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 RSMo, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0097675
Owner:	Associated Electric Cooperative, Inc.
Address:	2814 S. Golden, Springfield MO 65801
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Thomas Hill Energy Center
Facility Address:	5693 Highway F, Clifton Hill, MO 65244-9801
Legal Description:	Secs. 19, 24, & 30, T55N, R15W, Randolph County
UTM Coordinates:	See following pages
Receiving Streams:	See following pages
First Classified Streams and ID:	Thomas Hill Res. #7173 & Middle Fork Little Chariton River #0691; see following pages
USGS Basin & Sub-watershed No.:	10280203-0405 Bee Creek-Middle Fork Little Chariton River

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

FACILITY DESCRIPTION

Thomas Hill Energy Center is a coal-fired power plant located in Randolph County. It is located on the southeastern shore of the Thomas Hill Reservoir; thermal discharges exempted by 10 CSR 20-7.031(5)(D)4; portions of CWA §316(b) apply. Subject to ELG 40 CFR 423. SIC # 4911; NAICS # 221112; see additional information on following pages.

This permit authorizes only wastewater and stormwater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas.

November 1, 2022
Effective Date

October 31, 2027
Expiration Date

Chris Wieberg, Director, Water Protection Program

FACILITY DESCRIPTION (CONTINUED)

OUTFALL #001 – CATEGORICAL WASTEWATER AND STORMWATER

Ash sluice wastewater, ash quench wastewater overflow; effluent from an ash pond, which is slated to be decommissioned; a settling pond; a future concrete dewatering tank (CDT); and stormwater runoff from the plant grounds. Accumulated sediments are removed to an onsite Utility Waste Landfill (UWL), permitted under solid waste management permit #717502. Units 1 and 2 ash system; units 1 & 2 boiler slag is currently sluiced to the pond system. The process is changing to a concrete dewatering tank (CDT) with closure of the ash ponds; and will then be outfall #01A. Ash dewatering will occur prior to hauling to UWL. Unit 3 submerged flight conveyor (SFC) (0.283 MGD) to comply with 40 CFR 423. Flocculation and coagulation. 4/3/2020 antideg; implemented in this (2022) renewal. Waste residues are removed and disposed at the UWL.

This outfall also receives effluent from: air heater wash (about 2x per year at 15 MG); unit 3 pyrites; bottom ash system; vehicle wash (400 gallons); coal handling equipment wash,; process spills and leaks; unit 3 corrosive drain sump (0.097 MGD); the Unit 3 submerged flight conveyer (SFC) (0.283 MGD); units 1, 2, & 3 stormwater runoff (total runoff contribution is approximately 167.52 acres (12.7 max MGD), including units 1 & 2 coal pile runoff); and part of unit 3 coal pile runoff, approximately 24.76 acres. Flocculation and coagulation are used to treat effluent at this outfall prior to discharge. Wastewater, runoff, and coal handling equipment wash down (0.064 MGD), and residues are collected in the unit 3 coal pile runoff pond #006 then pumped to the UWL. Boiler rinses are without chemicals which flow to a four cell system. Cyclean, a coal pretreatment operation used for air pollution control, is under roof and discharges to this outfall – moved from outfall #008.

The facility can control the flow leaving through outfall #001 by stacking weir boards or cement blocks shaped like railroad ties at the intake to limit the amount of flow over the weir. Receives discharges from outfall #016. Stormwater BMPs are settling ponds and vegetated buffers. The low volume and metal cleaning wastewater and coal storage stormwater are considered categorical wastes under 40 CFR 423.

UTM Coordinates: X = 530801, Y = 4376802
Receiving & First Classified Stream and ID: Middle Fork Little Chariton River (P) WBID# 0691
Design flow: 29 MGD
Actual flow: 6.68 MGD

OUTFALL #01A – CATEGORICAL PROCESS WASTEWATER

Implemented in the 2022 renewal; see antidegradation review. The above process itemized in outfall #001 is changing in 2023 to include a concrete dewatering tank (CDT). Ash dewatering will then occur in the CDT prior to hauling to the UWL. On 4/3/2020 an antidegradation review was submitted, and is implemented in this (2022) renewal to authorize the planned changes to effluent flow, and is attached prior to the fact sheet of this permit. The concrete dewatering tank is being built; then ponds 2E and 2W will still be used. However, the facility is closing historical ponds 3 and 4, and will be closing them by the end of 2025. This outfall will be used later in the permit term and outfall #001 will be until the ponds are closed thereafter. At the time of full closure, no industrial exposure will likely exist. The facility must continue to sample from both outfalls until a permit modification is completed to remove the sampling requirements and re-evaluate the pollutants discharging to outfall #001. All of the above wastewaters will continue to be discharged though outfall #01A except for ash sluice wastewater. An engineered purge of sluice wastewater will occur prior to discharge of the ash sluice water and will receive treatment. All flows from outfall #001 will remain the same but will be directed to flow through Cell 2W and 2E and discharge via Outfall 01A after construction is complete.

UTM Coordinates: X = 531111, Y = 4377542
Receiving & First Classified Stream and ID: Middle Fork Little Chariton River (P) WBID# 0691
Design flow: 29 MGD (will be evaluated at next renewal or modification)
Actual flow: 6.68 MGD (will be evaluated at next renewal or modification)

OUTFALL #002 – NON-CATEGORICAL COOLING WATER

Once-through air compressor cooling water. Per 10 CSR 7.031(5)(D)4, thermal pollutants are not applicable to discharges to Thomas Hill Reservoir. Outfall #020 is the thermal compliance point for this permit. This discharge is treated with the biocide monochloramine but also is being treated by dechlorination. Outfall #002 is a return pipe that discharges from the Unit 1 & 2 intake.

UTM Coordinates: X = 530920, Y = 4377913
Receiving Waterbody: Thomas Hill Reservoir (L2)
First Classified Waterbody ID: Thomas Hill Reservoir (L2) WBID# 7173
Average flow: 2.16 MGD
Actual flow: 3.31 MGD

FACILITY DESCRIPTION (CONTINUED)

OUTFALL #003 – CATEGORICAL NON-CONTACT COOLING WASTEWATER

Once through cooling water and low volume waste sources categorical wastewater. Units 1 and 2 condenser cooling water, roof drains, boiler blowdown, and dewatering auxiliary cooling water. Discharges are sent to a backwater finger of the lake; no mixing is afforded this area. The 2003 permit listed stormwater runoff as a component of this outfall; however, the facility has stated stormwater does not discharge through this outfall. This discharge is treated with the biocide monochloramine but also is being treated by dechlorination. An antidegradation review was done for this pollutant 6/18/2019, and was incorporated into the permit in a 2019 modification.

UTM Coordinates:	X = 531301, Y = 4378228
Receiving Stream:	Thomas Hill Reservoir (L2)
First Classified Stream and ID:	Thomas Hill Reservoir (L2) WBID# 7173
Design flow:	348 MGD
Actual flow:	245.2 MGD

OUTFALL #004 – CATEGORICAL NON-CONTACT COOLING WASTEWATER

Once-through cooling water for purposes of cooling unit 3; this discharge is treated with the biocide monochloramine but also is being treated by dechlorination. An antidegradation review was done for this pollutant 5/17/2019 and was incorporated into the permit in a 2019 modification.

UTM Coordinates:	X = 530978, Y = 4378437
Receiving Stream:	Thomas Hill Reservoir (L2)
First Classified Stream and ID:	Thomas Hill Reservoir (L2) WBID# 7173
Design flow:	648 MGD
Actual flow:	532.8 MGD

OUTFALL #005 – CATEGORICAL PROCESS WASTEWATER

This outfall receives wastewater from outfall #013 (domestic wastewater), water treatment clarifiers, neutralization tank, lab drains, demineralizer and polisher wash, unit 3 pyrites (intermittent), bottom ash system (intermittent), unit 3 corrosive sump, plant drains, and 2.2 acres of stormwater runoff. This outfall receives pH neutralization and detention/settling in a single cell lagoon which has a retention time of about one day. Pond capacity is 0.5 MG. On 12/6/2021, AECI indicated that intermittent RO and potable water tank overflow (historically outfall #012) and draining will also be routed to this outfall; new at the 2022 renewal.

UTM Coordinates:	X = 530969, Y = 4378440
Receiving Stream:	Thomas Hill Reservoir (L2)
First Classified Stream and ID:	Thomas Hill Reservoir (L2) WBID# 7173
Design flow:	2.33 MGD
Average flow:	0.12 MGD

OUTFALL #006 – DISCHARGE THROUGH THIS OUTFALL TO WATERS OF THE STATE IS NOT AUTHORIZED UNDER THIS PERMIT

Eliminated NPDES permitting requirements on 01/01/2004; discharge is permanently directed to outfall #001/#01A.

UTM Coordinates:	X = 531977, Y = 4378348

OUTFALL #007 – INDUSTRIAL STORMWATER

Industrial stormwater runoff from northern portion of the facility. Receives flows in contact with material storage, T2 dust collector, transfer house #2, and ammonia tank area. Receives runoff from 11.51 acres of predominately graveled surface.

UTM Coordinates:	X = 531021, Y = 4378446
Receiving Stream:	Thomas Hill Reservoir (L2)
First Classified Stream and ID:	Thomas Hill Reservoir (L2) WBID# 7173
10 Year 24 Hour Predictive Storm Event:	0.792 MGD

FACILITY DESCRIPTION (CONTINUED)

OUTFALL #008 – INDUSTRIAL WASTEWATER, CATEGORICAL STORMWATER

Receives wastewater from Unit 3 coal tunnel and maintenance shop floor drains with heavy equipment wash. Unit 3 coal maintenance shop floor drains were removed from this outfall in the 2022 renewal. Categorical stormwater is received from coal tunnel and conveyor (approximately 23.86 acres); conveyor is lightly sprayed with dust suppression chemicals. Pond capacity is 3.128 MG, retention time is about 7 days. Construction permit in 1996 allowed a heavy equipment wash facility consisting of a 12'0" by 6'2" by 5'6" deep concrete tank (3'9" operating level) and oil water separator. Industrial stormwater runoff from settling basin; northeastern pond. 7 day retention time.

UTM Coordinates:	X = 531482, Y = 4378325
Receiving Stream:	Thomas Hill Reservoir (L2)
First Classified Stream and ID:	Thomas Hill Reservoir (L2) WBID# 7173
Design flow:	0.384 MGD
Average Flow:	0.141 MGD

OUTFALL #009 – INDUSTRIAL STORMWATER

Receives flow from southern portion of facility. This includes units 1 and 2 plant area, employee parking runoff, unit transformers, and sluice line piping. Receives stormwater runoff from approximately 6.24 acres, 80,000 sq. ft. impervious. Management practices implemented include best management practices as dictated by the SWPPP; and the SPCC Plan addresses oil contained in transformers located in the drainage area.

UTM Coordinates:	X = 531097, Y = 4377953
Receiving Stream:	Thomas Hill Reservoir (L2)
First Classified Stream and ID:	Thomas Hill Reservoir (L2) WBID# 7173
Est.flow in 10 Yr, 24 Hr Storm Event:	0.346 MGD

OUTFALL #010 – NON-INDUSTRIAL STORMWATER, UNMONITORED RETURN WATER

Intake strainer backwash (untreated lake water discharge) and stormwater without industrial exposure; no monitoring requirements.

UTM Coordinates:	X = 531047, Y = 4378033
Receiving Stream:	Thomas Hill Reservoir (L2)
First Classified Stream and ID:	Thomas Hill Reservoir (L2) WBID# 7173
Actual Flow:	0.034 MGD

OUTFALL #011 – INDUSTRIAL WASTEWATER

This outfall discharges treated wastewaters primarily from: potable water treatment (clarifier and sludge); unit 3 HVAC chiller water, unit 3 roof drains, unit 3 corrosive drain sump; an oil/water separator from units 1, 2 and 3 plant drains. Water used to blowdown the basin between production cycles flows to outfall #011. Finished RO water does not flow to outfall #011. This outfall also discharges stormwater runoff from approximately 2.19 acres. Residues and sludges are removed to the co-located UWL. Pond capacity is about 3.04 MG and retention time is about 5 days. Residues are removed from the pond about every 30 to 45 days.

UTM Coordinates:	X = 530774, Y = 4378183
Receiving Stream:	Thomas Hill Reservoir (L2)
First Classified Stream and ID:	Thomas Hill Reservoir (L2) WBID# 7173
Design flow:	2.81 MGD
Actual Flow:	0.530 MGD

OUTFALL #012 – DRINKING WATER AND RO WATER TANK PURGES - INTERMITTENT WASTEWATER DISCHARGE

Authorization to discharge removed at 2022 renewal; drinking water and RO water overflow routed to outfall #005; drinking water tank draining routed to outfall #011. This outfall also receives stormwater runoff from 0.84 acres which are graveled and paved; however, this stormwater is not exposed to industrial materials. Stormwater discharge authorized.

UTM Coordinates:	X = 530880, Y = 4378023

FACILITY DESCRIPTION (CONTINUED)

INTERNAL MONITORING POINT #013 – DOMESTIC WASTEWATER

Domestic wastewater. Discharges to waters of the state are through outfall #005. This outfall receives domestic effluent treated by a single cell package treatment plant (Sanitaire, Model #M1-R258). Activated sludge is hauled off-site by a contract hauler. This system serves approximately 240 employees; Population equivalent (PE) is 68. Missouri regulations require internal monitoring for domestic wastewater; 10 CSR 20-7.015(8)(A). Starting from the southwestern side of the building, the package plant has an aerobic digester, two aeration basins, and a clarifier at the northeastern end of the package plant. The aeration basins are approximately 12-15 feet deep and are operated in sequence, influent starts in basin 1 then travels to basin 2. The plant is checked daily and they add sodium bicarbonate once a day based on alkalinity. The plant is enclosed and has windows on each side of the building and a garage-style door on the eastern wall. There are not any fans to force ventilation. The plant is operated manually based on results from various factors, which includes mixed liquor suspended solids (MLSS), dissolved oxygen level, and biochemical oxygen demand. The aeration basins use a coarse bubble diffused aeration system. The sludge blanket in the clarifier is maintained at about four feet deep; the sludge is wasted to maintain proper solids in aerator section. Wastewater is recirculated to the aeration basin or pumped to the digester as needed. The weir is typically cleaned on a daily basis. The flow meter which measures in gallons per day is calibrated yearly. Local audio/visual alarms are present at the plant; they check the oil daily on the blower motors which has preventative maintenance performed annually. Operations and maintenance records are kept on site. The final step of the process is UV disinfection. Discharges to waters of the state are through outfall #005.

Sludge:	aerobic digester; 0.27 dry tons/year; hauled off site
UTM Coordinates:	X = 530950, Y = 4378437
Receiving Stream:	Thomas Hill Reservoir (L2)
First Classified Stream and ID:	Thomas Hill Reservoir (L2) WBID# 7173
Design Flow:	0.088
Average Flow:	0.018 MGD

OUTFALL #014 – CATEGORICAL NON-CONTACT COOLING WASTEWATER

This outfall discharges Unit 3 non-contact cooling water and Unit 3 boiler blowdown. The Unit 3 auxiliary boiler drain was removed at the 2019 modification. The ELG has defined boiler blowdown as a low volume waste 40 CFR 423.11(b). Heat is discharged at this outfall.

UTM Coordinates:	X = 531021, Y = 4378381
Receiving Stream:	Thomas Hill Reservoir (L2)
First Classified Stream and ID:	Thomas Hill Reservoir (L2) WBID# 7173
Design Flow:	2.1 MGD
Average Flow:	0.45 MGD

OUTFALL #015 - STORMWATER

This outfall receives de minimis industrial exposure, almost 99% of the area is grassy and has no industrial activity. The area is well vegetated and the rail line on northeast portion of the facility is rarely used. The exposed area is the coal entrance road and the railroad right-of-way. The facility shall keep this outfall in the SWPPP; however, no analytical monitoring is required. Permittee requested this outfall be added back in to the 2018 renewal permit. Transferred to permit no. MO-0003948 in the 1990s. Coal entrance road and railroad right-of-way. The roadway adjacent to the west side of the grassy area has a berm and flows inward to outfall #016.

UTM Coordinates:	X = 532201, Y = 4378206

OUTFALL #016 – INDUSTRIAL STORMWATER

This outfall receives effluent from a settling basin lined with ashcrete, a lift station, and stormwater runoff from the primary plant site. This stormwater is usually pumped to ash pond and then through outfall #001. Industrial sources are area runoff (most of the plant proper; Area SW-016), including approximately 1,240,000 sq. ft. immediately adjacent to Unit 3 and the north side of Units 1 and 2, and rooftop runoff of 7.6 acres. Specific areas drained include coal conveyors, unit 3 bottom ash loading area, equipment and material storage and precipitator areas. Stormwater control measures completed have included lined ditches and the installation of a collection pond and pump structure. The pond and pump structure are designed to only collect and transfer initial stormwater to the ash pond which is then discharged through outfall #001. Flows in excess of 1,500 GPM will discharge over the ashcrete paved spillway of the retention structure. Outfall #016 is considered a stormwater outfall even though some constituents are listed as industrial sources. The permit writer has determined the industrial sources are de minimis. When outfall #016 discharges, the volume of industrial sources is so dilute, parameters no longer require consideration separately. Outfall #001 and #014 normally receive stormwater from the central industrial area of the facility and those outfalls and constituents contained therein are protective of waters of the state from the industrial sources of this outfall.

UTM Coordinates:	X = 531004, Y = 4378407
Receiving Stream:	Thomas Hill Reservoir (L2)
First Classified Stream and ID:	Thomas Hill Reservoir (L2) WBID# 7173
10 Year 24 Hour Predictive Storm Event:	1.822 MGD

FACILITY DESCRIPTION (CONTINUED)

OUTFALL #017 – INDUSTRIAL STORMWATER

Stormwater (Area SW-17); receives stormwater from the southernmost portion of the facility above the dam, from a runoff area of approximately 8.18 acres. This runoff area drains the middle 1/3 of Units 1 and 2 switchyard, employee parking, and the area traversed by ash sluice piping. This outfall also receives sluice pipe maintenance raw water drain (raw water does not contain ash and ash transport water). Raw water drain considered intermittent and de minimis for the purposes of permitting. The facility is not permitted to discharge ash transport or ash sluice wastewater through this outfall. BMPs must be designed to capture any spilled ash sluice or transport wastewater and return the transport and sluice wastewater to the ash handling and treatment system at outfall #001/#01A.

UTM Coordinates:	X = 531045, Y = 4377839
Receiving Stream:	Thomas Hill Reservoir (L2)
First Classified Stream and ID:	Thomas Hill Reservoir (L2) WBID# 7173
10 Year 24 Hour Predictive Storm Event:	0.848 MGD

OUTFALL #018 – INDUSTRIAL STORMWATER

Stormwater runoff area of approximately 3.7 acres, runoff from the west side of the air/water building, contractor setup area, scaffolding, and rail lay-down area.

UTM Coordinates:	X = 530870, Y = 4378048
Receiving Stream:	Thomas Hill Reservoir (L2)
First Classified Stream and ID:	Thomas Hill Reservoir (L2) WBID# 7173
Actual Flow:	dependent upon precipitation
10 Year 24 Hour Predictive Storm Event:	0.384 MGD

OUTFALL #019 – INDUSTRIAL STORMWATER

Receives effluent from equipment and material storage area; area G and pond #SW-G. This outfall receives sediment pond treatment. This outfall was added during the 2018 renewal. Lay down area (even if temporary) must be permitted according to 40 CFR 122.26(b)(14) as a material handling site.

UTM Coordinates:	X = 530831, Y = 4378521
Receiving Stream:	Thomas Hill Reservoir (L2)
First Classified Stream and ID:	Thomas Hill Reservoir (L2) WBID# 7173
10 Year 24 Hour Storm Event:	0.727 MGD

PERMITTED FEATURE #020 – TEMPERATURE MONITORING POINT

Temperature compliance point – Thomas Hill Reservoir dam outlet. Per 10 CSR 20-7.031(5)(D), facilities discharging thermal pollution must be limited. The facility made an agreement with the Department of Conservation in 1965 they would discharge, at a minimum, 5 cfs from the dam to maintain flow in the Middle Fork Chariton River.

UTM Coordinates:	X = 530566, Y = 4377653
Receiving Stream:	Middle Fork Little Chariton River (P)
First Classified Stream and ID:	Middle Fork Little Chariton River (P) WBID# 0691
USGS Basin & Sub-watershed No.:	10280203-0405 Bee Creek-Middle Fork Little Chariton River
Minimum flow:	3.2316 MGD (5 cfs)

PERMITTED FEATURE #INA – INTAKE A FOR UNITS 1 AND 2

Intake monitoring necessary for certain parameters.

UTM Coordinates:	X = 530813, Y = 4378050
Design Intake:	346 MGD; 240k gpm
Screens:	8 screens, ¾ mesh

PERMITTED FEATURE #INB – INTAKE B FOR UNIT 3

Intake monitoring necessary for certain parameters.

UTM Coordinates:	X = 530566, Y = 4377653
Design Intake:	626 MGD; 145k gpm
Screens:	12 screens, ¾ mesh

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL #001 & #01A *process wastewater/ash handling*	**TABLE A-1** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

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

EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: M					
PHYSICAL					
Flow	MGD	*	*	once/week ⁂	24 hr. total
CONVENTIONAL					
Oil & Grease	mg/L	20	15	once/week ⁂	grab
pH †	SU	6.5 to 9.0	-	once/week ⁂	grab
Total Suspended Solids (TSS) - gross	mg/L	100	*	once/week ⁂	grab
Total Suspended Solids (TSS) - NET	mg/L	*	30 ♠	once/week ⁂	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2022.					
LIMIT SET: Q					
OTHER					
Chloride	mg/L	*	*	once/quarter ◊	grab
Sulfate	mg/L	*	*	once/quarter ◊	grab
Chloride plus Sulfate	mg/L	*	*	once/quarter ◊	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2023.					

OUTFALL #BWW *boiler cleaning – collected at #001/#01A*	**TABLE A-2** **INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The facility is authorized to discharge from outfall(s) as specified. In accordance with 10 CSR 20-7.031, the final effluent limitations outlined in Table A-3 must be achieved as soon as possible but no later than **November 1, 2027**. These interim effluent limitations are effective beginning **November 1, 2022** and remain in effect through **October 31, 2027** or as soon as possible. Discharges shall be controlled, limited, and monitored by the facility as specified below:

EFFLUENT PARAMETERS	UNITS	INTERIM EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: M					
PHYSICAL					
Flow	MGD	*	*	once/month ⸸	24 hr. total
METALS					
Boron, Total Recoverable	µg/L	3377	1683	once/month ⸸	grab
Copper, Total Recoverable	µg/L	1000 ♠	1000 ♠	once/month ⸸	grab
Iron, Total Recoverable	µg/L	1000 ♠	1000 ♠	once/month ⸸	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2022.					

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALL #BWW *boiler cleaning – collected at #001/#01A*	**TABLE A-3** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**			
The facility is authorized to discharge from outfall(s) as specified. The final effluent limitations shall become effective on **November 1, 2027** and remain in effect until expiration of the permit. Discharges shall be controlled, limited, and monitored by the facility as specified below:				
EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: M					
PHYSICAL					
Flow	MGD	*	*	once/month ⸸	24 hr. total
METALS					
Boron, Total Recoverable	µg/L	3377	1683	once/month ⸸	grab
Copper, Total Recoverable	µg/L	26.9	13.4	once/month ⸸	grab
Iron, Total Recoverable	µg/L	1000 ♠	831	once/month ⸸	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2027.					

OUTFALL #BWW *boiler cleaning – collected at #001/#01A*	**TABLE A-4** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**			
The facility is authorized to discharge from outfall(s) as specified. The final effluent limitations shall become effective on **November 1, 2022** and remain in effect until expiration of the permit. Discharges shall be controlled, limited, and monitored by the facility as specified below:				
EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: A					
WET					
Whole Effluent Toxicity, Acute ⁝	TUa	1.0		once/year ⸸	grab
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2024.					

OUTFALLS #002 AND #004 *cooling wastewater*	**TABLE A-5** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**			
The facility is authorized to discharge from outfall(s) as specified. The final effluent limitations shall become effective on **November 1, 2022** and remain in effect until expiration of the permit. Discharges shall be controlled, limited, and monitored by the facility as specified below:				
EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: M					
PHYSICAL					
Flow	MGD	*	*	once/week ⁂	24 hr. total
CONVENTIONAL					
pH †	SU	6.5 to 9.0	-	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2022.					

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALL #003 *cooling and low volume wastes*	**TABLE A-6** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

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

EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: M					
PHYSICAL					
Flow	MGD	*	*	once/week ⁂	24 hr. total
CONVENTIONAL					
Oil & Grease	mg/L	20	15	once/month	grab
pH †	SU	6.5 to 9.0	-	once/week ⁂	grab
Total Suspended Solids - Gross	mg/L	100	*	once/month	grab
Total Suspended Solids – NET ♠	mg/L	-	30 ♠	once/month	grab

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2022.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALL #005 *process waste pond*	**TABLE A-7** **INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The facility is authorized to discharge from outfall(s) as specified. In accordance with 10 CSR 20-7.031, the final effluent limitations outlined in Table A-8 must be achieved as soon as possible but no later than **November 1, 2027**. These interim effluent limitations are effective beginning **November 1, 2022** and remain in effect through **October 31, 2027** or as soon as possible. Discharges shall be controlled, limited, and monitored by the facility as specified below:

EFFLUENT PARAMETERS	UNITS	INTERIM EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: M					
PHYSICAL					
Flow	MGD	*	*	once/week ⁂	24 hr. total
CONVENTIONAL					
Chlorine, Total Residual ‡	µg/L	18.1 (ML130)	9.0 (ML130)	once/month	grab
Oil & Grease	mg/L	20	15	once/month	grab
pH †	SU	6.5 to 9.0	-	once/week ⁂	grab
Total Suspended Solids	mg/L	100	30	once/month	grab
METALS					
Copper, Total Recoverable	µg/L	*	*	once/week ⁂	grab
Iron, Total Recoverable	µg/L	*	*	once/week ⁂	grab
NUTRIENTS					
Ammonia as N – --Jan, Feb, Mar, & Nov, Dec	mg/L	7.5	2.8	once/month	grab
Ammonia as N – October	mg/L	7.5	2.6	once/month	grab
Ammonia as N – --April, May, June, & Aug, Sept	mg/L	3.7	1.4	once/month	grab
Ammonia as N – July	mg/L	3.7	1.3	once/month	grab
Kjeldahl Nitrogen, Total (TKN)	mg/L	*	*	once/month	grab
Nitrate plus Nitrite as Nitrogen	mg/L	*	*	once/month	grab
Phosphorus, Total (TP)	mg/L	*	*	once/month	grab

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2022.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALL #005 *process waste pond*	**TABLE A-8** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The facility is authorized to discharge from outfall(s) as specified. The final effluent limitations shall become effective on **November 1, 2027** and remain in effect until expiration of the permit. Discharges shall be controlled, limited, and monitored by the facility as specified below:

EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: M					
PHYSICAL					
Flow	MGD	*	*	once/week ⁂	24 hr. total
CONVENTIONAL					
Chlorine, Total Residual ‡	µg/L	18.1 (ML130)	9.0 (ML130)	once/month	grab
Oil & Grease	mg/L	20	15	once/month	grab
pH †	SU	6.5 to 9.0	-	once/week ⁂	grab
Total Suspended Solids	mg/L	100	30	once/month	grab
METALS					
Copper, Total Recoverable	µg/L	26.9	13.4	once/week ⁂	grab
Iron, Total Recoverable	µg/L	1643	819	once/week ⁂	grab
NUTRIENTS					
Ammonia as N – --Jan, Feb, Mar, Nov, Dec	mg/L	7.5	2.8	once/month	grab
Ammonia as N – October	mg/L	7.5	2.6	once/month	grab
Ammonia as N – --April, May, June, Aug, Sept	mg/L	3.7	1.4	once/month	grab
Ammonia as N – July	mg/L	3.7	1.3	once/month	grab
Kjeldahl Nitrogen, Total (TKN)	mg/L	*	*	once/month	grab
Nitrate plus Nitrite as Nitrogen	mg/L	*	*	once/month	grab
Phosphorus, Total (TP)	mg/L	*	*	once/month	grab

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2027

OUTFALL #005 *process waste pond (continued)*	**TABLE A-9** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

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

EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: Q					
OTHER					
Chloride	mg/L	*	*	once/quarter ◊	grab
Sulfate	mg/L	*	*	once/quarter ◊	grab
Chloride plus Sulfate	mg/L	1000	1000	once/quarter ◊	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2023.					
LIMIT SET: A					
OTHER					
Whole Effluent Toxicity, Chronic ⁝	TU_c	1.6		once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2024.					

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALL #008 *coal tunnel, plant drains, heavy equipment wash*	**TABLE A-10** **INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**			
The facility is authorized to discharge from outfall(s) as specified. In accordance with 10 CSR 20-7.031, the final effluent limitations outlined in Table A-10 must be achieved as soon as possible but no later than **November 1, 2027**. These interim effluent limitations are effective beginning **November 1, 2022** and remain in effect through **October 31, 2027** or as soon as possible. Discharges shall be controlled, limited, and monitored by the facility as specified below:				
EFFLUENT PARAMETERS	UNITS	INTERIM EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: M					
PHYSICAL					
Flow	MGD	*	*	once/month	24 hr. total
CONVENTIONAL					
Oil & Grease	mg/L	20	15	once/month	grab
pH †	SU	6.5 to 9.0	-	once/month	grab
Total Suspended Solids	mg/L	50	50	once/month	grab
METALS					
Aluminum, Total Recoverable	µg/L	*	*	once/month	grab
NUTRIENTS					
Ammonia as N	mg/L	*	*	once/month	grab
Kjeldahl Nitrogen, Total (TKN)	mg/L	*	*	once/month	grab
Nitrate plus Nitrite as Nitrogen	mg/L	*	*	once/month	grab
Phosphorus, Total (TP)	mg/L	*	*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2022.					
LIMIT SET: Q					
OTHER					
Chloride	mg/L	*	*	once/quarter ◊	grab
Sulfate	mg/L	*	*	once/quarter ◊	grab
Chloride plus Sulfate	mg/L	*	*	once/quarter ◊	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2023.					
LIMIT SET: A					
OTHER					
Whole Effluent Toxicity, Chronic ⁝	TU_c	1.6		once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2024.					

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALL #008 *coal tunnel, plant drains, heavy equipment wash*	**TABLE A-11** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**			
The facility is authorized to discharge from outfall(s) as specified. The final effluent limitations shall become effective on **November 1, 2027** and remain in effect until expiration of the permit. Discharges shall be controlled, limited, and monitored by the facility as specified below:				
EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: M					
PHYSICAL					
Flow	MGD	*	*	once/month	24 hr. total
CONVENTIONAL					
Oil & Grease	mg/L	20	15	once/month	grab
pH †	SU	6.5 to 9.0	-	once/month	grab
Total Suspended Solids	mg/L	50	50	once/month	grab
METALS					
Aluminum, Total Recoverable	µg/L	750	348	once/month	grab
NUTRIENTS					
Ammonia as N	mg/L	*	*	once/month	grab
Kjeldahl Nitrogen, Total (TKN)	mg/L	*	*	once/month	grab
Nitrate plus Nitrite as Nitrogen	mg/L	*	*	once/month	grab
Phosphorus, Total (TP)	mg/L	*	*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2027.					
LIMIT SET: Q					
OTHER					
Chloride	mg/L	*	*	once/quarter ◊	grab
Sulfate	mg/L	*	*	once/quarter ◊	grab
Chloride plus Sulfate	mg/L	*	*	once/quarter ◊	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2028.					
LIMIT SET: A					
OTHER					
Whole Effluent Toxicity, Chronic ⁝	TU_c	1.6		once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2029.					

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALL #011 *water treatment wastewater*	**TABLE A-12** **INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The facility is authorized to discharge from outfall(s) as specified. In accordance with 10 CSR 20-7.031, the final effluent limitations outlined in Table A-12 must be achieved as soon as possible but no later than **November 1, 2027**. These interim effluent limitations are effective beginning **November 1, 2022** and remain in effect through **October 31, 2027** or as soon as possible. Discharges shall be controlled, limited, and monitored by the facility as specified below:

EFFLUENT PARAMETERS	UNITS	INTERIM EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: M					
PHYSICAL					
Flow	MGD	*	*	once/month	24 hr. total
CONVENTIONAL					
Chlorine, Total Residual ‡	µg/L	*	*	once/month	grab
Oil & Grease	mg/L	20	15	once/month	grab
pH †	SU	6.5 to 9.0	-	once/month	grab
Total Suspended Solids	mg/L	100	30	once/month	grab
METALS					
Iron, Total Recoverable	µg/L	*	*	once/month	grab
NUTRIENTS					
Ammonia as N	mg/L	*	*	once/month	grab
Kjeldahl Nitrogen, Total (TKN)	mg/L	*	*	once/month	grab
Nitrate plus Nitrite as Nitrogen	mg/L	*	*	once/month	grab
Phosphorus, Total (TP)	mg/L	*	*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2022.					
LIMIT SET: Q					
OTHER					
Chloride	mg/L	*	*	once/quarter ◊	grab
Sulfate	mg/L	*	*	once/quarter ◊	grab
Chloride plus Sulfate	mg/L	*	*	once/quarter ◊	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2023.					
LIMIT SET: A					
OTHER					
Whole Effluent Toxicity, Chronic ⁝	TU_c	1.6		once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2024.					

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

OUTFALL #011 *water treatment wastewater*	**TABLE A-13** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The facility is authorized to discharge from outfall(s) as specified. The final effluent limitations shall become effective on **November 1, 2027** and remain in effect until expiration of the permit. Discharges shall be controlled, limited, and monitored by the facility as specified below:

EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: M					
PHYSICAL					
Flow	MGD	*	*	once/month	24 hr. total
CONVENTIONAL					
Chlorine, Total Residual ‡	µg/L	*	*	once/month	grab
Oil & Grease	mg/L	20	15	once/month	grab
pH †	SU	6.5 to 9.0	-	once/month	grab
Total Suspended Solids	mg/L	100	30	once/month	grab
METALS					
Iron, Total Recoverable	µg/L	1643	819	once/month	grab
NUTRIENTS					
Ammonia as N - Jan & Nov	mg/L	14.4	3.5	once/month	grab
Ammonia as N - Feb and Dec	mg/L	12.1	3.1	once/month	grab
Ammonia as N - March	mg/L	10.1	2.7	once/month	grab
Ammonia as N - April	mg/L	10.1	2.4	once/month	grab
Ammonia as N - May	mg/L	12.1	1.9	once/month	grab
Ammonia as N - June	mg/L	14.4	1.7	once/month	grab
Ammonia as N - July	mg/L	12.1	1.3	once/month	grab
Ammonia as N - August	mg/L	14.4	1.5	once/month	grab
Ammonia as N - September	mg/L	12.1	1.7	once/month	grab
Ammonia as N - October	mg/L	12.1	2.6	once/month	grab
Kjeldahl Nitrogen, Total (TKN)	mg/L	*	*	once/month	grab
Nitrate plus Nitrite as Nitrogen	mg/L	*	*	once/month	grab
Phosphorus, Total (TP)	mg/L	*	*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2027.					
LIMIT SET: Q					
OTHER					
Chloride	mg/L	*	*	once/quarter ◊	grab
Sulfate	mg/L	*	*	once/quarter ◊	grab
Chloride plus Sulfate	mg/L	*	*	once/quarter ◊	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2028.					
LIMIT SET: A					
OTHER					
Whole Effluent Toxicity, Chronic ⁝	TU_c	1.6		once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2029.					

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

INTERNAL MONITORING POINT #013 *Domestic Wastewater*	**TABLE A-14** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

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

EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: D					
PHYSICAL					
Flow	MGD	*	*	once/month	24 hr. total
CONVENTIONAL					
Biochemical Oxygen Demand – 5 day	mg/L	30	20	once/month	grab
E. coli ǂ	#/100 ml	630	126	once/month	grab
pH †	SU	6.0 to 9.0	-	once/month	grab
Total Suspended Solids	mg/L	30	20	once/month	grab

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2022.

OUTFALL #014 *Unit 3 Boiler Blowdown & Cooling Water*	**TABLE A-15** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

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

EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
PHYSICAL					
Flow	MGD	*	*	once/week ⁂	24 hr. total
CONVENTIONAL					
pH †	SU	6.5 to 9.0	-	once/month	grab
Total Suspended Solids - gross	mg/L	*	*	once/month	grab
Total Suspended Solids - NET	mg/L	100	30	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY. THE FIRST REPORT IS DUE DECEMBER 28, 2022.					
CONVENTIONAL					
Oil and Grease	mg/L	20	15	once/quarter ◊	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY. THE FIRST REPORT IS DUE JANUARY 28, 2023.					

OUTFALL #020 *in-stream monitoring and thermal compliance*	**TABLE A-16** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

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

EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: T					
PHYSICAL					
Temperature	°F	90	*	daily	measured
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2022.					

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

INTAKE #INT *intake*	**TABLE A-17** **FINAL MONITORING REQUIREMENTS**			
The facility is authorized to discharge from outfall(s) as specified. The final effluent limitations shall become effective on **November 1, 2022** and remain in effect until expiration of the permit. Discharges shall be controlled, limited, and monitored by the facility as specified below:				
EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: M					
INTAKE					
Flow	MGD	*	*	once/week ⁂	24 hr. total
pH	SU	* min, * max	-	once/week ⁂	grab
Total Suspended Solids ♣	mg/L	*	*	once/week ⁂	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE DECEMBER 28, 2022.					
LIMIT SET: A					
Aluminum, Total Recoverable	µg/L	*	*	once/year	grab
Copper, Total Recoverable	µg/L	*	*	once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY. THE FIRST REPORT IS DUE JANUARY 28, 2024.					

OUTFALLS #007, #009, #016, #017, #018, #019 *Stormwater Outfalls*	**TABLE A-18** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**				
The facility is authorized to discharge from outfall(s) as specified. The final effluent limitations shall become effective on **November 1, 2022** and remain in effect until expiration of the permit. Discharges shall be controlled, limited and monitored by the facility as specified below:					
EFFLUENT PARAMETERS	UNITS	FINAL LIMITATIONS		BENCH-MARKS	MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE		MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: Q						
PHYSICAL						
Flow	MGD	*			once/quarter ◊	24 Hr Est.
CONVENTIONAL						
Chemical Oxygen Demand	mg/L	**		120	once/quarter ◊	grab
Oil & Grease	mg/L	**		10	once/quarter ◊	grab
pH †	SU	6.5 to 9.0		-	once/quarter ◊	grab
Total Suspended Solids	mg/L	**		100	once/quarter ◊	grab
METALS						
Aluminum, Total Recoverable	µg/L	**		1100	once/quarter ◊	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2023.						

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)

* Monitoring and reporting requirement only

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

⁂ Weekly monitoring is monitoring any one day between Monday and Sunday. For weeks spanning two months, only 1 sample is required. Only samples collected in the month may be averaged for the month. pH is not to be averaged.

⁝ WET tests: Chronic WET test – see special condition #1; Acute WET test, see special condition #2.

‡ Chlorine, Total Residual. This permit contains a Total Residual Chlorine (TRC) limit (or monitoring)
(a) The effluent limit is below the minimum quantification level of the most sensitive EPA approved CLTRC methods. The Department has determined the current acceptable minimum level (ML) for total residual chlorine is 130 µg/L when using the DPD Colorimetric Method #4500 – CL G. from Standard Methods for the Examination of Waters and Wastewater. The facility will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. Measured and detection values greater than or equal to the minimum quantification level of 130 µg/L will be considered violations of the permit and non-detect values less than the minimum quantification level of 130 µg/L will be considered to be in compliance with the permit limitation. The minimum quantification level does not authorize the discharge of chlorine in excess of the effluent limits stated in the permit.
(b) The facility shall report less than "<" the value obtained on the meter for non-detections. The less than symbol shall not be used for detections.
(c) The facility shall not log the ML as the quantified value unless the quantified value is the ML.

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.

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

†† Composite Sampling: a 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

⸸ Boiler wash wastewater is collected at outfall #001 or #01A at the exact time, as determined by calculations, to be passing through the outfall at the time of discharge, but is reported on outfall #BWW. This outfall is established to determine the specific contribution of boiler wash wastewater. Boiler wash appears to be the major contributor of metals at outfall #001/#01A. The boiler wash sampling plan is on file with the Department, and must be followed. The facility must submit a plan prior to discharge of the boiler wash. The facility will submit an updated plan if changes occur. The initial boiler wash plan was received 3/3/2022 and was approved.

♠ NET. The facility may only NET the portion (percentage) of effluent which was withdrawn directly from the intake. Netting can only occur on parameter values marked "♠". Recycled water or water from other sources (including precipitation) may not be netted.
For iron after the SOC (Table A-3), the facility may net the daily maximum iron value up to 1666 µg/L. A value above 1666 µg/L after the SOC for the daily maximum is a permit exceedance.

♣ Intake samples must be taken on the same day and within four hours of taking the sample from the outfall for this parameter.

◊ Quarterly sampling

MINIMUM QUARTERLY SAMPLING REQUIREMENTS

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

B. SCHEDULE OF COMPLIANCE

Schedules of compliance are allowed per 40 CFR 122.47 and 10 CSR 20-7.031(11). The facility shall attain compliance with final effluent limitations established in this permit as soon as reasonably achievable:

1. Within six months of the effective date of this permit, the facility shall report progress made in attaining compliance with the final effluent limits.

2. The facility shall submit interim progress reports detailing progress made in attaining compliance with the final effluent limits every 12 months from effective date. The first report is due NOVEMBER 1, 2023.

3. Within 5 years of the effective date of this permit, the facility shall attain compliance with the final effluent limits at outfall #BWW for total recoverable copper and total recoverable iron.

4. Within 5 years of the effective date of this permit, the facility shall attain compliance with the final effluent limits at outfall #005 for total recoverable copper and total recoverable iron.

5. Within 5 years of the effective date of this permit, the facility shall attain compliance with the final effluent limits at outfall #008 for total recoverable aluminum.

6. Within 5 years of the effective date of this permit, the facility shall attain compliance with the monthly final effluent limits for ammonia as N, and final effluent limitations for total recoverable iron at outfall #011.

7. All reports shall be submitted to the northeast regional office eDMR neroedmr@dnr.mo.gov or other electronic system as required by the regional office. All reports shall be named so they easily identify the content.

C. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Part I and Part III standard conditions dated August 1, 2014 and August 1, 2019, respectively, and hereby incorporated as though fully set forth herein.

D. SPECIAL CONDITIONS

1. Chronic Whole Effluent Toxicity (WET) Test shall be conducted as follows:
   (a) Freshwater Species and Test Methods: Species and short-term test methods for estimating the chronic toxicity of effluents are found in the most recent edition of *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA/821/R-02/013; Table IA, 40 CFR Part 136).* The permittee shall concurrently conduct 7-day static triple renewal toxicity tests with the following species:
      - The fathead minnow, *Pimephales promelas* (Survival and Growth Test Method 1000.0).
      - The daphnid, *Ceriodaphnia dubia* (Survival and Reproduction Test Method 1002.0).

   (b) Chemical and physical analysis of the upstream control sample and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping. Where upstream receiving water is not available or known to be toxic, other approved control water may be used.
   (c) Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.
   (d) The laboratory shall not chemically dechlorinate the sample.
   (e) The Allowable Effluent Concentration (AEC) is 100%, the dilution series is: 100%, 50%, 25%, 12.5%, and 6.25%.
   (f) All chemical and physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% effluent concentration.
   (g) The facility must submit a full laboratory report for all toxicity testing. The report must include a quantification of chronic toxic units ($TU_c = 100/IC_{25}$) reported according to the *Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* chapter on report preparation and test review. The 25% Inhibition Effect Concentration (IC_{25}) or No Effect Concentration ($NOEC_{25}$) is the effect causing 25% reduction in mean young per female or in growth for the test population.
   (h) Accelerated Testing Trigger: If the regularly scheduled WET test exceeds the TUc limit, the permittee shall conduct accelerated follow-up WET testing as prescribed here. Results of the follow-up accelerated WET testing shall be reported in TUc. This permit requires the following additional toxicity testing if any one test result exceeds a TUc limit.
      (1) A multiple dilution test shall be performed for both test species within 60 calendar days of becoming aware the initial WET test exceeded a TU limit, and once every two weeks thereafter until one of the following conditions are met:

i. Three consecutive multiple-dilution tests are below the TU_c limit. No further tests need to be performed until next regularly scheduled test period.
ii. A total of three multiple-dilution tests exceed the TUc limit (do not need to be sequential)

(2) Follow-up tests do not negate an initial test result.
(3) The permittee shall submit a summary of all accelerated WET test results for the test series along with complete copies of the laboratory reports as received from the laboratory within 14 calendar days of the availability of the third test exceeding a TUc limit.
(4) The facility may begin a TIE or TRE during the follow-up testing phase.

(i) TIE/TRE Trigger: The following shall apply upon the exceedance of the TUc limit in three accelerated follow-up WET tests. The permittee should contact the Department within 14 calendar days from availability of the test results to ascertain as to whether a TIE or TRE is appropriate. If the permittee does not contact the Department upon the third follow up test exceeding a TUc limit, a toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall submit a plan for conducting a TIE or TRE within 60 calendar days of the date of the automatic trigger or the Department's direction to perform either a TIE or TRE. The plan shall be based on EPA Methods and include a schedule for completion. This plan must be approved by the Department before the TIE or TRE is begun.

