TUa	*	*	SAME	TWICE/YEAR	TWICE/YEAR	COMPOSITE
CHLORINE, TOTAL RESIDUAL	µg/L	208	104	*/*	ONCE/MONTH	ONCE/MONTH	GRAB
CHLOROFORM	µg/L	*	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
CYANIDE, AMEN. TO CHL.	µg/L	*	*	SAME	ONCE/MONTH	ONCE/MONTH	GRAB
OXYGEN, DISSOLVED**	mg/L	*	*	SAME	ONCE/MONTH	ONCE/MONTH	GRAB
PENTACHLOROPHENOL	lbs/day mg/L	4.5 0.21	4.5 0.21	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
2,4,5-TRICHLOROPHENOL	lbs/day mg/L	1.6 0.07	1.6 0.07	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
SURFACTANTS	mg/L	*	*	NEW	ONCE/QUARTER	ONCE/QUARTER	GRAB

* - Monitoring requirement only
** - For DO the Daily Maximum is a Daily Minimum and the Monthly Average is a Monthly Average Minimum.
ǂ The facility will report the minimum and maximum pH values; pH is not to be averaged.
NEW - Parameter not previously established in previous state operating permit.

PHYSICAL:

Flow

Daily monitoring is required. 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. The facility will report the total flow in millions of gallons per day (MGD).

CONVENTIONAL:

Biochemical Oxygen Demand$_5$

Daily maximum limit of 11,340 lbs/day, monthly average limit of 5,508 lbs/day, continued from the previous permit. Twice/week monitoring is required. 40 CFR 430.125 subpart L establishes a technology based daily maximum limitation of 7.0 lbs/1000 lbs of product, and a monthly average limit of 3.4 lbs/1000 lbs of product. The permittee reported on the previous renewal application they produce 1.62 million pounds per day of paper product. There are no water quality standards for BOD and the discharge enters the Mississippi River which would have a high assimilative capacity for BOD; therefore the technology limits are applied.

Daily maximum BOD_5 = (lbs of product) * (ELG)
Daily maximum BOD_5 = (1,620,000 lbs) * (7.0 lbs/1000 lbs of product)
Daily maximum BOD_5 = 11,340 lbs/day

Monthly average BOD_5 = (lbs of product) * (ELG)
Monthly average BOD_5 = (1,620,000 lbs) * (3.4 lbs/1000 lbs of product)
Monthly average BOD_5 = 5,508 lbs/day.

Oil & Grease
Daily maximum limit of 15 mg/L, with a monthly average limit of 10 mg/L, continued from the previous permit. Twice/week monitoring is required. Oil and grease is a comprehensive test which measures for gasoline, diesel, crude oil, creosote, kerosene, heating oils, heavy fuel oils, lubricating oils, waxes, and some asphalt and pitch. The test can also detect some volatile organics such as benzene, toluene, ethylbenzene, or toluene, but these constituents are often lost during testing due to their boiling points. It is recommended to perform separate testing for these constituents if they are a known pollutant of concern at the site, i.e. aquatic life toxicity or human health is a concern. Results do not allow for separation of specific pollutants within the test, they are reported, totaled, as "Oil and grease". Per 10 CSR 20-7.031 Table A: *Criteria for Designated Uses*; 10 mg/L is the standard for the protection of aquatic life. 10 mg/L is also the level at which sheen is estimated to form on receiving waters. Oils and greases of different densities will possibly form sheen or unsightly bottom deposits at levels which vary from 10 mg/L. To protect the general criteria found at 10 CSR 20-7.031 (4), it is the responsibility of the permittee to visually observe the discharge and receiving waters for sheen or bottom deposits. The daily maximum was calculated using the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001). Section 5.4.2 indicates the waste load allocation can be set to the chronic standard. When the chronic standard is multiplied by 1.5, the daily maximum can be calculated. Hence, 10 * 1.5 = 15 mg/L for the daily maximum.

pH
6.5 to 9.0 SU, continued from the previous permit. Twice/week monitoring is required. The Water Quality Standard at 10 CSR 20-7.031(5)(E) states water contaminants shall not cause pH to be outside the range of 6.5 to 9.0 standard pH units. 40 CFR 430.125 subpart L establishes a technology based limitation for pH of 5.0-9.0; however, Missouri Water Quality Standards are more protective, and will therefore be applied in this permit.

Total Suspended Solids
Daily maximum limit of 9,720 lbs/day, monthly average limit of 4,212 lbs/day, continued from the previous permit. Twice/week monitoring is required. 40 CFR 430.125 subpart L establishes a technology based daily maximum limitation of 6.0 lbs/1000 lbs of product, and a monthly average limit of 2.6 lbs/1000 lbs of product. The permittee reported on the previous renewal application they produce 1.62 million pounds per day of paper product. There are no water quality standards for TSS and the discharge enters the Mississippi River which would have a high assimilative capacity for TSS; therefore the technology limits are applied.

Daily maximum TSS = (lbs of product) * (ELG)
Daily maximum TSS = (1,620,000 lbs) * (6.0 lbs/1000 lbs of product)
Daily maximum TSS = 9,720 lbs/day

Monthly average TSS = (lbs of product) * (ELG)
Monthly average TSS = (1,620,000 lbs) * (2.6 lbs/1000 lbs of product)
Monthly average TSS = 4,212 lbs/day.

NUTRIENTS:

Ammonia as N
Monthly monitoring only. During the previous permit renewal process, it was disclosed to the permit writer the facility uses bromide activated chloramine treatment as a biocide in the cooling towers of this facility. Ammonium bromide is utilized as a biocide for cooling water treatment systems. Ammonium bromide is combined with sodium hypochlorite (1:2; AMBr:HOCl) to convert bromide activated chloramine. The combination is expected to be fed intermittently into the treatment system.

Nitrogen, Total (TN)
Per 10 CSR 20-7.015(9)(D)7, nutrient monitoring shall be instituted on a quarterly basis for facilities with a design flow greater than 0.1 MGD.

Phosphorus, Total (TP)
Per 10 CSR 20-7.015(9)(D)7, nutrient monitoring shall be instituted on a quarterly basis for facilities with a design flow greater than 0.1 MGD.

