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-0111686
Owner:	Continental Cement Company, L.L.C.
Address:	10107 Highway 79, Hannibal, MO 63401
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Continental Cement
Facility Address:	10107 Highway 79, Hannibal, MO 63401
Legal Description:	See page 2
UTM Coordinates:	See page 2
Receiving Stream:	See page 2
First Classified Stream and ID:	See page 2
USGS Basin & Sub-watershed No.:	See page 2

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

FACILITY DESCRIPTION

SIC #3241, #4952, #4953; NAICS #327310, Continental Cement is a cement manufacturer. Continental Cement also does quarry mining and uses high energy wastes as substitutes for fossil fuel in the cement manufacturing process. This facility does not require a certified wastewater operator. Domestic wastewater is treated using an extended aeration package plant. Sludge is retained in a holding tank and disposed of by a contract hauler.

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

May 1, 2020
Effective Date

Edward B. Galbraith, Director, Division of Environmental Quality

April 1, 2025
Expiration Date

Chris Wieberg, Director, Water Protection Program

FACILITY DESCRIPTION (CONTINUED)

OUTFALL #001 – Domestic Wastewater, SIC #4952
Treatment consists of an extended aeration package plant. Sludge is retained in a holding tank and disposed of by a contract hauler. The discharge from this outfall flows into the lift station associated with Outfall #003.

Legal Description:	SE¼, NW¼, Sec.02, T56N, R04W, Ralls County
UTM Coordinates:	X = 644631, Y = 4393586
Receiving Stream:	Mississippi River (P)
First Classified Stream and ID:	Mississippi River (P) (3699)
USGS Basin & Sub-watershed No.:	07110004-0504
Design Flow:	15,000 gallons per day
Average Flow:	8,750 gallons per day

OUTFALL #002 – Stormwater, SIC #3241
Runoff from historic quarry, cement kiln dust (CKD) management area and synthetic gypsum storage area.

Legal Description:	NE¼, NW¼, Sec.02, T56N, R04W, Ralls County
UTM Coordinates:	X = 644405, Y = 4394055
Receiving Stream:	Mississippi River (P)
First Classified Stream and ID:	Mississippi River (P) (3699)
USGS Basin & Sub-watershed No.:	07110004-0504
Maximum Flow:	11.9 MGD (based on a 10yr 24hr storm event)

OUTFALL #003 – Stormwater, Domestic Wastewater, SIC #3241, #4952, #4953
Lift station overflow. Runoff from north industrial area (including fuel operations and containment units) and Packhouse area and discharge from Outfall #001 flow through this outfall. This outfall only discharges during extreme precipitation events when the pumps at the lift station cannot handle the loading. Otherwise, stormwater runoff and discharge from Outfall #001 are pumped to Outfall #006 prior to discharging.

Legal Description:	NW¼, NE¼, Sec.02, T56N, R04W, Ralls County
UTM Coordinates:	X = 644772, Y = 4393769
Receiving Stream:	Mississippi River (P)
First Classified Stream and ID:	Mississippi River (P) (3699)
USGS Basin & Sub-watershed No.:	07110004-0504
Maximum Flow:	6.1 MGD (based on a 10yr 24hr storm event)

OUTFALL #004 – Stormwater, SIC #3241
Lift station overflow. Runoff from the old gypsum belt loading area. This outfall only discharges during extreme precipitation events when the pumps at the lift station cannot handle the loading. Otherwise, stormwater runoff is pumped to Outfall #006

Legal Description:	SW¼, NE¼, Sec.02, T56N, R04W, Ralls County
UTM Coordinates:	X = 644959, Y = 4393531
Receiving Stream:	Mississippi River (P)
First Classified Stream and ID:	Mississippi River (P) (3699)
USGS Basin & Sub-watershed No.:	07110004-0504
Maximum Flow:	6.1 MGD (based on a 10yr 24hr storm event)

OUTFALL #005 – Stormwater and Seepage, SIC #3241
Seepage and runoff from the artificial soil area flow to a sedimentation basin and is used to irrigate the reclamation area or is discharged.

Legal Description:	NE¼, NW¼, Sec.03, T56N, R04W, Ralls County
UTM Coordinates:	X = 642809, Y = 4393953
Receiving Stream:	100k Extent-Remaining Stream (C) (3960)
First Classified Stream and ID:	Mississippi River (P) (3699)
USGS Basin & Sub-watershed No.:	07110004-0504
Maximum Flow:	16.3 MGD (based on a 10yr 24hr storm event)

FACILITY DESCRIPTION (CONTINUED)

OUTFALL #006 – Process Wastewater, Domestic Wastewater, & Stormwater, SIC #3241, #4952, #4953
Non-contact cooling water and discharges from Outfalls #001, #003 and #004. All waters pass through a grit chamber, sedimentation basin and sand filter prior to discharge.

Legal Description:	SW¼, NE¼, Sec.02, T56N, R04W, Ralls County
UTM Coordinates:	X = 645041, Y = 4393402
Receiving Stream:	Mississippi River (P)
First Classified Stream and ID:	Mississippi River (P) (3699)
USGS Basin & Sub-watershed No.:	07110004-0504
Maximum Flow:	6.1 MGD (based on a 10yr 24hr storm event)

OUTFALL #007
Eliminated in 2019 because Continental Cement no longer receives or stores compost materials onsite and no longer performs industrial activities in the subwatershed for Outfall #007; discharge of industrially exposed stormwater from this outfall is prohibited.
UTM Coordinates: X = 645226, Y = 4391027

OUTFALL #008
Eliminated in 2019 because Continental Cement no longer receives or stores compost materials onsite and no longer performs industrial activities in the subwatershed for Outfall #008; discharge of industrially exposed stormwater from this outfall is prohibited.
UTM Coordinates: X = 645675, Y = 4391648

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL #001
Internal Domestic Outfall

TABLE A-1
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 **May 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/quarter ◊	24 hr. total
CONVENTIONAL						
Biochemical Oxygen Demand$_5$	mg/L	45		30	once/quarter ◊	composite §
E. coli ǂ	#/100 ml	630		126	once/quarter ◊	grab
pH †	SU	6.0 to 9.0		6.0 to 9.0	once/quarter ◊	grab
Total Suspended Solids	mg/L	45		30	once/quarter ◊	composite §

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.

OUTFALL #002, #003, #004
Stormwater / Treated Domestic

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 **May 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		BENCH-MARKS	MONITORING REQUIREMENTS ⁂	
		DAILY MAXIMUM			MEASUREMENT FREQUENCY	SAMPLE TYPE
PHYSICAL						
Flow	MGD	*		-	once/quarter ◊	24 Hr Est.
CONVENTIONAL						
Chemical Oxygen Demand	mg/L	*		-	once/quarter ◊	Grab
Oil & Grease	mg/L	**		10	once/quarter ◊	Grab
pH †	SU	6.0 to 9.0		-	once/quarter ◊	Grab
Total Suspended Solids (Outfall #002)	mg/L	50		-	once/quarter ◊	Grab
Total Suspended Solids (Outfall #003 & #004)	mg/L	**		100	once/quarter ◊	Grab
METALS						
Aluminum, Total Recoverable	µg/L	**		750	once/quarter ◊	Grab
Iron, Total Recoverable	µg/L	*		-	once/quarter ◊	Grab
OTHER						
Chloride	mg/L	*		-	once/quarter ◊	Grab
Chloride + Sulfate	mg/L	**		1,000	once/quarter ◊	Grab
Sulfate	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 #002, #003, #004 *Stormwater / Treated Domestic*	**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 **May 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		BENCH-MARKS	MONITORING REQUIREMENTS ⁂	
		DAILY MAXIMUM			MEASUREMENT FREQUENCY	SAMPLE TYPE
METALS						
Arsenic, Total Recoverable	µg/L	*		-	once/year	grab
Beryllium, Total Recoverable	µg/L	*		-	once/year	grab
Cadmium, Total Recoverable	µg/L	*		-	once/year	grab
Chromium III, Total Recoverable	µg/L	*		-	once/year	grab
Chromium VI, Dissolved €	µg/L	*		-	once/year	grab
Lead, Total Recoverable	µg/L	*		-	once/year	grab
Mercury, Total Recoverable	µg/L	*		-	once/year	grab
Selenium, Total Recoverable ¥	µg/L	*		-	once/year	grab
Thallium, Total Recoverable Ω	µg/L	*		-	once/year	grab

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2021.
THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

OUTFALL #005 *Stormwater and seepage*	**TABLE A-4** **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 **May 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		BENCH-MARKS	MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE		MEASUREMENT FREQUENCY	SAMPLE TYPE ∞
PHYSICAL						
Flow	MGD	*		-	once/quarter ◊	24 hr. estimate
Precipitation ⁂	Inches	*		-	once/quarter ◊	24 hr. total
CONVENTIONAL						
Biochemical Oxygen Demand$_5$	mg/L	*		-	once/quarter ◊	grab
Oil & Grease	mg/L	**		10	once/quarter ◊	grab
pH †	SU	6.0 to 9.0		-	once/quarter ◊	grab
Total Suspended Solids	mg/L	50		-	once/quarter ◊	grab
METALS						
Aluminum, Total Recoverable	µg/L	**		750	once/quarter ◊	grab
Iron, Total Recoverable	µg/L	*		-	once/quarter ◊	grab
NUTRIENTS						
Ammonia as N	mg/L	**		12.1	once/quarter ◊	grab
Nitrogen, Total Kjeldahl	mg/L	*		*	once/quarter ◊	grab
Nitrate plus Nitrite Nitrogen	mg/L	*		*	once/quarter ◊	grab
Phosphorus, Total	mg/L	*		*	once/quarter ◊	grab
OTHER						
Chloride	mg/L	*		-	once/quarter ◊	grab
Chlorides plus Sulfate	mg/L	**		1,000	once/quarter ◊	grab
Sulfate	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 #005 *Stormwater and seepage*	**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 **May 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		BENCH-MARKS	MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE		MEASUREMENT FREQUENCY	SAMPLE TYPE ∞
METALS						
Arsenic, Total Recoverable	µg/L	*		-	once/year	grab
Beryllium, Total Recoverable	µg/L	*		-	once/year	grab
Cadmium, Total Recoverable	µg/L	*		-	once/year	grab
Chromium (III), Total Recoverable	µg/L	*		-	once/year	grab
Chromium (VI), Dissolved €	µg/L	*		-	once/year	grab
Lead, Total Recoverable	µg/L	*		-	once/year	grab
Mercury, Total Recoverable	µg/L	*		-	once/year	grab
Selenium, Total Recoverable ¥	µg/L	*		-	once/year	grab
Thallium, Total Recoverable Ω	µg/L	*		-	once/year	grab

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 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 #006
Process Wastewater / Stormwater / Treated Domestic

TABLE A-6
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 **May 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/quarter ◊	24 hr. est.
CONVENTIONAL						
Chemical Oxygen Demand	mg/L	*		*	once/quarter ◊	grab
Oil & Grease	mg/L	*		*	once/quarter ◊	grab
pH †	SU	6.0 to 9.0		6.0 to 9.0	once/quarter ◊	grab
Total Suspended Solids	mg/L	50		50	once/quarter ◊	grab
METALS						
Aluminum, Total Recoverable	µg/L	*		*	once/quarter ◊	grab
Arsenic, Total Recoverable	µg/L	*		*	once/quarter ◊	grab
Iron, Total Recoverable	µg/L	*		*	once/quarter ◊	grab
OTHER						
Chloride	mg/L	*		*	once/quarter ◊	grab
Chlorides plus Sulfate	mg/L	*		*	once/quarter ◊	grab
Sulfate	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.						
2,3,7,8-tetrachlorodibenzo-p-dioxin	ng/L	*		*	once/permit cycle	grab
MONITORING REPORTS SHALL BE SUBMITTED ONCE PER PERMIT CYCLE; THE FIRST REPORT IS DUE MAY 28, 2023. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

OUTFALL #006
Process Wastewater & Stormwater

TABLE A-7
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 **May 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
METALS						
Beryllium, Total Recoverable	µg/L	*		*	once/year	grab
Cadmium, Total Recoverable	µg/L	*		*	once/year	grab
Chromium (III), Total Recoverable	µg/L	*		*	once/year	grab
Chromium (VI), Dissolved €	µg/L	*		*	once/year	grab
Lead, Total Recoverable	µg/L	*		*	once/year	grab
Mercury, Total Recoverable	µg/L	*		*	once/year	grab
Selenium, Total Recoverable ¥	µg/L	*		*	once/year	grab
Thallium, Total Recoverable Ω	µg/L	*		*	once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2021. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALL #006 *Process Wastewater & Stormwater*	**TABLE A-8** **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 **May 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
TOTAL TOXIC ORGANICS *Volatiles*						
Acrolein	µg/L	*		-	once/year	grab
Acrylonitrile	µg/L	*		-	once/year	grab
Benzene	µg/L	*		-	once/year	grab
Bromoform	µg/L	*		-	once/year	grab
Carbon Tetrachloride	µg/L	*		-	once/year	grab
Chlorobenzene	µg/L	*		-	once/year	grab
Chlorodibromemethane	µg/L	*		-	once/year	grab
Chloroethane	µg/L	*		-	once/year	grab
2-chloroethylvinyl ether	µg/L	*		-	once/year	grab
Chloroform	µg/L	*		-	once/year	grab
Dichlorobromomethane	µg/L	*		-	once/year	grab
1,1-dichloroethane	µg/L	*		-	once/year	grab
1,2-dichloroethane	µg/L	*		-	once/year	grab
1,1-dichloroethylene	µg/L	*		-	once/year	grab
1,2-dichloropropane	µg/L	*		-	once/year	grab
1,3-dichloropropylene used 03777	µg/L	*		-	once/year	grab
Ethylbenzene	µg/L	*		-	once/year	grab
Methyl bromide	µg/L	*		-	once/year	grab
Methyl Chloride	µg/L	*		-	once/year	grab
Methylene Chloride	µg/L	*		-	once/year	grab
1,1,2,2-tetrachloroethane	µg/L	*		-	once/year	grab
Tetrachloroethylene	µg/L	*		-	once/year	grab
Toluene	µg/L	*		-	once/year	grab
1,2-trans-dichloroethylene	µg/L	*		-	once/year	grab
1,1,1-trichloroethane	µg/L	*		-	once/year	grab
1,1,2-trichloroethane	µg/L	*		-	once/year	grab
Trichloroethylene	µg/L	*		-	once/year	grab
Vinyl Chloride	µg/L	*		-	once/year	grab
Acid Compounds						
2-chlorophenol	µg/L	*		-	once/year	grab
2,4-dichlorophenol	µg/L	*		-	once/year	grab
2,4-dimethylphenol	µg/L	*		-	once/year	grab
4,6-dinitro-o-cresol	µg/L	*		-	once/year	grab
2,4-dinitrophenol	µg/L	*		-	once/year	grab
2-nitrophenol	µg/L	*		-	once/year	grab
4-nitrophenol	µg/L	*		-	once/year	grab
p-chloro-m-cresol	µg/L	*		-	once/year	grab
Pentachlorophenol	µg/L	*		-	once/year	grab
Phenol	µg/L	*		-	once/year	grab
2,4,6-trichlorophenol	µg/L	*		-	once/year	grab

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2021.
THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALL #006 *Process Wastewater & Stormwater*	**TABLE A-8** *(cont.)* **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 **May 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
TOTAL TOXIC ORGANICS *Base/Neutral*						
Acenaphthene	µg/L	*		-	once/year	grab
Acenaphthylene	µg/L	*		-	once/year	grab
Anthracene	µg/L	*		-	once/year	grab
Benzidine	µg/L	*		-	once/year	grab
Benzo(a)anthracene	µg/L	*		-	once/year	grab
Benzo(a)pyrene	µg/L	*		-	once/year	grab
3,4-benzofluoranthene	µg/L	*		-	once/year	grab
Benzo(ghi)perylene	µg/L	*		-	once/year	grab
Benzo(k)fluoranthene	µg/L	*		-	once/year	grab
Bis (2-chloroethoxy) methane	µg/L	*		-	once/year	grab
Bis (2-chloroethyl) ether	µg/L	*		-	once/year	grab
Bis (2-chloroisopropyl) ether	µg/L	*		-	once/year	grab
Bis (2-ethylhexyl) phthalate	µg/L	*		-	once/year	grab
4-bromophenyl phenyl ether	µg/L	*		-	once/year	grab
Butylbenzyl phthalate	µg/L	*		-	once/year	grab
2-chloronaphthalene	µg/L	*		-	once/year	grab
4-chlorophenyl phenyl ether	µg/L	*		-	once/year	grab
Chrysene	µg/L	*		-	once/year	grab
Dibenzo(a,h)anthracene	µg/L	*		-	once/year	grab
1,2-dichlorobenzene	µg/L	*		-	once/year	grab
1,3-dichlorobenzene	µg/L	*		-	once/year	grab
1,4-dichlorobenzene	µg/L	*		-	once/year	grab
3,3-dichlorobenzidine	µg/L	*		-	once/year	grab
Diethyl phthalate	µg/L	*		-	once/year	grab
Dimethyl phthalate	µg/L	*		-	once/year	grab
Di-n-butyl phthalate	µg/L	*		-	once/year	grab
2,4-dinitrotoluene	µg/L	*		-	once/year	grab
2,6-dinitrotoluene	µg/L	*		-	once/year	grab
Di-n-octyl phthalate	µg/L	*		-	once/year	grab
1,2-diphenylhydrazine (as azobenzene)	µg/L	*		-	once/year	grab
Fluoranthene	µg/L	*		-	once/year	grab
Fluorene	µg/L	*		-	once/year	grab
Hexachlorobenzene	µg/L	*		-	once/year	grab
Hexachlorobutadiene	µg/L	*		-	once/year	grab
Hexachlorocyclopentadiene	µg/L	*		-	once/year	grab
Hexachloroethane	µg/L	*		-	once/year	grab
Indeno (1,2,3-cd) pyrene	µg/L	*		-	once/year	grab
Isophorone	µg/L	*		-	once/year	grab
Naphthalene	µg/L	*		-	once/year	grab
Nitrobenzene	µg/L	*		-	once/year	grab
N-nitrosodimethylamine	µg/L	*		-	once/year	grab
N-nitrosodi-n-propylamine	µg/L	*		-	once/year	grab
N-nitrosodiphenylamine	µg/L	*		-	once/year	grab
Phenanthrene	µg/L	*		-	once/year	grab
Pyrene	µg/L	*		-	once/year	grab

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 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 #006 *Process Wastewater & Stormwater*	**TABLE A-8***(cont.)* **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 **May 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
TOTAL TOXIC ORGANICS *Base/Neutral - continued*						
1,2,4-trichlorobenzene	µg/L	*		-	once/year	grab
Pesticides						
Aldrin	µg/L	*		-	once/year	grab
Alpha-BHC	µg/L	*		-	once/year	grab
Beta-BHC	µg/L	*		-	once/year	grab
Gamma-BHC	µg/L	*		-	once/year	grab
Delta-BHC	µg/L	*		-	once/year	grab
Chlordane	µg/L	*		-	once/year	grab
4,4-DDT	µg/L	*		-	once/year	grab
4,4-DDE	µg/L	*		-	once/year	grab
4,4-DDD	µg/L	*		-	once/year	grab
Dieldrin	µg/L	*		-	once/year	grab
Alpha-endosulfan	µg/L	*		-	once/year	grab
Beta-endosulfan	µg/L	*		-	once/year	grab
Endosulfan sulfate	µg/L	*		-	once/year	grab
Endrin	µg/L	*		-	once/year	grab
Endrin aldehyde	µg/L	*		-	once/year	grab
Heptachlor	µg/L	*		-	once/year	grab
Heptachlor epoxide	µg/L	*		-	once/year	grab
PCB-1242	µg/L	*		-	once/year	grab
PCB-1254	µg/L	*		-	once/year	grab
PCB-1221	µg/L	*		-	once/year	grab
PCB-1232	µg/L	*		-	once/year	grab
PCB-1248	µg/L	*		-	once/year	grab
PCB-1260 (Note 6)	µg/L	*		-	once/year	grab
PCB-1016	µg/L	*		-	once/year	grab
Toxaphene	µg/L	*		-	once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2021. 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

** Monitoring and reporting requirement with benchmark. See Special Conditions for additional requirements.

ǂ *E. coli*: final limitations and monitoring requirements 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.

⁂ Precipitation Event Monitoring Requirement: all samples shall be collected from a discharge resulting from a precipitation event greater than 0.1 inches in magnitude and occurring at least 72 hours from the previously measurable precipitation event. If a discharge does not occur within the reporting period, report as no discharge. The total amount of precipitation should be noted from the event from which the samples were collected.

† pH: the facility will report the minimum and maximum values; pH is not to be averaged

§ A composite sample made up from a minimum of four grab samples collected within a 24 hour period with a minimum of two hours between each grab sample.

¥ This permit establishes monitoring for total recoverable selenium which are below the most commonly used analytical methods detection limits. However, 40 CFR 136 indicates effluent characteristics can be effectively quantified using EPA approved method 200.9 or 3113B. These methods have detection limits of 0.6 µg/L and 2 µg/L respectively; either may be used to determine compliance with this permit. Additionally, if monitoring only, the facility must choose one of the above methods to attain compliance with Standard Conditions Part I Section A 4.

Ω This permit establishes monitoring for total recoverable thallium which are below the most commonly used analytical methods detection limits. However, 40 CFR 136 indicates effluent characteristics can be effectively quantified using EPA approved method 200.9 or 3120B. These methods have detection limits of 0.7 µg/L and 1 µg/L respectively; either may be used to determine compliance with this permit. Additionally, if monitoring only, the facility must choose one of the above methods to attain compliance with Standard Conditions Part I Section A 4.

€ This permit establishes monitoring for dissolved hexavalent chromium. This permit establishes the requirement to use Standard Method 3500-Cr C-2011 or newer to assure data submitted to the Department conforms to the most sensitive method as required by Standard Conditions Part I Section A 4 and is analyzed within the required method holding times.

◊ Quarterly sampling

MINIMUM QUARTERLY SAMPLING REQUIREMENTS

QUARTER	MONTHS	*E. COLI*	ALL OTHER PARAMETERS	REPORT IS DUE
First	January, February, March	Not required to sample.	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	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	Sample at least once during any month of the quarter	October 28th
Fourth	October	Sample once during October	Sample at least once during any month of the quarter	January 28th
	November, December	No sample required		

B. 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 August 1, 2019, respectively, and hereby incorporated as though fully set forth herein.

C. SPECIAL CONDITIONS

1. Spills, Overflows, and Other Unauthorized Discharges.
   (a) Any spill that reaches waters of the state, overflow, or other discharge(s) not specifically authorized above are unauthorized discharges. Should a spill occur, it must be cleaned properly in a timely manner as to not reach waters of the state.
   (b) Should an unauthorized discharge cause or permit any contaminants to discharge or enter waters of the state, the unauthorized discharge must be reported to the regional office as soon as practicable but no more than 24 hours after the discovery of the discharge. If the spill or overflow needs to be reported after normal business hours or on the weekend, the facility must call the Department's 24 hour spill line at 573-634-2436.

2. Stormwater runoff from the artificial soil reclamation areas associated with the sedimentation basin at Outfall #005 shall not be land applied to areas outside of the artificial soil reclamation area. The land application activity shall comply with the following conditions.
   (a) No land application shall occur when the soil is frozen, snow covered, or saturated. There shall be no application during a precipitation event or if a precipitation event that is likely to create runoff is forecasted to occur within 24 hours of a planned application.
   (b) Land application shall occur only during daylight hours.
   (c) Land application fields shall be checked daily during land application for runoff. Sites that utilize spray irrigation shall monitor for the drifting of spray beyond the boundary of the artificial soil reclamation area.

C. SPECIAL CONDITIONS (CONTINUED)

3. Electronic Discharge Monitoring Report (eDMR) Submission System.
   (a) Discharge Monitoring Reporting Requirements. The permittee must electronically submit compliance monitoring data via the eDMR system. Standard Conditions Part I, Section B, #7 indicates the eDMR system is currently the only Department approved reporting method for this permit.
   (b) Programmatic Reporting Requirements. All reports must be electronically submitted as an attachment to the eDMR system until such a time when the current or a new system is available to allow direct input of the data. After such a system has been made available by the Department, required data shall be directly input into the system by the next report due date
      (1) Sludge/Biosolids Annual reports; and
      (2) Any additional report required by the permit excluding bypass reporting.
   (c) The following shall be submitted electronically after such a system has been made available by the Department:
      (1) General Permit Applications/Notices of Intent to discharge (NOIs);
      (2) Notices of Termination (NOTs);
      (3) No Exposure Certifications (NOEs);
      (4) Bypass reporting, See Special Condition #7 for 24-hr. bypass reporting requirements.
   (d) Electronic Submission: access the eDMR system via: https://edmr.dnr.mo.gov/edmr/E2/Shared/Pages/Main/Login.aspx
   (e) Electronic Reporting Waivers. The permittee must electronically submit compliance monitoring data and reports unless a waiver is granted by the Department in compliance with 40 CFR Part 127. The permittee may obtain an electronic reporting waiver by first submitting an eDMR Waiver Request Form: http://dnr.mo.gov/forms/780-2692-f.pdf. The Department will either approve or deny this electronic reporting waiver request within 120 calendar days. Only permittees with an approved waiver request may submit monitoring data and reports on paper to the Department for the period the approved electronic reporting waiver is effective.

4. Stormwater Pollution Prevention Plan (SWPPP).
   The facility's SIC code or description is found in 40 CFR 122.26(b)(14) and/or 10 CSR 20-6.200(2) and hence shall implement a Stormwater Pollution Prevention Plan (SWPPP) which must be prepared and implemented upon permit effective date. The SWPPP must be kept on-site and should not be sent to the Department unless specifically requested. The SWPPP must be reviewed and updated annually or if site conditions affecting stormwater change. The permittee shall select, install, use, operate, and maintain the Best Management Practices prescribed in the SWPPP in accordance with the concepts and methods described in: *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 The purpose of the SWPPP and the Best Management Practices (BMPs) listed herein is the prevention of pollution of waters of the state. A deficiency of a BMP means it was not effective at preventing pollution [10 CSR 20-2.010(56)] to waters of the state. Corrective action describes the steps the facility took to eliminate the deficiency.
   The SWPPP must include:
   (a) A listing of specific contaminants and their control measures (or BMPs) and a narrative explaining how BMPs are implemented to control and minimize the amount of contaminants potentially entering stormwater.
   (b) A map with all outfalls and structural BMPs marked.
   (c) A schedule for at least once per month site inspections and brief written reports. The inspection report must include precipitation information for the entire period since last inspection, as well as observations and evaluations of BMP effectiveness. Throughout coverage under this permit, the facility must perform ongoing SWPPP review and revision to incorporate any site condition changes.
      i. Operational deficiencies must be corrected within seven (7) calendar days.
      ii. Minor structural deficiencies must be corrected within fourteen (14) calendar days.
      iii. Major structural deficiencies (deficiencies projected to take longer than 14 days to correct) must be reported as an uploaded attachment through the eDMR system with the DMRs. The initial report shall consist of the deficiency noted, the proposed remedies, the interim or temporary remedies (including proposed timing of the placement of the interim measures), and an estimate of the timeframe needed to wholly complete the repairs or construction. If required by the Department, the permittee shall work with the regional office to determine the best course of action. The permittee should consider temporary structures to control stormwater runoff. The facility shall correct the major structural deficiency as soon as reasonably achievable.
      iv. All actions taken to correct the deficiencies shall be included with the written report, including photographs, and kept with the SWPPP. Additionally, corrective action of major structural deficiencies shall be reported as an uploaded attachment through the eDMR system with the DMRs.
      v. BMP failure causing discharge through an unregistered outfall is considered an unauthorized discharge and must be reported in accordance with Standard Conditions Part I.
      vi. Inspection reports must be kept on site with the SWPPP and maintained for a period of five (5) years. These must be made available to Department personnel upon request. Electronic versions of the documents and photographs are acceptable.

C. SPECIAL CONDITIONS (CONTINUED)

(d) A provision for designating an individual to be responsible for environmental matters and a provision for providing training to all personnel involved in housekeeping, material handling (including but not limited to loading and unloading), storage, and staging of all operational, maintenance, storage, and cleaning areas. Proof of training shall be submitted upon request by the Department.

5. Site-wide minimum Best Management Practices (BMPs). At a minimum, the permittee shall adhere to the following:
   (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) Ensure adequate provisions are provided to protect embankments from erosion.
   (c) Provide collection facilities and arrange for proper disposal of waste products including but not limited to petroleum waste products, and solvents.
   (d) 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. Spill records should be retained on-site.
   (e) Provide good housekeeping practices on the site to keep trash from entry into waters of the state.
   (f) Provide sediment and erosion control sufficient to prevent or control sediment loss off of the property.

6. Stormwater Benchmarks. This permit stipulates pollutant benchmarks applicable to your stormwater discharges.
   (a) The benchmarks do not constitute direct numeric effluent limitations; therefore, a benchmark exceedance alone is not a permit violation. Benchmark monitoring and visual inspections shall be used to determine the overall effectiveness of the SWPPP and to assist you in knowing when additional corrective action may be necessary to protect water quality. If a sample exceeds a benchmark concentration you must review your SWPPP and your BMPs to determine what improvements or additional controls are needed to reduce the pollutant in your stormwater discharge(s).
   (b) Any time a benchmark exceedance occurs, a Corrective Action Report (CAR) must be completed. A CAR is a document recording the efforts undertaken by the facility to improve BMPs to meet benchmarks in future samples. CARs must be retained with the SWPPP and be available to the Department upon request. If the efforts taken by the facility are not sufficient and subsequent exceedances of a benchmark occur, the facility must contact the Department if a benchmark value cannot be achieved. Failure to take corrective action to address a benchmark exceedance and failure to make measureable progress towards achieving the benchmarks is a permit violation.

7. Bypasses are not authorized at this facility unless they meet the criteria in 40 CFR 122.41(m). If a 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. Bypasses are to be reported to the Northeast Regional Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application located at: https://dnr.mo.gov/mogem/ or the Environmental Emergency Response spill-line 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.

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 Clean Water Act Sections 301(b)(2)(C) and (D), §304(b)(2), and §307(a) (2), 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. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, termination, notice of planned changes, or anticipated non-compliance does not stay any permit condition.

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

10. Permittee will cease discharge of domestic wastewater from Outfall #001 by connection to a facility with an area-wide management plan per 10 CSR 20-6.010(3)(B) within 90 days of notice of its availability. The permittee shall follow the closure requirements found in Part I and Part III standard conditions referenced in section B of the Permit. If the permittee wishes to use

C. SPECIAL CONDITIONS (CONTINUED)

the existing structure for an alternative use after connection, the permittee shall contact the department for assistance and approval.

11. Report 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.

12. 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).

13. 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) See sufficiently sensitive method requirements in Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.
    (e) 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).

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

15. This permit does not cover land disturbance activities.

16. This permit does not authorize the placement of fill materials in flood plains, placement of solid materials into any waterway, the obstruction of stream flow, or changing the channel of a defined drainage course. The facility must contact the U.S. Army Corps of Engineers (Corps) to determine if a CWA §404 Department of Army permit is required.

17. Renewal Application Requirements.
    (a) This facility shall submit an appropriate and complete application to the Department no less than 180 days from the expiration date listed on page 1 of the permit.
    (b) Application materials shall include complete Form A and Form C. If the form names have changed, then the facility should assure they are submitting the correct forms as required by regulation.
    (c) The facility must sample the stormwater outfalls and provide analysis for every parameter contained in the permit at any outfall for at the site in accordance with 10 CSR 20-6.200(2)(C)1.E(I) and (II)
    (d) The facility may use the electronic submission system to submit the application to the Program.
    (e) This facility must submit any corrective action reports completed for the last permit term if a benchmark exceedance occurred.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET
FOR THE PURPOSE OF RENEWAL
OF
MO-0111686
CONTINENTAL CEMENT

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 – Categorical; >1 MGD
SIC Code(s): 3241, 4952, 4953
NAICS Code(s): 327310
Application Date: 06/03/2019
Expiration Date: 11/30/2019
Last Inspection: 09/29&30/2015

FACILITY DESCRIPTION:
Continental Cement is a cement manufacturer. Other activities on the site include quarry mining and sue of high energy waste as substitutes for fossil fuel in the cement manufacturing process. This permit covers domestic wastewater discharges, process wastewater discharge and stormwater discharges.

The charter number for the continuing authority for this facility is FL1061292; this number was verified by the permit writer to be associated with the facility and precisely matches the continuing authority reported by the facility.

In accordance with 40 CFR 122.21(f)(6), the Department evaluated other permits currently held by this facility. This facility has the following permits: NPDES Operating Permit – #MOG490248, MDNR Air Pollution Program Permit – OP2011-046B with amendments 072007-008E and 072007-008F, MDNR RCRA Permit – MOD054018288, Permit to construct the underground mine – Permit No. 092012-003, and mine permit – 0321-A3.