2. Acute Whole Effluent Toxicity (WET) tests shall be conducted as follows:
(a) Freshwater Species and Test Methods: Species and short-term test methods for estimating the acute toxicity of NPDES effluents are found in the most recent edition of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA/821/R-02/012; Table IA, 40 CFR Part 136). The permittee shall concurrently conduct 48-hour, static, non-renewal toxicity tests with the following species:
i. The fathead minnow, *Pimephales promelas* (Acute Toxicity EPA Test Method 2000.0).
ii. The daphnid, *Ceriodaphnia dubia* (Acute Toxicity EPA Test Method 2002.0).
(b) Chemical and physical analysis of the upstream control sample and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing required to stabilize the sample during shipping. Where upstream receiving water is not available or known to be toxic, other approved control water should be used.
(c) Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.
(d) The laboratory shall not chemically dechlorinate the sample.
(e) The Allowable Effluent Concentration (AEC) is 100%; the dilution series is: 6.25%, 12.5%, 25%, 50%, and 100%.
(f) All chemical and physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% effluent concentration.
(g) The facility must submit a full laboratory report for all toxicity testing. The report must include a quantification of acute toxic units ($TU_a = 100/LC_{50}$) reported according to the test methods manual chapter on report preparation and test review. The Lethal Concentration 50% (LC_{50}) is the effluent concentration causing death in 50% of the test organisms at a specific time.
(h) Accelerated Testing Trigger: If the regularly scheduled WET test exceeds the TUc limit, the permittee shall conduct accelerated follow-up WET testing as prescribed here. Results of the follow-up accelerated WET testing shall be reported in TUc. This permit requires the following additional toxicity testing if any one test result exceeds a TUc limit.
(1) A multiple dilution test shall be performed for both test species within 60 calendar days of becoming aware the initial WET test exceeded a TU limit, and once every two weeks thereafter until one of the following conditions are met:
i. Three consecutive multiple-dilution tests are below the TU_c limit. No further tests need to be performed until next regularly scheduled test period.
ii. A total of three multiple-dilution tests exceed the TUc limit (do not need to be sequential)
(2) Follow-up tests do not negate an initial test result.
(3) The permittee shall submit a summary of all accelerated WET test results for the test series along with complete copies of the laboratory reports as received from the laboratory within 14 calendar days of the availability of the third test exceeding a TUc limit.
(4) The facility may begin a TIE or TRE during the follow-up testing phase.
(i) TIE/TRE Trigger: The following shall apply upon the exceedance of the TUc limit in three accelerated follow-up WET tests. The permittee should contact the Department within 14 calendar days from availability of the test results to ascertain as to whether a TIE or TRE is appropriate. If the permittee does not contact the Department upon the third follow up test exceeding a TUc limit, a toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall submit a plan for conducting a TIE or TRE within 60 calendar days of the date of the automatic trigger or the Department's direction to perform either a TIE or TRE. The plan shall be based on EPA Methods and include a schedule for completion. This plan must be approved by the Department before the TIE or TRE is begun.

3. The facility may discharge free available chlorine pursuant to 40 CFR 423.12(b)(6) and 40 CFR 423.13(d)(2) and Total Residual Chlorine (TRC) pursuant to Missouri WQS 10 CSR 20-7.031 at outfalls #001, #01A, #002, #003, #004, and #014 when the facility applies chlorine (monochloramine) for up to two hours a day; the facility typically only applies for one hour a day. The facility must determine, via destruction calculation, that the disinfectant/biocide being added is being applied in amounts which are

effectively utilized in the system, so as not to cause a discharge of TRC above the acute WQS of 19 µg/L. Actual monitoring of TRC is not required when meeting these conditions.

4. Discharges of chlorinated wash water are prohibited at outfall #008. Wash water utilizing chlorinated water must be retained in the #008 retention basin for at least 5 days before discharge.

5. Spills, Overflows, and Other Unauthorized Discharges.
   (a) Any spill, overflow, or other discharge(s) not specifically authorized above are unauthorized discharges.
   (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.

6. Technology Assessment
   (a) Evaluation of pollutants and the associated studies are required to be submitted with the next permit renewal application materials; see Renewal Requirements Special Condition.
   (b) The facility shall provide an appropriate assessment as follows:
      i. For BCT requirements per 40 CFR 125.3(d)(2); this shall include nitrate plus nitrite as N at outfall #011. If long term data show for nitrate plus nitrite as N is below the baseline x10 threshold of 0.5 mg/L, then no study is required.
      ii. For BCT requirements per 40 CFR 125.3(d)(2); this shall include total recoverable iron at outfall #011. If long term data for total recoverable iron is below the baseline x10 threshold of 1000 µg/L, then no study is required.
   (c) Studies must be conducted as follows:
      i. The reasonableness of the relationship between the costs of attaining a reduction in effluent and the effluent reduction benefits derived;
      ii. The comparison of the cost and level of reduction of such pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or category of industrial sources;
      iii. The age of equipment and facilities involved;
      iv. The process employed;
      v. The engineering aspects of the application of various types of control techniques;
      vi. Process changes; and
      vii. Non-water quality environmental impact (including energy requirements).

7. The facility must maintain discharge of bottom ash purge wastewater at or below 10% of the 30-day rolling average wastewater volume of the primary active wetted bottom ash system. This condition takes effect on January 1, 2024. Only ash purge wastewater is considered under this condition. No other wastewater sources may be used in the calculation for the 10% threshold.
   (a) A monthly report for the previous calendar month is due on or before the 28th day of the following month (i.e. January's report is due February 28th). Reports will be submitted via the on-line system. Reports shall be named such they are reasonably identifiable (i.e. Bottom Ash System Jan-2024). The first report is due February 28, 2024.
   (b) The volume of daily discharges used to calculate the 30-day rolling average shall be calculated using measurements from flow monitors.
   (c) Pursuant to 40 CFR 423.13(k)(3)(iv) the facility shall, on or before January 1, 2024:
      i. Submit an initial engineer stamped certification statement pursuant to 40 CFR 423.19(c)(1) and (c)(2), which must include the contents described in 40 CFR 423.19(c)(3). The Department will approve the document prior to January 1, 2024; the facility will submit the document at least 90 days prior to January 1, 2024 if ash transport wastewater is to be discharged on or after January 1, 2024. Failure of timely submission of the necessary document removes the allowance to discharge any bottom ash transport wastewater on or after January 1, 2024 until this document is approved by the Department.
      ii. Implement a comprehensive preventive maintenance program to identify, repair, or replace equipment prior to failures, which may result in the inadvertent release of bottom ash transport water.
      iii. Establish a minimum of daily inspections of the entire bottom ash transport water system, including valves, pipe flanges, and piping, to identify leaks, spills, or other unintended bottom ash transport water escaping from the system. The daily inspection reports must include an evaluation for a timely repair of such conditions, what preventative and corrective maintenance was performed, and be available to the Department upon request. All records may be maintained in electronic format.
   (d) With the application for renewal the facility shall provide:
      i. Description of the bottom ash recycle system, including all technologies, measures, and practices that are or will be used to minimize discharge pursuant to 40 CFR 423.13(k)(3)(vi).
      ii. Description establishing a method for documenting and demonstrating to the Department the recycle system is well operated and maintained pursuant to 40 CFR 423.13(k)(3)(viii).
      iii. Performance analysis of weekly flow monitoring for 1) make up water to the bottom ash transport water system; 2) bottom ash transport water sluice flow rate (e.g., to the surface impoundment(s), dewatering bins(s), tank(s), remote

mechanical drag system); 3) bottom ash transport water discharge to surface water; and 4) bottom ash transport water recycle back to the bottom ash system or FGD scrubber pursuant to 40 CFR 423.13(k)(3)(ix).

iv. Documentation of preventive and corrective maintenance performed pursuant to 40 CFR 423.13(k)(3)(iv).

8. Electronic Discharge Monitoring Report (eDMR) Submission System. Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent monitoring data and any report required by the permit (unless specifically directed otherwise by the permit), shall be submitted via an electronic system to ensure timely, complete, accurate, and nationally consistent set of data for the NPDES program. The eDMR system is currently the only Department-approved reporting method for this permit unless specified elsewhere in this permit, or a waiver is granted by the Department. The facility must register in the Department's eDMR system through the Missouri Gateway for Environmental Management (MoGEM) before the first report is due. All reports uploaded into the system shall be reasonably named so they are easily identifiable, such as "WET Test Outfall 002 Jan 2023", or "TRC Outfall 004 Mar 2025".

9. Site-wide minimum Best Management Practices (BMPs). At a minimum, the facility 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 prevent and to protect site 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 minimize sediment loss off of the property.
   (g) Wash water for building(s) or pavement must be handled in a manner that mitigates risk to aquatic life (infiltration, hauled off-site, etc.). Describe the control methods used and include all pertinent information (effluent destination, BMPs, etc.) in the SWPPP and the application for renewal. If wash water is not produced, note this instead.
   (h) Vehicle wash water may only be discharged through outfalls #001 and #008.
   (i) Fire protection test water must be handled in a manner that mitigates risk to aquatic life (infiltration, hauled off-site, etc.). Describe the control methods used and include all pertinent information (effluent destination, BMPs, etc.) in the SWPPP and the application for renewal. If fire protection test water is not produced, note this instead.
   (j) Remove sediment from stormwater sediment pond(s) as prescribed in the engineering design. Records must be retained since last cleanout and submitted with the application for renewal.
   (k) After snow or ice, if the facility applies sand/salt to the pavement of the parking lots, sidewalks, or stairs, the facility shall sweep the lots to remove sand/salt as soon as possible after snow or ice melt, collect excess solids, and minimize and control the discharge of solids into stormwater inlets. Salt and sand shall be stored in a manner minimizing mobilization in stormwater (for example: under roof, in covered container, in secondary containment, under tarp, etc.).

10. Stormwater Pollution Prevention Plan (SWPPP).
The facility's description is found in 40 CFR 122.26(b)(14) and 10 CSR 20-6.200(2) and hence shall implement a 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 facility 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 March 2021) https://www.epa.gov/sites/production/files/2021-03/documents/swppp_guide_industrial_2021_030121.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 ineffective at providing the necessary protections for which it was designed. 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) Areas SW-B, SW-C, SW-F, SW-H, SW-I and outfall #015 must be included in the SWPPP.
   (c) The SWPPP must include the rail loops and any areas where coal is stored, or temporarily stored.
   (d) A map with all outfalls and structural BMPs marked.
   (e) 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. A BMP is considered to be disrupted if it is rendered ineffective as a result of damage or improper maintenance.

Categorization of a deficiency is reliant on the length of time required to correct each disrupted BMP. Corrective action after discovering a disrupted BMP must be taken as soon as possible. Throughout coverage under this permit, the facility must perform ongoing SWPPP review and revision to incorporate any site condition changes.

(1) Operational deficiencies are disrupted BMPs which the facility is able to and must correct within 7 calendar days.
(2) Minor structural deficiencies are disrupted BMPs which the facility is able to and must correct within 14 calendar days.
(3) 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 facility shall work with the regional office to determine the best course of action. The facility should consider temporary structures to control stormwater runoff. The facility shall correct the major structural deficiency as soon as reasonably achievable.
(4) 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.
(5) BMP failure causing discharge through an unregistered outfall is considered an illicit discharge and must be reported in accordance with Standard Conditions Part I.
(6) 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.

(f) A provision for designating an individual 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.

11. Stormwater Benchmarks. This permit stipulates pollutant benchmarks applicable to the facility's stormwater discharges.
(a) Benchmarks do not constitute direct numeric effluent limitations; therefore, a benchmark exceedance alone is not a permit violation. Stormwater monitoring, numeric benchmark compliance, and visual inspections shall be used to determine the overall effectiveness of the BMPs identified in the SWPPP.
(b) If a sample exceeds a benchmark concentration or an inspection exceeds a narrative requirement, the facility must review the SWPPP and BMPs to determine what improvements or additional controls are needed to reduce the pollutant concentrations in the facility's future stormwater discharges.
(c) Every time a numeric 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. This permit may require CARs be submitted to the Department upon permit renewal; see Renewal Requirements section below.
(d) Failure to take corrective action to address any narrative or numeric benchmark exceedance, and failure to make measurable progress towards achieving the numeric benchmark(s), is a permit violation.
(e) Stormwater benchmarks and required minimum BMPs as described in this permit are enforceable permit conditions. Any requested change(s) to numeric benchmark values or deviation from minimum BMP requirements must be established through the permitting process. Assessment, evaluation, and implementation of specific BMPs to meet numeric benchmarks or minimum BMP requirements, must be addressed through the SWPPPs and CARs.

12. Petroleum Secondary Containment.
The drainage area around the secondary containment area and the interior of the containment area shall be inspected monthly. Solids, sludges, and soluble debris shall not be allowed to accumulate in the secondary containment.
(a) The interior of the secondary containment area shall be checked monthly for signs of leaks, spills, and releases of petroleum.
(b) All petroleum captured in the secondary containment area shall be expeditiously removed and the source of the petroleum determined. Leaks or otherwise compromised equipment or appurtenances shall be promptly addressed/repaired.
(c) Before releasing water accumulated in petroleum secondary containment areas, the water and area must be examined for hydrocarbon odor and presence of sheen to protect the general criteria found at 10 CSR 20-7.031(4).
(d) Unimpacted stormwater (i.e. free from hydrocarbon odor and presence of sheen), should be drained from the secondary containment as soon as reasonably possible after a precipitation event.
(e) If items (a) and (b) above were not followed, impacted stormwater shall not be discharged from the secondary containment and shall instead be directed for disposal in accordance with legally approved methods for disposal of process wastewater, such as being sent to an accepting wastewater treatment facility.
(f) If items (a) and (b) were followed, impacted stormwater can only be drained from the secondary containment after removal of any odor or sheen utilizing appropriate methods.
(g) The area surrounding the secondary containment must be free of signs of vegetative stress or other indicia of petroleum discharge.
(h) The area below the outlet of the secondary containment area must be maintained to minimize soil washout, such as with stabilized vegetation, rip rap, or by releasing accumulated water slowly.

(i) Records of all inspections, testing, and/or treatment of water accumulated in secondary containment shall be available on demand to the Department. Electronic records retention is acceptable. These records must be included in the application for renewal.

13. The full implementation of this operating permit, which includes implementation of any applicable schedules of compliance, shall constitute compliance with Sections 301, 302, 306, 307, and 403 of the federal Clean Water Act, except for standards imposed under Section 307 for toxic pollutants injurious to human health, and with equivalent provisions of the Missouri Clean Water Law, in accordance with Section 644.051.16 RSMo and CWA §402(k). 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 CWA §§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 already limited in the permit. This permit may be modified, revoked and reissued, or terminated for cause, including determination new pollutants found in the discharge not identified in the application for the new or revised permit. The filing of a request by the facility for a permit modification, termination, notice of planned changes, or anticipated non-compliance does not stay any permit condition.

14. All outfalls and permitted features must be clearly marked in the field.

15. The operation of the cooling water intake structures is in compliance with 40 CFR 125.92(c), as a closed cycle cooling system. The facility must continue to operate the intake structures utilizing this strategy. The Thomas Hill Reservoir was constructed expressly for the purposes of maintaining a sufficient volume of water to meet the cooling needs of the power plant. The facility has submitted the operating requirements under 40 CFR 122.21(r)(2) through (r)(5) for the 2022 renewal. The facility must submit a revised document for (r)(2) through (r)(5) with the next permit renewal or a statement indicating nothing has changed.

16. 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.

17. The Department may require sampling and reporting as a result of illegal discharges from the site, compliance issues related to water quality concerns or BMP effectiveness, or evidence of off-site impacts from activities or discharges at the facility.

18. This permit does not apply to fertilizer products receiving a current exemption under the Missouri Clean Water Law and regulations in 10 CSR 20-6.015(3)(B)8, and are land applied in accordance with the exemption.

19. Changes in Discharges of Toxic Pollutant.
In addition to the reporting requirements under 40 CFR 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: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) 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 40 CFR 122.21(g)(7).
    (4) The level established by the Director in accordance with 40 CFR 122.44(f).

20. Reporting of Non-Detects.
(a) Compliance analysis conducted by the facility or any contracted laboratory shall be conducted in such a way the precision and accuracy of the analyzed result can be enumerated. See sufficiently sensitive test method requirements in Standard Conditions Part I, §A, No. 4 regarding proper testing and detection limits used for sample analysis. For the purposes of this permit, the definitions in 40 CFR 136 apply; method detection limit (MDL) and laboratory established reporting limit (RL) are used interchangeably in this permit.
(b) The facility shall not report a sample result as "non-detect" without also reporting the MDL. Reporting "non-detect" without also including the MDL will be considered failure to report, which is a violation of this permit.

(c) For the daily maximum, the facility shall report the highest value; if the highest value was a non-detect, use the less than "<" symbol and the laboratory's highest method detection limit (MDL) or the highest reporting limit (RL); whichever is higher (e.g. <6).
(d) When calculating monthly averages, zero shall be used in place of any value(s) not detected. Where all data used in the average are below the MDL or RL, the highest MDL or RL shall be reported as "<#" for the average as indicated in item (c).

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

22. This permit does not cover land disturbance activities.

23. This permit does not authorize in-stream treatment, 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.

24. This permit does not allow stream channel or wetland alterations; approval must be obtained from Clean Water Act §404 permitting authorities.

25. All records required by this permit may be maintained electronically per 432.255 RSMo. These records should be maintained in a searchable format.

26. Any discharges not expressly authorized in this permit, and not clearly disclosed in the permit application, cannot become authorized or shielded from liability under CWA section 402(k) or Section 644.051.16, RSMo, by disclosure to EPA, state, or local authorities after issuance of this permit via any means, including any other permit applications, funding applications, the SWPPP, discharge monitoring reporting, or during an inspection. Submit a permit modification application, as well as an antidegradation determination, if appropriate, to request authorization of new or expanded discharges.

27. Renewal Application Requirements.
(a) The facility must sample at outfall #005 and #011 for the following parameters: chlorodibromomethane CAS# 124481, dichlorobromomethane (bromodichloromethane) CAS# 75274; tribromomethane (bromoform) CAS# 75252; and trichloromethane (chloroform) CAS# 67663.
(b) The facility must sample all outfalls for chloride and sulfate (in addition to other parameters as required).
(c) The facility must submit a narrative for outfall #016 showing the steps performed to meet the TSS and aluminum benchmarks.
(d) The facility must submit a brief narrative for each outfall on the steps taken to meet the aluminum benchmarks for outfalls #007, #009, #017, and #018, as well as any future plans to reduce aluminum in the stormwater.
(e) Cooling water intake
    i. A document is necessary to be prepared if there are changes from the 2020 document; this facility is subject to sections 40 CFR 122.21(r)(2) through (r)(4).
    ii. Provide any and all communications with the United States Fish and Wildlife Services or Missouri Department of Conservation, and any other communications regarding aquatic organisms at the site, with any state or federal agency in compliance with 40 CFR 122.21(r)(1)(ii)(C) and 40 CFR 122.21(r)(1)(ii)(H).

E. NOTICE OF RIGHT TO APPEAL

If you were adversely affected by this decision, you may be entitled to pursue an appeal before the administrative hearing commission (AHC) pursuant to 621.250 and 644.051.6 RSMo. To appeal, you must file a petition with the AHC within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Any appeal should be directed to:

Administrative Hearing Commission
U.S. Post Office Building, Third Floor
131 West High Street, P.O. Box 1557
Jefferson City, MO 65102-1557
Phone: 573-751-2422
Fax: 573-751-5018
Website: https://ahc.mo.gov

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET
FOR THE PURPOSE OF RENEWAL OF
MO-0097675
THOMAS HILL ENERGY CENTER

The Federal Water Pollution Control Act (Clean Water Act (CWA) §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 (§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 644 RSMo as amended). MSOPs may also cover underground injection, non-discharging facilities, and land application facilities. Permits 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 applicable regulations, rationale for the development of limitations and conditions, and the public participation process for the Missouri State Operating Permit (MSOP or permit) listed below. A factsheet is not an enforceable part of a permit.

PART I. FACILITY INFORMATION

Facility Type:	Industrial: Major, Primary, Categorical; >1 MGD
SIC Code(s):	4911
NAICS Code(s):	221112
Application Date:	12/22/2020
Modification Date:	00/01/2019
Expiration Date:	06/30/2021
Last Inspection:	08/06/2020

FACILITY DESCRIPTION:
Items listed in the facility description applicable to the operation, maintenance, control, and resultant effluent quality are required to be enumerated in the facility description. The facility description ensures the facility continues to operate the wastewater (or stormwater) controls listed in the permit to preserve and maintain the effluent quality pursuant to 40 CFR 122.21(e). Any planned changes to the facility (which changes the facility description) are required to be reported to the Department pursuant to 40 CFR 122.41(l)(1)(ii). If the facility does not or cannot use all of their disclosed treatment devices, this is considered bypassing pursuant to 40 CFR 122.41(m) in the case of wastewater, and BMP disruption in the case of stormwater.

Thomas Hill Energy Center is an electric generating facility. See facility description in the permit and table below for detailed description of the site's wastewater, industrially exposed stormwater, and other activities occurring at the site. See Part III COAL ASH – COAL COMBUSTION RESIDUALS (CCR), AND SOLID WASTE/LAND RECLAMATION for discussion regarding coal ash.

During the pre-public notice comment period, the facility asked for mixing considerations. However, the discharges comprise of numerous discharges to a back finger of a lake called the hot water pond. Numerous outfalls are situated on the lake, however, most are not available for mixing because of 1) the outfall is found within a back finger of the lake, or 2) because of the proximity to the drinking water intake pursuant to 10 CSR 20-7.031(5)(A)4.D specifically citing the bank configuration and the proximity to drinking water supply intakes. While the exact proximity is not stated in regulation, the intakes combined are over 1 billion gallons per day, and have the ability to create pull on the lake. Stormwater outfalls are typically not given mixing considerations; benchmarks are implemented in this permit which are technological controls for the stormwater in lieu of inflexible water quality limits.

CONTINUING AUTHORITY:
The Missouri Secretary of State continuing authority charter number for this facility is Q00101340 for Associated Electric Cooperative, Inc.; registered on 2/8/1961, and due on 8/31/2023. This number was verified by the permit writer to be associated with the facility and precisely matches the continuing authority reported by the facility. Continuing authorities are required for all permits under 10 CSR 20-6.010(2); the continuing authority acknowledges responsibility for compliance with all permit conditions.

Pursuant to 10 CSR 20-6.010(2)(B)4, this facility is a Level 4 Authority.
- ✓ Pursuant to 10 CSR 20-6.010(2)(D), the facility demonstrated the closest collection system was greater than 2000 feet from the property line per 10 CSR 20-6.010(2)(C)3.

PROCESS WASTEWATER - PERMITTED FEATURES TABLE:

OUTFALL	AVG. FLOW (MGD)	DESIGN FLOW (MGD)	TREATMENT LEVEL	EFFLUENT TYPE
#001	6.68	29	settling, retention, neutralization	Process wastewater: Ash sluice wastewater, ash quench wastewater overflow; effluent from an ash pond, which is slated to be decommissioned; a settling pond; a future concrete dewatering tank (CDT); and stormwater runoff from the plant grounds. Accumulated sediments are removed to an onsite Utility Waste Landfill (UWL), permitted under solid waste management permit #717502. Units 1 and 2 ash system; units 1 & 2 boiler slag and on occasion fly ash, is currently sluiced to the pond system. The process is changing in 2023 to a concrete dewatering tank (CDT) with closure of the ash ponds; and will then be outfall #01A. Ash dewatering will occur prior to hauling to UWL. Unit 3 submerged flight conveyor (SFC) (0.283 MGD) to comply with 40 CFR 423. Flocculation and coagulation. 4/3/2020 antideg; implemented in this (2022) renewal. This outfall also receives flow from Units 1 and 2 ash system, units 1 & 2 boiler slag, and, on occasion, fly ash is sluiced to the pond system. Boiler slag-wash process: Units 1 & 2 slag is washed by water pumped from the ash pond. Wastewater from the slag-wash process is typically recycled and reused in the wash process. Waste residues are removed and disposed at the UWL. This outfall also receives effluent from: air heater wash (about 2x per year at 15 MG); unit 3 pyrites; bottom ash system; vehicle wash (400 gallons); coal handling equipment wash, iron filings are used as coal pretreatment; process spills and leaks; unit 3 corrosive drain sump (0.097 MGD); the Unit 3 submerged flight conveyer (SFC) (0.283 MGD); units 1, 2, & 3 stormwater runoff (total runoff contribution is approximately 167.52 acres (12.7 max MGD), including units 1 & 2 coal pile runoff); and part of unit 3 coal pile runoff, approximately 24.76 acres. Flocculation and coagulation are used to treat effluent at this outfall prior to discharge. Wastewater, runoff, and coal handling equipment wash down (0.064 MGD), and residues are collected in the unit 3 coal pile runoff pond #006 then pumped to the UWL; however, occasionally this waste is pumped to the ash pond system of outfall #001. Boiler rinses are without chemicals which flow to a four cell system. Iron filings are used as a coal pretreatment option; this is part of the coal pile treatment system. Cyclean, a coal pretreatment operation used for air pollution control, is under roof and discharges to this outfall – moved from outfall #008. The facility can control the flow leaving through outfall #001 by stacking weir boards or cement blocks shaped like railroad ties at the intake to limit the amount of flow over the weir. Receives discharges from outfall #016. Stormwater BMPs are settling ponds and vegetated buffers. The low volume and metal cleaning wastewater and coal storage stormwater are considered categorical wastes under 40 CFR 423.
#01A	6.68	29	settling, retention, neutralization, recycle	Implemented in the 2022 renewal; see antidegradation review. The above process itemized in outfall #001 is changing in 2023 to include a concrete dewatering tank (CDT). Ash dewatering will then occur in the CDT prior to hauling to the UWL. On 4/3/2020 an antidegradation review was submitted, and is implemented in this (2022) renewal to authorize the planned changes to effluent flow, and is attached prior to the fact sheet of this permit. The concrete dewatering tank is being built; then ponds 2E and 2W will still be used. However, the facility is closing historical ponds 3 and 4, and will be closing them by the end of 2023. This outfall will be used later in the permit term and outfall #001 will be until the ponds are closed thereafter. At the time of full closure, no industrial exposure will likely exist. The facility must continue to sample from both outfalls until a permit modification is completed to remove the sampling requirements and re-evaluate the pollutants discharging to outfall #001. All of the above wastewaters will continue to be discharged though outfall #01A except for ash sluice wastewater. An engineered purge of sluice wastewater will occur prior to discharge of the ash sluice water and will receive treatment. All flows from Outfall 001 will remain the same but will be

				directed to flow through Cell 2W and 2E and discharge via Outfall 01A after construction is complete.
#002	2.16	3.31	dechlor	air compressor cooling water; chlorinated water is used; Once-through air compressor cooling water. Per 10 CSR 7.031(5)(D)4, thermal pollutants are not applicable to discharges to Thomas Hill Reservoir. Outfall #020 is the thermal compliance point for this permit. Note: permits prior to the 1980s indicated outfall #002 was at the ash disposal area south of the dam (designated as "Old Ash Pond"). That area has since been capped and during permit renewal circa 1980s, this cooling water discharge was then designated as #002. This discharge has a chlorine component (monochloramine), but also is being treated by dechlorination.
#003	245.2	347.124	dechlor	Cooling water and process wastewater. Once through cooling water and low volume waste sources categorical wastewater. Units 1 and 2 condenser cooling water, roof drains, boiler blowdown, and dewatering auxiliary cooling water. Discharges are sent to a backwater finger of the lake; no mixing is afforded this area. The 2003 permit listed stormwater runoff as a component of this outfall; however, the facility has stated stormwater does not discharge through this outfall. This discharge is treated with the biocide monochloramine. An antidegradation review was done for this pollutant 6/18/2019, and was incorporated into the permit in a 2019 modification.
#004	532.8	648.0	dechlor	Single pass cooling water. Once-through cooling water for purposes of cooling unit 3; this discharge is treated with the biocide monochloramine. An antidegradation review was done for this pollutant 5/17/2019 and was incorporated into the permit in a 2019 modification.
#005	0.084	2.33	settling, retention	Process wastewater. This outfall receives wastewater from outfall #013 (domestic wastewater), a neutralization tank, lab drains, demineralizer and polisher wash, unit 3 pyrites (intermittent), bottom ash system (intermittent), unit 3 corrosive sump, plant drains, and 2.2 acres of stormwater runoff. This outfall receives pH neutralization and detention/settling in a single cell lagoon which has a retention time of about one day. Pond capacity is 0.5 MG. INTERMITTENT WASTEWATER DISCHARGE FROM OUTFALL #012: Receives overflow and drainage discharge from two 300,000 gallon potable water/fire protection storage, tanks overflow. The water in the tanks was reported to contain ~2.0 ppm free available chlorine as a maximum concentration. This outfall also receives overflow discharge from two 300,000 gallon reverse osmosis treated water storage tanks. The water in the tanks was reported to have a pH of ~5.5. The facility performs pH adjustment prior to discharge.
#006	n/a	n/a	n/a	pumped into outfall #001;
#008	0.045	2.789	settling	Process wastewater. Receives wastewater from Unit 3 coal tunnel and maintenance shop floor drains with heavy equipment wash and unit 3 coal maintenance shop floor drains. Categorical stormwater is received from coal tunnel and conveyor (approximately 23.86 acres); conveyor is lightly sprayed with a chemical to suppress dust. Pond capacity is 3.128 MG, retention time is about 7 days. Construction permit in 1996 allowed a heavy equipment wash facility consisting of a 12'0" by 6'2" by 5'6" deep concrete tank (3'9" operating level) and oil water separator. Industrial stormwater runoff from settling basin; northeastern pond.
#010	0.034	Note 2	none	Intake strainer backwash (untreated lake water discharge) and stormwater without industrial exposure; no monitoring requirements.
#011	1.06	3.588	dechlorination, settling, flotation, retention	Process wastewater. This outfall discharges treated wastewaters primarily from potable water treatment (clarifier); an oil/water separator from units 1, 2 and 3 plant drains; and stormwater. Also receives drinking water facility's clarifier sludge; drinking water tank drain from outfall #011; unit 3 HVAC chiller water, unit 3 roof drains, unit 3 corrosive drain sump, and stormwater runoff from approximately 2.19 acres. Residues are removed to UWL. Pond capacity is about 3.04 MG and retention time is 5 days. Residues are removed from the pond about every 30 to 45 days.
#012	*	1.2		Two drinking water and two RO tank drain or overflow; no longer authorized for discharge; drain was routed to outfall #011; overflow was routed to #005. This outfall also receives stormwater runoff from 0.84 acres which are graveled and paved; however, this stormwater is not exposed to industrial materials therefore no

				stormwater sampling is required.
#013	0.005	0.02	package plant, settling, retention, neutralization, activated sludge, UV disinfection	Internal monitoring point for domestic wastewater. Discharges to waters of the state are through outfall #005. This outfall receives domestic effluent treated by a single cell package treatment plant (Sanitaire, Model #M1-R258). Activated sludge is hauled off-site by a contract hauler. This system serves approximately 240 employees; Population equivalent (PE) is 68. Missouri regulations require internal monitoring for domestic wastewater; 10 CSR 20-7.015(8)(A). Starting from the southwestern side of the building, the package plant has an aerobic digester, two aeration basins, and a clarifier at the northeastern end of the package plant. The aeration basins are approximately 12-15 feet deep and are operated in sequence, influent starts in basin 1 then travels to basin 2. The plant is checked daily and they add sodium bicarbonate once a day based on alkalinity. The plant is enclosed and has windows on each side of the building and a garage-style door on the eastern wall. There are not any fans to force ventilation. The plant is operated manually based on results from various factors, which includes mixed liquor suspended solids (MLSS), dissolved oxygen level, and biochemical oxygen demand. They use a stationary dissolved oxygen meter calibrated monthly. The aeration basins use a coarse bubble diffused aeration system. The sludge blanket in the clarifier is maintained at about four feet deep; the sludge is wasted to maintain proper solids in aerator section. Wastewater is recirculated to the aeration basin or pumped to the digester as needed. The weir is cleaned on a daily basis. The flow meter which measures in gallons per day is calibrated yearly. Local audio/visual alarms are present at the plant; they have spare parts for the plant and they check the oil daily on the blower motors which has preventative maintenance performed annually. Operations and maintenance records are kept on site. The final step of the process is UV disinfection. Discharges to waters of the state are through outfall #005.
#014	0.131	0.56	none	Process wastewater. This outfall discharges Unit 3 non-contact cooling water and Unit 3 boiler blowdown. The Unit 3 auxiliary boiler drain was removed at the 2019 modification. The ELG has defined boiler blowdown as a low volume waste 40 CFR 423.11(b). Heat is discharged at this outfall.
#020	3.2316	3.2316	recirculation/ retention	Temperature compliance point – Thomas Hill Reservoir dam outlet. Per 10 CSR 20-7.031(5)(D), facilities discharging thermal pollution must be limited. For this facility, Thomas Hill Reservoir is specifically exempted from thermal discharges TO the reservoir; however, the discharge FROM the reservoir must meet stream requirements. Stream requirements limit the discharge to 90 °F. The facility must maintain the temperature in the receiving stream below 90 °F. The facility made an agreement with the Department of Conservation in 1965 they would discharge, at a minimum, 5 cfs from the dam to maintain flow in the Middle Fork Chariton River.
#INT	unknown	1027	n/a	Intake monitoring necessary for certain parameters and net limitations afforded to the facility (TSS).

* = batch discharge about once per year

INDUSTRIAL STORMWATER PERMITTED FEATURES TABLE:

OUTFALL	10 YEAR 24 HR STORM (MGD)	ACRES	RUNOFF COEFFICIENT (C)	TREAT-MENT LEVEL	EFFLUENT TYPE
#007	1.193	11.51	0.7	none	Stormwater. Industrial stormwater runoff from northern portion of the facility. Receives flows in contact with material storage, T2 dust collector, transfer house #2, and ammonia tank area. Receives runoff from 11.51 acres of predominately graveled surface.
#009	0.629	5.31	0.8	none	Stormwater. Receives flow from southern portion of facility. This includes units 1 and 2 plant area, employee parking runoff, unit transformers, and sluice line piping. Receives stormwater runoff from approximately 6.24 acres, 80,000 sq. ft. impervious. Management practices implemented include routine inspection of drainage areas for erosion requiring maintenance; installation of sediment controls, i.e. split fences and re-seeding; routine

					inspection of ash sluice piping which traverses the area; and the SPCC Plan that addresses oil contained in transformers located in the drainage area. The facility is able to create a holding basin by closing a valve at the outfall should an oil spill from the transformers occur; the valve is exercised routinely.
#015	n/a	unknown	n/a	vegetation	Stormwater. This outfall receives de minimis industrial exposure, almost 99% of the area is grassy and has no industrial activity. The area is well vegetated and the rail line on northeast portion of the facility is rarely used. The exposed area is the coal entrance road and the railroad right-of-way. The facility shall keep this outfall in the SWPPP; however, no analytical monitoring is required. Permittee requested this outfall be added back in to the 2018 renewal permit. Transferred to permit no. MO-0003948 in the 1990s. Coal entrance road and railroad right-of-way. The roadway adjacent to the west side of the grassy area has a berm and flows inward to outfall #016.
#016	4.808	36.066	0.9	none	Emergency stormwater overflow (Area SW-16), constructed to the 2.3 year 24 hour storm event This outfall receives effluent from a settling basin lined with ashcrete, a lift station, and stormwater runoff from the primary plant site. This stormwater is usually pumped to ash pond and then through outfall #001. Industrial sources are area runoff (most of the plant proper; Area SW-016), including approximately 1,240,000 sq. ft. immediately adjacent to Unit 3 and the north side of Units 1 and 2, and rooftop runoff of 7.6 acres. Specific areas drained include coal conveyors, unit 3 bottom ash loading area, equipment and material storage and precipitator areas. Stormwater control measures completed have included lined ditches and the installation of a collection pond and pump structure. The pond and pump structure are designed to only collect and transfer initial stormwater to the ash pond which is then discharged through outfall #001. Flows in excess of 1,500 GPM will discharge over the ashcrete paved spillway of the retention structure. Outfall #016 is considered a stormwater outfall even though some constituents are listed as industrial sources. The permit writer has determined the industrial sources are de minimis. When outfall #016 discharges, the volume of industrial sources is so dilute, parameters no longer require consideration separately. Outfall #001 and #014 normally receive stormwater from the central industrial area of the facility and those outfalls and constituents contained therein are protective of waters of the state from the industrial sources of this outfall.
#017	0.848	8.18	0.7	none	Stormwater (Area SW-17); Receives stormwater from the southernmost portion of the facility above the dam, from a runoff area of approximately 8.18 acres. This runoff area drains the middle 1/3 of Units 1 and 2 switchyard, employee parking, and the area traversed by ash sluice piping. This outfall also receives sluice pipe maintenance raw water drain (but does contain ash and ash transport water). Raw water drain considered intermittent and de minimis for the purposes of permitting. The facility is not permitted to discharge ash transport or ash sluice wastewater through this outfall. BMPs must be designed to capture any spilled ash sluice or transport wastewater and return the transport and sluice wastewater to the ash handling and treatment system
#018	0.384	3.7	0.7	none	Stormwater (Area SW-18); lay down yard; Stormwater runoff area of approximately 3.7 acres, runoff from the west side of the air/water building, contractor setup area, scaffolding and rail lay-down area.
#019	0.727	7.02	0.6	settling	Stormwater (Area SW-G); Receives effluent from equipment and material storage area; area G and pond #SW-G. This outfall

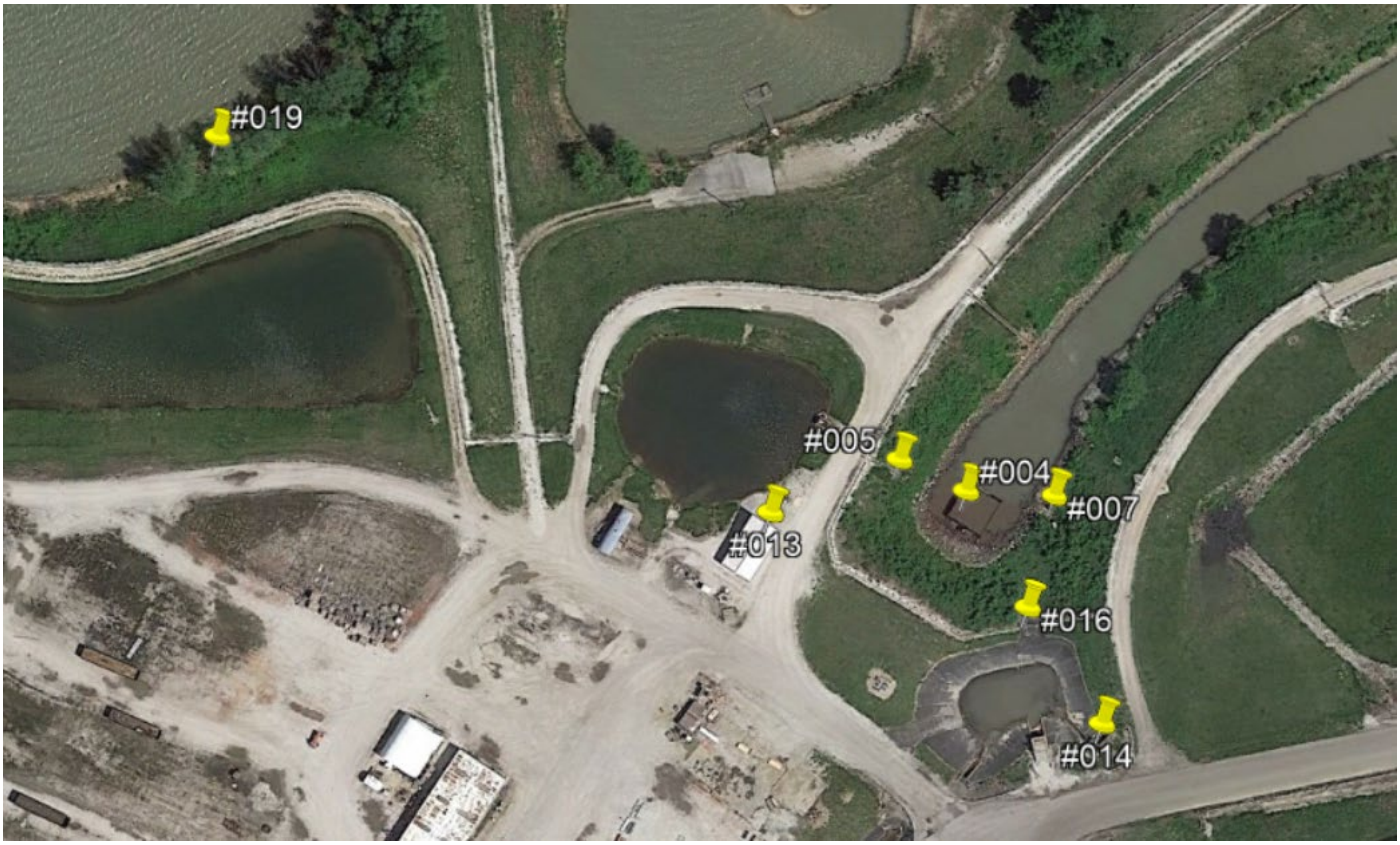
					receives sediment pond treatment. This outfall was added during the 2018 renewal. Lay down area (even if temporary) must be permitted according to 40 CFR 122.26(b)(14) as a material handling site.

Stormwater flows calculated using http://www.lmnoeng.com/Hydrology/rational.php; i = 5.5 inches per day for 10 year 24 hour storm

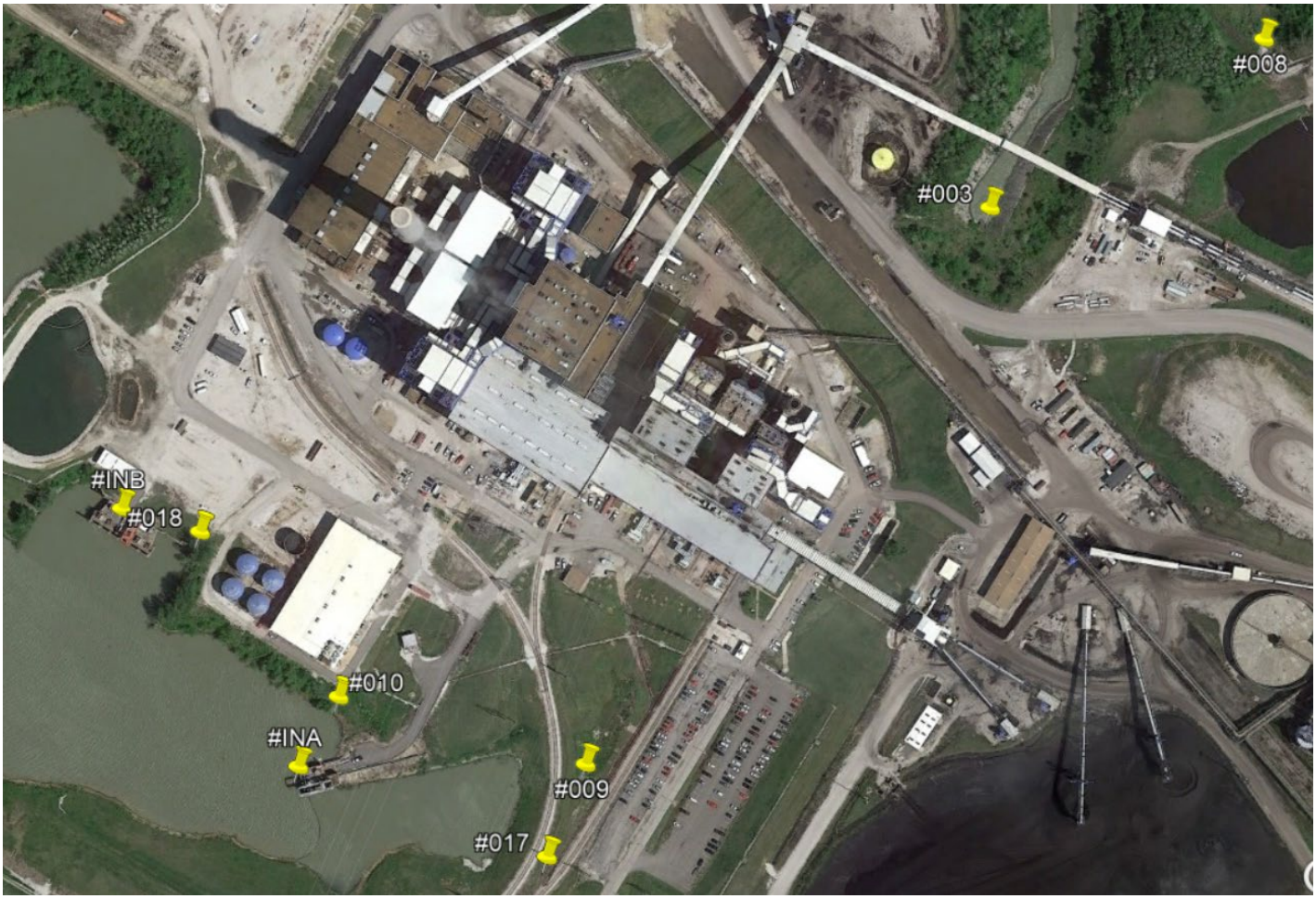
SITE STORMWATER AREAS:

OUTFALL	ACRES	TREATMENT LEVEL	EFFLUENT TYPE
SW-B	1.09	BMPs	stormwater runoff from the south side of units 1 & 2 intake and structure access road, 1.09 acres; de minimis industrial stormwater; must be included in the SWPPP
SW-C	1.74	BMPs	stormwater runoff from the Units 1 &2 chlorine building and the south side of the air and water building, 16,000 sq. ft. impervious area, hazardous substance management plans developed and implemented addressing unloading of water plant chemicals in this area; de minimis industrial stormwater; must be included in the SWPPP
SW-F	0.26	BMPs	stormwater runoff from the unit 3 chlorine building at unit 3 intake structure, all impervious; de minimis industrial stormwater; must be included in the SWPPP
SW-H	0.0183	BMPs	unit 3 fuel oil containment dike drain, drain valve remains closed (included in the facility SPCC plan), no surface discharge of stormwater has occurred; subsurface migration; discharges controlled utilizing special conditions; de minimis industrial stormwater; must be included in the SWPPP
SW-I	1.52	BMPs	stormwater from area surrounding oil water separator; discharges controlled utilizing special conditions; area must be included in the SWPPP
#015	4.9	BMPs	almost 100% vegetated with infrequently used rail line; removed from numeric permitting requirements 2018 permit renewal; must be included in SWPPP

FACILITY MAP -- NORTH-WEST:



FACILITY MAP - CENTRAL:

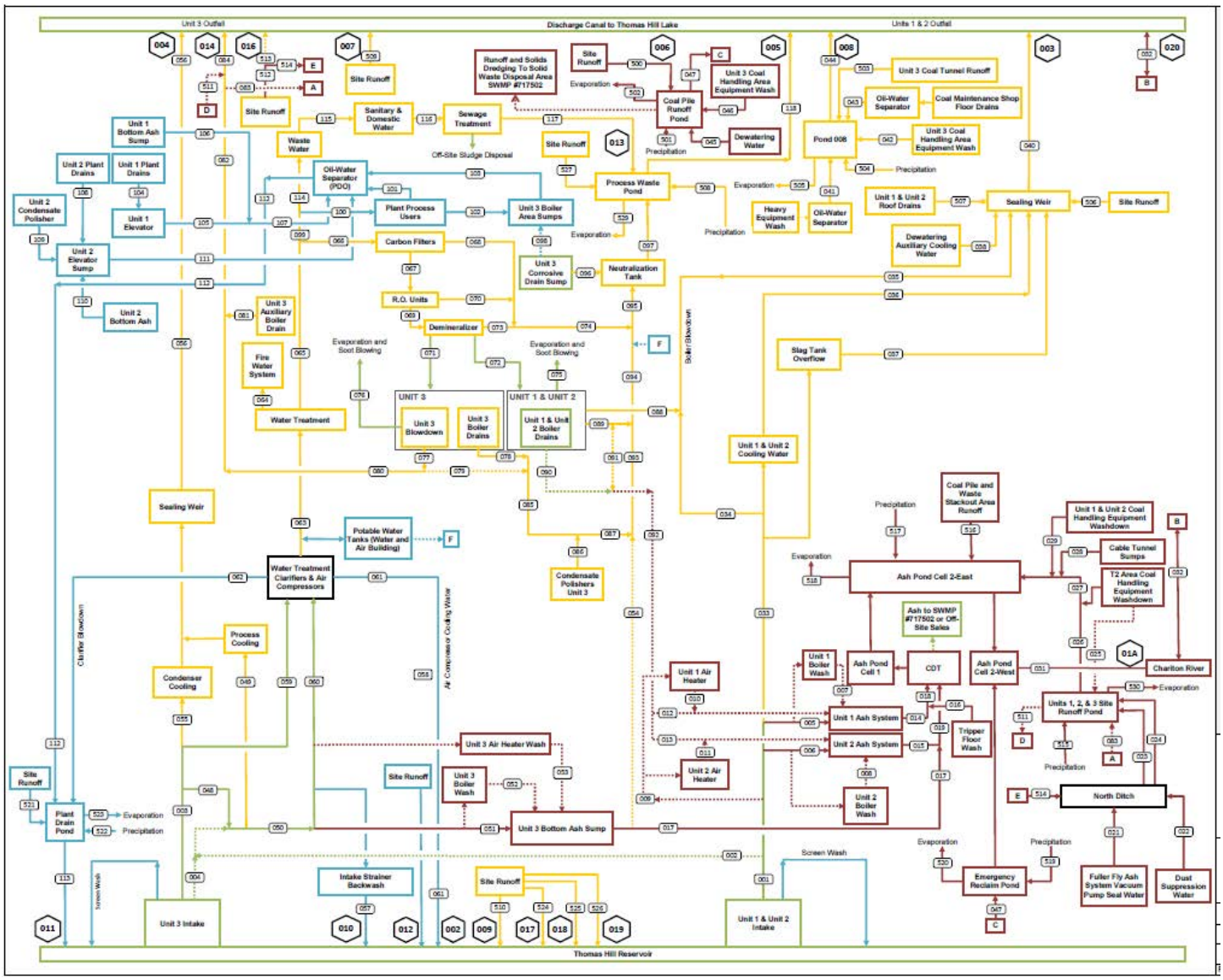


FACILITY MAP -- SOUTH:

Pins are permitted features.