OTHER:

Surfactants: While Missouri currently does not have a water quality standard for surfactants other states do. General criteria still applies. Surfactants have the ability to impair general criteria due to toxicity to aquatic life and ability to produce a sheen and foam on the water's surface. The applicant reported "believed present" for surfactants on the application for renewal. Surfactant levels reported as a part of the application for renewal were reported as 1.1 mg/L for outfall #004. In addition to the sample results submitted with the renewal application the permittee resampled on 11/19/2018 and submitted additional monitoring data for surfactants which was considered. The range of this data for outfall #001, #002, # 003, #004, #006 and #007 was from <0.1 mg/L to 0.46 mg/L. One sample was collected for each outfall. Monitoring is being in order to determine if the facility has reasonable potential to cause a violation of general criteria.

Chlorine, Total Residual
Monthly Monitoring only. During the previous permit renewal process, it was disclosed to the permit writer the facility uses bromide activated chloramine treatment as a biocide in the cooling towers of this facility. As no process changes have been disclosed it is assumed this is still the case. Total residual chlorine testing is a combination of the free (unreacted) chlorine and chloramines (reacted chlorine). Additional biocides are used during the manufacturing process. This parameter is added for monitoring to determine whether the TRC discharged from these outfalls is within water quality standards.

Chlorine, Total Residual (TRC)
208 µg/L daily maximum and 104 µg/L monthly average; warm-water Protection of Aquatic Life CCC = 11 µg/L, CMC = 19 µg/L [10 CSR 20-7.031, Table A1]. Background = 0 µg/L. Standard compliance language for TRC, including the minimum level (ML), is described in the permit.

Acute WLA: $C_e = ((6.8\ cfs_{DF} + 68.1\ cfs_{ZID\ 7Q10})\ 19\ \mu g/L - (68.1\ cfs_{ZID\ 7Q10} * 0.0\ \mu g/L)) \div 6.8\ cfs_{DF}$ $C_e = 209\ \mu g/L$
Chronic WLA: $C_e = ((6.8\ cfs_{DF} + 15725\ cfs_{MZ\ 7Q10})\ 10\ \mu g/L - (15725\ cfs_{MZ\ 7Q10} * 0.0\ \mu g/L)) \div 6.8\ cfs_{DF}$ $C_e = 23135\ \mu g/L$

LTA_a:	209 (0.321) = 67 µg/L	[CV = 0.6, 99th Percentile]
LTA_c:	23135 (0.527) = 12192 µg/L	[CV = 0.6, 99th Percentile]
	Use most protective number of LTA_a or LTA_c.	
MDL:	67 (3.11) = 208 µg/L	[CV = 0.6, 99th Percentile]
AML:	67 (1.55) = 104 µg/L	[CV = 0.6, 95th Percentile, n = 4]

Monitoring results for Total Residual Chlorine (TRC) were evaluated. This identified exceedances of the minimum detectable level of 130 µg/L for 12 out of 14 of the monthly monitoring reports from August 2017 until September 2018. This demonstrates a reasonable potential to cause a violation of water quality standards for TRC. As a result limits for 208 µg/L for a daily maximum and 104 µg/L for a monthly average have been included in this permit.

Chlorodibromomethane
The previous renewal application materials received 07/06/2015 report 0.703 µg/L of chlorodibromomethane at this outfall. Drinking water standards are 0.41 µg/L, per 10 CSR 20-7.031 table A. The nearest drinking water intake is over 14.3 miles downstream from this outfall; therefore the most applicable water quality standard is protection of human health (HHF). The water quality standard for HHF is 34 µg/L. therefore it is in the permit writer's best professional judgment it is unnecessary to monitor for or limit this parameter, considering the mixing offered by the Mississippi River.

Chloroform
Quarterly Monitoring only. Quarterly monitoring is being retained to determine if reasonable potential exists to violate water quality standards for chloroform.

Cyanide, Amenable to Chlorination
Monthly Monitoring only. The previous renewal application materials received 07/06/2015 report 14 µg/L of cyanide. The water quality standards for cyanide amenable to chlorination for protection of aquatic life are 22 µg/L-acute, and 5 µg/L chronic. The mixing afforded by the Mississippi River is substantial, and at the current discharge level, water quality standards are not exceeded in stream. However, it is in the permit writer's best professional judgment cyanide is a pollutant of concern, therefore monitoring is retained at monthly.

Oxygen, Dissolved (DO)
Monthly monitoring requirement only; monitoring for dissolved oxygen is included to determine whether reasonable potential exists to exceed water quality standards. During the previous permit renewal process, it was disclosed to the permit writer the facility uses bromide activated chloramine treatment as a biocide in the cooling towers of this facility. As no change of process has been disclosed this process is assumed to still be implemented. DO is a pollutant of concern in discharges that utilize this kind of treatment.

Pentachlorophenol

Effluent limits for Pentachlorophenol have been retained from the previous permit. Daily maximum limit of 4.5 lbs/day and 0.21 mg/L, with the same being applied as a monthly average limit. The daily maximum limits will be applied as monthly average limits, as the ELG does not require specific monthly average limits. The previous permit required a concentration of 0.24 mg/L as a daily maximum, however, the facility had a higher average discharge this permit cycle, therefore the concentration limits were lowered to reflect this. Because this is a technology based limitation, a schedule of compliance cannot be offered for the new concentration based limitations.

40 CFR 430.125 subpart L establishes a technology based daily maximum limitation of 0.0028 lbs/1000 lbs of product, and a concentration daily maximum based on discharge. The permittee reported on the renewal application they produce 1.62 million pounds per day of paper product. The design flow of the outfall is 4.4 MGD and the average flow is 2.6 MGD.