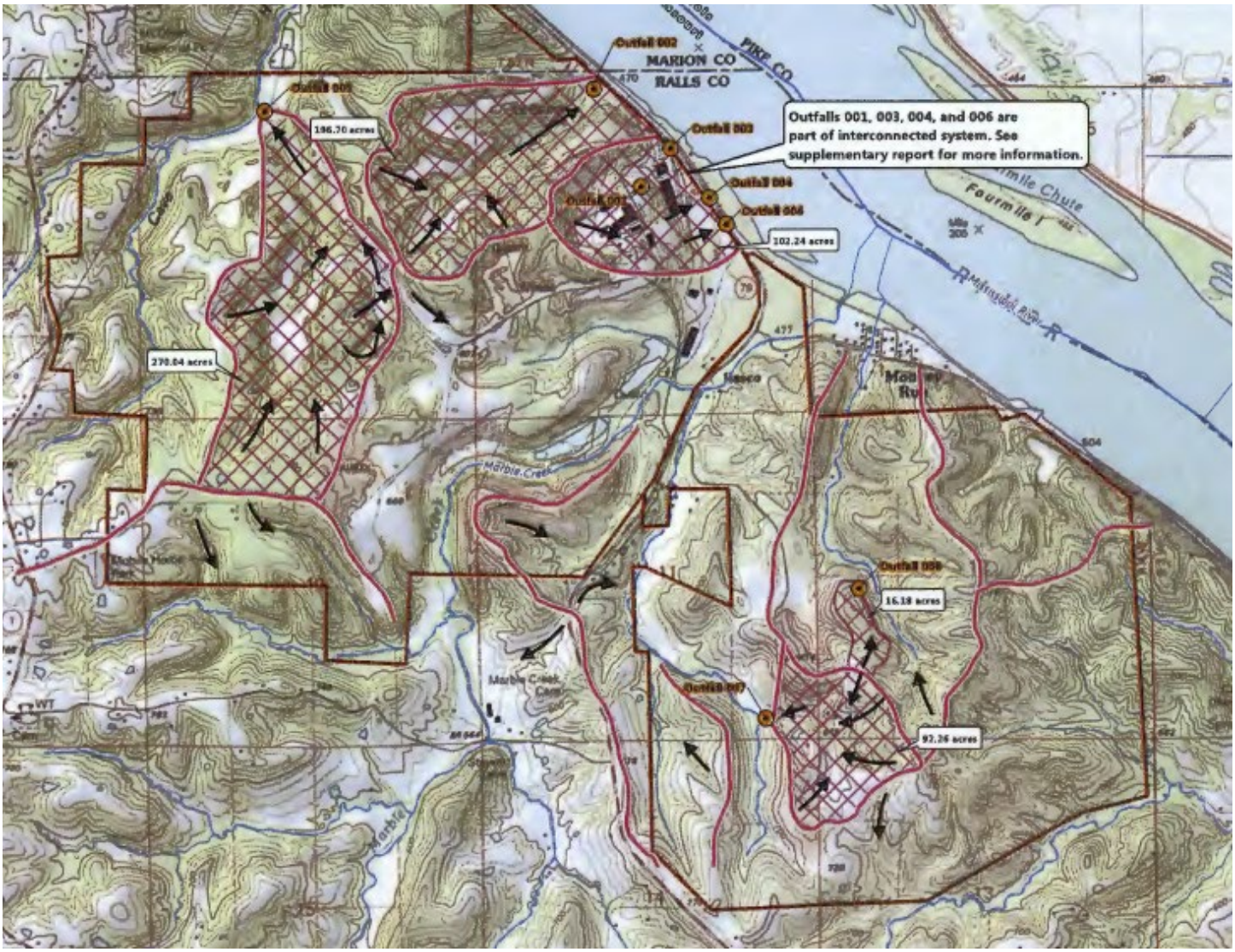
PERMITTED FEATURES TABLE:

OUTFALL	AVERAGE FLOW	DESIGN FLOW	TREATMENT LEVEL	EFFLUENT TYPE
#001	8,750 GPD	15,000 GPD	Secondary	Domestic Wastewater
#002	Dependent upon precipitation	11.9 MGD	BMPs	Stormwater
#003		6.1 MGD	BMPs	Stormwater, Treated Domestic
#004		6.1 MGD	BMPs	Stormwater
#005		16.3 MGD	BMPs	Stormwater and groundwater
#006		6.1 MGD	Primary & Tertiary	Non-Contact Cooling Water, Treated Domestic, Stormwater

FACILITY PERFORMANCE HISTORY & COMMENTS:
The electronic discharge monitoring reports were reviewed for the last permit term. No limits in the permit were exceeded. On December 17, 2015, the Northeast Regional Office referred the company to the Compliance and Enforcement Section for violating permitted effluent limitations of their permit. The Department re-issued a modified permit on December 1, 2017. The new permit removed specific effluent limitations from specific outfalls and added benchmarks to various outfalls for specific parameters. During April 2016, the company completed improvements to their sand filter and cleaned the retention pond at Outfall #006 in order to prevent TSS exceedances. During January 2017, the company added pumps to aerate the stormwater retention basin and provide irrigation to a reclamation area near Outfall #005 in order to control flow and prevent exceedances. On April 5, 2018, the Department issued a letter to Continental Cement Company stating that the Department has elected not to pursue enforcement action due to changes to the permit and corrective actions taken to correct exceedances.

FACILITY MAP:

WATER BALANCE DIAGRAM:



PART II. RECEIVING WATERBODY INFORMATION

RECEIVING WATERBODY'S WATER QUALITY:
The Mississippi River has a 2006 EPA approved TMDL for Chlordane and PCBs in fish tissue. The use of Chlordane and PCBs have been banned so the TMDL does not identify specific remedies for this impairment. The facility is not authorized to discharge these pollutants.

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 (P) (3699) is associated with the 2006 EPA Approved TMDL for chlordane and polychlorinated biphenyls (PCBs).
- ✓ This facility is not considered to be a source of the above listed pollutant(s) or considered to contribute to the impairment of Mississippi River (P) (3699).

UPSTREAM OR DOWNSTREAM IMPAIRMENTS:
The permit writer has reviewed upstream and downstream stream segments of this facility for impairments.
- ✓ The permit writer has noted no upstream or downstream impairments near this facility.

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. This facility is subject to effluent limitations derived on a site specific basis 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	Mississippi River	P	3699	ALP, DWS, IND, IRR, LWW, SCR, WBC-A, HHP	0.2 mi	07110004-0504 The Sny
#002					0.1 mi	
#003					0.1 mi	
#004					0.1 mi	
#005	100k Extent-Remaining Stream	C	3690	ALP, IRR, LWW, SCR, WBC-B, HHP	0.1 mi	
	Mississippi River	P	3699	ALP, DWS, IND, IRR, LWW, SCR, WBC-A, HHP	0.9 mi	
#006	Mississippi River	P	3699	ALP, DWS, IND, IRR, LWW, SCR, WBC-A, HHP	0.1 mi	

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 100K Extant-Remaining Streams 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

RECEIVING WATERBODY MONITORING REQUIREMENTS:
No receiving water monitoring requirements are recommended at this time.

RECEIVING STREAM LOW-FLOW VALUES:

OUTFALL	RECEIVING STREAM	LOW-FLOW VALUES (CFS)				
		GAGING STATION	1Q10	7Q10	30Q10	60Q10
#001, #002, #003, #004, #006	Mississippi River	Grafton, IL #05587455	19,787	27,605	31,888	34,862
#005	100k Extent-Remaining Stream	N/A	0.0	0.0	0.0	0.0

Data were obtained for the last 20 years and were calculated using a Department developed spreadsheet (available upon request).

MIXING CONSIDERATIONS TABLE: MISSISSIPPI RIVER
Outfalls #001, #003, and #006

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	60Q10	1Q10	7Q10	30Q10	60Q10
4,947	6,901	7,972	8,716	0.23 for #001 94 for others	0.23 for #001 94 for others	0.23 for #001 94 for others	0.23 for #001 94 for others

The design flow for these outfalls is 0.023 CFS for Outfall #001 and 9.4 CFS for the other outfalls. Per the regulations cited in the table, the ZID cannot be more than 10 times the facility design flow. Thus, the ZIDs are equal to 10 times the design flow.

Outfalls #002, #004 and #005
Mixing zone: not allowed [10 CSR 20-7.031(5)(A)4.B.(I)(a)].
Zone of initial dilution: not allowed [10 CSR 20-7.031(5)(A)4.B.(I)(b)].

PART III. RATIONALE AND DERIVATION OF 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)], and 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.

- ✓ Limitations in this operating permit for the reissuance conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.
  - ✓ The Department determined technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b).
    - Per a memorandum issued by the EPA entitled *Interim Guidance for Performance-Based Reductions of NPDES Permit Monitoring Frequencies* (4/19/1996), the Department has found the permittee eligible for reduced monitoring frequency. Stormwater on site is controlled through a number of mechanisms including a SWPPP. Operations at the facility have been consistent and have low variability. A decreased sampling frequency is warranted for Arsenic, Beryllium, Cadmium, Chromium III, Chromium VI, Lead, Mercury, Selenium, and Thallium at outfalls #002, #003, #004, and #005. A decreased sampling frequency is also warranted for Beryllium, Cadmium, Chromium III, Chromium VI, Lead, Mercury, Selenium, and Thallium at outfall #006.
    - Outfalls #007 and #008 have been removed. There is no longer industrial activity taking place at these outfalls.
    - Total hardness will be removed from this permit. The previous permit required monitoring for this parameter. The Department may use a default hardness depending on which ecoregion the site is located to calculate daily maximum limits and benchmarks for metals with hardness based toxicity when site specific instream hardness values are not available. It is no longer necessary to sample for this parameter. Historic data previously collected by the applicant may be used when applicable.

- The previous permit special condition stated: "Any pesticide discharge from any point source shall comply with the requirements of Federal Insecticide, Fungicide and Rodenticide Act, as amended (7 U.S.C. 136 et. seq.) and the use of such pesticides shall be in a manner consistent with its label."
  The permit writer has determined this special condition was outside the scope of NPDES permitting and was removed.
- The previous permit special condition indicated spills from hazardous waste substances must be reported to the department. However, this condition is covered under standard conditions therefore was removed from special conditions.

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.

This permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) which must include an alternative analysis (AA) of the BMPs. The SWPPP must be developed, implemented, updated, and maintained at the facility. Failure to implement and maintain the chosen alternative, is a permit violation. The AA is a structured evaluation of BMPs to determine which are reasonable and cost effective. Analysis should include practices designed to be 1) non-degrading, 2) less degrading, or 3) degrading water quality. The chosen BMP will be the most reasonable and cost effective while ensuring the highest statutory and regulatory requirements are achieved and the highest quality water attainable for the facility is discharged. The analysis must demonstrate why "no discharge" or "no exposure" are not feasible alternatives at the facility. Existing facilities with established SWPPPs and BMPs need not conduct an additional alternatives analysis unless new BMPs are established to address BMP failures or benchmark exceedances. This structured analysis of BMPs serves as the antidegradation review, fulfilling the requirements of 10 CSR 20-7.015(9)(A)5 and 7.031(3). For stormwater discharges with new, altered, or expanding discharges, the stormwater BMP chosen for the facility, through the AA 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.

✓ Applicable; the facility must review and maintain stormwater BMPs as appropriate.

BEST MANAGEMENT PRACTICES:
Minimum site-wide best management practices are established in this permit to assure all permittees are managing their sites equally to protect waters of the state from certain activities which could cause negative effects in receiving water bodies. While not all sites require a SWPPP because the SIC codes are specifically exempted in 40 CFR 122.26(b)(14), these best management practices are not specifically included for stormwater purposes. These practices are minimum requirements for all industrial sites to protect waters of the state. If the minimum best management practices are not followed, the facility may violate general criteria [10 CSR 20-7.031(4)]. Statutes are applicable to all permitted facilities in the state, therefore pollutants cannot be released unless in accordance with RSMo 644.011 and 644.016 (17).

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.

DOMESTIC WASTEWATER, SLUDGE, AND BIOSOLIDS:
Domestic wastewater is defined as wastewater (i.e., human sewage) originating primarily from the sanitary conveyances of bathrooms and kitchens. Domestic wastewater excludes stormwater, animal waste, process waste, and other similar waste.

✓ Applicable; The permittee treats domestic waste onsite using a domestic waste treatment system which is regulated by this permit. See outfall #001 in permit and parameter descriptions below.

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. Biosolids are solid materials resulting from domestic wastewater treatment meeting federal and state criteria for productive use (i.e. fertilizer) and after having pathogens removed.
Additional information: http://extension.missouri.edu/main/DisplayCategory.aspx?C=74 (WQ422 through WQ449).

- ✓ Applicable, sludge is removed by contract hauler. The permitted management strategy must be followed, see FACILITY DESCRIPTION in the permit. If the described management strategy cannot be followed, the permittee must obtain a permit modification. See Standard Conditions Part III.
- ✓ Standard conditions Part III is incorporated into this permit.

EFFLUENT LIMITATIONS:
Effluent limitations derived and established for this permit are based on current operations of the facility and applied per 10 CSR 20-7.015(9)(A). Any flow through the outfall is considered a discharge and must be sampled and reported as provided in the permit. Future permit action due to facility modification may contain new operating permit terms and conditions which supersede the terms and conditions, including effluent limitations, of this operating permit. Daily maximums and monthly averages are required per 40 CFR 122.45(d)(1) for continuous discharges (not from a POTW).

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) at 40 CFR 400-499 applicable to the wastewater and stormwater discharge at this site, and is applied under 40 CFR 125.3(a). 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.

PARAMETER	BPT/BAT OR CITATION	DAILY MAXIMUM
40 CFR 411 Subparts A and B do not apply. Process wastewater is not generated at this site. Non-contact cooling water has been determined to be a separate category of waste stream than process wastewater. For this reason, only the stormwater ELG outlined in Subpart C applies.		
Total Suspended Solids	40 CFR 411 Subpart C	Not to exceed 50 mg/L
pH		6.0-9.0 SU

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.

To assist the facility in entering data into the eDMR system, the permit describes limit sets in each table in Part A of the permit. The data entry personnel should use these identifiers to assure data entry is being completed appropriately.

- ✓ The permittee/facility is currently using the eDMR data reporting system.

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 within the permit 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 Section D – Administrative Requirements of Standard Conditions Part I of 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 sections 644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule, or regulation promulgated by the commission.

GROUNDWATER MONITORING:
Groundwater is a water of the state according to RSMo 644.016(27), 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.

LAND APPLICATION:
Land application of wastewater or sludge is performed by facilities to maintain a basin as no-discharge.
✓ Applicable, the facility shall comply with all applicable land application requirements listed in the special conditions of this permit. These requirements ensure appropriate minimum operational controls of the no-discharge land application systems which, if operated correctly, will 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.

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/pub2236.htm
✓ Applicable; this facility is a major water user and is registered with the state.

OIL/WATER SEPARATORS:
Oil water separator (OWS) tank systems are frequently found at industrial sites where process water and stormwater may contain oils and greases, oily wastewaters, or other immiscible liquids requiring separation. Food industry discharges typically require pretreatment prior to discharge to municipally owned treatment works. Per 10 CSR 26-2.010(2)(B), all oil water separator tanks must be operated according to manufacturer's specifications and authorized in NPDES permits per 10 CSR 26-2.010(2) or may be regulated as a petroleum tank.
✓ Not applicable; the permittee has not disclosed the use of any oil water separators they wish to include under the NPDES permit at this facility and therefore oil water separator tanks are not authorized by this permit.

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). Permit writers may use mathematical reasonable potential analysis (RPA) using the Technical Support Document for Water Quality Based Toxics Control (TSD) methods (EPA/505/2-90-001) as found in Section 3.3.2, or may also use reasonable potential determinations (RPD) as provided in Sections 3.1.2, 3.1.3, and 3.2 of the TSD.
✓ Applicable; an RPA was conducted on appropriate parameters and was conducted as per (TSD Section 3.3.2). A more detailed version including calculations of this RPA is available upon request. See Wasteload Allocations (WLA) for Limits in this section.

Outfall #001

Parameter	CMC	RWC Acute	CCC	RWC Chronic	n	Max/Min	CV	MF	RP
Ammonia as Nitrogen (Summer)	12.1	0.17	1.5	0.01	10.00	0.58/0.1	0.81	3.00	NO
Ammonia as Nitrogen (Winter)	12.1	0.79	3.1	0.01	10.00	2.87/0.1	1.40	3.00	NO

Outfall #006

Parameter:	CMC Acute	CCC Chronic	Listing	Daily Max	Monthly Average	n#	CV	n Max	MF	RWC Acute	RWC Chronic	RP
Aluminum, TR	750	n/a	AQL	8250.00	4112.27	7	0.6	100	3.5425353	32.204866	0.3601164	No
Arsenic, TR	n/a	20	AQL	32318.51	16109.40	7	0.6	15	3.5425353	4.83073	0.0540175	No
Beryllium, TR	n/a	5	AQL	8079.63	4027.35	7	0.6	4	3.5425353	1.2881947	0.0144047	No
Cadmium, TR	8.35	1.17	AQL	91.83	45.77	7	0.6	1	3.54	0.32	0.00	No
Chromium III, TR	2703.92	129.25	AQL	29743.08	14825.66	7	0.6	15	3.54	4.83	0.05	No
Chromium VI, Diss.	15	10	AQL	165.00	82.25	7	0.6	10	3.5425353	3.2204866	0.0360116	No
Iron, TR	n/a	1000	AQL	1615925.63	805470.22	7	0.6	1100	3.54	354.25	3.96	No
Lead, TR	153.19	5.97	AQL	1685.10	839.95	7	0.6	10	3.54	3.22	0.04	No
Mercury, Total	2.82	0.5	AQL	31.06	15.48	7	0.6	0.2	3.54	0.06	0.00	No
Selenium, TR	n/a	5	AQL	8079.63	4027.35	7	0.6	10	3.54	3.22	0.04	No
Thallium, TR	n/a	6.3	HHP	10610.98	5289.12	7	0.6	20	3.5425353	6.4409733	0.0691002	No
Chloride	860	230	AQL	9460.00	4715.41	8	0.6	230	3.329392	69.61	0.7784335	No
Chloride + Sulfate	1000	n/a	AQL	11000.00	n/a	8	0.6	570	3.329392	172.52	139291612	No

Units are (µg/L) unless otherwise noted.

n/a	Not Applicable
n	number of samples; if the number of samples is 10 or greater, then the CV value must be used in the WQBEL for the applicable constituent.
CV	Coefficient of Variation (CV) is calculated by dividing the Standard Deviation of the sample set by the mean of the same sample set.
CCC	continuous chronic concentration
CMC	continuous maximum concentration
RWC	Receiving Water Concentration: concentration of a toxicant or the parameter in the receiving water after mixing (if applicable)
MF	Multiplying Factor; 99% confidence level and 99% probability basis
RP	Reasonable Potential: an effluent is projected or calculated to cause an excursion above a water quality standard based on a number of factors including, as a minimum, the four factors listed in 40 CFR 122.44(d)(1)(ii).

This permit also establishes permit limits and benchmarks for stormwater. The department has determined stormwater is not a continuous discharge and is therefore not necessarily dependent on mathematical RPAs. However, the permit writer completed an RPD, a reasonable potential determination, using best professional judgment for all fo the appropriate parameters in this permit. An RPD consists of reviewing application data and/or discharge monitoring data for the last five years and comparing those data to narrative or numeric water quality criteria.

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 frequency for stormwater-only outfalls is typically quarterly even though BMP inspection occurs monthly. The facility may sample more frequently if additional data is required to determine if best management operations and technology are performing as expected.

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.

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 and 10 CSR 20-7.031(11) 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.

✓ Not applicable; this permit does not contain a SOC. Limits have not become more restrictive. No SOC is allowed because the permittee is already capable of meeting the new effluent limits.

SPILLS, OVERFLOWS, AND OTHER UNAUTHORIZED DISCHARGE REPORTING:
Per 260.505 RSMo, 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

Any other spills, overflows, or unauthorized discharges reaching waters of the state must be reported to the regional office during normal business hours, or after normal business hours, to the Department's 24 hour Environmental Emergency Response spill line at 573-634-2436.

SLUDGE – INDUSTRIAL:
Industrial sludge is solid, semi-solid, or liquid residue generated during the treatment of industrial process or non-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 any material derived from industrial sludge.

✓ Not applicable; industrial sludge is not generated at this facility.

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. Standard Conditions Part III, if attached to this permit, incorporate requirements dealing with domestic wastewater, sludge, and land application.

STORMWATER PERMITTING: LIMITATIONS AND BENCHMARKS:
Because of the fleeting nature of stormwater discharges, the Department, under the direction of EPA guidance, has determined monthly averages are capricious measures of stormwater discharges. The *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001; 1991) Section 3.1 indicates most procedures within the document apply only to water quality based approaches, not end-of-pipe technology-based controls. Hence, stormwater-only outfalls will generally only contain a maximum daily limit (MDL), benchmark, or monitoring requirement as dictated by site specific conditions, the BMPs in place, past performance of the facility, and the receiving water's current quality.

Sufficient rainfall to cause a discharge for one hour or more from a facility would not necessarily cause significant flow in a receiving stream. Acute Water Quality Standards (WQSs) are based on one hour of exposure, and must be protected at all times. Therefore, industrial stormwater facilities with toxic contaminants present in the stormwater may have the potential to cause a violation of acute WQSs if toxic contaminants occur in sufficient amounts. In this instance, the permit writer may apply daily maximum limitations.

Conversely, it is unlikely for rainfall to cause a discharge for four continuous days from a facility; if this does occur however, the receiving stream will also likely sustain a significant amount of flow providing dilution. Most chronic WQSs are based on a four-day exposure with some exceptions. Under this scenario, most industrial stormwater facilities have limited potential to cause a violation of chronic water quality standards in the receiving stream.

A standard mass-balance equation cannot be calculated for stormwater because stormwater flow and flow in the receiving stream cannot be determined for conditions on any given day or storm event. The amount of stormwater discharged from the facility will vary based on current and previous rainfall, soil saturation, humidity, detention time, BMPs, surface permeability, etc. Flow in the receiving stream will vary based on climatic conditions, size of watershed, area of surfaces with reduced permeability (houses, parking lots, and the like) in the watershed, hydrogeology, topography, etc. Decreased permeability may increase the stream flow dramatically over a short period of time (flash).

Numeric benchmark values are based on site specific requirements taking in to account a number of factors but cannot be applied to any process water discharges. First, the technology in place at the site to control pollutant discharges in stormwater is evaluated. The permit writer also evaluates other similar permits for similar activities. A review of the guidance forming the basis of Environmental Protection Agency's (EPA's) *Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity* (MSGP) may also occur. Because precipitation events are sudden and momentary, benchmarks based on state or federal standards or recommendations use the Criteria Maximum Concentration (CMC) value, or acute standard may also be used. The CMC is the estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly without resulting in an unacceptable effect. The CMC for aquatic life is intended to be protective of the vast majority of the aquatic communities in the United States. If a facility has not disclosed BMPs applicable to the pollutants for the site, the permittee may not be eligible for benchmarks.

40 CFR 122.44(b)(1) requires the permit implement the most stringent limitations for each discharge, including industrially exposed stormwater; and 40 CFR 122.44(d)(1)(i) and (iii) requires the permit to include water-quality based effluent limitations where reasonable potential has been found. However, because of the non-continuous nature of stormwater discharges, staff are unable to perform statistical Reasonable Potential Analysis (RPA) under most stormwater discharge scenarios. Reasonable potential determinations (RPDs; see REASONABLE POTENTIAL above) using best professional judgment are performed.

Benchmarks require the facility to monitor, and if necessary, replace and update stormwater control measures. Benchmark concentrations are not effluent limitations. A benchmark exceedance, therefore, is not a permit violation; however, failure to take corrective action is a violation of the permit. Benchmark monitoring data is used to determine the overall effectiveness of control measures and to assist the permittee in knowing when additional corrective actions may be necessary to comply with the conditions of the permit.

BMP inspections typically occur more frequently than sampling. Sampling frequencies are based on the facility's ability to comply with the benchmarks and the requirements of the permit. Inspections should occur after large rain events and any other time an issue is noted; sampling after a benchmark exceedance may need to occur to show the corrective active taken was meaningful.

When a permitted feature or outfall consists of only stormwater, a benchmark may be implemented at the discretion of the permit writer, if there is no RP for water quality excursions.

- ✓ Applicable, this facility has stormwater-only outfalls where benchmarks or limitations were deemed appropriate contaminant measures.

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, which includes an appropriate fee; the application is found at: https://dnr.mo.gov/forms/#WaterPollution

✓ Applicable; a SWPPP shall be developed and implemented for this facility.

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 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.

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 Single family residential septic systems and non-residential septic systems used solely for sanitary waste and having the capacity to serve fewer than 20 persons a day are excluded from the UIC requirements (40 CFR 144.81(9)).

✓ Not applicable; the permittee has not submitted materials indicating the facility will be performing UIC 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; this permit is not drafted under premise of a petition for variance.

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:

As per [10 CSR 20-2.010; definitions], 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). Total Maximum Daily Loads, if required for this facility, were also reviewed.

✓ Applicable; wasteload allocations for toxic parameters were calculated using water quality criteria or water quality model results and by applying the dilution equation below; WLAs are calculated using the *Technical Support Document For Water Quality-Based Toxics Control* or TSD EPA/505/2-90-001; 3/1991.

$$C = \frac{(Cs \times Qs) + (Ce \times Qe)}{(Qe + Qs)}$$

(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).

✓ Number of Samples "n": 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 assumption 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 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". For total ammonia as nitrogen, "n = 30" is used.

WASTELOAD ALLOCATION (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.

WATER QUALITY STANDARD REVISION:

In accordance with section 644.058, RSMo, the Department is required to utilize an evaluation of the environmental and economic impacts of modifications to water quality standards of twenty-five percent or more when making individual site-specific permit decisions.

✓ This operating permit does not contain requirements for a water quality standard that has changed twenty-five percent or more since the previous operating permit.

PART IV. EFFLUENT LIMITS DETERMINATIONS

OUTFALL #001 – DOMESTIC WASTEWATER OUTFALL

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVG.	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	*	SAME	ONCE/QUARTER	ONCE/QUARTER	24 HR. TOT
CONVENTIONAL							
BOD_5	mg/L	45	30	SAME	ONCE/QUARTER	ONCE/QUARTER	COMPOSITE
E. COLI	#/100 ml	630	126	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
PH †	SU	6.0 TO 9.0	-	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
TOTAL SUSPENDED SOLIDS (TSS)	mg/L	45	30	SAME	ONCE/QUARTER	ONCE/QUARTER	COMPOSITE
NUTRIENTS							
AMMONIA AS N	REMOVED						

* monitoring and reporting requirement only
† report the minimum and maximum pH values; pH is not to be averaged
new parameter not established in previous state operating permit
TR total recoverable

DERIVATION AND DISCUSSION OF LIMITS:

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 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), quarterly monitoring continued from previous permit.

CONVENTIONAL:

Biochemical Oxygen Demand - 5 Day (BOD_5)
45 mg/L as a daily maximum and 30 mg/L as a monthly average. In accordance with 10 CSR 20.7.015(2)(A)1, the technology based limits apply.

Escherichia coli (E. coli)
A daily maximum of 630 bacteria per 100 mL and a monthly geometric mean of 126 bacteria per 100 mL during the recreational season (April 1 through October 31) only, to protect Whole Body Contact (A) 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). 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.

pH
6.0 to 9.0 SU. In accordance with 10 CSR 20-7.015(2)(A)2, the technology-based limits apply. 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. The permit writer has determined the 0.23 CFS ZID allows sufficient buffering capacity in order for the discharge to meet the water quality standard at the end of the ZID. The TBEL is protective.

Total Suspended Solids (TSS)
45 mg/L as a daily maximum and 30 mg/L as a monthly average. In accordance with 10 CSR 20.7.015(2)(A)1, the technology based limits apply.

NUTRIENTS:

Ammonia, Total as Nitrogen

This parameter has been removed. The facility's DMRs show there is no reasonable potential to cause or contribute to excursions of the water quality standard. As long as the facility meets technology limits at outfall #001, the Department believes there will not be a discharge of ammonia at levels exceeding the water quality standard. Sampling data required upon permit renewal will be used to reassess ammonia monitoring in the future.

OUTFALL #002, #003, #004 – STORMWATER AND TREATED DOMESTIC

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAXIMUM LIMIT	BENCH-MARK	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	-	SAME	ONCE/QUARTER	ONCE/QUARTER	24 HR. ESTIMATE
CONVENTIONAL							
COD	mg/L	*	-	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
OIL & GREASE	mg/L	**	10	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
pH †	SU	6.0 TO 9.0	-	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
TSS (OUTFALL #002)	mg/L	50	-	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
TSS (OUTFALLS 003 & 004)	mg/L	**	100	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
METALS							
ALUMINUM, TR	µg/L	**	750	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
ARSENIC, TR	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
BERYLLIUM, TR	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
CADMIUM, TR	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
CHROMIUM III, TR	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
CHROMIUM VI, DISSOLVED	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
IRON, TR	µg/L	*	-	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
LEAD, TR	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
MERCURY, TR	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
SELENIUM, TR	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
THALLIUM, TR	µg/L	*	-	6.3	ONCE/YEAR	ONCE/YEAR	GRAB
HARDNESS, TOTAL	REMOVED						
OTHER							
CHLORIDE	mg/L	*	-	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
CHLORIDE + SULFATE	mg/L	**	1,000	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
SULFATE	mg/L	*	-	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB

* monitoring and reporting requirement only
** monitoring with associated benchmark
† report the minimum and maximum pH values; pH is not to be averaged
TR total recoverable

DERIVATION AND DISCUSSION OF LIMITS:

PHYSICAL:

Flow
In accordance with [40 CFR Part 122.44(i)(1)(ii)] the estimated volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain estimated 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 estimated total flow in millions of gallons per day (MGD), quarterly monitoring continued from previous permit.

CONVENTIONAL:

Chemical Oxygen Demand (COD)
Monitoring only, per the permit writer's best professional judgment. COD is a common pollutant of concern in stormwater. There is no water quality standard for COD; however, increased oxygen demand may impact instream water quality. COD is also a valuable indicator parameter. COD monitoring allows the permittee to identify increases in COD that may indicate materials/chemicals coming into contact with stormwater that cause an increase in oxygen demand. Increases in COD may indicate a need for maintenance or improvement of BMPs.

Oil & Grease
Monitoring with a daily maximum benchmark of 10 mg/L. DMRs show a values ranging from 1 mg/L to 5.2 mg/L. Oil and grease is considered a conventional pollutant. 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 A1: *Criteria for Designated Uses*; 10 mg/L is the standard for protection of aquatic life. This standard will also be used to protect the general criteria found at 10 CSR 20-7.031(4). 10 mg/L is the level at which sheen is expected 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, it is the responsibility of the permittee to visually observe the discharge and receiving waters for sheen or bottom deposits. The benchmark is achievable through proper operational and maintenance of BMPs and falls within the range of values implemented in other permits having similar industrial activities.

pH
6.0 to 9.0 SU. In accordance with 10 CSR 20-7.015(2)(A)2, the technology-based limits apply. 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. The permit writer has determined the 0.23 CFS ZID allows sufficient buffering capacity in order for the discharge to meet the water quality standard at the end of the ZID. The TBEL is protective.

Total Suspended Solids (TSS)
50 mg/L at outfall #002. The technology-based limits found in 40 CFR 411.32 are applicable to this outfall. This TBEL covers stormwater discharges from the cement manufacturing industry.

Outfalls #003 and #004 will have monitoring with a daily maximum benchmark of 100 mg/L because the drainages to these outfalls do not have any material storage stockpiles used in the manufacturing process or other legacy material storage piles. There is no numeric water quality standard for TSS; however, sediment discharges can negatively impact aquatic life habitat. TSS is also a valuable indicator parameter. TSS monitoring allows the permittee to identify increases in TSS indicating uncontrolled materials leaving the site. Increased suspended solids in runoff can lead to decreased available oxygen for aquatic life and an increase of surface water temperatures in a receiving stream. Suspended solids can also be carriers of toxins, which can adsorb to the suspended particles; therefore, total suspended solids are a valuable indicator parameter for other pollution. The benchmark is achievable through proper operational and maintenance of BMPs and falls within the range of values implemented in other permits having similar industrial activities.

METALS:

Aluminum, Total Recoverable
Monitoring only with a benchmark of 750 µg/L. DMRs show values ranging from 44.7 µg/L to 614 µg/L. Aluminum is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. The benchmark is achievable through proper operational and maintenance of BMPs and falls within the range of values implemented in other permits having similar industrial activities.