This permit does not cover the Old Ash Pond area, which also then removes coverage for operation of a waste contaminant source or discharges to groundwater or discharges from the subsurface to surface water. This area and those discharges are covered under MO-0139874.

WATER BALANCE DIAGRAM:

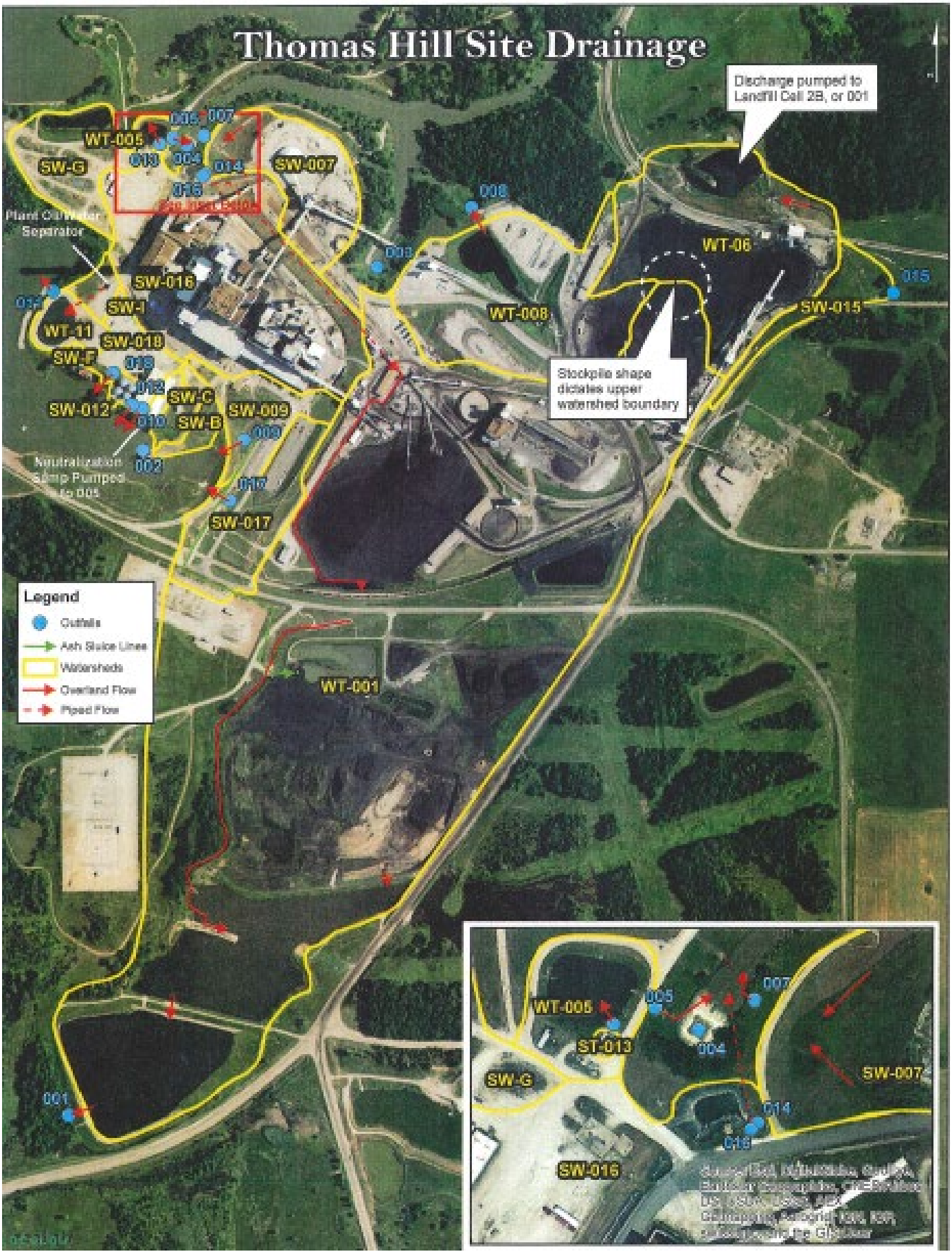


Data for outfall #012 was not submitted with the 2020 application. The facility indicated in an email they will route the discharge to outfall #011 on 9/10/2021; in a subsequent email dated 11/12/2021 the facility confirmed the wastewater has the same pollutants of concern, stating the water previously discharged from #012 was stored potable water the facility drained for required system maintenance. Under normal operations the water stored in the outfall #012 tanks is potable water and RO water used within the facility. Since this water already discharges to outfall #005 for daily operations, the change to route the tank drain to #005 will have no impact to the pollutant potential being discharged. Because the wastewater is confirmed to have the same constituents of concern, the permit now allows discharge of the drinking water tank purge (drain) at an alternate location.

On 12/6/2021, the facility indicated they would be routing the tank overflow (both potable water and RO water) to outfall #011; this is from the same tanks historically identified as outfall #012. The overflow is a cleaner (less sediment) discharge but would still contain TRC. Outfall #011 already has drinking water sources listed therefore the change is also similar to the discharges already permitted at outfall #011. However, on 1/6/2022, the facility identified that both the overflow and drain would be routed to outfall #005; the facility submitted an updated water balance diagram on 3/3/2022.

Additionally, the pollutants were reviewed under the drinking water permit, MO2024504. The permit writer has reason to believe that certain drinking water constituents (total trihalomethanes TTHM), while in compliance with the requirements for finished drinking water for users under the drinking water permit, may be contributing to pollutant loading of the receiving water (the reservoir is listed as a drinking water (DWS) source in Missouri's WQS). Because no data is currently available, a request for additional information for outfalls #005 and #011 is requested in the special conditions. The parameters are chlorodibromomethane CAS# 124481, dichlorobromomethane (bromodichloromethane) CAS# 75274; tribromomethane (bromoform) CAS# 75252; and trichloromethane (chloroform) CAS# 67663.

DRAINAGE AREAS:



FACILITY PERFORMANCE HISTORY & COMMENTS:
The electronic discharge monitoring reports were reviewed for the last permit term. Some of the data entered appeared to be in the incorrect units, for example, 0.152 entered for iron when it should have been entered as 152 in µg/L. The data entry individual needs to ensure data is being entered in the units in the permit database, and must be converted to µg/L if the lab provides the data in mg/L. Details of parameter compliance and exceedance are included in Part IV under the limits derivation section. The application for renewal included data which were non-compliant with the sufficiently sensitive obligations of NPDES application requirements in 10 CSR 6 and 40 CFR 122. The data for cadmium, copper, selenium, silver, and thallium were rejected as not able to quantify compliance with the water quality standards. However, the permit writer does not believe silver is a parameter of concern at this site because silver is not listed as a known contaminant of concern in the steam electric point source category. If it is present, limitations for other metals in this permit can serve as a proxy for identification of treatment alternatives. On 4/7/2021, the permit writer notified the facility of insufficient monitoring methods. On 4/20/2021, the permit writer notified the facility beryllium was also above the appropriate detection limit. On 4/22/2021, the facility submitted the detection limits for beryllium, copper, selenium, and thallium were <3; of these parameters, copper had detections at all the outfalls. On 4/29/2021, the facility submitted re-testing results for cadmium. The detection limit was 0.5, and there were no detections.

OTHER ENVIRONMENTAL PERMITS:
In accordance with 40 CFR 122.21(f)(6), the Department evaluated other environmental permits currently held by this facility. This facility has the following permits:

- ✓ Part 70 air permit to operate (OP2017-061) expires 8/11/2022. AECI Thomas Hill Energy Center is a power plant which converts the energy from coal and other fuels to electrical energy. The installation has coal unloading, conveying, stockpiles, and crushing equipment to supply the boilers. The main sources of emissions are boilers that primarily combust coal and secondarily combust fuel oil. The boilers produce steam that powers electrical generating equipment. Fly-ash unloading, hauling and disposal operations are also on site. The installation is a major source of Carbon Monoxide (CO), Greenhouse Gases (C02e), Nitrogen Oxides (NOx), Particulate Matter less~ 10 microns and~ 2.5 microns (PM10 and PM2.s), Sulfur Oxides (SOx), Volatile Organic Compounds (VOCs) and Hazardous Air Pollutants (HAPs), including individual HAPs: Hydrogen Chloride, Hydrogen Fluoride, and Formaldehyde.
- ✓ Solid waste beneficial use exemption for surface mining backfill under Land Reclamation Program and Solid Waste permit #0717502 issued 8/19/1985. Under an agreement between the solid waste program and the land reclamation program, the facility has obtained a variance from both the solid waste and reclamation rules, to fill, upon CCR generation, the coal surface mining areas under the Prairie Hill Mine permit, MO-0003948, just to the south of the power plant. Therefore this area is not considered under this permit renewal.
- ✓ Drinking Water Permit, Thomas Hill PWSD #1: MO2024504

PART II. RECEIVING WATERBODY INFORMATION

RECEIVING WATERBODY TABLE:

OUTFALL	WATERBODY NAME	CLASS	WBID	DESIGNATED USES	DISTANCE TO SEGMENT	12-DIGIT HUC
#001, #020	Middle Fork Little Chariton River	P	0691	GEN, HHP, IRR, LWW, SCR, WBC-B, WWH (ALP)	0 mi	10280203-0405 Bee Creek-Middle Fork Little Chariton River
#002 - #019	Thomas Hill Reservoir	L2	7173	GEN, DWS, HHP, IRR, LWW, NNC, SCR, WBC-B, WWH (ALP)	0 mi	

Classes are representations of hydrologic flow volume or lake basin size 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: wetlands. 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 Number: 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.

HUC: Hydrologic Unit Code; https://dnr.mo.gov/env/wpp/watersheds.htm has additional information about the watersheds in Missouri

Designated Uses:
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-B3 for all habitat designations unless otherwise specified.
10 CSR 20-7.031(1)(C)2: Recreation in and on the water
WBC is 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 included 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, includes aquifers per 10 CSR 20-7.031(6)(A);
LWW – Livestock and Wildlife Watering (current narrative use is defined as LWP = Livestock and Wildlife Protection), includes aquifers per 10 CSR 20-7.031(6)(A);
DWS – Drinking Water Supply, includes aquifers per 10 CSR 20-7.031(6)(A);
IND – industrial water supply
10 CSR 20-7.031(1)(C)8 to 11: Wetlands (10 CSR 20-7.031 Tables A1-B3) do 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 20-7.015(7) and 10 CSR 20-7.031(6): **GRW** = Groundwater

Other Applicable Criteria:
10 CSR 20-7.031(4): **GEN** – general criteria
10 CSR 20-7.031(5)(N)6: **NNC** – lake numeric nutrient criteria apply
Water Quality Standards Search https://apps5.mo.gov/mocwis_public/waterQualityStandardsSearch.do

WATERS OF THE STATE DESIGNATIONS:
Waters of the state are divided into seven categories per 10 CSR 20-7.015(1)(B)1 through 7. The applicable water of the state category is listed below. Missouri's technology-based effluent regulations are found in [10 CSR 20-7.015] and are implemented in 10 CSR 20-7.015(2) through (8). When implementing technology regulations, considerations are made for the facility type, discharge type, and category of waters of the state. Effluent limitations may not be applicable to certain waters of the state, facility type, or discharge type. In these cases, effluent limitations may be based on a best professional judgment evaluation. The best professional judgment evaluation will take site specific conditions into consideration; including facility type, the receiving water body classification, and type of discharge. Stormwater discharges and land application sites are not directly subject to limitations found in 10 CSR 20-7.015, but may be subject to limitations determined by the best professional judgment evaluation. Effluent limitation derivations are discussed in PART IV: EFFLUENTS LIMITS DETERMINATIONS.

- ✓ Lakes and Reservoirs; including natural lakes and any impoundments created by the construction of a dam across any waterway or watershed. An impoundment designed for or used as a disposal site for tailings or sediment from a mine or mill shall be considered a wastewater treatment device and not a lake or reservoir. Releases to lakes and reservoirs include discharges into streams one-half (1/2) stream mile before the stream enters the lake as measured to its conservation pool. Thomas Hill reservoir is exempted from temperature requirements in 10 CSR 20-7.031(5)(D)4.
- ✓ Subsurface Water; identified at 10 CSR 20-7.015(7), including underground injection control permits, and regulated by 10 CSR 20-7.031(6)
- ✓ All other waters; identified at 10 CSR 20-7.015(B)7 and 10 CSR 20-7.015(8)

EXISTING WATER QUALITY & IMPAIRMENTS:
The receiving waterbody(s) segment(s), upstream, and downstream confluence water quality was reviewed. The Department's water quality data database was reviewed. https://apps5.mo.gov/mocwis_public/wqa/waterbodySearch.do and https://apps5.mo.gov/wqa/ Impaired waterbodies which may be impacted by discharges from this facility were determined. Impairments include waterbodies on the 305(b) or 303(d) list and those waterbodies or watersheds under a TMDL. 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. 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 for that watershed may be developed. The TMDL shall include the WLA calculation. http://dnr.mo.gov/env/wpp/tmdl/ or http://dnr.mo.gov/env/wpp/waterquality/303d/303d.htm

- ✓ The permit writer has noted no upstream or downstream impairments near this facility. There is neither a 303(d) listing nor a TMDL for this area.

WATERBODY MONITORING REQUIREMENTS:

- ✓ Outfall #020 and the intake establish requirements for waterbody monitoring.

WATERBODY MIXING CONSIDERATIONS:
This facility has numerous outfalls discharging into the same lake. Compound discharges and variable effluent types indicate the discharge should not receive lake mixing considerations per [10 CSR 20-7.031(5)(A)4.B.(IV)(b) and 10 CSR 20-7.031(5)(D) and (E). However, outfall #001 discharges to the stream below the dam. The facility made an agreement with the Department of Conservation in 1965 they would discharge, at a minimum, 5 cfs from the dam to maintain flow in the Middle Fork Chariton River. The 5 cfs coming from the dam is not effluent as it is from a reservoir established for cooling, and also utilized as a recreational lake therefore 5 cfs was used for mixing considerations when calculating RPA and limits for outfall #001.

PART III. RATIONALE AND DERIVATION OF PERMIT CONDITIONS

ANTIBACKSLIDING

Federal antibacksliding requirements [CWA §402(o) and 40 CFR § 122.44(l) https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-122#p-122.44(l) generally prohibit a reissued permit from containing effluent limitations that are less stringent than the previous permit, with some exceptions. All renewed permits are analyzed for evidence of backsliding. There are several express statutory and regulatory exceptions to the antibacksliding requirements, located in CWA § 402(o)(2) and 40 CFR 122.44(l).

Item 1. Technology-Based Effluent Limits (TBELs).

> CWA § 402(o) Anti-backsliding (1) General Prohibition: "In the case of effluent limitations established on the basis of subsection (a)(1)(B) of this section, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 1314(b) of this title subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit. …"

The references in this section to subsection (a)(1)(B) and section 1314(b) are both references to the effluent limitation guidelines (ELGs), which are promulgated at 40 CFR Subchapter N. 40 CFR § 122.44(l)(2) states that the ELG values must be applied. The only allowable methods of removing an ELG limit imposed in a previous permit are if that limit was erroneously applied or if the waste stream is no longer subject to the ELG.

Item 2. Water-Quality-Based Effluent Limits (WQBELs).

> 402(o)(1) continued: "… In the case of effluent limitations established on the basis of section 1311(b)(1)(C) or section 1313(d) or (e) of this title, a permit may not be renewed, reissued, or modified to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit except in compliance with section 1313(d)(4) of this title."

For WQBELs, the statutory language quoted above refers to "comparable" WQBELs, not "exact" or "identical." A permit is required to maintain WQBELs consistent with 40 CFR 122.44(d); and to implement current Department policies and procedures for deriving WQBELs in permits.

CWA 402(o)(2)(B)(i) allows permits to contain a less stringent effluent limitation when "(i) information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance." However, the last sentence of CWA 402(o)(2) states: "Subparagraph (B) shall not apply to any revised waste load allocations or any alternative grounds for translating water quality standards into effluent limitations, except where the cumulative effect of such revised allocations results in a decrease in the amount of pollutants discharged into the concerned waters, and such revised allocations are not the result of a discharger eliminating or substantially reducing its discharge of pollutants due to complying with the requirements of this chapter or for reasons otherwise unrelated to water quality." In other words, the new information exception to antibacksliding does not apply to revised WLAs or any alternative grounds to establishing WQBELs, unless the revised WLAs decrease the amount of pollutants discharged for any reason other than the discharge being reduced or eliminated in order to comply with the CWA or for reasons unrelated to water quality.

When 402(o)(2)(B)(i) refers to new information, that information can be either provided by the facility or investigated by the Department. All new information must be examined, and the Department may use new site-specific hardness (for hardness-dependent metals), pH and temperature (for ammonia WQS), stream flow (for mixing considerations), and other information, to derive less stringent WQBELs, subject to the safety clause discussed below.

Finally, a WQBEL must be based on the most stringent and applicable WQS. As an example, Missouri has two generally applicable WQSs for chromium, one for aquatic life toxicity, and a second for irrigation. The irrigation standard is typically more stringent unless the local hardness is extremely low. The permit writer compares the WQSs and, if there is RP, implements the lower final effluent limit in the permit.

Item 3. Safety Clause.

> 402(o)(3) Limitations "In no event may a permit with respect to which paragraph (1) applies be renewed, reissued, or modified to contain an effluent limitation which is less stringent than required by effluent guidelines in effect at the time the permit is renewed, reissued, or modified. In no event may such a permit to discharge into waters be renewed, reissued, or modified to contain a less stringent effluent limitation if the implementation of such limitation would result in a violation of a water quality standard under section 1313 of this title applicable to such waters."

This section prohibits less stringent effluent limitations in all cases if they would result in a violation of applicable effluent guidelines or water quality standards. This absolute minimum still does only apply to established and *applicable* technology limits, such as those found in Effluent Limit Guidelines (ELGs) at 40 CFR Subchapter N; and *applicable* water quality standards. In other words, if a water quality standard has changed, the revised, promulgated, and EPA-approved WQS becomes the basis for the effluent limitation. The Department implements the most stringent of the state-wide WQS or any applicable watershed TMDL WLA in the permit. The necessity of a WQBEL is also tied to Reasonable Potential (RP), and the Department also completes an antibacksliding analysis on any limits removed; this is generally considered new information in the form of discharge data, and if the new information shows there is no RP, this is described in the fact sheet. To reduce duplicative statements of facts, see the derivation section of the fact sheet for more information.

A reduction in monitoring frequency is not considered backsliding. A numeric or narrative limit established in the permit is applicable every hour of every day, not only during the day the monitoring occurs, therefore, a reduction in monitoring frequency has no bearing on the numeric limits applied in the permit. Both § 402(o)(1) and the safety clause in § 402(o)(3) prohibit renewed permits from containing *effluent limitations* that are less stringent. The Department does not read 402(o) to apply to any other non-limiting type of permit conditions.

Narrative conditions, found in the special conditions portion of the permit are non-numeric permit limits. Pursuant to 40 CFR 122.2, an effluent limit is *any restriction* imposed by the permitting authority on quantities, discharge rates, and concentrations of pollutants which are discharged. However, re-assessment of non-numeric conditions during a permit reissuance can result in varying perspectives based on additional knowledge gathered by the Department over the course of the permit term. To be clear, only when there is reasonable potential (RP) is the Department charged with developing WQBELs, whether narrative or numeric. If there is no reasonable potential, narrative conditions may be removed as well; because the removed narrative conditions did not implement any relevant, *applicable*, or *comparable* WQS. Historically, permits included a listing of the narrative general criteria identified in 10 CSR 20-7.031(4), without thoughtfully assessing RP. See REASONABLE POTENTIAL discussion, below in this part for additional information for reasonable potential determinations (RPDs). When RP is no longer found for a parameter, this is based on new information and therefore the parenthetical new information antibacksliding exception applies.

Item 4. CWA §303(d)(4) Limitations On Revision Of Certain Effluent Limitations

> (A) Standard Not Attained—For waters identified under paragraph (1)(A) where the applicable water quality standard has not yet been attained, any effluent limitation based on a total maximum daily load or other waste load allocation established under this section may be revised only if (i) the cumulative effect of all such revised effluent limitations based on such total maximum daily load or waste load allocation will assure the attainment of such water quality standard, or (ii) the designated use which is not being attained is removed in accordance with regulations established under this section.
>
> (B) Standard Attained—For waters identified under paragraph (1)(A) where the quality of such waters equals or exceeds levels necessary to protect the designated use for such waters or otherwise required by applicable water quality standards, any effluent limitation based on a total maximum daily load or other waste load allocation established under this section, or any water quality standard established under this section, or any other permitting standard may be revised only if such revision is subject to and consistent with the antidegradation policy established under this section.

CWA § 303 is section 1313, that refers to establishment of state water quality standards; and is CWA § 303(d)(4) is section 1313(d)(4) that refers to effluent limitations based on methods to attain a higher quality of water than what currently exists. The words "*this section*" as used in CWA § 303 necessarily refer to CWA § 303, meaning this antibacksliding requirement applies to the development of water quality standards. A wasteload allocation (WLA) is a discrete portion of the available loading capacity of the receiving stream identified in the WQS, and used as the basis for the WQBEL in a permit. The WLA can change based on the number of dischargers in the stream, a change in stream capacity (for example, a stream no longer classified as a "C" stream but is now a permanent stream), and any load allocation distributed to non-point sources in a TMDL. When revised permit limits are higher than the last permit but are also based on higher revised WQS, the Department has determined, through reissuance of elevated water quality standards, the revised WQS will not interfere with the uses established for the receiving stream. The parenthetical exception to the exception in CWA §402(o)(2)(B)(i) indicates that revised WQS cannot be considered new information, therefore backsliding can only be allowed for attainment waters pursuant to CWA §303(d)(4).

Pursuant to 303(d)(4)(A), if the receiving waters were not yet attained for the use, the TMDL limit remains just as or more protective than the broader state WQS. Because 303(d)(4)(B) invokes the antidegradation policy, it would be important for any TMDL or permit in lieu of TMDL to provide rational analysis for any attained water where limits are becoming less stringent. This would be provided for in the TMDL removal document. However, the Department's antidegradation policy applies only to new or expanding discharges (i.e., an increase in flow or pollutant loading or a decrease in treatment), and therefore if there is no new or expanding discharge, then an antidegradation review is not triggered. Once the water is attained, the permit limit may be based on a different, but also applicable, WQS if it meets one of the exceptions.

Summary:
The Department always incorporates any applicable ELG in the permit. Also, 40 CFR 122.44(d)(1)(vii) states "when developing water quality-based effluent limits under this paragraph the permitting authority shall ensure that: (A) The level of water quality to be achieved by limits on point sources established under this paragraph is derived from, and complies with all applicable water quality standards." The Department can only utilize effective, promulgated, and approved WQS in limit derivation. This includes TMDL WLAs.

As with any previous permit limit, if justification was not included in the fact sheet, then reissued permit backsliding provisions are difficult to determine. The Department is required by 640.016 RSMo to only prescribe statutorily supported requirements. If a historical limit was not identified as WQBEL, TBEL, or BPJ, then the next permit has reasonable expectation of providing sufficient derivation and legal cause to include the previous limit or the revised limit. A historical limit without thorough justification is not a statutorily supported effluent limit. If the revised limit does not match the historical limit, there is no basis to continue a historical effluent limit based on incomplete information simply to preserve a numeric value. The Department must effectively administer the NPDES program fairly and realistically, and that includes providing justification for each and every permit condition. Stating that a parameter is "continued from the previous permit" with no other basis is not defensible pursuant to 640.012 and 640.016 RSMo.

- ✓ Outfall #004 had WET testing requirements. However, as the facility only chlorinates this wastewater for one hour a day, it was determined there was no reasonable potential for any toxic parameters at this outfall. WET testing was removed from outfall #004 based on the information provided by the facility. Pursuant to antibacksliding requirements, this was removed based on new information.
- ✓ The previous permit had a special condition which 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 unjustified and was outside the scope of NPDES permitting under this permit and was removed. The Department does not read 402(o) to apply to any other non-limiting type of permit conditions therefore this is not considered backsliding.
- ✓ The previous permit had a special condition which indicated spills from hazardous waste substances must be reported to the Department; however, this condition is covered under standard conditions and was removed from special conditions. This is still limited in another section therefore this is not considered backsliding.
- ✓ The water quality standards for chronic total residual chlorine increased from 10 µg/L to 11 µg/L in 2018; see 10 CSR 20-7.031 Table A1. Permit reissuance must utilize currently applicable water quality standards when calculating water quality based effluent limitations. Revised permit limits are slightly higher than the last permit. The ML established in this permit is the same as the last permit. The Department has determined, through reissuance of elevated water quality standards, the discharges of this parameter within permitted limits will not interfere with the uses established for the receiving stream. Backsliding provisions parenthetical exception to the exception in CWA §402(o)(2)(B)(i) indicate that revised WQS are not considered new information, therefore backsliding is allowed for attainment waters pursuant to CWA §303(d)(4).
- ✓ The permit writer removed the precipitation reporting component in the permit. The data for precipitation is readily available online. The facility may need to determine daily precipitation to determine stormwater flow; however, the requirement to report this measurement to the Department is removed. The SWPPP remains a component of the permit and typically continues to require a daily log of precipitation. On-site measurements of precipitation may also be necessary if no nearby weather stations exist. Both § 402(o)(1) and the safety clause in § 402(o)(3) prohibit renewed permits from containing effluent limitations that are less stringent. The Department does not read 402(o) to apply to any other non-limiting type of permit conditions therefore this is not considered backsliding.

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

- ✓ See ANTIDEGRADATION APPLICABILITY REVIEW below.
- ✓ The facility has indicated outfall #002 discharges chlorine as monochloramine. While this was not specifically identified in the previous permit, the outfall effluent has contained chlorinated wastewater for some time, as shown in historical process flow diagrams. This permit will correct the oversight and add chlorine monitoring and limits to outfall #002. When the facility realized chlorine discharge was not authorized, the facility re-routed the flow to a similar outfall where the constituents included chlorine; outfall #003. The new authorization of chlorine at outfall #002 is not a new discharge, but effluent limits applied to the outfall utilize the same principles as required under antidegradation reviews, and the most restrictive limits are chosen.

ANTIDEGRADATION APPLICABILITY REVIEW:
The below summary is the antidegradation review, to be public noticed with this permit as required under 10 CSR 20-6.010(3)(B) for the purposes of inclusion and expansion of pollutant loading at outfall #001.

Project Information:
DESCRIPTION: The Thomas Hill Energy Center located in Clifton Hill, MO is owned and operated by Associated Electric Cooperative, Inc. (AECI). The facility is a coal-fired power plant located on the southeastern shore of the Thomas Hill Reservoir and is engaged in the generating and selling of electricity. The Plant is categorized by the Standard Industrial Classification (SIC) # 4911 and North American Industry Classification System (NAICS) # 221112. The facility's existing Missouri State Operating Permit became effective on January 1, 2018 and expires on June 30, 2021. The facility has a total of eighteen (18) active outfalls; several non-industrially exposed outfalls also exist.

PROPOSAL: According to a letter dated March 20, 2020, AECI is proposing to modify its current stormwater and industrial process water treatment and discharges at the Thomas Hill Energy Center. The modifications are required to comply with United States Environmental Protection Agency regulations related to coal combustion residuals and effluent limitation guidelines. The facility is proposing to replace Cell 001 with a concrete dewatering tank that will primarily recirculate flows back to the plant. Additionally the facility is proposing to modify existing Cell 002 West and Cell 002 East, which will include the relocation of current Outfall 001 to the southeast corner of Cell 002 East. The relocated outfall will discharge into an existing stormwater ditch, which ultimately discharges to the Tributary to Little Chariton River immediately downstream of the current Outfall 001 location. All discharges will continue to the same receiving waterbody. Following the startup of Cell 002 East and Cell 002 West, Cell 003 and Cell 004 will be taken offline for closure of these impoundments.

Additional upstream modifications to the ash pond system will be made to improve the site's best management practices and enhance sediment removal procedures.

In summary, "modifications to the ash pond system are anticipated to (1) reduce the volume of sluice water discharge at the plant under current coal combustion residual rule (2) cease discharge of current CCR and non-CCR process waters into the active CCR ponds and (3) for closure of Cells 001, 003 and 004."

DISCUSSION: The proposed modifications to the Thomas Hill Energy Center are considered a reconfiguration of existing process flows. There will be no increase in design flow or discharge of new pollutants of concern associated with the proposed modifications. The current design flow and effluent limitations associated with discharges from Outfall 001 in the effective MSOP will be maintained.

DETERMINATION: The proposed upgrade will not require an antidegradation review according to Missouri Antidegradation Rule and Implementation Procedure. The proposed modifications will not result in a new or expanded discharge from the facility. Mass loading to the receiving waterbody, Middle Fork Little Chariton River, will be maintained.

REVIEWER: ELLEN MODGLIN, E.I.
DATE: APRIL 2020
UNIT CHIEF: JOHN RUSTIGE, P.E.

BEST MANAGEMENT PRACTICES:
Minimum site-wide best management practices are established in this permit to ensure all facilities 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 644.011 and 644.016 (17) RSMo.

CHANGES IN DISCHARGES OF TOXIC POLLUTANT:
This special condition reiterates the federal rules found in 40 CFR 122.44(f) for technology treatments and 122.42(a)(1) for all other toxic substances. 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 listed in 40 CFR 401.15 and any other toxic parameter the Department determines is applicable for reporting under these rules in the permit. The facility should also consider any other toxic pollutant in the discharge as reportable under this condition and must report all increases to the Department as soon as discovered in the effluent. The Department may open the permit to implement any required effluent limits pursuant to CWA §402(k) where sufficient data was not supplied within the

application but was supplied at a later date by either the permittee or other resource determined to be representative of the discharge, such as sampling by Department personnel.

CLOSURE:
To properly decontaminate and close a wastewater basin, the facility must draft a complete closure plan, and include the Closure Request Form #2512 https://dnr.mo.gov/document-search/facility-closure-request-form-mo-780-2512 The publication, Wastewater Treatment Plant Closure - PUB2568 found at https://dnr.mo.gov/print/document-search/pub2568 may be helpful to develop the closure plan. The regional office will then approve the closure plan, and provide authorization to begin the work. The regional office contact information can be found here: https://dnr.mo.gov/about-us/division-environmental-quality/regional-office

COAL ASH – COAL COMBUSTION RESIDUALS (CCR), AND SOLID WASTE/LAND RECLAMATION:
Coal combustion residuals (CCRs) include fly ash, bottom ash, boiler slag and flue gas desulfurization, or scrubber materials such as synthetic gypsum, which are produced when coal is burned for electricity generation. This site has several areas holding coal ash or "ash", where coal ash is temporarily or permanently stored. Some metals such as arsenic, mercury and lead that occur naturally in coal in trace amounts remain in the ash. By using appropriate procedures, the metals are contained within ash management facilities on site at the power plants. The two most common types of ash management facilities are landfills, which are used to dispose of dry ash, and surface impoundments, also called wet ponds, in which ash settles at the pond bottom. Ash collected for beneficial reuse is in some cases stored in dry ash silos. CCR surface impoundments have been a standard practice for managing fly ash and bottom ash in the past, but the CCR rule, explained below, is changing the historical standard practices.

ASH PONDS:
Ponded areas holding ash are being monitored for groundwater contamination under 40 CFR 257 Subpart D (Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments, or "CCR Rule"). AECI has installed and certified a multi-unit groundwater monitoring system at the Thomas Hill Energy Center (THEC) Ash Pond System. The THEC Ash Pond System is subject to the groundwater monitoring and corrective action requirements described under 40 CFR §§ 257.90 through 257.98. This permit does not enact or enforce 40 CFR 257 §D; this regulation is self-implementing. This permit does require compliance with Missouri's groundwater quality standards in 10 CSR 20-7.031 Table A. The facility currently utilizes a system of coal ash ponds, shown below. These ponds must meet groundwater water quality standards for the Water Protection Program (WPP) but are sampled using the requirements in 40 CFR 257 §D. Under the final rule, the federal criteria include requirements for design and operating standards, structural stability inspections, groundwater monitoring, dike structural stability, location restrictions and closure and post-closure care for all existing and new surface impoundments and landfills. Compliance with the federal criteria is measured through a record-keeping, notification and internet-posting requirement.

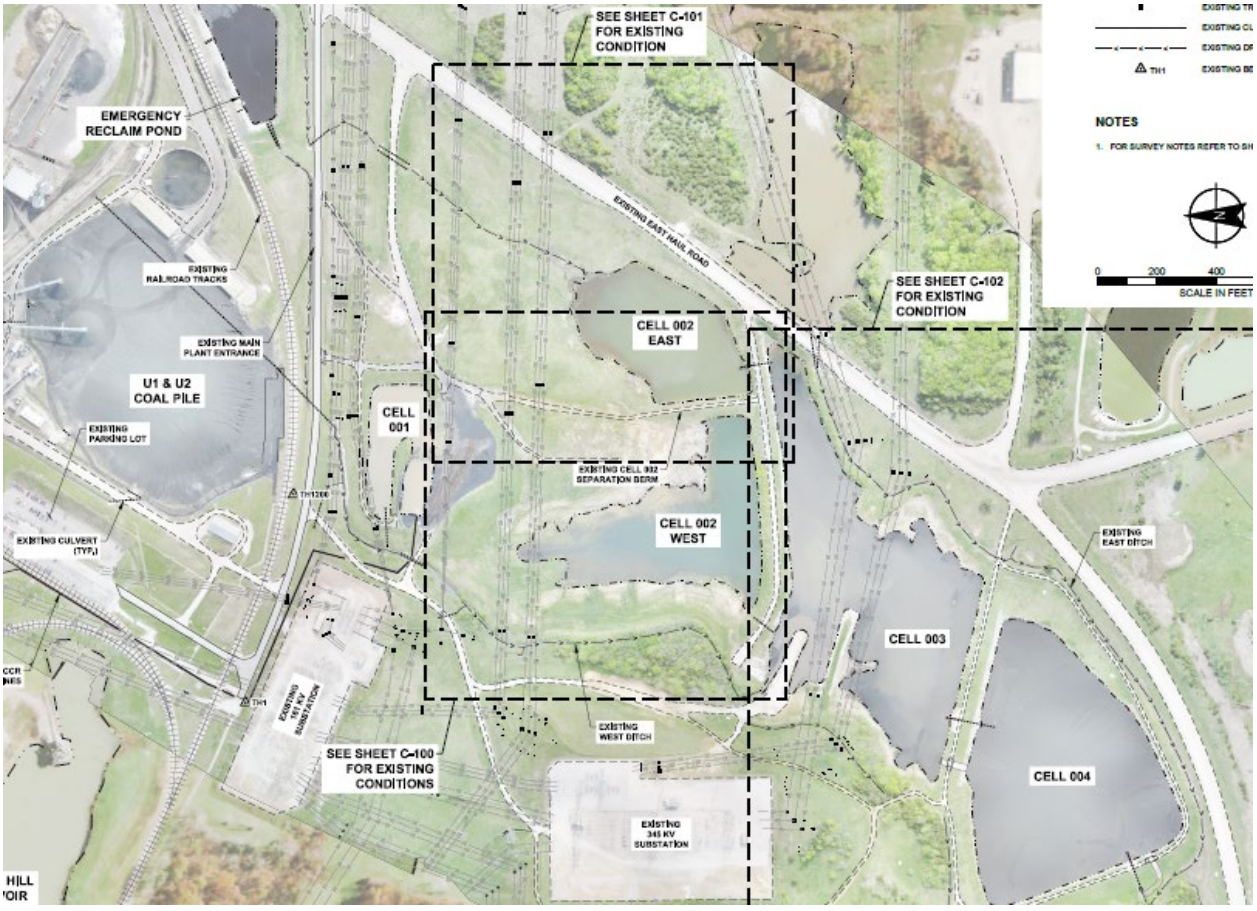
The current monitoring wells are listed below; these wells were listed in the "Facility Description" portion of the permit during the last permit term. However, the wells were moved to the fact sheet because the well positions are not require to be maintained. The only requirement is the groundwater monitoring network effectively monitor the groundwater at the site and that the other groundwater terms and conditions of the permit be met. Monitoring well locations are typically determined through consultation with the Water Protection Program and the Environmental Assistance Unit of the Missouri Geological Survey. The WPP acts as the intermediary between the two units, providing coordination and a clearing house for all things groundwater. Should the facility need to relocate or remove a well, the facility may contact the WPP for coordination, although coordination is not necessarily required when the facility is monitoring under the CCR Rule.

Monitoring Well #SW-222	UTM Coordinates: X= 531182, Y= 4377670
Monitoring Well #MW-1	UTM Coordinates: X= 531649, Y= 4377615
Monitoring Well #MW-2R	UTM Coordinates: X= 532080, Y= 4377279
Monitoring Well #MW-3	UTM Coordinates: X= 530818, Y= 4376739
Monitoring Well # MW-4	UTM Coordinates: X= 530722, Y= 4376807
Monitoring Well #MW-5	UTM Coordinates: X= 530723, Y= 4376872
Monitoring Well #MW-6	UTM Coordinates: X= 530759, Y= 4376959
Monitoring Well #TPZ-1	UTM Coordinates: X= 531193, Y= 4377700
Monitoring Well #TPZ-3	UTM Coordinates: X= 530975, Y= 4377232
Monitoring Well #TPZ-9	UTM Coordinates: X= 531105, Y= 4376913
Monitoring Well #TPZ-11	UTM Coordinates: X= 531020, Y= 4376846

During the last permit term, the Department regulated the areas around the ash ponds (shown above as cells 1 through 4) by enacting permit requirements for installation of monitoring wells, a site Characterization Report, and a Groundwater Monitoring Sampling and Analysis Plan. However, these areas are covered under 40 CFR 257 Subpart D ("§D"). During the last permit renewal, the Coal Ash Rule was new, and the Water program was unsure the results 40 CFR 257 §D would obtain. Now that the rule has been effective for over 5 years, the permit writer has noted the requirements found in 40 CFR 257 §D meet the monitoring and evaluation needs of the Department as well, therefore the Department will no longer require additional information be gathered and submitted to the Water Protection Program under this permit for the groundwater in these areas. However, the permit writer has reviewed the groundwater

records provided online by the facility, which are required to be made publicly available by §D. Data supplied in the 2018, 2019, and 2020 groundwater monitoring report describe high levels of sulfate. This is a historical mining area where coal was mined for the purposes of generating electricity at the power plant and sulfur is found concomitantly with the coal. However, downgradient wells show no impacts from boron at this time, which is a primary indicator of coal combustion residual leachate. As the elevated sulfate does not appear to be caused by coal combustion residual leachate, and therefore is unlikely to be due to any activities of the facility, the permit writer has no reason to implement groundwater limits for this area at this time. The facility will proceed with closures dictated by §D. 40 CFR 423 §D is under EPA review, and several remands and court cases have been adjudicated. The permit writer has reason to believe changes will occur in the future to the rule, and currently the outcome of the rule is unpredictable. Regardless, currently the facility is required to close these ash areas, under varying means, but the Department is not requiring any specific closure method at this time because the Department does not hold primacy for regulating under 40 CFR 257 §D.

Cell 1 no longer receives sluice wastewater which must be halted after December 31, 2023. The facility has completed construction of a Concrete Dewatering Tank (CDT), which replaces Cell 001 to comply with this requirement. The CDT will receive quenched bottom ash and ash handling wastewater. The CDT will be designed to recycle the quench water back to the plant to achieve zero liquid discharge by the latest of December 31, 2023. Clean overflows and blowdowns from the CDT to achieve desired water chemistry (clean of CCR material and meeting TSS limits in this permit) will be placed in a clean closed Cell 001 (which would now be a non-CCR impoundment). The CDT flows to Cell 002-West and decant into the Cell 002-East and out regulated outfall #001. The parameters of concern at outfall #001 will not significantly change due to this redirection of wastewater; the volume of wastewater will decrease. The facility utilizes intake water from the reservoir in the systems; for net limitations, the net allowance can only be used on the portion of the wastewater which has directly come from the reservoir per 40 CFR 122.45(g). It is the facility's responsibility to determine what percentage of the discharge is coming directly from the intake, and only obtain the net value from that percentage.



OLD ASH POND:
Old ash pond area (historical ash pond capped in the 1980s, situated below the Thomas Hill Reservoir dam). During the last permit term, the special conditions required the facility provide additional information regarding the old ash pond area. AECI asked for the old ash pond area to be considered under a separate permit, logged as MO-0139874. Therefore, this permit removes coverage for this area.

LANDFILL AND LAND RECLAMATION:
After the facility dewaters the sluiced ash (sluicing is being ceased in 2023), it is hauled and emplaced in special solid waste landfill #717502, which is also designed to regrade the surface of the land to historical grade. Dewatering is now performed in the Concrete Dewatering Tank (CDT), a new feature under this permit. The facility is monitoring the groundwater at the under the Department issued landfill permit #717502. These data were not reviewed by the permit writer, as the facility did not supply them, as compliance is to be determined by the Waste Management Program (WMP) and Land Reclamation Programs (LRP) programs, and technically falls under the co-located Prairie Hill Mine, MO-0003948; the permit writer will review when writing the Prairie Hill Mine permit.