Lbs/Day:
Daily maximum Pentachlorophenol = (lbs of product) * (ELG)
Daily maximum Pentachlorophenol = (1,620,000 lbs) * (0.0028 lbs/1000 lbs of product)
Daily maximum Pentachlorophenol = 4.5 lbs/day

Mg/L:
Daily maximum Pentachlorophenol = [(0.035) * (19.1)]/y
y = (Average flow in Gallons/day)(CF)/(810 tons of product per day)
y = (2,600,000)(1 kgal/1000 gallons)/810
y = 3.2 kgal/ton

Daily maximum Pentachlorophenol = [(0.035) * (19.1)] / 3.2
Daily maximum Pentachlorophenol = 0.21 mg/L

Water Quality Calculations:
Pentachlorophenol's toxicity varies based on pH. The permit writer reviewed data for the Mississippi River at USGS stream gage 07020850 from 3/13/2014 to 01/23/2017, and found the appropriate pH to use to be 8.0 SU. The AQL water quality standard at 8.0 SU is 14.0 ug/L. HHF is 8 ug/L, and DWS is 1 ug/L. DWS is the most restrictive, and will be applied. The following is the calculation of the water quality based limit, afforded Mississippi River mixing:

WLA = C_e = (6.81 + 15,725)1.0 – (15,725 * 0) / 6.81 = 2,310 µg/L
Technology based limitations found in the ELG are more protective than the most stringent water quality standard; therefore the technology based limitations are applied. Sampling is reduced to quarterly, as DMR data shows non-detects for the last five years.

2,4,5-Trichlorophenol

Effluent limits are being retained from the previous permit. Daily maximum limit of 1.6 lbs/day and 0.07 mg/L, with the same being applied as a monthly average limit. The daily maximum limits will be applied as monthly average limits, as the ELG does not require specific monthly average limits. The previous permit required a concentration of 0.08 mg/L as a daily maximum, however, the facility had a higher average discharge this permit cycle, therefore the concentration limits were lowered to reflect this. Because this is a technology based limitation, a schedule of compliance cannot be offered for the new concentration based limitations.

40 CFR 430.125 subpart L establishes a technology based daily maximum limitation of 0.00096 lbs/1000 lbs of product, and a concentration daily maximum based on discharge. The permittee reported on the renewal application they produce 1.62 million pounds per day of paper product. The design flow of the outfall is 4.4 MGD and the average flow is 2.6 MGD.

Lbs/Day:
Daily maximum 2,4,5-Trichlorophenol = (lbs of product) * (ELG)
Daily maximum 2,4,5-Trichlorophenol = (1,620,000 lbs) * (0.00096 lbs/1000 lbs of product)
Daily maximum 2,4,5-Trichlorophenol = 1.6 lbs/day

Mg/L:
Daily maximum 2,4,5-Trichlorophenol = [(0.012) * (19.1)]/y
y = (Average flow in Gallons/day)(CF)/(810 tons of product per day)
y = (2,600,000)(1 kgal/1000 gallons)/810
y = 3.2 kgal/ton

Daily maximum 2,4,5-Trichlorophenol = [(0.012) * (19.1)] / 3.2
Daily maximum 2,4,5-Trichlorophenol = 0.07 mg/L

Water Quality Calculations:
The DWS standard is the most protective, at 2,600 µg/L.
WLA = C_e = (6.81 + 15,725)2,600 – (15,725 * 0) / 6.81 = 6,006,271 µg/L

Technology based limitations found in the ELG are more protective than the most stringent water quality standard; therefore the technology based limitations are applied. Sampling is reduced to quarterly, as DMR data shows non-detects for the last five years.

WET TESTING:

Whole Effluent Toxicity (WET) Test, Acute
Monitoring is required to determine if reasonable potential exists for the discharge to cause toxicity within the receiving stream.

For classified permanent streams with other than default mixing considerations, the Allowable Effluent Concentration (AEC)% is determined as follows:

Acute AEC% = [DF_{cfs} ÷ (ZID_{7Q10} + DF_{cfs})] x 100% = ## %
Acute AEC% = [6.81 / (68.1 + 6.81)] x 100% = 9.1%

10 CSR 20-7.015((9)(L)4.A. states the dilution series must be proportional. Each dilution was determined by multiplying or dividing 3.0 from the AEC and then each consecutive value.
The dilution series is:

Dilution Series						
81.9%	27.3%	9.1%	3.0%	1.0%	(Control) 100% upstream, if available	(Control) 100% Lab Water, also called synthetic water

PART V. SAMPLING AND REPORTING REQUIREMENTS

Refer to each outfall's derivation and discussion of limits section to review individual sampling and reporting frequencies and sampling type. Additionally, see Standard Conditions Part I attached at the end of this permit and fully incorporated within.

ELECTRONIC DISCHARGE MONITORING REPORT (EDMR) SUBMISSION SYSTEM:
The U.S. Environmental Protection Agency (EPA) promulgated a final rule on October 22, 2015, to modernize Clean Water Act reporting for municipalities, industries, and other facilities by converting to an electronic data reporting system. The final rule requires regulated entities and state and federal regulators to use information technology to electronically report data required by the National Pollutant Discharge Elimination System (NPDES) permit program instead of filing paper reports. To comply with the federal rule, the Department is requiring all permittees to begin submitting discharge monitoring data and reports online.

Per 40 CFR 127.15 and 127.24, permitted facilities may request a temporary waiver for up to 5 years or a permanent waiver from electronic reporting from the Department. To obtain an electronic reporting waiver, a permittee must first submit an eDMR Waiver Request Form: http://dnr.mo.gov/forms/780-2692-f.pdf. A request must be made for each facility. If more than one facility is owned or operated by a single entity, then the entity must submit a separate request for each facility based on its specific circumstances. An approved waiver is not transferable.

The Department must review and notify the facility within 120 calendar days of receipt if the waiver request has been approved or rejected [40 CFR 124.27(a)]. During the Department review period as well as after a waiver is granted, the facility must continue submitting a hard-copy of any reports required by their permit. The Department will enter data submitted in hard-copy from those facilities allowed to do so and electronically submit the data to the EPA on behalf of the facility.
✓ The permittee/facility is currently using the eDMR data reporting system.

SAMPLING FREQUENCY JUSTIFICATION:
Sampling and reporting frequency was generally retained from previous permit. 40 CFR 122.45(d)(1) indicates all continuous discharges shall be permitted with daily maximum and monthly average limits. Minimum sampling frequency for all parameters is annually per 40 CFR 122.44(i)(2).