Arsenic, Total Recoverable
Monitoring only. Arsenic is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs, and to fully characterize effluent discharging from these outfalls.

Beryllium, Total Recoverable
Monitoring only. Beryllium is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Cadmium, Total Recoverable
Monitoring only. Cadmium is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Chromium III, Total Recoverable
Monitoring only. Chromium III is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Chromium VI, Dissolved
Monitoring only. Chromium VI is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Iron, Total Recoverable
Monitoring only continued from previous permit. Iron has numerous industrial uses, being the most widely used of all metals. DMRs show values ranging from 112 µg/L to 1180 µg/L. Iron is a common constituent in portland cement and fly ash. Due to the sporadic nature of stormwater discharges, the Department, under the direction of EPA guidance, has determined chronic standards are capricious measures of stormwater discharges. Chronic effluent limitations are based on the organism's ability to survive within the designated concentration for four days. Stormwater is rarely discharged continuously for four days. Conversely, acute water quality standards are applicable, but are non-existent for iron. It is in the best professional judgment of the permit writer that a discharge from these outfalls at 4,000 µg/L per storm event is unlikely to cause an exceedance of the chronic water quality standard of 1000µg/L over four days.

Lead, Total Recoverable
Monitoring only. Lead is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Mercury, Total Recoverable
Monitoring only. Mercury is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Selenium, Total Recoverable
Monitoring only. Selenium is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Thallium, Total Recoverable
Monitoring only. Thallium is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Hardness, Total
This parameter will be removed from this permit. The previous permit required monitoring for this parameter. The Department will use a default hardness of 208 mg/L to calculate daily maximum limits for metals with hardness based toxicity if necessary. It is no longer necessary to sample for this parameter as default in-stream hardness values will be utilized.

OTHER:

Chloride
Monitoring only continued from previous permit. There is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. Chloride monitoring is included to evaluate concentrations of Chloride plus Sulfate in the discharge, which is included to capture any cement kiln dust or other raw materials in the discharge. This requires monitoring of both Sulfate and Chloride separately and then adding the values together. For this reason, the permit writer used best professional judgement to retain this parameter in the permit.

Chlorides plus Sulfates
Monitoring only with an associated benchmark continued from the previous permit. There is no reasonable potential for the stormwater discharges to cause or contribute to excursions of the water quality standard. The water quality standard is 1,000 mg/L. Since there are a variety of operations dealing with limestone quarries and cement manufacturing within the drainages, the permit writer used best professional judgement to apply a benchmark value for the outfalls. This benchmark is believed to be achievable at this site based on DMR data. The permittee will be required to maintain appropriate BMPs and will be basing BMP performance on this technology-based benchmark value.

Sulfate
Monitoring only. There are no water quality standards for sulfate alone; however, the rules include water quality standards for Chloride plus Sulfate, which is being included to capture any cement kiln dust or other raw materials in the discharge. This requires monitoring of both Sulfate and Chloride separately and then adding the values together. For this reason, monitoring only has been added to this permit.

OUTFALL #005 – STORMWATER OUTFALL

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAXIMUM LIMIT	BENCH-MARK	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	-	SAME	ONCE/QUARTER	ONCE/QUARTER	24 HR. ESTIMATE
PRECIPITATION	inches	*	-	NEW	ONCE/QUARTER	ONCE/QUARTER	24 HR. TOTAL
CONVENTIONAL							
BOD_5	mg/L	*	-	*/65	ONCE/QUARTER	ONCE/QUARTER	GRAB
OIL & GREASE	mg/L	**	10	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
pH †	SU	6.0 TO 9.0	-	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
TSS	mg/L	50	-	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
METALS							
ALUMINUM, TR	µg/L	*	-	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
ARSENIC, TR	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
BERYLLIUM, TR	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
CADMIUM, TR	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
CHROMIUM III, TR	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
CHROMIUM VI, DISSOLVED	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
IRON, TR	µg/L	*	-	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
LEAD, TR	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
MERCURY, TR	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
SELENIUM, TR	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
THALLIUM, TR	µg/L	*	-	6.3	ONCE/YEAR	ONCE/YEAR	GRAB
HARDNESS, TR	µg/L	*	-	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
NUTRIENTS							
AMMONIA AS N	mg/L	**	12.1	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
NITROGEN, TOTAL KJELDAHL	mg/L	*	*	NEW	ONCE/QUARTER	ONCE/QUARTER	GRAB
NITRATE PLUS NITRITE	mg/L	*	*	NEW	ONCE/QUARTER	ONCE/QUARTER	GRAB
PHOSPHORUS, TOTAL	mg/L	*	*	NEW	ONCE/QUARTER	ONCE/QUARTER	GRAB
OTHER							
CHLORIDE	mg/L	*	-	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
CHLORIDE + SULFATE	mg/L	**	1,000	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
SULFATE	mg/L	*	-	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB

* monitoring and reporting requirement only
** monitoring with associated benchmark
† report the minimum and maximum pH values; pH is not to be averaged
new parameter not established in previous state operating permit
TR total recoverable

DERIVATION AND DISCUSSION OF LIMITS:

PHYSICAL:

Flow

In accordance with [40 CFR Part 122.44(i)(1)(ii)] the estimated volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain estimated 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 estimated total flow in millions of gallons per day (MGD), quarterly monitoring continued from previous permit.

Precipitation
Monitoring only requirement; measuring the amount of precipitation [(10 CSR 20-6.200(2)(C)1.E(VI)] during an event is necessary to ensure adequate stormwater management exists at the site. Knowing the amount of potential stormwater runoff can provide the permittee a better understanding of any specific control measures be employed to ensure protection of water quality. The facility will provide the 24 hour accumulation value of precipitation from the day of sampling the other parameters.

CONVENTIONAL:

Biochemical Oxygen Demand - 5 Day (BOD_5)
Monitoring only. The previous permit established a benchmark based on the technology-based limits found in 10 CSR 20-7.015(8)(A)3.A. These regulations specifically address domestic wastewater discharges. DMRs show values ranging from 2 mg/L to 9.4 mg/L. This parameter is a concern with the ingredients used in the artificial soil, however, DMRs show no reasonable potential to cause or contribute to water quality excursions.

Oil & Grease
Monitoring with a daily maximum benchmark of 10 mg/L. DMRs show a value of 1 mg/L, which is likely a non-detect. Oil and grease is considered a conventional pollutant. 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 A1: *Criteria for Designated Uses*; 10 mg/L is the standard for protection of aquatic life. This standard will also be used to protect the general criteria found at 10 CSR 20-7.031(4). 10 mg/L is the level at which sheen is expected 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, it is the responsibility of the permittee to visually observe the discharge and receiving waters for sheen or bottom deposits. The benchmark is achievable through proper operational and maintenance of BMPs and falls within the range of values implemented in other permits having similar industrial activities.

pH
6.0 to 9.0 SU. In accordance with 10 CSR 20-7.015(2)(A)2, the technology-based limits apply. 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. The permit writer has determined the 0.23 CFS ZID allows sufficient buffering capacity in order for the discharge to meet the water quality standard at the end of the ZID. The TBEL is protective.

Total Suspended Solids (TSS)
Daily maximum limit of 50 mg/L. The technology-based limits found in 40 CFR 311.32 are applicable to this outfall. This TBEL covers stormwater discharges from the cement manufacturing industry. There are no numeric water quality standards for TSS, therefore the technology limit is more stringent than water quality.

METALS:

Aluminum, Total Recoverable
Monitoring only. Aluminum is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Arsenic, Total Recoverable
Monitoring only. Arsenic is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Beryllium, Total Recoverable
Monitoring only. Beryllium is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Cadmium, Total Recoverable
Monitoring only. Cadmium is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Chromium III, Total Recoverable
Monitoring only. Chromium III is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Chromium VI, Dissolved
Monitoring only. Chromium VI is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Iron, Total Recoverable
Monitoring only continued from previous permit. Iron has numerous industrial uses, being the most widely used of all metals. DMRs show values ranging from 53 µg/L to 93 µg/L. Iron is a common constituent in portland cement and fly ash. Due to the sporadic nature of stormwater discharges, the Department, under the direction of EPA guidance, has determined chronic standards are capricious measures of stormwater discharges. Chronic effluent limitations are based on the organism's ability to survive within the designated concentration for four days. Stormwater is rarely discharged continuously for four days. Conversely, acute water quality standards are applicable, but are non-existent for iron. It is in the best professional judgment of the permit writer that a discharge from these outfalls at 4,000 µg/L per storm event is unlikely to cause an exceedance of the chronic water quality standard of 1000µg/L over four days.

Lead, Total Recoverable
Monitoring only. Lead is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Mercury, Total Recoverable
Monitoring only. Mercury is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Selenium, Total Recoverable
Monitoring only. Selenium is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Thallium, Total Recoverable
Monitoring only. Thallium is a common constituent of portland cement and fly ash. However, there is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. DMR data is extremely low compared to the water quality standard, with many values that appear to be minimum detection limits for the method of analysis used. Monitoring will be maintained to support evaluations of technology controls and stormwater BMPs.

Hardness, Total
This parameter will be removed from this permit. The previous permit required monitoring for this parameter. The Department will use a default hardness of 208 mg/L to calculate daily maximum limits for metals with hardness based toxicity if necessary. It is no longer necessary to sample for this parameter as default in-stream hardness values will be utilized.

NUTRIENTS:

Ammonia, Total as Nitrogen
Monitoring with associated benchmark. DMRs show values ranging from 0.4 mg/L to 7.6 mg/L. This parameter is a concern with the ingredients used in the artificial soil; however, DMRs show no reasonable potential to cause or contribute to water quality excursions.

Nitrogen, Total Kjeldahl (TKN)
Monitoring only requirement. Per 10 CSR 20-7.015(9), point sources that have the design capacity of greater than 100,000 gpd that typically discharge nitrogen and phosphorus shall collect and analyze influent and effluent samples for total phosphorus, ammonia, total kjeldahl nitrogen and nitrate plus nitrite.

Nitrate plus Nitrite
Monitoring only requirement. Per 10 CSR 20-7.015(9), point sources that have the design capacity of greater than 100,000 gpd that typically discharge nitrogen and phosphorus shall collect and analyze influent and effluent samples for total phosphorus, ammonia, total kjeldahl nitrogen and nitrate plus nitrite.

Phosphorus, Total P (TP)
Monitoring only requirement. Per 10 CSR 20-7.015(9), point sources that have the design capacity of greater than 100,000 gpd that typically discharge nitrogen and phosphorus shall collect and analyze influent and effluent samples for total phosphorus, ammonia, total kjeldahl nitrogen and nitrate plus nitrite.

OTHER:

Chloride
Monitoring only. DMRs show values ranging from 150 mg/L to 190 mg/L. There is no reasonable potential for the stormwater discharges to cause or contribute to water quality excursions. Chloride monitoring is included to evaluate concentrations of Chloride plus Sulfate in the discharge, which is included to capture any cement kiln dust or other raw materials in the discharge. This requires monitoring of both Sulfate and Chloride separately and then adding the values together. For this reason, the permit writer used best professional judgement to retain this parameter in the permit.

Chlorides plus Sulfates
Monitoring only with an associated benchmark continued from the previous permit. There is no reasonable potential for the stormwater discharges to cause or contribute to excursions of the water quality standard. The water quality standard is 1,000 mg/L. Since there are a variety of operations dealing with limestone quarries and cement manufacturing within the drainages, the permit writer used best professional judgement to apply a benchmark value for the outfalls. This benchmark is believed to be achievable at this site based on DMR data. The permittee will be required to maintain appropriate BMPs and will be basing BMP performance on this technology-based benchmark value.

Sulfate
Monitoring only. There are no water quality standards for sulfate alone; however, the rules include water quality standards for Chloride plus Sulfate, which is being included to capture any cement kiln dust or other raw materials in the discharge. This requires monitoring of both Sulfate and Chloride separately and then adding the values together. For this reason, monitoring only has been added to this permit.

OUTFALL #006 – PROCESS WASTEWATER AND DOMESTIC WASTEWATER OUTFALL

Non-contact cooling water and discharges from Outfalls #001, #003, and #004. All waters pass through a grit chamber, sedimentation basin, and sand filter prior to discharge.

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVERAGE	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	MINIMUM REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	*	SAME	ONCE/QUARTER	ONCE/QUARTER	24 HR.EST.
CONVENTIONAL							
COD	MG/L	*	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
OIL & GREASE	MG/L	*	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
PH ǂ	SU	6.0 TO 9.0	6.0 TO 9.0	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
TSS	MG/L	50	50	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
METALS							
ALUMINUM, TR	µg/L	*	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
ARSENIC, TR	µg/L	*	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
BERYLLIUM, TR	µg/L	*	*	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
CADMIUM, TR	µg/L	*	*	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
CHROMIUM (III), TR	µg/L	*	*	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
CHROMIUM (VI), DISSOLVED	µg/L	*	*	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
IRON, TR	µg/L	*	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
LEAD, TR	µg/L	*	*	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
MERCURY, TR	µg/L	*	*	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
SELENIUM, TR	µg/L	*	*	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
THALLIUM, TR	µg/L	*	*	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
HARDNESS, TOTAL	REMOVED						
OTHER							
CHLORIDE	µg/L	*	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
CHLORIDE + SULFATE	MG/L	*	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
SULFATE	µg/L	*	*	SAME	ONCE/QUARTER	ONCE/QUARTER	GRAB
TOTAL TOXIC ORGANICS	µg/L	*	*	SAME	ONCE/YEAR	ONCE/YEAR	GRAB
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	NG/L	*	*	SAME	ONCE/PERMIT	ONCE/PERMIT	GRAB

* monitoring and reporting requirement only
† report the minimum and maximum pH values; pH is not to be averaged
TR total recoverable

DERIVATION AND DISCUSSION OF LIMITS:

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), quarterly monitoring continued from previous permit.

CONVENTIONAL:

Chemical Oxygen Demand (COD)
Monitoring only, per the permit writer's best professional judgment. COD is a common pollutant of concern in stormwater. There is no water quality standard for COD; however, increased oxygen demand may impact instream water quality. COD is also a valuable indicator parameter. COD monitoring allows the permittee to identify increases in COD that may indicate materials/chemicals coming into contact with stormwater that cause an increase in oxygen demand. Increases in COD may indicate a need for maintenance or improvement of BMPs.

Oil & Grease
Monitoring only. DMRs show values ranging from 1 mg/L to 5.2 mg/L. Permit writer performed a reasonable potential determination and found no reasonable potential to cause or contribute to water quality excursions. Monitoring only will continue based on permit writer's best professional judgement.

pH
6.0 to 9.0 SU. The technology-based limits found in 40 CFR 411.32 are applicable to this outfall. This TBEL covers stormwater runoff from storage piles of raw, intermediate, finished or waste materials. The water quality standard at 10 CSR 20.031(5)(E) states water contaminants shall no cause pH to be outside the range of 6.5 to 9.0 standard pH units. The permit writer has determined that the 0.23 CFS ZID allows sufficient buffering capacity in order for the discharge to meet the water quality standard at the end of the ZID. The TBEL is protective.

Total Suspended Solids (TSS)
Daily maximum and monthly average of 50 mg/L. The technology-based limits found in 40 CFR 411.32 are applicable to this outfall. This TBEL covers stormwater runoff from storage piles of raw, intermediate, finished or waste materials. The TBEL specifically states that the discharge shall not exceed 50 mg/L. For this reason, the permit writer is applying the ELG as both a daily maximum and monthly average.

METALS:

Aluminum, Total Recoverable
Monitoring only. The RPA shows no reasonable potential to cause or contribute to exceedances of the water quality standards. Aluminum is a common constituent of portland cement and fly ash. Monitoring will continue at this time.

Arsenic, Total Recoverable
Monitoring only. The RPA shows no reasonable potential to cause or contribute to exceedances of the water quality standards. Arsenic is a common constituent of portland cement and fly ash. Monitoring will continue at this time.

Beryllium, Total Recoverable
Monitoring only. The RPA shows no reasonable potential to cause or contribute to exceedances of the water quality standards. Beryllium is a common constituent of portland cement and fly ash. Monitoring will continue at this time.

Cadmium, Total Recoverable
Monitoring only. The RPA shows no reasonable potential to cause or contribute to exceedances of the water quality standards. Cadmium is a common constituent of portland cement and fly ash. Monitoring will continue at this time.

Chromium III, Total Recoverable
Monitoring only. The RPA shows no reasonable potential to cause or contribute to exceedances of the water quality standards. Chromium III is a common constituent of portland cement and fly ash. Monitoring will continue at this time.

Chromium VI, Dissolved
Monitoring only. The RPA shows no reasonable potential to cause or contribute to exceedances of the water quality standards. Chromium VI is a common constituent of portland cement and fly ash. Monitoring will continue at this time.

Iron, Total Recoverable
Monitoring only. The RPA shows no reasonable potential to cause or contribute to exceedances of the water quality standards. Iron is a common constituent of portland cement and fly ash. Monitoring will continue at this time.

Lead, Total Recoverable
Monitoring only. The RPA shows no reasonable potential to cause or contribute to exceedances of the water quality standards. Lead is a common constituent of portland cement and fly ash. Monitoring will continue at this time.

Mercury, Total Recoverable
Monitoring only. The RPA shows no reasonable potential to cause or contribute to exceedances of the water quality standards. Mercury is a common constituent of portland cement and fly ash. Monitoring will continue at this time.

Selenium, Total Recoverable
Monitoring only. The RPA shows no reasonable potential to cause or contribute to exceedances of the water quality standards. Selenium is a common constituent of portland cement and fly ash. Monitoring will continue at this time.

Thallium, Total Recoverable
Monitoring only. The RPA shows no reasonable potential to cause or contribute to exceedances of the water quality standards. Thallium is a common constituent of portland cement and fly ash. Monitoring will continue at this time.

Hardness, Total
This parameter will be removed from this permit. The previous permit required monitoring for this parameter. The Department will use a default hardness of 208 mg/L to calculate daily maximum limits for metals with hardness based toxicity if necessary. It is no longer necessary to sample for this parameter as default in-stream hardness values will be utilized.

OTHER:

Chloride
Monitoring only. The RPA shows no reasonable potential to cause or contribute to exceedances of the water quality standards. Monitoring will continue since this pollutant can be found in CKD. Also, it is necessary to gather Chloride data in order to report Chlorides plus Sulfates data.

Chlorides plus Sulfates
Monitoring only. The RPA shows no reasonable potential to cause or contribute to exceedances of the water quality standards. Monitoring will continue since this pollutant can be found in CKD.

Sulfate
Monitoring only. There are no water quality standards for sulfate alone; however, the rules include water quality standards for Chloride plus Sulfate, which is being included to capture any cement kiln dust or other raw materials in the discharge. This requires monitoring of both Sulfate and Chloride separately and then adding the values together. For this reason, monitoring only is necessary.

Total Toxic Organics
Monitoring only. The intent of monitoring these pollutants is to determine if any of the hazardous wastes used as an alternative fuel source for heating the cement kiln are being released into the environment. Since the non-contact cooling water is not expected to interact with any of the cement materials or fueling materials, the permittee will be required to test the discharge during precipitation events to determine the presence of hazardous wastes that may have been released into the environment in the transfer area or other parts of the manufacturing area. The permittee will only be required to test for the 108 TTO's listed in the permit.

2,3,7,8-tetrachlorodibenzo-p-dioxin
Monitoring only. Like TTO's, the intent of monitoring these pollutants is to determine if any of the hazardous wastes used as an alternative fuel source for heating the cement kiln are being released into the environment. This pollutant is a byproduct of hazardous waste or coal combustion. Since this site uses both hazardous wastes and coal for a heating source for the cement kiln, monitoring will continue. This is a good parameter to maintain as it serves as verification that wasted fuel materials are being handled properly and are not released to the environment. Since the non-contact cooling water is not expected to interact with any of the cement materials or fueling materials, the permittee will be required to test the discharge during precipitation events to determine the presence of materials that may have been released into the environment in the transfer area or other parts of the manufacturing area.

PART V. 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 is not being synchronized at this time because the permittee requests a full 5-year term.

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 31, 2020 to March 2, 2020. No comments were received.

DATE OF FACT SHEET: DECEMBER 11, 2019
COMPLETED BY:
KYLE O'ROURKE, 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
August 1, 2019

PART III – BIOSOLIDS AND SLUDGE FROM DOMESTIC TREATMENT FACILITIES

SECTION A – GENERAL REQUIREMENTS

1. PART III Standard Conditions pertain to biosolids and sludge requirements under the Missouri Clean Water Law and regulations for domestic and municipal wastewater and also incorporates federal sludge disposal requirements under 40 CFR Part 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR Part 503 for domestic biosolids and sludge.
2. PART III Standard Conditions apply only to biosolids and sludge generated at domestic wastewater treatment facilities, including public owned treatment works (POTW) and privately owned facilities.
3. Biosolids and Sludge Use and Disposal Practices:
    a. The permittee is authorized to operate the biosolids and sludge generating, treatment, storage, use, and disposal facilities listed in the facility description of this permit.
    b. The permittee shall not exceed the design sludge/biosolids volume listed in the facility description and shall not use biosolids or sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
    c. For facilities operating under general operating permits that incorporate Standard Conditions PART III, the facility is authorized to operate the biosolids and sludge generating, treatment, storage, use and disposal facilities identified in the original operating permit application, subsequent renewal applications or subsequent written approval by the department.
4. Biosolids or Sludge Received from other Facilities:
    a. Permittees may accept domestic wastewater biosolids or sludge from other facilities as long as the permittee's design sludge capacity is not exceeded and the treatment facility performance is not impaired.
    b. The permittee shall obtain a signed statement from the biosolids or sludge generator or hauler that certifies the type and source of the sludge
5. Nothing in this permit precludes the initiation of legal action under local laws, except to the extent local laws are preempted by state law.
6. This permit does not preclude the enforcement of other applicable 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 biosolids or sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Act or under Chapter 644 RSMo.
8. In addition to Standard Conditions PART III, the Department may include biosolids and sludge limitations in the special conditions portion or other sections of a site specific permit.
9. Exceptions to Standard Conditions PART III may be authorized on a case-by-case basis by the Department, as follows:
    a. The Department may modify a site-specific permit following permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR § 124.10, and 40 CFR § 501.15(a)(2)(ix)(E).
    b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR Part 503.

SECTION B – DEFINITIONS

1. Best Management Practices are practices to prevent or reduce the pollution of waters of the state and include agronomic loading rates (nitrogen based), soil conservation practices, spill prevention and maintenance procedures 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, feed 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 Part 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 (PSRP) in accordance with 40 CFR Part 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. Feed crops are crops produced primarily for consumption by animals.
8. Fiber crops are crops such as flax and cotton.
9. Food crops are crops consumed by humans which include, but is not limted to, fruits, vegetables and tobacco.
10. Industrial wastewater means any wastewater, also known as process wastewater, not defined as domestic wastewater. Per 40 CFR Part 122.2, process wastewater 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. Land application of industrial wastewater, residuals or sludge is not authorized by Standard Conditions PART III.
11. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including, sand filters, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological contact systems, and other similar facilities. It does not include wastewater treatment lagoons or constructed wetlands for wastewater treatment.
12. Plant Available Nitrogen (PAN) is nitrogen that will be available to plants during the growing seasons after biosolids application.
13. 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.
14. 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), sewage sludge incinerator ash, or grit/screenings generated during preliminary treatment of domestic sewage.
15. Sludge lagoon is part of a mechanical wastewater treatment facility. A sludge lagoon is an earthen or concrete lined 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.
16. Septage is the sludge pumped from residential septic tanks, cesspools, portable toilets, Type III marine sanitation devices, or similar treatment works such as sludge holding structures from residential wastewater treatment facilities with design populations of less than 150 people. Septage does not include grease removed from grease traps at a restaurant or material removed from septic tanks and other similar treatment works that have received industrial wastewater. The standard for biosolids from septage is different from other sludges. See Section H for more information.

SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES

1. Biosolids or sludge shall be routinely removed from wastewater treatment facilities and handled according to the permit facility description and the requirements of Standard Conditions PART III or in accordance with Section A.3.c., above.
2. The permittee shall operate storage and treatment facilities, as defined by Section 644.016(23), RSMo, so that there is no biosolids or sludge discharged to waters of the state. Agricultural storm water discharges are exempt under the provisions of Section 644.059, RSMo.
3. Mechanical treatment plants shall have separate biosolids or sludge storage compartments in accordance with 10 CSR 20, Chapter 8. Failure to remove biosolids or sludge from these storage compartments on the required design schedule is a violation of this permit.

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

1. Permittees that use contract haulers, under the authority of their operating permit, to dispose of biosolids or sludge, are responsible for compliance with all the terms of this permit. Contract haulers that assume the responsibility of the final disposal of biosolids or sludge, including biosolids land application, must obtain a Missouri State Operating Permit unless the hauler transports the biosolids or sludge to another permitted treatment facility.
2. Testing of biosolids or sludge, other than total solids content, is not required if biosolids or sludge are hauled to a permitted wastewater treatment facility, unless it is required by the accepting facility.

SECTION E – INCINERATION OF SLUDGE

1. Please be aware that sludge incineration facilities may be subject to the requirements of 40 CFR Part 503 Subpart E, Missouri Air Conservation Commission regulations under 10 CSR 10, and solid waste management regulations under 10 CSR 80, as applicable.
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, mass of sludge incinerated and mass of ash generated. Permittee shall also provide the name of the ash disposal facility and permit number if applicable.

SECTION F – SURFACE DISPOSAL SITES AND BIOSOLIDS AND SLUDGE LAGOONS

1. Please be aware that surface disposal sites of biosolids or sludge from wastewater treatment facilities may be subject to other laws including the requirements in 40 CFR Part 503 Subpart C, Missouri Air Conservation Commission regulations under 10 CSR 10, and solid waste management regulations under 10 CSR 80, as applicable.
2. Biosolids or 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 biosolids or sludge storage lagoons as storage facilities, accumulated biosolids or 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 biosolids or sludge removed will be dependent on biosolids or sludge generation and accumulation in the facility. Enough biosolids or 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 biosolids or sludge on the bottom of the lagoon, upon prior approval of the Department; or
    b. Permittee shall close the lagoon in accordance with Section I.

SECTION G – LAND APPLICATION OF BIOSOLIDS

1. The permittee shall not land apply biosolids unless land application is authorized in the facility description, the special conditions of the issued NPDES permit, or in accordance with Section A.3.c., above.
2. This permit only authorizes "Class A" or "Class B" biosolids derived from domestic wastewater 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.
3. Class A Biosolids Requirements: Biosolids shall meet Class A requirements for application to public contact sites, residential lawns, home gardens or sold and/or given away in a bag or other container.
4. Class B biosolids that are land applied to agricultural and public contact sites shall comply with the following restrictions:
    a. Food crops that touch the biosolids/soil mixture and are totally above the land surface shall not be harvested for 14 months after application of biosolids.
    b. Food crops below the surface of the land shall not be harvested for 20 months after application of biosolids when the biosolids remain on the land surface for four months or longer prior to incorporation into the soil.
    c. Food crops below the surface of the land shall not be harvested for 38 months after application of biosolids when the biosolids remain on the land surface for less than four months prior to incorporation into the soil.
    d. Animal grazing shall not be allowed for 30 days after application of biosolids.
    e. Food crops, feed crops, and fiber crops shall not be harvested for 30 days after application of biosolids.
    f. Turf shall not be harvested for one year after application of biosolids if used for lawns or high public contact sites in close proximity to populated areas such as city parks or golf courses.
    g. After Class B biosolids have been land applied to public contact sites with high potential for public exposure, as defined in 40 CFR § 503.31, such as city parks or golf courses, access must be restricted for 12 months.
    h. After Class B biosolids have been land applied public contact sites with low potential for public exposure as defined in 40 CFR § 503.31, such as a rural land application or reclamation sites, access must be restricted for 30 days.

5. Pollutant limits
    a. Biosolids shall be monitored to determine the quality for regulated pollutants listed in Table 1, below. Limits for any pollutants not listed below may be established in the permit.
    b. The number of samples taken is directly related to the amount of biosolids or sludge produced by the facility (See Section J, below). 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 achieve pollutant concentration below those identified in Table 1, below.
    c. Table 1 gives the ceiling concentration for biosolids. Biosolids which exceed the concentrations in Table 1 may not be land applied.

TABLE 1

Biosolids ceiling concentration	
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

d. Table 2 below gives the low metal concentration for biosolids. Because of its higher quality, biosolids with pollutant concentrations below those listed in Table 2 can safely be applied to agricultural land, forest, public contact sites, lawns, home gardens or be given away without further analysis. Biosolids containing metals in concentrations above the low metals concentrations but below the ceiling concentration limits may be land applied but shall not exceed the annual loading rates in Table 3 and the cumulative loading rates in Table 4. The permittee is required to track polluntant loading onto application sites for parameters that have exceeded the low metal concentration limits.

TABLE 2

Biosolids Low Metal Concentration	
Pollutant	Milligrams per kilogram dry weight
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2,800

e. Annual pollutant loading rate.

Table 3

Biosolids Annual Loading Rate	
Pollutant	Kg/ha (lbs./ac) per year
Arsenic	2.0 (1.79)
Cadmium	1.9 (1.70)
Copper	75 (66.94)
Lead	15 (13.39)
Mercury	0.85 (0.76)
Nickel	21 (18.74)
Selenium	5.0 (4.46)
Zinc	140 (124.96)

f. Cumulative pollutant loading rates.

Table 4

Biosolids Cumulative Pollutant Loading Rate	
Pollutant	Kg/ha (lbs./ac)
Arsenic	41 (37)
Cadmium	39 (35)
Copper	1500 (1339)
Lead	300 (268)
Mercury	17 (15)
Nickel	420 (375)
Selenium	100 (89)
Zinc	2800 (2499)

6. Best Management Practices. The permittee shall use the following best management practices during land application activities to prevent the discharge of biosolids to waters of the state.
   a. Biosolids shall not be applied to the land if it is likely to adversely affect a threatened or endangered species listed under § 4 of the Endangered Species Act or its designated critical habitat.
   b. Apply biosolids only at the agronomic rate of nitrogen needed (see 5.c. of this section).
   c. The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop

nitrogen removal when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kgTN; 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:

(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. Alternative volitalization factors and mineralization rates can be utilized on a case-by-case basis.

ii. Crop nutrient production/removal to be based on crop specific nitrogen needs and realistic yield goals. **NOTE:** There are a number of reference documents on the Missouri Department of Natural Resources website that are informative to implement best management practices in the proper management of biosolids, including crop specific nitrogen needs, realistic yields on a county by county basis and other supporting references.

iii. Biosolids that are applied at agronomic rates shall not cause the annual pollutant loading rates identified in Table 3 to be exceeded.

d. Buffer zones are as follows:

i. 300 feet of a water supply well, sinkhole, 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 outstandingstate resource waters as listed in the Water Quality Standards, 10 CSR 20-7.031;

iii. 150 feet of dwellings or public use areas;

iv. 100 feet (35 feet if biosolids application is down-gradient or the buffer zone is entirely vegetated) of lake, pond, wetlands or gaining streams (perennial or intermittent);

v. 50 feet of a property line. Buffer distances from property lines may be waived with written permission from neighboring property owner.

vi. For the application of dry, cake or liquid biosolids that are subsurface injected, buffer zones identified in 5.d.i. through 5.d.iii above, may be reduced to 100 feet. The buffer zone may be reduced to 35 feet if the buffer zone is permanently vegetated. Subsurface injection does not include methods or technology reflective of combination surface/shallow soil incorporation.

e. Slope limitation for application sites are as follows:

i. For slopes less than or equal to 6 percent, 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.

iv. Dry, cake or liquid biosolids that are subsurface injected, may be applied on slopes not to exceed 20 percent. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation.

f. No biosolids may be land applied in an area that it is reasonably certain that pollutants will be transported into waters of the state.

g. Biosolids may be land applied to sites with soil that are snow covered, frozen, or saturated with liquid when site restrictions or other controls are provided to prevent pollutants from being discharged to waters of the state during snowmelt or stormwater runoff. During inclement weather or unfavorable soil conditions use the following management practices:

i. A maximum field slope of 6% and a minimum 300 feet grass buffer between the application site and waters of the state. A 35 feet grass buffer may be utilized for the application of dry, cake or liquid biosolids that are subsurface injected. Subsurface injection does not include the use of mthods or technology refletive of combination surface/shallow soil incorporation;

ii. A maximum field slope of 2% and 100 feet grass buffer between the application site and waters of the state. A 35 feet grass buffer may be used for the application of dry, cake or liquid biosolids that are subsurface injected. Subsurface injection does not included the use of methods or technology refletive of combination surface/shallow soil incorporation;

iii. Other best management practices approved by the Department.