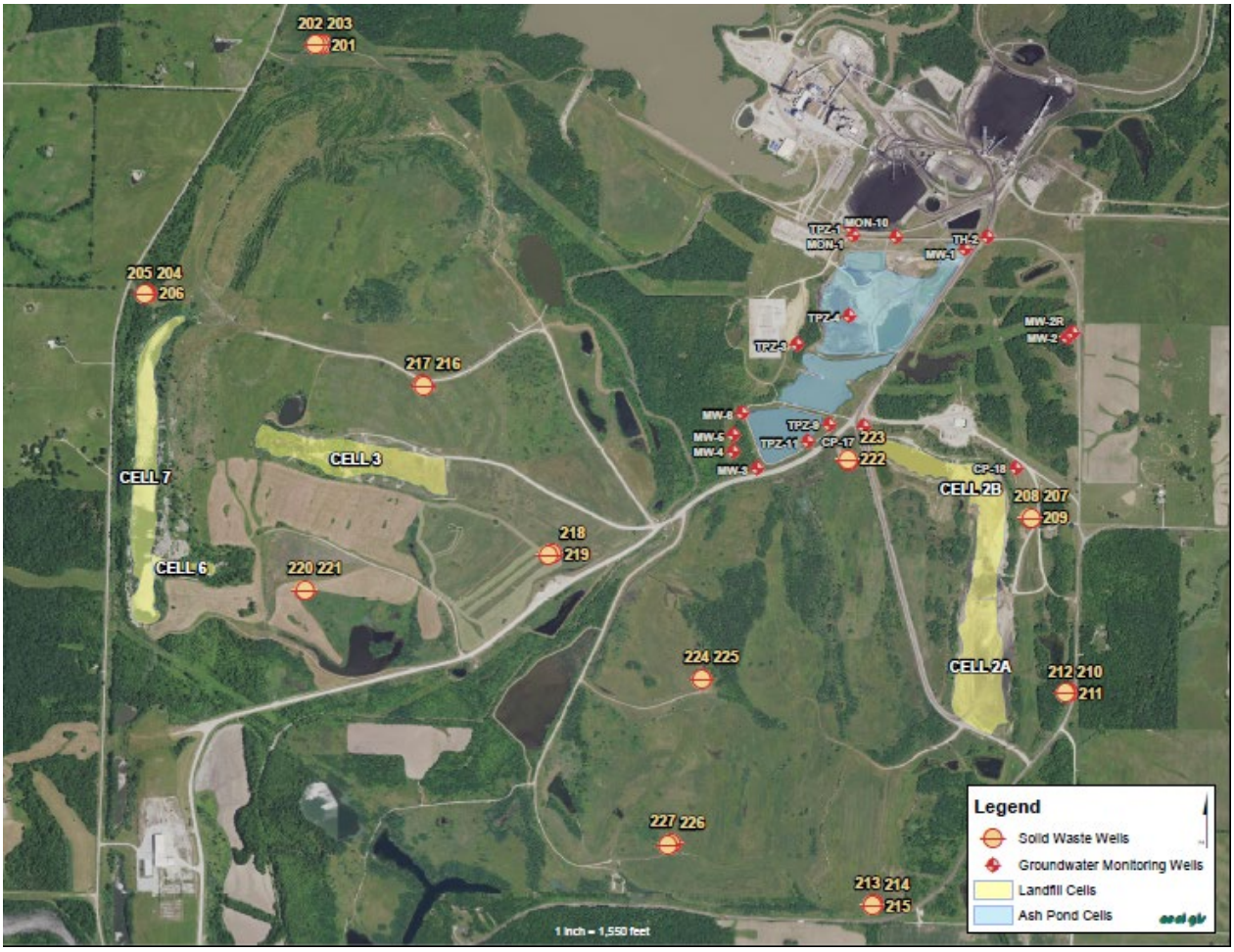
The facility beneficially reuses ash for the reclamation of coal surface mined areas per 10 CSR 40-6. The strip mining areas being reclaimed are still under active coal mining permits with the Land Reclamation Program (LRP). In 1985, the facility was issued a special waste landfill permit by the WMP. During the dual regulation development of the facility the two state programs agreed to regulatory oversight boundaries: 1) Solid waste management (Waste Management Program - WMP) maintains oversight for regulation of the placement of ash within the disposal cells and operations of disposal activity. 2) Land Reclamation is responsible for oversight of operations outside of the disposal cells. Once the ash fill reaches subgrade, Land Reclamation maintains regulatory primacy for the completion of reclamation activities. These areas are managed by both the Waste Management Program (WMP) under 10 CSR 80 and the land reclamation program (LRP) under 10 CFR 40-6. The areas identified by the WMP landfill are simultaneously backfill of historical surface coal mining. There is a network of wells surrounding the landfill/reclamation areas in compliance with the permit issued by the WMP for landfills. The well network is designed, just as it is at other facilities, to collect groundwater data to detect leachate leaks from the area. The area is shown below and is under permit MO-0003948.

AECI Prairie Hill Mine is permitted under a WMP Permit dated in 1985 and the permit continues to this day. The current operation is considered a solid waste disposal activity and is therefore regulated and inspected by solid waste personnel. LRP does not regulate coal ash disposal nor do the LRP regulations or statutes govern coal ash disposal. LRP regulations are only invoked when Solid Waste regulations are no longer in effect - once a final cover is being placed over the coal ash or AECI can no longer fulfill their responsibility to reclaim the remaining final pits and the bonds are forfeited.

In order to allow AECI to use the final mine pits as disposal cells the LRP has granted a variance to delay backfill and grading of the previously mined pits. This action was originally agreed to by DEQ in 1993 when AECI ceased mining coal. The reclamation variance was allowed in order for AECI to achieve higher standard of reclamation by filling the mine pits with coal ash or CCR. This brings the land closer to the original grade of the area, as it was previous to mining. The latest reclamation variance was granted in 2019 and will expire in 2025. AECI samples groundwater monitoring wells quarterly for both the WMP and LRP permits. Those reports are submitted quarterly through the approved electronic data collection system that replaced the paper copies formerly sent to the Northeast Regional Office. WMP, through the Environmental Service Program, has collected split samples with AECI of the groundwater wells in the past.

This is a Solid Waste regulated facility until the pits are to grade and topsoil begins to be placed. At that time, LRP regulations come into play. As required in the surface coal mining law, LRP inspects the 4 remaining LRP permit areas that surround the disposal cells or have stockpiled topsoil on them monthly. These permits cover 795.8 acres. LRP’s inspections focus on vegetative cover, erosion control, and water impoundment stability. There is bonding in place to reclaim the disturbed permitted area should AECI not have the ability to do so. The reclamation bonding is renewed each year. As part of the LRP's approval process it is reviewed by a Professional Engineer (PE) to determine if the amount is sufficient to reclaim the LRP permitted areas.

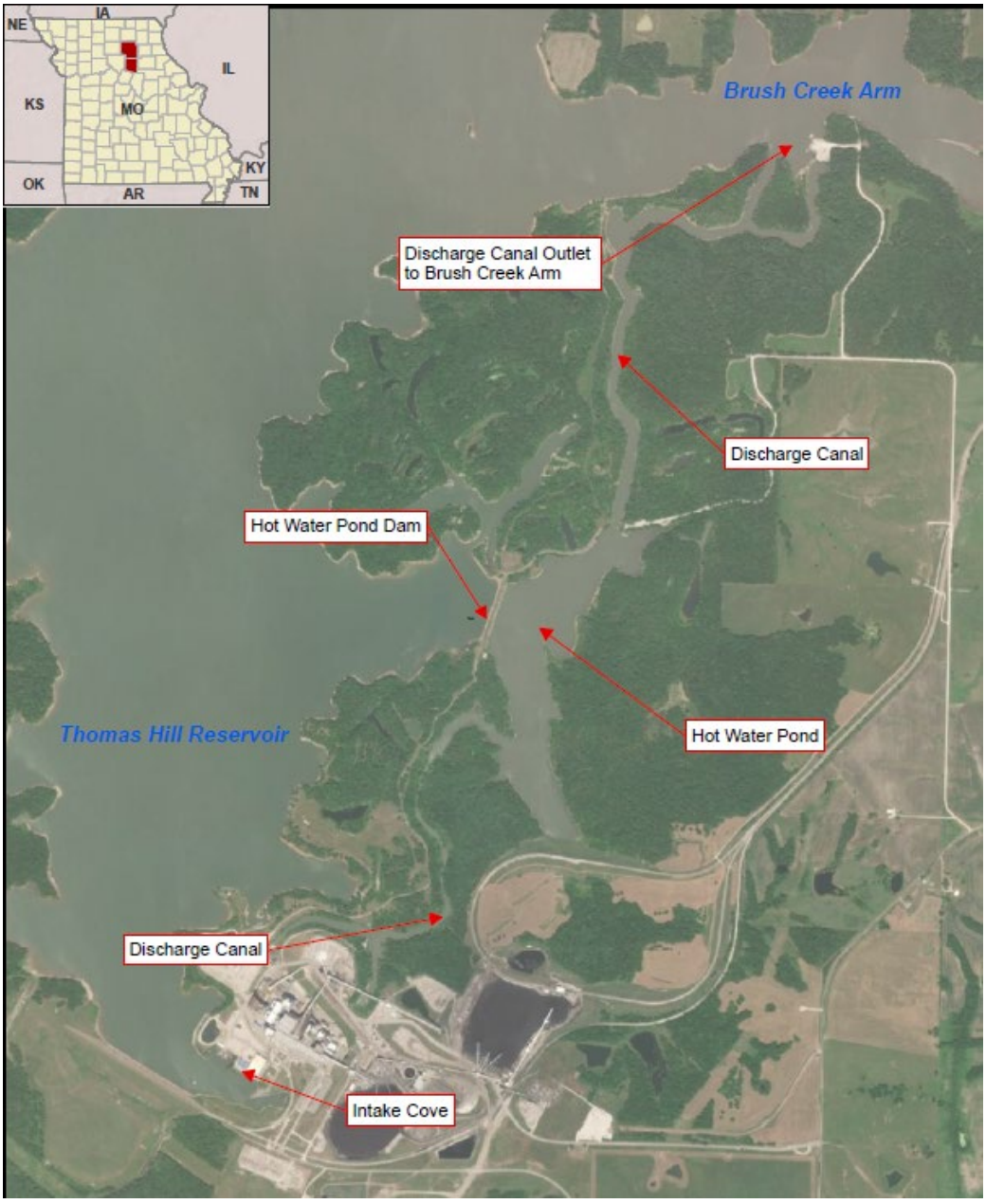
The groundwater monitoring wells (series 200s) shown below are under the WMP, the WPP will not be regulating these areas of groundwater.



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 facility is not currently under Water Protection Program enforcement action.

COST ANALYSIS FOR COMPLIANCE (CAFCOM):
Pursuant to 644.145 RSMo, when incorporating a new requirement for discharges from publicly owned facilities, or when enforcing provisions of this chapter or the CWA, pertaining to any portion of a publicly owned facility, the Department shall make a finding of affordability on the costs to be incurred and the impact of any rate changes on ratepayers upon which to base such permits and decisions, to the extent allowable under this chapter and the CWA. This process is completed through a CAFCom. Permits not including new requirements may be deemed affordable.
✓ The Department is not required to complete a cost analysis for compliance because the facility is not publicly owned.

COOLING WATER INTAKE STRUCTURE:
On 2/12/2016 the facility sent a letter to the Department asking to make a determination for the newly promulgated 316(b) regulations. On 2//18/2016, the Department sent a letter to the facility indicating the 316(b) studies were not required for this facility because the facility intakes cooling water from a reservoir specifically built for the purposes of cooling. During the last permit term, the facility was to gather data regarding the intake for items 122.21(r)(2) through (r)(5). This data was submitted the Department with the application for renewal. The special condition in the permit for the next submission is only required if there are changes to the intake; therefore, no submission is necessary if no changes are made. At this time, the facility operates a system similar to closed cycle cooling; therefore, the BTA/BAT determination for this facility is closed cycle cooling. Closed cycle cooling is appropriate for minimizing both negative impingement and entrainment effects.



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

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

Per 40 CFR 127.15 and 127.24, permitted facilities may request a temporary waiver for up to 5 years or a permanent waiver from electronic reporting from the Department. To obtain an electronic reporting waiver, a facility must first submit an eDMR Waiver Request form available on the Department's web page. A request must be made for each operating permit. An approved waiver is not transferable. The Department must review and notify the facility within 120 calendar days of receipt if the waiver request has been approved or rejected [40 CFR 124.27(a)].

During the Department review period as well as after a waiver is granted, the facility must continue submitting a hard-copy of any reports required by their permit. The Department will enter data submitted in hard-copy from those facilities allowed to do so, and electronically submit the data to the EPA on behalf of the facility.

✓ This facility has not been granted a waiver, nor would this facility qualify for a waiver.

DOMESTIC WASTEWATER, SLUDGE, AND BIOSOLIDS:

Domestic wastewater is defined as wastewater originating primarily from the sanitary conveyances of bathrooms and kitchens. Domestic wastewater excludes stormwater, wash water, animal waste, process and ancillary wastewater.

✓ Applicable; see internal monitoring point #013.

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/biosolids/septage are 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 facility 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) as applicable. 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).

FEDERAL EFFLUENT LIMITATION GUIDELINES:

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. Effluent guidelines are not always established for every pollutant present in a point source discharge. In many instances, EPA promulgates effluent guidelines for an indicator pollutant. Industrial facilities that comply with the effluent guidelines for the indicator pollutant will also control other pollutants (e.g. pollutants with a similar chemical structure). For example, EPA may choose to regulate only one of several metals present in the effluent from an industrial category, and compliance with the effluent guidelines will ensure that similar metals present in the discharge are adequately controlled. All are technology based limitations which must be met by the applicable facility at all times. 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).

✓ The facility has an associated Effluent Limit Guideline (ELG) at 40 CFR 423 applicable to the wastewater and certain stormwater discharges at this site, and is applied under 40 CFR 125.3(a). See Part IV: EFFLUENT LIMITS DETERMINATION.

GENERAL CRITERIA CONSIDERATIONS:

In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into permits for pollutants determined to cause, have reasonable potential to cause, or to contribute to, an excursion above any water quality standard, including narrative water quality criteria. In order to comply with this regulation, the permit writer has completed a reasonable potential determination on whether discharges have reasonable potential to cause, or contribute to an excursion of the general criteria listed in 10 CSR 20-7.031(4). In instances where reasonable potential exists, the permit includes limitations to address the reasonable potential. In discharges where reasonable potential does not exist, the permit may include monitoring to later determine the discharge's potential to impact the narrative criteria. Additionally, 644.076.1 RSMo, as well as Part I §D – Administrative Requirements of Standard Conditions included in this permit state it shall be unlawful for any person to cause or allow any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of §§644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule, or regulation promulgated by the commission. See Part IV for specific determinations.

GROUNDWATER MONITORING:

Groundwater is a water of the state according to 644.016(27) RSMo, 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 monitoring the groundwater at the site because of coal combustion residuals (CCR). See section COAL ASH – COAL COMBUSTION RESIDUALS (CCR), AND SOLID WASTE/LAND RECLAMATION above for detailed information about the groundwater at this site.

HYDRAULIC CONNECTION THROUGH GROUNDWATER TO SURFACE WATER:
A point source does not need to *directly* discharge into a regulated waterbody to be considered a discharge. The Department continues to permit both direct discharges, as well as discharges that are the "functional equivalent" of a direct discharge under the NPDES, UIC, and State program to protect the beneficial uses of Missouri's regulated surface and groundwater. Discharges subsurface in the subsurface to surface regime, are discussed and required for evaluation under this permit.

Missouri has recently clarified that discharges to or into groundwater must also consider hydraulic connections to surface water, meaning discharges to the subsurface in areas of regular surface water interaction (e.g. large river alluvial areas, discharges percolating subsurface, and losing stream situations) may require evaluation of groundwater and surface water protection standards for all pollutants. Additionally, in Missouri's karst geology, areas of losing streams, and sinkholes may need to be evaluated both for groundwater protection, but also for potential nearby areas where this groundwater may re-surface, if a connection to the surface waterbody is suspected.

As Missouri already has laws and regulations protecting both groundwater and surface water, and as the Department already permits no-discharge facilities, underground injection, surficial discharging facilities, discharges to losing streams, and potential groundwater impacts, recent federal Court decisions will not likely result in dramatic differences in permitting pertaining to groundwater protection and groundwater conveyance into surface waters in Missouri. Department permit writers already evaluate protection of all potentially impacted waters of the state. Recent court decisions have simply clarified the obligation on facilities and the Department to fully evaluate wastewater generated, stored, discharged, or land applied; and the potential impacts to regulated waters of the state, both surface waters as well as groundwater, and the hydraulic connections between them.

LAND APPLICATION:
Land application, or surficial dispersion of wastewater and/or sludge, is performed by facilities to maintain a basin as no-discharge. Requirements for these types of operations are found in 10 CSR 20-6.015; authority to regulate these activities is from 644.026 RSMo.
✓ Not applicable; this permit does not authorize operation of a surficial land application system to disperse wastewater or sludge.

LAND DISTURBANCE:
Land disturbance, sometimes called construction activities, are actions which cause disturbance of the root layer or soil; these include clearing, grading, and excavating of the land. 40 CFR 122.26(b)(14) and 10 CSR 20-6.200(3) requires permit coverage for these activities. Coverage is not required for facilities when only providing maintenance of original line and grade, hydraulic capacity, or to continue the original purpose of the facility.
✓ Not applicable; this permit does not provide coverage for land disturbance activities. The facility must obtain a separate land disturbance permit (MORA) online at https://dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm; MORA permits do not cover disturbance of contaminated soils, however, site specific permits such as this one can be modified to include appropriate controls for land disturbance of contaminated soils by adding site-specific BMP requirements and additional outfalls. Land disturbance permits also cover soil borrow areas.

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. https://dnr.mo.gov/geology/wrc/majorwaterusers.htm 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 under registration number 59131257. 100% of the flow is used for the electrical generation category. The facility averaged 766 MG daily use in 2020. Three units are supplied by three intakes; Unit 1, established in 1966, uses a 100,000 gpm pump; unit 2, established in 1969, uses a 140,000 gpm pump; and unit 3, established in 1982, uses a 435,000 gpm pump.

METALS:
Effluent limitations for total recoverable metals were developed using methods and procedures outlined in the *Technical Support Document For Water Quality-based Toxic Controls* (EPA/505/2-90-001) and *The Metals Translator: Guidance For Calculating a Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007). "Aquatic Life Protection" in 10 CSR 20-7.031 Tables A1 and A2, as well as general criteria protections in 10 CSR 20-7.031(4) apply to this discharge. The hardness value used for hardness-dependent metals calculations was based on the ecoregion's 50th percentile, also known as the median per 10 CSR 20-7.015(1)(CC), and is reported in the calculations below. Per a memorandum dated August 6, 2019, the Director has determined permit writers should use the median of the Level III Ecoregion to calculate permit limits, or site specific data if applicable. Additional use

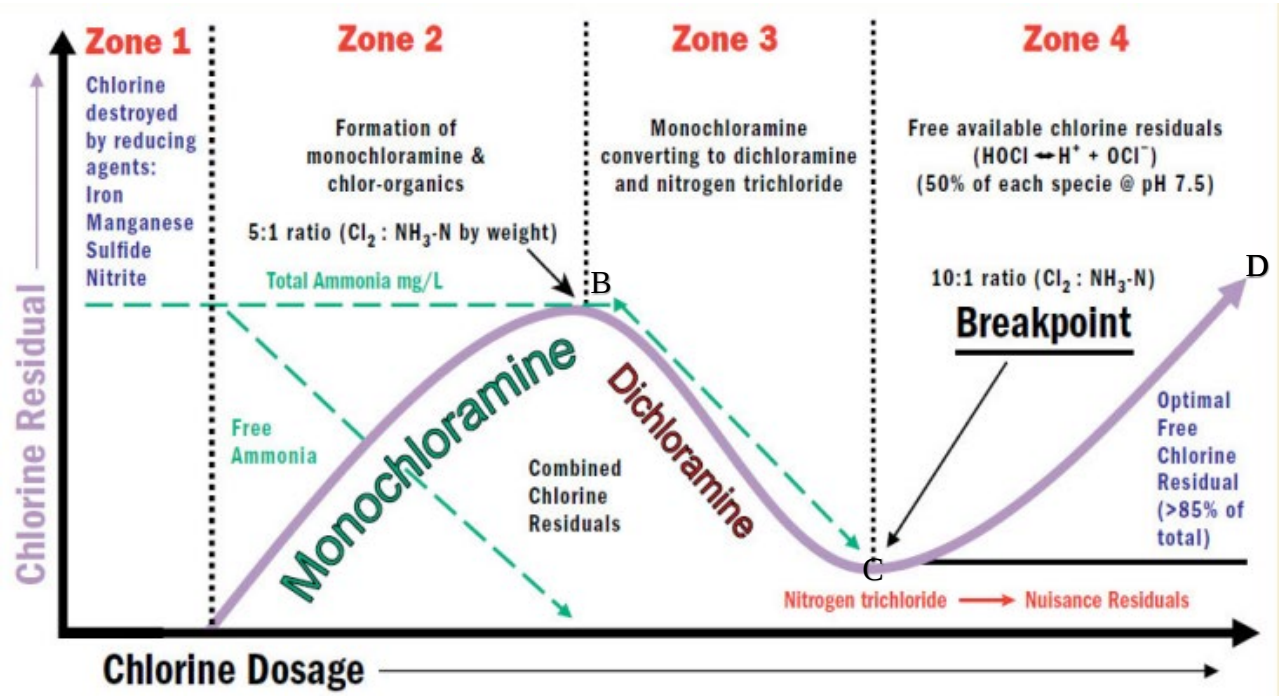
criterion (HHP, DWS, GRW, IRR, or LWW) may also be used, as applicable, to determine the most protective effluent limit for the receiving waterbody's class and uses.

MODIFICATION REQUESTS:
Facilities have the option to request a permit modification from the Department at any time under RSMo 644.051.9. Requests must be submitted to the Water Protection Program with the appropriate forms and fees paid per 10 CSR 20-6.011. It is recommended facilities contact the permit writer early so the correct forms and fees are submitted, and the modification request can be completed in a timely fashion. Minor modifications, found in 40 CFR 122.63, are processed without the need for a public comment period. Major modifications, those requests not explicitly fitting under 40 CFR 122.63, do require a public notice period. Modifications to permits should be completed when: a new pollutant is found in the discharge; operational or functional changes occur which affect the technology, function, or outcome of treatment; the facility desires alternate numeric benchmarks; or other changes are needed to the permit.

Modifications are not required when utilizing or changing additives in accordance with the publication https://dnr.mo.gov/pubs/pub2653.htm nor are required when a temporary change or provisional discharge has been authorized by the regional office. While provisional discharges may be authorized by the regional office, they will not be granted for more than the time necessary for the facility to obtain an official modification from the Water Protection Program. Temporary provisional discharges due to weather events or other unforeseen circumstances may or may not necessitate a permit modification. The facility may ask for a Compliance Assistance Visit (CAV) from the regional office to assist in the decision-making process; CAVs are provided free to the permitted entity.

MONOCHLORAMINE AS BIOCIDE:
This facility has chosen to utilize monochloramine in the system to protect the equipment from biofouling. Heated water systems have a high propensity for microbial fouling given their warmth as ideal places for microorganisms to grow. Monochloramine is touted as being more effective than chlorine on systems with high organic-demand waters. Chlorine or bromine (or any halogen) application requires calculations daily to maintain the "breakpoint" chlorine loading-to-treatment ratio, whereas monochloramine reportedly degrades into non-toxic salts, rather than leaving behind unreacted halogens; however, both methods of disinfection use the same reactive process.

The principal purpose of breakpoint chlorination is to ensure effective disinfection by satisfying the chlorine demand of the wastewater. Breakpoint chlorination is also a means of eliminating ammonia, which is converted to an oxidized volatile form. The addition of chlorine to a water that contains nitrogen-containing organic matter produces an increased combined chlorine residual. Monochloramine and dichloramine are formed between points A and B on the curve below. After the maximum combined residual is reached (point B), further chlorine doses decrease the residual. Monochloramine oxidation to dichloramine, occurring between points B and C, results in a decline in the combined available residuals initially formed. Point C represents the breakpoint: the point at which chlorine demand has been satisfied and additional chlorine appears as free residuals. Between points C and D, free available residual chlorine increases in direct proportion to the amount of chlorine applied. Monochloramine addition simply skips the steps occurring in Zones 1 and 2 and allows the facility to treat the wastewater without reduction by reducing agents in Zone 1.



Total residual chlorine (TRC) is the chlorine residual which exists in water in combination with ammonia or organic nitrogen compounds. TRC is the application of chlorine to water to react with ammonia (natural or added), or other nitrogen compounds to produce a combined available chlorine residual. Total available chlorine is the total of free available chlorine, combined available chlorine, and other chlorinated compounds. "Available chlorine" is an expression of the equivalent weights of oxidizing agents, with chlorine gas as a basis, similar to the expression of alkalinity in terms of calcium carbonate equivalents. The term originated from the need to compare other chlorine-containing compounds to gaseous chlorine. Available chlorine is based on the half-cell reaction in which chlorine gas is reduced to chloride ions with the consumption of two electrons.

One of the most frequent reactions in water conditioning cooling systems is the reaction between dissolved chlorine in the form of hypochlorous acid (HOCl) and ammonia (NH_3) to form inorganic chloramines. The inorganic chloramines consist of three species: monochloramine (NH_2Cl), dichloramine ($NHCl_2$), and trichloramine, or nitrogen trichloride (NCl_3). The pH of the wastewater determines the end species of the reactions.

Chloramines are usually produced by adding ammonia to water containing free chlorine (HOCl or OCl, depending on the pH). The ideal pH value for this reaction is 8.4 SU. When the reaction takes place three kinds of inorganic chloramines can be formed. The pH value determines which kind of chloramine is formed. Trichloramines mainly form when the pH value is 3 or below. When the pH value is 7 or above, monochloramine concentrations are highest. The amounts of chlorine and ammonia in the water also influence the origination of chloramines. The chlorine:ammonia rate is ideally 6:1. When ammonia concentrations are higher, more di- and trichloramines are formed. Organic chloramines can also be formed during these reactions. Organic chloramines cannot be distinguished from other chloramines, using standard chloramine analysis methods. Little to no trihalomethanes (THM) and other disinfection byproducts are formed during chloramine disinfection. Chloramines remain active within the plumbing much longer because it takes chloramines longer to break down than free chlorine.

Given the abundance of disinfection byproducts generated during the biocide treatment process, this permit will require pH and ammonia monitoring in the cooling systems utilizing monochloramine, in addition to the regular chlorine measurements. Ammonia should be reduced in each phase of the reaction, but because this facility uses lake water in the systems, the level could vary based on the monochloramine produced and actually applied. Chloride salts such as trichloramine are not expected to be present in the finished reactions in high enough concentrations to cause or contribute to waterbody exceedances of chlorides; therefore, chlorides warrant no further monitoring at this time unless otherwise specified. Testing for chlorides are required at renewal.

NUTRIENT MONITORING:
Nutrient monitoring is required for facilities characteristically or expected to discharge nutrients (nitrogenous compounds and/or phosphorus) when the design flow is equal to or greater than 0.1 MGD per 10 CSR 20-7.015(9)(D)8. This requirement is applicable to all Missouri waterways. Water quality standards per 10 CSR 20-7.031(5)(N) describe nutrient criteria requirements assigned to lakes (which include reservoirs) in Missouri, equal to or greater than 10 acres during normal pool conditions. The Department's Nutrient Criteria Implementation Plan (NCIP) may be reviewed at: https://dnr.mo.gov/env/wpp/rules/documents/nutrient-implementation-plan-final-072618.pdf Discharges of wastewater in to lakes or lake watersheds designated as L1 (drinking water use) are prohibited per 10 CSR 20-7.015(3)(C).

- ✓ All outfalls (except for #001 and #020) are located in watershed of Thomas Hill Reservoir where numeric criteria are applicable. The total design flow for this facility is >1 MGD and the facility discharges nutrients, therefore nutrient monitoring is required on a monthly basis per 10 CSR 20-7.015(9)(D)8.B for all outfalls suspected or discharging nutrients. This facility is required to monitor for ammonia, total Kjeldahl nitrogen, nitrate plus nitrite, and phosphorus at the applicable outfalls. Stormwater only outfalls are not subject to provisions found in 10 CSR 20-7.015 per 10 CSR 20-7.015(1)(C). Should the lake within this watershed be identified as impaired due to nutrient loading, the Department will conduct watershed modeling to determine if this facility has reasonable potential to cause or contribute to the impairment. Consequently, effluent limitations may be established at a later date based on the modeling results. See PART IV. EFFLUENT LIMITS DETERMINATION for more information. Thomas Hill Reservoir is designated as NNC.
- ✓ Nutrient monitoring is included in the permit from 10 CSR 20-7.015(9) as an effluent limit for all discharges established as applicable in 10 CSR 20-7.015(1)(C), as the nutrient monitoring was not placed on stormwater. Section (9) of the effluent regulations apply to all types of facilities, including industrial facilities. Additionally, the facility has a domestic wastewater treatment plant on site. When determining if a facility is a typical discharger, several factors are considered. First, the facility has shown detections of a nutrient in the wastewater; making them a discharger of nutrients. Secondly, the EPA has determined certain dischargers are typical dischargers of nutrients; the facility's SIC code, 4911 is an SIC code identified by the Nutrient Modeling (Hypoxia Task Force). When searching by industry in https://echo.epa.gov/trends/loading-tool/hypoxia-task-force-nutrient-model Thomas Hill was specifically noted as discharging 29,889.7 pounds per year of nitrogen. On 11/12/2021, the facility reported outfalls #001, #01A, #003, #004, and #014 do not contain industrial sources of nutrients (nitrogen, ammonia, or phosphorous). Each of these outfalls' effluent water contains raw lake water from the Thomas Hill Reservoir with the only chemical change of 1-hour per day monochloramine treatment. AECI understands the future goal of nutrient monitoring is unclear but could be a cap & trade system, watershed balancing program, or direct permit limits. AECI is concerned that, if these outfalls maintain nutrient monitoring, it will present a false identification of Thomas Hill discharging significantly high volumes of

nitrogen. The reality is that nutrients detected in these outfalls is the inherent concentration from the lake. Quantifying discharges to the reservoir does not seem to present benefit to understanding the impact to the downstream watersheds. Outfalls 003, 004, and 014 utilize water from the facility raw water intake that is used in once through cooling. Outfalls #003 and #014 contain the addition of boiler blowdown at intermittent frequencies based on operational needs. Boiler blowdown, at the facility, is deionized water that contacts no potential sources to increase the nutrient content. The water is monitored by the plant lab for purity to ensure efficient operations. Total Nitrogen reported at outfall #001 in 2020: <3.31 mg/L non-detect, <1 mg/l non-detect, 0.564 mg/L, 1.13 mg/l. These values would represent an annual average of 1.376 mg/L discharged from #001. The Department found and referenced 29,889.7 lbs. of nitrogen discharged from the facility in 2020 based on ECHO. AECI believed this was pulled prior to the 4th quarter report being submitted. Total for 2020 the ECHO database shows 39,260 lbs of nitrogen. This is split to 713 lbs. from outfall #005 and 38,547 lbs. discharged from 001. The entire discharge from #001 is not representative of the facilities potential to add nutrients to the environment. Since this is raw lake water discharges to the same source, this number indicates the pounds of nitrogen already contained in the receiving stream. The monitoring requirements for nutrients were therefore removed for these specified outfalls.

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 best management practices and USTs may be authorized in NPDES permits per 10 CSR 26-2.010(2) or otherwise may be regulated as a petroleum tank.

✓ Not applicable as the facility has stated the OWS this facility operates are not identified as USTs. The OWS, as disclosed by the facility, discharges to outfall #011, and the outfall contains appropriate parameters as determined by the permit writer. Oily wastes generated by OWS are subject to SPCC regulations. Oil collected is an industrial sludge, is identified as used oil, and must be disposed of according to 10 CSR 25-11.279. 40 CFR 279.20(b)(2)(ii)(B) indicate that OWS operated for compliance with the CWA are not "processors" but are still "generators" of used oil and fall under the used oil requirements for disposal.

OPERATOR CERTIFICATION REQUIREMENTS:

Operators or supervisors of operations at regulated domestic wastewater treatment facilities shall be certified in accordance with 10 CSR 20-9 and any other applicable state law or regulation.

✓ Not applicable; this facility is not required to have a certified operator. The domestic wastewater population equivalent (PE) of the system covered by this permit is less than two hundred (200) individuals. Additionally, this facility is not owned or operated by a municipality, public sewer district, county, public water supply district, or private sewer company regulated by the Public Service Commission, or operated by a state or federal agency. Private entities are exempted from the population equivalent requirement unless the Department has reason to believe a certified operator is necessary.

PFAS VOLUNTARY SAMPLING:

The Department is implementing voluntary sampling of per-and polyfluoroalkyl substances, or more commonly known as PFAS. PFAS are a group of compounds common in industrial processes which degrade slowly in the environment and have suspected health effects such as cancer, decreased immune response, hepatotoxicity, and low infant birth weight. Deleterious effects can occur at levels as low as parts per trillion, or 1/1,000,000,000,000 of a gram. EPA plans to 1) require additional testing for facilities within industry groups having the highest likelihood of discharging PFAS; 2) promulgate Effluent Limitation Guidelines for these facilities; and 3) designate PFAS as RCRA hazardous wastes prior to 2024, per their PFAS Strategic Roadmap. Removal technologies for PFAS remain both traditionally expensive and resource-intensive. As such, understanding this facility's reasonable potential to violate future potential effluent limitations prior to their implementation will inform required process improvements in the future.

✓ This facility has no known PFAS sources, although PFAS was found in the now closed J.B. Sims Generating Station on Harbor Island, Grand Haven, Michigan, power plant. However, CDC has been collecting data regarding PFAS exposure in humans since 1999. Nearly every person surveyed had measurable amounts of PFOS, PFOA, PFHxS, and PFNA in their blood serum, indicating widespread exposure. Despite this facility having no known PFAS sources, voluntary testing may still be prudent to ascertain if legacy sources such as air force bases, wastewaters not previously known to have PFAS with unknown contributing sources from proprietary formulation additives, chemicals used in the industrial process, or unknown other contributors are contributing to PFAS runoff in stormwater, groundwater, or wastewater at this site. If the facility wishes to test for PFAS, the Department recommends sampling using a modified Test Method 537.1, found here: https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=348508&Lab=CESER&simpleSearch=0&showCriteria=2&searchAll=537.1&TIMSType=&dateBeginPublishedPresented=03%2F24%2F2018. This tests for over 40 different PFAS analytes. Sample results may be submitted with this permit's renewal application.

PERMIT SHIELD:

Enforceable conditions, generally called permit shield, are found under CWA section 402(k) or Section 644.051.16, RSMo. All permits issued by the State of Missouri protect both the permittee and issuer from legal intervention, but only when all discharges and activities are clearly divulged by the facility; and when the issuer evaluates all discharges and activities during the renewal (or modification) process.

During the facility review of the permit draft, it is both the facility's and Department's responsibility to ensure all types of effluent the facility wishes to discharge, or qualified activities the facility wishes to perform (such as land application), are authorized in some manner. Authorization may be either through an outfall established in the permit under the facility description heading, or after reviewing the fact sheet which should include a mention of the discharge (or activity) and endorsing the discharge (or activity) as de minimis or through some other described determination. The Department must issue a legally binding and enforceable permit, which can only be completed through a thorough review from both parties.

PRETREATMENT:
This permit does not regulate pretreatment requirements for facilities discharging to an accepting permitted wastewater treatment facility. If applicable, the receiving entity (the publicly owned treatment works - POTW) is to ensure compliance with any effluent limitation guidelines for pretreatment listed in 40 CFR Subchapter N per 10 CSR 20-6.100. Pretreatment regulations per 644.016 RSMo are limitations on the introduction of pollutants or water contaminants into publicly owned treatment works or facilities.
✓ Not applicable, this facility does not discharge industrial wastewater to a POTW.

REASONABLE POTENTIAL (RP):
Regulations per 10 CSR 20-7.015(9)(A)2 and 40 CFR 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 allowance in zones of initial dilution, and chronic toxicity criteria may be exceeded by permit allowance 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 use reasonable potential determinations (RPD) as provided in Sections 3.1.2, 3.1.3, and 3.2 of the TSD. An RPD consists of evaluating visual observations, non-numeric information, or small amounts of numerical data (such as 1 data point supplied in the application). A stormwater RPD consists of reviewing application data and/or discharge monitoring data and comparing those data to narrative or numeric water quality criteria. RPD decisions are based on minimal numeric samples, the type of effluent proposed for discharge, or the unavailability of numerical RPA for a parameter, such as pH, or oil and grease. Absent effluent data, effluent limits are derived without consideration of effluent variability and is assumed to be present unless found to be absent to meet the requirements of antidegradation review found in 10 CSR 20-7.031(3) and reporting of toxic substances pursuant to 40 CFR 122.44(f).

Reasonable potential determinations are also performed for WET testing in wastewater. While no WET regulations specific to industrial wastewater exist, 40 CFR 122.21(j)(5) implies the following should be considered: 1) the variability of the pollutants; 2) the ratio of wastewater flow to receiving stream flow; and 3) current technology employed to remove toxic pollutants. Generally, sufficient data does not exist to mathematically determine RPA for WET, but permit writers compare the data for other toxic parameters in the wastewater with the necessity to implement WET testing with either monitoring or limits. When toxic parameters exhibit RP, WET testing is generally included in the permit. However, if all toxic parameters are controlled via limitations or have exhibited no toxicity in the past, then WET testing may be waived. Only in instances where the wastewater is well characterized can WET testing be waived. Permit writers do not implement WET testing for stormwater as 10 CSR 20-7.015(9)(L) does not apply to stormwater. Precipitation can itself be acidic, or may contain run-in from other un-controlled areas and can provide false positives. The Department works with the Missouri Department of Conservation and has understanding of streams already exhibiting toxicity; even without the influence of industrial wastewater or stormwater. Facilities discharging to streams with historical toxicity are required to use laboratory water for dilution, instead of the receiving stream.

Permit writers use the Department's permit writer's manual (https://dnr.mo.gov/water/business-industry-other-entities/technical-assistance-guidance/wastewater-permit-writers-manual), the EPA's permit writer's manual (https://www.epa.gov/npdes/npdes-permit-writers-manual), program policies, and best professional judgment. For each parameter in each permit, the permit writer carefully considers all applicable information regarding: technology based effluent limitations, effluent limitation guidelines, water quality standards, inspection reports, stream water quality information, stream flows, uses assigned to each waterbody, and all applicable site specific information and data gathered by the facility through discharge monitoring reports and renewal (or new) application sampling. Best professional judgment is based on the experience of the permit writer, cohorts in the Department and resources at the EPA, research, and maintaining continuity of permits if necessary. For stormwater permits, the permit writer is required per 10 CSR 6.200(6)(B)2 to consider: A. application and other information supplied by the facility; B. effluent guidelines; C. best professional judgment of the permit writer; D. water quality; and E. BMPs. Part IV provides specific decisions related to this permit.

Secondly, permit writers use mathematical reasonable potential analysis (RPA) using the *Technical Support Document for Water Quality Based Toxics Control (TSD)* methods (EPA/505/2-90-001) for continuous discharges. The TSD RPA method cannot be performed on stormwater as the flow is intermittent. See additional considerations under Part II WATERBODY MIXING CONSIDERATIONS and Part III WASTELOAD ALLOCATIONS. Wasteload allocations are determined utilizing the same equations and statistical methodology.

✓ 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 Part IV for Limits and further parameter-specific discussion.

Outfall #001

Parameter:	Units	CMC Acute	CCC Chronic	Listing	Daily Max	Monthly Average	n#	CV	n Max	MF	RWC Acute	RWC Chronic	RP
Ammonia	mg/L	14.44	1.49	AQL	3.6	1.4	1	0.600	1.18	2.3	2.714	2.714	Yes
Chloride	mg/L	860	230	AQL	404	177	12	0.792	25	3.65	91.16	91.16	No
Chloride + Sulfate	mg/L	1000	n/a	AQL	1000	n/a	12	0.217	93.1	1.49	138.47	138.47	No

Outfall #003

Parameter:	Units	CMC Acute	CCC Chronic	Listing	Daily Max	Monthly Average	n#	CV	n Max	MF	RWC Acute	RWC Chronic	RP
Chloride + Sulfate	mg/L	1000	n/a	AQL	1000	n/a	12	0.433	707.7	2.16	1526	1526	Yes
Copper, TR	µg/L	26.89	16.87	AQL	26.89	13.40	1	0.600	9	2.30	20.70	20.70	Yes
Iron, TR	µg/L	n/a	1000	AQL	1642.67	818.80	1	0.600	394	2.00	788	788	No

Outfall #005

Parameter:	Units	CMC Acute	CCC Chronic	Listing	Daily Max	Monthly Average	n#	CV	n Max	MF	RWC Acute	RWC Chronic	RP
Chloride + Sulfate	mg/L	1000	n/a	AQL	1000	n/a	12	0.433	707.7	2.16	1526.49	1526.49	Yes
Copper, TR	µg/L	26.89	16.87	AQL	26.89	13.40	1	0.600	14	13.19	184.72	184.72	Yes
Iron TR	µg/L	n/a	1000	AQL	1643	819	1	0.600	793	2.3	1823.9	1923.9	Yes

Outfall #008

Parameter:	Units	CMC Acute	CCC Chronic	Listing	Daily Max	Monthly Average	n#	CV	n Max	MF	RWC Acute	RWC Chronic	RP
Aluminum, TR	µg/L	750	n/a	AQL	750	348	12	0.698	630	3.21	2028	2028	Yes
Chloride + Sulfate	mg/L	1000	n/a	AQL	1000	n/a	12	0.290	152.3	1.69	258.0	258.0	No
Iron, TR	µg/L	n/a	1000	AQL	1642.6	818.8	1	0.600	273	2.30	627.9	627.9	No

Outfall #011

Parameter:	Units	CMC Acute	CCC Chronic	Listing	Daily Max	Monthly Average	n#	CV	n Max	MF	RWC Acute	RWC Chronic	RP
Ammonia	mg/L	14.44	1.49	AQL	3.6	1.4	1	0.600	1.18	2.3	2.714	2.714	Yes
Chloride	mg/L	860	230	AQL	404	177	12	0.792	25	3.65	91.16	91.16	No
Chloride + Sulfate	mg/L	1000	n/a	AQL	1000	n/a	12	0.217	93.1	1.49	138.47	138.47	No

Outfall #014

Parameter:	Units	CMC Acute	CCC Chronic	Listing	Daily Max	Monthly Average	n#	CV	n Max	MF	RWC Acute	RWC Chronic	RP
Aluminum, TR	µg/L	750	n/a	AQL	750.00	373.84	1	0.600	225	2.3	517.5	517.5	Yes
Chloride + Sulfate	mg/L	1000	n/a	AQL	1000	n/a	1	0.600	43.57	13.19	574.88	574.88	No
Copper, TR	µg/L	26.89	16.87	AQL	26.89	13.40	1	0.600	6.1	2.30	14.03	14.03	No
Iron, TR	µg/L	n/a	1000	AQL	1642.67	818.80	1	0.600	490	2.00	980.00	980.00	No

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).

✓ Total Residual Chlorine (TRC) reasonable potential was evaluated for each of the following outfalls, individually, but based on the following facts. For outfalls #001, #01A, #002, #003, #004, & #014, chlorination is only occurring for one hour per day and the facility utilizes engineering calculations to ensure that the correct amount of monochloramine is being applied. Because chlorine waste products are only being discharged for one hour a day, the permit writer has found there is no RP for this

parameter at these outfalls. A special condition was added for TRC and compliance with the WQS is evaluated based on engineering calculations instead of direct TRC measurement.

- ✓ Similarly, when TRC is the only toxic parameter, WET testing RP was evaluated. Again, because the facility is only chlorinating one hour per day, there is no WET RP under those circumstances, even if slight over application of chloramines occurs.
- ✓ The previous permit had a special condition which 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 under this permit, has no RP, and was removed.
- ✓ The permit writer removed the precipitation reporting component in the permit. The data for precipitation is readily available online. The facility may need to determine daily precipitation to determine stormwater flow; however, the requirement to report this measurement to the Department is removed. The SWPPP continues to require a daily log of precipitation. On-site measurements of precipitation may also be necessary if no nearby weather stations exist. There is no RP for this parameter.

REGIONAL OFFICES (ROS):
Regional Offices will provide a compliance assistance visit at a facility's request; a regional map with links to phone numbers can be found here: https://dnr.mo.gov/about-us/division-environmental-quality/regional-office. Or use https://dnr.mo.gov/compliance-assistance-enforcement to request assistance from the Region online.

RENEWAL REQUIREMENTS:
The renewal special condition permit requirement is designed to guide the facility to prepare and include all relevant and applicable information in accordance with 10 CSR 20-6.010(7)(A)-(C), and if applicable, federal regulations. The special condition may not include all requirements and requests for additional information may be made at the time of permit renewal under 644.051.13(5) RSMo and 40 CFR 122.21(h). Prior to submittal, the facility must review the entire submittal to confirm all required information and data is provided; it is the facility's responsibility to discern if additional information is required. Failure to fully disclosure applicable information with the application or application addendums may result in a permit revocation per 10 CSR 20-6.010(8)(A) and may result in the forfeiture of permit shield protection authorized in 644.051.16 RSMo.

- ✓ This facility shall submit an appropriate and complete application to the Department no less than 180 days prior to the expiration date listed on page 1 of the permit.
- ✓ The facility may use the electronic submission system to submit the application to the Program, if available.
- ✓ Application materials shall include complete Form A, Form C, and Form D. If the form names have changed, then the facility should ensure they are submitting the correct forms as required by regulation. Form C Tables and Form D parameter sampling is required for, at least, outfalls #001 or #01A, #002, #003, #004, #005, #008, #009, #011, #012, and #014.
- ✓ This facility must submit Form B for the domestic wastewater outfall, #013.
- ✓ 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). For this facility, chloride and sulfate are found in the wastewater outfalls, therefore all stormwater outfalls must also be sampled for chloride and sulfate.

SAMPLING FREQUENCY JUSTIFICATION:
Sampling and reporting frequency was generally retained from previous permit. 40 CFR 122.45(d)(1) indicates all continuous discharges, such as wastewater discharges, shall be permitted with daily maximum and monthly average limits. Minimum sampling frequency for all discharge 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 or more often dependent on site needs. 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. For further information on sampling and testing methods see 10 CSR 20-7.015(9)(D)2. BOD_5, TSS, and WET test samples collected for domestic wastewater mechanical plants per 10 CSR 20-7.015, shall be a 24 hour composite samples.

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. An 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 in accordance with 40 CFR 125.3.

- For a newly constructed facility in most cases per 644.029 RSMo. Newly constructed facilities must meet all applicable effluent limitations (technology and water quality) when discharge begins. New facilities are required to install the appropriate control technologies 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 specifically granted for conducting these activities.