SAMPLING TYPE JUSTIFICATION:
Sampling type was continued from the previous permit. The sampling types are representative of the discharges, and are protective of water quality. Discharges with altering effluent should have composite sampling; discharges with uniform effluent can have grab samples. Grab samples are usually appropriate for stormwater. Parameters which must have grab sampling are: pH, ammonia, *E. coli*, total residual chlorine, free available chlorine, hexavalent chromium, dissolved oxygen, total phosphorus, volatile organic compounds, and others.

SUFFICIENTLY SENSITIVE ANALYTICAL METHODS:
Please review Standard Conditions Part 1, section A, number 4. The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 and/or 40 CFR 136 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is "sufficiently sensitive" when; 1) the method quantifies the pollutant below the level of the applicable water quality criterion or; 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility's discharge is high enough the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015 and or 40 CFR 136. These methods are also required for parameters listed as monitoring only, as the data collected may be used to determine if numeric limitations need to be established. A permittee is responsible for working with their contractors to ensure the analysis performed is sufficiently sensitive. 40 CFR 136 lists the approved methods accepted by the Department. Tables A1-B3 at 10 CSR 20-7.031 shows water quality standards.

PART VI. ADMINISTRATIVE REQUIREMENTS

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

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

✓ This permit will maintain synchronization by expiring the end of the 1st quarter, 2024.

PUBLIC NOTICE:
The Department shall give public notice a draft permit has been prepared and its issuance is pending. http://dnr.mo.gov/env/wpp/permits/pn/index.html Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in or with water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing.

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

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

✓ The Public Notice period for this operating permit was from January 25, 2019 to February 25, 2019. No comments were received during this time period.

DATE OF FACT SHEET: 10/18/2018
COMPLETED BY:
SHAWN MASSEY, ENVIRONMENTAL SPECIALIST
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION - INDUSTRIAL UNIT
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STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
REVISED
AUGUST 1, 2014

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

Part I – General Conditions
Section A – Sampling, Monitoring, and Recording

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

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

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

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

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

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

Section B – Reporting Requirements

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

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

b. The following shall be included as information which must be reported within 24 hours under this paragraph.
   i. Any unanticipated bypass which exceeds any effluent limitation in the permit.
   ii. Any upset which exceeds any effluent limitation in the permit.
   iii. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit required to be reported within 24 hours.

c. The Department may waive the written report on a case-by-case basis for reports under paragraph 2. b. of this section if the oral report has been received within 24 hours.

3. **Anticipated Noncompliance**. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The notice shall be submitted to the Department 60 days prior to such changes or activity.

4. **Compliance Schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date. The report shall provide an explanation for the instance of noncompliance and a proposed schedule or anticipated date, for achieving compliance with the compliance schedule requirement.

5. **Other Noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, and 6 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.

6. **Other Information**. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

7. **Discharge Monitoring Reports.**
   a. Monitoring results shall be reported at the intervals specified in the permit.
   b. Monitoring results must be reported to the Department via the current method approved by the Department, unless the permittee has been granted a waiver from using the method. If the permittee has been granted a waiver, the permittee must use forms provided by the Department.
   c. Monitoring results shall be reported to the Department no later than the 28th day of the month following the end of the reporting period.

Section C – Bypass/Upset Requirements

1. **Definitions.**
   a. *Bypass*: the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending.
   b. *Severe Property Damage*: substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
   c. *Upset*: an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2. **Bypass Requirements.**
   a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2. b. and 2. c. of this section.
   b. Notice.
      i. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
      ii. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section B – Reporting Requirements, paragraph 5 (24-hour notice).
   c. Prohibition of bypass.
      i. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
         1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
         2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
         3. The permittee submitted notices as required under paragraph 2. b. of this section.
      ii. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three (3) conditions listed above in paragraph 2. c. i. of this section.

3. **Upset Requirements.**
   a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 3. b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
   b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
      i. An upset occurred and that the permittee can identify the cause(s) of the upset;
      ii. The permitted facility was at the time being properly operated; and
      iii. The permittee submitted notice of the upset as required in Section B – Reporting Requirements, paragraph 2. b. ii. (24-hour notice).
      iv. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
   c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

Section D – Administrative Requirements

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

imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

c. Any person may be assessed an administrative penalty by the EPA Director for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

d. It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law or any other provision which this state is required to enforce pursuant to any federal water pollution control act, is being, was, or is in imminent danger of being violated, the commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed $10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

2. **Duty to Reapply.**
   a. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.
   b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
   c. A permittees with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

3. **Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

5. **Proper Operation and Maintenance**. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

6. **Permit Actions.**
   a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
      i. Violations of any terms or conditions of this permit or the law;
      ii. Having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;
      iii. A change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
      iv. Any reason set forth in the Law or Regulations.
   b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

7. **Permit Transfer.**
   a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
   b. The Department may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Missouri Clean Water Law or the Federal Clean Water Act.
   c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.

8. **Toxic Pollutants.** The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

9. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

10. **Duty to Provide Information.** The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

11. **Inspection and Entry.** The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:
    a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
    b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
    c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
    d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.

12. **Closure of Treatment Facilities.**
    a. Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
    b. Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.

13. **Signatory Requirement.**
    a. All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
    b. The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
    c. The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.

14. **Severability.** The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.