SECTION H – SEPTAGE

1. Haulers that land apply septage must obtain a state permit. An operating permit is not required for septage haulers who transport septage to another permitted treatment facility for disposal.
2. Do not apply more than 30,000 gallons of septage per acre per year or the volume otherwise stipulated in the operating permit.
3. Septic 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 mechanical treatment facilities.
4. Septage must comply with Class B biosolids regarding pathogen and vector attraction reduction requirements before it may be applied to crops, pastures or timberland. To meet required pathogen and vector reduction requirements, mix 50 pounds of hydrated lime for every 1,000 gallons of septage and maintain a septage pH of at least 12 pH standard units for 30 minutes or more prior to application.
5. 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.
6. As residential septage contains relatively low levels of metals, the testing of metals in septage is not required.

SECTION I– CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical and lagoons) and sludge or biosolids storage and treatment facilities. 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 sludges and/or biosolids. 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. Biosolids or sludge 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. Biosolids and sludge shall meet the monitoring and land application limits for agricultural rates as referenced in Section G, above.
    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. Alternative, site-specific application rates may be included in the closure plan for department consideration.
        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. Alternative volitalization factors and mineralization rates can be utilized on a case-by-case basis
4. Domestic wastewater treatment lagoons with a design treatment capacity less than or equal to 150 persons, are "similar treatment works" under the definition of septage. Therefore the sludge within the lagoons may be treated as septage during closure activities. See Section B, above. 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. Biosolids or sludge left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, and unless otherwise approved, 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. Alternative biosolids or sludge and soil mixing ratios may be included in the closure plan for department consideration.
6. Lagoon and earthen structure 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 plant, all biosolids or 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. Hazardous Waste shall not be land applied or disposed during mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations pursuant to 10 CSR 25.

c. After demolition of the mechanical plant, the site must only contain clean fill defined in Section 260.200.1(6) RSMo 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, reclamation, or other beneficial use. Other solid wastes must be removed.

8. If biosolids or sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or I, 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 Part 503, Subpart C.

SECTION J – MONITORING FREQUENCY

1. At a minimum, biosolids or sludge 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

Biosolids or Sludge produced and disposed (Dry Tons per Year)	Monitoring Frequency (See Notes 1, and 2)		
	Metals, Pathogens and Vectors, Total Phosphorus, Total Potassium	Nitrogen TKN, Nitrogen PAN[1]	Priority Pollutants[2]
319 or less	1/year	1 per month	1/year
320 to 1650	4/year	1 per month	1/year
1651 to 16,500	6/year	1 per month	1/year
16,501+	12/year	1 per month	1/year

[1] 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.

[2] Priority pollutants (40 CFR 122.21, Appendix D, Tables II and III) are required only for permit holders that must have a pre-treatment program. Monitoring requirements may be modified and incorporated into the operating permit by the Department on a case-by-case basis.

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: Table 5 is not applicable for incineration and permit holders that landfill their sludge.

2. Permittees that operate wastewater treatment lagoons, peak flow equalization basins, combined sewer overflow basins or biosolids or sludge lagoons that are cleaned out once a year or less, may choose to sample only when the biosolids or sludge is removed or the lagoon is closed. Test one composite sample for each 319 dry tons of biosolids or sludge removed from the lagoon during the reporting year or during lagoon closure. 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.
4. Biosolids and sludge monitoring shall be conducted in accordance with federal regulation 40 CFR § 503.8, Sampling and analysis.

SECTION K – 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 Standard Conditions PART III and any additional items in the Special Conditions section of this permit. This shall include dates when the biosolids or sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.
2. Reporting period
   a. By February 19th of each year, applicable facilities shall submit an annual report for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and biosolids or sludge disposal facilities.
   b. Permittees with wastewater treatment lagoons shall submit the above annual report only when biosolids or sludge are removed from the lagoon during the report period or when the lagoon is closed.
3. Report Form. The annual report shall be prepared on report forms provided by the Department or equivalent forms approved by the Department.
4. Reports shall be submitted as follows:
   Major facilities, which are those serving 10,000 persons or more or with a design flow equal to or greater than 1 million gallons per day or that are required to have an approved pretreatment program, shall report to both the Department and EPA if the facility land applied, disposed of biosolids by surface disposal, or operated a sewage sludge incinerator. All other facilities shall maintain their biosolids or sludge records and keep them available to Department personnel upon request. State reports shall be submitted to the address listed as follows:

   DNR regional or other applicable office listed in the
   permit (see cover letter of permit)
   ATTN: Sludge Coordinator

Reports to EPA must be electronically submitted online via the Central Data Exchange at: https://cdx.epa.gov/ Additional information is available at: https://www.epa.gov/biosolids/compliance-and-annual-reporting-guidance-about-clean-water-act-laws

5. Annual report contents. The annual report shall include the following:
    a. Biosolids and sludge testing performed. If testing was conducted at a greater frequency than what is required by the permit, all test results must be included in the report.
    b. Biosolids or sludge quantity shall be reported as dry tons for the quantity produced and/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 and 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 using a 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 biosolids or sludge 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 and phosphorus. If no soil was tested during the year, report the last date when tested and the results.

AP 32645

RECEIVED
JUN 03 2019
Water Protection Program

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 6319	FEE SUBMITTED 80
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 – 0111686, 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 – _____ 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	
Continental Cement		(573) 221-1740	
ADDRESS (PHYSICAL)	**CITY**	**STATE**	**ZIP CODE**
10107 Highway 79	Hannibal	MO	63401

3. OWNER

NAME		TELEPHONE NUMBER WITH AREA CODE	
Continental Cement		(573) 221-1740	
EMAIL ADDRESS			
matt.helms@continentalcement.com			
ADDRESS (MAILING)	**CITY**	**STATE**	**ZIP CODE**
10107 Highway 79	Hannibal	MO	63401

4. CONTINUING AUTHORITY

NAME		TELEPHONE NUMBER WITH AREA CODE	
Continental Cement		(573) 221-1740	
EMAIL ADDRESS			
matt.helms@continentalcement.com			
ADDRESS (MAILING)	**CITY**	**STATE**	**ZIP CODE**
10107 Highway 79	Hannibal	MO	63401

5. OPERATOR CERTIFICATION

NAME	CERTIFICATE NUMBER	TELEPHONE NUMBER WITH AREA CODE	
ADDRESS (MAILING)	**CITY**	**STATE**	**ZIP CODE**

6. FACILITY CONTACT

NAME	TITLE	TELEPHONE NUMBER WITH AREA CODE
Melissa Myers	Environmental Engineer	(573) 221-1740
E-MAIL ADDRESS		
melissa.myers@continentalcement.com		

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

NAME			
Mary Rita Brothers			
ADDRESS	**CITY**	**STATE**	**ZIP CODE**
61645 Hale Place	Hannibal	MO	63401

See attached supplemental page for Outfalls 005-008.

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 SE ¼ NW ¼ Sec 2 T 56N R 4W Ralls _____ County
UTM Coordinates Easting (X): 644631 Northing (Y): 4393586

002 NE ¼ NW ¼ Sec 2 T 56N R 4W Ralls _____ County
UTM Coordinates Easting (X): 644405 Northing (Y): 4394055

003 NW ¼ NE ¼ Sec 2 T 56N R 4W Ralls _____ County
UTM Coordinates Easting (X): 644772 Northing (Y): 4393769

004 SW ¼ NE ¼ Sec 2 T 56N R 4W Ralls _____ County
UTM Coordinates Easting (X): 644959 Northing (Y): 4393531

8.2 Primary Standard Industrial Classification (SIC) and Facility North American Industrial Classification System (NAICS) Codes.
Primary SIC 3241 and NAICS 327310 SIC 3241 and NAICS 327310
SIC 3241 and NAICS 327310 SIC 3241 and NAICS 327310

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: Mississippi River

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
Matt Helms, Plant Manager	573-221-1740
SIGNATURE	DATE SIGNED
	5/30/2019

MO 780-1479 (02-19)

Form A Supplement

7. Downstream Landowners (contd.)

Mark Twain Cave
300 Cave Hollow Road
Hannibal, MO 63401

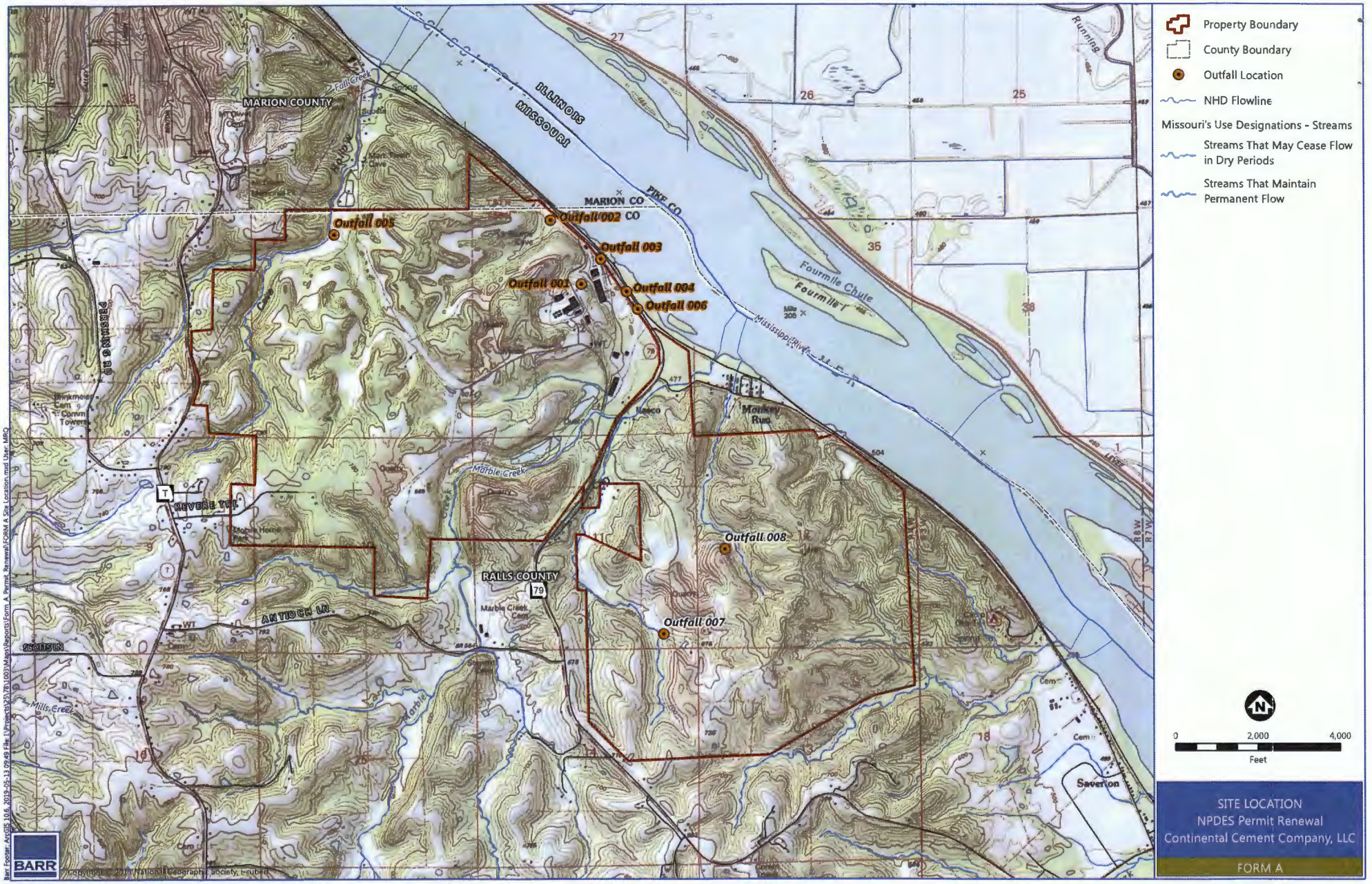
Loren & Minnie Kennedy (Estate)
(40 ac piece of property located within Continental Cement's property)

8.1 Legal Description of Outfalls (contd.)

Outfall 005	NE ¼	NW ¼	Sec. 03, T56N, R04W	Ralls County	
	UTM Easting (X):		642809	UTM Northing (Y):	4393953
Outfall 006	SW ¼	NE ¼	Sec. 02, T56N, R04W	Ralls County	
	UTM Easting (X):		645041	UTM Northing (Y):	4393402
Outfall 007	SE ¼	SE ¼	Sec. 11, T56N, R04W	Ralls County	
	UTM Easting (X):		645226	UTM Northing (Y):	4391027
Outfall 008	NW ¼	SW ¼	Sec. 12, T56N, R04W	Ralls County	
	UTM Easting (X):		645675	UTM Northing (Y):	4391648

8.2 SIC and NAICS Codes

Outfall 005	SIC: 3241	NAICS: 327310
Outfall 006	SIC: 3241	NAICS: 327310
Outfall 007	SIC: 3241	NAICS: 327310
Outfall 008	SIC: 3241	NAICS: 327310


Property Boundary
County Boundary
Outfall Location
NHD Flowline
Missouri's Use Designations - Streams
Streams That May Cease Flow in Dry Periods
Streams That Maintain Permanent Flow
Outfall 001
Outfall 002
Outfall 003
Outfall 004
Outfall 005
Outfall 006
Outfall 007
Outfall 008
MARION COUNTY
MARION CO
PIKE CO
ILLINOIS
MISSOURI
RALLS COUNTY
Mississippi River
Fourmile Chute
Fourmile
Marble Creek
Mills Creek
PERSHING RD
REVERE TWP
AKTUCH LN
SCOTTS LN
Saverton
0
2,000
4,000
Feet
SITE LOCATION
NPDES Permit Renewal
Continental Cement Company, LLC
FORM A
BARR

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

FORM C – APPLICATION FOR DISCHARGE PERMIT – MANUFACTURING, COMMERCIAL, MINING, SILVICULTURE OPERATIONS, AND STORMWATER

GENERAL INFORMATION (PLEASE SEE INSTRUCTIONS)

1.0 NAME OF FACILITY

Continental Cement

1.1 THIS FACILITY IS OPERATING UNDER MISSOURI STATE OPERATING PERMIT (MSOP) NUMBER:

MO-0111686

1.2 IS THIS A NEW FACILITY? PROVIDE CONSTRUCTION PERMIT (CP) NUMBER IF APPLICABLE.

1.3 Describe the nature of the business, in detail. Identify the goods and services provided by the business. Include descriptions of all raw, intermediate, final products, byproducts, or waste products used in the production or manufacturing process, stored outdoors, loaded or transferred and any other pertinent information for potential sources of wastewater or stormwater discharges.

Continental Cement is a cement manufacturer. Continental also does quarry mining and uses high energy wastes as substitutes for fossil fuel in the cement manufacturing process.

FLOWS, TYPE, AND FREQUENCY

2.0 Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in item B. Construct a water balance on the line drawing by showing average and maximum flows between intakes, operations, treatment units, evaporation, public sewers, and outfalls. If a water balance cannot by determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

2.1 For each outfall (1) below, provide: (2) a description of all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, stormwater runoff, and any other process or non-process wastewater, (3) the average flow and maximum flow (put max in parentheses) contributed by each operation and the sum of those operations, (4) the treatment received by the wastewater, and (5) the treatment type code. Continue on additional sheets if necessary.

1. OUTFALL NO.	2. OPERATION(S) CONTRIBUTING FLOW; INCLUDE ALL PROCESSES AND SUB PROCESSES AT EACH OUTFALL	3. AVERAGE FLOW AND (MAXIMUM FLOW), INCLUDE UNITS.	4. TREATMENT DESCRIPTION	5. TREATMENT CODES FROM TABLE A
001	Extended aeration of domestic waste and	15,000 gpd	Domestic wastewater	3-A
	stormwater.		package plant.	
002	Stormwater flow from CKD management area &	Rainfall dependent	Discharge to surface water.	4-A
	synthetic gypsum storage area.	(>1 MGD)		
003	Stormwater flow from northern industrial area,	Rainfall dependent	Pumped to Outfall 006 settling	1-U
	fuel operations area, and outfall 001 effluent.	(>1 MGD)	pond.	
004	Stormwater flow from gypsum belt loading area.	Rainfall dependent	Pumped to Outfall 006 settling	1-U
	Only discharges during extreme precip events.	(>1 MGD)	pond.	
005	Seepage and runoff from artificial soil area. Flow	Rainfall dependent	Settling and holding ponds.	1-U
	to sed basin for irrigation or discharge.	(>1 MGD)		
Attach additional pages if necessary.				

See attached supplemental page for Outfalls 006-008.

2.2 INTERMITTENT DISCHARGES

Except for stormwater runoff, leaks, or spills, are any of the discharges described in items 2.0 or 2.1 intermittent or seasonal?

☐ Yes *(complete the following table)* ☑ No *(go to section 2.3)*

1. OUTFALL NUMBER	2. OPERATION(S) CONTRIBUTING FLOW	3. FREQUENCY		4. FLOW				C. DURATION *(in days)*
				A. FLOW RATE *(in mgd)*		B. TOTAL VOLUME (specify with units)		
		A. DAYS PER WEEK *(specify average)*	B. MONTHS PER YEAR *(specify average)*	1. MAXIMUM DAILY	2. LONG TERM AVERAGE	4. LONG TERM DAILY	3. MAXIMUM AVERAGE	

2.3 PRODUCTION

A. Does an effluent limitation guideline (ELG) promulgated by EPA under section 304 of the Clean Water Act apply to your facility? Indicate the part and subparts applicable.

☐ Yes 40 CFR_____ Subpart(s) _____ ☑ No *(go to section 2.5)*

See supplementary report for additional information on ELG applicability.

B. Are the limitations in the effluent guideline(s) expressed in terms of production (or other measure of operation)? Describe in C below.

☐ Yes *(complete C.)* ☑ No *(go to section 2.5)*

C. If you answered "yes" to B, list the quantity representing an actual measurement of your maximum level of production, expressed in the terms and units used in the applicable effluent guideline and indicate the affected outfalls.

A. OUTFALL(S)	B. QUANTITY PER DAY	C. UNITS OF MEASURE	D. OPERATION, PRODUCT, MATERIAL, ETC. *(specify)*

2.4 IMPROVEMENTS

A. Are you required by any federal, state, or local authority to meet any implementation schedule for the construction, upgrading, or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☐ Yes *(complete the following table)* ☑ No *(go to 2.6)*

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS	3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE	
			A. REQUIRED	B. PROJECTED

B. Optional: provide below or attach additional sheets describing water pollution control programs or other environmental projects which may affect discharges. Indicate whether each program is underway or planned, and indicate actual or planned schedules for construction. This may include proposed bmp projects for stormwater.

2.5 SLUDGE MANAGEMENT

Describe the removal of any industrial or domestic biosolids or sludges generated at your facility. Include names and contact information for any haulers used. Note the frequency, volume, and methods (incineration, landfilling, composting, etc) used. See Form A for additional forms which may need to be completed.

DATA COLLECTION AND REPORTING REQUIREMENTS FOR APPLICANTS

3.0 EFFLUENT (AND INTAKE) CHARACTERISTICS (SEE INSTRUCTIONS)

A. & B. See instructions before continuing – complete one Table 1 for **each outfall** (and intake) – annotate the outfall (intake) number or designation in the space provided. The facility is not required to complete intake data unless required by the department or rule.

C. Use the space below to list any pollutants listed in the instructions section 3.0 C. Table B which you know or have reason to believe is discharged or may be discharged from any outfall not listed in parts 3.0 A or B on Table 1. For every pollutant listed, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	3. OUTFALL(S)	4. ANALYTICAL RESULTS (INCLUDE UNITS)
None believed present.			

3.1 Whole Effluent Toxicity Testing

A. To your knowledge, have any Whole Effluent Toxicity (WET) tests been performed on the facility discharges (or on receiving waters in relation to your discharge) within the last three years?

☐ Yes (go to 3.1 B) ☑ No (go to 3.2)

3.1 B

Disclose wet testing conditions, including test duration (chronic or acute), the organisms tested, and the testing results. Provide any results of toxicity identification evaluations (TIE) or toxicity reduction evaluations (TRE) if applicable. Please indicate the conclusions of the test(s) including any pollutants identified as causing toxicity and steps the facility is taking to remedy the toxicity.

No WET tests performed.

3.2 CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported herein, above, or on Table 1 performed by a contract laboratory or consulting firm?

☑ Yes (list the name, address, telephone number, and pollutants analyzed by each laboratory or firm.) ☐ No *(go to 4.0)*

A. LAB NAME	B. ADDRESS	C. TELEPHONE *(area code and number)*	D. POLLUTANTS ANALYZED *(list or group)*
PDC Laboratories, Inc.	1210 Capital Airport Dr, Springfield, IL 62707	800-333-3278	O&G, BOD, TSS, COD, Ammonia, Trivalent Chromium, Hexavalent Chromium, Chloride, Sulfate,
			Mercury, Metals by ICP-MS, Metals by ICP, Hardness, TTO.

*Outfalls 001, 003, 004, and 006 are part of an interconnected system. See supplementary report for additional detail.

4.0 STORMWATER

4.1
Do you have industrial stormwater discharges from the site? If so, attach a site map outlining drainage areas served by each outfall. Indicate the following attributes within each drainage area: pavement or other impervious surfaces; buildings; outdoor storage areas; material loading and unloading areas; outdoor industrial activities; structural stormwater control measures; hazardous waste treatment, storage, and disposal units; and wells or springs in the area.

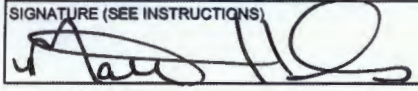
OUTFALL NUMBER	TOTAL AREA DRAINED (PROVIDE UNITS)	TYPES OF SURFACES (VEGETATED, STONE, PAVED, ETC)	BEST MANAGEMENT PRACTICES EMPLOYED; INCLUDE STRUCTURAL BMPS AND TREATMENT DESIGN FLOW FOR BMPS DESCRIBE HOW FLOW IS MEASURED
002	197 acres	Gravel, Vegetated	Area is vegetated for erosion control. Flow is estimated by area and precip.
003*	102 acres	Gravel, Paved, Vegetated	Area is vegetated for erosion control. Flow is estimated by area and precip.
004*	102 acres	Gravel, Paved, Vegetated	Area is vegetated for erosion control. Flow is estimated by area and precip.
005	270 acres	Vegetated	Area is vegetated for erosion control. Flow is estimated by area and precip.
006*	102 acres	Gravel, Vegetated	Area is vegetated for erosion control. Flow is estimated by area and precip.
007	92 acres	Gravel, Vegetated	Stormwater pond to be closed and outfall removed.
008	16 acres	Gravel, Vegetated	Outfall does not discharge, removal will be requested.

4.2 STORMWATER FLOWS
Provide the date of sampling with the flows, and how the flows were estimated.
Flows are estimated by drainage areas and precip measurements. Pump sizes are accounted for at Outfalls 003,004, and 006.

SIGNATORY REQUIREMENTS

5.0 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
Matt Helms	573-221-1740
SIGNATURE (SEE INSTRUCTIONS)	DATE SIGNED
	5/30/2019

SEE INSTRUCTIONS; PLEASE PRINT OR TYPE.
You may report some or all of this information on separate sheet *(use similar format)* instead of completing these pages.

FORM C TABLE 1 FOR 3.0 - ITEMS A AND B

EFFLUENT (AND INTAKE) CHARACTERISTICS THIS OUTFALL IS: OUTFALL NO. 001

3.0 PART A – You must provide the results of at least one analysis for every pollutant in Part A. Complete one table for each outfall or proposed outfall. See instructions.

1. POLLUTANT	2. VALUES							3. UNITS *(specify if blank)*	
	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS			
A. Biochemical Oxygen Demand, 5-day (BOD_5)	13.0	3.02			7.08	0.83	19	mg/L	lb/day
B. Chemical Oxygen Demand (COD)	83.0	19.3					1	mg/L	lb/day
C. Total Organic Carbon (TOC)	18.0	4.18					1	mg/L	lb/day
D. Total Suspended Solids (TSS)	13.0	3.02			5.63	0.66	19	mg/L	lb/day
E. Ammonia as N	3.31	0.77			1.21	0.14	19	mg/L	lb/day
F. Flow	VALUE 0.03		VALUE		VALUE 0.01		19	MILLIONS OF GALLONS PER DAY (MGD)	
G. Temperature *(winter)*	VALUE 60.8		VALUE		VALUE		4	°F	
H. Temperature *(summer)*	VALUE 68		VALUE		VALUE		4	°F	
I. pH	MINIMUM 6.8		MAXIMUM 7.8		AVERAGE		19	STANDARD UNITS (SU)	

3.0 PART B – Mark "X" in column 2A for each pollutant you know or have reason to believe is present. Mark "X" in column 2B for each pollutant you believe to be absent. If you mark Column 2A for any pollutant, you must provide the results for at least one analysis for the pollutant. Complete one table for each outfall (intake). Provide results for additional parameters not listed here in Part 3.0 C.

1. POLLUTANT AND CAS NUMBER *(If available)*	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)		X	MINIMUM		MINIMUM		MINIMUM				
B. Bromide (24959-67-9)		X									
C. Chloride (16887-00-6)		X									
D. Chlorine, Total Residual		X									
E. Color		X									
F. Conductivity		X									
F. Cyanide, Amenable to Chlorination		X									

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants (Continued)											
G. *E. coli*	X		2419.2				15.57		15	#/100mL	
H. Fluoride (16984-48-8)		X									
I. Nitrate plus Nitrate *(as N)*		X									
J. Kjeldahl, Total (as N)		X									
K. Nitrogen, Total Organic *(as N)*		X									
L. Oil and Grease		X									
M. Phenols, Total		X									
N. Phosphorus *(as P)*, Total (7723-14-0)		X									
O. Sulfate *(as SO^4)* (14808-79-8)		X									
P. Sulfide *(as S)*		X									
Q. Sulfite (as SO^3) (14265-45-3)		X									
R. Surfactants		X									
S. Trihalomethanes, Total		X									
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)		X									
2M. Antimony, Total Recoverable (7440-36-9)		X									
3M. Arsenic, Total Recoverable (7440-38-2)		X									
4M. Barium, Total Recoverable (7440-39-3)		X									
5M. Beryllium, Total Recoverable (7440-41-7)		X									
6M. Boron, Total Recoverable (7440-42-8)		X									
7M. Cadmium, Total Recoverable (7440-43-9)		X									
8M. Chromium III Total Recoverable (16065-83-1)		X									
9M. Chromium VI, Dissolved (18540-29-9)		X									
10M. Cobalt, Total Recoverable (7440-48-4)		X									

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 2 – Metals (Continued)											
11M. Copper, Total Recoverable (7440-50-8)		X									
12M. Iron, Total Recoverable (7439-89-6)		X									
13M. Lead, Total Recoverable (7439-92-1)		X									
14M. Magnesium, Total Recoverable (7439-95-4)		X									
15M. Manganese, Total Recoverable (7439-96-5)		X									
16M. Mercury, Total Recoverable (7439-97-6)		X									
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)		X									
19M. Nickel, Total Recoverable (7440-02-0)		X									
20M. Selenium, Total Recoverable (7782-49-2)		X									
21M. Silver, Total Recoverable (7440-22-4)		X									
22M. Thallium, Total Recoverable (7440-28-0)		X									
23M. Tin, Total Recoverable (7440-31-5)		X									
24M. Titanium, Total Recoverable (7440-32-6)		X									
25M. Zinc, Total Recoverable (7440-66-6)		X									
Subpart 3 – Radioactivity											
1R. Alpha Total		X									
2R. Beta Total		X									
3R. Radium Total		X									
4R. Radium 226 plus 228 Total		X									

INSTRUCTIONS FOR FILLING OUT APPLICATION FOR NPDES DISCHARGE PERMIT – FORM C – MANUFACTURING, COMMERCIAL, MINING, SILVICULTURE OPERATIONS, PROCESS WASTEWATER, NON-PROCESS WASTEWATER, AND INDUSTRIAL STORMWATER DISCHARGES.

All applicable sections must be filled in when the application is submitted. The form must be signed as indicated. This application is to be completed only for facilities with a discharge. Non-discharging (land application facilities) should fill out the appropriate forms for the activity. Include any area with potential discharge, even if there is normally no discharge. If this form is not adequate for you to describe your existing operations, then sufficient information should be attached so an evaluation of the discharges can be made. Attach additional sheets as necessary for any additional information. If an applicant believes previous outfalls are no longer applicable to the facility, please indicate so. Certain parts of the application may be submitted electronically, such as extensive analytical data, or project plans relating to improvements. This may be included using a thumb drive or CD. If extensive data is submitted without an electronic copy, the department may request the submission at a later time so the permit writer can mathematically evaluate the data. If you have any questions regarding this form please contact the Water Protection Program Operating Permits Administrative Assistant at 800-361-4827 or 573-571-6825 and you will be directed to a permit writer.

GENERAL INFORMATION

1.0 Name of Facility – By what title or name is this facility known? Has the official name changed? Please indicate both the previous and current name you wish to be listed on the permit.

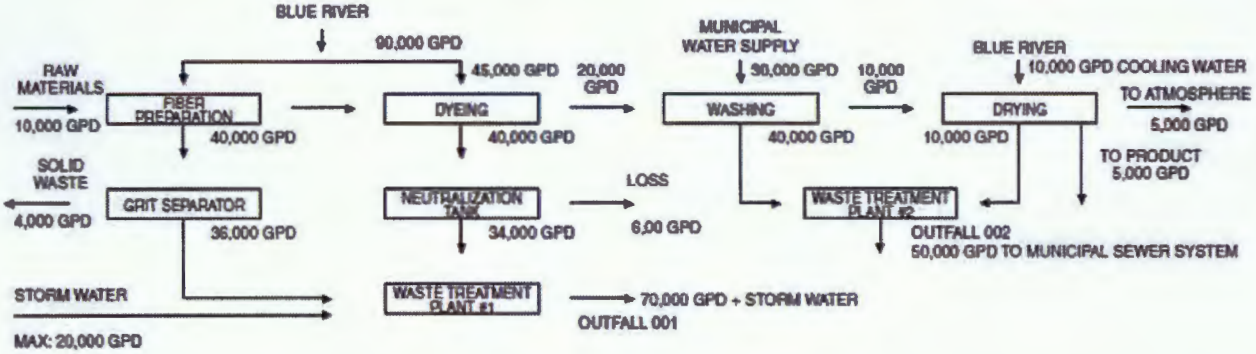
1.1 Operating permit number as assigned (MO-########)

1.2 Indicate if this is a new facility or if there are any new discharges. Has the facility completed an antidegradation review? Is this facility being moved from a general permit to a site specific permit? If so, indicate general permit number.

1.3 Self-explanatory.

FLOWS, TYPE, AND FREQUENCY

2.0 The line drawing should show the route taken by water in your facility from intake to discharge. Show all operations contributing wastewater, including process and production areas, sanitary flows, cooling water, and stormwater runoff. Indicate any alternate treatment trains available. You may group similar operations into a single unit labeled to correspond to the more detailed listing. More than one drawing may be required depending on the complexity of the system. The water balance should show average and maximum flows. Show all significant losses of water to: products, atmosphere, public sewer systems; both storm sewer and sewer. You should use actual measurements whenever available; otherwise, use your best estimate. An example of an acceptable line drawing appears below.



2.1 List all sources of wastewater to each outfall. Operations may be described in general terms (for example, "dye-making reactor" or a "distillation tower"). You may estimate the flow contributed by each source if no data is available, and for stormwater, you may use any reasonable measure of duration, volume, or frequency. For each treatment unit, indicate its size, flow rate, and retention time, and describe the ultimate disposal of any solid or liquid wastes not discharged. Treatment units should be listed in order and you should select the proper code from Table A to fill in column 3B for each treatment unit. Insert "XX" into column 3B if no code corresponds to a treatment unit you list.