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

- ✓ Applicable; the time given for effluent limitations of this permit listed under Interim Effluent Limitations and Final Effluent Limitations were established in accordance with [10 CSR 20-7.031(11)]. The facility has been given a schedule of compliance to meet final effluent limits. See permit Sections A and B for compliance dates, parameters, and outfalls involved. See individual parameter discussion in Part IV.
- ✓ The SOC for iron and copper at outfall #005 was granted for five years. The facility demonstrated they could not determine viable solutions for the removal of iron and copper within the 3 year SOC timeframe initially proposed. Both effluent treatment and upstream modification will need to be evaluated. Potential to disrupt the facilities ability to process domestic wastewater during transient operation necessitates conclusive review prior to implementation.
- ✓ The SOC for iron at outfall #011 was granted for five years. The facility utilizes ferric sulfate as a critical part of producing safe drinking water. The technology assessment for this parameter will require engineering considerations and cost evaluations. Both effluent treatment and upstream modification will need to be evaluated. Potential to disrupt the facility's ability to produce safe drinking water during transient operation necessitates conclusive review prior to implementation.

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. Industrial sludge could also be derived from lagoon dredging or other similar maintenance activities.

- ✓ Applicable; the OWS at this site produces industrial sludge. See OWS section above.

STANDARD CONDITIONS:
The standard conditions Part I attached to this permit incorporate all sections of 10 CSR 20-6.010(8) and 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 facility 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, domestic sludge, and land application of domestic wastes.

- The previous permit had a special condition which indicated spills from hazardous waste substances must be reported to the Department; however, this condition is covered under standard conditions and was removed from special conditions.

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-only discharges. The *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001; 1991) §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), a benchmark, or a monitoring requirement as dictated by site specific conditions, the BMPs in place, the BMPs proposed, 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 without real-time ad-hoc monitoring.
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 facility 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 facility 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 §304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities; 2) Authorized under §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 facility 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 facility 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), §II.B.

If parameter-specific numeric benchmark exceedances continue to occur and the facility 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 facility 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; see specific requirements in the SPECIAL CONDITIONS section of the permit.

SUFFICIENTLY SENSITIVE ANALYTICAL METHODS:

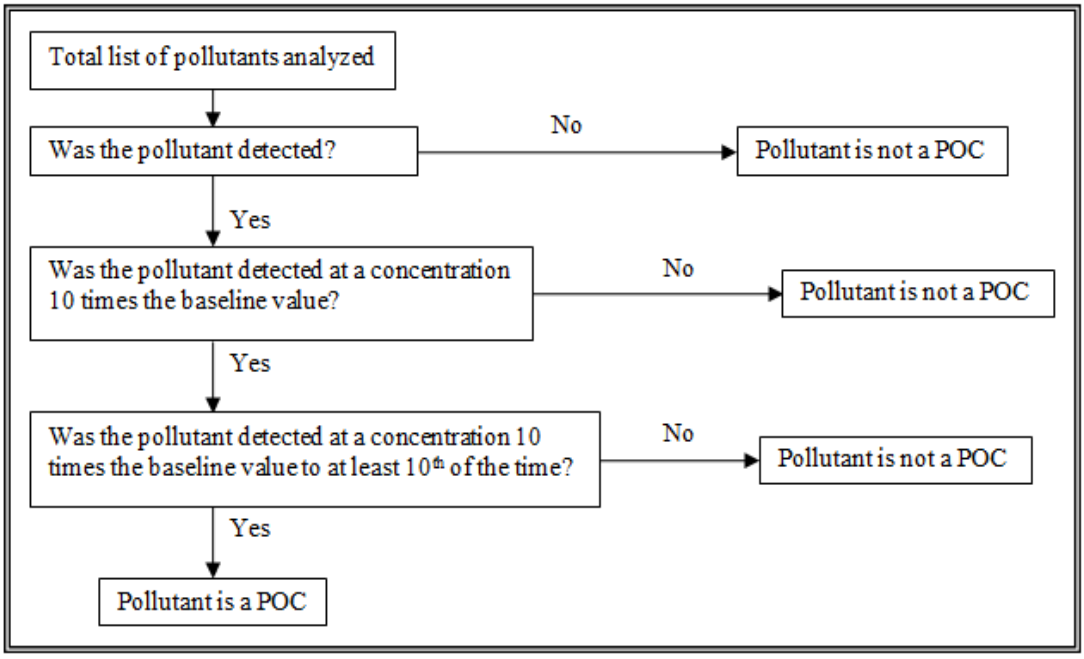
Please review Standard Conditions Part 1, §A, No. 4. The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 and/or 40 CFR 136 unless alternates are approved by the Department and incorporated within this permit. The facility shall use sufficiently sensitive 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 facility is responsible for working with their contractors to ensure the analysis performed is sufficiently sensitive.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS (TBEL):
One of the major strategies of the Clean Water Act (CWA) in making "reasonable further progress toward the national goal of eliminating the discharge of all pollutants" is to require effluent limitations based on the capabilities of the technologies available to control those discharges. Technology-based effluent limitations (TBELs) aim to prevent pollution by requiring a minimum level of effluent quality attainable using demonstrated technologies for reducing discharges of pollutants or pollution into the waters of the United States. TBELs are developed independently of the potential impact of a discharge on the receiving water, which is addressed through water quality standards and water quality-based effluent limitations (WQBELs). The NPDES regulations at Title 40 of the Code of Federal Regulations (CFR) 125.3(a) require NPDES permit writers to develop technology-based treatment requirements, consistent with CWA § 301(b) and § 402(a)(1), represent the minimum level of control that must be imposed in a permit.
The regulation also indicates that permit writers must include in permits additional or more stringent effluent limitations and conditions, including those necessary to protect water quality. Regardless of the technology chosen to be the basis for limitations, the facility is not required to install the technology, only to meet the established TBEL.

Case-by-case TBELs are developed pursuant to CWA section 402(a)(1), which authorizes the administrator to issue a permit meeting either, 1) all applicable requirements developed under the authority of other sections of the CWA (e.g., technology-based treatment standards, water quality standards) or, 2) before taking the necessary implementing actions related to those requirements, "such conditions as the administrator determines are necessary to carry out the provisions of this Act." The regulation at §125.3(c)(2) specifically cite this section of the CWA, stating technology-based treatment requirements may be imposed in a permit "on a case-by-case basis under section 402(a)(1) of the Act, to the extent that EPA-promulgated effluent limitations are inapplicable." Further, §125.3(c)(3) indicates "where promulgated effluent limitations guidelines only apply to certain aspects of the discharger's operation, or to certain pollutants, other aspects or activities are subject to regulation on a case-by-case basis to carry out the provisions of the act." When establishing case-by-case effluent limitations using best professional judgment, the permit writer should cite in the fact sheet or statement of basis both the approach used to develop the limitations, discussed below, and how the limitations carry out the intent and requirements of the CWA and the NPDES regulations.

Baselines to determine contaminants of concern are found in the *Development Document for Effluent Limitations Guidelines and Standards for the Centralized Waste Treatment Industry – Final* (EPA 821-R-00-020; August 2000). The baselines represent the treatable concentration of model technology which would effectually treat a pollutant. Chapter 6 Table 6-1 directs the permit writer to multiply the baseline by ten to determine if the parameter is a pollutant of concern. The following table determines the parameters for which a TBEL must be considered; baseline values are retrieved from chapter six.

POC = Pollutants of Concern
BPT = **Best Practicable Control Technology Currently Available** is defined at CWA section 304(b)(1)
BCT = **Best Conventional Pollutant Control Technology**, defined at CWA section 304(b)(4)
BAT = **Best Available Technology Economically Achievable** is defined at CWA section 304(b)(2)



When developing TBELs for industrial facilities, the permit writer must consider all applicable technology standards and requirements for all pollutants discharged above baseline level. Without applicable effluent guidelines for the discharge or pollutant, permit writers must identify any needed TBELs on a case-by-case basis, in accordance with the statutory factors specified in CWA sections

301(b)(2) and 304(b). The site-specific TBELs reflect the BPJ of the permit writer, taking into account the same statutory factors EPA would use in promulgating a national effluent guideline regulation, but they are applied to the circumstances relating to the applicant. The permit writer also should identify whether state laws or regulations govern TBELs and might require more stringent performance standards than those required by federal regulations. In some cases, a single permit could have TBELs based on effluent guidelines, best professional judgment, state law, and WQBELs based on water quality standards.

Nation-Wide Site Specific Evaluation Requirements
For BPT Requirements (all pollutants)

1. Age of equipment and facilities involved
2. Process(es) employed
3. Process changes
4. Engineering aspects of the application of various types of control techniques
5. Non-water quality environmental impact including energy requirements
6. Total cost of application of technology in relation to the effluent reduction benefits to be achieved from the technology

For BCT requirements (conventional pollutants)

- Items 1 through 5 in BPT; and
- Reasonableness of the relationship between the costs of attaining a reduction in effluent and the derived effluent reduction benefits
- Comparison of the cost and level of reduction of such pollutants from the discharge of POTWs to the cost and level of reduction of such pollutants from a class or category of industrial sources

For BAT requirements (toxic and non-conventional pollutants)

- Items 1 through 5 in BPT; and
- The cost of achieving such effluent reduction

Best Practicable Control Technology Currently Available (BPT) is the first level of technology-based effluent controls for direct dischargers and it applies to all types of pollutants (conventional, nonconventional, and toxic). The Federal Water Pollution Control Act (FWPCA) amendments of 1972 require when EPA establishes BPT standards, it must consider the industry-wide cost of implementing the technology in relation to the pollutant-reduction benefits. EPA also must consider the age of the equipment and facilities, the processes employed, process changes, engineering aspects of the control technologies, non-water quality environmental impacts (including energy requirements), and such other factors as the EPA Administrator deems appropriate [CWA §304(b)(1)(B)]. Traditionally, EPA establishes BPT effluent limitations on the basis of the average of the best performance of well-operated facilities in each industrial category or subcategory. Where existing performance is uniformly inadequate, BPT may reflect higher levels of control than currently in place in an industrial category if the agency determines the technology can be practically applied. See CWA sections 301(b)(1)(A) and 304(b)(1)(B). Because the EPA has not promulgated TBELs for the pollutants identified as POCs, the permit writer follows the same format to establish site-specific TBELs. Although the numerical effluent limitations and standards are based on specific processes or treatment technologies to control pollutant discharges, EPA does not require dischargers to use these technologies. Individual facilities may meet the numerical requirements using whatever types of treatment technologies, process changes, and waste management practices they choose.

The following table provides the numerical values of the wastewater present at the site and determination of pollutants of concern.

TBEL POC TABLE:
This method of analysis is one of several and is only to assist the permit writer in determining possible contaminants of concern and does not indicate actual effluent limitations the permit writer will establish in the permit.

PARAMETER	Unit	#001	#003	#005	#008	#011	#014	Base-line	Base-line x 10	POC
FORM C OF APPLICATION FOR PERMIT RENEWAL: PART A										
BOD_5	mg/L	<2	<2	<2	<2	<2	<2	2	20	no
COD	mg/L	<25	<25	<25	<25	<25	<25	5	50	no
Total Organic Carbon	mg/L	5.21	5.46	6.62	4.31	4.96	5.16	1	10	no
*Total Suspended Solids	mg/L	10.0	8.6	21.8	2.8	11.6	11.8	4	40	no
NUTRIENTS:										
Ammonia as N	mg/L	<0.1	<1	<0.1	<0.1	1.18	<0.1	0.05	0.5	yes #011
Nitrate + Nitrite as N	mg/L	<0.2	<0.2	0.402	<0.2	0.688	<0.2	0.05	0.5	yes #011
Nitrogen, Total N	mg/L	0.564	0.5	1.17	0.588	0.5	0.723	none	none	n/a

PARAMETER	Unit	#001	#003	#005	#008	#011	#014	Base-line	Base-line x 10	POC
Phosphorus, Total P	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.01	0.1	no
FORM C OF APPLICATION FOR PERMIT RENEWAL: OTHER										
Bromide	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	none	none	n/a
Chlorine, Total Residual	mg/L	0.03	0.6	ML	<0.05	<0.05	0.07	none	none	n/a
Cyanide, Total	µg/L	<20	<20	<20	<20	<20	<20	20	200	no
Fecal Coliform (CFU/100 mL)	CFU	3 (E. coli)	<1(E. coli)	5 (E. coli)	1 (E. coli)	8 (E. coli)	2 (E. coli)	none	none	n/a
Fluoride	mg/L	0.198	0.155	0.432	0.230	0.136	0.191	0.1	1	no
*Oil and Grease	mg/L	<6	<5	<5	<5	<5	<5	5	50	no
Phenols, Total	µg/L	<50	<50	<50	<50	<50	<50	50	500	no
Sulfate as SO_4^{2-}	mg/L	53.3	43	630	70.9	52.5	39.3	none	none	n/a
Sulfide as S^{2-}	mg/L	<1	<1	<1	<1	<1	<1	1	10	no
Sulfite as SO_3^{2-}	mg/L	n/a	n/a	n/a	n/a	n/a	n/a	none	none	n/a
Surfactants	mg/L	<0.04	<0.04	0.06	0.04	<0.04	<0.04	none	none	n/a
METALS (AS TOTAL RECOVERABLE - UNLESS SPECIFIED):										
Aluminum	µg/L	497	177	112	74	161	225	200	2,000	no
Antimony	µg/L	<8	<8	<8	<8	<8	<8	20	200	no
Arsenic	µg/L	<8	<8	<8	<8	<8	<8	10	100	no
Barium	µg/L	88	47	58	133	88	49	200	2,000	no
Beryllium	µg/L	<3	<3	<3	<3	<3	<3	5	50	no
Boron	µg/L	42	30	68	69	79	<25	100	1,000	no
Cadmium	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5	50	no
Chromium	µg/L	<25 (III)	<25 (III)	<25 (III)	<25 (III)	<25 (III)	<25 (III)	10	100	no
Cobalt	µg/L	<8	<8	<8	<8	<8	<8	50	500	no
Copper	µg/L	4.46	9	14	<8	5.66	6.1	25	250	no
Iron	µg/L	421	394	793	273	1290	490	100	1,000	yes #011
Lead	µg/L	<8	<8	<8	<8	<8	<8	50	500	no
Magnesium	mg/L	6.92	6.55	4.22	12.2	10.9	6.52	5	50	no
Manganese	µg/L	27	43	<20	<20	29	116	15	150	no
Mercury	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	2	no
Molybdenum	µg/L	<8	<8	<8	<8	<8	<8	10	100	no
Nickel	µg/L	<8	<8	<8	<8	<8	<8	40	400	no
Selenium	µg/L	<3	<3	<3	<3	<3	<8	5	50	no
Silver	µg/L	<8	<8	<8	<8	<8	<8	10	100	no
Thallium	µg/L	<3	<3	<3	<3	<3	<3	10	100	no
Tin	µg/L	<50	<50	<50	<50	<50	<50	30	300	no
Titanium	µg/L	<20	<20	<20	<20	<20	<20	5	50	no
Zinc	µg/L	<8	<8	8	8	<8	<8	20	200	no

* = addressed by 40 CFR 423; data in the application does not reflect long term averages.
< = reported below quantifiable analytical limits

For each parameter, group of parameters, or outfall treatment process, the facility will summarize the relevant factors below in facility-specific (or waste-stream specific) case-by-case TBEL development. The permittee will supply the required information to the Department so a technology based effluent limitation can be applied in the permit if applicable.

- ✓ Applicable; this operating permit has identified TBEL POCs at outfall #011. These parameters require further analysis. See special conditions for analysis required over the next permit term; and see Part IV for additional sampling requirements.
- ✓ When a facility has an ELG applied to certain waste streams, the ELG does not cover all of the pollutants in other waste streams. Centralized Waste Treatment (CWT) has shown to be the most technologically advanced treatment system available for all waste waters. Utilizing the document; we are ensuring the most stringent treatment value available for each pollutant is utilized. Because of this, the CWT values are utilized as a baseline comparison with the effluent values. When an effluent is a process wastewater, the EPA requires states to provide a technology-based assessment for each pollutant.

  Because the Department does not gather the information or provide the results of the study, the facility is required to provide results and a comprehensive study of each pollutant removal method. The Department simply uses the CWT values to propose which parameters may be contaminants of concern at the site. If the facility has an alternate method to determine contaminants of concern, the Department is willing to hear alternatives. You may review the NPDES EPA permit writer's manual regarding establishing TBELs for each site and a permit writer's requirements when establishing limits under the EPA requirements: https://www.epa.gov/sites/default/files/2015-09/documents/pwm_chapt_05.pdf When a TBEL is found to be more stringent than a WQBEL, the TBEL must be established in the permit. If the facility's analysis of POC removal technologies indicates the TBEL would be less stringent than the WQBEL, no lowered effluent limit would be necessary for the pollutant. Without applicable effluent guidelines for the discharge or pollutant, permit writers must identify any needed TBELs on a case-by-case basis, in accordance with the statutory factors specified in CWA sections 301(b)(2) and 304(b).

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 §§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 577.155 RSMo; 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 577.155 RSMo; 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 facility 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)). The Department implements additional requirements for these types of operations pursuant to 10 CSR 20-6.015(4)(A)1 which instructs the Department to develop permit conditions containing limitations, monitoring, reporting, and other requirements to protect soils, crops, surface waters, groundwater, public health, and the environment.

- ✓ Not applicable; the facility 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 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. Thermal variances are regulated separately and are found under 644.

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

- ✓ Applicable; wasteload allocations 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, §4.5.5.

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

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, 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 uses an assumed number of samples "n = 4".

WASTELOAD ALLOCATION (WLA) MODELING:
Facilities 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 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 changing twenty-five percent or more since the previous operating permit.

WHOLE EFFLUENT TOXICITY (WET) TEST
A WET test is a quantifiable method to conclusively determine if discharges from the facility cause toxicity to aquatic life by itself, in combination with, or through synergistic responses, when mixed with receiving stream water. Under the CWA §101(a)(3), requiring WET testing is reasonably appropriate for site-specific Missouri State Operating Permits to quantify toxicity. WET testing is also required by 40 CFR 122.44(d)(1). WET testing ensures the provisions in 10 CSR 20-6 and Missouri's Water Quality Standards in 10 CSR 20-7 are being met. Under 10 CSR 20-6.010(8)(A)4, the Department may require other terms and conditions it deems necessary to ensure compliance with the CWA and related regulations of the Missouri Clean Water Commission. Missouri Clean Water Law (MCWL) RSMo 644.051.3 requires the Department to set permit conditions complying with the MCWL and CWA. 644.051.4 RSMo specifically references toxicity as an item the Department must consider in permits (along with water quality-based effluent limits); and RSMo 644.051.5 is the basic authority to require testing conditions. WET tests are required by all facilities meeting any of the following criteria:
✓ Facility is a designated a Major
✓ Facility handles large quantities of toxic substances, or substances toxic in large amounts
✓ Facility has water quality-based effluent limitations for toxic substances
✓ Annual testing is the minimum testing frequency; monitoring requirements promulgated in 40 CFR 122.44(i)(2) state "requirements to report monitoring results shall be established on a case-by-case basis with a frequency dependent on the nature and effect of the discharge, but in no case less than once per year."
✓ For chronic WET testing, the chronic WLA is converted to a long-term average concentration (LTAa,c) using: WLAa,c = WLAa × ACR. A default acute to chronic ratio (ACR) value of 10 is used based on §1.3.4 (page 18) and Appendix A of the March 1991 TSD.
✓ The standard Allowable Effluent Concentration (AEC) for facilities without mixing considerations is 100%. The standard dilution series for facilities discharging to waterbodies with no mixing considerations is 100%, 50%, 25%, 12.5%, & 6.25% as 10 CSR 20-7.015((9)(L)4.A states the dilution series must be proportional. See the permit for the dilution series.

PART IV. EFFLUENT LIMIT DETERMINATIONS

OUTFALL #001 & #01A – PROCESS WASTEWATER – ASH HANDLING SYSTEMS

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVG.	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	*	SAME	ONCE/WEEK	MONTHLY	24 HR. TOT
CONVENTIONAL							
OIL & GREASE	mg/L	20	15	SAME	ONCE/WEEK	MONTHLY	GRAB
pH †	SU	6.5 TO 9.0	-	SAME	ONCE/WEEK	MONTHLY	GRAB
TOTAL SUSPENDED SOLIDS (TSS)	mg/L	100	*	NET	ONCE/WEEK	MONTHLY	COMPOSITE
TSS – NET ♠	mg/L	-	30	SAME	ONCE/WEEK	MONTHLY	COMPOSITE
OTHER							
CHLORIDE	mg/L	*	*	SAME	ONCE/QUARTER	QUARTERLY	GRAB
SULFATE	mg/L	*	*	SAME	ONCE/QUARTER	QUARTERLY	GRAB
CHLORIDE PLUS SULFATE	mg/L	*	*	SAME	ONCE/QUARTER	QUARTERLY	GRAB
WET TEST - CHRONIC	TUc	1.6	-	*	ONCE/YEAR	ANNUALLY	GRAB

OUTFALL #BWW – BOILER WASH WASTEWATER

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVG.	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	*	SAME	ONCE/MONTH ⏚	MONTHLY	24 HR. TOT
METALS							
BORON, TR	µg/L	3377	1683	NEW	ONCE/MONTH ⏚	MONTHLY	GRAB
COPPER, TR (NET ♠)	µg/L	1000	1000	SAME INTERIM	ONCE/MONTH ⏚	MONTHLY	GRAB
COPPER, TR	µg/L	26.9	13.4	NEW FINAL	ONCE/MONTH ⏚	MONTHLY	GRAB
IRON, TR (NET ♠)	µg/L	1000	1000	SAME INTERIM	ONCE/MONTH ⏚	MONTHLY	GRAB
IRON, TR (NET DAILY MAX ♠)	µg/L	1000	831	NEW FINAL	ONCE/MONTH ⏚	MONTHLY	GRAB

* 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
interim parameter requirements prior to end of SOC
final parameter requirements at end of SOC
same for outfall #BWW was applied at #001 previously
TR total recoverable
♠ NET parameters. The facility may only NET the portion (percentage) of effluent which was withdrawn directly from the intake. Recycled water or water from other sources (including precipitation) may not be netted.

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 facility is unable to obtain effluent flow, then it is the responsibility of the facility to inform the Department, which may require the submittal of an operating permit modification. The facility will report

the total flow in millions of gallons per day (MGD), weekly monitoring continued from previous permit. The facility reported from 2.258 to 61.13 MGD during the last permit term. Stormwater at the site causes the flow to be highly variable.

CONVENTIONAL:

Chemical Oxygen Demand

Chemical Oxygen Demand monitoring at outfall #008 was removed. The data reported were between non-detect and 58 mg/L. There are no numeric water quality standards for COD, nor are there established technology limits for COD for this type of wastewater. The permit writer has reviewed the data and found no reasonable potential for exceedance of narrative "free from" criteria per 10 CSR 20-7.031(4) therefore the permit writer will not develop water quality based limitations for this parameter. No further monitoring is warranted as the permit writer has no reason to believe the wastewater is causing narrative criteria excursions in the receiving stream at this outfall from this pollutant. Both § 402(o)(1) and the safety clause in § 402(o)(3) prohibit renewed permits from containing *effluent limitations* that are less stringent. The Department does not read 402(o) to apply to any other non-limiting type of permit conditions therefore this is not considered backsliding.

Oil & Grease

20 mg/L daily maximum; 15 mg/L monthly average; continued from previous permit per 40 CFR 423.12(b)(3) for low volume waste sources; weekly sampling continued. 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 xylene, but these constituents are often lost during testing due to their boiling points. The facility reported from non-detect to 6 mg/L (although less sophisticated test's detection limits can be up to 6 mg/L). The permit writer completed an RPD on this parameter and found no reasonable potential to exceed water quality standards (RP). The data show oil and grease is effectively trapped in the OWS on site. 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 facility to visually observe the discharge and receiving waters for sheen or bottom deposits. The limit this permit applies does not allow the facility to violate general narrative criteria found at 10 CSR 20-7.031(4) even if data provided are below the numeric limit. Any sign of oil or grease in the ponds or dewatering system shall be remediated with adsorbent materials prior to discharge.

pH

6.5 to 9.0 SU – instantaneous grab sample, weekly sampling and limits continued from the previous permit. Water quality limits [10 CSR 20-7.031(5)(E)] are applicable to this outfall; technology limits provided in 40 CFR 423.12(b)(1) are not protective enough for the receiving waterbody's water quality. The facility reported from 6.98 to 8.47 SU during the last permit term. pH is a fundamental water quality indicator. Additionally, metals leachability and ammonia availability in wastewater is dependent on pH. Limitations in this permit will protect against aquatic organism toxicity, downstream water quality issues, human health hazard contact, and negative physical changes in accordance with the general criteria at 10 CSR 20-7.031(4) and the Clean Water Act's (CWA) goal of 100% fishable and swimmable rivers and streams.

Total Suspended Solids (TSS)

100 mg/L daily maximum and NET 30 mg/L monthly average per 40 CFR 423.12(b)(3) for low volume waste sources. This outfall is no longer afforded net limitations for the daily maximum. The processes at the facility are changing such that much of the wastewater is recycled and there is a significant portion of stormwater also discharged from the outfall; the facility may only "net" the percentage of wastewater from the intake. "End-of-pipe" discharge data indicate the TSS is always below the daily maximum of 100 mg/L; the facility reported from 5.1 to 69.8 mg/L. However, the monthly average of 30 mg/L is not met at all times without netting; the facility reported end-of-pipe monthly averages from 0.62 to 55.24; but net monthly averages from 0 to 14.65 mg/L. NET limitations may only be granted in instances where the facility has showed the necessity of the NET allowance. Processes are changing over the next permit term and even more wastewater will be recycled. It is the responsibility of the permittee to only net the TSS from the percentage of wastewater withdrawn; see permit for equations; stormwater can not be netted.

The facility has demonstrated the discharge from outfall #001 is to the same waterbody from which it is withdrawn [40 CFR 122.45(g)(4)] even though the two waterbodies have different waterbody identification numbers; the intake for this outfall is Thomas Hill Reservoir and the discharge is to a tributary to Middle Fork Little Chariton River, just downstream of the Thomas Hill dam; a dam placed in the river to create the lake for the express purposes of maintain a sufficient pool of cooling water. The facility may not report a negative number. The facility requested the net allowance in previous renewals; the permit writer has determined only net allowance for the monthly average is necessary to meet the ELG as allowed by 40 CFR 122.45(g)(1) and (3). There are no numeric water quality standards for TSS. The permit writer has determined the ELG limitations are more stringent than the narrative general criteria established for solids at 10 CSR 20-7.031(4), therefore the numeric ELG limits are implemented. A report is also due for the newly established permitted feature, #INT, for the intake values.

BOILER WASHING WASTEWATER - METALS:

Boron, Total Recoverable

Previous permit requirements were twice annual monitoring only. The facility reported between 34 and 850 µg/L for this parameter; this parameter has RP per an RPA, but after further examination, the high boron values were from boiler wash exclusively; see fact sheet Part III, REASONABLE POTENTIAL. The facility is able to meet the new limits therefore no SOC is afforded. Because this parameter has RP, twice annual monitoring is increased to monthly monitoring, but only during boiler washes. The facility will report this data on the BWW outfall monthly if boiler wash occurs, even though it discharges through outfall #001 or #01A. Net is not available for this parameter as this limit is based on a water quality standard. Netting is only available for technology based limits pursuant to 40 CFR 122.45(g).
Chronic IRR: 2000 µg/L
Chronic WLA: Ce = ((44.87 cfsDF + 1.25 cfsMZ) * 2000 – (1.25 cfsMZ * 0 background)) / 44.87 cfsDF = 2055.717
LTAc: WLAc * LTAc multiplier = 2055.717 * 0.527 = 1084.254 [CV: 0.6, 99th %ile]
Daily Maximum: MDL = LTA * MDL multiplier = 1084.254 * 3.114 = 3376.9 µg/L [CV: 0.6, 99th %ile]
Monthly Average: AML = LTA * AML multiplier = 1084.254 * 1.552 = 1683.2 µg/L [CV: 0.6, 95th %ile, n=4]

Copper, Total Recoverable

Previous permit limits were 1000 µg/L daily maximum and monthly average based on technology limitations per the ELG at 40 CFR 423.13(e) for metal cleaning wastewater; the facility reported between 5 and 40 µg/L for this parameter; this parameter has RP, but only for boiler washes; see fact sheet Part III, REASONABLE POTENTIAL. The facility is not able to meet the new limits during boiler wash; therefore, an SOC is afforded (see fact sheet Part III SCHEDULE OF COMPLIANCE). The ELG limits will remain until the SOC for water quality is ended. Net is only available for this parameter while under technology limits (1000 µg/L) and not available for this parameter when the limit becomes based on a water quality standard. Netting is only available for technology based limits pursuant to 40 CFR 122.45(g). Twice annual sampling is increasing to monthly during boiler washing. The facility will report no-discharge during times when no boiler washing is occurring. The facility will report this data on the BWW outfall monthly if boiler wash occurs during the month, even though it discharges through outfall #001 or #01A.
Acute AQL: e^(0.9422 * ln200 – 1.700300) * (0.960) = 25.815 µg/L [at hardness 200]
Chronic AQL: e^(0.8545 * ln200 – 1.702) * (0.960) = 16.193 µg/L [at hardness 200]
TR Conversion: AQL/Translator = 25.815 / 0.96 = 26.891 [at hardness 200]
TR Conversion: AQL/Translator = 16.193 / 0.96 = 16.868 [at hardness 200]
Acute WLA: Ce = ((44.87 cfsDF + 0.125 cfsZID) * 26.891 – (0.125 cfsZID * 8 background)) / 44.87 cfsDF = 26.943
Chronic WLA: Ce = ((44.87 cfsDF + 1.25 cfsMZ) * 16.868 – (1.25 cfsMZ * 8 background)) / 44.87 cfsDF = 17.115
LTAa: WLAa * LTAa multiplier = 26.943 * 0.321 = 8.651 [CV: 0.6, 99th %ile]
LTAc: WLAc * LTAc multiplier = 17.115 * 0.527 = 9.027 [CV: 0.6, 99th %ile]
use most protective LTA: 8.651
Daily Maximum: MDL = LTA * MDL multiplier = 8.651 * 3.114 = 26.9 µg/L [CV: 0.6, 99th %ile]
Monthly Average: AML = LTA * AML multiplier = 8.651 * 1.552 = 13.4 µg/L [CV: 0.6, 95th %ile, n=4]

Iron, Total Recoverable

Previous permit limits were 1000 µg/L daily maximum and monthly average based on technology limitations per the ELG at 40 CFR 423.13(e) for metal cleaning wastewater; the facility reported between 7.51 and 1540 µg/L for this parameter; this parameter has RP but only during boiler washing; see fact sheet Part III, REASONABLE POTENTIAL. The facility is not able to meet the new limits therefore an SOC is afforded; see fact sheet Part III SCHEDULE OF COMPLIANCE. The ELG limits will remain in the daily maximum indefinitely as those are more stringent; the monthly average limits will be implemented at the end of the SOC. Net is only available for this parameter while under technology limits (1000 µg/L) and not available for this parameter when the limit becomes based on a water quality standard. Netting is only available for technology based limits pursuant to 40 CFR 122.45(g) and the net value may not exceed the calculated WQ daily maximum of 1666 µg/L. Twice annual sampling is increasing to monthly, but only during boiler washing at this time. The most stringent limits must be applied per 40 CFR 122.44(b)(1) and the most protective limit must be applied per 10 CSR 20-7.015(9)(A). The facility will supply this data monthly if boiler washing is occurring on the BWW outfall even though the discharge is through outfall #001 or #01A.
Chronic AQL: 1000 µg/L
Chronic WLA: Ce = ((44.87 cfsDF + 1.25 cfsMZ) * 1000 – (1.25 cfsMZ * 487 background)) / 44.87 cfsDF = 1014.291
LTAc: WLAc * LTAc multiplier = 1014.291 * 0.527 = 534.971 [CV: 0.6, 99th %ile]
Daily Maximum: MDL = LTA * MDL multiplier = 534.971 * 3.114 = 1666.1 µg/L [CV: 0.6, 99th %ile]
Monthly Average: AML = LTA * AML multiplier = 534.971 * 1.552 = 830.5 µg/L [CV: 0.6, 95th %ile, n=4]

OTHER:

Chloride, Sulfate, and Chloride Plus Sulfate

Previous permit required sampling and reporting of chloride, sulfate, and chloride plus sulfate without limitations. A review of the data found no reasonable potential for this parameter to cause or contribute to instream toxicity, therefore quarterly monitoring is continued without limits. Data for chloride plus sulfate ranged from 38.7 to 83.1. The AQL WQS is 1000 mg/L per 10 CSR 20-7.031((5)(L). These pollutants are pollutants of concern in ash handling wastewater and vehicle washing, but precipitation is likely diluting them in the current process; however, processes are changing in the future and much less precipitation will be in the discharge therefore monitoring frequency is not decreasing.

Whole Effluent Toxicity (WET) Test, Acute

The 2018 and 2019 chronic WET tests for outfall #001 were reviewed. The LC_{50} and the IC_{25} were both below <1 TUa and <1 TUc respectively. Upstream toxicity data may indicate the reservoir was mildly toxic in 2019. Due to the pollutants and activities at this outfall, the permit writer has determined this facility has reasonable potential to cause synergistic toxicity in the receiving stream. The WET test is moved from outfall #001/#01A to outfall #BWW based on the potential toxicity of boiler cleaning. Acute testing was implemented instead of chromic based on the duration of the boiler wash.
Acute AQL: 0.3 TUa
The AEC is (44.87 CFSdf / (0.125 CFSzid +44.87 CFSdf)) = 97.3%
Acute WLA: Ce = ((44.87 CFSdf + 1.25 cfsZID) * 0.3 – (1.25 cfsZID * 0 background)) / 44.87 CFSdf = 0.301
LTAa: WLAa * LTAa multiplier = 0.301 * 0.321 = 0.097 [CV: 0.6, 99th %ile]
Daily Maximum: MDL = LTA * MDL multiplier = 0.097 * 3.114 = 0.3 TU [CV: 0.6, 99th %ile]
The limit established in this permit is below the detection limit for this test; the compliance value is set at 1.0 TUa.

OUTFALLS #002 AND #004 – COOLING WASTEWATER

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVG.	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	*	†††	ONCE/WEEK	MONTHLY	24 HR. TOT
CONVENTIONAL							
pH †	SU	6.5 TO 9.0	-	NEW	ONCE/MONTH	MONTHLY	GRAB

* monitoring and reporting requirement only
† report the minimum and maximum pH values; pH is not to be averaged
††† The previous limits varied between outfalls. See parameter descriptions below for more info.
new requirement new to this permit action

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 facility is unable to obtain effluent flow, then it is the responsibility of the facility to inform the Department, which may require the submittal of an operating permit modification. The facility will report the total flow in millions of gallons per day (MGD), weekly monitoring to match the same frequency as the most frequent parameter. The facility reported from 432 to 648 MGD during the last permit term at outfall #004. There is no data for outfall #002, as this is a new parameter on this outfall.

CONVENTIONAL:

pH
6.5 to 9.0 SU – instantaneous grab sample. Water quality limits [10 CSR 20-7.031(5)(E)] are applicable to these outfalls. The permit writer made a finding of RP based on RPD because the manipulation of pH during addition of biocides may change the pH outcome of the outfall. pH is a fundamental water quality indicator. Additionally, metals leachability and ammonia availability in wastewater is dependent on pH. Limitations in this permit will protect against aquatic organism toxicity, downstream water quality issues, human health hazard contact, and negative physical changes in accordance with the general criteria at 10 CSR 20-7.031(4) and the Clean Water Act's (CWA) goal of 100% fishable and swimmable rivers and streams. The facility did not submit form C data tables for either outfall so there is no pH data available for comparison.

OTHER:

Whole Effluent Toxicity (WET) Test
There are no toxic pollutants with RP at these outfalls; WET testing is not required. WET testing was found on outfall #004 (but not #002) in the past. However, as the facility only chlorinates this wastewater for one hour a day, it was determined there was no reasonable potential (RP) per RPD for any toxic parameters at this outfall; see Part III, REASONABLE POTENTIAL for more information. WET testing was removed from outfall #004 based on information provided by the facility which changed the RPD outcome.

OUTFALL #003 – COOLING & LOW VOLUME WASTES

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVG.	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	*	SAME	ONCE/WEEK	MONTHLY	24 HR. TOT
CONVENTIONAL							
OIL & GREASE	mg/L	20	15	NET	ONCE/MONTH	MONTHLY	GRAB
pH †	SU	6.5 TO 9.0	-	MONTHLY	ONCE/WEEK	MONTHLY	GRAB
TOTAL SUSPENDED SOLIDS (TSS)	mg/L	100	net 30	NET BOTH	ONCE/MONTH	MONTHLY	GRAB

*	monitoring and reporting requirement only
†	report the minimum and maximum pH values; pH is not to be averaged
‡	An ML is established for this parameter; see permit.
new	parameter not established in previous state operating permit
interim	parameter requirements prior to end of SOC
final	parameter requirements at end of SOC
TR	total recoverable

DERIVATION AND DISCUSSION OF LIMITS:
The facility has asked that unscheduled reporting not be continued from the last permit. The reporting frequency of outfall #03 parameters was changed from unscheduled to monthly understanding that monthly discharges will not likely occur and the facilitiy will report no discharge when discharges do not occur.

PHYSICAL:

Flow
In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to ensure compliance with permitted effluent limitations. If the facility is unable to obtain effluent flow, then it is the responsibility of the facility to inform the Department, which may require the submittal of an operating permit modification. The facility will report the total flow in millions of gallons per day (MGD), weekly monitoring continued from previous permit. The facility reported from 345 to 648 MGD during the last permit term. Most of the reported values were 345.6 MGD.

CONVENTIONAL:

Oil & Grease
20 mg/L daily maximum; 15 mg/L monthly average; continued from previous permit per 40 CFR 423.12(b)(3) for low volume waste sources. 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 xylene, but these constituents are often lost during testing due to their boiling points. The facility reported from non-detect to 5 mg/L (likely also not detected). The permit writer completed an RPD on this parameter and found no RP based on the data. 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 facility to visually observe the discharge and receiving waters for sheen or bottom deposits. The limit this permit applies does not allow the facility to violate general criteria even if data provided are below the numeric limit. Because there is no RP, the permit writer has applied ELG limits rather than water quality limits.

The previous permit implemented a NET allowance for this parameter. However, the end-of-pipe data showed the ELG limits are already being met. The permit writer has determined no net allowance is necessary to meet the ELG as would be allowed by 40 CFR 122.45(g)(1) and (3). Monthly monitoring continued; the effluent limits must be met at the end of the pipe; the facility may collect additional samples if necessary.

pH
6.5 to 9.0 SU – instantaneous grab sample, continued from the previous permit. The facility reported from 6.82 to 8.43 SU. Monthly monitoring increased to weekly; the data show the pH of this wastewater is approaching 9 SU showing RP; more frequent monitoring is required to determine fluctuations or excursions. Water quality limits [10 CSR 20-7.031(5)(E)] are applicable to this outfall. pH is a fundamental water quality indicator. Additionally, metals leachability and ammonia availability in wastewater is dependent on pH. Limitations in this permit will protect against aquatic organism toxicity, downstream water

quality issues, human health hazard contact, and negative physical changes in accordance with the general criteria at 10 CSR 20-7.031(4) and the Clean Water Act's (CWA) goal of 100% fishable and swimmable rivers and streams.

Total Suspended Solids (TSS)
100 mg/L daily maximum, 30 mg/L monthly average. The facility reported from 5.5 mg/L to 93 mg/L at the end of pipe, and 0 to 29.3 mg/L for NET. TSS limits based on the low volume waste sources discharged at this outfall; continued; 40 CFR 423.12(b)(3). The previous permit allowed NET limits in accordance with 40 CFR 122.45(g), continued but only for the monthly average. Only the portion of wastewater from the intake can be used for netting purposes and NET limitations may only be granted in instances where the facility has showed the necessity of the NET allowance. It is the facility's responsibility to determine the percentage of the intake being discharged at the time of measurement and multiply the TSS in the intake by the fraction of the intake prior to subtraction. The facility requested the net allowance in previous renewals; the permit writer has determined only net allowance for the monthly average is necessary to meet the ELG as allowed by 40 CFR 122.45(g)(1) and (3). There are no water quality standards for TSS. The permit writer has determined the ELG limitations are more stringent than the general narrative criteria established for solids at 10 CSR 20-7.031(4), therefore the numeric ELG limits are implemented. A report is also due for the newly established permitted feature, #INT, for the intake values.

METALS:

Copper, Total Recoverable
The facility reported 9 µg/L for this parameter in the application. However, the major volume of water at this outfall is single pass cooling water and the source of copper is from the intake; naturally occurring in the lake. The low volume wastewater sources are from roof drains and boiler blowdown. The facility has indicated the upstream process piping for the outfall does not present a significant potential to discharge copper. The sources of concern are once-through cooling water and boiler blowdown. AECI Thomas Hill utilizes primarily carbon steel pipe with a copper concentration of 0.3% or less does in piping in the cooling water process and boiler blowdown. For the copper to become released from the pipes the water would require a pH below 6 with residence time to corrode the piping. The facility continually recirculates the water and monitors pH to ensure efficient operations. Raw lake water comprising the majority of this effluent exhibits a typical pH of 7 to 8. For the plant to operate efficiently it is imperative excessive degradation of the piping is does not occur. This is further validated by the permit application data; the intake source water ranges 8-10 µg/L. Per the permit application the source intake water copper level was reported at 8 µg/L.

OTHER:

Whole Effluent Toxicity (WET) Test, Chronic
Given that copper was the only toxic pollutant of concern at this outfall, and TRC is being limited to two hours per day, WET testing was removed.

OUTFALL #005 – PROCESS WASTE POND

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVG.	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	*	MONTHLY	ONCE/WEEK	MONTHLY	24 HR. TOT
CONVENTIONAL							
CHLORINE, TOTAL RESIDUAL ‡	µg/L	18.1	9.0	17, 8	ONCE/MONTH	MONTHLY	GRAB
OIL & GREASE	mg/L	20	15	SAME	ONCE/MONTH	MONTHLY	GRAB
pH †	SU	6.5 TO 9.0	-	SAME	ONCE/WEEK	MONTHLY	GRAB
TOTAL SUSPENDED SOLIDS (TSS)	mg/L	100	30	SAME	ONCE/MONTH	MONTHLY	GRAB
METALS							
COPPER, TR	µg/L	*	*	NEW INTERIM	ONCE/WEEK	MONTHLY	GRAB
COPPER, TR	µg/L	26.9	13.4	NEW FINAL	ONCE/WEEK	MONTHLY	GRAB
IRON, TR	µg/L	*	*	NEW INTERIM	ONCE/WEEK	MONTHLY	GRAB
IRON, TR	µg/L	1643	819	NEW FINAL	ONCE/WEEK	MONTHLY	GRAB
NUTRIENTS							
AMMONIA AS N – JAN, FEB, MAR, & NOV, DEC	mg/L	7.5	2.8	7.5, 2.8	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N – APRIL, MAY, JUN & AUG, SEPT	mg/L	3.7	1.4	3.7, 1.4	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N - JULY	mg/L	3.7	1.3	3.7, 1.4	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N - OCTOBER	mg/L	7.5	2.6	7.5, 2.8	ONCE/MONTH	MONTHLY	GRAB
KJELDAHL NITROGEN, TOTAL (TKN)	mg/L	*	*	NEW	ONCE/MONTH	MONTHLY	GRAB
NITRATE PLUS NITRITE AS N	mg/L	*	*	NEW	ONCE/MONTH	MONTHLY	GRAB
PHOSPHORUS, TOTAL P (TP)	mg/L	*	*	QUARTERLY	ONCE/MONTH	MONTHLY	GRAB
OTHER							
CHLORIDE	mg/L	*	*	SAME	ONCE/QUARTER	QUARTERLY	GRAB
SULFATE	mg/L	*	*	SAME	ONCE/QUARTER	QUARTERLY	GRAB
CHLORIDE PLUS SULFATE	mg/L	1000	1000	*, *	ONCE/QUARTER	QUARTERLY	GRAB
WET TEST - CHRONIC	TUc	1.6	-	*, NEW	ONCE/YEAR	ANNUALLY	GRAB

* monitoring and reporting requirement only
† report the minimum and maximum pH values; pH is not to be averaged
‡ An ML is established for this parameter; see permit.
new parameter not established in previous state operating permit
interim parameter requirements prior to end of SOC
final parameter requirements at end of SOC
TR total recoverable

PHYSICAL:

Flow

In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to ensure compliance with permitted effluent limitations. If the facility is unable to obtain effluent flow, then it is the responsibility of the facility to inform the Department, which may require the submittal of an operating permit modification. The facility will report the total flow in millions of gallons per day (MGD), monthly monitoring increased to weekly monitoring because of the metals identified in the discharge, see below. The facility reported from 0.025 to 0.284 MGD; the average was 0.12 MGD.