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

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

SECTION A – GENERAL REQUIREMENTS

1. This permit pertains to sludge requirements under the Missouri Clean Water Law and regulation for domestic wastewater and industrial process wastewater. This permit also incorporates applicable federal sludge disposal requirements under 40 CFR 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR 503 for domestic wastewater. EPA has reviewed and accepted these standard sludge conditions. EPA may choose to issue a separate sludge addendum to this permit or a separate federal sludge permit at their discretion to further address the federal requirements.
2. These PART III Standard Conditions apply only to sludge and biosolids generated at domestic wastewater treatment facilities, including public owned treatment works (POTW), privately owned facilities and sludge or biosolids generated at industrial facilities.
3. Sludge and Biosolids Use and Disposal Practices:
    a. The permittee is authorized to operate the sludge and biosolids treatment, storage, use, and disposal facilities listed in the facility description of this permit.
    b. The permittee shall not exceed the design sludge volume listed in the facility description and shall not use sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
    c. The permittee is authorized to operate the storage, treatment or generating sites listed in the Facility Description section of this permit.
4. Sludge Received from other Facilities:
    a. Permittees may accept domestic wastewater sludge from other facilities including septic tank pumpings from residential sources as long as the design sludge volume is not exceeded and the treatment facility performance is not impaired.
    b. The permittee shall obtain a signed statement from the sludge generator or hauler that certifies the type and source of the sludge
5. These permit requirements do not supersede nor remove liability for compliance with county and other local ordinances.
6. These permit requirements do not supersede nor remove liability for compliance with other environmental regulations such as odor emissions under the Missouri Air Pollution Control Law and regulations.
7. This permit may (after due process) be modified, or alternatively revoked and reissued, to comply with any applicable sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Actor under Chapter 644 RSMo.
8. In addition to STANDARD CONDITIONS, the Department may include sludge limitations in the special conditions portion or other sections of a site specific permit.
9. Alternate Limits in the Site Specific Permit.
   Where deemed appropriate, the Department may require an individual site specific permit in order to authorize alternate limitations:
    a. A site specific permit must be obtained for each operating location, including application sites.
    b. To request a site specific permit, an individual permit application, permit fee, and supporting documents shall be submitted for each operating location. This shall include a detailed sludge/biosolids management plan or engineering report.
10. Exceptions to these Standard Conditions may be authorized on a case-by-case basis by the Department, as follows:
    a. The Department will prepare a permit modification and follow permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR 124.10, and 40 CFR 501.15(a)(2)(ix)(E). This includes notification of the owner of the property located adjacent to each land application site, where appropriate.
    b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR 503.

SECTION B – DEFINITIONS

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

SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES

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

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

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

SECTION E – INCINERATION OF SLUDGE

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

SECTION F – SURFACE DISPOSAL SITES AND SLUDGE LAGOONS

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

SECTION G – LAND APPLICATION

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

    Permittees who wish to apply Class A biosolids to public contact sites must obtain approval from the Department after two years of proper operation with acceptable testing documentation that shows the biosolids meet Class A criteria. A shorter length of testing will be allowed with prior approval from the Department. Authorization for land applications must be provided in the special conditions section of this permit or in a separate site specific permit.
    a. After Class B biosolids have been land applied, public access must be restricted for 12 months.
    b. Class B biosolids are only land applied to root crops, home gardens or vegetable crops whose edible parts will not be for human consumption.
6. Agricultural and Silvicultural Sites:

    Septage – Based on Water Quality guide 422 (WQ422) published by the University of Missouri
    a. Haulers that land apply septage must obtain a state permit
    b. Do not apply more than 30,000 gallons of septage per acre per year.
    c. Septage tanks are designed to retain sludge for one to three years which will allow for a larger reduction in pathogens and vectors, as compared to other mechanical type treatment facilities.
    d. To meet Class B sludge requirements, maintain septage at 12 pH for at least thirty (30) minutes before land application. 50 pounds of hydrated lime shall be added to each 1,000 gallons of septage in order to meet pathogen and vector stabilization for septage biosolids applied to crops, pastures or timberland.
    e. Lime is to be added to the pump truck and not directly to the septic tanks, as lime would harm the beneficial bacteria of the septic tank.

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

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

TABLE 1

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

[1] Land application is not allowed if the sludge concentration exceeds the maximum limits for any of these pollutants

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

TABLE 2

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

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

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

TABLE 3

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

[1] Total cumulative loading limits for soils with equal or greater than 6.0 pH (salt based test) or 6.5 pH (water based test)

TABLE 4 - Guidelines for land application of other trace substances [1]

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

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

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

[3] Total Dioxin Toxicity Equivalents (TEQ) in soils, based on a risk assessment under 40 CFR 744, May 1998.

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

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

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

SECTION H – CLOSURE REQUIREMENTS

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

        (Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1]).

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

SECTION I – MONITORING FREQUENCY

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

TABLE 5

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

[1] Test total Kjeldahl nitrogen, if biosolids application is 2 dry tons per acre per year or less.

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

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

[4] One sample for each 1,000 dry tons of sludge.

Note 1: Total solids: A grab sample of sludge shall be tested one per day during land application periods for percent total solids. This data shall be used to calculate the dry tons of sludge applied per acre.
Note 2: Total Phosphorus: Total phosphorus and total potassium shall be tested at the same monitoring frequency as metals.
Note 3: Table 5 is not applicable for incineration and permit holders that landfill their sludge.

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

SECTION J – RECORD KEEPING AND REPORTING REQUIREMENTS

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

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

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

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

5. Annual report contents. The annual report shall include the following:
    a. Sludge and biosolids testing performed. Include a copy or summary of all test results, even if not required by the permit.
    b. Sludge or biosolids quantity shall be reported as dry tons for quantity generated by the wastewater treatment facility, the quantity stored on site at the end of the year, and the quantity used or disposed.
    c. Gallons and % solids data used to calculate the dry ton amounts.
    d. Description of any unusual operating conditions.
    e. Final disposal method, dates, and location, and person responsible for hauling and disposal.
        i. This must include the name, address for the hauler and sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name of that facility.
        ii. Include a description of the type of hauling equipment used and the capacity in tons, gallons, or cubic feet.
    f. Contract Hauler Activities:
    If contract hauler, provide a copy of a signed contract from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate sludge or biosolids use permit.
    g. Land Application Sites:
        i. Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as a legal description for nearest ¼, ¼, Section, Township, Range, and county, or UTM coordinates. The facility shall report PAN when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
        ii. If the “Low Metals” criteria are exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative pollutant loading which has been reached at each site.
        iii. Report the method used for compliance with pathogen and vector attraction requirements.
        iv. Report soil test results for pH, CEC, and phosphorus. If none was tested during the year, report the last date when tested and results.