TABLE A – CODES FOR TREATMENT UNITS			
PHYSICAL TREATMENT PROCESSES			
1-A	Ammonia Stripping	1-M	Grit Removal
1-B	Dialysis	1-N	Microstraining
1-C	Diatomaceous Earth Filtration	1-O	Mixing
1-D	Distillation	1-P	Moving Bed Filters
1-E	Electrodialysis	1-Q	Multimedia Filtration
1-F	Evaporation	1-R	Rapid Sand Filtration
1-G	Flocculation	1-S	Reverse Osmosis (Hyper Filtration)
1-H	Flotation	1-T	Screening
1-I	Foam Fractionation	1-U	Sedimentation (Settling)
1-J	Freezing	1-V	Slow Sand Filtration
1-K	Gas-Phase Separation	1-W	Solvent Extraction
1-L	Grinding (Comminutors)	1-X	Sorption
CHEMICAL TREATMENT PROCESSES			
2-A	Carbon Absorption	2-G	Disinfection (Ozone)
2-B	Chemical Oxidation	2-H	Disinfection (Other)
2-C	Chemical Precipitation	2-I	Electrochemical Treatment
2-D	Coagulation	2-J	Ion Exchange
2-E	Dechlorination	2-K	Neutralization
2-F	Disinfection (Chlorine)	2-L	Reduction
BIOLOGICAL TREATMENT PROCESSES			
3-A	Activated Sludge	3-E	Pre-Aeration
3-B	Aerated Lagoons	3-F	Spray Irrigation/Land Application
3-C	Anaerobic Treatment	3-G	Stabilization Ponds
3-D	Nitrification-Denitrification	3-H	Trickling Filtration
OTHER PROCESSES			
4-A	Discharge to Surface Water	4-C	Reuse/Recycle of Treated Effluent
4-B	Ocean Discharge Through Outfall	4-D	Underground Injection
SLUDGE TREATMENT AND DISPOSAL PROCESSES			
5-A	Aerobic Digestion	5-M	Heat Drying
5-B	Anaerobic Digestion	5-N	Heat Treatment
5-C	Belt Filtration	5-O	Incineration
5-D	Centrifugation	5-P	Land Application
5-E	Chemical Conditioning	5-Q	Landfill
5-F	Chlorine Treatment	5-R	Pressure Filtration
5-G	Composting	5-S	Pyrolysis
5-H	Drying Beds	5-T	Sludge Lagoons
5-I	Elutriation	5-U	Vacuum Filtration
5-J	Flotation Thickening	5-V	Vibration
5-K	Freezing	5-W	Web Oxidation
5-L	Gravity Thickening		

2.2 A discharge is intermittent unless it occurs without interruption during the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities. A discharge is seasonal if it occurs only during certain parts of the year. Fill in every applicable column in this item for each source of intermittent or seasonal discharges. Base your answers on actual data whenever available; otherwise, provide your best estimate. Report the highest daily value for flow rate and total volume in the "Maximum Daily" columns. Report the average of all daily values measures during days when discharge occurred within the last year in the "Long Term Average" columns.

PRODUCTION

2.3 A. All effluent limitation guidelines (ELGs) promulgated by EPA appear in the Federal Register and are published annually in 40 CPR Subchapter N (400-499). A guideline applies to you based on the applicability sections within each subpart. If you are unsure you are covered by an ELG, check with your Missouri Department of Natural Resources' Regional Office. You must check yes if an applicable effluent guideline has been promulgated, even if the guideline limitations are being contested in court. If you believe a promulgated effluent guideline has been remanded for reconsideration by a court and does not apply to your operations, you may check no. The ELG number and subpart(s) must be included.

2.3 B. An ELG is expressed in terms of production (or other measure of operation) if the limitations are expressed as mass of pollutant per operational parameter; for example, "pounds of BOD per cubic foot of logs from which bark is removed," or "pounds of TSS per megawatt hour of electrical energy consumed by smelting furnace." An example of a guideline not expressed in terms of a measure of operation is one which limits the concentration of pollutants, or requires no discharge of the wastewater.

2.3 C. This item must be completed if you checked "yes" to item B. The production information requested here is necessary to apply effluent guidelines to your facility and you may not claim it as confidential. However, you do not have to indicate how the reported information was calculated. Report quantities and the units of measurement used in the applicable effluent guideline. The data provided must be a measure of actual operation over a one month period, such as the production for the highest month during the last twelve months, or the monthly average production for the highest year of the last five years, or other reasonable measure of actual operation, but may not be based on design capacity or on predictions of future increases in operation. This data must be concurrent of facility operations.

2.4 IMPROVEMENTS If you check yes to this question, complete all parts of the table, or attach a copy of any previous submission you have made containing the same information. You are not required to submit a description of future pollution control projects if you do not wish to, or if none are planned.

2.5 SLUDGE MANAGEMENT If the facility generates any sludge or biosolids, please indicate where the sludge accumulates (lagoon, tank, etc.) and the methods of disposal. Please include the volume and frequency of sludge removal/disposal and any haulers used. Please indicate if the facility composts, incinerates, landfills, stores, sells, or other methods of eliminating the sludge from lagoons or holding tanks. Consider submitting a sludge or biosolids management plan electronically if additional description is needed.

DATA COLLECTION AND REPORTING REQUIREMENTS FOR APPLICANTS

3.0 This section requires collection and reporting of data on pollutants discharged from each outfall, including stormwater outfalls, non-process wastewater, and any intake data you wish to provide. Parts A, B, and C address different sets of pollutants and must be completed in accordance with the specific instructions for the part. All data must be reported as a concentration **and** as total mass. You may report some or all of the required data by attaching separate sheets of paper.

3.0 A. and B. These sections are found on Table 1. Complete a separate table for each outfall and intake.

3.0 A. Requires reporting at least one analysis for each pollutant. Part A must be completed by all applicants for all outfalls, including outfalls containing only noncontact cooling water, stormwater runoff, or other discharges; intake values are not required in this Part. Upon written request, (email is suitable) prior to submitting the application, the department may waive the requirements to test for one or more of these pollutants upon determining testing for the pollutant(s) is not applicable for your effluent.

3.0 B. Mark "X" in either "Believed Present", Column 2A, or "Believed Absent", Column 2B, for each pollutant, based on your best estimate, and test those you believe present. Base your determination a pollutant is present in, or absent from, your discharge on your knowledge of your raw materials, source water, maintenance chemicals, intermediate, byproduct, and final products, and any previous analyses known to you of the facility's effluent, or of any similar effluent. If either chloride or sulfate is believed present, the department asks you to test for both chloride and sulfate. If you expect a pollutant is present as a result your intake water, you should mark "Believed Present" and analyze for the pollutant. Provide analysis of the intake or source water as well; this includes water withdrawn from wells or obtained from a potable water source. Presence of a pollutant in the discharge from sourced water does not eliminate disclosure requirements. If a

pollutant is reported as not present, the pollutant will be considered "believed absent" for the purposes of application shield.

3.0 A and B Continued

Use the following abbreviations (or other as applicable) in Column 4, "Units". Mass must be specified as per day, month, or year.

CONCENTRATION		MASS	
ppm	parts per million	lbs	pounds
mg/L	milligrams per liter	ton	tons (English tons)
ppb	parts per billion	mg	Milligrams
ug/L	micrograms per liter	g	grams
pCi/L	picocuries per liter	kg	kilograms
		T	tonnes (metric tons)

MAXIMUM DAILY VALUE. If you measure a pollutant only once, complete only the "Maximum Daily Value" columns and insert "1" into the "number of analyses" in Column D. The Missouri Department of Natural Resources may require you to conduct additional analyses to further characterize your discharge. If the pollutant is sampled but not detected, a less than "<" symbol should be used next to the detection limit (or laboratory reporting limit). Simply stating "below detection limits" without quantifying the limit of detection may not be appropriate and additional information may be required.

MAXIMUM 30 DAY VALUES. "Maximum 30 Day Values" are not compulsory but should be filled out if data is available. The department suggests at least 4 samples (one per week) be collected over a one month period for averaging purposes, but is not required. Determine the average of all daily values taken during one calendar month, and report the highest average of all daily values taken during all calendar months, and report the highest average in Column B. Column D must show the number of samples used in the calculation.

LONG TERM AVERAGES. "Long Term Average Values" are not compulsory but should be filled out if data is available. Determine the long term average of all the data and report in Column C. Column D must show the number of samples used in the calculations. The facility should include a statement describing the timeframe of the data used in the calculations. Consider including an electronic copy of the data with the application.

SAMPLING. The collection of samples for analyses should be supervised by a person experienced in performing sampling of industrial wastewater and/or stormwater. You may contact your Missouri Department of Natural Resources' Regional Office for detailed guidance on sampling techniques and for answers to specific questions. Any specific requirements contained in the applicable analytical methods should be followed for sample containers, sample preservation, holding times, the collection of duplicate or blank samples, etc. The time when you sample should be representative of your normal operation, with all processes contributing wastewater in normal operation, and with your treatment system operating properly with no system upsets. Samples should be collected from the center of the flow channel, at a site specified in your present permit, or for new discharges, at any site adequate for the collection of a representative sample.

GRAB SAMPLE. An individual sample of sufficient volume for analysis, collected at a randomly selected time, over a period not exceeding 15 minutes, which is representative of the discharge. Grab samples must be used for temperature, pH, total residual chlorine, oil and grease, *E. coli,* and any pollutant considered to be volatile. Grab samples are typically appropriate for stormwater.

COMPOSITE SAMPLE. Use composite sampling (if available) for all pollutants (except above). A combination of at least eight sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24 hour period. For volatile pollutants, aliquots must be combined in the laboratory immediately before analysis. The composite must be proportional; either time interval proportional, or flow proportional. Aliquots may be collected manually or automatically.

ANALYSIS. You must use test methods promulgated in 40 CFR Part 136 for all analyses. The facility must use a sufficiently sensitive method to determine compliance with Missouri Water Quality Standards in accordance with Standard Conditions Part I. If no method has been promulgated for a particular pollutant, you may use any suitable method for measuring the level of the pollutant in your discharge. If there is no promulgated method, your attached description should include the preservation techniques, sample holding times, the quality control measures which you used, and any other

pertinent information, such as filtering or what fraction the method detects. For obscure methods or new contaminants, consider including an electronic copy of the method with the application and the laboratory analysis sheets.

IDENTICAL OUTFALL CONSIDERATION. If you have two or more substantially identical outfalls, you may submit the results of the analysis for one substantially identical outfall in its place. Identify which outfall you did test and describe why the outfalls which you did not test are substantially identical to the outfall you did test.

REPORTING OF INTAKE DATA. You are not required to report intake data unless you wish apply for "net" effluent limitations for one or more pollutants. Net limitations are technology limits adjusted by subtracting the level of the pollutant present in the intake water from the discharge. National Pollutant Discharge Elimination System (NPDES) regulations allow net limitations only in certain circumstances. To demonstrate eligibility, report the maximum and average of the results of analyses on the intake water, attach a statement the intake water is drawn from the same body of water into which the discharge is made, and a statement how the pollutant level is reduced by the wastewater treatment. When applicable, a demonstration to the extent the pollutants in the intake vary physically, chemically, or biologically from the pollutants contained in the discharge; for example, when the pollutant represents a class of compounds.

3.0. C. requires listing any pollutants from "TABLE B – TOXIC POLLUTANTS AND HAZARDOUS SUBSTANCES REQUIRED TO BE IDENTIFIED BY APPLICANTS IF EXPECTED TO BE PRESENT" you believe to be present and explain why you believe them to be present. If you have analytical data, you must report it. You may include other pollutants not listed below but present in your discharge in 3.0 C. Please provide Chemical Abstract Service (CAS) numbers for any additional pollutants described. If the facility is required to complete Form D, duplication of the parameters here is not required.

TABLE B – TOXIC POLLUTANTS AND HAZARDOUS SUBSTANCES REQUIRED TO BE IDENTIFIED BY APPLICANTS IF EXPECTED TO BE PRESENT		
TOXIC POLLUTANT	HAZARDOUS SUBSTANCES	HAZARDOUS SUBSTANCES
Asbestos	Dimethylamine	Napthenic acid
HAZARDOUS SUBSTANCES	Dintrobenzene	Nitrotoluene
Acetaldehyde	Diquat	Parathion
Allyl alcohol	Disulfoton	Phenolsulfonate
Allyl chloride	Diuron	Phosgene
Amyl acetate	Epichlorohydrin	Propargite
Aniline	Ethion	Propylene oxide
Benzonitrile	Ethylene diamine	Pyrethrins
Benzyl chloride	Ethylene dibromide	Quinoline
Butyl acetate	Formaldehyde	Resorcinol
Butylamine	Furfural	Strontium
Captan	Guthion	Strychnine
Carbaryl	Isoprene	Sytrene
Carbofuran	Isopropanolamine	2,4,5-T (2,4,5-Trichloro-phenoxyacetic acid)
Carbon disulfide	Kelthane	TDE (Tetrachlorodiphenyl ethane)
Chlorpyrifos	Kepone	2, 4, 5-TP (2-(2,4,5-Trichloro-phenoxy) propanoic acid)
Coumaphos	Malathion	Trichlorofon
Cresol	Mercaptodimethur	Triethanolamine
Crotonaldehyde	Methoxychlor	Triethaylamine
2,4-D (2,4-Dichloro-Phenoxyacetic acid)	Methyl mercaptan	Uranium
Diazinon	Methyl parathion	Vanadium
Dicamba	Mevinphos	Vinyl acetate
Dichlobenil	Mexacarbate	Xylene
2,2-Dichloropropionic acid	Monethyl amine	Xylenol
Dichlorvos	Monomethyl amine	Zirconium
Diethylamine	Nalad	

3.1 Self-explanatory.

3.2 Self-explanatory.

4.0 STORMWATER [10 CSR 20-6.200(2)(C)1.]

In accordance with 10 CSR 20-6.200(2)(C)1.E(I) and (II), the facility must sample the stormwater for any pollutant listed in the permit for process wastewater discharges and/or the applicable Effluent Limitation Guideline. All industrial stormwater must be sampled for parameters listed in 10 CSR 20-6.200(2)(C)1.E.(III); these are: oil and grease, pH, biochemical oxygen demands (BOD_5), chemical oxygen demands (COD), total suspended solids (TSS), conductivity, total phosphorus, total Kjeldahl nitrogen, and nitrate plus nitrite nitrogen.

4.1 Indicate the outfall numbers for industrial stormwater discharges. Provide the area drained by each outfall. Indicate the type and percentages of surface(s), for example: 60% grass or vegetated areas, 10% non-vegetated soils, 30% pavement, etc., the outfall drains. The facility must indicate any structural best management practices, such as settling/retention, rain garden/infiltration, filter socks, etc, employed at each outfall.

4.2 Describe the method used to determine the flow rate in accordance with 10 CSR 20-6.200(2)(C)1., and the flow rate; submit the date and duration of the storm event from which the samples were taken.

5.0 SIGNATORY REQUIREMENTS The Clean Water Act provides for severe penalties for submitting false information on this application form. Section 309(c)(2) of the Clean Water Act provides "Any person who knowingly makes any false statement, representation, or certification in any application . . . shall upon conviction, be punished by a fine of no more $10,000 or by imprisonment for not more than six months, or both.

All applications must be signed as follows and the signature must be original. For a corporation: by an officer having responsibility for the overall operation of the regulated facility or activity or for environmental matters. For a partnership or sole proprietorship: by a general partner or the proprietor. For a municipal, state, federal or other public facility: by either a principal executive officer or by an individual having overall responsibility for environmental matters at the facility.

SEE INSTRUCTIONS; PLEASE PRINT OR TYPE.
You may report some or all of this information on separate sheet *(use similar format)* instead of completing these pages.

FORM C TABLE 1 FOR 3.0 - ITEMS A AND B

EFFLUENT (AND INTAKE) CHARACTERISTICS THIS OUTFALL IS: OUTFALL NO. 002

3.0 PART A – You must provide the results of at least one analysis for every pollutant in Part A. Complete one table for each outfall or proposed outfall. See instructions.

1. POLLUTANT	2. VALUES							3. UNITS *(specify if blank)*	
	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS			
A. Biochemical Oxygen Demand, 5-day (BOD_5)									
B. Chemical Oxygen Demand (COD)	61.1	25.9			19.6	5.70	16	mg/L	lb/day
C. Total Organic Carbon (TOC)									
D. Total Suspended Solids (TSS)	58	24.5			14.6	4.25	16	mg/L	lb/day
E. Ammonia as N									
F. Flow	VALUE 0.051		VALUE		VALUE 0.035		16	MILLIONS OF GALLONS PER DAY (MGD)	
G. Temperature *(winter)*	VALUE 64.4		VALUE		VALUE		4	°F	
H. Temperature *(summer)*	VALUE 73.4		VALUE		VALUE		3	°F	
I. pH	MINIMUM 6.8		MAXIMUM 8.3		AVERAGE		16	STANDARD UNITS (SU)	

3.0 PART B – Mark "X" in column 2A for each pollutant you know or have reason to believe is present. Mark "X" in column 2B for each pollutant you believe to be absent. If you mark Column 2A for any pollutant, you must provide the results for at least one analysis for the pollutant. Complete one table for each outfall (intake). Provide results for additional parameters not listed here in Part 3.0 C.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)		X	MINIMUM		MINIMUM		MINIMUM				
B. Bromide (24959-67-9)		X									
C. Chloride (16887-00-6)	X		1260	533.4			182.3	52.9	16	mg/L	lb/day
D. Chlorine, Total Residual		X									
E. Color		X									
F. Conductivity		X									
F. Cyanide, Amenable to Chlorination		X									

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants (Continued)											
G. *E. coli*		X									
H. Fluoride (16984-48-8)		X									
I. Nitrate plus Nitrate *(as N)*		X									
J. Kjeldahl, Total (as N)		X									
K. Nitrogen, Total Organic *(as N)*		X									
L. Oil and Grease	X		5.2	2.20			3.1	0.88	16	mg/L	lb/day
M. Phenols, Total		X									
N. Phosphorus *(as P)*, Total (7723-14-0)		X									
O. Sulfate *(as SO^4)* (14808-79-8)	X		353	149.4			258.8	75.2	4	mg/L	lb/day
P. Sulfide *(as S)*		X									
Q. Sulfite (as SO^3) (14265-45-3)		X									
R. Surfactants		X									
S. Trihalomethanes, Total		X									
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X		6160	2.61			320.93	0.09	16	ug/L	lb/day
2M. Antimony, Total Recoverable (7440-36-9)	X		50	0.02					12	ug/L	lb/day
3M. Arsenic, Total Recoverable (7440-38-2)	X		10	0.004			7.5	0.002	16	ug/L	lb/day
4M. Barium, Total Recoverable (7440-39-3)		X									
5M. Beryllium, Total Recoverable (7440-41-7)	X		5	0.002			4	0.001	16	ug/L	lb/day
6M. Boron, Total Recoverable (7440-42-8)		X									
7M. Cadmium, Total Recoverable (7440-43-9)	X		5	0.002			1	0.0003	16	ug/L	lb/day
8M. Chromium III Total Recoverable (16065-83-1)	X		15	0.006			11.8	0.003	16	ug/L	lb/day
9M. Chromium VI, Dissolved (18540-29-9)	X		10	0.004			8.8	0.003	16	ug/L	lb/day
10M. Cobalt, Total Recoverable (7440-48-4)		X									

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 2 – Metals (Continued)											
11M. Copper, Total Recoverable (7440-50-8)	X		15.6	0.006					12	ug/L	lb/day
12M. Iron, Total Recoverable (7439-89-6)	X		2140	0.91			666	0.19	16	ug/L	lb/day
13M. Lead, Total Recoverable (7439-92-1)	X		214	0.091			3	0.0008	16	ug/L	lb/day
14M. Magnesium, Total Recoverable (7439-95-4)		X									
15M. Manganese, Total Recoverable (7439-96-5)		X									
16M. Mercury, Total Recoverable (7439-97-6)	X		0.2	0.00008			0.2	0.00005	16	ug/L	lb/day
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)		X									
19M. Nickel, Total Recoverable (7440-02-0)	X		18.6	0.008					17	ug/L	lb/day
20M. Selenium, Total Recoverable (7782-49-2)	X		50	0.02			5.3	0.002	16	ug/L	lb/day
21M. Silver, Total Recoverable (7440-22-4)	X		5	0.002					12	ug/L	lb/day
22M. Thallium, Total Recoverable (7440-28-0)	X		100	0.04			1.5	0.0004	16	ug/L	lb/day
23M. Tin, Total Recoverable (7440-31-5)		X									
24M. Titanium, Total Recoverable (7440-32-6)		X									
25M. Zinc, Total Recoverable (7440-66-6)	X		34.7	0.015					12	ug/L	lb/day
Subpart 3 – Radioactivity											
1R. Alpha Total		X									
2R. Beta Total		X									
3R. Radium Total		X									
4R. Radium 226 plus 228 Total		X									

SEE INSTRUCTIONS; PLEASE PRINT OR TYPE.
You may report some or all of this information on separate sheet *(use similar format)* instead of completing these pages.

FORM C TABLE 1 FOR 3.0 - ITEMS A AND B

EFFLUENT (AND INTAKE) CHARACTERISTICS THIS OUTFALL IS: OUTFALL NO. 003

3.0 PART A – You must provide the results of at least one analysis for every pollutant in Part A. Complete one table for each outfall or proposed outfall. See instructions.

1. POLLUTANT	2. VALUES						D. NO. OF ANALYSES	3. UNITS *(specify if blank)*	
	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES			A. CONCENTRATION	B. MASS
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS			
A. Biochemical Oxygen Demand, 5-day (BOD_5)									
B. Chemical Oxygen Demand (COD)	76.5	692.1					8	mg/L	lb/day
C. Total Organic Carbon (TOC)									
D. Total Suspended Solids (TSS)	279	2524.1					8	mg/L	lb/day
E. Ammonia as N									
F. Flow	VALUE 1.09		VALUE		VALUE 0.0136		8	MILLIONS OF GALLONS PER DAY (MGD)	
G. Temperature *(winter)*	VALUE 54.5		VALUE		VALUE		1	°F	
H. Temperature *(summer)*	VALUE 69.8		VALUE		VALUE		1	°F	
I. pH	MINIMUM 7.4		MAXIMUM 8.9		AVERAGE		8	STANDARD UNITS (SU)	

3.0 PART B – Mark "X" in column 2A for each pollutant you know or have reason to believe is present. Mark "X" in column 2B for each pollutant you believe to be absent. If you mark Column 2A for any pollutant, you must provide the results for at least one analysis for the pollutant. Complete one table for each outfall (intake). Provide results for additional parameters not listed here in Part 3.0 C.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)		X	MINIMUM		MINIMUM		MINIMUM				
B. Bromide (24959-67-9)		X									
C. Chloride (16887-00-6)	X		505	4568.7					8	mg/L	lb/day
D. Chlorine, Total Residual		X									
E. Color		X									
F. Conductivity		X									
F. Cyanide, Amenable to Chlorination		X									

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants (Continued)											
G. *E. coli*		X									
H. Fluoride (16984-48-8)		X									
I. Nitrate plus Nitrate *(as N)*		X									
J. Kjeldahl, Total (as N)		X									
K. Nitrogen, Total Organic *(as N)*		X									
L. Oil and Grease	X		4.4	39.8					8	mg/L	lb/day
M. Phenols, Total		X									
N. Phosphorus *(as P)*, Total (7723-14-0)		X									
O. Sulfate *(as SO^4)* (14808-79-8)	X		140	1266.6					1	mg/L	lb/day
P. Sulfide *(as S)*		X									
Q. Sulfite (as SO^3) (14265-45-3)		X									
R. Surfactants		X									
S. Trihalomethanes, Total		X									
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X		2940	26.6					8	ug/L	lb/day
2M. Antimony, Total Recoverable (7440-36-9)	X		25	0.23					7	ug/L	lb/day
3M. Arsenic, Total Recoverable (7440-38-2)	X		10	0.09					8	ug/L	lb/day
4M. Barium, Total Recoverable (7440-39-3)		X									
5M. Beryllium, Total Recoverable (7440-41-7)	X		20	0.18					8	ug/L	lb/day
6M. Boron, Total Recoverable (7440-42-8)		X									
7M. Cadmium, Total Recoverable (7440-43-9)	X		5	0.05					8	ug/L	lb/day
8M. Chromium III Total Recoverable (16065-83-1)	X		15	0.13					8	ug/L	lb/day
9M. Chromium VI, Dissolved (18540-29-9)	X		10	0.09					8	ug/L	lb/day
10M. Cobalt, Total Recoverable (7440-48-4)		X									

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 2 – Metals (Continued)											
11M. Copper, Total Recoverable (7440-50-8)	X		20.7	0.19					7	ug/L	lb/day
12M. Iron, Total Recoverable (7439-89-6)	X		3600	32.6					8	ug/L	lb/day
13M. Lead, Total Recoverable (7439-92-1)	X		11.2	0.1					8	ug/L	lb/day
14M. Magnesium, Total Recoverable (7439-95-4)		X									
15M. Manganese, Total Recoverable (7439-96-5)		X									
16M. Mercury, Total Recoverable (7439-97-6)	X		1	0.009					8	ug/L	lb/day
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)		X									
19M. Nickel, Total Recoverable (7440-02-0)	X		6.63	0.06					7	ug/L	lb/day
20M. Selenium, Total Recoverable (7782-49-2)	X		50	0.45					8	ug/L	lb/day
21M. Silver, Total Recoverable (7440-22-4)	X		25	0.23					7	ug/L	lb/day
22M. Thallium, Total Recoverable (7440-28-0)	X		50	0.45					8	ug/L	lb/day
23M. Tin, Total Recoverable (7440-31-5)		X									
24M. Titanium, Total Recoverable (7440-32-6)		X									
25M. Zinc, Total Recoverable (7440-66-6)	X		76.4	0.69					7	ug/L	lb/day
Subpart 3 – Radioactivity											
1R. Alpha Total		X									
2R. Beta Total		X									
3R. Radium Total		X									
4R. Radium 226 plus 228 Total		X									

SEE INSTRUCTIONS; PLEASE PRINT OR TYPE.
You may report some or all of this information on separate sheet *(use similar format)* instead of completing these pages.

FORM C TABLE 1 FOR 3.0 - ITEMS A AND B

EFFLUENT (AND INTAKE) CHARACTERISTICS THIS OUTFALL IS: OUTFALL NO. 004

3.0 PART A – You must provide the results of at least one analysis for every pollutant in Part A. Complete one table for each outfall or proposed outfall. See instructions.

1. POLLUTANT	2. VALUES							3. UNITS *(specify if blank)*	
	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS			
A. Biochemical Oxygen Demand, 5-day (BOD_5)									
B. Chemical Oxygen Demand (COD)	36.6	4.25					1	mg/L	lb/day
C. Total Organic Carbon (TOC)									
D. Total Suspended Solids (TSS)	45	5.23					1	mg/L	lb/day
E. Ammonia as N									
F. Flow	VALUE 0.014		VALUE		VALUE 0.014		1	MILLIONS OF GALLONS PER DAY (MGD)	
G. Temperature *(winter)*	VALUE		VALUE		VALUE			°F	
H. Temperature *(summer)*	VALUE		VALUE		VALUE			°F	
I. pH	MINIMUM		MAXIMUM 7.3		AVERAGE		1	STANDARD UNITS (SU)	

3.0 PART B – Mark "X" in column 2A for each pollutant you know or have reason to believe is present. Mark "X" in column 2B for each pollutant you believe to be absent. If you mark Column 2A for any pollutant, you must provide the results for at least one analysis for the pollutant. Complete one table for each outfall (intake). Provide results for additional parameters not listed here in Part 3.0 C.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)		X	MINIMUM		MINIMUM		MINIMUM				
B. Bromide (24959-67-9)		X									
C. Chloride (16887-00-6)	X		26.6	3.09					1	mg/L	lb/day
D. Chlorine, Total Residual		X									
E. Color		X									
F. Conductivity		X									
F. Cyanide, Amenable to Chlorination		X									

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants (Continued)											
G. *E. coli*		X									
H. Fluoride (16984-48-8)		X									
I. Nitrate plus Nitrate *(as N)*		X									
J. Kjeldahl, Total (as N)		X									
K. Nitrogen, Total Organic *(as N)*		X									
L. Oil and Grease	X		1.96	0.23					1	mg/L	lb/day
M. Phenols, Total		X									
N. Phosphorus *(as P)*, Total (7723-14-0)		X									
O. Sulfate *(as SO^4)* (14808-79-8)	X		23.5	2.73					1	mg/L	lb/day
P. Sulfide *(as S)*		X									
Q. Sulfite (as SO^3) (14265-45-3)		X									
R. Surfactants		X									
S. Trihalomethanes, Total		X									
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X		541	0.063					1	ug/L	lb/day
2M. Antimony, Total Recoverable (7440-36-9)	X		5	0.0006					1	ug/L	lb/day
3M. Arsenic, Total Recoverable (7440-38-2)	X		10	0.0012					1	ug/L	lb/day
4M. Barium, Total Recoverable (7440-39-3)		X									
5M. Beryllium, Total Recoverable (7440-41-7)	X		5	0.0006					1	ug/L	lb/day
6M. Boron, Total Recoverable (7440-42-8)		X									
7M. Cadmium, Total Recoverable (7440-43-9)	X		5	0.0006					1	ug/L	lb/day
8M. Chromium III Total Recoverable (16065-83-1)	X		15	0.0017					1	ug/L	lb/day
9M. Chromium VI, Dissolved (18540-29-9)	X		10	0.0012					1	ug/L	lb/day
10M. Cobalt, Total Recoverable (7440-48-4)		X									

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 2 – Metals (Continued)											
11M. Copper, Total Recoverable (7440-50-8)	X		6.81	0.0008					1	ug/L	lb/day
12M. Iron, Total Recoverable (7439-89-6)	X		1.27	0.00015					1	ug/L	lb/day
13M. Lead, Total Recoverable (7439-92-1)	X		5	0.0006					1	ug/L	lb/day
14M. Magnesium, Total Recoverable (7439-95-4)		X									
15M. Manganese, Total Recoverable (7439-96-5)		X									
16M. Mercury, Total Recoverable (7439-97-6)	X		0.02	0.000002					1	ug/L	lb/day
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)		X									
19M. Nickel, Total Recoverable (7440-02-0)	X		5	0.0006					1	ug/L	lb/day
20M. Selenium, Total Recoverable (7782-49-2)	X		5	0.0006					1	ug/L	lb/day
21M. Silver, Total Recoverable (7440-22-4)	X		5	0.0006					1	ug/L	lb/day
22M. Thallium, Total Recoverable (7440-28-0)	X		10	0.0012					1	ug/L	lb/day
23M. Tin, Total Recoverable (7440-31-5)		X									
24M. Titanium, Total Recoverable (7440-32-6)		X									
25M. Zinc, Total Recoverable (7440-66-6)	X		12.3	0.0014					1	ug/L	lb/day
Subpart 3 – Radioactivity											
1R. Alpha Total		X									
2R. Beta Total		X									
3R. Radium Total		X									
4R. Radium 226 plus 228 Total		X									

SEE INSTRUCTIONS; PLEASE PRINT OR TYPE.
You may report some or all of this information on separate sheet *(use similar format)* instead of completing these pages.

FORM C TABLE 1 FOR 3.0 - ITEMS A AND B

EFFLUENT (AND INTAKE) CHARACTERISTICS THIS OUTFALL IS: OUTFALL NO. 005

3.0 PART A – You must provide the results of at least one analysis for every pollutant in Part A. Complete one table for each outfall or proposed outfall. See instructions.

1. POLLUTANT	2. VALUES							3. UNITS *(specify if blank)*	
	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS			
A. Biochemical Oxygen Demand, 5-day (BOD_5)	36.1	389.52					2	mg/L	lb/day
B. Chemical Oxygen Demand (COD)									
C. Total Organic Carbon (TOC)									
D. Total Suspended Solids (TSS)	45	485.6					13	mg/L	lb/day
E. Ammonia as N	149	1607.7					13	mg/L	lb/day
F. Flow	VALUE 1.3		VALUE		VALUE 0.282		5	MILLIONS OF GALLONS PER DAY (MGD)	
G. Temperature *(winter)*	VALUE 46.4		VALUE		VALUE		1	°F	
H. Temperature *(summer)*	VALUE 75.2		VALUE		VALUE		1	°F	
I. pH	MINIMUM 7.5		MAXIMUM 9.0		AVERAGE		16	STANDARD UNITS (SU)	

3.0 PART B – Mark "X" in column 2A for each pollutant you know or have reason to believe is present. Mark "X" in column 2B for each pollutant you believe to be absent. If you mark Column 2A for any pollutant, you must provide the results for at least one analysis for the pollutant. Complete one table for each outfall (intake). Provide results for additional parameters not listed here in Part 3.0 C.