CONVENTIONAL:

Chlorine, Total Residual (TRC)
Monthly monitoring continued. The facility frequently reported the ML as the effluent value. However, the facility must provide the actual value obtained using the on-site method. The value may be preceded with a "<" is appropriate.
Previous permit limits were 17 µg/L daily maximum and 8 µg/L monthly average; limits are continued but the limits have increased due to the reissuance of the WQS in 2018. The following limits are applied immediately, no SOC. The ML is established in the permit. The effluent limit was provided without completing an RPA, however, the permit writer utilized the RPD method of determining RP, and found RP based on the wastewater type and processes employed at this outfall. An ML is established for this parameter, see permit note ‡. The water quality standards for chronic total residual chlorine increased from 10 µg/L to 11 µg/L in 2018; see 10 CSR 20-7.031 Table A1. Permit reissuance must utilize currently applicable water quality standards when calculating water quality based effluent limitations therefore the limitations within this permit are slightly higher than the last permit. The ML established in this permit is the same as the last permit. The Department has determined, through reissuance of elevated water quality standards, the discharges of this parameter within permitted limits will not interfere with the uses established for the receiving stream. Backsliding provisions parenthetical exception to the exception in CWA §402(o)(2)(B)(i) indicate that revised WQS are not considered new information, therefore backsliding is allowed for attainment waters pursuant to CWA §303(d)(4).Acute AQL: 19 µg/L
Chronic AQL: 11 µg/L
LTAa: WLAa * LTAa multiplier = 19 * 0.321 = 6.101 [CV: 0.6, 99th %ile]
LTAc: WLAc * LTAc multiplier = 11 * 0.527 = 5.802 [CV: 0.6, 99th %ile]
use most protective LTA: 5.802
Daily Maximum: MDL = LTA * MDL multiplier = 5.802 * 3.114 = 18.1 µg/L [CV: 0.6, 99th %ile]
Monthly Average: AML = LTA * AML multiplier = 5.802 * 1.552 = 9.0 µg/L [CV: 0.6, 95th %ile, n=4]

Oil & Grease
20 mg/L daily maximum; 15 mg/L monthly average; continued from previous permit per 40 CFR 423.12(b)(3) for low volume waste sources. 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 xylene, but these constituents are often lost during testing due to their boiling points. The facility reported from non-detect to 6 mg/L. The permit writer completed an RPD on this parameter and found no RP given the supplied data; additionally, no reports of sheen were made on the discharge. 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 facility to visually observe the discharge and receiving waters for sheen or bottom deposits. The limit this permit applies does not allow the facility to violate general criteria even if data provided are below the numeric limit.

pH
6.5 to 9.0 SU – instantaneous grab sample, at least weekly. A week is from Monday through Sunday. Water quality limits [10 CSR 20-7.031(5)(E)] are applicable to this outfall; continued from the previous permit. The permit writer has conducted an RPD and determined the facility has RP; data range from 2.74 to 8.87 SU; only one data point was outside the water quality limits. However, this effluent is extremely variable and changes in pH can cause negative impacts on aquatic life. This outfall has wastewater from neutralization tank, lab drains, demineralizer and polisher wash, corrosive sump, and plant drains. The permit writer has determined that more frequent monitoring is required. More frequent monitoring will ensure appropriate response to pH changes and will ensure pH changes are addressed prior to becoming unmanageable; pH adjustment must occur as soon as pH drift is noticed. pH is a fundamental water quality indicator. Metals leachability and ammonia availability in wastewater depend on pH; and low or high pH can inadvertently cause toxicity in the wastewater from ammonia or metals if not controlled. Limitations in this permit will protect against aquatic organism toxicity, downstream water quality issues, human health hazard contact, and negative physical changes in accordance with the general criteria at 10 CSR 20-7.031(4) and the Clean Water Act's (CWA) goal of 100% fishable and swimmable rivers and streams.

Total Suspended Solids (TSS)
100 mg/L daily maximum and 30 mg/L monthly average per 40 CFR 423.12(b)(3) BPT for low volume waste sources. This limit is continued from the previous permit. Data range from 2.2 to 21.8 mg/L. All values reported were within established limits.

METALS:

Copper, Total Recoverable
New parameter, weekly monitoring. The facility reported 14 µg/L in the application for this parameter; this parameter has RP as the reported value is above the monthly average limits; see fact sheet Part III, REASONABLE POTENTIAL. The facility is not able to meet the new limits therefore an SOC is afforded; see fact sheet Part III SCHEDULE OF COMPLIANCE. Weekly monitoring was

determined applicable to this discharge at this time as 1) this is a new parameter; and 2) the effluent variability is unknown at this time.
Acute AQL: e^(0.9422 * ln200 – 1.700300) * (0.960) = 25.815 µg/L [at hardness 200]
Chronic AQL: e^(0.8545 * ln200 – 1.702) * (0.960) = 16.193 µg/L [at hardness 200]
TR Conversion: AQL/Translator = 25.815 / 0.96 = 26.891 [at hardness 200]
TR Conversion: AQL/Translator = 16.193 / 0.96 = 16.868 [at hardness 200]
LTAa: WLAa * LTAa multiplier = 26.891 * 0.321 = 8.634 [CV: 0.6, 99th %ile]
LTAc: WLAc * LTAc multiplier = 16.868 * 0.527 = 8.897 [CV: 0.6, 99th %ile]
use most protective LTA: 8.634
Daily Maximum: MDL = LTA * MDL multiplier = 8.634 * 3.114 = 26.9 µg/L [CV: 0.6, 99th %ile]
Monthly Average: AML = LTA * AML multiplier = 8.634 * 1.552 = 13.4 µg/L [CV: 0.6, 95th %ile, n=4]

Iron, Total Recoverable
The facility reported 793 in the application for renewal. This parameter has RP. During the public comment period, the facility supplied additional information that the limit could not be met immediately. The information supplied then affords the facility a SOC, see fact sheet Part III SCHEDULE OF COMPLIANCE and permit Part B for dates.
Chronic AQL: 1000 µg/L
LTAc: WLAc * LTAc multiplier = 1000 * 0.527 = 527.433 [CV: 0.6, 99th %ile]
Daily Maximum: MDL = LTA * MDL multiplier = 527.433 * 3.114 = 1642.7 µg/L [CV: 0.6, 99th %ile]
Monthly Average: AML = LTA * AML multiplier = 527.433 * 1.552 = 818.8 µg/L [CV: 0.6, 95th %ile, n=4]

NUTRIENTS:

Ammonia, Total as Nitrogen
Previous permit limits were bi-seasonal. Early life stages present [10 CSR 20-7.031(5)(B)7.C & Table B3], salmonids absent based on WWH designation of lake; total ammonia nitrogen criteria apply. This outfall has a domestic wastewater component. The Department previously followed the 2007 ammonia guidance method for derivation of ammonia limits. However, the EPA's Technical Support Document for Water Quality-Based Toxic Controls (TSD) establishes other alternatives to limit derivation. In 2000, the Department has determined the approach established in §5.4.2 of the TSD, which allows for direct application of both the acute and chronic wasteload allocations (WLA) as permit limits, is more appropriate limit derivation approach for ammonia. Using this method for a discharge to a waterbody where mixing is not allowed, the criterion continuous concentration (CCC) and the criterion maximum concentration (CMC) will equal the chronic and acute WLA respectively. WLAs are then applied as effluent limits, per §5.4.2 of the TSD, where the CMC is the daily maximum and the CCC is the monthly average. The only limit becoming more restrictive is the monthly average in July and October. The facility's past July and October data show the facility can meet the new limits; no SOC is provided. Once monthly monitoring continued; the facility may sample more often to meet the monthly average. The historical limits for October through March are 12.1 mg/L daily maximum and 2.8 mg/L monthly average; the historical limits for April through September are 3.7 mg/L daily maximum and 1.4 mg/L monthly average. The most stringent limits must be retained to conform to antibacksliding regulations. To elevate limits, the facility must complete an antidegradation review and have the new limits implemented in the permit. See table for outfall #005 for applied limits.

The Department previously followed the 2007 Ammonia Guidance method for derivation of ammonia limits. However, the EPA's Technical Support Document for Water Quality-based Toxic Controls (TSD) establishes other alternatives to limit derivation. The Department has determined that the approach established in Section 5.4.2 of the TSD, which allows for direct application of both the acute and chronic wasteload allocations (WLA) as permit limits for toxic pollutants, is more appropriate limit derivation approach. Using this method for a discharge to a waterbody where mixing is not allowed, the criterion continuous concentration (CCC) and the criterion maximum concentration (CMC) will equal the chronic and acute WLA respectively. The WLAs are then applied as effluent limits, per Section 5.4.2 of the TSD, where the CMC is the Daily Maximum and the CCC is the Monthly Average. The direct application of both acute and chronic criteria as WLA is also applicable for facilities that discharge into receiving waterbodies with mixing considerations. The CCC and CMC was then calculated into WLA with mixing considerations using the mass-balance equation. The newly established limitations remain protective of water quality. However, as an antidegradation review was not completed, and the facility can meet all of the old and new limitations; backsliding is not occurring under CWA §303(d)(4)(B) for attainment waters. The water quality standards have not changed.

January
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.7]))+(58.4/(1+10^(pH[7.7]-7.204)) = 14.4 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.7]))+(2.487/(1+10^pH[7.7]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[3]))) = 3.5 mg/L

February
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.8]))+(58.4/(1+10^(pH[7.8]-7.204)) = 12.1 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.8]))+(2.487/(1+10^pH[7.8]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[4]))) = 3.1 mg/L

March
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.9]))+(58.4/(1+10^(pH[7.9]-7.204)) = 10.1 mg/L

Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.9]))+(2.487/(1+10^pH[7.9]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[10.6]))) = 2.7 mg/L

April
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.9]))+(58.4/(1+10^(pH[7.9]-7.204)) = 10.1 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.9]))+(2.487/(1+10^pH[7.9]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[16.8]))) = 2.4 mg/L

May
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.8]))+(58.4/(1+10^(pH[7.8]-7.204)) = 12.1 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.8]))+(2.487/(1+10^pH[7.8]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[22]))) = 1.9 mg/L

June
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.7]))+(58.4/(1+10^(pH[7.7]-7.204)) = 14.4 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.7]))+(2.487/(1+10^pH[7.7]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[25.9]))) = 1.7 mg/L

July
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.8]))+(58.4/(1+10^(pH[7.8]-7.204)) = 12.1 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.8]))+(2.487/(1+10^pH[7.8]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[28.8]))) = 1.3 mg/L

August
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.7]))+(58.4/(1+10^(pH[7.7]-7.204)) = 14.4 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.7]))+(2.487/(1+10^pH[7.7]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[28]))) = 1.5 mg/L

September
Acute AQL WQS: (0.411/(1+10^7.204- pH[7.8]))+(58.4/(1+10^(pH[7.8]-7.204)) = 12.1 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.8]))+(2.487/(1+10^pH[7.8]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[24]))) = 1.7 mg/L

October
Acute AQL WQS: (0.411/(1+10^7.204- pH[7.8]))+(58.4/(1+10^(pH[7.8]-7.204)) = 12.1 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.8]))+(2.487/(1+10^pH[7.8]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[17.5]))) = 2.6 mg/L

November
Acute AQL WQS: (0.411/(1+10^7.204- pH[7.7]))+(58.4/(1+10^(pH[7.7]-7.204)) = 14.4 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.7]))+(2.487/(1+10^pH[7.7]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[11.6]))) = 3.5 mg/L

December
Acute AQL WQS: (0.411/(1+10^7.204- pH[7.8]))+(58.4/(1+10^(pH[7.8]-7.204)) = 12.1 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.8]))+(2.487/(1+10^pH[7.8]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[5]))) = 3.1 mg/L

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

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

Phosphorus, Total P (TP)
Phosphorus is present in this discharge therefore monthly monitoring is required per 10 CSR 20-7.015(9)(D)8.B.

OTHER:

Chloride
Monitoring was implemented in the previous permit to determine compliance with the WQS for chlorides and sulfates below. The facility submitted from non-detect to 155 mg/L for chlorides alone during the last permit term. Monitoring is continued for chloride and sulfate limits below.

Sulfate
Monitoring was implemented in the previous permit to determine compliance with the WQS for chlorides and sulfates below. The facility submitted from 106 to 696 mg/L for sulfate alone during the last permit term. Monitoring is continued for chloride and sulfate limits below.

Chloride Plus Sulfate
Previous permit required sampling and reporting sulfate plus chloride. The permit writer is implementing the AQL WQS: 1000 mg/L per 10 CSR 20-7.031((5)(L) applied as a daily maximum and monthly average per 40 CFR 122.45(d)(1). The limits are new. The permit writer has made a finding of reasonable potential utilizing supplied data in an RPA. The facility reported from 112.9 to 707.7 mg/L for this parameter. While the data are not above the WQS, the permit writer has determined the facility type and treatment type also have RP. The data are variable and quarterly sampling with limits are applicable. No SOC as the facility is currently able to meet the newly established limits.

Whole Effluent Toxicity (WET) Test, Chronic

The permit writer has determined this facility has reasonable potential to cause toxicity in the receiving stream because of the type of process wastewater being discharged from this outfall, and the toxic pollutants (ammonia and metals) present in this outfall's discharge. The 2018 and 2019 WET tests were reviewed. Historical data show no toxicity or inhibited reproduction therefore no schedule is permitted.

Acute AQL: 0.3 TUa

Chronic Assumption: 1 TUc

The AEC is = 100%

LTAa,c: WLAa * LTAa multiplier = 3 * 0.321 = 0.963 [CV: 0.6, 99th %ile]

LTAc: WLAc * LTAc multiplier = 1 * 0.527 = 0.527 [CV: 0.6, 99th %ile]

use most protective LTA: 0.527

Daily Maximum: MDL = LTA * MDL multiplier = 0.527 * 3.114 = 1.6 TUc [CV: 0.6, 99th %ile]

OUTFALL #008 – COAL TUNNEL, MAINTENANCE DRAINS, HEAVY EQUIPMENT WASH, STORMWATER, ETC.

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVG.	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	*	SAME	ONCE/MONTH	MONTHLY	24 HR. TOT
CONVENTIONAL							
OIL & GREASE	mg/L	20	15	SAME	ONCE/MONTH	MONTHLY	GRAB
pH †	SU	6.5 TO 9.0	-	SAME	ONCE/MONTH	MONTHLY	GRAB
TOTAL SUSPENDED SOLIDS (TSS)	mg/L	50	50	SAME	ONCE/MONTH	MONTHLY	GRAB
METALS							
ALUMINUM, TR	µg/L	*	*	INTERIM SAME	ONCE/MONTH	MONTHLY	GRAB
ALUMINUM, TR	µg/L	750	348	NEW FINAL	ONCE/MONTH	MONTHLY	GRAB
NUTRIENTS							
AMMONIA AS N	mg/L	*	*	NEW	ONCE/MONTH	MONTHLY	GRAB
KJELDAHL NITROGEN, TOTAL (TKN)	mg/L	*	*	NEW	ONCE/MONTH	MONTHLY	GRAB
NITRATE PLUS NITRITE AS N	mg/L	*	*	NEW	ONCE/MONTH	MONTHLY	GRAB
PHOSPHORUS, TOTAL P (TP)	mg/L	*	*	NEW	ONCE/MONTH	MONTHLY	GRAB
OTHER							
CHLORIDE	mg/L	*	*	SAME	ONCE/QUARTER	QUARTERLY	GRAB
SULFATE	mg/L	*	*	SAME	ONCE/QUARTER	QUARTERLY	GRAB
CHLORIDE PLUS SULFATE	mg/L	*	*	SAME	ONCE/QUARTER	QUARTERLY	GRAB
WET TEST - CHRONIC	TUc	1.6	-	*	ONCE/YEAR	ANNUALLY	GRAB

* 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
interim parameter requirements prior to end of SOC
final parameter requirements at end of SOC
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 facility is unable to obtain effluent flow, then it is the responsibility of the facility to inform the Department, which may require the submittal of an operating permit modification. The facility will report the total flow in millions of gallons per day (MGD), monthly monitoring continued from previous permit. The facility reported from 0.01 to 2.2 MGD at this outfall.

CONVENTIONAL:

Chemical Oxygen Demand

Chemical Oxygen Demand monitoring was removed. The data reported were between non-detect and 58 mg/L. There are no numeric water quality standards for COD, nor are there established technology limits for COD for this type of wastewater. The permit writer has reviewed the data and found no reasonable potential for exceedance of narrative "free from" criteria per 10 CSR 20-7.031(4) therefore the permit writer will not develop water quality based limitations for this parameter. No further monitoring is warranted as the permit writer has no reason to believe the wastewater is causing narrative criteria excursions in the receiving stream at this outfall from this pollutant. Removal of this parameter is not considered backsliding as no RP was found; see additional information in Part III, REASONABLE POTENTIAL.

Oil & Grease
20 mg/L daily maximum; 15 mg/L monthly average; continued from previous permit and per the effluent limitation guideline for low volume waste sources 40 CFR 423.13(b)(3). This outfall has an oil water separator. 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 xylene, but these constituents are often lost during testing due to their boiling points. The facility reported non-detects. The permit writer completed an RPD on this parameter and found no RP based on the data and activities occurring at this outfall. To protect the general criteria, it is the responsibility of the facility to visually observe the discharge and receiving waters for sheen or bottom deposits. The limit this permit applies does not allow the facility to violate general criteria even if data provided are below the numeric limit.

pH
6.5 to 9.0 SU – instantaneous grab sample. The facility reported from 7.61 to 8.69 SU during the last permit term in the DMRs. Water quality limits [10 CSR 20-7.031(5)(E)] are applicable to this outfall and continued from the previous permit. pH is a fundamental water quality indicator. Additionally, metals leachability and ammonia availability in wastewater is dependent on pH. Limitations in this permit will protect against aquatic organism toxicity, downstream water quality issues, human health hazard contact, and negative physical changes in accordance with the general criteria at 10 CSR 20-7.031(4) and the Clean Water Act's (CWA) goal of 100% fishable and swimmable rivers and streams.

Total Suspended Solids (TSS)
50 mg/L daily maximum and monthly average per the ELG 40 CFR 423.12(b)(9) for coal pile runoff. The coal tunnel and conveyor are approximately 23.86 acres of this outfall area. Limits continued from the previous permit. The facility reported 3.2 to 74.4 mg/L during the last permit term with two exceedances of the limits.

METALS:

Aluminum, Total Recoverable
Previous permit limits were monitoring only; the facility reported between 57 and 630 µg/L for this parameter; this parameter has RP; see fact sheet Part III, REASONABLE POTENTIAL. The facility is not able to meet the new limits therefore an SOC is afforded; see fact sheet Part III SCHEDULE OF COMPLIANCE. Coal tunnel, heavy equipment wash, shop floor drains, and stormwater all likely contribute to the aluminum at this outfall. The facility is required to evaluate each contribution and implement controls sufficient to reduce aluminum in the wastewater to the permitted levels.
Acute AQL: 750 µg/L
LTAa: WLAa * LTAa multiplier = 750 * 0.282 = 211.147 [CV: 0.698, 99th %ile]
Daily Maximum: MDL = LTA * MDL multiplier = 211.147 * 3.552 = 750 µg/L [CV: 0.698, 99th %ile]
Monthly Average: AML = LTA * AML multiplier = 211.147 * 1.65 = 348.3 µg/L [CV: 0.698, 95th %ile, n=4]

Special Condition – Retention Time Required for Heavy Equipment Wash Wastewater
To eliminate monitoring requirements of total residual chlorine, the facility is required to retain chlorinated wastewater from the heavy equipment wash for a minimum of 5 days to effectively dissipate or dilute chlorine in the wash water prior to discharge. Simply because an outfall is listed as a low volume waste source does not mean that the only pollutants of concern are TSS and Oil and Grease. These are the minimum requirements of the ELG, and it is the issuing authority's responsibility to determine if any additional pollutants are of concern.

NUTRIENTS:

Ammonia, Total as Nitrogen
In the 2018 chronic WET test, the three grab samples ranged from 0.421 to 0.513 mg/L therefore nitrogen is present in this discharge; monthly monitoring is required per 10 CSR 20-7.015(9)(D)8.B. The coal handling process utilizes a wetting agent, ammonium lignosulfonate. This chemical application occurs in a fine mist applied to the coal as it is transported along conveyors. The potential to enter outfall #008 occurs when the conveyor equipment is washed, and wash water has the potential to contact residual amounts of wetting agent remaining on the conveyor belts. This is a new requirement based on new information and new regulations promulgated during the last permit term.

Kjeldahl Nitrogen, Total (TKN)
TKN was reported as 0.588 mg/L in the application; monthly monitoring is required per 10 CSR 20-7.015(9)(D)8.B. This is a new requirement based on new regulations promulgated during the last permit term.

Nitrate plus Nitrite
Nitrogen was reported as 0.588 mg/L in the application therefore is present. Monthly monitoring is required per 10 CSR 20-7.015(9)(D)8.B. This is a new requirement based on new regulations promulgated during the last permit term.

Phosphorus, Total P (TP)
Phosphorus is an expected pollutant in the steam electric category under the EPA's Nutrient Model. Monthly monitoring is required per 10 CSR 20-7.015(9)(D)8.B. This is a new requirement based on new regulations promulgated during the last permit term.

OTHER:

Chloride, Sulfate, and Chloride Plus Sulfate
Previous permit required sampling and reporting sulfate plus chloride without limitations. A review of the data found no reasonable potential for this parameter to cause or contribute to instream toxicity. The facility reported from 59.6 to 152.3 mg/L for the combined constituents. Quarterly monitoring is continued based on the data and activities occurring at this outfall. Many of the outfalls at this site discharge chlorides and sulfates; monitoring is needed to determine the entire pollutant load from the facility to the reservoir.

Surfactants (LAS)
The facility reported 0.04 mg/L of LAS surfactants (by method 425.1) in the wastewater at this outfall; in an email dated 6/3/2021, the facility indicated it was a non-detect, and the facility will no longer use detergents. No monitoring requirement henceforth.

Whole Effluent Toxicity (WET) Test, Chronic
The 2018 WET test was reviewed for outfall #008; the NOEC for both species was 100% for survival and reproduction. The facility can meet the new limits immediately therefore there is no SOC established for this parameter. This outfall has been identified as discharging toxic pollutants therefore WET testing is established.
Acute AQL: 0.3 TUa
Chronic Assumption: 1 TUc
The AEC is (0.218 CFSdf / (0 CFSzid +0.218 CFSdf)) = 100%
LTAa,c: WLAa * LTAa multiplier = 3 * 0.321 = 0.963 [CV: 0.6, 99th %ile]
LTAc: WLAc * LTAc multiplier = 1 * 0.527 = 0.527 [CV: 0.6, 99th %ile]
use most protective LTA: 0.527
Daily Maximum: MDL = LTA * MDL multiplier = 0.527 * 3.114 = 1.6 TUc [CV: 0.6, 99th %ile]

OUTFALL #011 – INDUSTRIAL CATEGORICAL WASTEWATER

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVG.	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	*	SAME	ONCE/MONTH	MONTHLY	24 HR. TOT
CONVENTIONAL							
CHLORINE, TOTAL RESIDUAL ‡	µg/L	18.1	9.0	NEW	ONCE/MONTH	MONTHLY	GRAB
OIL & GREASE	mg/L	20	15	SAME	ONCE/MONTH	MONTHLY	GRAB
pH †	SU	6.5 TO 9.0	-	SAME	ONCE/MONTH	MONTHLY	GRAB
TOTAL SUSPENDED SOLIDS (TSS)	mg/L	100	30	SAME	ONCE/MONTH	MONTHLY	GRAB
METALS							
IRON, TR	µg/L	*	*	NEW INTERIM	ONCE/MONTH	MONTHLY	GRAB
IRON, TR	µg/L	1643	819	NEW FINAL	ONCE/MONTH	MONTHLY	GRAB
NUTRIENTS							
AMMONIA AS N - JAN & NOV	mg/L	14.4	3.5	NEW	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N - FEB AND DEC	mg/L	12.1	3.1	NEW	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N - MARCH	mg/L	10.1	2.7	NEW	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N - APRIL	mg/L	10.1	2.4	NEW	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N - MAY	mg/L	12.1	1.9	NEW	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N - JUNE	mg/L	14.4	1.7	NEW	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N - JULY	mg/L	12.1	1.3	NEW	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N - AUGUST	mg/L	14.4	1.5	NEW	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N - SEPTEMBER	mg/L	12.1	1.7	NEW	ONCE/MONTH	MONTHLY	GRAB
AMMONIA AS N - OCTOBER	mg/L	12.1	2.6	NEW	ONCE/MONTH	MONTHLY	GRAB
KJELDAHL NITROGEN, TOTAL (TKN)	mg/L	*	*	NEW	ONCE/MONTH	MONTHLY	GRAB
NITRATE PLUS NITRITE AS N	mg/L	*	*	NEW	ONCE/MONTH	MONTHLY	GRAB
PHOSPHORUS, TOTAL P (TP)	mg/L	*	*	NEW	ONCE/MONTH	MONTHLY	GRAB
OTHER							
CHLORIDE	mg/L	*	*	SAME	ONCE/QUARTER	QUARTERLY	GRAB
SULFATE	mg/L	*	*	SAME	ONCE/QUARTER	QUARTERLY	GRAB
CHLORIDE PLUS SULFATE	mg/L	*	*	SAME	ONCE/QUARTER	QUARTERLY	GRAB
WET TEST - CHRONIC	TUc	1.6	-	*	ONCE/YEAR	ANNUALLY	GRAB

*	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
interim	parameter requirements prior to end of SOC
final	parameter requirements at end of SOC
TR	total recoverable

PHYSICAL:

Flow

In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to ensure compliance with permitted effluent limitations. If the facility is unable to obtain effluent flow, then it is the responsibility of the facility to inform the Department, which may require the submittal of an operating permit modification. The facility will report the total flow in millions of gallons per day (MGD), monthly monitoring continued from previous permit. The facility reported from 0.12 to 1.6 MGD during the last permit term.

CONVENTIONAL:

Chlorine, Total Residual (TRC)
New parameter for this outfall. The ML is discussed and included in the permit. The facility reported <60 µg/L in the application but the facility discharges RO through RPD as this parameter is present. For renewal this parameter was listed as a non-detection. But because the facility is routing outfall #012 to this outfall, the permit writer has established monthly monitoring with a limit. An ML is established for this parameter, see permit note ‡. The water quality standards for chronic total residual chlorine increased from 10 µg/L to 11 µg/L in 2018; see 10 CSR 20-7.031 Table A1. Permit reissuance must utilize currently applicable water quality standards when calculating water quality based effluent limitations therefore the limitations within this permit are slightly higher than the last permit. The ML established in this permit is the same as the last permit. The Department has determined, through reissuance of elevated water quality standards, the discharges of this parameter within permitted limits will not cause or contribute to exceedances of the WQS; this is not considered backsliding.
Acute AQL: 19 µg/L
Chronic AQL: 11 µg/L
LTAa: WLAa * LTAa multiplier = 19 * 0.321 = 6.101 [CV: 0.6, 99th %ile]
LTAc: WLAc * LTAc multiplier = 11 * 0.527 = 5.802 [CV: 0.6, 99th %ile]
use most protective LTA: 5.802
Daily Maximum: MDL = LTA * MDL multiplier = 5.802 * 3.114 = 18.1 µg/L [CV: 0.6, 99th %ile]
Monthly Average: AML = LTA * AML multiplier = 5.802 * 1.552 = 9.0 µg/L [CV: 0.6, 95th %ile, n=4]

Oil & Grease
20 mg/L daily maximum; 15 mg/L monthly average; continued from previous permit and per the effluent limitation guideline for low volume waste sources 40 CFR 423.13(b)(3); this outfall discharges plant drains. The facility reported from non-detects to 6 mg/L (which is also sometimes not a detection). 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 xylene, but these constituents are often lost during testing due to their boiling points. The facility reported non-detects. The permit writer completed an RPD on this parameter and found no RP based on the data and activities occurring at this outfall. To protect the general criteria, it is the responsibility of the facility to visually observe the discharge and receiving waters for sheen or bottom deposits. The limit this permit applies does not allow the facility to violate general criteria even if data provided are below the numeric limit.

pH
6.5 to 9.0 SU – instantaneous grab sample. Water quality limits [10 CSR 20-7.031(5)(E)] are applicable to this outfall. pH is a fundamental water quality indicator. Additionally, metals leachability and ammonia availability in wastewater is dependent on pH. Limitations in this permit will protect against aquatic organism toxicity, downstream water quality issues, human health hazard contact, and negative physical changes in accordance with the general criteria at 10 CSR 20-7.031(4) and the Clean Water Act's (CWA) goal of 100% fishable and swimmable rivers and streams. The facility reported from 6.84 to 8.75 SU during the last permit term.

Total Suspended Solids (TSS)
100 mg/L daily maximum and 30 mg/L monthly average per 40 CFR 423.12(b)(3) BPT for low volume waste sources. This limit is continued from the previous permit. Data range from 2.2 to 38 mg/L in July 2020 (an average was completed in July 2020 and was determined to be 27.5 mg/L during that month). All values reported were within established limits.

METALS:

Iron, Total Recoverable
The facility reported 1290 µg/L in the permit application. The parameter has RP. The facility will be afforded an SOC to meet the new limits. This parameter was also identified as a pollutant of concern in the TBEL review. However, the facility is being given water quality limitations therefore no further TBEL considerations are required.
Chronic AQL: 1000 µg/L
LTAc: WLAc * LTAc multiplier = 1000 * 0.527 = 527.433 [CV: 0.6, 99th %ile]
Daily Maximum: MDL = LTA * MDL multiplier = 527.433 * 3.114 = 1642.7 µg/L [CV: 0.6, 99th %ile]
Monthly Average: AML = LTA * AML multiplier = 527.433 * 1.552 = 818.8 µg/L [CV: 0.6, 95th %ile, n=4]

NUTRIENTS:

Ammonia, Total as Nitrogen
The application for renewal indicated 1.18 mg/L for ammonia; the WET test ammonia levels ranged from non-detect to 0.222 mg/L. Early life stages present [10 CSR 20-7.031(5)(B)7.C & Table B3], salmonids absent based on WWH designation of stream; total

ammonia nitrogen criteria apply. This is a new requirement which will receive an SOC; see Part III SCHEDULE OF COMPLIANCE and permit Part B for additional information and dates.

The EPA's Technical Support Document for Water Quality-Based Toxic Controls (TSD) establishes other alternatives to limit derivation. The Department has determined the approach established in §5.4.2 of the TSD, which allows for direct application of both the acute and chronic wasteload allocations (WLA) as permit limits, is more appropriate limit derivation approach for ammonia.
Using this method for a discharge to a waterbody where mixing is not allowed, the criterion continuous concentration (CCC) and the criterion maximum concentration (CMC) will equal the chronic and acute WLA respectively. WLAs are then applied as effluent limits, per §5.4.2 of the TSD, where the CMC is the daily maximum and the CCC is the monthly average. The direct application of both acute and chronic criteria as WLA is also applicable for facilities discharging into receiving waterbodies with mixing considerations.

January
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.7]))+(58.4/(1+10^(pH[7.7]-7.204)) = 14.4 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.7]))+(2.487/(1+10^pH[7.7]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[3]))) = 3.5 mg/L

February
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.8]))+(58.4/(1+10^(pH[7.8]-7.204)) = 12.1 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.8]))+(2.487/(1+10^pH[7.8]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[4]))) = 3.1 mg/L

March
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.9]))+(58.4/(1+10^(pH[7.9]-7.204)) = 10.1 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.9]))+(2.487/(1+10^pH[7.9]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[10.6]))) = 2.7 mg/L

April
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.9]))+(58.4/(1+10^(pH[7.9]-7.204)) = 10.1 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.9]))+(2.487/(1+10^pH[7.9]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[16.8]))) = 2.4 mg/L

May
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.8]))+(58.4/(1+10^(pH[7.8]-7.204)) = 12.1 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.8]))+(2.487/(1+10^pH[7.8]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[22]))) = 1.9 mg/L

June
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.7]))+(58.4/(1+10^(pH[7.7]-7.204)) = 14.4 mg/L
Chronic AQL WQS (CCC): (0.0577/(1+10^7.688 – pH[7.7]))+(2.487/(1+10^pH[7.7]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[25.9]))) = 1.7 mg/L

July
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.8]))+(58.4/(1+10^(pH[7.8]-7.204)) = 12.1 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.8]))+(2.487/(1+10^pH[7.8]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[28.8]))) = 1.3 mg/L

August
Acute AQL WQS (CMC): (0.411/(1+10^7.204- pH[7.7]))+(58.4/(1+10^(pH[7.7]-7.204)) = 14.4 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.7]))+(2.487/(1+10^pH[7.7]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[28]))) = 1.5 mg/L

September
Acute AQL WQS: (0.411/(1+10^7.204- pH[7.8]))+(58.4/(1+10^(pH[7.8]-7.204)) = 12.1 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.8]))+(2.487/(1+10^pH[7.8]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[24]))) = 1.7 mg/L

October
Acute AQL WQS: (0.411/(1+10^7.204- pH[7.8]))+(58.4/(1+10^(pH[7.8]-7.204)) = 12.1 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.8]))+(2.487/(1+10^pH[7.8]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[17.5]))) = 2.6 mg/L

November
Acute AQL WQS: (0.411/(1+10^7.204- pH[7.7]))+(58.4/(1+10^(pH[7.7]-7.204)) = 14.4 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.7]))+(2.487/(1+10^pH[7.7]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[11.6]))) = 3.5 mg/L

December
Acute AQL WQS: (0.411/(1+10^7.204- pH[7.8]))+(58.4/(1+10^(pH[7.8]-7.204)) = 12.1 mg/L
Chronic AQL WQS: (0.0577/(1+10^7.688 – pH[7.8]))+(2.487/(1+10^pH[7.8]-7.688))*MIN(2.85,(1.45*10^0.028*(25-temp[5]))) = 3.1 mg/L

Kjeldahl Nitrogen, Total (TKN)
Nitrogen is present in this discharge therefore monthly monitoring is required per 10 CSR 20-7.015(9)(D)8.B.

Nitrate plus Nitrite
Nitrogen is present in this discharge therefore monthly monitoring is required per 10 CSR 20-7.015(9)(D)8.B. Additionally, this parameter was identified as a POC under the TBEL analysis. See special conditions; additional requirements to analyze and provide treatment options for this parameter is required utilizing the BCT analysis under CWA §304(b)(4) promulgated under 40 CFR 125.3(d)(2).

Phosphorus, Total P (TP)
Phosphorus is expected to be present in this discharge based on the EPA's nutrient model therefore monthly monitoring is required per 10 CSR 20-7.015(9)(D)8.B.

OTHER:

Chloride, Sulfate, and Chloride Plus Sulfate
Previous permit required sampling and reporting sulfate plus chloride without limitations. A review of the data found no reasonable potential for this parameter to cause or contribute to instream toxicity. The facility reported from 46.9 to 93.1 mg/L for the combined constituents. Quarterly monitoring is continued based on the data and activities occurring at this outfall. Chlorination and other salts are being added because this is a drinking water treatment outfall, and the facility has disclosed ferric sulfate is used in the water treatment process. Many of the outfalls at this site discharge chlorides and sulfates; monitoring is needed to determine the entire pollutant load from the facility to the reservoir.

Whole Effluent Toxicity (WET), Chronic
This facility has reasonable potential to cause toxicity in the receiving stream due to ammonia, iron, chloride, and other toxics found in the effluent. The chronic WLA is converted to a long-term average concentration (LTAa,c) using: WLAa,c = WLAa × ACR. A default acute to chronic ratio (ACR) value of 10 is used based on §1.3.4 (page 18) and Appendix A of the March 1991 TSD. The standard Allowable Effluent Concentration (AEC) for facilities without mixing considerations is 100%. The standard dilution series for facilities discharging to waterbodies with no mixing considerations is 100%, 50%, 25%, 12.5%, & 6.25% as 10 CSR 20-7.015((9)(L)4.A. states the dilution series must be proportional.

Acute AQL: 0.3 TUa
Chronic Assumption: 1 TUc
The AEC is (44.87 CFSdf / (0 CFSzid +44.87 CFSdf)) = 100%
Acute WLA: Ce = ((44.87 CFSdf + 0 CFSzid) * 0.3 – (0 CFSzid * 0 background)) / 44.87 CFSdf] * ACR of 10 = 3
Chronic WLA: Ce = ((44.87 CFSdf + 0 CFSmz) * 1 – (0 CFSmz * 0 background)) / 44.87 CFSdf = 1
LTAa,c: WLAa * LTAa multiplier = 3 * 0.321 = 0.963 [CV: 0.6, 99th %ile]
LTAc: WLAc * LTAc multiplier = 1 * 0.527 = 0.527 [CV: 0.6, 99th %ile]
use most protective LTA: 0.527
Daily Maximum: MDL = LTA * MDL multiplier = 0.527 * 3.114 = 1.6 TUc [CV: 0.6, 99th %ile]

INTERNAL MONITORING POINT #013 DOMESTIC WASTEWATER

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVG.	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	*	SAME	ONCE/MONTH	ONCE/MONTH	24 HR. TOT
CONVENTIONAL							
BOD_5	mg/L	30	20	45/30	ONCE/MONTH	ONCE/MONTH	GRAB
E. COLI ‡	#/100 mL	630	126	SAME	ONCE/MONTH	ONCE/MONTH	GRAB
PH †	SU	6.0 TO 9.0	-	SAME	ONCE/MONTH	ONCE/MONTH	GRAB
TOTAL SUSPENDED SOLIDS (TSS)	mg/L	30	20	45/30	ONCE/MONTH	ONCE/MONTH	GRAB

* monitoring and reporting requirement only
† report the minimum and maximum pH values; pH is not to be averaged
‡ # of colonies/100 mL; the Monthly Average for *E. coli* is a geometric mean.

DERIVATION AND DISCUSSION OF LIMITS:
This is an internal monitoring required for compliance with Missouri's effluent regulations for domestic wastewater pursuant to 10 CSR 20-7.015. Water quality requirements are added to outfall #005 if necessary.

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). The last permit issued determined the actual flow of the plant to be 0.05 MGD. However, the data supplied over the last permit term indicated a minimum flow of 0.0005 MGD, a maximum flow of 0.088 MGD, and an average flow of 0.018 MGD. The facility description part of the fact sheet was updated to reflect the new measurements.

CONVENTIONAL:

Biochemical Oxygen Demand (BOD_5)
Effluent limitations from the previous state operating permit were reassessed but indicated that the previous permit limts were applied in error. 10 CSR 20-7.015(3)(A)1.A; daily maximum 30 mg/L, monthly average 20 mg/L are implemented. Previous permit limits daily maximum 45 mg/L, monthly average 30 mg/L were removed because they were applied in error. Weekly averages were applied in error within the last permit and are only allowed for POTWs according to 40 CFR 122.45(d)(2). Facility reported non-detect to 6.57 mg/L during the last permit term; there were no exceedances during the last permit term.

Escherichia coli (E. coli)
A daily maximum of 630 bacteria per 100 mL [10 CSR 20-7.015(9)(B)1.C.] and a monthly geometric mean of 126 bacteria per 100 mL [10 CSR 20-7.031 Table A]. Limitations apply only during the recreational season (April 1 through October 31), to protect Whole Body Contact (WBC-A) designated use of the receiving waterbody. 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. In the 2018 renewal, the facility requested *E. coli* be placed on this outfall to avoid outside influences on bacteria levels in the discharge through outfall #005. Monthly monitoring and limits continued from the previous permit. Facility reported non-detect to 727 #/100 mL during the last permit term; only one month of exceedance was noted.

pH
6.0 to 9.0 SU. Technology based limits at 10 CSR 20-7.015(3) are protective of the receiving water's quality as this effluent is not discharged directly to waters of the state but through outfall #005. Monthly monitoring and limits continued from the previous permit. The facility reported from 6.36 to 7.78 during the last permit term with no exceedances of the permitted limits.

Total Suspended Solids (TSS)

Monthly monitoring and limits revised from the previous permit. Effluent limitations from the previous state operating permit were reassessed but indicated that the previous permit limits were applied in error. 10 CSR 20-7.015(3)(A)1.A; daily maximum 30 mg/L, monthly average 20 mg/L are implemented. Previous permit limits daily maximum 45 mg/L, monthly average 30 mg/L were removed because they were applied in error. Facility reported from 2.9 to 24.2 mg/L during the last permit term; there were no exceedances.

OUTFALL #014 – COOLING WATER AND BOILER BLOWDOWN

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVG.	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
FLOW	MGD	*	*	SAME	ONCE/WEEK ⁂	MONTHLY	24 HR. TOT
CONVENTIONAL							
OIL & GREASE	mg/L	20	15	SAME	ONCE/QUARTER	QUARTERLY	GRAB
pH †	SU	6.5 TO 9.0	-	SAME	ONCE/MONTH	MONTHLY	GRAB
TOTAL SUSPENDED SOLIDS (TSS) - GROSS	mg/L	*	*	SAME	ONCE/MONTH	MONTHLY	GRAB
TOTAL SUSPENDED SOLIDS (TSS) - NET	mg/L	100	30	SAME	ONCE/MONTH	MONTHLY	GRAB

* monitoring and reporting requirement only
† report the minimum and maximum pH values; pH is not to be averaged
‡ An ML is established for this parameter; see permit.
new parameter not established in previous state operating permit
interim parameter requirements prior to end of SOC
final parameter requirements at end of SOC
TR total recoverable

PHYSICAL:

Flow

In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to ensure compliance with permitted effluent limitations. If the facility is unable to obtain effluent flow, then it is the responsibility of the facility to inform the Department, which may require the submittal of an operating permit modification. The facility will report the total flow in millions of gallons per day (MGD), monthly monitoring from the previous permit increased to weekly under this permit to match the sampling frequency for chlorine. The facility reported from 0.02 to 2.1 MGD at this outfall.

CONVENTIONAL:

Oil & Grease

20 mg/L daily maximum; 15 mg/L monthly average; continued from previous permit and per the effluent limitation guideline for low volume waste sources 40 CFR 423.13(b)(3). This outfall has an oil water separator. 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 xylene, but these constituents are often lost during testing due to their boiling points. The facility reported non-detects. The permit writer completed an RPD on this parameter and found no RP based on the data and activities occurring at this outfall. 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 facility to visually observe the discharge and receiving waters for sheen or bottom deposits. The limit this permit applies does not allow the facility to violate general criteria even if data provided are below the numeric limit.

pH

6.5 to 9.0 SU – instantaneous grab sample. The facility reported from 6.6 to 8.51 SU during the last permit term in the DMRs. Water quality limits [10 CSR 20-7.031(5)(E)] are applicable to this outfall and continued from the previous permit. pH is a fundamental water quality indicator. Additionally, metals leachability and ammonia availability in wastewater is dependent on pH. Limitations in this permit will protect against aquatic organism toxicity, downstream water quality issues, human health hazard contact, and negative physical changes in accordance with the general criteria at 10 CSR 20-7.031(4) and the Clean Water Act's (CWA) goal of 100% fishable and swimmable rivers and streams.

Total Suspended Solids (TSS)

NET 100 mg/L daily maximum and NET 30 mg/L monthly average per the ELG 40 CFR 423.12(b)(3) for low volume waste sources. Limits continued from the previous permit. The facility reported 0.6 to 156.4 mg/L at the end of pipe. This outfall is afforded intake credits. The facility may only "net" the percentage of wastewater from the intake; stormwater and recycled water can not be included in the calculation. "End-of-pipe" discharge data indicate the daily maximum TSS was exceeded once above the daily maximum of 100 mg/L; the monthly average is above the monthly average limit about 25% of the time. NET limitations may only be granted in instances where the facility has showed the necessity of the NET allowance. It is the responsibility of the

permittee to only net the TSS from the percentage of wastewater withdrawn; see permit for equations; stormwater can not be netted.

METALS:

Aluminum, Total Recoverable
The facility reported 225 µg/L for this parameter in the application, however, the facility has also demonstrated that this parameter is present in the intake water at 220 µg/L. Because the facility is discharging cooling water from this outfall and they have demonstrated that the aluminum is not coming from the blowdown process, aluminum is not being implemented as a parameter at this outfall.

OTHER:

Whole Effluent Toxicity (WET) Test
This outfall does not discharge toxic pollutants which are not already present in the intake water. No WET testing requirement is implemented.

PERMITTED FEATURE #020 – THERMAL COMPLIANCE

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVG.	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL							
TEMPERATURE	°F	90	*	SAME	DAILY	MONTHLY	MEASURED

* monitoring and reporting requirement only

Temperature

In accordance with 10 CSR 20-7.031(5)(D), water contaminant sources shall not cause or contribute to stream temperature in excess of ninety degrees Fahrenheit (90 °F) or change the stream temperature by more than 5 degrees Fahrenheit. Daily monitoring is consistent with other power plants. The Thomas Hill reservoir is specifically exempted from thermal limits in regulation at 10 CSR 20-7.031(5)(D)4. However, the regulations also indicates the temperature of the entire discharge cannot cause any measurable rise in temperature. Typically, paired with a temperature maximum, is a change in temperature limitation [10 CSR 20-7.031(5)(D)1] of five degrees Fahrenheit (ΔT). However, there is no logical upstream location to which compare the discharge to, therefore no ΔT limitation will be applied in this permit. Monthly averages are not required by rule, however, the permit writer utilizes the average value to 1) detect trends in temperature which may assist the permittee in BMP control, and 2) determine reasonable potential. This coincides with other permits for power plants.

INTAKE

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVG.	PREVIOUS PERMIT LIMITS	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
INTAKE							
FLOW	MGD	*	*	NEW	ONCE/WEEK	MONTHLY	MEASURED
PH †	SU	* MIN, * MAX	-	NEW	ONCE/WEEK	MONTHLY	GRAB
TOTAL SUSPENDED SOLIDS	mg/L	*	*	SAME ♣	ONCE/WEEK	MONTHLY	GRAB
ALUMINUM	µg/L	*	*	NEW	ONCE/YEAR	ANNUALLY	GRAB
COPPER	µg/L	*	*	NEW	ONCE/YEAR	ANNUALLY	GRAB

* monitoring and reporting requirement only

DERIVATION AND DISCUSSION OF LIMITS – INTAKE:
♣ Several outfalls have net limits or pollutant limits which are or may be present in the intake water. Monitoring at the intake has been completed in the past; although the intake parameter was included in the outfall instead. By establishing intake monitoring independently, this reduces reporting requirements for the specific outfalls with net limits allowed, but also determines the lake solids. Samples must be taken on the same day and within four hours of taking the sample from the respective outfall for this parameter.

Flow
The facility will provide the flow in MGD into the intake to comply with 40 CFR 122.21(r)(3)(iii), (5)(i), and CWA §316(b).

pH
Monitoring of the intake for pH is new this permit term. The facility discharges varying levels of pH and intake monitoring is necessary to establish natural fluctuations of pH in the systems.

Total Suspended Solids (TSS)
This facility is afforded NET limitations for TSS at some outfalls. The facility shall report the intake TSS values at this newly established permitted feature. NET effluent limitations are provided under 40 CFR 122.45(g)(1)(ii), (g)(2), and (g)(3).

Aluminum
Many wastewater outfalls contain limits or monitoring for this pollutant. To gather information about the reservoir, and to ensure total pollutant loading is not having a negative effect on the reservoir and downstream (10 CSR 20-7.031(4)), it is important to monitor the intake for the same pollutant.

Copper
Many wastewater outfalls contain limits or monitoring for this pollutant. To gather information about the reservoir, and to ensure total pollutant loading is not having a negative effect on the reservoir and downstream (10 CSR 20-7.031(4)), it is important to monitor the intake for the same pollutant.