The Procter & Gamble Paper Products Company
14484 State Hwy 177
Jackson, MO 63755

April 30, 2021

Ms. Amberly Schulz
Missouri Department of Natural Resources
Water Protection Program
Industrial Operating Permits Section
P.O. Box 176
Jefferson City, MO 65102

Re: Missouri State Operating Permit No. MO-0044121
National Pollutant Discharge Elimination System Permit Modification

Dear Ms. Schulz:

The Procter & Gamble Paper Products Company (P&G) Plant in Cape Girardeau, Missouri (Cape Girardeau Plant or Plant) operates in accordance with Missouri State Operating Permit No. MO-0044121. The permit was issued on April 1, 2019 by the Missouri Department of Natural Resources (MoDNR) and serves as the Plant's Federal National Pollutant Discharge Elimination System (NPDES) permit. A revised permit was issued on February 1, 2021 to incorporate outfall changes implemented at the Plant. Since the issuance of the revised permit, it has become evident that the Plant may not be able to comply with the sampling requirements of the revised permit and has prepared this NPDES permit modification application to address said challenges.

Project Background

The Plant submitted a NPDES permit modification application in September 2020 for proposed changes to the existing wastewater treatment facility infrastructure. Under the proposed changes, the treated domestic wastewater from the wastewater treatment facility was rerouted from Outfall 002, which discharges to a tributary of Indian Creek, to Outfall 004, which discharges to the Mississippi River. The Plant finished construction of the proposed changes in January 2021 and began diverting the treated domestic wastewater from Outfall 002 to Outfall 004 after issuance of the revised permit. As such, Outfall 002 now discharges stormwater only and Outfall 004 discharges combined process wastewater and treated domestic wastewater from the wastewater treatment facility.

The sampling location for Outfall 004 is located upstream of the tie-in point for the diverted Outfall 002 flow. As a result, samples collected at the Outfall 004 sampling location are not representative of the combined process and treated domestic wastewater discharged at Outfall 004. Consistent with discussion of the sampling challenges with Amberly Schulz at MoDNR on April 8, 2021, the Plant is submitting this NPDES permit modification application to correct and clarify how sampling and monitoring will be conducted for Outfalls 002 and 004. The following sections of this application address the Plant's proposed compliance methodology and the permit application requirements of 10 CSR 20-6.010(7)(B), as discussed with MoDNR.

Proposed Compliance Methodology

The Plant proposes to collect separate samples at Outfalls 002 and 004 and to report the data as separate outfalls on the electronic Discharge Monitoring Report (eDMR). Given that treated domestic wastewater is no longer physically discharged to the existing Outfall 002, the Plant proposes to create a new, domestic-only outfall, labeled as Outfall 002A, for reporting purposes. Furthermore, the Plant proposes the sampling frequency for the new Outfall 002A be the same as the pre-existing Outfall 002 (i.e., once/quarter) and the current effluent limits for Outfall 004 be applied to Outfall 002A. The rationale for this proposed approach is supported by the following:

- Although a flow-weighted approach for Outfall 004 may appear logical, flow-weighting would require a tremendous increase in frequency of sampling at Outfall 002 to generate the data necessary to conduct flow-weighted calculations. This would add undue burden on the Plant, specifically at Outfall 002, which was previously sampling most parameters at a frequency of once/quarter but would have to increase to as frequent as twice per week to generate aliquots for calculation.

- The antidegradation review conducted for the previous permit modification adequately confirmed that adding Outfall 002 treated domestic wastewater to Outfall 004 would not have an impact on the receiving surface water. Outfall 002 has little impact on Outfall 004 effluent because of the comparatively low flow rate for the treated domestic discharge as compared to the much higher process wastewater flow rate at Outfall 004 and the mixing capacity of the Outfall 004 receiving water (i.e., Mississippi River).

Permit Application Requirements

The following subsections provide a description of the required application components and address the required components.

Application Forms, Maps, and Flowcharts:

In accordance with the aforementioned regulations, and as confirmed in discussions with MoDNR, the Plant is only submitting Form A – *Application for Nondomestic Permit Under Missouri Clean Water Law (780-1479)* with this application. Form A has been completed to include all currently permitted outfalls at the Plant (i.e., Outfalls 001, 002, 003, 004, 005, 006, and 007). In addition, the Plant has provided a map of the sampling locations for Outfalls 002 and 004. All application forms and maps are provided in Attachment A.

It should be noted that no maps or flowcharts are provided for the other permitted outfalls that are not the subject of this permit modification as no changes to these outfalls are being proposed in this application. Therefore, the information submitted in the September 2020 application is still representative of the Plant's outfall locations and flows.

Permit Fee:

The Plant is required to submit an operating permit modification fee for the proposed permit modification. The permit modification is not a name change, address change, or other non-substantive change to the NPDES permit; therefore, in accordance with 10 CSR 20-6.011(2)(G), the permit modification fee is equal to 25% of the Plant's annual operating fee. The Plant's annual operating fee is $5,000; therefore, the permit modification fee is $1,250. The Plant has paid the $1,250 permit

modification fee through the MoDNR JetPay system and a receipt of the online payment is included in Attachment A.

Antidegradation Review and Geohydrological Evaluation:
An antidegradation review and geohydrological evaluation is required to be submitted for all new and expanding discharge facilities. The proposed modification does not result in any new or expanded discharge facilities; therefore, an antidegradation review and geohydrological evaluation is not included in this application.

Engineering Certification:
An engineering certification is required for all projects exempted from construction permitting requirements in 10 CSR 20-6.010(5). No construction is being proposed with this application; therefore, no engineering certification is required.

Conclusion
The Plant is submitting this NPDES permit modification for proposed changes to the compliance demonstration methods for Outfalls 002 and 004 as established in the revised permit, issued February 1, 2021. This cover letter and associated attachments address the application requirements for a permit modification as required by 10 CSR 20-6.010(7).

If you have any questions or require additional information, please contact Dustin Bryant, Site Environmental Leader, at (573) 332-3486 or bryant.rd@pg.com. Based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

Sincerely,
The Procter & Gamble Paper Products Company

Ricardo Souza
Plant Manager

cc: Dustin Bryant – P&G
Kayla Turney – ALL4
Paul Hagerty, P.E. – ALL4

Attachment A – MoDNR Application Forms and Supplemental Information

ATTACHMENT A –
MoDNR APPLICATION FORMS AND SUPPLEMENTAL INFORMATION

rec'd 5/04/21 AP 36806

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
FORM A – APPLICATION FOR NONDOMESTIC PERMIT UNDER MISSOURI CLEAN WATER LAW

FOR AGENCY USE ONLY	
CHECK NUMBER	
DATE RECEIVED	FEE SUBMITTED
JET PAY CONFIRMATION NUMBER	

PLEASE READ ALL THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM.
SUBMITTAL OF AN INCOMPLETE APPLICATION MAY RESULT IN THE APPLICATION BEING RETURNED.