1. POLLUTANT AND CAS NUMBER *(If available)*	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)		X	MINIMUM		MINIMUM		MINIMUM				
B. Bromide (24959-67-9)		X									
C. Chloride (16887-00-6)	X		923	9959					6	mg/L	lb/day
D. Chlorine, Total Residual		X									
E. Color		X									
F. Conductivity		X									
F. Cyanide, Amenable to Chlorination		X									

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants (Continued)											
G. *E. coli*		X									
H. Fluoride (16984-48-8)		X									
I. Nitrate plus Nitrate *(as N)*		X									
J. Kjeldahl, Total (as N)		X									
K. Nitrogen, Total Organic *(as N)*		X									
L. Oil and Grease	X		1.0	10.8					1	mg/L	lb/day
M. Phenols, Total		X									
N. Phosphorus *(as P)*, Total (7723-14-0)		X									
O. Sulfate *(as SO^4)* (14808-79-8)	X		638	6884					13	mg/L	lb/day
P. Sulfide *(as S)*		X									
Q. Sulfite (as SO^3) (14265-45-3)		X									
R. Surfactants		X									
S. Trihalomethanes, Total		X									
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X		768	8.28					8	ug/L	lb/day
2M. Antimony, Total Recoverable (7440-36-9)	X		50	0.54					8	ug/L	lb/day
3M. Arsenic, Total Recoverable (7440-38-2)	X		11.3	0.12					8	ug/L	lb/day
4M. Barium, Total Recoverable (7440-39-3)		X									
5M. Beryllium, Total Recoverable (7440-41-7)	X		5	0.054					8	ug/L	lb/day
6M. Boron, Total Recoverable (7440-42-8)		X									
7M. Cadmium, Total Recoverable (7440-43-9)	X		5	0.054					8	ug/L	lb/day
8M. Chromium III Total Recoverable (16065-83-1)	X		15	0.16					8	ug/L	lb/day
9M. Chromium VI, Dissolved (18540-29-9)	X		10	0.11					8	ug/L	lb/day
10M. Cobalt, Total Recoverable (7440-48-4)		X									

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 2 – Metals (Continued)											
11M. Copper, Total Recoverable (7440-50-8)	X		11	0.12					8	ug/L	lb/day
12M. Iron, Total Recoverable (7439-89-6)	X		1230	13.3					8	ug/L	lb/day
13M. Lead, Total Recoverable (7439-92-1)	X		5	0.002					8	ug/L	lb/day
14M. Magnesium, Total Recoverable (7439-95-4)		X									
15M. Manganese, Total Recoverable (7439-96-5)		X									
16M. Mercury, Total Recoverable (7439-97-6)	X		0.02	0.002					8	ug/L	lb/day
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)		X									
19M. Nickel, Total Recoverable (7440-02-0)	X		57.1	0.62					8	ug/L	lb/day
20M. Selenium, Total Recoverable (7782-49-2)	X		50	0.54					8	ug/L	lb/day
21M. Silver, Total Recoverable (7440-22-4)	X		5	0.054					8	ug/L	lb/day
22M. Thallium, Total Recoverable (7440-28-0)	X		100	1.08					8	ug/L	lb/day
23M. Tin, Total Recoverable (7440-31-5)		X									
24M. Titanium, Total Recoverable (7440-32-6)		X									
25M. Zinc, Total Recoverable (7440-66-6)	X		21.1	0.23					8	ug/L	lb/day
Subpart 3 – Radioactivity											
1R. Alpha Total		X									
2R. Beta Total		X									
3R. Radium Total		X									
4R. Radium 226 plus 228 Total		X									

SEE INSTRUCTIONS; PLEASE PRINT OR TYPE.
You may report some or all of this information on separate sheet *(use similar format)* instead of completing these pages.

FORM C TABLE 1 FOR 3.0 - ITEMS A AND B

EFFLUENT (AND INTAKE) CHARACTERISTICS THIS OUTFALL IS: OUTFALL NO. 006

3.0 PART A – You must provide the results of at least one analysis for every pollutant in Part A. Complete one table for each outfall or proposed outfall. See instructions.

1. POLLUTANT	2. VALUES							3. UNITS *(specify if blank)*	
	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS			
A. Biochemical Oxygen Demand, 5-day (BOD_5)	<4	<16.9					1	mg/L	lb/day
B. Chemical Oxygen Demand (COD)	38.2	162.3			18.75	14.6	19	mg/L	lb/day
C. Total Organic Carbon (TOC)									
D. Total Suspended Solids (TSS)	216	917.9			14.25	11.08	19	mg/L	lb/day
E. Ammonia as N	1.2	5.09					1	mg/L	lb/day
F. Flow	VALUE 0.512		VALUE		VALUE 0.0938		19	MILLIONS OF GALLONS PER DAY (MGD)	
G. Temperature *(winter)*	VALUE 41		VALUE		VALUE			°F	
H. Temperature *(summer)*	VALUE 62.6		VALUE		VALUE			°F	
I. pH	MINIMUM 6.97		MAXIMUM 9		AVERAGE		19	STANDARD UNITS (SU)	

3.0 PART B – Mark "X" in column 2A for each pollutant you know or have reason to believe is present. Mark "X" in column 2B for each pollutant you believe to be absent. If you mark Column 2A for any pollutant, you must provide the results for at least one analysis for the pollutant. Complete one table for each outfall (intake). Provide results for additional parameters not listed here in Part 3.0 C.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)		X	MINIMUM		MINIMUM		MINIMUM				
B. Bromide (24959-67-9)		X									
C. Chloride (16887-00-6)	X		230	977.41			96.03	74.72	19	mg/L	lb/day
D. Chlorine, Total Residual		X									
E. Color		X									
F. Conductivity		X									
F. Cyanide, Amenable to Chlorination		X									

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants (Continued)											
G. *E. coli*		X									
H. Fluoride (16984-48-8)		X									
I. Nitrate plus Nitrate *(as N)*		X									
J. Kjeldahl, Total (as N)		X									
K. Nitrogen, Total Organic *(as N)*		X									
L. Oil and Grease	X		5.1	21.7			3.03	2.35	19	mg/L	lb/day
M. Phenols, Total		X									
N. Phosphorus *(as P)*, Total (7723-14-0)		X									
O. Sulfate *(as SO^4)* (14808-79-8)	X		340	1444.8			216	168.1	4	mg/L	lb/day
P. Sulfide *(as S)*		X									
Q. Sulfite (as SO^3) (14265-45-3)		X									
R. Surfactants		X									
S. Trihalomethanes, Total		X									
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X		2160	9.17			69.8	0.054	19	ug/L	lb/day
2M. Antimony, Total Recoverable (7440-36-9)	X		50	0.21					15	ug/L	lb/day
3M. Arsenic, Total Recoverable (7440-38-2)	X		10	0.042			8.03	0.006	19	ug/L	lb/day
4M. Barium, Total Recoverable (7440-39-3)		X									
5M. Beryllium, Total Recoverable (7440-41-7)	X		5	0.021			4	0.003	19	ug/L	lb/day
6M. Boron, Total Recoverable (7440-42-8)		X									
7M. Cadmium, Total Recoverable (7440-43-9)	X		5	0.021			1	0.0007	19	ug/L	lb/day
8M. Chromium III Total Recoverable (16065-83-1)	X		15	0.064			11.8	0.009	19	ug/L	lb/day
9M. Chromium VI, Dissolved (18540-29-9)	X		12.5	0.053			8.8	0.007	19	ug/L	lb/day
10M. Cobalt, Total Recoverable (7440-48-4)		X									

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 2 – Metals (Continued)											
11M. Copper, Total Recoverable (7440-50-8)	X		11.1	0.047					15	ug/L	lb/day
12M. Iron, Total Recoverable (7439-89-6)	X		2610	11.09			295.9	0.23	19	ug/L	lb/day
13M. Lead, Total Recoverable (7439-92-1)	X		5	0.021			3	0.002	19	ug/L	lb/day
14M. Magnesium, Total Recoverable (7439-95-4)		X									
15M. Manganese, Total Recoverable (7439-96-5)		X									
16M. Mercury, Total Recoverable (7439-97-6)	X		0.02	0.00085			0.02	0.00015	19	ug/L	lb/day
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)		X									
19M. Nickel, Total Recoverable (7440-02-0)	X		19.9	0.084					15	ug/L	lb/day
20M. Selenium, Total Recoverable (7782-49-2)	X		50	0.21			5	0.0039	19	ug/L	lb/day
21M. Silver, Total Recoverable (7440-22-4)	X		5	0.021					15	ug/L	lb/day
22M. Thallium, Total Recoverable (7440-28-0)	X		100	0.42			1.5	0.0012	19	ug/L	lb/day
23M. Tin, Total Recoverable (7440-31-5)		X									
24M. Titanium, Total Recoverable (7440-32-6)		X									
25M. Zinc, Total Recoverable (7440-66-6)	X		39.8	0.17					15	ug/L	lb/day
Subpart 3 – Radioactivity											
1R. Alpha Total		X									
2R. Beta Total		X									
3R. Radium Total		X									
4R. Radium 226 plus 228 Total		X									

SEE INSTRUCTIONS; PLEASE PRINT OR TYPE.
You may report some or all of this information on separate sheet *(use similar format)* instead of completing these pages.

FORM C TABLE 1 FOR 3.0 - ITEMS A AND B

EFFLUENT (AND INTAKE) CHARACTERISTICS THIS OUTFALL IS: OUTFALL NO. 007

3.0 PART A – You must provide the results of at least one analysis for every pollutant in Part A. Complete one table for each outfall or proposed outfall. See instructions.

1. POLLUTANT	2. VALUES							3. UNITS *(specify if blank)*	
	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS			
A. Biochemical Oxygen Demand, 5-day (BOD_5)	202	120.7					5	mg/L	lb/day
B. Chemical Oxygen Demand (COD)									
C. Total Organic Carbon (TOC)									
D. Total Suspended Solids (TSS)	64	38.2					5	mg/L	lb/day
E. Ammonia as N	473	282.6					5	mg/L	lb/day
F. Flow	VALUE 0.072		VALUE		VALUE 0.033		5	MILLIONS OF GALLONS PER DAY (MGD)	
G. Temperature *(winter)*	VALUE		VALUE		VALUE			°F	
H. Temperature *(summer)*	VALUE		VALUE		VALUE			°F	
I. pH	MINIMUM 6.4		MAXIMUM 8.4		AVERAGE		5	STANDARD UNITS (SU)	

3.0 PART B – Mark "X" in column 2A for each pollutant you know or have reason to believe is present. Mark "X" in column 2B for each pollutant you believe to be absent. If you mark Column 2A for any pollutant, you must provide the results for at least one analysis for the pollutant. Complete one table for each outfall (intake). Provide results for additional parameters not listed here in Part 3.0 C.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)		X	MINIMUM		MINIMUM		MINIMUM				
B. Bromide (24959-67-9)		X									
C. Chloride (16887-00-6)	X		68.6	40.9					5	mg/L	lb/day
D. Chlorine, Total Residual		X									
E. Color		X									
F. Conductivity		X									
F. Cyanide, Amenable to Chlorination		X									

1. POLLUTANT AND CAS NUMBER *(If available)*	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants (Continued)											
G. *E. coli*		X									
H. Fluoride (16984-48-8)		X									
I. Nitrate plus Nitrate *(as N)*		X									
J. Kjeldahl, Total (as N)		X									
K. Nitrogen, Total Organic *(as N)*		X									
L. Oil and Grease	X		10	5.97					5	mg/L	lb/day
M. Phenols, Total		X									
N. Phosphorus *(as P)*, Total (7723-14-0)		X									
O. Sulfate *(as SO^4)* (14808-79-8)	X		280	167.3					5	mg/L	lb/day
P. Sulfide *(as S)*		X									
Q. Sulfite (as SO^3) (14265-45-3)		X									
R. Surfactants		X									
S. Trihalomethanes, Total		X									
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)		X									
2M. Antimony, Total Recoverable (7440-36-9)		X									
3M. Arsenic, Total Recoverable (7440-38-2)		X									
4M. Barium, Total Recoverable (7440-39-3)		X									
5M. Beryllium, Total Recoverable (7440-41-7)		X									
6M. Boron, Total Recoverable (7440-42-8)		X									
7M. Cadmium, Total Recoverable (7440-43-9)		X									
8M. Chromium III Total Recoverable (16065-83-1)		X									
9M. Chromium VI, Dissolved (18540-29-9)		X									
10M. Cobalt, Total Recoverable (7440-48-4)		X									

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 2 – Metals (Continued)											
11M. Copper, Total Recoverable (7440-50-8)		X									
12M. Iron, Total Recoverable (7439-89-6)		X									
13M. Lead, Total Recoverable (7439-92-1)		X									
14M. Magnesium, Total Recoverable (7439-95-4)		X									
15M. Manganese, Total Recoverable (7439-96-5)		X									
16M. Mercury, Total Recoverable (7439-97-6)		X									
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)		X									
19M. Nickel, Total Recoverable (7440-02-0)		X									
20M. Selenium, Total Recoverable (7782-49-2)		X									
21M. Silver, Total Recoverable (7440-22-4)		X									
22M. Thallium, Total Recoverable (7440-28-0)		X									
23M. Tin, Total Recoverable (7440-31-5)		X									
24M. Titanium, Total Recoverable (7440-32-6)		X									
25M. Zinc, Total Recoverable (7440-66-6)		X									
Subpart 3 – Radioactivity											
1R. Alpha Total		X									
2R. Beta Total		X									
3R. Radium Total		X									
4R. Radium 226 plus 228 Total		X									

Outfall 008 is no discharge.

SEE INSTRUCTIONS; PLEASE PRINT OR TYPE.
You may report some or all of this information on separate sheet *(use similar format)* instead of completing these pages.

FORM C TABLE 1 FOR 3.0 - ITEMS A AND B

EFFLUENT (AND INTAKE) CHARACTERISTICS THIS OUTFALL IS: OUTFALL NO. 008

3.0 PART A – You must provide the results of at least one analysis for every pollutant in Part A. Complete one table for each outfall or proposed outfall. See instructions.

1. POLLUTANT	2. VALUES							3. UNITS *(specify if blank)*	
	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS			
A. Biochemical Oxygen Demand, 5-day (BOD_5)									
B. Chemical Oxygen Demand (COD)									
C. Total Organic Carbon (TOC)									
D. Total Suspended Solids (TSS)									
E. Ammonia as N									
F. Flow	VALUE		VALUE		VALUE			MILLIONS OF GALLONS PER DAY (MGD)	
G. Temperature *(winter)*	VALUE		VALUE		VALUE			°F	
H. Temperature *(summer)*	VALUE		VALUE		VALUE			°F	
I. pH	MINIMUM		MAXIMUM		AVERAGE			STANDARD UNITS (SU)	

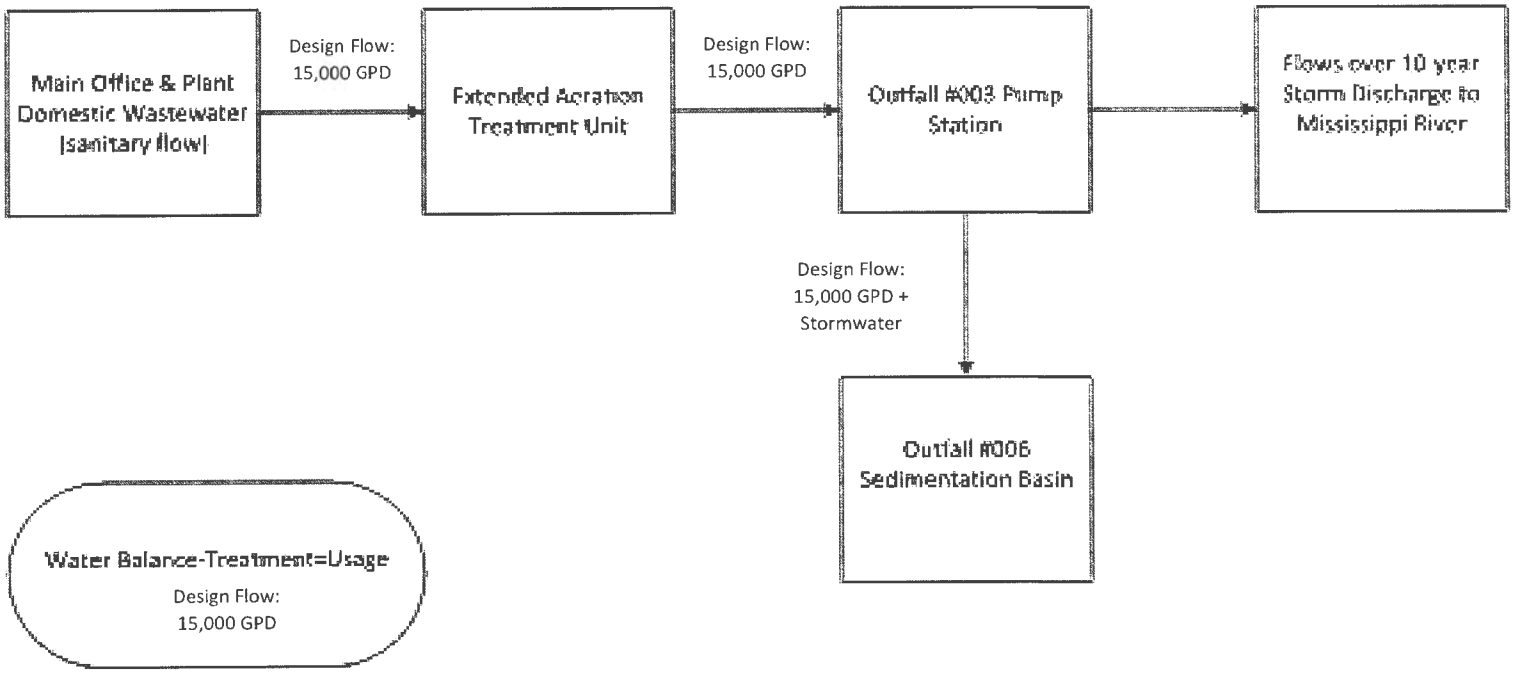
3.0 PART B – Mark "X" in column 2A for each pollutant you know or have reason to believe is present. Mark "X" in column 2B for each pollutant you believe to be absent. If you mark Column 2A for any pollutant, you must provide the results for at least one analysis for the pollutant. Complete one table for each outfall (intake). Provide results for additional parameters not listed here in Part 3.0 C.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)		X	MINIMUM		MINIMUM		MINIMUM				
B. Bromide (24959-67-9)		X									
C. Chloride (16887-00-6)		X									
D. Chlorine, Total Residual		X									
E. Color		X									
F. Conductivity		X									
F. Cyanide, Amenable to Chlorination		X									

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants (Continued)											
G. *E. coli*		X									
H. Fluoride (16984-48-8)		X									
I. Nitrate plus Nitrate *(as N)*		X									
J. Kjeldahl, Total (as N)		X									
K. Nitrogen, Total Organic *(as N)*		X									
L. Oil and Grease		X									
M. Phenols, Total		X									
N. Phosphorus *(as P)*, Total (7723-14-0)		X									
O. Sulfate *(as SO^4)* (14808-79-8)											
P. Sulfide *(as S)*		X									
Q. Sulfite (as SO^3) (14265-45-3)		X									
R. Surfactants		X									
S. Trihalomethanes, Total		X									
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)		X									
2M. Antimony, Total Recoverable (7440-36-9)		X									
3M. Arsenic, Total Recoverable (7440-38-2)		X									
4M. Barium, Total Recoverable (7440-39-3)		X									
5M. Beryllium, Total Recoverable (7440-41-7)		X									
6M. Boron, Total Recoverable (7440-42-8)		X									
7M. Cadmium, Total Recoverable (7440-43-9)		X									
8M. Chromium III Total Recoverable (16065-83-1)		X									
9M. Chromium VI, Dissolved (18540-29-9)		X									
10M. Cobalt, Total Recoverable (7440-48-4)		X									

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"		3. VALUES							4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE		C. LONG TERM AVERAGE VALUE		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 2 – Metals (Continued)											
11M. Copper, Total Recoverable (7440-50-8)		X									
12M. Iron, Total Recoverable (7439-89-6)		X									
13M. Lead, Total Recoverable (7439-92-1)		X									
14M. Magnesium, Total Recoverable (7439-95-4)		X									
15M. Manganese, Total Recoverable (7439-96-5)		X									
16M. Mercury, Total Recoverable (7439-97-6)		X									
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)		X									
19M. Nickel, Total Recoverable (7440-02-0)		X									
20M. Selenium, Total Recoverable (7782-49-2)		X									
21M. Silver, Total Recoverable (7440-22-4)		X									
22M. Thallium, Total Recoverable (7440-28-0)		X									
23M. Tin, Total Recoverable (7440-31-5)		X									
24M. Titanium, Total Recoverable (7440-32-6)		X									
25M. Zinc, Total Recoverable (7440-66-6)		X									
Subpart 3 – Radioactivity											
1R. Alpha Total		X									
2R. Beta Total		X									
3R. Radium Total		X									
4R. Radium 226 plus 228 Total		X									

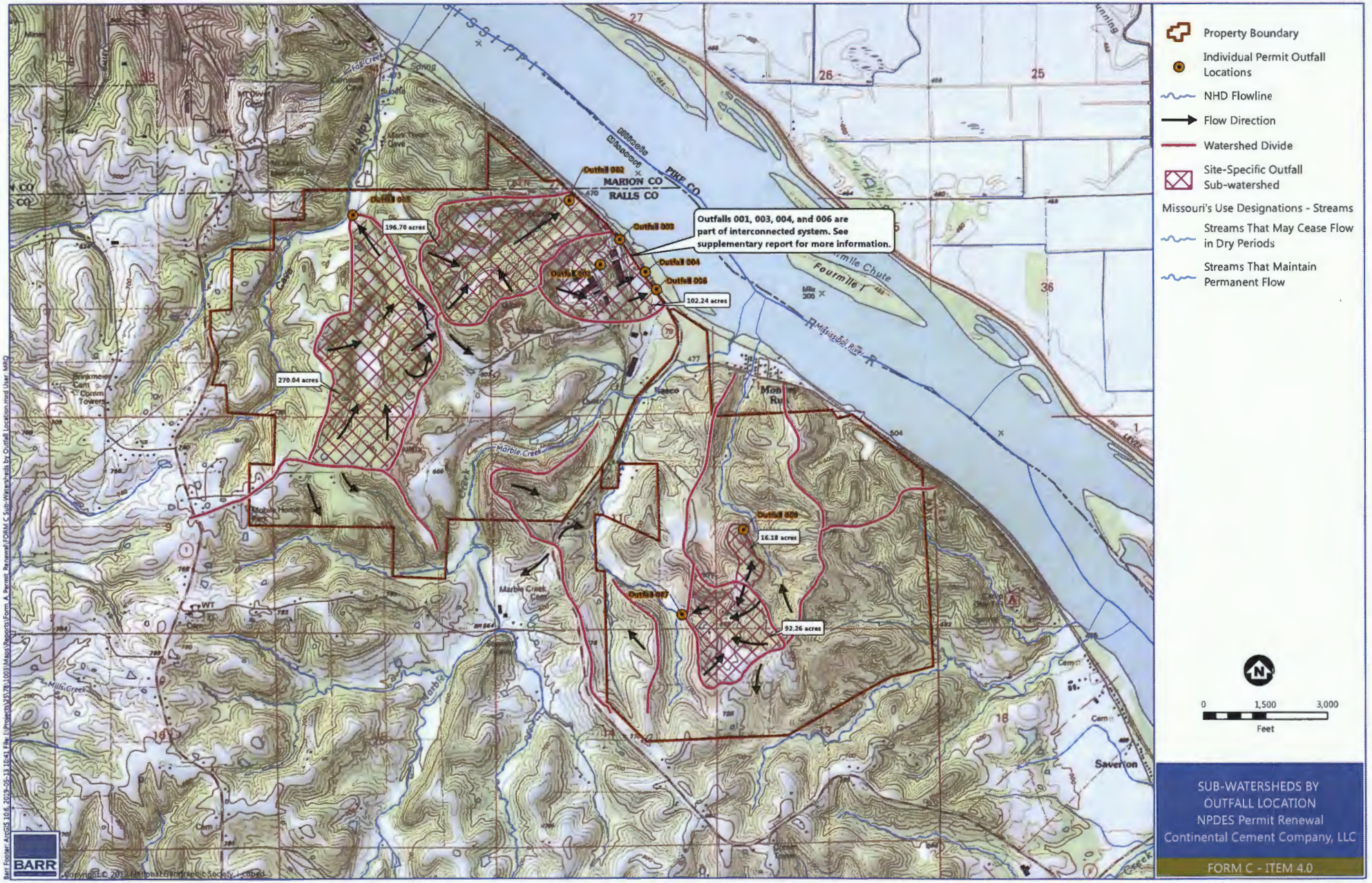
Continental Cement, Permit #MO-0111686
Outfall #001



Form C Supplement

2.1 Flows, Type, and Frequency (contd.)

Outfall 006	Non-contact cooling water and discharges from Outfall 001, 003, and 004. All waters pass through a grit chamber, sedimentation basin and sand filter prior to discharge.	Rainfall dependent (>1MGD)	Grit removal, settling pond, and sand filter.	1-M, 1-U, and 1-V
Outfall 007	Previously runoff from compost and soil storage/staging area flows to a sedimentation basin prior to discharging. All industrial activities ceased in the area. Continental is pursuing closure of the basin and removal of Outfall 007.	Rainfall dependent (>1MGD)	Settling pond	1-U
Outfall 008	Previously runoff from compost and soil storage/staging area flows overland prior to discharging. Industrial activities have ceased in the area and Continental is requesting removal of Outfall 008.	Rainfall dependent (>1MGD)	Discharge to surface water	4-A


Property Boundary
Individual Permit Outfall Locations
NHD Flowline
Flow Direction
Watershed Divide
Site-Specific Outfall Sub-watershed
Missouri's Use Designations - Streams
Streams That May Cease Flow in Dry Periods
Streams That Maintain Permanent Flow
Outfalls 001, 003, 004, and 006 are part of interconnected system. See supplementary report for more information.
196.70 acres
270.04 acres
102.24 acres
16.18 acres
92.26 acres
Outfall 001
Outfall 002
Outfall 003
Outfall 004
Outfall 005
Outfall 006
Outfall 007
Outfall 009
MARION CO
RALLS CO
PIKE CO
Mississippi River
Fourmile Chute
Marble Creek
Saverton
0
1,500
3,000
Feet
SUB-WATERSHEDS BY OUTFALL LOCATION
NPDES Permit Renewal
Continental Cement Company, LLC
FORM C - ITEM 4.0
BARR

NPDES Permit Renewal Supplementary Report

Missouri State Operating Permit MO-0111686

Prepared for
Continental Cement Company, LLC

May 2019

NPDES Permit Renewal Supplementary Report

Missouri State Operating Permit MO-0111686

Prepared for
Continental Cement Company, LLC

May 2019

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NPDES Permit Renewal Supplementary Report
Missouri State Operating Permit MO-0111686

May 2019

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1.0 Purpose and Scope

This report is intended to serve as a supplementary document for the renewal of Missouri State Operating Permit (MSOP) number MO-0111686. Continental Cement Company, LLC (Continental Cement) is requesting the renewal include the following modifications, which will be detailed in this report:

- Removal of Outfall 007, which will include the closure of the existing stormwater pond associated with the outfall.
- Removal of Outfall 008.

This report also contains facility background information, a summary of current conditions for each existing outfall, and supplementary information necessary to support permit modifications. In addition, this report outlines information from correspondence with the Missouri Department of Natural Resources (MDNR) during the previous permit renewal process in 2017 that is still relevant to the facility (Section 6.0). Continental Cement received a Notice of Violation (NOV) on October 30, 2015, which prompted further meetings and discussion with MDNR regarding the nature of the facility, appropriateness of outfall locations, and applicability of chronic water quality criteria (WQC) for stormwater discharges, to name a few topics. Through these compliance conversations as well as communications associated with the previous permit renewal, a satisfactory resolution was reached for the NOV and the facility permit was modified to more accurately reflect site conditions. Continental Cement was appreciative of the time and effort MDNR personnel put into understanding the facility and drafting a suitable permit. As such, relevant information has been included in Section 6.0 of this report in an effort to highlight some of the key changes made during the last permit renewal.

2.0 Facility Background

Continental Cement is a cement manufacturer located at 10107 Highway 79, Hannibal, Missouri. The facility also supports onsite quarries for the mining of aggregate material for use in the cement manufacturing process. Processing of mined materials, manufacturing, and packaging of cement takes place in the plant area. In addition, the facility also uses high-energy wastes as substitutes for fossil fuels in the cement manufacturing process. This activity is supported by Green America Recycling (GAR), which is also located onsite in the vicinity of the plant (SIC Code 4953). Site-specific MSOP MO-0111686 covers discharges associated with industrial stormwater from the plant area, industrial stormwater from stormwater retention ponds, stormwater runoff from artificial soil areas, and sanitary wastewater from the main office and plant. Additional information on each outfall and the contributing flows is included in Section 2.1. Figure 1 shows the site location.

All stormwater and process wastewater flows from the onsite quarries are covered by MO-G49 general permits for the discharge of stormwater and other specified discharges from limestone and other rock quarries, concrete, glass, and asphalt industries. General permit outfalls were not assessed as part of the supplementary report.

2.1 Site-Specific Permit Outfalls

Continental Cement currently has eight permitted outfalls under MSOP MO-0111686, Outfalls 001-008. The following table summarizes pertinent information for each outfall, including location and receiving waters. Additional description on the outfalls is included following the table.

Table 1 Outfall Locations and Receiving Water

Outfall	Outfall Location (UTM Zone 15N)		Receiving Water
	Easting (X)	Northing (Y)	
001	644631	4393586	Mississippi River
002	644405	4394055	Mississippi River
003	644772	4393769	Mississippi River
004	644959	4393531	Mississippi River
005	642809	4393953	Cave Hollow Spring Creek
006	645041	4393402	Mississippi River
007	645226	4391027	Unnamed Tributary to Marble Creek
008	645675	4391648	Unnamed tributary to Mississippi River

Outfalls 001, 003, 004, and 006 are part of an interconnected system that functions in series during times of normal operation and routine weather conditions. Discharge from Outfall 001 is the treated effluent from an extended aeration activated sludge plant for the treatment of sanitary wastewater from the main offices and plant portion of the site. Discharges from Outfall 001 flow via gravity through a riprap lined

channel to a lift station to the northeast. Due to the potential for the lift station to overflow and discharge during large storm events, it is considered Outfall 003. However, in general during periods of routine operation, the lift station operates on an as-needed basis and pumps the discharge from Outfall 001, as well as a portion of the stormwater runoff from the north plant area and Packhouse area to Outfall 006 to the southeast. The pumps associated with Outfall 003 are sized to handle 1,600 gallons per minute. Outfall 004 is an open wet well that collects stormwater runoff from the old gypsum belt loading areas. Similarly to Outfall 003, it is a pump station that is considered an outfall due to the potential to overflow and discharge during large storm events. During normal operating conditions, Outfall 004 pumps to Outfall 006. Outfall 006 is associated with a passive treatment system, which is comprised of a grit chamber that flows to a sedimentation basin, and finally passes through a passive sand filter before discharging to a ditch, which flows to the Mississippi River.

Outfall 002 is associated with stormwater runoff from historic quarrying operations, cement kiln dust (CKD) disposal and management, and synthetic gypsum storage areas, which flows overland to the northeast before ultimately discharging to the Mississippi River. More detail on the stormwater flow associated with Outfall 002 is included in Section 4.1 of this report.

Outfall 005 discharges stormwater runoff from an area that was previously reclaimed using artificial soil. Seepage and stormwater runoff from the artificial soil area is collected in a sedimentation basin, located to the north. Water from the sedimentation basin is then pumped to an emergency holding pond immediately northwest from the detention basin. Collected water is then used to irrigate the reclamation area or may be discharged. Continental Cement utilizes spray irrigation of the water collected to maximize evaporation and minimize the volume of water that is discharged. Water that is discharged flows overland to the northwest before entering Cave Hollow Spring Creek, which ultimately flows to the Mississippi River.

Outfall 007 is the discharge from a sedimentation basin used to collect stormwater runoff from an area previously used for storing compost materials. Excess water may overflow from the stormwater pond to an unnamed tributary to Marble Creek. The drainage area associated with Outfall 007 is no longer used for storage of compost or any other activities that could create industrial stormwater; therefore, Continental Cement is seeking to close the stormwater pond and remove Outfall 007 from the permit. A more detailed discussion is included in Section 7.0.

Outfall 008 is associated with stormwater runoff from a reclamation area that used artificial soil in the reclamation. Although the permit indicates stormwater runoff would flow overland to the north to an unnamed tributary to the Mississippi River, Outfall 008 has historically never discharged. Stormwater that falls in the vicinity infiltrates the ground due to natural topography. Storage of compost and soil have ceased in the vicinity of Outfall 008 and Continental Cement is requesting removal from the permit. Further discussion on outfall removal is included in Section 7.0.

Table 2 summarizes the activities contributing to each outfall, as well as the anticipated flow.

Table 2 Outfall Sources and Anticipated Flows

Outfall	Activities Contributing to Flow	Design Flow	Actual Flow*
001	Office and plant sanitary wastewater flows to Outfall 003 pump station, which pumps to Outfall 006 sedimentation basin.	15,000 gpd	10,000 gpd
002	Stormwater runoff from the historic quarry, CKD, and synthetic gypsum storage areas.	1 MGD +	Dependent upon precipitation
003	Stormwater runoff from the north industrial area (including fuel operations and containment units) and Packhouse area. Discharge from Outfall 001. Pumps to Outfall 006 or during storm events, may overflow to Mississippi River.	1 MGD +	Dependent upon precipitation
004	Stormwater runoff from the old gypsum belt loading area. Pumps to 006 or during storm events, may overflow to Mississippi River.	1 MGD +	Dependent upon precipitation
005	Seepage and stormwater from the artificial soil area flow to the sedimentation basin and is used to irrigate the reclamation area or discharged. Outfall 005 flows overland to the northwest before entering Cave Hollow Spring Creek.	1 MGD +	Dependent upon precipitation
006	Non-contact cooling water and flows from 001, 003, and 004 pass through the grit chamber, sedimentation basin, and sand filter.	1 MGD +	Dependent upon precipitation
007	Previous composting activities no longer take place in the Outfall 007 drainage area. There are no industrial activities in the drainage area; therefore, it is requested Outfall 007 be removed from the permit following closure of the associated stormwater pond. See Section 7.0 for additional detail.	1 MGD +	Dependent upon precipitation
008	Outfall 008 no longer discharges; therefore, it is requested to be removed from the permit. See Section 7.0 for additional detail.	N/A	Dependent upon precipitation

Note: "*" Actual flow is calculated based on long-term average discharge monitoring report values.