STORMWATER OUTFALLS #007, #009, #016, #017, #018, AND #019 – STORMWATER

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	QUARTERLY	24 HR. ESTIMATE
CONVENTIONAL							
COD	mg/L	**	120	SAME	ONCE/QUARTER	QUARTERLY	GRAB
OIL & GREASE	mg/L	**	10	SAME	ONCE/QUARTER	QUARTERLY	GRAB
PH †	SU	6.5 TO 9.0	-	SAME	ONCE/QUARTER	QUARTERLY	GRAB
TSS	mg/L	**	100	SAME	ONCE/QUARTER	QUARTERLY	GRAB
METALS							
ALUMINUM, TR	µg/L	**	1100	*	ONCE/QUARTER	QUARTERLY	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 volume of effluent discharged from each outfall is needed to ensure compliance with permitted effluent limitations. If the facility is unable to obtain effluent flow, then it is the responsibility of the facility to inform the Department, which may require the submittal of an operating permit modification. The facility will report the total flow in millions of gallons per day (MGD), quarterly monitoring continued from previous permit.

Outfall	Minimum	Maximum	Average
#007	0.002 MGD	0.138 MGD	0.065 MGD
#009	0.007 MGD	61 MGD	5.12 MGD
#016	0.206 MGD	1.63 MGD	0.87 MGD
#017	0.011 MGD	0.206 MGD	0.107 MGD
#018	0.003 MGD	0.03 MGD	0.014 MGD
#019	0.01 MGD	0.212 MGD	0.09 MGD

61 MGD at outfall #009 may be incorrect.

CONVENTIONAL:

Chemical Oxygen Demand (COD)

Monitoring with 120 mg/L daily maximum benchmark is included using the permit writer's best professional judgment and continued from the previous permit. There is no numeric 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 facility to identify increases in COD, which may indicate materials/chemicals coming into contact with stormwater causing an increase in oxygen demand. Increases in COD may indicate a need for maintenance or improvement of BMPs. The benchmark value falls within the range of values implemented in other permits having similar industrial activities and is achievable through proper BMP controls. Data obtained during the last permit term were generally favorable. Six data points were above the established benchmarks: outfall #007 at 168 mg/L; outfall #009 at 153 mg/L; outfall #016 at 150 and 201 mg/L; outfall #018 at 1197 mg/L; and outfall #019 at 1346 mg/L. One high exceedance of the established benchmark throughout the permit term is not necessarily cause for concern as the other data were below the benchmark. Outfall #016 is a conglomeration of stormwater and is also an overflow stormwater basin. Discharging conditions of outfall #016 have been identified as only during extremely high precipitation events.

Oil & Grease

Monitoring with a daily maximum benchmark of 10 mg/L included per the permit writer's best professional judgment and continued from the previous permit. Over the last permit term, the facility reported mostly non-detects; with 6 mg/L at outfalls #007, #009, #017, #018, and #019. Outfall ##007 had one 7 mg/L data point in the third quarter 2018. None of these data have reasonable potential to cause or contribute to narrative or numeric reasonable potential. 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 xylene, 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). Ten 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 facility 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. The benchmark this permit applies does not allow the facility to violate general criteria even if data provided are below the benchmark.

pH

6.5 to 9.0 SU. Previous permit indicated water quality limits were applicable to the stormwater outfalls. However, after review of the site, the items exposed to stormwater do not have reasonable potential to cause significant changes in the pH of the stormwater. These limits are maintained to conform to antibacksliding regulations; however, they are now considered a technology limit the facility is able to meet at all times. pH of stormwater is naturally variable and the facility reported from 6.98 to 8.8 SU at the outfalls. While pH is a fundamental water quality indicator, the stormwater at this site is not frequently manipulated by on-site activities. pH monitoring remains to ensure the Clean Water Act's (CWA) goal of 100% fishable and swimmable lakes, rivers, and streams.

Total Suspended Solids (TSS)

Monitoring with a daily maximum benchmark of 100 mg/L. 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 facility 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. The average of all values reported was 50 mg/L. The facility reported from non-detect to 598.4 mg/L. The highest data occurred at outfall #016 (598.4, 473.5, and 235 mg/L) outfall #007 (133 mg/L), and outfall #017 (129 mg/L). Outfall #016 has been evaluated in the past and continues to be the worst outfall of the stormwater outfalls. However, outfall #016 only discharges at the highest storm events causing solids entrainment, do not have reasonable potential to contribute to the TSS of the reservoir because at the time of discharge from the outfall, the reservoir is receiving stormwater from the entire stormwatershed at a much higher rate. Data from the last permit term for outfall #016 indicate improvements have occurred, the TSS prior to the last renewal maximum was 1560 mg/L.

Outfall	Minimum	Maximum	Average
#007	0.4	65.8	24.4
#009	5.3	80.7	25
#016	84.8	598.4	300
#017	2	294.6	65.3
#018	2.4	94.9	26.2
#019	4.6	19.3	9.7

METALS:

Aluminum, Total Recoverable

Aluminum monitoring was implemented in the last renewal based on application information. Over the permit term, data was supplied and ranged from non-detect to 17,500 µg/L. Overall average was 1264 µg/L.

Outfall	Minimum	Maximum	Average	No Discharge
#007	10	5170	679	0
#009	83	2790	555	0
#016	2100	17500	8258	about ½ of the quarters
#017	1.23	4030	1236	1 during last permit term

#018	48	2270	631	0
#019	8	626	199	0

These outfalls need a benchmark to ensure the facility is taking greater steps to reduce aluminum in the stormwater. Outfalls #016 and #017 may require more in-depth study of the components in the stormwater than the other outfalls. While aluminum is found in clay soils, the discharges from outfall #016 is predominately from the plant proper, where there are little contact with soils. For the rest of the outfalls, additional vegetative buffers or rip rap may reduce contact with native soils, or other

The permit writer chose a benchmark of 1100 µg/L based on the National Research Council (NRC), National Academies of Sciences, (NAS) Industrial Stormwater Study (ISS) for the EPA. While Missouri's effluent limits for wastewater have the acute standard of 750, the permit writer may utilize the ISS value because only stormwater was reviewed under the study. See *Improving the EPA Multi-Sector General Permit for Industrial Stormwater Discharges* (2019). Given the proposed benchmark of 1100 µg/L, the facility will have approximately 80% compliance rate without any changes, as only 14 measurements were above 1100 µg/L. Per the benchmark conditions listed in the permit, the facility need only make progress toward meeting the numeric benchmark, and is not required to immediately meet the numeric benchmark. Compliance is based on the steps the facility takes to meet the numeric benchmark. The facility is required to supply the SWPPP, and all CARs for review under the next renewal. See Special Condition "Renewal Application Requirements".

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. The proposed determinations are tentative pending public comment.

PUBLIC NOTICE:
The Department shall give public notice a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in or with 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 facility must be notified of the denial in writing. http://dnr.mo.gov/env/wpp/permits/pn/index.html The Department must issue public notice of a pending operating 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 wishing to submit comments regarding this proposed operating permit, 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. All comments must be in written form.

- ✓ The Public Notice period for this operating permit started August 5, 2022 and ended September 5, 2022.
  - On August 19, 2022, the facility supplied reasonable information and further analysis of the draft iron limit at outfall #005. The data used to determine initial compliance with the new WQBEL, while accurate, was incomplete. Further wastewater analysis indicates that iron cannot be met immediately in the wastewater therefore an SOC is supplied for iron. The total recoverable iron SOC at outfall #005 was matched to the copper SOC; the treatment for these metals is expected to be similar, if not the same. This change conforms to requirements pursuant to 40 CFR 122.21(m)(3).
  - On August 31, 2022, the EPA indicated:
    - The heading on Table A-7 was incorrect. The heading erroneously referred to Table A-7 as the final limits.
      - The heading was changed to indicate the final limits for outfall #005 are found on Table A-8 instead.
    - The permit shield language (special condition #13) could be misinterpreted as applying to all state and federal laws, i.e., that compliance with this permit meant compliance with all other applicable laws
      - The permit shield text was also revised to address EPA's concerns.
    - It was unclear whether this permit is attempting to implement the CCR regulations.
      - The Department has not determined applicability of the CCR regulations nor made any decisions with respect to storage or disposal of CCR in this permit, because any such activity is regulated by 40 CFR Part 257. The Department is not allowed or required to make any determinations for 40 CFR Part 257; these are self-implementing federal regulations, for which Missouri does not have a delegated program.
    - Permit limits became less stringent.
      - See edits in the antibacksliding section.

DATE OF FACT SHEET: OCTOBER 28, 2022

COMPLETED BY:
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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.

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

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

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

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

1. REASON FOR APPLICATION:

☑ a. This facility is now in operation under Missouri State Operating Permit (permit) MO – 0097675, 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	
THOMAS HILL ENERGY CENTER - POWER DIVISION		660-261-4211	
ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE
5693 HIGHWAY F.	CLIFTON HILL	MO	65244

3. OWNER

NAME		TELEPHONE NUMBER WITH AREA CODE	
ASSOCIATED ELECTRIC COOPERATIVE, INC.		417-881-1204	
EMAIL ADDRESS			
RBENNETT@ ACI.ORG			
ADDRESS (MAILING)	CITY	STATE	ZIP CODE
2814 SOUTH GOLDEN	SPRINGFIELD	MO	65801

4. CONTINUING AUTHORITY

NAME		TELEPHONE NUMBER WITH AREA CODE	
ASSOCIATED ELECTRIC COOPERATIVE, INC.		417-881-1204	
EMAIL ADDRESS			
RBENNETT@ ACI.ORG			
ADDRESS (MAILING)	CITY	STATE	ZIP CODE
2814 SOUTH GOLDEN	SPRINGFIELD	MO	65801

5. OPERATOR CERTIFICATION

NAME	CERTIFICATE NUMBER	TELEPHONE NUMBER WITH AREA CODE	
N/A			
ADDRESS (MAILING)	CITY	STATE	ZIP CODE

6. FACILITY CONTACT

NAME	TITLE	TELEPHONE NUMBER WITH AREA CODE
BENJAMIN GUTZ	S&E SPECIALIST	660-261-3254
E-MAIL ADDRESS		
BGUTZ@ AECI.ORG		

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

NAME			
TAYLOR, MARK C & SONIA L			
ADDRESS	CITY	STATE	ZIP CODE
10101 SOUTHWOOD DR	ROLLA	MO	65401

8. ADDITIONAL FACILITY INFORMATION

8.1 Legal Description of Outfalls. (Attach additional sheets if necessary.) **SEE ATTACHMENT**

For Universal Transverse Mercator (UTM), use Zone 15 North referenced to North American Datum 1983 (NAD83)

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

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

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

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

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

Primary SIC _____ and NAICS **SEE ATTACHMENT** SIC _____ and NAICS _____
SIC _____ and NAICS _____ SIC _____ and NAICS _____

9. ADDITIONAL FORMS AND MAPS NECESSARY TO COMPLETE THIS APPLICATION

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

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

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

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

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

F. Do you use cooling water in your operations at this facility? YES ☑ NO ☐
If yes, please indicate the source of the water: Thomas Hill Reservoir

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
Ken Wilmot - Senior Vice President & Chief Operations Officer	417-881-1204
SIGNATURE DocuSigned by: [signature] 5437A24BC42C...	DATE SIGNED 12/17/2020

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

Thomas Hill Energy Center

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

MO-0097675

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

N/A

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.

Thomas Hill Energy Center is a coal-fired power plant located in the town of Clifton Hill, in Randolph County, Missouri and is located on the southeastern shore of the Thomas Hill Reservoir. The Thomas Hill Energy Center is owned and operated by Associated Electric Cooperative, Inc. The facility has a total of 18 active outfalls; several non-industrially exposed outfalls also exist. The water used by AECI, Thomas Hill Energy Center is obtained from the Thomas Hill Reservoir. The largest part of the water utilized by this facility is used for heat transfer and is discharged back into the reservoir. Thermal discharges to the reservoir are exempted by rule. The remaining water that is discharged from the facility is for boiler water replacement, conveyance of slag and bottom ash, cleaning, human consumption, and sanitation.

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
	SEE ATTACHMENT			

Attach additional pages if necessary.

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 423.11 Subpart(s) _____ ☐ No *(go to section 2.5)*

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.

N/A

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)
	SEE ATTACHMENT		

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.

See facility annual WET testing results.

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)*
Inovatia Laboratories, LLC	120 E Davis St, Fayette, MO 65248	(660) 248-1911	**SEE ATTACHMENT**

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
			SEE ATTACHMENT

4.2 STORMWATER FLOWS
Provide the date of sampling with the flows, and how the flows were estimated.

SEE ATTACHMENT

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
Ken Wilmot - Senior Vice President & Chief Operations Officer	417-881-1204
SIGNATURE (SEE INSTRUCTIONS) DocuSigned by: A2D5437A24BC42C...	DATE SIGNED 12/17/2020

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. INTAKE

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)	<2						1	mg/L	
B. Chemical Oxygen Demand (COD)	<25						1	mg/L	
C. Total Organic Carbon (TOC)	6.41						1	mg/L	
D. Total Suspended Solids (TSS)	12.2						1	mg/L	
E. Ammonia as N	<0.1						1	mg/L	
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 8.14		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. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)	x		MINIMUM 80		MINIMUM		MINIMUM		1	mg/L	
B. Bromide (24959-67-9)		x	<0.500						1	mg/L	
C. Chloride (16887-00-6)	x		4.34						1	mg/L	
D. Chlorine, Total Residual	x		0.06						1	mg/L	
E. Color	x		30						1	mg/L	
F. Conductivity	x		244						1	us/cm	
F. Cyanide, Amenable to Chlorination		x	<0.02						1	mg/L	

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	<1						1	MPN/100m	
H. Fluoride (16984-48-8)	X		0.119						1	mg/L	
I. Nitrate plus Nitrate *(as N)*		X	<0.2						1	mg/L	
J. Kjeldahl, Total (as N)		X	<0.500						1	mg/L	
K. Nitrogen, Total Organic *(as N)*		X	<0.500						1	mg/L	
L. Oil and Grease		X	<5						1	mg/L	
M. Phenols, Total		X	<0.050						1	mg/L	
N. Phosphorus *(as P)*, Total (7723-14-0)		X	<0.500						1	mg/L	
O. Sulfate *(as SO^4)* (14808-79-8)	X		42.9						1	mg/L	
P. Sulfide *(as S)*		X	<1.00						1	mg/L	
Q. Sulfite (as SO^3) (14265-45-3)											
R. Surfactants	X		0.16						1	mg/L	
S. Trihalomethanes, Total		X	<0.005						1	mg/L	
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X		0.22						1	mg/L	
2M. Antimony, Total Recoverable (7440-36-9)		X	<0.008						1	mg/L	
3M. Arsenic, Total Recoverable (7440-38-2)		X	<0.008						1	mg/L	
4M. Barium, Total Recoverable (7440-39-3)	X		0.049						1	mg/L	
5M. Beryllium, Total Recoverable (7440-41-7)		X	<0.008						1	mg/L	
6M. Boron, Total Recoverable (7440-42-8)		X	<0.025						1	mg/L	
7M. Cadmium, Total Recoverable (7440-43-9)		X	<0.008						1	mg/L	
8M. Chromium III Total Recoverable (16065-83-1)		X	<0.025						1	mg/L	
9M. Chromium VI, Dissolved (18540-29-9)		X	<0.025						1	mg/L	
10M. Cobalt, Total Recoverable (7440-48-4)		X	<0.008						1	mg/L	

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		0.008						1	mg/L	
12M. Iron, Total Recoverable (7439-89-6)	X		0.487						1	mg/L	
13M. Lead, Total Recoverable (7439-92-1)		X	<0.008						1	mg/L	
14M. Magnesium, Total Recoverable (7439-95-4)	X		6.65						1	mg/L	
15M. Manganese, Total Recoverable (7439-96-5)	X		0.079						1	mg/L	
16M. Mercury, Total Recoverable (7439-97-6)		X	<0.0002						1	mg/L	
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)		X	<0.008						1	mg/L	
19M. Nickel, Total Recoverable (7440-02-0)		X	<0.008						1	mg/L	
20M. Selenium, Total Recoverable (7782-49-2)	X		0.010						1	mg/L	
21M. Silver, Total Recoverable (7440-22-4)		X	<0.008						1	mg/L	
22M. Thallium, Total Recoverable (7440-28-0)		X	<0.008						1	mg/L	
23M. Tin, Total Recoverable (7440-31-5)		X	<0.050						1	mg/L	
24M. Titanium, Total Recoverable (7440-32-6)		X	<0.020						1	mg/L	
25M. Zinc, Total Recoverable (7440-66-6)	X		0.008						1	mg/L	
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. 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)	<2						1	mg/L	
B. Chemical Oxygen Demand (COD)	<25						1	mg/L	
C. Total Organic Carbon (TOC)	5.21						1	mg/L	
D. Total Suspended Solids (TSS)	10.0						1	mg/L	
E. Ammonia as N	<0.1						1	mg/L	
F. Flow	VALUE 2.32		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 8.19		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. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)	x		MINIMUM 83		MINIMUM		MINIMUM		1	mg/L	
B. Bromide (24959-67-9)		x	<0.500						1	mg/L	
C. Chloride (16887-00-6)	x		4.69						1	mg/L	
D. Chlorine, Total Residual	x		0.03						1	mg/L	
E. Color		x	26						1	units	
F. Conductivity	x		283						1	us/cm	
F. Cyanide, Amenable to Chlorination		x	<0.02						1	mg/L	

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		3						1	MON/100m	
H. Fluoride (16984-48-8)	X		0.198						1	mg/L	
I. Nitrate plus Nitrate *(as N)*		X	<0.2						1	mg/L	
J. Kjeldahl, Total (as N)	X		0.564						1	mg/L	
K. Nitrogen, Total Organic *(as N)*	X		0.564						1	mg/L	
L. Oil and Grease		X	<6						1	mg/L	
M. Phenols, Total		X	<0.050						1	mg/L	
N. Phosphorus *(as P)*, Total (7723-14-0)		X	<0.500						1	mg/L	
O. Sulfate *(as SO^4)* (14808-79-8)	X		53.3						1	mg/L	
P. Sulfide *(as S)*		X	<1.00						1	mg/L	
Q. Sulfite (as SO^3) (14265-45-3)		X									
R. Surfactants		X	<0.04						1	mg/L	
S. Trihalomethanes, Total		X	<0.005						1	mg/L	
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X		0.497						1	mg/L	
2M. Antimony, Total Recoverable (7440-36-9)		X	<0.008						1	mg/L	
3M. Arsenic, Total Recoverable (7440-38-2)		X	<0.008						1	mg/L	
4M. Barium, Total Recoverable (7440-39-3)	X		0.088						1	mg/L	
5M. Beryllium, Total Recoverable (7440-41-7)		X	<0.008						1	mg/L	
6M. Boron, Total Recoverable (7440-42-8)	X		0.042						1	mg/L	
7M. Cadmium, Total Recoverable (7440-43-9)		X	<0.008						1	mg/L	
8M. Chromium III Total Recoverable (16065-83-1)		X	<0.025						1	mg/L	
9M. Chromium VI, Dissolved (18540-29-9)		X	<0.025						1	mg/L	
10M. Cobalt, Total Recoverable (7440-48-4)		X	<0.008						1	mg/L	

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	<0.008						1	mg/L	
12M. Iron, Total Recoverable (7439-89-6)	x		0.421						1	mg/L	
13M. Lead, Total Recoverable (7439-92-1)		x	<0.008						1	mg/L	
14M. Magnesium, Total Recoverable (7439-95-4)	x		6.92						1	mg/L	
15M. Manganese, Total Recoverable (7439-96-5)	x		0.027						1	mg/L	
16M. Mercury, Total Recoverable (7439-97-6)		x	<0.0002						1	mg/L	
17M. Methylmercury (22967926)		x									
18M. Molybdenum, Total Recoverable (7439-98-7)		x	<0.008						1	mg/L	
19M. Nickel, Total Recoverable (7440-02-0)		x	<0.008						1	mg/L	
20M. Selenium, Total Recoverable (7782-49-2)		x	<0.008						1	mg/L	
21M. Silver, Total Recoverable (7440-22-4)		x	<0.008						1	mg/L	
22M. Thallium, Total Recoverable (7440-28-0)		x	<0.008						1	mg/L	
23M. Tin, Total Recoverable (7440-31-5)		x	<0.050						1	mg/L	
24M. Titanium, Total Recoverable (7440-32-6)		x	<0.020						1	mg/L	
25M. Zinc, Total Recoverable (7440-66-6)		x	<0.008						1	mg/L	
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							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)	<2						1	mg/L	
B. Chemical Oxygen Demand (COD)	<25						1	mg/L	
C. Total Organic Carbon (TOC)	5.46						1	mg/L	
D. Total Suspended Solids (TSS)	8.6						1	mg/L	
E. Ammonia as N	<0.1						1	mg/L	
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 8.43		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 74		MINIMUM		MINIMUM		1	mg/L	
B. Bromide (24959-67-9)		X	<0.500						1	mg/L	
C. Chloride (16887-00-6)	X		4.38						1	mg/L	
D. Chlorine, Total Residual	X		0.06						1	mg/L	
E. Color		X	35						1	units	
F. Conductivity	X		223						1	us/cm	
F. Cyanide, Amenable to Chlorination		X	<0.02						1	mg/L	

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	<1						1	MPM/100m	
H. Fluoride (16984-48-8)	X		0.155						1	mg/L	
I. Nitrate plus Nitrate *(as N)*			<0.2						1	mg/L	
J. Kjeldahl, Total (as N)		X	0.500						1	mg/L	
K. Nitrogen, Total Organic *(as N)*		X	0.500						1	mg/L	
L. Oil and Grease		X	<5						1	mg/L	
M. Phenols, Total		X	<0.050						1	mg/L	
N. Phosphorus *(as P)*, Total (7723-14-0)		X	<0.500						1	mg/L	
O. Sulfate *(as SO^4)* (14808-79-8)	X		43						1	mg/L	
P. Sulfide *(as S)*		X	<1.00						1	mg/L	
Q. Sulfite (as SO^3) (14265-45-3)		X									
R. Surfactants		X	<0.04						1	mg/L	
S. Trihalomethanes, Total		X	<0.005						1	mg/L	
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X		0.177						1	mg/L	
2M. Antimony, Total Recoverable (7440-36-9)		X	<0.008						1	mg/L	
3M. Arsenic, Total Recoverable (7440-38-2)		X	<0.008						1	mg/L	
4M. Barium, Total Recoverable (7440-39-3)	X		0.047						1	mg/L	
5M. Beryllium, Total Recoverable (7440-41-7)		X	<0.008						1	mg/L	
6M. Boron, Total Recoverable (7440-42-8)	X		0.030						1	mg/L	
7M. Cadmium, Total Recoverable (7440-43-9)		X	<0.008						1	mg/L	
8M. Chromium III Total Recoverable (16065-83-1)		X	<0.025						1	mg/L	
9M. Chromium VI, Dissolved (18540-29-9)		X	<0.025						1	mg/L	
10M. Cobalt, Total Recoverable (7440-48-4)		X	<0.008						1	mg/L	

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		0.009						1	mg/L	
12M. Iron, Total Recoverable (7439-89-6)	x		0.394						1	mg/L	
13M. Lead, Total Recoverable (7439-92-1)		x	<0.008						1	mg/L	
14M. Magnesium, Total Recoverable (7439-95-4)	x		6.55						1	mg/L	
15M. Manganese, Total Recoverable (7439-96-5)	x		0.043						1	mg/L	
16M. Mercury, Total Recoverable (7439-97-6)		x	<0.0002						1	mg/L	
17M. Methylmercury (22967926)		x									
18M. Molybdenum, Total Recoverable (7439-98-7)		x	<0.008						1	mg/L	
19M. Nickel, Total Recoverable (7440-02-0)		x	<0.008						1	mg/L	
20M. Selenium, Total Recoverable (7782-49-2)		x	<0.008						1	mg/L	
21M. Silver, Total Recoverable (7440-22-4)		x	<0.008						1	mg/L	
22M. Thallium, Total Recoverable (7440-28-0)		x	<0.008						1	mg/L	
23M. Tin, Total Recoverable (7440-31-5)		x	<0.050						1	mg/L	
24M. Titanium, Total Recoverable (7440-32-6)		x	<0.020						1	mg/L	
25M. Zinc, Total Recoverable (7440-66-6)		x	<0.008						1	mg/L	
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)	<2						1	mg/L	
B. Chemical Oxygen Demand (COD)	<25						1	mg/L	
C. Total Organic Carbon (TOC)	6.62						1	mg/L	
D. Total Suspended Solids (TSS)	21.8						1	mg/L	
E. Ammonia as N	<0.1						1	mg/L	
F. Flow	VALUE 0.079		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 7.21		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. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)	X		MINIMUM 24		MINIMUM		MINIMUM		1	mg/L	
B. Bromide (24959-67-9)		X	<0.500						1	mg/L	
C. Chloride (16887-00-6)	X		20.9						1	mg/L	
D. Chlorine, Total Residual		X	<0.05						1	mg/L	
E. Color		X	22						1	units	
F. Conductivity	X		1245						1	us/cm	
F. Cyanide, Amenable to Chlorination		X	<0.02						1	mg/L	

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		5						1	mg/L	
H. Fluoride (16984-48-8)	X		0.432						1	mg/L	
I. Nitrate plus Nitrate *(as N)*	X		0.402						1	mg/L	
J. Kjeldahl, Total (as N)	X		1.17						1	mg/L	
K. Nitrogen, Total Organic *(as N)*	X		1.17						1	mg/L	
L. Oil and Grease		X	<5						1	mg/L	
M. Phenols, Total		X	<0.050						1	mg/L	
N. Phosphorus *(as P)*, Total (7723-14-0)		X	<0.500						1	mg/L	
O. Sulfate *(as SO^4)* (14808-79-8)	X		630						1	mg/L	
P. Sulfide *(as S)*		X	<1.00						1	mg/L	
Q. Sulfite (as SO^3) (14265-45-3)		X									
R. Surfactants	X		0.06						1	mg/L	
S. Trihalomethanes, Total		X	<0.005						1	mg/L	
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X		0.112						1	mg/L	
2M. Antimony, Total Recoverable (7440-36-9)		X	<0.008						1	mg/L	
3M. Arsenic, Total Recoverable (7440-38-2)		X	<0.008						1	mg/L	
4M. Barium, Total Recoverable (7440-39-3)	X		0.058						1	mg/L	
5M. Beryllium, Total Recoverable (7440-41-7)		X	<0.008						1	mg/L	
6M. Boron, Total Recoverable (7440-42-8)	X		0.068						1	mg/L	
7M. Cadmium, Total Recoverable (7440-43-9)		X	<0.008						1	mg/L	
8M. Chromium III Total Recoverable (16065-83-1)		X	<0.025						1	mg/L	
9M. Chromium VI, Dissolved (18540-29-9)		X	<0.025						1	mg/L	
10M. Cobalt, Total Recoverable (7440-48-4)		X	<0.008						1	mg/L	

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		0.014						1	mg/L	
12M. Iron, Total Recoverable (7439-89-6)	X		0.793						1	mg/L	
13M. Lead, Total Recoverable (7439-92-1)		X	<0.008						1	mg/L	
14M. Magnesium, Total Recoverable (7439-95-4)	X		4.22						1	mg/L	
15M. Manganese, Total Recoverable (7439-96-5)		X	<0.020						1	mg/L	
16M. Mercury, Total Recoverable (7439-97-6)		X	<0.0002						1	mg/L	
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)		X	<0.008						1	mg/L	
19M. Nickel, Total Recoverable (7440-02-0)		X	<0.008						1	mg/L	
20M. Selenium, Total Recoverable (7782-49-2)		X	<0.008						1	mg/L	
21M. Silver, Total Recoverable (7440-22-4)		X	<0.008						1	mg/L	
22M. Thallium, Total Recoverable (7440-28-0)		X	<0.008						1	mg/L	
23M. Tin, Total Recoverable (7440-31-5)		X	<0.050						1	mg/L	
24M. Titanium, Total Recoverable (7440-32-6)		S	<0.020						1	mg/L	
25M. Zinc, Total Recoverable (7440-66-6)	X		0.008						1	mg/L	
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)	2						1	mg/L	
B. Chemical Oxygen Demand (COD)	29						1	mg/L	
C. Total Organic Carbon (TOC)	5.37						1	mg/L	
D. Total Suspended Solids (TSS)	3.0						1	mg/L	
E. Ammonia as N	<0.1						1	mg/L	
F. Flow	VALUE 0.039		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 7.00		MAXIMUM		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. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)	X		MINIMUM 106		MINIMUM		MINIMUM		1	mg/L	
B. Bromide (24959-67-9)		X	<0.100						1	mg/L	
C. Chloride (16887-00-6)	X		25.5						1	mg/L	
D. Chlorine, Total Residual		X	<0.05						1	mg/L	
E. Color	X		27						1	mg/L	
F. Conductivity	X		589						1	us/cm	
F. Cyanide, Amenable to Chlorination		X	<0.02						1	mg/L	

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		>2420						1	MPN/100m	
H. Fluoride (16984-48-8)	X		0.268						1	mg/L	
I. Nitrate plus Nitrate *(as N)*	X		4.15						1	mg/L	
J. Kjeldahl, Total (as N)	X		1.07						1	mg/L	
K. Nitrogen, Total Organic *(as N)*	X		1.07						1	mg/L	
L. Oil and Grease		X	<5						1	mg/L	
M. Phenols, Total		X	<0.050						1	mg/L	
N. Phosphorus *(as P)*, Total (7723-14-0)		X	<0.500						1	mg/L	
O. Sulfate *(as SO^4)* (14808-79-8)	X		63.1						1	mg/L	
P. Sulfide *(as S)*		X	<1.00						1	mg/L	
Q. Sulfite (as SO^3) (14265-45-3)		X									
R. Surfactants	X		0.14						1	mg/L	
S. Trihalomethanes, Total		X	<0.005						1	mg/L	
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)		X	<0.060						1	mg/L	
2M. Antimony, Total Recoverable (7440-36-9)	X		0.008						1	mg/L	
3M. Arsenic, Total Recoverable (7440-38-2)		X	<0.008						1	mg/L	
4M. Barium, Total Recoverable (7440-39-3)	X		0.108						1	mg/L	
5M. Beryllium, Total Recoverable (7440-41-7)		X	<0.008						1	mg/L	
6M. Boron, Total Recoverable (7440-42-8)	X		0.096						1	mg/L	
7M. Cadmium, Total Recoverable (7440-43-9)		X	<0.008						1	mg/L	
8M. Chromium III Total Recoverable (16065-83-1)		X	<0.025						1	mg/L	
9M. Chromium VI, Dissolved (18540-29-9)		X	<0.025						1	mg/L	
10M. Cobalt, Total Recoverable (7440-48-4)		X	<0.008						1	mg/L	

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	<0.008						1	mg/L	
12M. Iron, Total Recoverable (7439-89-6)	X		0.264						1	mg/L	
13M. Lead, Total Recoverable (7439-92-1)		X	<0.008						1	mg/L	
14M. Magnesium, Total Recoverable (7439-95-4)	X		19.1						1	mg/L	
15M. Manganese, Total Recoverable (7439-96-5)		X	<0.020						1	mg/L	
16M. Mercury, Total Recoverable (7439-97-6)		X	<0.0002						1	mg/L	
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)		X	<0.008						1	mg/L	
19M. Nickel, Total Recoverable (7440-02-0)		X	<0.008						1	mg/L	
20M. Selenium, Total Recoverable (7782-49-2)		X	<0.008						1	mg/L	
21M. Silver, Total Recoverable (7440-22-4)		X	<0.008						1	mg/L	
22M. Thallium, Total Recoverable (7440-28-0)		X	<0.008						1	mg/L	
23M. Tin, Total Recoverable (7440-31-5)		X	<0.050						1	mg/L	
24M. Titanium, Total Recoverable (7440-32-6)		X	<0.020						1	mg/L	
25M. Zinc, Total Recoverable (7440-66-6)		X	<0.008						1	mg/L	
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. 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)	<2						1	mg/L	
B. Chemical Oxygen Demand (COD)	<25						1	mg/L	
C. Total Organic Carbon (TOC)	4.31						1	mg/L	
D. Total Suspended Solids (TSS)	2.8						1	mg/L	
E. Ammonia as N	<0.1						1	mg/L	
F. Flow	VALUE 0.016		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 8.77		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 125		MINIMUM		MINIMUM		1	mg/L	
B. Bromide (24959-67-9)		x	<0.500						1	mg/L	
C. Chloride (16887-00-6)	x		16.3						1	mg/L	
D. Chlorine, Total Residual	x		<0.05						1	mg/L	
E. Color		x	7						1	Units	
F. Conductivity	x		379						1	us/cm	
F. Cyanide, Amenable to Chlorination		x	<0.02						1	mg/L	

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		1						1	mg/L	
H. Fluoride (16984-48-8)	x		0.230						1	mg/L	
I. Nitrate plus Nitrate *(as N)*		x	<0.2						1	mg/L	
J. Kjeldahl, Total (as N)	x		0.588						1	mg/L	
K. Nitrogen, Total Organic *(as N)*	x		0.588						1	mg/L	
L. Oil and Grease		x	<5						1	mg/L	
M. Phenols, Total		x	<0.050						1	mg/L	
N. Phosphorus *(as P)*, Total (7723-14-0)		x	<0.500						1	mg/L	
O. Sulfate *(as SO^4)* (14808-79-8)	x		70.9						1	mg/L	
P. Sulfide *(as S)*		x	<1.00						1	mg/L	
Q. Sulfite (as SO^3) (14265-45-3)		x									
R. Surfactants	x		0.04						1	mg/L	
S. Trihalomethanes, Total		x	<0.005						1	mg/L	
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	x		0.074						1	mg/L	
2M. Antimony, Total Recoverable (7440-36-9)		x	<0.008						1	mg/L	
3M. Arsenic, Total Recoverable (7440-38-2)		x	<0.008						1	mg/L	
4M. Barium, Total Recoverable (7440-39-3)	x		0.133						1	mg/L	
5M. Beryllium, Total Recoverable (7440-41-7)		x	<0.008						1	mg/L	
6M. Boron, Total Recoverable (7440-42-8)	x		0.069						1	mg/L	
7M. Cadmium, Total Recoverable (7440-43-9)		x	<0.008						1	mg/L	
8M. Chromium III Total Recoverable (16065-83-1)		x	<0.025						1	mg/L	
9M. Chromium VI, Dissolved (18540-29-9)		x	<0.025						1	mg/L	
10M. Cobalt, Total Recoverable (7440-48-4)		x	<0.008						1	mg/L	

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	<0.008						1	mg/L	
12M. Iron, Total Recoverable (7439-89-6)	x		0.273						1	mg/L	
13M. Lead, Total Recoverable (7439-92-1)	x		0.273						1	mg/L	
14M. Magnesium, Total Recoverable (7439-95-4)	x		12.2						1	mg/L	
15M. Manganese, Total Recoverable (7439-96-5)		x	<0.020						1	mg/L	
16M. Mercury, Total Recoverable (7439-97-6)		x	<0.0002						1	mg/L	
17M. Methylmercury (22967926)		x									
18M. Molybdenum, Total Recoverable (7439-98-7)		x	<0.008						1	mg/L	
19M. Nickel, Total Recoverable (7440-02-0)		x	<0.008						1	mg/L	
20M. Selenium, Total Recoverable (7782-49-2)		x	<0.008						1	mg/L	
21M. Silver, Total Recoverable (7440-22-4)		x	<0.008						1	mg/L	
22M. Thallium, Total Recoverable (7440-28-0)		x	<0.008						1	mg/L	
23M. Tin, Total Recoverable (7440-31-5)		x	<0.050						1	mg/L	
24M. Titanium, Total Recoverable (7440-32-6)		x	<0.020						1	mg/L	
25M. Zinc, Total Recoverable (7440-66-6)	x		0.008						1	mg/L	
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. 009

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)	<2						1	mg/L	
B. Chemical Oxygen Demand (COD)	27						1	mg/L	
C. Total Organic Carbon (TOC)	4.40						1	mg/L	
D. Total Suspended Solids (TSS)	41								
E. Ammonia as N									
F. Flow	VALUE 0.028		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 7.17		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. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)	x		MINIMUM 142		MINIMUM		MINIMUM		1	mgCaCO3/	
B. Bromide (24959-67-9)		x	<0.100						1	mg/L	
C. Chloride (16887-00-6)	x		45.6						1	mg/L	
D. Chlorine, Total Residual		x	<0.05						1	mg/L	
E. Color	x		30						1	units	
F. Conductivity											
F. Cyanide, Amenable to Chlorination		x	<0.02						1	mg/L	

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		0.171						1	mg/L	
I. Nitrate plus Nitrate *(as N)*	X		4.08						1	mg/L	
J. Kjeldahl, Total (as N)	X		0.552						1	mg/L	
K. Nitrogen, Total Organic *(as N)*	X		0.552						1	mg/L	
L. Oil and Grease		X	<5						1	mg/L	
M. Phenols, Total		X	<0.050						1	mg/L	
N. Phosphorus *(as P)*, Total (7723-14-0)		X	<0.500						1	mg/L	
O. Sulfate *(as SO^4)* (14808-79-8)	X		49.7						1	mg/L	
P. Sulfide *(as S)*		X	<1.00						1	mg/L	
Q. Sulfite (as SO^3) (14265-45-3)		X									
R. Surfactants	X		0.09						1	mg/L	
S. Trihalomethanes, Total		X	<0.005						1	mg/L	
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X		0.325						1	mg/L	
2M. Antimony, Total Recoverable (7440-36-9)		X	<0.008						1	mg/L	
3M. Arsenic, Total Recoverable (7440-38-2)		X	<0.008						1	mg/L	
4M. Barium, Total Recoverable (7440-39-3)	X		0.064						1	mg/L	
5M. Beryllium, Total Recoverable (7440-41-7)		X	<0.008						1	mg/L	
6M. Boron, Total Recoverable (7440-42-8)	X		0.104						1	mg/L	
7M. Cadmium, Total Recoverable (7440-43-9)		X	<0.008						1	mg/L	
8M. Chromium III Total Recoverable (16065-83-1)		X	<0.025						1	mg/L	
9M. Chromium VI, Dissolved (18540-29-9)		X	<0.025						1	mg/L	
10M. Cobalt, Total Recoverable (7440-48-4)		X	<0.008						1	mg/L	

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	<0.008						1	mg/L	
12M. Iron, Total Recoverable (7439-89-6)	x		0.725						1	mg/L	
13M. Lead, Total Recoverable (7439-92-1)		x	<0.008						1	mg/L	
14M. Magnesium, Total Recoverable (7439-95-4)	x		9.68						1	mg/L	
15M. Manganese, Total Recoverable (7439-96-5)	x		0.025						1	mg/L	
16M. Mercury, Total Recoverable (7439-97-6)		x	<0.0005						1	mg/L	
17M. Methylmercury (22967926)		x									
18M. Molybdenum, Total Recoverable (7439-98-7)		x	<0.008						1	mg/L	
19M. Nickel, Total Recoverable (7440-02-0)		x	<0.008						1	mg/L	
20M. Selenium, Total Recoverable (7782-49-2)		x	<0.008						1	mg/L	
21M. Silver, Total Recoverable (7440-22-4)		x	<0.008						1	mg/L	
22M. Thallium, Total Recoverable (7440-28-0)		x	<0.008						1	mg/L	
23M. Tin, Total Recoverable (7440-31-5)		x	<0.050						1	mg/L	
24M. Titanium, Total Recoverable (7440-32-6)		x	<0.020						1	mg/L	
25M. Zinc, Total Recoverable (7440-66-6)		x	<0.008						1	mg/L	
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. 011

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)	<2						1	mg/L	
B. Chemical Oxygen Demand (COD)	<25						1	mg/L	
C. Total Organic Carbon (TOC)	4.96						1	mg/L	
D. Total Suspended Solids (TSS)	11.6						1	mg/L	
E. Ammonia as N	1.18						1	mg/L	
F. Flow	VALUE 0.698		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 7.65		MAXIMUM		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						D. NO. OF ANALYSES	4. UNITS	
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUES		C. LONG TERM AVERAGE VALUES			A. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)	X		MINIMUM 108		MINIMUM		MINIMUM		1	mg/L	
B. Bromide (24959-67-9)		X	<0.500						1	mg/L	
C. Chloride (16887-00-6)	X		6.08						1	mg/L	
D. Chlorine, Total Residual	X		<0.05						1	mg/L	
E. Color	X		12						1	units	
F. Conductivity	X		350						1	us/cm	
F. Cyanide, Amenable to Chlorination		X	<0.02						1	mg/L	

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		8						1	mg/L	
H. Fluoride (16984-48-8)	X		0.136						1	mg/L	
I. Nitrate plus Nitrate *(as N)*	X		0.688						1	mg/L	
J. Kjeldahl, Total (as N)	X		1.68						1	mg/L	
K. Nitrogen, Total Organic *(as N)*	X		0.500						1	mg/L	
L. Oil and Grease		X	<5						1	mg/L	
M. Phenols, Total		X	<0.050						1	mg/L	
N. Phosphorus *(as P)*, Total (7723-14-0)		X	<0.500						1	mg/L	
O. Sulfate *(as SO^4)* (14808-79-8)	X		52.5						1	mg/L	
P. Sulfide *(as S)*		X	<1.00						1	mg/L	
Q. Sulfite (as SO^3) (14265-45-3)		X									
R. Surfactants		X	<0.04						1	mg/L	
S. Trihalomethanes, Total		X	<0.005						1	mg/L	
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X		0.161						1	mg/L	
2M. Antimony, Total Recoverable (7440-36-9)		X	<0.008						1	mg/L	
3M. Arsenic, Total Recoverable (7440-38-2)		X	<0.008						1	mg/L	
4M. Barium, Total Recoverable (7440-39-3)	X		0.088						1	mg/L	
5M. Beryllium, Total Recoverable (7440-41-7)		X	<0.008						1	mg/L	
6M. Boron, Total Recoverable (7440-42-8)	X		0.079						1	mg/L	
7M. Cadmium, Total Recoverable (7440-43-9)		X	<0.008						1	mg/L	
8M. Chromium III Total Recoverable (16065-83-1)		X	<0.025						1	mg/L	
9M. Chromium VI, Dissolved (18540-29-9)		X	<0.025						1	mg/L	
10M. Cobalt, Total Recoverable (7440-48-4)		X	<0.008						1	mg/L	

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	<0.008						1	mg/L	
12M. Iron, Total Recoverable (7439-89-6)	x		1.29						1	mg/L	
13M. Lead, Total Recoverable (7439-92-1)		x	<0.008						1	mg/L	
14M. Magnesium, Total Recoverable (7439-95-4)	x		10.9						1	mg/L	
15M. Manganese, Total Recoverable (7439-96-5)	x		0.029						1	mg/L	
16M. Mercury, Total Recoverable (7439-97-6)		x	<0.0002						1	mg/L	
17M. Methylmercury (22967926)		x									
18M. Molybdenum, Total Recoverable (7439-98-7)		x	<0.008						1	mg/L	
19M. Nickel, Total Recoverable (7440-02-0)		x	<0.008						1	mg/L	
20M. Selenium, Total Recoverable (7782-49-2)		x	<0.008						1	mg/L	
21M. Silver, Total Recoverable (7440-22-4)		x	<0.008						1	mg/L	
22M. Thallium, Total Recoverable (7440-28-0)		x	<0.008						1	mg/L	
23M. Tin, Total Recoverable (7440-31-5)		x	<0.050						1	mg/L	
24M. Titanium, Total Recoverable (7440-32-6)		x	<0.020						1	mg/L	
25M. Zinc, Total Recoverable (7440-66-6)		x	<0.008						1	mg/L	
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. 014

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)	<2						1	mg/L	
B. Chemical Oxygen Demand (COD)	<25						1	mg/L	
C. Total Organic Carbon (TOC)	5.16						1	mg/L	
D. Total Suspended Solids (TSS)	11.8						1	mg/L	
E. Ammonia as N	<0.1						1	mg/L	
F. Flow	VALUE 0.850		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 7.41		MAXIMUM		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. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)	X		MINIMUM 79		MINIMUM		MINIMUM		1	mg/L	
B. Bromide (24959-67-9)		X	<0.500						1	mg/L	
C. Chloride (16887-00-6)	X		4.27						1	mg/L	
D. Chlorine, Total Residual	x		0.07						1	mg/L	
E. Color	X		15						1	units	
F. Conductivity	x		263						1	us/cm	
F. Cyanide, Amenable to Chlorination		X	<0.02						1	mg/L	

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		2						1	mg/L	
H. Fluoride (16984-48-8)	X		0.191						1	mg/L	
I. Nitrate plus Nitrate *(as N)*		X	<0.2						1	mg/L	
J. Kjeldahl, Total (as N)	X		0.723						1	mg/L	
K. Nitrogen, Total Organic *(as N)*	X		0.723						1	mg/L	
L. Oil and Grease		X	<5						1	mg/L	
M. Phenols, Total		X	<0.050						1	mg/L	
N. Phosphorus *(as P)*, Total (7723-14-0)		X	<0.500						1	mg/L	
O. Sulfate *(as SO^4)* (14808-79-8)	X		39.3						1	mg/L	
P. Sulfide *(as S)*		X	<1.00						1	mg/L	
Q. Sulfite (as SO^3) (14265-45-3)		X									
R. Surfactants		X	<0.04						1	mg/L	
S. Trihalomethanes, Total		X	<0.005						1	mg/L	
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X		0.225						1	mg/L	
2M. Antimony, Total Recoverable (7440-36-9)		X	<0.008						1	mg/L	
3M. Arsenic, Total Recoverable (7440-38-2)		X	<0.008						1	mg/L	
4M. Barium, Total Recoverable (7440-39-3)	X		0.049						1	mg/L	
5M. Beryllium, Total Recoverable (7440-41-7)		X	<0.008						1	mg/L	
6M. Boron, Total Recoverable (7440-42-8)		X	<0.025						1	mg/L	
7M. Cadmium, Total Recoverable (7440-43-9)		X	<0.008						1	mg/L	
8M. Chromium III Total Recoverable (16065-83-1)		X	<0.025						1	mg/L	
9M. Chromium VI, Dissolved (18540-29-9)		X	<0.025						1	mg/L	
10M. Cobalt, Total Recoverable (7440-48-4)		X	<0.008						1	mg/L	