IF YOUR FACILITY IS ELIGIBLE FOR A NO EXPOSURE EXEMPTION:
Fill out the No Exposure Certification Form (Mo 780-2828): https://dnr.mo.gov/forms/780-2828-f.pdf

1. REASON FOR APPLICATION:

☐ a. This facility is now in operation under Missouri State Operating Permit (permit) MO – _____, is submitting an application for renewal, and there is no proposed increase in design wastewater flow. Annual fees will be paid when invoiced and there is no additional permit fee required for renewal.

☐ b. This facility is now in operation under permit MO – _____, is submitting an application for renewal, and there is a proposed increase in design wastewater flow. Antidegradation Review may be required. Annual fees will be paid when invoiced and there is no additional permit fee required for renewal.

☐ c. This is a facility submitting an application for a new permit (for a new facility). Antidegradation Review may be required. New permit fee is required.

☑ d. This facility is now in operation under Missouri State Operating Permit (permit) MO – 0044121 and is requesting a modification to the permit. Antidegradation Review may be required. Modification fee is required.

2. FACILITY

NAME		TELEPHONE NUMBER WITH AREA CODE	
The Procter & Gamble Paper Products Company		573-332-3486	
ADDRESS (PHYSICAL)	**CITY**	**STATE**	**ZIP CODE**
14484 State Highway 177	Jackson	MO	63755

3. OWNER

NAME		TELEPHONE NUMBER WITH AREA CODE	
The Procter & Gamble Paper Products Company		513-634-9724	
EMAIL ADDRESS			
N/A			
ADDRESS (MAILING)	**CITY**	**STATE**	**ZIP CODE**
2 P&G Plaza	Cincinnati	OH	45202

4. CONTINUING AUTHORITY

NAME		TELEPHONE NUMBER WITH AREA CODE	
The Procter & Gamble Paper Products Company		573-332-3486	
EMAIL ADDRESS			
bryant.rd@pg.com			
ADDRESS (MAILING)	**CITY**	**STATE**	**ZIP CODE**
P.O. Box 400	Cape Girardeau	MO	63701

5. OPERATOR CERTIFICATION

NAME	CERTIFICATE NUMBER	TELEPHONE NUMBER WITH AREA CODE	
Kim Lynch		573-332-3978	
ADDRESS (MAILING)	**CITY**	**STATE**	**ZIP CODE**
P.O. Box 400	Cape Girardeau	MO	63701

6. FACILITY CONTACT

NAME	TITLE	TELEPHONE NUMBER WITH AREA CODE
Dustin Bryant	Site Environmental Leader	573-332-3486
E-MAIL ADDRESS		
bryant.rd@pg.com		

7. DOWNSTREAM LANDOWNER(S) Attach additional sheets as necessary.

NAME			
The Trail of Tears State Park (MDNR)			
ADDRESS	**CITY**	**STATE**	**ZIP CODE**
429 Moccasin Springs	Jackson	MO	63755

8. ADDITIONAL FACILITY INFORMATION

8.1 Legal Description of Outfalls. (Attach additional sheets if necessary.)
For Universal Transverse Mercator (UTM), use Zone 15 North referenced to North American Datum 1983 (NAD83)

001 _____¼ _____¼ Sec _____ T _____ R _____ _____ County
UTM Coordinates Easting (X): _____ Northing (Y): _____

002 _____¼ _____¼ Sec _____ T _____ R _____ _____ County
UTM Coordinates Easting (X): _____ Northing (Y): _____

003 _____¼ _____¼ Sec _____ T _____ R _____ _____ County
UTM Coordinates Ea[illegible]

004 _____¼ [illegible] _____ County
UTM Coordinates Ea[illegible]

Please refer to the attached sheet.

8.2 Primary Standard Indu[illegible]ssification System (NAICS) Codes.
Primary SIC _____ and NAICS _____ SIC _____ and NAICS _____
SIC _____ and NAICS _____ SIC _____ and NAICS _____

9. ADDITIONAL FORMS AND MAPS NECESSARY TO COMPLETE THIS APPLICATION

A. Is this permit for a manufacturing, commercial, mining, solid/hazardous waste, or silviculture facility? YES ☑ NO ☐
If yes, complete Form C.

B. Is the facility considered a "Primary Industry" under EPA guidelines (40 CFR Part 122, Appendix A) : YES ☑ NO ☐
If yes, complete Forms C and D.

C. Is wastewater land applied? YES ☐ NO ☑
If yes, complete Form I.

D. Are sludge, biosolids, ash, or residuals generated, treated, stored, or land applied? YES ☐ NO ☑
If yes, complete Form R.

E. Have you received or applied for any permit or construction approval under the CWA or any other environmental regulatory authority? YES ☑ NO ☐
If yes, please include a list of all permits or approvals for this facility.

F. Do you use cooling water in your operations at this facility? YES ☑ NO ☐
If yes, please indicate the source of the water: Non-contact cooling water is pumped from wells.

G. Attach a map showing all outfalls and the receiving stream at 1" = 2,000' scale.

10. ELECTRONIC DISCHARGE MONITORING REPORT (eDMR) SUBMISSION SYSTEM

Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent limits and monitoring shall be submitted by the permittee via an electronic system to ensure timely, complete, accurate, and nationally consistent set of data. **One of the following must be checked in order for this application to be considered complete.** Please visit http://dnr.mo.gov/env/wpp/edmr.htm to access the Facility Participation Package.

☐ - You have completed and submitted with this permit application the required documentation to participate in the eDMR system.

☑ - You have previously submitted the required documentation to participate in the eDMR system and/or you are currently using the eDMR system.

☐ - You have submitted a written request for a waiver from electronic reporting. See instructions for further information regarding waivers.