2.2 Potential Pollutants of Concern (POC)

The following table outlines parameters for which there are existing permit limits or monitoring requirements.

Table 3 Summary of Existing Limits

Outfall	Parameter	Limit/ Monitoring Only	Frequency
001	Biochemical Oxygen Demand (BOD)	Limits	Quarterly
	Total Suspended Solids (TSS)	Limits	
	pH	Limits	
	Ammonia as N	Monitoring	
	E. coli	Limits	
002, 003, and 004	Chemical Oxygen Demand (COD)	Monitoring	Quarterly
	Chloride	Monitoring	
	Chloride + Sulfate	Benchmark	
	Oil and Grease	Benchmark	
	pH	Limits	
	Sulfate	Monitoring	
	TSS (002)	Limits	
	TSS (003 and 004)	Benchmark	
	Aluminum	Benchmark	
	Arsenic, Beryllium, Cadmium, Chromium III, Iron, Lead, Mercury, Selenium (Total Recoverable)	Monitoring	
	Chromium VI (Dissolved)	Monitoring	
	Thallium (Total Recoverable)	Benchmark	
	Hardness	Monitoring	
005	BOD	Benchmark	Monthly
	Chloride	Benchmark	
	Chloride + Sulfate	Benchmark	
	Oil and Grease	Benchmark	
	pH	Limits	
	Sulfate	Monitoring	
	TSS	Limits	
	Ammonia as N (5/1 – 10/31 & 11/1 – 4/30)	Benchmark	
	Aluminum	Benchmark	
	Arsenic, Beryllium, Cadmium, Chromium III, Iron, Lead, Mercury, Selenium, Thallium (Total Recoverable)	Monitoring	
	Chromium VI (Dissolved)	Monitoring	
	Hardness	Monitoring	

Outfall	Parameter	Limit/ Monitoring Only	Frequency
006	COD	Monitoring	Quarterly
	Chloride	Benchmark	
	Chloride + Sulfate	Benchmark	
	Oil and Grease	Benchmark	
	pH	Limits	
	Sulfate	Monitoring	
	TSS	Limits	
	Aluminum, Arsenic, Beryllium, Cadmium, Chromium III, Iron, Lead, Mercury, Selenium, Thallium (Total Recoverable)	Monitoring	
	Chromium VI (Dissolved)	Monitoring	
	Hardness	Monitoring	
	Total Toxic Organics	Monitoring	Annually
	2,3,7,8-Tetrachlorodibenzo-p-Dioxin	Monitoring	Every 5 years
007 and 008	BOD	Benchmark	Monthly
	Oil and Grease	Benchmark	
	pH	Limits	
	TSS	Benchmark	
	Ammonia as N	Benchmark	

3.0 Receiving Water Classifications and Criteria

The following sub-sections describe the classifications of Cinque Hommes Creek and the Mississippi River, as well as the associated water quality criteria that are applicable.

3.1 Water Body Classification/Designated Beneficial Uses

Unnamed Tributary to Marble Creek/Cave Hollow Spring Creek

Continental Cement is currently permitted to discharge to an unnamed tributary to Marble Creek and Cave Hollow Spring Creek, which are both included in the Missouri Use Designation Dataset (MUDD), ID 8-20-13 MUDD V1.0 3960, but are not classified in Table H of 10 CSR 20-7.031. As such, they have presumed use designations under Section 101 of the Clean Water Act, as well as protection under the narrative criteria.

Mississippi River

The Mississippi River (Waterbody ID (WBID) 3699) in the vicinity of the site has assigned designated uses of livestock and wildlife watering, protection of warm water aquatic life, human health – fish consumption, whole body contact category A, secondary contact recreation, drinking water supply, and industrial.

3.2 Water Quality Criteria (WQC)

The following sub-sections outline WQC that are applicable to the currently permitted surface water discharges to unclassified waters (unnamed tributary to Marble Creek and Cave Hollow Spring Creek). The water quality criteria that are applicable to the Mississippi River are also included. WQC establish the required numeric water quality in the receiving stream that is used in the permitting process to establish effluent limits for the National Pollutant Discharge Elimination System (NPDES) discharge permits to protect the designated beneficial uses and associated water quality criteria of the receiving water body.

3.2.1 Numeric Criteria

Numeric criteria for the pollutant of concerns (POCs) previously identified in Section 2.2 are outlined for the unclassified waters and the Mississippi River in Tables 4 and 5, respectively.

Table 4 Unnamed Tributaries Numeric Water Quality Criteria for Pollutants of Concern

Parameter	Protection of Aquatic Life Criteria		Citation
	Acute	Chronic	
Ammonia, Summer (mg/L)	8.4	1.4	Tables B1 and B3
Ammonia Winter (mg/L)	8.4	3.2	Tables B1 and B3
BOD (mg/L)	45	30	Technology-Based
Chloride (mg/L)	860	230	Table A1
Chloride + Sulfate (mg/L)	-	1,000	10 20-7.031(5)(L)
E. coli (#/100mL)	-	206	Table A1
Nitrogen (mg/L)	-	-	NA
Oil and Grease (mg/L)	-	10	Table A1
pH (SU)	6.5-9.0		10 CSR 20-7.031(5)(E)
Phosphorus (mg/L)	-	-	NA
TSS (mg/L)	45	30	Technology-Based
Aluminum, Total (µg/L)	750	-	Table A1
Arsenic, Total (µg/L)	340	150	Table A1
Beryllium, Total (µg/L)	-	5	Table A1
Cadmium, Total (µg/L)	7.6	1	Table A2
Chromium III, Total (µg/L)	845.9	110	Table A2
Chromium VI, Dissolved (µg/L)	16	11	Table A1
Iron, Total (µg/L)	-	1000	Table A1
Lead, Total (µg/L)	109	4	Table A2
Mercury, Total (µg/L)	1.4	0.77	Table A1
Selenium, Total (µg/L)	-	5	Table A1
Thallium, Total (µg/L)	-	6.3	Table A1

1. Hardness dependent metals were calculated using the default hardness of 162 mg/L.
2. Seasonal ammonia is for summer (April-September) and winter (October-March).
3. Ammonia criteria are based on a pH of 8.0 and a temperature of 10°C winter and 24°C summer.
4. Seasonal BOD is for summer (June-September) and winter (October-May).
5. Tables A1, A2, B1, and B3 are located in 10 CSR 20-7.031.

Table 5 Mississippi River Numeric Water Quality Criteria for Pollutants of Concern

Parameter	Protection of Aquatic Life Criteria		Chronic Drinking Water Criteria	Citation
	Acute	Chronic		
Ammonia, Summer (mg/L)	8.4	1.6	-	Tables B1 and B3
Ammonia, Winter (mg/L)	8.4	3.2	-	Tables B1 and B3
BOD, Summer (mg/L)	45	30	-	10 CSR 20-7.015(2)(A)1.
Chloride (mg/L)	860	230	250	Table A1
Chloride + Sulfate (mg/L)	-	83.4	-	10 CSR 20-7.031(5)(L)
E. coli (#/100mL)	-	126	-	Table A1
Nitrogen (mg/L)	-	-	-	NA
Oil and Grease (mg/L)	-	10	-	Table A1
pH (SU)	6.0-9.0		-	10 CSR 20-7.015(2)(A)2.
Phosphorus (mg/L)	-	-	-	None
TSS (mg/L)	45	30	-	10 CSR 20-7.015(2)(A)1.
Aluminum, Total (µg/L)	750	-	-	Table A1
Antimony, Total (µg/L)	-	4,300	6	Table A1
Arsenic, Total (µg/L)	340	150	50	Table A1
Beryllium, Total (µg/L)	-	5	4	Table A1
Cadmium, Total (µg/L)	9.9	1.3	5	Table A1
Chromium III, Total (µg/L)	1,054	137	100	Table A2
Chromium VI, Dissolved (µg/L)	16	11	-	Table A1
Copper, Total (µg/L)	27.3	17	1,300	Table A2
Lead, Total (µg/L)	145	6	15	Table A1
Mercury, Total (µg/L)	1.4	0.77	2	Table A1
Nickel, Total (µg/L)	885	98.2	100	Table A2
Selenium, Total (µg/L)	-	5	50	Table A1
Silver, Total (µg/L)	11.7	-	50	Table A2
Thallium, Total (µg/L)	-	-	2	Table A1
Zinc, Total (µg/L)	222	222	5,000	Table A2

1. Hardness dependent metals were calculated using 212 mg/L, which is the median hardness from the USGS gage, Mississippi River at Grafton, IL (1989-2019).
2. Seasonal ammonia is for summer (April-September) and winter (October-March).
3. Ammonia criteria are based on a pH of 8.0 and a temperature of 10°C Winter and 24°C Summer.
4. Seasonal BOD is for summer (June-September) and winter (October-May).
5. Tables A1, A2, B1, and B3 are located in 10 CSR 20-7.031.

3.2.2 Narrative Criteria

All waters of the state are subject to narrative criteria as outlined in 10 CSR 20-7.031(4). In general, the narrative criteria prohibit conditions that may degrade the aesthetic value, degrade the aquatic habitat, or negatively impact the designated uses of the water. The narrative criteria are as follows:

> *(A) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly, or harmful bottom deposits or prevent full maintenance of beneficial uses;*
>
> *(B) Waters shall be free from oil, scum, and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;*
>
> *(C) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor, or prevent full maintenance of beneficial uses;*
>
> *(D) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal, or aquatic life;*
>
> *(E) There shall be no significant human health hazard from incidental contact with the water;*
>
> *(F) There shall be no acute toxicity to livestock or wildlife watering;*
>
> *(G) Waters shall be free from physical, chemical, or hydrologic changes that would impair the natural biological community;*
>
> *(H) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment, and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to sections 260.200–260.247, RSMo;*
>
> *(I) Waters in mixing zones, ephemeral aquatic habitat and waters of the state lacking designated uses shall be subject to the following requirements:*
>
> 1. *The acute toxicity criteria of Tables A and B and the requirements of subsection (5)(B); and*
> 2. *The following whole effluent toxicity conditions must be satisfied:*
>
> A. *Single dilution method. The percent effluent at the edge of the zone of initial dilution will be computed and toxicity tests performed at this percent effluent. These tests must show statistically-insignificant mortality on the most sensitive of at least two (2) representative, diverse species; and*
>
> B. *Multiple dilution method. An LC50 will be derived from a series of test dilutions. The computed percent effluent at the edge of the zone of initial dilution must be less than three-tenths (0.3) of the LC50 for the most sensitive of at least two (2) representative, diverse species.*

3.2.3 Special Protections

Unnamed Tributary to Marble Creek/Cave Hollow Spring Creek

There are no known special protections for the unclassified tributary to Marble Creek or Cave Hollow Spring Creek.

Mississippi River

There are no known special protections for the Mississippi River at the proposed discharge location. However, a total maximum daily load (TMDL) has been completed for 490 miles of the river that spans the distance from Clark County to Pemiscot County [WBIDs 00001, 03152, and 01707] (MDNR, 2006). These segments of the Mississippi River were determined by the MDNR to have an impaired use of aquatic life protection, human health fish consumption. These segments of the Mississippi River have fish tissue sampling data that indicates that the concentration of polychlorinated biphenyls (PCBs) and chlordane exceeds criteria established for the protection of human health. It is noted that discharges from Continental Cement to the Mississippi River do not contribute to the previously discussed impairment for PCBs and chlordane.

4.0 Effluent Limitation Guidelines (ELGs)

Previously MDNR had based TSS effluent limitations for Outfalls 004, 007, and 008 on the effluent limitation guidelines (ELG)-based value from 40 CFR 411.32 that pertains to the runoff from material storage stockpiles at cement manufacturing facilities. After reviewing the United States Environmental Protection Agency's (USEPA's) development document for ELGs for cement manufacturing (January 1974), it seems clear that EPA did not intend for this portion of the regulation to be applied in a site-wide manner without regard for whether materials used in manufacturing or resulting from manufacturing were being stored or stockpiled in a manner where they are exposed to precipitation. Page 61 of the document recommends that runoff from material storage piles be segregated from other runoff from the plant.

Applying this regulatory approach of segregation to Continental Cement, the Outfalls 004, 007, and 008 do not contain any material storage stockpiles that are used in the manufacturing process or other legacy material storage stockpiles (e.g., cement kiln dust) that are stored or managed in those areas. As such, the ELG-based effluent limit for TSS is not applicable to Continental Cement.

5.0 Reasonable Potential Analysis (RPA)

An RPA was conducted using data from Outfall 006 for the following parameters:

- Aluminum
- Arsenic
- Beryllium
- Cadmium
- Chromium III
- Chromium VI
- Iron
- Lead
- Mercury
- Selenium
- Thallium
- Chloride
- Chloride + Sulfate
- Oil and Grease

The results of the RPA are listed in Table 6. From this analysis, none of the parameters were found to have reasonable potential to exceed the WQC.

Calculations were based on the WQC as outlined in Tables A1 and A2 of 10 CSR 20-7.031. Both acute and chronic receiving water concentrations were calculated through mass balance equations, taking into account the upstream concentration of the parameter in the Mississippi River using data from the Grafton United States Geological Survey (USGS) gage, the receiving stream flow, and the average flow of Outfall 006. For the Mississippi River, the mixing zone used was one-quarter the volume of flow and the zone of initial dilution (ZID) was limited to ten times the facility design flow.

The chloride + sulfate criteria for the protection of aquatic life applicable to the Mississippi River near the Continental Cement facility was found by estimating the "natural background" from the USGS gage located at Grafton, Illinois, which was the nearest gage with sufficient chloride and sulfate data. This was calculated as outlined in 10 CSR 20-7.031(5)(L)2:

> *Streams with 7Q10 low flow of more than one cubic foot per second (1 cfs) and Class P1, L1, L2, and L3 waters. The total chloride plus sulfate concentration shall not exceed the estimated natural background concentration by more than twenty percent (20%) at the 60Q10 low flow.*

Barr determined the 60Q10 low flow value from the flow dataset using a Log Pearson Type 3 distribution technique. The chloride + sulfate concentration data was plotted verses flow and a linear regression performed to identify the chloride and sulfate concentration associated with the 60Q10 low flow value, which was found to be approximately 38,000 cubic feet per second (cfs).

Using the 60Q10 low flow value and the corresponding chloride + sulfate data, the concentration at that flow was determined to be 69.5 mg/L. Adding 20% yields a criterion value of 83.4 mg/L.

Table 6 RPA Results for Outfall 006

Parameter	CMC	RWC Acute	CCC	RWC Chronic	Reasonable Potential
Aluminum, Total (µg/L)	750	97.8	(1)	2.8	NO
Arsenic, Total (µg/L)	340	1.6	150	1.6	NO
Beryllium, Total (µg/L)	(1)	0.4	5	0.27	NO
Cadmium, Total (µg/L)	9.9	0.9	1.3	0.8	NO
Chloride (mg/L)	860	38	230	28.6	NO
Chloride + Sulfate (mg/L)	(1)	75	83.4(2)	63	NO
Chromium III (µg/L)	1054.4	0.9	137.2	0.7	NO
Chromium VI (µg/L)	16	0.9	11	0.7	NO
Iron, Total (µg/L)	(1)	136	1,000	28.4	NO
Lead, Total (µg/L)	145	2.7	5.6	2.6	NO
Mercury, Total (µg/L)	1.4	0.04	0.77	0.03	NO
Oil and Grease (mg/L)	(1)	0.2	10	0.0003	NO
Selenium, Total (µg/L)	(1)	4.25	5	0.77	NO
Thallium, Total (µg/L)	(1)	0.87	2	0.65	NO

Notes:
(1) No acute criteria exists for this parameter.
(2) This value was calculated based upon 10 CSR 20-7.031(5)(L)2.

6.0 Previous Permit Modifications

The following subsections present information on previous modifications to the NPDES permit effective December 2017, which are key to understanding the facility.

6.1 Outfall Location

Outfalls 002, 005, and 007 were relocated to the appropriate receiving water or the property boundary based on delineations of the sub-watersheds to allow for complete coverage of the drainage areas and more accurate representation of the discharge from the facility.

The analysis was performed using data from light detection and ranging (LIDAR) surveys was used to characterize site topography and stormwater flows. Where LIDAR data was unavailable, USGS topographic data was used. Due to the dynamic nature of the site, including historic quarry operations as well as current quarry operations, it was not possible to determine sub-watersheds using topographic information alone. Historic aerial imagery was also utilized to determine where portions of the topographic lines were inaccurate or not up to date. Historic imagery was used to identify disturbed areas, which could be compared over time to better determine the extents of the sub-watersheds. The sub-watersheds and updated outfall locations are shown on Figure 2.

6.2 Non-Continuous Flow Outfalls

Numeric effluent limitations for Outfalls 002, 003, 004, 005, 007, and 008 were modified to be consistent with the best management practice (BMPs) permitting approach that is identified in 40 CFR 122.44(k)(2) for stormwater discharges. This approach includes numeric benchmarks for the BMPs, which are performance-based criteria and generally based upon the acute aquatic life water quality criteria, when appropriate.

As previously discussed, Outfalls 003, 004, 005, 007, and 008 are all dependent upon precipitation for flow and are non-continuous in nature. The Code of Federal Regulations (CFR) in 40 CFR 122.45(d)(1) requires that all continuous discharges have maximum daily and average monthly effluent limits included in NPDES permits. However, stormwater is defined as a non-continuous discharge in accordance with 40 CFR 122.2 and 40 CFR 122.26(b)(14). Therefore, the discharge from Outfalls 003, 004, 005, 007, and 008 are not required by regulation to have maximum daily and monthly average effluent limits but rather falls under 40 CFR 122.45(e).

6.3 Removal of Metals Not Associated with Cement Manufacturing

Antimony, copper, nickel, silver, and zinc were removed from the permit as they are not common constituents in Portland cement or fly ash.

6.4 Major Discharger Status

The permit was modified to indicate Continental Cement is not a major discharger. Section 2.4 of the EPA NPDES Permit Writers' Manual states the following about industrial dischargers (USEPA 2010):

Non-POTW discharges are classified as major facilities on the basis of the number of points accumulated using the NPDES Permit Rating Work Sheet. The worksheet evaluates the significance of a facility using several criteria, including toxic pollutant potential, flow volume, and water quality factors such as impairment of the receiving water or proximity of the discharge to coastal waters.

MDNR provided Continental Cement with a completed NPDES Permit Rating Worksheet, dated July 25, 2016. The worksheet was reviewed for correctness based on the EPA memorandum titled, *New NPDES Non-Municipal Permit Rating Systems*, dated June 27, 1990 (USEPA 1990) and the new review did not show Continental Cement to be a major discharger.

7.0 Permit Modification Requests

Continental Cement will be requesting the removal of Outfalls 007 and 008 from the permit. Outfall 007 was previously associated with stormwater runoff from a compost storage area. Stormwater would flow through a stormwater pond for settling prior to discharge. Continental Cement no longer receives or stores compost materials onsite and no longer performs industrial activities in the subwatershed for Outfall 007. As such, Continental Cement is seeking to close the stormwater pond and eliminate Outfall 007. A Sampling and Analysis Plan (SAP) will be prepared for review and approval by MDNR prior to sampling the pond. Once sampling results are available, a Closure Plan will be developed for submittal to MDNR. This permit renewal will be amended with appropriate information in support of stormwater pond closure prior to permit expiration.

Outfall 008 was also previously associated with a compost and a soil storage/staging area, which is no longer present. The permit indicates stormwater runoff from Outfall 008 would flow overland to the north to an unnamed tributary to the Mississippi River; however, Outfall 008 has historically never discharged and compost/soil storage in the subwatershed have ceased. Industrial activities are not performed in the subwatershed of Outfall 008 and the area has been stablilized; therefore, Continental Cement is requesting removal of Outfall 008 from the permit.

8.0 Summary, Conclusion, and Recommendations

As previously discussed, this report is intended to serve as a supplementary document for the renewal of Continental Cement's MSOP. Background information and supporting documentation have been provided in this report to support the following requests by Continental Cement:

1. Removal of Outfall 007 pending stormwater pond Closure Plan development, closure of the pond, and stabilization.
2. Removal of Outfall 008.

9.0 References

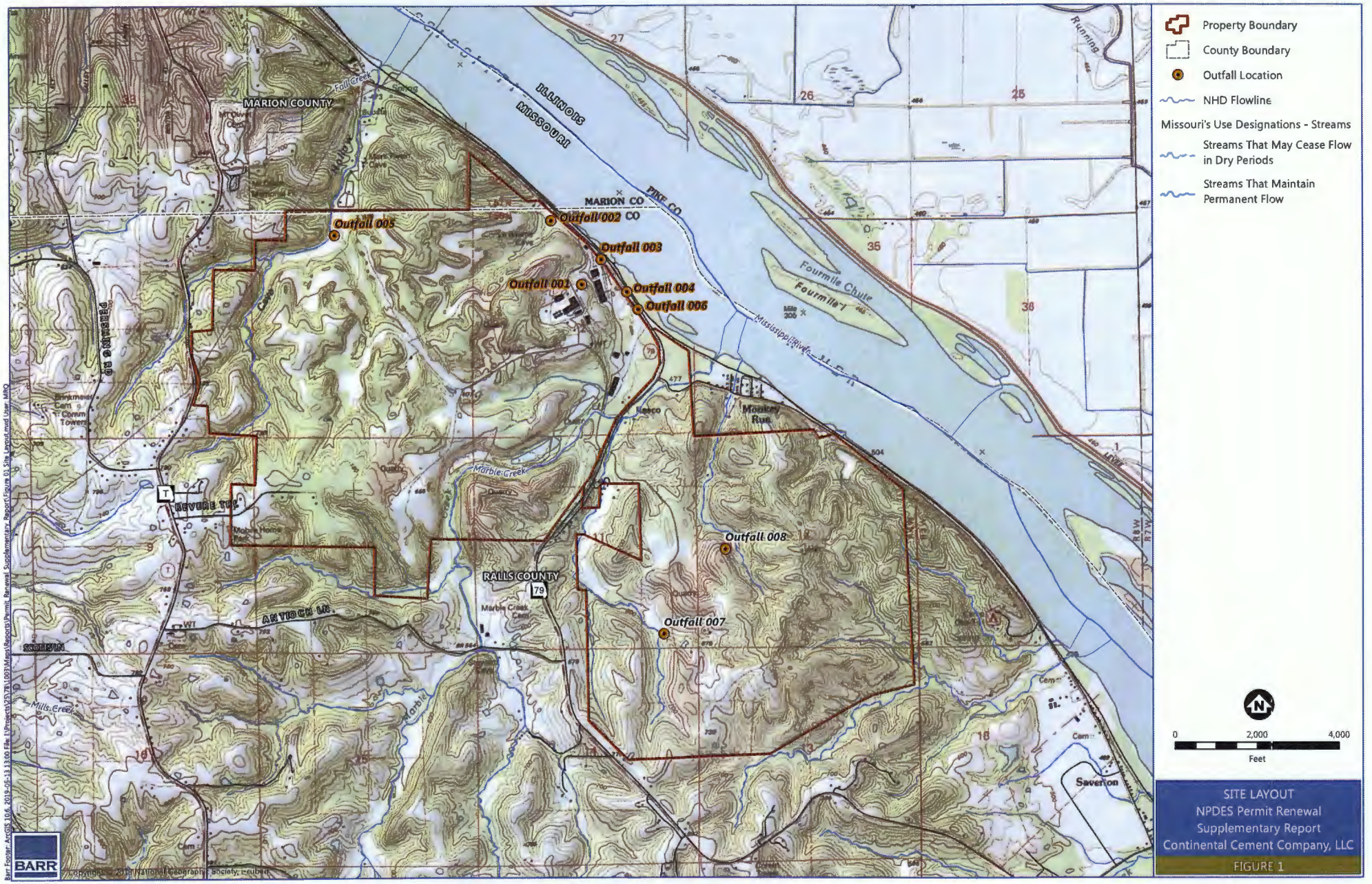
MDNR, 2006. Total Maximum Daily Loads for Chlordane and Polychlorinated Biphenyls in the Mississippi River. Missouri Department of Natural Resources, Water Protection Program. October 5, 2006. http://dnr.mo.gov/env/wpp/tmdl/docs/0001-1707-3152-mississippi-r-tmdl.pdf, accessed March 20, 2017.

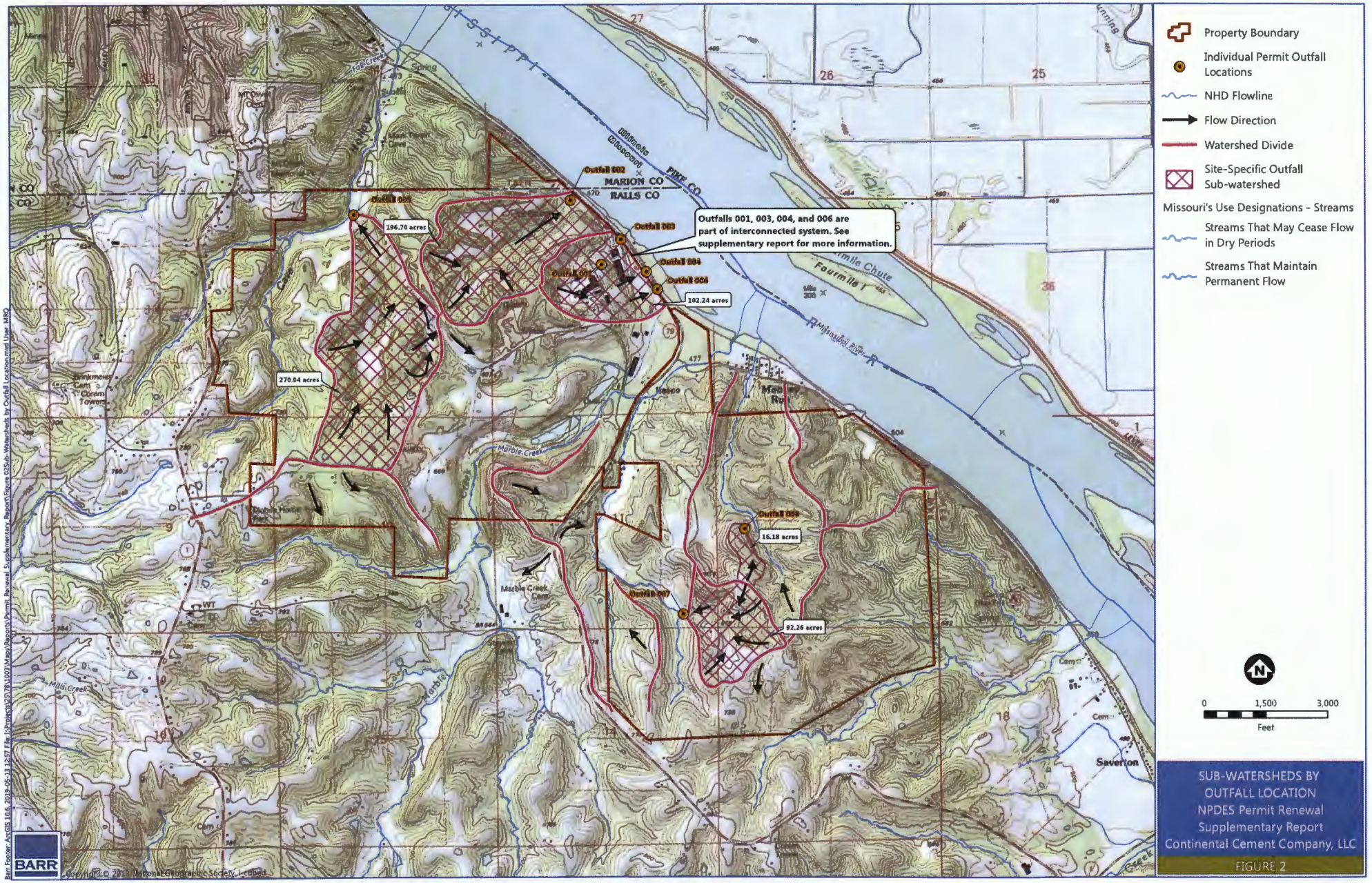
MDNR, 2014. 2014 EPA Approved Section 303(d) Listed Waters. Missouri Department of Natural Resources. January 1, 2014. http://dnr.mo.gov/env/wpp/waterquality/docs/epa-approved-2014-303d.pdf, accessed March 20, 2017.

USEPA, 1990. New NPDES Non-Municipal Permit Rating System Memorandum. U.S. Environmental Protection Agency. June 27, 1990. https://www3.epa.gov/npdes/pubs/owm0116.pdf, accessed March 20, 2017.

USEPA, 2010. NPDES Permit Writers' Manual (EPA-833-6-10-001). U.S. Environmental Protection Agency. September 2010. https://www.epa.gov/sites/production/files/2015-09/documents/pwm_2010.pdf, accessed March 20, 2017.

Figures


Property Boundary
County Boundary
Outfall Location
NHD Flowline
Missouri's Use Designations - Streams
Streams That May Cease Flow in Dry Periods
Streams That Maintain Permanent Flow
Outfall 001
Outfall 002
Outfall 003
Outfall 004
Outfall 005
Outfall 006
Outfall 007
Outfall 008
MARION COUNTY
RALLS COUNTY
PIKE CO
MARION CO
ILLINOIS
MISSOURI
Fourmile Chute
Fourmile
Mississippi River
Marble Creek
Mills Creek
Fall Creek
Running
Monkey Run
Saverton
Hanover
REVERE TRL
ANTIOCH LN
PERSHING RD
0
2,000
4,000
Feet
SITE LAYOUT
NPDES Permit Renewal
Supplementary Report
Continental Cement Company, LLC
FIGURE 1
BARR


Property Boundary
Individual Permit Outfall Locations
NHD Flowline
Flow Direction
Watershed Divide
Site-Specific Outfall Sub-watershed
Missouri's Use Designations - Streams
Streams That May Cease Flow in Dry Periods
Streams That Maintain Permanent Flow
Outfalls 001, 003, 004, and 006 are part of interconnected system. See supplementary report for more information.
196.70 acres
270.04 acres
102.24 acres
16.18 acres
92.26 acres
Outfall 002
Outfall 005
Outfall 003
Outfall 001
Outfall 004
Outfall 006
Outfall 008
Outfall 007
MARION CO
RALLS CO
PIKE CO
Mississippi River
Marble Creek
Saverton
0
1,500
3,000
Feet
SUB-WATERSHEDS BY OUTFALL LOCATION
NPDES Permit Renewal
Supplementary Report
Continental Cement Company, LLC
FIGURE 2
BARR
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Appendix A

Reasonable Potential Analysis Worksheets

Continental Cement, Hannibal Missouri (MO-0111686)
Aluminum, Reasonable Potential Analysis (TSD, EPA/505/2-90-001, Section 3.3.2)

DATE	OUTFALL	CMAVG (mg/L)
12/31/2018	006	0.0179
09/30/2018	006	0.0613
06/30/2018	006	0.1
03/31/2018	006	0.1
12/31/2017	006	0.1
09/30/2017	006	0.1
06/30/2017	006	0.1
03/31/2017	006	0.1
12/31/2016	006	0.1
09/30/2016	006	0.125
06/30/2016	006	0.156
03/31/2016	006	0.477
12/31/2015	006	0.811
09/30/2015	006	0.107
06/30/2015	006	1.3
03/31/2015	006	0.379
12/31/2014	006	1.51
09/30/2014	006	2.16
06/30/2014	006	0.473
03/31/2014	006	0.989
12/31/2013	006	0.854
09/30/2013	006	0.641
06/30/2013	006	1.1
03/31/2013	006	0.21
12/31/2012	006	0.202
09/30/2012	006	0.445
06/30/2012	006	0.56
03/31/2012	006	0.388
12/31/2011	006	0.38

OUTFALL 006

Number of Samples (n)	29	
Maximum	2.16	
Minimum	0.018	
Mean	0.484	
Standard Deviation	0.506	
CV	1.045	
$\sigma^2 = \ln(CV^2 + 1)$	0.738	
σ	0.859	
$\rho_n = (1 - CL)^{1/n}$	0.853	99% CL
Z_{99}	2.326	
Z_{85}	1.028	
C_{99}	5.101	
C_{85}	1.672	
C_{99}/C_{85}	3.050	
Chronic RWC	2.8	µg/L
CCC	750	µg/L
Acute RWC	97.8	µg/L
CMC	N.A.	µg/L

Average Flow	0.226889	CFS
Design Flow	1.547200	CFS

	Flow (cfs)	Dilution Factor
7Q10	37,100	---
MZ	9,275.0	5995.7
ZID	15.472	11.0

*ZID cannot exceed 10x effluent design flow

Receiving Water Mass Balance

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

	MZ	ZID
C_s = upstream concentration (mg/L)	0.0026	0.0026
Q_s = upstream flow (cfs)	9,275.0	15.472
C_e = effluent concentration (mg/L)	6.5885	6.5885
Q_e = effluent flow (cfs)	0.2	0.2
C = downstream concentration (mg/L)	0.0028	0.0978

Note: Non-detect values were replaces with one half the reporting limit. When the reporting limit was unknown, non-detect values were eliminated from the dataset.