11. FEES

Permit fees may be paid by attaching a check, or online by credit card or eCheck through the JetPay system. Use the URL provided to access JetPay and make an online payment: https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/

12. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NAME AND OFFICIAL TITLE (TYPE OR PRINT)	TELEPHONE NUMBER WITH AREA CODE
Ricardo Souza - Plant Manager	513 292 1785
SIGNATURE [signature]	DATE SIGNED May 4th 2021

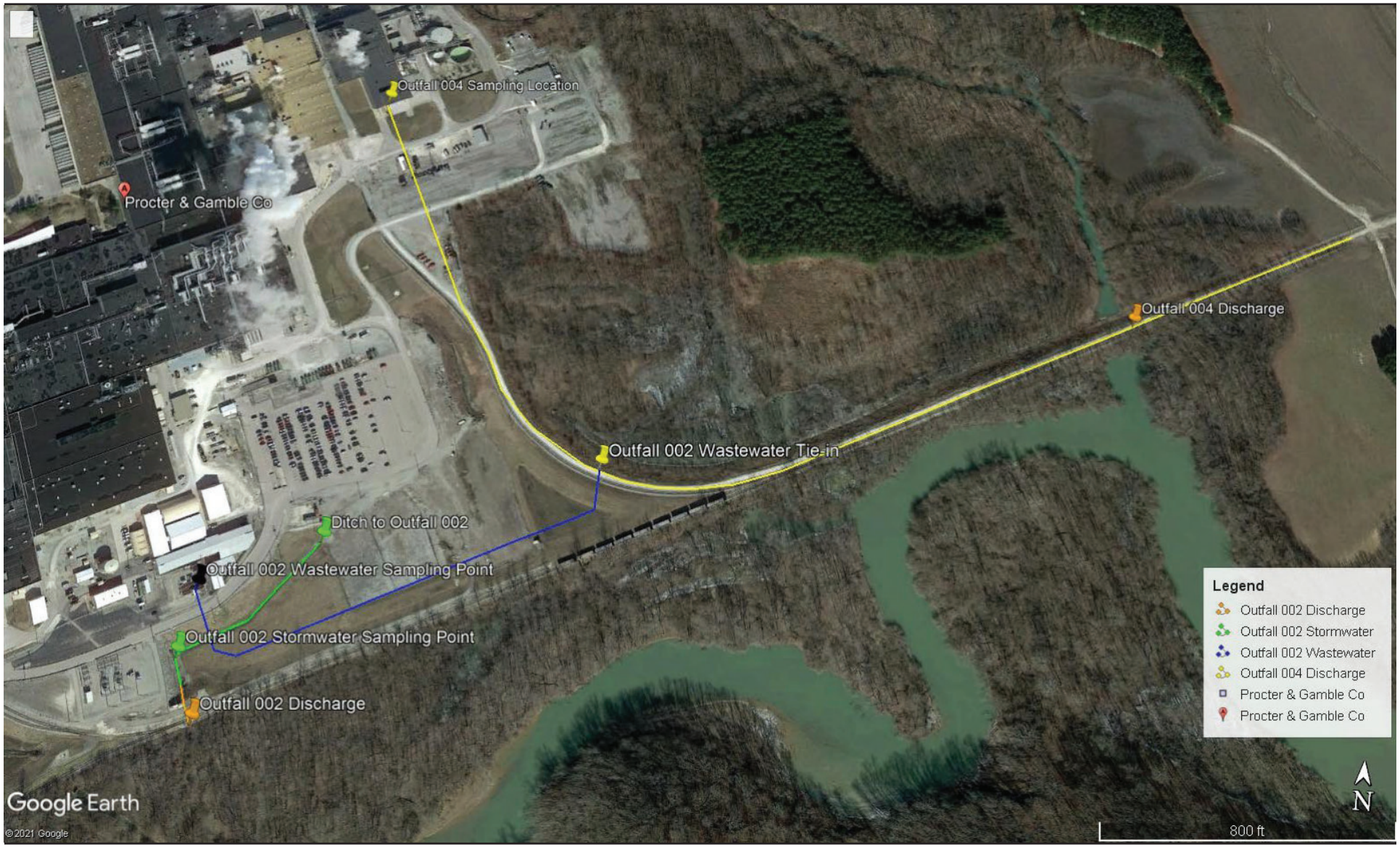
Attachment to Missouri DNR, Water Protection Program, Form A
Section 8 Additional Facility Information
The Procter & Gamble Paper Products Company - Jackson, MO Facility

Outfall	Legal Description						UTM Coordinates		SIC Code(s)	NAICS Code(s)
001	SW 1/4	NW 1/4	Sec 5	T32N	R14E	Cape Girardeau County	X=808590	Y=4153801	2676	322291
002	SW 1/4	NW 1/4	Sec 4	T32N	R14E	Cape Girardeau County	X=808759	Y=4153877	N/A	N/A
003	SW 1/4	NW 1/4	Sec 4	T32N	R14E	Cape Girardeau County	X=808891	Y=4154201	2676	322291
004	Landgrant 00819					Cape Girardeau County	X=809986	Y=4154605	2676 and 4952	322291 and 221320
005	SW 1/4	NW 1/4	Sec 4	T32N	R14E	Cape Girardeau County	X=808916	Y=4154351	2676	322291
006	SW 1/4	NW 1/4	Sec 4	T32N	R14E	Cape Girardeau County	X=808817	Y=4154640	2676	322291
007	SW 1/4	NW 1/4	Sec 4	T32N	R14E	Cape Girardeau County	X=808650	Y=4154719	2676	322291

Data as listed in the current NPDES Permit No. MO-0044121, effective February 1, 2021, Facility Description.

Attachment to Missouri DNR, Water Protection Program, Form A
Section 9.E. List of Permit or Construction Approvals Under Any Environmental Regulatory Authority
The Procter & Gamble Paper Products Company - Jackson, MO Facility

Regulatory Authority	Permit No.
Hazardous Waste Management Program (RCRA)	#001202
Safe Drinking Water Act	MO-4180589
Clean Air Act	OP2011-013
Clean Water Act	MO-0044121



Procter & Gamble

Cape Girardeau Plant

Location of Sampling Points