Continental Cement, Hannibal Missouri (MO-0111686)
Arsenic, Reasonable Potential Analysis (TSD, EPA/505/2-90-001, Section 3.3.2)

DATE	OUTFALL	CMAVG (mg/L)
12/31/2018	006	0.005
09/30/2018	006	0.0071
06/30/2018	006	0.01
03/31/2018	006	0.01
12/31/2017	006	0.01
09/30/2017	006	0.01
06/30/2017	006	0.01
03/31/2017	006	0.01
12/31/2016	006	0.01
09/30/2016	006	0.01
06/30/2016	006	0.01
03/31/2016	006	0.01
12/31/2015	006	0.01
09/30/2015	006	0.01
06/30/2015	006	0.01
03/31/2015	006	0.01
12/31/2014	006	0.01
09/30/2014	006	0.01
06/30/2014	006	0.01
03/31/2014	006	0.01
12/31/2013	006	0.01
09/30/2013	006	
06/30/2013	006	0.01
03/31/2013	006	
12/31/2012	006	
09/30/2012	006	
06/30/2012	006	
03/31/2012	006	
12/31/2011	006	

OUTFALL 006

Number of Samples (n)	22	
Maximum	0.01	
Minimum	0.005	
Mean	0.010	
Standard Deviation	0.001	
CV	0.122	
$\sigma^2 = \ln(CV^2 + 1)$	0.015	
σ	0.122	
$\rho_n = (1 - CL)^{1/n}$	0.811	99% CL
Z_{99}	2.326	
Z_{81}	0.882	
C_{99}	1.318	
C_{81}	1.105	
C_{99}/C_{81}	1.192	
Chronic RWC	1.4 µg/L	
CCC	150 µg/L	
Acute RWC	1.6 µg/L	
CMC	340 µg/L	

Average Flow 0.226889 CFS
Design Flow 1.547200 CFS

	Flow (cfs)	Dilution Factor
7Q10	37,100	---
MZ	9,275.0	5995.7
ZID	15.472	11.0

*ZID cannot exceed 10x effluent design flow

Receiving Water Mass Balance

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

	MZ	ZID
C_s = upstream concentration (mg/L)	0.0014	0.0014
Q_s = upstream flow (cfs)	9,275.0	15.472
C_e = effluent concentration (mg/L)	0.0119	0.0119
Q_e = effluent flow (cfs)	0.2	0.2
C = downstream concentration (mg/L)	0.0014	0.0016

Note: Non-detect values were replaces with one half the reporting limit. When the reporting limit was unknown, non-detect values were eliminated from the dataset.

Continental Cement, Hannibal Missouri (MO-0111686)
Beryllium, Reasonable Potential Analysis (TSD, EPA/505/2-90-001, Section 3.3.2)

DATE	OUTFALL	CMAVG (mg/L)
12/31/2018	006	0.004
09/30/2018	006	0.004
06/30/2018	006	0.004
03/31/2018	006	0.004
12/31/2017	006	0.004
09/30/2017	006	0.004
06/30/2017	006	0.004
03/31/2017	006	0.004
12/31/2016	006	0.004
09/30/2016	006	0.004
06/30/2016	006	0.004
03/31/2016	006	0.004
12/31/2015	006	0.005
09/30/2015	006	0.004
06/30/2015	006	0.004
03/31/2015	006	0.005
12/31/2014	006	0.005
09/30/2014	006	0.005
06/30/2014	006	0.005
03/31/2014	006	0.001
12/31/2013	006	0.005
09/30/2013	006	
06/30/2013	006	0.005
03/31/2013	006	
12/31/2012	006	
09/30/2012	006	
06/30/2012	006	
03/31/2012	006	
12/31/2011	006	

OUTFALL 006

Number of Samples (n)	22
Maximum	0.01
Minimum	0.001
Mean	0.004
Standard Deviation	0.001
CV	0.199

$\sigma^2 = \ln(CV^2 + 1)$ 0.039

σ 0.197

$\rho_n = (1 - CL)^{1/n}$ 0.811 99% CL

Z_{99} 2.326

Z_{81} 0.882

C_{99} 1.552

C_{81} 1.167

C_{99}/C_{81} 1.330

Chronic RWC 0.3 µg/L

CCC 5 µg/L

Acute RWC 0.4 µg/L

CMC N.A. µg/L

Average Flow	0.226889	CFS
Design Flow	1.547200	CFS

	Flow (cfs)	Dilution Factor
7Q10	37,100	—
MZ	9,275.0	5995.7
ZID	15.472	11.0

*ZID cannot exceed 10x effluent design flow

Receiving Water Mass Balance

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

	MZ	ZID
C_s = upstream concentration (mg/L)	0.0003	0.0003
Q_s = upstream flow (cfs)	9,275.0	15.472
C_e = effluent concentration (mg/L)	0.0066	0.0066
Q_e = effluent flow (cfs)	0.2	0.2
C = downstream concentration (mg/L)	0.0003	0.0004

Note: Non-detect values were replaces with one half the reporting limit. When the reporting limit was unknown, non-detect values were eliminated from the dataset.

Continental Cement, Hannibal Missouri (MO-0111686)
Cadmium, Reasonable Potential Analysis (TSD, EPA/505/2-90-001, Section 3.3.2)

DATE	OUTFALL	CMAVG (mg/L)
12/31/2018	006	0.001
09/30/2018	006	0.001
06/30/2018	006	0.001
03/31/2018	006	0.001
12/31/2017	006	0.001
09/30/2017	006	0.001
06/30/2017	006	0.001
03/31/2017	006	0.001
12/31/2016	006	0.001
09/30/2016	006	0.001
06/30/2016	006	0.005
03/31/2016	006	0.005
12/31/2015	006	0.005
09/30/2015	006	0.005
06/30/2015	006	0.005
03/31/2015	006	0.005
12/31/2014	006	0.005
09/30/2014	006	0.005
06/30/2014	006	0.005
03/31/2014	006	0.005
12/31/2013	006	0.005
09/30/2013	006	
06/30/2013	006	0.005
03/31/2013	006	
12/31/2012	006	
09/30/2012	006	
06/30/2012	006	
03/31/2012	006	
12/31/2011	006	

OUTFALL 006

Number of Samples (n)	22
Maximum	0.01
Minimum	0.001
Mean	0.003
Standard Deviation	0.002
CV	0.626
$\sigma^2 = \ln(CV^2 + 1)$	0.331
σ	0.575
$\rho_n = (1 - CL)^{1/n}$	0.811 (99% CL)
Z_{99}	2.326
Z_{81}	0.882
C_{99}	3.229
C_{81}	1.408
C_{99}/C_{81}	2.294
Chronic RWC	0.8 µg/L
CCC	1 µg/L
Acute RWC	0.9 µg/L
CMC	10 µg/L

Average Flow	0.226889	CFS
Design Flow	1.547200	CFS

	Flow (cfs)	Dilution Factor
7Q10	37,100	---
MZ	9,275.0	5995.7
ZID	15.472	11.0

*ZID cannot exceed 10x effluent design flow

Receiving Water Mass Balance

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

	MZ	ZID
C_s = upstream concentration (mg/L)	0.0008	0.0008
Q_s = upstream flow (cfs)	9,275.0	15.472
C_e = effluent concentration (mg/L)	0.0115	0.0115
Q_e = effluent flow (cfs)	0.2	0.2
C = downstream concentration (mg/L)	0.0008	0.0009

Note: Non-detect values were replaces with one half the reporting limit. When the reporting limit was unknown, non-detect values were eliminated from the dataset.

Continental Cement, Hannibal Missouri (MO-0111686)
Chromium III, Reasonable Potential Analysis (TSD, EPA/505/2-90-001, Section 3.3.2)

DATE	OUTFALL	CMAVG (mg/L)
12/31/2018	006	0.011
09/30/2018	006	0.006
06/30/2018	006	0.015
03/31/2018	006	0.015
12/31/2017	006	0.015
09/30/2017	006	0.015
06/30/2017	006	0.015
03/31/2017	006	0.015
12/31/2016	006	0.015
09/30/2016	006	0.015
06/30/2016	006	0.015
03/31/2016	006	0.015
12/31/2015	006	0.015
09/30/2015	006	0.015
06/30/2015	006	0.015
03/31/2015	006	0.015
12/31/2014	006	0.015
09/30/2014	006	0.015
06/30/2014	006	0.015
03/31/2014	006	0.015
12/31/2013	006	0.015
09/30/2013	006	
06/30/2013	006	0.015
03/31/2013	006	
12/31/2012	006	
09/30/2012	006	
06/30/2012	006	
03/31/2012	006	
12/31/2011	006	

OUTFALL 006

Number of Samples (n)	22
Maximum	0.02
Minimum	0.006
Mean	0.014
Standard Deviation	0.002
CV	0.140
$\sigma^2 = \ln(CV^2 + 1)$	0.019
σ	0.139
$\rho_n = (1 - CL)^{1/n}$	0.811 (99% CL)
Z_{99}	2.326
Z_{81}	0.882
C_{99}	1.369
C_{81}	1.120
C_{99}/C_{81}	1.223
Chronic RWC	0.7 µg/L
CCC	137 µg/L
Acute RWC	0.9 µg/L
CMC	1054 µg/L

Average Flow	0.226889	CFS
Design Flow	1.547200	CFS

	Flow (cfs)	Dilution Factor
7Q10	37,100	—
MZ	9,275.0	5995.7
ZID	15.472	11.0

*ZID cannot exceed 10x effluent design flow

Receiving Water Mass Balance

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

	MZ	ZID
C_s = upstream concentration (mg/L)	0.0007	0.0007
Q_s = upstream flow (cfs)	9,275.0	15.472
C_e = effluent concentration (mg/L)	0.0183	0.0183
Q_e = effluent flow (cfs)	0.2	0.2
C = downstream concentration (mg/L)	0.0007	0.0009

Note: Non-detect values were replaces with one half the reporting limit. When the reporting limit was unknown, non-detect values were eliminated from the dataset.
*Total Chromium used for analysis, no data for Chromium III data

Continental Cement, Hannibal Missouri (MO-0111686)
Chromium VI, Reasonable Potential Analysis (TSD, EPA/505/2-90-001, Section 3.3.2)

DATE	OUTFALL	CMAVG (mg/L)
12/31/2018	006	0.01
09/30/2018	006	0.005
06/30/2018	006	0.01
03/31/2018	006	0.01
12/31/2017	006	0.01
09/30/2017	006	0.01
06/30/2017	006	0.01
03/31/2017	006	0.01
12/31/2016	006	0.01
09/30/2016	006	0.01
06/30/2016	006	0.0125
03/31/2016	006	0.0115
12/31/2015	006	0.01
09/30/2015	006	0.01
06/30/2015	006	0.01
03/31/2015	006	0.01
12/31/2014	006	0.01
09/30/2014	006	0.01
06/30/2014	006	0.01
03/31/2014	006	0.01
12/31/2013	006	0.01
09/30/2013	006	
06/30/2013	006	0.01
03/31/2013	006	
12/31/2012	006	
09/30/2012	006	
06/30/2012	006	
03/31/2012	006	
12/31/2011	006	

OUTFALL 006

Number of Samples (n)	22
Maximum	0.01
Minimum	0.005
Mean	0.010
Standard Deviation	0.001
CV	0.124

$\sigma^2 = \ln(CV^2 + 1)$ = 0.015

σ = 0.123

$\rho_n = (1 - CL)^{1/n}$ = 0.811 (99% CL)

Z_{99}	2.326
Z_{81}	0.882
C_{99}	1.322
C_{81}	1.107
C_{99}/C_{81}	1.195

Chronic RWC	0.7 µg/L
CCC	11 µg/L
Acute RWC	0.9 µg/L
CMC	16 µg/L

Average Flow	0.226889	CFS
Design Flow	1.547200	CFS

	Flow (cfs)	Dilution Factor
7Q10	37,100	—
MZ	9,275.0	5995.7
ZID	15.472	11.0

*ZID cannot exceed 10x effluent design flow

Receiving Water Mass Balance

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

	MZ	ZID
C_s = upstream concentration (mg/L)	0.0007	0.0007
Q_s = upstream flow (cfs)	9,275.0	15.472
C_e = effluent concentration (mg/L)	0.0149	0.0149
Q_e = effluent flow (cfs)	0.2	0.2
C = downstream concentration (mg/L)	0.0007	0.0009

Note: Non-detect values were replaces with one half the reporting limit. When the reporting limit was unknown, non-detect values were eliminated from the dataset.
*Total Chromium used for analysis, no data for Chromium III data

Continental Cement, Hannibal Missouri (MO-0111686)
Iron, Reasonable Potential Analysis (TSD, EPA/505/2-90-001, Section 3.3.2)

DATE	OUTFALL	CMAVG (mg/L)
12/31/2018	006	0.654
09/30/2018	006	0.349
06/30/2018	006	0.117
03/31/2018	006	0.0635
12/31/2017	006	0.0519
09/30/2017	006	0.344
06/30/2017	006	0.148
03/31/2017	006	0.11
12/31/2016	006	0.05
09/30/2016	006	0.0972
06/30/2016	006	0.0699
03/31/2016	006	2.61
12/31/2015	006	1.07
09/30/2015	006	0.179
06/30/2015	006	1.89
03/31/2015	006	0.503
12/31/2014	006	2.55
09/30/2014	006	1.64
06/30/2014	006	0.713
03/31/2014	006	1.3
12/31/2013	006	1.34
09/30/2013	006	1.02
06/30/2013	006	1.85
03/31/2013	006	0.374
12/31/2012	006	0.307
09/30/2012	006	0.745
06/30/2012	006	1.08
03/31/2012	006	0.617
12/31/2011	006	0.62

OUTFALL 006

Number of Samples (n)	29	
Maximum	2.61	
Minimum	0.050	
Mean	0.775	
Standard Deviation	0.732	
CV	0.945	
$\sigma^2 = \ln(CV^2 + 1)$	0.638	
σ	0.799	
$\rho_n = (1 - CL)^{1/n}$	0.853	99% CL
Z_{99}	2.326	
Z_{84}	1.007	
C_{99}	4.658	
C_{84}	1.625	
C_{99}/C_{84}	2.867	
Chronic RWC	28.4 µg/L	
CCC	1000 µg/L	
Acute RWC	136.0 µg/L	
CMC	N.A. µg/L	

Average Flow	0.226889	CFS
Design Flow	1.547200	CFS

	Flow (cfs)	Dilution Factor
7Q10	37,100	---
MZ	9,275.0	5995.7
ZID	15.472	11.0

*ZID cannot exceed 10x effluent design flow

Receiving Water Mass Balance

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

	MZ	ZID
C_s = upstream concentration (mg/L)	0.0282	0.0282
Q_s = upstream flow (cfs)	9,275.0	15.472
C_e = effluent concentration (mg/L)	7.4836	7.4836
Q_e = effluent flow (cfs)	0.2	0.2
C = downstream concentration (mg/L)	0.0284	0.1360

Note: Non-detect values were replaces with one half the reporting limit. When the reporting limit was unknown, non-detect values were eliminated from the dataset.

Continental Cement, Hannibal Missouri (MO-0111686)
Lead, Reasonable Potential Analysis (TSD, EPA/505/2-90-001, Section 3.3.2)

DATE	OUTFALL	CMAVG (mg/L)
12/31/2018	006	0.001
09/30/2018	006	0.001
06/30/2018	006	0.005
03/31/2018	006	0.005
12/31/2017	006	0.005
09/30/2017	006	0.005
06/30/2017	006	0.005
03/31/2017	006	0.005
12/31/2016	006	0.005
09/30/2016	006	0.005
06/30/2016	006	0.005
03/31/2016	006	0.005
12/31/2015	006	0.005
09/30/2015	006	0.005
06/30/2015	006	0.005
03/31/2015	006	0.005
12/31/2014	006	0.005
09/30/2014	006	0.005
06/30/2014	006	0.005
03/31/2014	006	0.005
12/31/2013	006	0.005
09/30/2013	006	
06/30/2013	006	0.00553
03/31/2013	006	
12/31/2012	006	
09/30/2012	006	
06/30/2012	006	
03/31/2012	006	
12/31/2011	006	0.000898

OUTFALL 006

Number of Samples (n)	23	
Maximum	0.00553	
Minimum	0.001	
Mean	0.004	
Standard Deviation	0.001	
CV	0.305	
$\sigma^2 = \ln(CV^2 + 1)$	0.089	
σ	0.298	
$\rho_n = (1 - CL)^{1/n}$	0.819	99% CL
Z_{99}	2.326	
Z_{82}	0.912	
C_{99}	1.914	
C_{82}	1.256	
C_{99}/C_{82}	1.525	
Chronic RWC	2.6 µg/L	
CCC	6 µg/L	
Acute RWC	2.7 µg/L	
CMC	145 µg/L	

Average Flow	0.226889	CFS
Design Flow	1.547200	CFS

	Flow (cfs)	Dilution Factor
7Q10	37,100	---
MZ	9,275.0	5995.7
ZID	15.472	11.0

*ZID cannot exceed 10x effluent design flow

Receiving Water Mass Balance

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

	MZ	ZID
C_s = upstream concentration (mg/L)	0.0026	0.0026
Q_s = upstream flow (cfs)	9,275.0	15.472
C_e = effluent concentration (mg/L)	0.0084	0.0084
Q_e = effluent flow (cfs)	0.2	0.2
C = downstream concentration (mg/L)	0.0026	0.0027

Note: Non-detect values were replaces with one half the reporting limit. When the reporting limit was unknown, non-detect values were eliminated from the dataset.

Continental Cement, Hannibal Missouri (MO-0111686)
Mercury, Reasonable Potential Analysis (TSD, EPA/505/2-90-001, Section 3.3.2)

DATE	OUTFALL	CMAVG (mg/L)
12/31/2018	006	0.0002
09/30/2018	006	0.0002
06/30/2018	006	0.0002
03/31/2018	006	0.0002
12/31/2017	006	0.0002
09/30/2017	006	0.0002
06/30/2017	006	0.0002
03/31/2017	006	0.0002
12/31/2016	006	0.0002
09/30/2016	006	0.0002
06/30/2016	006	0.0002
03/31/2016	006	0.0002
12/31/2015	006	0.0002
09/30/2015	006	0.0002
06/30/2015	006	0.0002
03/31/2015	006	0.0002
12/31/2014	006	0.0002
09/30/2014	006	0.0002
06/30/2014	006	0.0002
03/31/2014	006	0.0002
12/31/2013	006	0.0002
09/30/2013	006	
06/30/2013	006	0.0002
03/31/2013	006	
12/31/2012	006	
09/30/2012	006	
06/30/2012	006	
03/31/2012	006	
12/31/2011	006	

OUTFALL 006

Number of Samples (n)	22
Maximum	0.0002
Minimum	0.0002
Mean	0.0002
Standard Deviation	0.000
CV	0.000
$\sigma^2 = \ln(CV^2 + 1)$	0.000
σ	0.000
$\rho_n = (1 - CL)^{1/n}$	0.811 99% CL
Z_{99}	2.326
Z_{81}	0.882
C_{99}	1.000
C_{81}	1.000
C_{99}/C_{81}	1.000
Chronic RWC	0.035 µg/L
CCC	0.77 µg/L
Acute RWC	0.037 µg/L
CMC	1.4 µg/L

Average Flow	0.226889	CFS
Design Flow	1.547200	CFS

	Flow (cfs)	Dilution Factor
7Q10	37,100	---
MZ	9,275.0	5995.7
ZID	15.472	11.0

*ZID cannot exceed 10x effluent design flow

Receiving Water Mass Balance

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

	MZ	ZID
C_s = upstream concentration (mg/L)	0.0000	0.0000
Q_s = upstream flow (cfs)	9,275.0	15.472
C_e = effluent concentration (mg/L)	0.0002	0.0002
Q_e = effluent flow (cfs)	0.2	0.2
C = downstream concentration (mg/L)	0.00003	0.00004

Note: Non-detect values were replaces with one half the reporting limit. When the reporting limit was unknown, non-detect values were eliminated from the dataset.

Continental Cement, Hannibal Missouri (MO-0111686)
Selenium, Reasonable Potential Analysis (TSD, EPA/505/2-90-001, Section 3.3.2)

DATE	OUTFALL	CMAVG (mg/L)
12/31/2018	006	0.005
09/30/2018	006	0.005
06/30/2018	006	0.005
03/31/2018	006	0.005
12/31/2017	006	0.005
09/30/2017	006	0.005
06/30/2017	006	0.005
03/31/2017	006	0.005
12/31/2016	006	0.005
09/30/2016	006	0.005
06/30/2016	006	0.005
03/31/2016	006	0.005
12/31/2015	006	0.005
09/30/2015	006	0.005
06/30/2015	006	0.005
03/31/2015	006	0.005
12/31/2014	006	0.005
09/30/2014	006	0.05
06/30/2014	006	0.05
03/31/2014	006	0.005
12/31/2013	006	0.05
09/30/2013	006	
06/30/2013	006	0.05
03/31/2013	006	
12/31/2012	006	
09/30/2012	006	
06/30/2012	006	
03/31/2012	006	
12/31/2011	006	

OUTFALL 006

Number of Samples (n)	22
Maximum	0.05
Minimum	0.005
Mean	0.013
Standard Deviation	0.017
CV	1.317
$\sigma^2 = \ln(CV^2 + 1)$	1.006
σ	1.003
$\rho_n = (1 - CL)^{1/n}$	0.811 99% CL
Z_{99}	2.326
Z_{77}	0.752
C_{99}	6.232
C_{77}	1.286
C_{99}/C_{77}	4.847
Chronic RWC	0.8 µg/L
CCC	5 µg/L
Acute RWC	4.3 µg/L
CMC	N.A. µg/L

Average Flow	0.226889	CFS
Design Flow	1.547200	CFS

	Flow (cfs)	Dilution Factor
7Q10	37,100	—
MZ	9,275.0	5995.7
ZID	15.472	11.0

*ZID cannot exceed 10x effluent design flow

Receiving Water Mass Balance

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

	MZ	ZID
C_s = upstream concentration (mg/L)	0.0008	0.0008
Q_s = upstream flow (cfs)	9,275.0	15.472
C_e = effluent concentration (mg/L)	0.2424	0.2424
Q_e = effluent flow (cfs)	0.2	0.2
C = downstream concentration (mg/L)	0.0008	0.0043

Note: Non-detect values were replaces with one half the reporting limit. When the reporting limit was unknown, non-detect values were eliminated from the dataset.

Continental Cement, Hannibal Missouri (MO-0111686)
Thallium, Reasonable Potential Analysis (TSD, EPA/505/2-90-001, Section 3.3.2)

DATE	OUTFALL	CMAVG (mg/L)
12/31/2018	006	0.001
09/30/2018	006	0.001
06/30/2018	006	0.002
03/31/2018	006	0.002
12/31/2017	006	0.002
09/30/2017	006	0.002
06/30/2017	006	0.002
03/31/2017	006	0.01
12/31/2016	006	0.01
09/30/2016	006	0.01
06/30/2016	006	0.01
03/31/2016	006	0.01
12/31/2015	006	0.0107
09/30/2015	006	0.01
06/30/2015	006	0.01
03/31/2015	006	0.01
12/31/2014	006	0.1
09/30/2014	006	0.01
06/30/2014	006	0.01
03/31/2014	006	0.01
12/31/2013	006	0.01
09/30/2013	006	
06/30/2013	006	0.01
03/31/2013	006	
12/31/2012	006	
09/30/2012	006	
06/30/2012	006	
03/31/2012	006	
12/31/2011	006	

OUTFALL 006

Number of Samples (n)	22
Maximum	0.10
Minimum	0.001
Mean	0.011
Standard Deviation	0.020
CV	1.715
$\sigma^2 = \ln(CV^2 + 1)$	1.371
σ	1.171
$\rho_n = (1 - CL)^{1/n}$	0.811 99% CL
Z_{99}	2.326
Z_{80}	0.852
C_{99}	7.676
C_{80}	1.366
C_{99}/C_{80}	5.618
Chronic RWC	0.6 µg/L
CCC	2 µg/L
Acute RWC	8.7 µg/L
CMC	N.A. µg/L

Average Flow	0.226889	CFS
Design Flow	1.547200	CFS

	Flow (cfs)	Dilution Factor
7Q10	37,100	---
MZ	9,275.0	5995.7
ZID	15.472	11.0

*ZID cannot exceed 10x effluent design flow

Receiving Water Mass Balance

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

	MZ	ZID
C_s = upstream concentration (mg/L)	0.0006	0.0006
Q_s = upstream flow (cfs)	9,275.0	15.472
C_e = effluent concentration (mg/L)	0.5618	0.5618
Q_e = effluent flow (cfs)	0.2	0.2
C = downstream concentration (mg/L)	0.0006	0.0087

Note: Non-detect values were replaces with one half the reporting limit. When the reporting limit was unknown, non-detect values were eliminated from the dataset.

Continental Cement, Hannibal Missouri (MO-0111686)
Chloride, Reasonable Potential Analysis (TSD, EPA/505/2-90-001, Section 3.3.2)

DATE	OUTFALL	CMAVG (mg/L)
12/31/2018	006	38
09/30/2018	006	230
06/30/2018	006	67.2
03/31/2018	006	48.9
12/31/2017	006	41.6
09/30/2017	006	44.1
06/30/2017	006	41
03/31/2017	006	66.9
12/31/2016	006	38.6
09/30/2016	006	32.5
06/30/2016	006	48.6
03/31/2016	006	44.9
12/31/2015	006	41.6
09/30/2015	006	37.8
06/30/2015	006	52
03/31/2015	006	132
12/31/2014	006	35.1
09/30/2014	006	43.8
06/30/2014	006	142
03/31/2014	006	282
12/31/2013	006	51.6
09/30/2013	006	54.5
06/30/2013	006	34.8
03/31/2013	006	77.6
12/31/2012	006	40.3
09/30/2012	006	57.2
06/30/2012	006	51.5
03/31/2012	006	88
12/31/2011	006	68.1

OUTFALL 006

Number of Samples (n)	29
Maximum	282.00
Minimum	32.500
Mean	70.076
Standard Deviation	57.090
CV	0.815

$\sigma^2 = \ln(CV^2 + 1)$ 0.509

σ 0.713

$\rho_n = (1 - CL)^{1/n}$ 0.853 99% CL

Z_{99}	2.326
Z_{95}	1.049
C_{99}	4.076
C_{95}	1.639
C_{99}/C_{95}	2.487

Chronic RWC	28.6	mg/L
CCC	230	mg/L
Acute RWC	38.3	mg/L
CMC	860	mg/L

Average Flow	0.226889	CFS
Design Flow	1.547200	CFS

	Flow (cfs)	Dilution Factor
7Q10	37,100	---
MZ	9,275.0	5995.7
ZID	15.472	11.0

*ZID cannot exceed 10x effluent design flow

Receiving Water Mass Balance

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

	MZ	ZID
C_s = upstream concentration (mg/L)	28.5602	28.5602
Q_s = upstream flow (cfs)	9,275.0	15.472
C_e = effluent concentration (mg/L)	701.3643	701.3643
Q_e = effluent flow (cfs)	0.2	0.2
C = downstream concentration (mg/L)	28.5766	38.2839

Continental Cement, Hannibal Missouri (MO-0111686)
Chloride + Sulfate, Reasonable Potential Analysis (TSD, EPA/505/2-90-001, Section 3.3.2)

DATE	OUTFALL	CMAVG (mg/L)
12/31/2018	006	188
09/30/2018	006	570
06/30/2018	006	263.2
03/31/2018	006	226.9
12/31/2017	006	219.6
09/30/2017	006	133
06/30/2017	006	166
03/31/2017	006	204.9
12/31/2016	006	150.6
09/30/2016	006	142.5
06/30/2016	006	243.6
03/31/2016	006	241.9
12/31/2015	006	185.6
09/30/2015	006	251.8
06/30/2015	006	172
03/31/2015	006	345
12/31/2014	006	221.1
09/30/2014	006	276.8
06/30/2014	006	367
03/31/2014	006	442
12/31/2013	006	198.6
09/30/2013	006	215.5
06/30/2013	006	238
03/31/2013	006	279
12/31/2012	006	235
09/30/2012	006	239
06/30/2012	006	205.5
03/31/2012	006	257
12/31/2011	006	271

OUTFALL 006

Number of Samples (n)	29	
Maximum	570.00	
Minimum	133.000	
Mean	246.555	
Standard Deviation	89.221	
CV	0.362	
$\sigma^2 = \ln(CV^2 + 1)$	0.123	
σ	0.351	
$\rho_n = (1 - CL)^{1/n}$	0.853	99% CL
Z_{99}	2.326	
Z_{85}	1.049	
C_{99}	2.126	
C_{85}	1.359	
C_{99}/C_{85}	1.565	
Chronic RWC	63.4	mg/L
CCC	83	mg/L
Acute RWC	75.3	mg/L
CMC	83	mg/L

Average Flow	0.226889	CFS
Design Flow	1.547200	CFS

	Flow (cfs)	Dilution Factor
7Q10	37,100	—
MZ	9,275.0	5995.7
ZID	15.472	11.0

*ZID cannot exceed 10x effluent design flow

Receiving Water Mass Balance

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

	MZ	ZID
C_s = upstream concentration (mg/L)	63.3309	63.3309
Q_s = upstream flow (cfs)	9,275.0	15.472
C_e = effluent concentration (mg/L)	892.1243	892.1243
Q_e = effluent flow (cfs)	0.2	0.2
C = downstream concentration (mg/L)	63.3511	75.3090

Continental Cement, Hannibal Missouri (MO-0111686)
Oil and Grease, Reasonable Potential Analysis (TSD, EPA/505/2-90-001, Section 3.3.2)

DATE	OUTFALL	CMAVG (mg/L)
12/31/2018	006	1
09/30/2018	006	5
06/30/2018	006	5.1
03/31/2018	006	1
12/31/2017	006	1
09/30/2017	006	1
06/30/2017	006	1
03/31/2017	006	1.1
12/31/2016	006	1.11
09/30/2016	006	1
06/30/2016	006	1
03/31/2016	006	4
12/31/2015	006	2
09/30/2015	006	1.03
06/30/2015	006	1.01
03/31/2015	006	1.01
12/31/2014	006	1.62
09/30/2014	006	1
06/30/2014	006	1
03/31/2014	006	1
12/31/2013	006	1
09/30/2013	006	
06/30/2013	006	1
03/31/2013	006	
12/31/2012	006	
09/30/2012	006	
06/30/2012	006	
03/31/2012	006	
12/31/2011	006	1.05

OUTFALL 006

Number of Samples (n)	29	
Maximum	5.10	
Minimum	1.000	
Mean	1.567	
Standard Deviation	1.248	
CV	0.797	
$\sigma^2 = \ln(CV^2 + 1)$	0.492	
σ	0.701	
$\rho_n = (1 - CL)^{1/n}$	0.853	99% CL
Z_{99}	2.326	
Z_{85}	1.049	
C_{99}	3.995	
C_{85}	1.632	
C_{99}/C_{85}	2.448	
Chronic RWC	0.0003	mg/L
CCC	10	mg/L
Acute RWC	0.2	mg/L
CMC	N.A.	mg/L

Average Flow	0.226889	CFS
Design Flow	1.547200	CFS

	Flow (cfs)	Dilution Factor
7Q10	37,100	---
MZ	9,275.0	5995.7
ZID	15.472	11.0

*ZID cannot exceed 10x effluent design flow

Receiving Water Mass Balance

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

	MZ	ZID
C_s = upstream concentration (mg/L)	0.0000	0.0000
Q_s = upstream flow (cfs)	9,275.0	15.472
C_e = effluent concentration (mg/L)	12.4861	12.4861
Q_e = effluent flow (cfs)	0.2	0.2
C = downstream concentration (mg/L)	0.0003	0.1805

Note: Non-detect values were replaces with one half the reporting limit. When the reporting limit was unknown, non-detect values were eliminated from the dataset.