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	<0.008						1	mg/L	
12M. Iron, Total Recoverable (7439-89-6)	X		0.490						1	mg/L	
13M. Lead, Total Recoverable (7439-92-1)		X	<0.008						1	mg/L	
14M. Magnesium, Total Recoverable (7439-95-4)	X		6.52						1	mg/L	
15M. Manganese, Total Recoverable (7439-96-5)	x		0.116						1	mg/L	
16M. Mercury, Total Recoverable (7439-97-6)		X	<0.0002						1	mg/L	
17M. Methylmercury (22967926)		x									
18M. Molybdenum, Total Recoverable (7439-98-7)		X	<0.008						1	mg/L	
19M. Nickel, Total Recoverable (7440-02-0)		X	<0.008						1	mg/L	
20M. Selenium, Total Recoverable (7782-49-2)		X	<0.008						1	mg/L	
21M. Silver, Total Recoverable (7440-22-4)		X	<0.008						1	mg/L	
22M. Thallium, Total Recoverable (7440-28-0)		X	<0.008						1	mg/L	
23M. Tin, Total Recoverable (7440-31-5)		X	<0.050						1	mg/L	
24M. Titanium, Total Recoverable (7440-32-6)		x	<0.020								
25M. Zinc, Total Recoverable (7440-66-6)		X	<0.008						1	mg/L	
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.
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FORM C TABLE 1 FOR 3.0 - ITEMS A AND B

EFFLUENT (AND INTAKE) CHARACTERISTICS THIS OUTFALL IS: OUTFALL NO. 017

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)	<2						1	mg/L	
B. Chemical Oxygen Demand (COD)	<25						1	mg/L	
C. Total Organic Carbon (TOC)	3.67						1	mg/L	
D. Total Suspended Solids (TSS)	26.2						1	mg/L	
E. Ammonia as N									
F. Flow	VALUE 0.072		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 7.65		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. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)	X		MINIMUM 142		MINIMUM		MINIMUM		1	mg/L	
B. Bromide (24959-67-9)		X	<0.100						1	mg/L	
C. Chloride (16887-00-6)	X		45.6						1	mg/L	
D. Chlorine, Total Residual		X									
E. Color	X		30						1	mg/L	
F. Conductivity											
F. Cyanide, Amenable to Chlorination		X	<0.02						1	mg/L	

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		0.155						1	mg/L	
I. Nitrate plus Nitrate *(as N)*	X		1.13						1	mg/L	
J. Kjeldahl, Total (as N)		X	<0.500						1	mg/L	
K. Nitrogen, Total Organic *(as N)*		X	<0.500						1	mg/L	
L. Oil and Grease		X	<5						1	mg/L	
M. Phenols, Total		X	<0.050						1	mg/L	
N. Phosphorus *(as P)*, Total (7723-14-0)		X	<0.500						1	mg/L	
O. Sulfate *(as SO^4)* (14808-79-8)	X		47.7						1	mg/L	
P. Sulfide *(as S)*		X	<1.00						1	mg/L	
Q. Sulfite (as SO^3) (14265-45-3)											
R. Surfactants	X		0.08						1	mg/L	
S. Trihalomethanes, Total		X	<0.005						1	mg/L	
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	X		0.104						1	mg/L	
2M. Antimony, Total Recoverable (7440-36-9)		X	<0.008						1	mg/L	
3M. Arsenic, Total Recoverable (7440-38-2)		X	<0.008						1	mg/L	
4M. Barium, Total Recoverable (7440-39-3)	X		0.070						1	mg/L	
5M. Beryllium, Total Recoverable (7440-41-7)		X	<0.008						1	mg/L	
6M. Boron, Total Recoverable (7440-42-8)	X		0.064						1	mg/L	
7M. Cadmium, Total Recoverable (7440-43-9)		X	<0.008						1	mg/L	
8M. Chromium III Total Recoverable (16065-83-1)		X	<0.025						1	mg/L	
9M. Chromium VI, Dissolved (18540-29-9)		X	<0.025						1	mg/L	
10M. Cobalt, Total Recoverable (7440-48-4)		X	<0.008						1	mg/L	

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	<0.008						1	mg/L	
12M. Iron, Total Recoverable (7439-89-6)	x		0.335						1	mg/L	
13M. Lead, Total Recoverable (7439-92-1)		x	<0.008						1	mg/L	
14M. Magnesium, Total Recoverable (7439-95-4)	x		9.43						1	mg/L	
15M. Manganese, Total Recoverable (7439-96-5)		x	<0.020						1	mg/L	
16M. Mercury, Total Recoverable (7439-97-6)		x	<0.0005						1	mg/L	
17M. Methylmercury (22967926)		x									
18M. Molybdenum, Total Recoverable (7439-98-7)		x	<0.008						1	mg/L	
19M. Nickel, Total Recoverable (7440-02-0)		x	<0.008						1	mg/L	
20M. Selenium, Total Recoverable (7782-49-2)		x	<0.008						1	mg/L	
21M. Silver, Total Recoverable (7440-22-4)		x	<0.008						1	mg/L	
22M. Thallium, Total Recoverable (7440-28-0)		x	<0.008						1	mg/L	
23M. Tin, Total Recoverable (7440-31-5)		x	<0.050						1	mg/L	
24M. Titanium, Total Recoverable (7440-32-6)		x	<0.020						1	mg/L	
25M. Zinc, Total Recoverable (7440-66-6)		x	<0.008						1	mg/L	
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. 018

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)	<2						1	mg/L	
B. Chemical Oxygen Demand (COD)	<25						1	mg/L	
C. Total Organic Carbon (TOC)	5.16						1	mg/L	
D. Total Suspended Solids (TSS)	16.8						1	mg/L	
E. Ammonia as N	<0.1						1	mg/L	
F. Flow	VALUE 0.011		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 6.98		MAXIMUM		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. CONCENTRATION	B. MASS
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS			
Subpart 1 – Conventional and Non-Conventional Pollutants											
A. Alkalinity ($CaCO_3$)	X		MINIMUM 79		MINIMUM		MINIMUM		1	mg/L	
B. Bromide (24959-67-9)		X	<0.500						1	mg/L	
C. Chloride (16887-00-6)	X		4.27						1	mg/L	
D. Chlorine, Total Residual		X	0.00						1	mg/L	
E. Color	X		15						1	mg/L	
F. Conductivity	X		388						1	us/cm	
F. Cyanide, Amenable to Chlorination		X	<0.02						1	mg/L	

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	<1						1	MPN/100m	
H. Fluoride (16984-48-8)	x		0.191						1	mg/L	
I. Nitrate plus Nitrate *(as N)*		x	<0.2						1	mg/L	
J. Kjeldahl, Total (as N)	x		0.723						1	mg/L	
K. Nitrogen, Total Organic *(as N)*	x		0.474						1	mg/L	
L. Oil and Grease		x	<5						1	mg/L	
M. Phenols, Total		x	<0.050						1	mg/L	
N. Phosphorus *(as P)*, Total (7723-14-0)		x	<0.500						1	mg/L	
O. Sulfate *(as SO^4)* (14808-79-8)	x		39.3						1	mg/L	
P. Sulfide *(as S)*		x	<1.00						1	mg/L	
Q. Sulfite (as SO^3) (14265-45-3)		x									
R. Surfactants		x	<0.04						1	mg/L	
S. Trihalomethanes, Total		x	<0.005						1	mg/L	
Subpart 2 – Metals											
1M. Aluminum, Total Recoverable (7429-90-5)	x		0.225						1	mg/L	
2M. Antimony, Total Recoverable (7440-36-9)		x	<0.008						1	mg/L	
3M. Arsenic, Total Recoverable (7440-38-2)		x	<0.008						1	mg/L	
4M. Barium, Total Recoverable (7440-39-3)	x		0.049						1	mg/L	
5M. Beryllium, Total Recoverable (7440-41-7)		x	<0.008						1	mg/L	
6M. Boron, Total Recoverable (7440-42-8)		x	<0.025						1	mg/L	
7M. Cadmium, Total Recoverable (7440-43-9)		x	<0.008						1	mg/L	
8M. Chromium III Total Recoverable (16065-83-1)		x	<0.025						1	mg/L	
9M. Chromium VI, Dissolved (18540-29-9)		x	<0.025						1	mg/L	
10M. Cobalt, Total Recoverable (7440-48-4)		x	<0.008						1	mg/L	

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	<0.008						1	mg/L	
12M. Iron, Total Recoverable (7439-89-6)	X		0.490						1	mg/L	
13M. Lead, Total Recoverable (7439-92-1)		X	<0.008						1	mg/L	
14M. Magnesium, Total Recoverable (7439-95-4)	X		6.52						1	mg/L	
15M. Manganese, Total Recoverable (7439-96-5)	X		0.025						1	mg/L	
16M. Mercury, Total Recoverable (7439-97-6)		X	<0.002						1	mg/L	
17M. Methylmercury (22967926)		X									
18M. Molybdenum, Total Recoverable (7439-98-7)		X	<0.008						1	mg/L	
19M. Nickel, Total Recoverable (7440-02-0)		X	<0.008						1	mg/L	
20M. Selenium, Total Recoverable (7782-49-2)		X	<0.008						1	mg/L	
21M. Silver, Total Recoverable (7440-22-4)		X	<0.008						1	mg/L	
22M. Thallium, Total Recoverable (7440-28-0)		X	<0.008						1	mg/L	
23M. Tin, Total Recoverable (7440-31-5)		X	<0.050						1	mg/L	
24M. Titanium, Total Recoverable (7440-32-6)		X	<0.020						1	mg/L	
25M. Zinc, Total Recoverable (7440-66-6)		X	<0.008						1	mg/L	
Subpart 3 – Radioactivity											
1R. Alpha Total		X									
2R. Beta Total		X									
3R. Radium Total		X									
4R. Radium 226 plus 228 Total		X									

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

FORM D – APPLICATION FOR DISCHARGE PERMIT – PRIMARY INDUSTRIES

FOR AGENCY USE ONLY	
CHECK NO.	
DATE RECEIVED	FEE SUBMITTED

NOTE: DO NOT ATTEMPT TO COMPLETE THIS FORM BEFORE READING THE ACCOMPANYING INSTRUCTIONS

1.00 NAME OF FACILITY
Thomas Hill Energy Center - Power Division

1.10 THIS FACILITY IS NOW IN OPERATION UNDER MISSOURI OPERATING PERMIT NUMBER
MO 0097675

This form is to be filled out in addition to forms A and C "Application for Discharge Permit" for the Industries listed below:

INDUSTRY CATEGORY

Adhesives and sealants
Aluminum forming
Auto and other laundries
Battery manufacturing
Coal mining
Coil coating
Copper forming
Electric and electronic compounds
Electroplating
Explosives manufacturing
Foundries
Gum and wood chemicals
Inorganic chemicals manufacturing
Iron and steel manufacturing
Leather tanning and finishing
Landfill
Mechanical products manufacturing
Nonferrous metals manufacturing
Ore mining
Organic chemicals manufacturing
Paint and ink formulation
Pesticides
Petroleum refining
Pharmaceutical preparations
Photographic equipment and supplies
Plastic and synthetic materials manufacturing
Plastic processing
Porcelain enameling
Printing and publishing
Pulp and paperboard mills
Rubber processing
Soap and detergent manufacturing
Steam electric power plants
Textile mills
Timber products processing

APPLICATION FOR DISCHARGE PERMIT
FORM D – PRIMARY INDUSTRIES

TABLE II

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-097675	INTAKE

1.30 If you are a primary industry and this outfall contains process wastewater, refer to Table A in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-A for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. Mark "X" in column 2-B for each pollutant you know or have reason to believe is present. Mark "X" in column 2-C for each pollutant you believe to be absent. If you mark either columns 2-A or 2-B for any pollutant, you must provide the results of at least one analysis for that pollutant. Note that there are seven pages to this part, please review each carefully. Complete one table (*all seven pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TEST-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-9)	☑	☐	☑	<0.008						1	mg/L				
2M. Arsenic, Total (7440-38-2)	☑	☐	☑	<0.008						1	mg/L				
3M. Beryllium, Total (7440-41-7)	☑	☐	☑	<0.008						1	mg/L				
4M. Cadmium, Total (7440-43-9)	☑	☐	☑	<0.008						1	mg/L				
5M. Chromium III (16065-83-1)	☑	☐	☑	<0.025						1	mg/L				
6M. Chromium VI (18540-29-9)	☑	☐	☑	<0.025						1	mg/L				
7M. Copper, Total (7440-50-8)	☑	☑	☐	0.008						1	mg/L				
8M. Lead, Total (7439-92-1)	☑	☐	☑	<0.008						1	mg/L				
9M. Magnesium Total (7439-95-4)	☑	☑	☐	6.65						1	mg/L				
10M. Mercury, Total (7439-97-6)	☑	☐	☑	<0.0002						1	mg/L				
11M. Molybdenum Total (7439-98-7)	☑	☐	☑	<0.008						1	mg/L				
12M. Nickel, Total (7440-02-0)	☑	☐	☑	<0.008						1	mg/L				
13M. Selenium, Total (7782-49-2)	☑	☑	☐	0.010						1	mg/L				
14M. Silver, Total (7440-22-4)	☑	☐	☑	<0.008						1	mg/L				
15M. Thallium, Total (7440-28-0)	☑	☐	☑	<0.008						1	mg/L				
16M. Tin Total (7440-31-5)	☑	☐	☑	<0.050						1	mg/L				
17M. Titanium Total (7440-32-6)	☑	☐	☐	<0.020						1	mg/L				
18M. Zinc, Total (7440-66-6)	☑	☑	☐	0.008						1	mg/L				

CONTINUED FROM PAGE 3

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X" A. TESTING REQUIRED	2. MARK "X" B. BELIEVED PRESENT	2. MARK "X" C. BELIEVED ABSENT	3. EFFLUENT A. MAXIMUM DAILY VALUE (1) CONCENTRATION	3. EFFLUENT A. MAXIMUM DAILY VALUE (2) MASS	3. EFFLUENT B. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	3. EFFLUENT B. MAXIMUM 30 DAY VALUE (if available) (2) MASS	3. EFFLUENT C. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	3. EFFLUENT C. LONG TERM AVRG. VALUE (if available) (2) MASS	3. EFFLUENT D. NO. OF ANALYSES	4. UNITS A. CONCENTRATION	4. UNITS B. MASS	5. INTAKE (optional) A. LONG TERM AVRG. VALUE (1) CONCENTRATION	5. INTAKE (optional) A. LONG TERM AVRG. VALUE (2) MASS	5. INTAKE (optional) B. NO OF ANALYSES
19M. Cyanide, Amenable to Chlorination	☑	☐	☑	<0.02						1	mg/L				
20M. Phenols, Total	☑	☐	☑	<0.050						1	mg/L				
DIOXIN															
2,3,7,8 – Tetra – chlorodibenzo-P-Dioxin (1764-01-6)	☑	☐	☑	**DESCRIBE RESULTS** <5 mg/L											
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	☑	☐	☑	<0.050						1	mg/L				
2V. Acrylonitrile (107-13-1)	☑	☐	☑	<0.050						1	mg/L				
3V. Benzene (71-43-2)	☑	☐	☑	<0.005						1	mg/L				
4V. Bis (*Chloromethyl*) Ether (542-88-1)	☑	☐	☑	N/D						1	mg/L				
5V. Bromoform (75-25-2)	☑	☐	☑	<0.005						1	mg/L				
6V. Carbon Tetrachloride (56-23-5)	☑	☐	☑	<0.005						1	mg/L				
7V. Chlorobenzene (108-90-7)	☑	☐	☑	<0.005						1	mg/L				
8V. Chlorodibromomethane (124-48-1)	☑	☐	☑	<0.005						1	mg/L				
9V. Chloroethane (75-00-3)	☑	☐	☑	<0.005						1	mg/L				
10V. 2-Chloroethylvinyl Ether (110-75-8)	☑	☐	☑	<0.010						1	mg/L				
11V. Chloroform (67-66-3)	☑	☐	☑	<0.005						1	mg/L				
12V. Dichlorobromomethane (75-27-4)	☑	☐	☑	<0.005						1	mg/L				
13V. Dichloro-difluoromethane (75-71-8)	☑	☐	☑	<0.005						1	mg/L				
14V. 1,1 – Dichloroethane (75-34-3)	☑	☐	☑	<0.005						1	mg/L				
15V. 1,2 – Dichloroethane (107-06-2)	☑	☐	☑	<0.005						1	mg/L				
16V. 1,1 – Dichloroethylene (75-35-4)	☑	☐	☑	<0.005						1	mg/L				
17V. 1,3 – Dichloropropane (78-87-5)	☑	☐	☑	<0.005						1	mg/L				
18V. 1,2 –Dichloropropylene (542-75-6)	☑	☐	☑	<0.005						1	mg/L				
19V. Ethylbenzene (100-41-4)	☑	☐	☑	<0.005						1	mg/L				
20V. Methyl Bromide (74-83-9)	☑	☐	☑	<0.005						1	mg/L				
21V. Methyl Chloride (74-87-3)	☑	☐	☑	<0.005						1	mg/L				

CONTINUED FROM THE FRONT

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-097675	INTAKE

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC.MS FRACTION – VOLATILE COMPOUNDS *(continued)*															
22V. Methylene Chloride (75-09-2)	☑	☐	☑	<0.005						1	mg/L				
23V. 1,1,2,2 – Tetra-chloroethane (79-34-5)	☑	☐	☑	<0.005						1	mg/L				
24V. Tetrachloroethylene (127-18-4)	☑	☐	☑	<0.005						1	mg/L				
25V. Toluene (108-88-3)	☑	☐	☑	<0.005						1	mg/L				
26V. 1,2 – Trans Dichloroethylene (156-60-5)	☑	☐	☑	<0.005						1	mg/L				
27V. 1,1,1 – Tri – chloroethane (71-55-6)	☑	☐	☑	<0.005						1	mg/L				
28V. 1,1,2 – Tri-chloroethane (79-00-5)	☑	☐	☑	<0.005						1	mg/L				
29V. Trichloro – ethylene (79-01-6)	☑	☐	☑	<0.005						1	mg/L				
30V. Trichloro – fluoromethane (75-69-4)	☑	☐	☑	<0.005						1	mg/L				
31V. Vinyl Chloride (75-01-4)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2 – Chlorophenol (95-57-8)	☑	☐	☑	<0.005						1	mg/L				
2A. 2,4 – Dichloro – phenol (120-83-2)	☑	☐	☑	<0.005						1	mg/L				
3A. 2,4 – Dimethyl – phenol (105-67-9)	☑	☐	☑	<0.005						1	mg/L				
4A. 4,6 – Dinitro - O-Cresol (534-52-1)	☑	☐	☑	<0.071						1	mg/L				
5A. 2,4 – Dinitro – phenol (51-28-5)	☑	☐	☑	<0.082						1	mg/L				
6A. 2-Nitrophenol (88-75-5)	☑	☐	☑	<0.005						1	mg/L				
7A. 4-Nitrophenol (100-02-7)	☑	☐	☑	<0.041						1	mg/L				
8A. P – Chloro – M Cresol (59-50-7)	☑	☐	☑	<0.005						1	mg/L				
9A. Pentachloro – phenol (87-86-5)	☑	☐	☑	<0.026						1	mg/L				
10A. Phenol (108-952)	☑	☐	☑	<0.005						1	mg/L				
11A. 2,4,6 – Trichloro-phenol (88-06-2)	☑	☐	☑	<0.005						1	mg/L				
12A. 2 - methyl – 4,6 dinitrophenol (534-52-1)	☑	☐	☑	<0.071						1	mg/L				

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CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT						D. NO. OF ANALYSES	4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)			A. CONCENTRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	☑	☐	☑	<0.005						1	mg/L				
2B. Acenaphtylene (208-96-8)	☑	☐	☑	<0.005						1	mg/L				
3B. Anthracene (120-12-7)	☑	☐	☑	<0.005						1	mg/L				
4B. Benzidine (92-87-5)	☑	☐	☑	<0.087						1	mg/L				
5B. Benzo (a) Anthracene (56-55-3)	☑	☐	☑	<0.005						1	mg/L				
6B. Benzo (a) Pyrene (50-32-8)	☑	☐	☑	<0.005						1	mg/L				
7B. 3,4 – Benzofluoranthene (205-99-2)	☑	☐	☑	<0.010						1	mg/L				
8B. Benzo (ghi) Perylene (191-24-2)	☑	☐	☑	<0.015						1	mg/L				
9B. Benzo (k) Fluoranthene (207-08-9)	☑	☐	☑	<0.005						1	mg/L				
10B. Bis (2-Chloroethoxy) Methane (111-91-1)	☑	☐	☑	<0.005						1	mg/L				
11B. Bis (2-Chloroethyl) Ether (111-44-4)	☑	☐	☑	<0.005						1	mg/L				
12B. Bis (2-Chloroisopropyl) Ether (39638-32-9)	☑	☐	☑	<0.005						1	mg/L				
13B. Bis (2-Ethylhexyl) Phthalate (117-81-7)	☑	☐	☑	<0.082						1	mg/L				
14B. 4-Bromophenyl Phenyl Ether (101-55-3)	☑	☐	☑	<0.005						1	mg/L				
15B. Butyl Benzyl Phthalate (85-68-7)	☑	☐	☑	<0.005						1	mg/L				
16B. 2-Chloronaphthalene (91-58-7)	☑	☐	☑	<0.005						1	mg/L				
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)	☑	☐	☑	<0.005						1	mg/L				
18B. Chrysene (218-01-9)	☑	☐	☑	<0.005						1	mg/L				
19B. Dibenzo (a.h) Anthracene (53-70-3)	☑	☐	☑	<0.051						1	mg/L				
20B. 1,2 – Dichlorobenzene (95-50-1)	☑	☐	☑	<0.005						1	mg/L				
21B. 1,3 – Dichlorobenzene (541-73-1)	☑	☐	☑	<0.005						1	mg/L				

CONTINUED FROM PAGE 5

NPDES # (*IF ASSIGNED*): MO-097675 | OUTFALL NUMBER: INTAKE

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1, 4-Dichlorobenzene (106-46-7)	☑	☐	☑	<0.005						1	mg/L				
23B. 3, 3'-Dichlorobenzidine (91-94-1)	☑	☐	☑	<0.061						1	mg/L				
24B. Diethyl Phthalate (84-66-2)	☑	☐	☑	<0.005						1	mg/L				
25B. Dimethyl Phthalate (131-11-3)	☑	☐	☑	<0.005						1	mg/L				
26B. Di-N-butyl Phthalate (84-74-2)	☑	☐	☑	<0.005						1	mg/L				
27B. 2,4-Dinitrotoluene (121-14-2)	☑	☐	☑	<0.005						1	mg/L				
28B. 2,6-Dinitrotoluene (606-20-2)	☑	☐	☑	<0.005						1	mg/L				
29B. Di-N-Octyphthalate (117-84-0)	☑	☐	☑	<0.031						1	mg/L				
30B. 1,2-Diphenylhydrazine (*as Azobenzene)* (122-66-7)	☑	☐	☑	<0.020						1	mg/L				
31B. Fluoranthene (206-44-0)	☑	☐	☑	<0.005						1	mg/L				
32B. Fluorene (86-73-7)	☑	☐	☑	<0.005						1	mg/L				
33B. Hexachlorobenzene (87-68-3)	☑	☐	☑	<0.005						1	mg/L				
34B. Hexachlorobutadiene (87-68-3)	☑	☐	☑	<0.005						1	mg/L				
35B. Hexachloro-cyclopentadiene (77-47-4)	☑	☐	☑	<0.061						1	mg/L				
36B. Hexachloroethane (67-72-1)	☑	☐	☑	<0.005						1	mg/L				
37B. Indeno (1,2,3-c-d) Pyrene (193-39-5)	☑	☐	☑	<0.014						1	mg/L				
38B. Isophorone (78-59-1)	☑	☐	☑	<0.005						1	mg/L				
39B. Naphthalene (91-20-3)	☑	☐	☑	<0.005						1	mg/L				
40B. Nitrobenzene (98-95-3)	☑	☐	☑	<0.005						1	mg/L				
41B. N-Nitro-sodimethylamine (62-75-9)	☑	☐	☑	<0.005						1	mg/L				

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CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT						D. NO. OF ANALYSES	4. UNITS		5. INTAKE (*optional*)		
	A. TES-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)			A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
42B. N-Nitroso N-Propylamine (621-64-7)	☑	☐	☑	<0.005						1	mg/L				
43B. N-Nitro-sodiphenylamine (86-30-6)	☑	☐	☑	<0.005						1	mg/L				
44B. Phenanthrene (85-01-8)	☑	☐	☑	<0.005						1	mg/L				
45B. Pyrene (129-00-0)	☑	☐	☑	<0.005						1	mg/L				
46B. 1,2,4-Tri chlorobenzene (120-82-1)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)	☐	☐	☑												
2P. α-BHC (319-84-6)	☐	☐	☑												
3P. β-BHC (319-84-6)	☐	☐	☑												
4P. γ-BHC (58-89-9)	☐	☐	☑												
5P. δ-BHC (319-86-8)	☐	☐	☑												
6P. Chlordane (57-74-9)	☐	☐	☑												
7P. 4,4'-DDT (50-29-3)	☐	☐	☑												
8P. 4,4'-DDE (72-55-9)	☐	☐	☑												
9P. 4,4'-DDD (72-54-8)	☐	☐	☑												
10P. Dieldrin (60-57-1)	☐	☐	☑												
11P. α-Endosulfan (115-29-7)	☐	☐	☑												
12P. β-Endosultan (115-29-7)	☐	☐	☑												
13P. Endosulfan Sulfate (1031-07-8)	☐	☐	☑												
14P. Endrin (72-20-8)	☐	☐	☑												
15P. Endrin Aldehyde (7421-93-4)	☐	☐	☑												
16P. Heptachlor (76-44-8)	☐	☐	☑												

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NPDES # (IF ASSIGNED)	OUTFALL NUMBER
MO-097675	INTAKE

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – PESTICISES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)	☐	☐	☑												
18P. PCB-1242 (53469-21-9)	☐	☐	☑												
19P. PBC-1254 (11097-69-1)	☐	☐	☑												
20P. PCB-1221 (11104-28-2)	☐	☐	☑												
21P. PCB-1232 (11141-16-5)	☐	☐	☑												
22P. PCB-1248 (12672-29-6)	☐	☐	☑												
23P. PCB-1260 (11096-82-5)	☐	☐	☑												
24P. PCB-1016 (12674-11-2)	☐	☐	☑												
25P. Toxaphene (8001-35-2)	☐	☐	☑												
J. RADIOACTIVITY															
(1) Alpha Total	☐	☐	☑												
(2) Beta Total	☐	☐	☑												
(3) Radium Total	☐	☐	☑												
(4) Radium 226 Total	☐	☐	☑												

APPLICATION FOR DISCHARGE PERMIT
FORM D – PRIMARY INDUSTRIES

TABLE II

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-0097675	001

1.30 If you are a primary industry and this outfall contains process wastewater, refer to Table A in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-A for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. Mark "X" in column 2-B for each pollutant you know or have reason to believe is present. Mark "X" in column 2-C for each pollutant you believe to be absent. If you mark either columns 2-A or 2-B for any pollutant, you must provide the results of at least one analysis for that pollutant. Note that there are seven pages to this part, please review each carefully. Complete one table (*all seven pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TEST-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-9)	☑	☐	☑	<0.008						1	mg/L				
2M. Arsenic, Total (7440-38-2)	☑	☐	☑	<0.008						1	mg/L				
3M. Beryllium, Total (7440-41-7)	☑	☐	☑	<0.008						1	mg/L				
4M. Cadmium, Total (7440-43-9)	☑	☐	☑	<0.008						1	mg/L				
5M. Chromium III (16065-83-1)	☑	☐	☑	<0.025						1	mg/L				
6M. Chromium VI (18540-29-9)	☑	☐	☑	<0.025						1	mg/L				
7M. Copper, Total (7440-50-8)	☑	☐	☑	<0.008						1	mg/L				
8M. Lead, Total (7439-92-1)	☑	☐	☑	<0.008						1	mg/L				
9M. Magnesium Total (7439-95-4)	☑	☑	☐	6.92						1	mg/L				
10M. Mercury, Total (7439-97-6)	☑	☐	☑	<0.0002						1	mg/L				
11M. Molybdenum Total (7439-98-7)	☑	☐	☑	<0.008						1	mg/L				
12M. Nickel, Total (7440-02-0)	☑	☐	☑	<0.008						1	mg/L				
13M. Selenium, Total (7782-49-2)	☑	☐	☑	<0.008						1	mg/L				
14M. Silver, Total (7440-22-4)	☑	☐	☑	<0.008						1	mg/L				
15M. Thallium, Total (7440-28-0)	☑	☐	☑	<0.008						1	mg/L				
16M. Tin Total (7440-31-5)	☑	☐	☑	<0.050						1	mg/L				
17M. Titanium Total (7440-32-6)	☑	☐	☑	<0.020						1	mg/L				
18M. Zinc, Total (7440-66-6)	☑	☐	☑	<0.008						1	mg/L				

CONTINUED FROM PAGE 3

19M. Cyanide, Amenable to Chlorination	☑	☐	☑	<0.02						1	mg/L				
20M. Phenols, Total	☑	☐	☑	<0.050						1	mg/L				
DIOXIN															
2,3,7,8 – Tetra – chlorodibenzo-P-Dioxin (1764-01-6)	☑	☐	☑	**DESCRIBE RESULTS** <5 mg/L											

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
				A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE *(if available)*		C. LONG TERM AVRG. VALUE *(if available)*		D. NO. OF ANALYSES			A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		A. CONCENTRATION	B. MASS	(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	☑	☐	☑	<0.050						1	mg/L				
2V. Acrylonitrile (107-13-1)	☑	☐	☑	<0.050						1	mg/L				
3V. Benzene (71-43-2)	☑	☐	☑	<0.005						1	mg/L				
4V. Bis (*Chloromethyl*) Ether (542-88-1)	☑	☐	☑	N/D						1	mg/L				
5V. Bromoform (75-25-2)	☑	☐	☑	<0.005						1	mg/L				
6V. Carbon Tetrachloride (56-23-5)	☑	☐	☑	<0.005						1	mg/L				
7V. Chlorobenzene (108-90-7)	☑	☐	☑	<0.005						1	mg/L				
8V. Chlorodibromomethane (124-48-1)	☑	☐	☑	<0.005						1	mg/L				
9V. Chloroethane (75-00-3)	☑	☐	☑	<0.005						1	mg/L				
10V. 2-Chloroethylvinyl Ether (110-75-8)	☑	☐	☑	<0.010						1	mg/L				
11V. Chloroform (67-66-3)	☑	☐	☑	<0.005						1	mg/L				
12V. Dichlorobromomethane (75-27-4)	☑	☐	☑	<0.005						1	mg/L				
13V. Dichloro-difluoromethane (75-71-8)	☑	☐	☑	<0.005						1	mg/L				
14V. 1,1 – Dichloroethane (75-34-3)	☑	☐	☑	<0.005						1	mg/L				
15V. 1,2 – Dichloroethane (107-06-2)	☑	☐	☑	<0.005						1	mg/L				
16V. 1,1 – Dichloroethylene (75-35-4)	☑	☐	☑	<0.005						1	mg/L				
17V. 1,3 – Dichloropropane (78-87-5)	☑	☐	☑	<0.005						1	mg/L				
18V. 1,2 –Dichloropropylene (542-75-6)	☑	☐	☑	<0.005						1	mg/L				
19V. Ethylbenzene (100-41-4)	☑	☐	☑	<0.005						1	mg/L				
20V. Methyl Bromide (74-83-9)	☑	☐	☑	<0.005						1	mg/L				
21V. Methyl Chloride (74-87-3)	☑	☐	☑	<0.005						1	mg/L				

CONTINUED FROM THE FRONT

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-0097675	001

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING RE-QUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC.MS FRACTION – VOLATILE COMPOUNDS *(continued)*															
22V. Methylene Chloride (75-09-2)	☑	☐	☑	<0.005						1	mg/L				
23V. 1,1,2,2 – Tetra-chloroethane (79-34-5)	☑	☐	☑	<0.005						1	mg/L				
24V. Tetrachloroethylene (127-18-4)	☑	☐	☑	<0.005						1	mg/L				
25V. Toluene (108-88-3)	☑	☐	☑	<0.005						1	mg/L				
26V. 1,2 – Trans Dichloroethylene (156-60-5)	☑	☐	☑	<0.005						1	mg/L				
27V. 1,1,1 – Tri – chloroethane (71-55-6)	☑	☐	☑	<0.005						1	mg/L				
28V. 1,1,2 – Tri-chloroethane (79-00-5)	☑	☐	☑	<0.005						1	mg/L				
29V. Trichloro – ethylene (79-01-6)	☑	☐	☑	<0.005						1	mg/L				
30V. Trichloro – fluoromethane (75-69-4)	☑	☐	☑	<0.005						1	mg/L				
31V. Vinyl Chloride (75-01-4)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2 – Chlorophenol (95-57-8)	☑	☐	☑	<0.005						1	mg/L				
2A. 2,4 – Dichloro – phenol (120-83-2)	☑	☐	☑	<0.005						1	mg/L				
3A. 2,4 – Dimethyl – phenol (105-67-9)	☑	☐	☑	<0.005						1	mg/L				
4A. 4,6 – Dinitro - O-Cresol (534-52-1)	☑	☐	☑	<0.071						1	mg/L				
5A. 2,4 – Dinitro – phenol (51-28-5)	☑	☐	☑	<0.082						1	mg/L				
6A. 2-Nitrophenol (88-75-5)	☑	☐	☑	<0.005						1	mg/L				
7A. 4-Nitrophenol (100-02-7)	☑	☐	☑	<0.041						1	mg/L				
8A. P – Chloro – M Cresol (59-50-7)	☑	☐	☑	<0.005						1	mg/L				
9A. Pentachloro – phenol (87-86-5)	☑	☐	☑	<0.026						1	mg/L				
10A. Phenol (108-952)	☑	☐	☑	<0.005						1	mg/L				
11A. 2,4,6 – Trichloro-phenol (88-06-2)	☑	☐	☑	<0.005						1	mg/L				
12A. 2 - methyl – 4,6 dinitrophenol (534-52-1)	☑	☐	☑	<0.071						1	mg/L				

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	☑	☐	☑	<0.005						1	mg/L				
2B. Acenaphtylene (208-96-8)	☑	☐	☑	<0.005						1	mg/L				
3B. Anthracene (120-12-7)	☑	☐	☑	<0.005						1	mg/L				
4B. Benzidine (92-87-5)	☑	☐	☑	<0.087						1	mg/L				
5B. Benzo (a) Anthracene (56-55-3)	☑	☐	☑	<0.005						1	mg/L				
6B. Benzo (a) Pyrene (50-32-8)	☑	☐	☑	<0.005						1	mg/L				
7B. 3,4 – Benzofluoranthene (205-99-2)	☑	☐	☑	<0.010						1	mg/L				
8B. Benzo (ghi) Perylene (191-24-2)	☑	☐	☑	<0.015						1	mg/L				
9B. Benzo (k) Fluoranthene (207-08-9)	☑	☐	☑	<0.005						1	mg/L				
10B. Bis (2-Chloroethoxy) Methane (111-91-1)	☑	☐	☑	<0.005						1	mg/L				
11B. Bis (2-Chloroethyl) Ether (111-44-4)	☑	☐	☑	<0.005						1	mg/L				
12B. Bis (2-Chloroisopropyl) Ether (39638-32-9)	☑	☐	☑	<0.005						1	mg/L				
13B. Bis (2-Ethylhexyl) Phthalate (117-81-7)	☑	☐	☑	<0.082						1	mg/L				
14B. 4-Bromophenyl Phenyl Ether (101-55-3)	☑	☐	☑	<0.005						1	mg/L				
15B. Butyl Benzyl Phthalate (85-68-7)	☑	☐	☑	<0.005						1	mg/L				
16B. 2-Chloronaphthalene (91-58-7)	☑	☐	☑	<0.005						1	mg/L				
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)	☑	☐	☑	<0.005						1	mg/L				
18B. Chrysene (218-01-9)	☑	☐	☑	<0.005						1	mg/L				
19B. Dibenzo (a.h) Anthracene (53-70-3)	☑	☐	☑	<0.051						1	mg/L				
20B. 1,2 – Dichlorobenzene (95-50-1)	☑	☐	☑	<0.005						1	mg/L				
21B. 1,3 – Dichlorobenzene (541-73-1)	☑	☐	☑	<0.005						1	mg/L				

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NPDES # (IF ASSIGNED): MO-97675 | OUTFALL NUMBER: 001

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1, 4-Dichlorobenzene (106-46-7)	☑	☐	☑	<0.005						1	mg/L				
23B. 3, 3'-Dichlorobenzidine (91-94-1)	☑	☐	☑	<0.061						1	mg/L				
24B. Diethyl Phthalate (84-66-2)	☑	☐	☑	<0.005						1	mg/L				
25B. Dimethyl Phthalate (131-11-3)	☑	☐	☑	<0.005						1	mg/L				
26B. Di-N-butyl Phthalate (84-74-2)	☑	☐	☑	<0.005						1	mg/L				
27B. 2,4-Dinitrotoluene (121-14-2)	☑	☐	☑	<0.005						1	mg/L				
28B. 2,6-Dinitrotoluene (606-20-2)	☑	☐	☑	<0.005						1	mg/L				
29B. Di-N-Octyphthalate (117-84-0)	☑	☐	☑	<0.031						1	mg/L				
30B. 1,2-Diphenylhydrazine (*as Azobenzene)* (122-66-7)	☑	☐	☑	<0.020						1	mg/L				
31B. Fluoranthene (206-44-0)	☑	☐	☑	<0.005						1	mg/L				
32B. Fluorene (86-73-7)	☑	☐	☑	<0.005						1	mg/L				
33B. Hexachlorobenzene (87-68-3)	☑	☐	☑	<0.005						1	mg/L				
34B. Hexachlorobutadiene (87-68-3)	☑	☐	☑	<0.005						1	mg/L				
35B. Hexachloro-cyclopentadiene (77-47-4)	☑	☐	☑	<0.061						1	mg/L				
36B. Hexachloroethane (67-72-1)	☑	☐	☑	<0.005						1	mg/L				
37B. Indeno (1,2,3-c-d) Pyrene (193-39-5)	☑	☐	☑	<0.014						1	mg/L				
38B. Isophorone (78-59-1)	☑	☐	☑	<0.005						1	mg/L				
39B. Naphthalene (91-20-3)	☑	☐	☑	<0.005						1	mg/L				
40B. Nitrobenzene (98-95-3)	☑	☐	☑	<0.005						1	mg/L				
41B. N-Nitro-sodimethylamine (62-75-9)	☑	☐	☑	<0.005						1	mg/L				

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1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TES-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
42B. N-Nitroso N-Propylamine (621-64-7)	☑	☐	☑	<0.005						1	mg/L				
43B. N-Nitro-sodiphenylamine (86-30-6)	☑	☐	☑	<0.005						1	mg/L				
44B. Phenanthrene (85-01-8)	☑	☐	☑	<0.005						1	mg/L				
45B. Pyrene (129-00-0)	☑	☐	☑	<0.005						1	mg/L				
46B. 1,2,4-Tri chlorobenzene (120-82-1)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)	☐	☐	☑												
2P. α-BHC (319-84-6)	☐	☐	☑												
3P. β-BHC (319-84-6)	☐	☐	☑												
4P. γ-BHC (58-89-9)	☐	☐	☑												
5P. δ-BHC (319-86-8)	☐	☐	☑												
6P. Chlordane (57-74-9)	☐	☐	☑												
7P. 4,4'-DDT (50-29-3)	☐	☐	☑												
8P. 4,4'-DDE (72-55-9)	☐	☐	☑												
9P. 4,4'-DDD (72-54-8)	☐	☐	☑												
10P. Dieldrin (60-57-1)	☐	☐	☑												
11P. α-Endosulfan (115-29-7)	☐	☐	☑												
12P. β-Endosultan (115-29-7)	☐	☐	☑												
13P. Endosulfan Sulfate (1031-07-8)	☐	☐	☑												
14P. Endrin (72-20-8)	☐	☐	☑												
15P. Endrin Aldehyde (7421-93-4)	☐	☐	☑												
16P. Heptachlor (76-44-8)	☐	☐	☑												

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CONTINUED FROM PAGE 7

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-0097675	001

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – PESTICISES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)	☐	☐	☑												
18P. PCB-1242 (53469-21-9)	☐	☐	☑												
19P. PBC-1254 (11097-69-1)	☐	☐	☑												
20P. PCB-1221 (11104-28-2)	☐	☐	☑												
21P. PCB-1232 (11141-16-5)	☐	☐	☑												
22P. PCB-1248 (12672-29-6)	☐	☐	☑												
23P. PCB-1260 (11096-82-5)	☐	☐	☑												
24P. PCB-1016 (12674-11-2)	☐	☐	☑												
25P. Toxaphene (8001-35-2)	☐	☐	☑												
J. RADIOACTIVITY															
(1) Alpha Total	☐	☐	☑												
(2) Beta Total	☐	☐	☑												
(3) Radium Total	☐	☐	☑												
(4) Radium 226 Total	☐	☐	☑												

APPLICATION FOR DISCHARGE PERMIT
FORM D – PRIMARY INDUSTRIES

TABLE II

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-000097675	003

1.30 If you are a primary industry and this outfall contains process wastewater, refer to Table A in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-A for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. Mark "X" in column 2-B for each pollutant you know or have reason to believe is present. Mark "X" in column 2-C for each pollutant you believe to be absent. If you mark either columns 2-A or 2-B for any pollutant, you must provide the results of at least one analysis for that pollutant. Note that there are seven pages to this part, please review each carefully. Complete one table (*all seven pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TEST-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-9)	☑	☐	☑	<0.008						1	mg/L				
2M. Arsenic, Total (7440-38-2)	☑	☐	☑	<0.008						1	mg/L				
3M. Beryllium, Total (7440-41-7)	☑	☐	☑	<0.008						1	mg/L				
4M. Cadmium, Total (7440-43-9)	☑	☐	☑	<0.008						1	mg/L				
5M. Chromium III (16065-83-1)	☑	☐	☑	<0.025						1	mg/L				
6M. Chromium VI (18540-29-9)	☑	☐	☑	<0.025						1	mg/L				
7M. Copper, Total (7440-50-8)	☑	☑	☐	0.009						1	mg/L				
8M. Lead, Total (7439-92-1)	☑	☐	☑	<0.008						1	mg/L				
9M. Magnesium Total (7439-95-4)	☑	☑	☐	6.55						1	mg/L				
10M. Mercury, Total (7439-97-6)	☑	☐	☑	<0.0002						1	mg/L				
11M. Molybdenum Total (7439-98-7)	☑	☐	☑	<0.008						1	mg/L				
12M. Nickel, Total (7440-02-0)	☑	☐	☑	<0.008						1	mg/L				
13M. Selenium, Total (7782-49-2)	☑	☐	☑	<0.008						1	mg/L				
14M. Silver, Total (7440-22-4)	☑	☐	☑	<0.008						1	mg/L				
15M. Thallium, Total (7440-28-0)	☑	☐	☑	<0.008						1	mg/L				
16M. Tin Total (7440-31-5)	☑	☐	☑	<0.050						1	mg/L				
17M. Titanium Total (7440-32-6)	☑	☐	☑	<0.020						1	mg/L				
18M. Zinc, Total (7440-66-6)	☑	☐	☑	<0.008						1	mg/L				

CONTINUED FROM PAGE 3

19M. Cyanide, Amenable to Chlorination	☑	☐	☑	<0.02						1	mg/L				
20M. Phenols, Total	☑	☐	☑	<0.050						1	mg/L				
DIOXIN															
2,3,7,8 – Tetra – chlorodibenzo-P-Dioxin (1764-01-6)	☑	☐	☑	**DESCRIBE RESULTS** <5 mg/L											

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE *(if available)*		C. LONG TERM AVRG. VALUE *(if available)*		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	☑	☐	☑	<0.050						1	mg/L				
2V. Acrylonitrile (107-13-1)	☑	☐	☑	<0.050						1	mg/L				
3V. Benzene (71-43-2)	☑	☐	☑	<0.005						1	mg/L				
4V. Bis (*Chloromethyl*) Ether (542-88-1)	☑	☐	☑	N/D						1	mg/L				
5V. Bromoform (75-25-2)	☑	☐	☑	<0.005						1	mg/L				
6V. Carbon Tetrachloride (56-23-5)	☑	☐	☑	<0.005						1	mg/L				
7V. Chlorobenzene (108-90-7)	☑	☐	☑	<0.005						1	mg/L				
8V. Chlorodibromomethane (124-48-1)	☑	☐	☑	<0.005						1	mg/L				
9V. Chloroethane (75-00-3)	☑	☐	☑	<0.005						1	mg/L				
10V. 2-Chloroethylvinyl Ether (110-75-8)	☑	☐	☑	<0.005						1	mg/L				
11V. Chloroform (67-66-3)	☑	☐	☑	<0.005						1	mg/L				
12V. Dichlorobromomethane (75-27-4)	☑	☐	☑	<0.005						1	mg/L				
13V. Dichloro-difluoromethane (75-71-8)	☑	☐	☑	<0.005						1	mg/L				
14V. 1,1 – Dichloroethane (75-34-3)	☑	☐	☑	<0.005						1	mg/L				
15V. 1,2 – Dichloroethane (107-06-2)	☑	☐	☑	<0.005						1	mg/L				
16V. 1,1 – Dichloroethylene (75-35-4)	☑	☐	☑	<0.005						1	mg/L				
17V. 1,3 – Dichloropropane (78-87-5)	☑	☐	☑	<0.005						1	mg/L				
18V. 1,2 –Dichloropropylene (542-75-6)	☑	☐	☑	<0.005						1	mg/L				
19V. Ethylbenzene (100-41-4)	☑	☐	☑	<0.005						1	mg/L				
20V. Methyl Bromide (74-83-9)	☑	☐	☑	<0.005						1	mg/L				
21V. Methyl Chloride (74-87-3)	☑	☐	☑	<0.005						1	mg/L				

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CONTINUED FROM THE FRONT

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-000097675	003

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING RE-QUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC.MS FRACTION – VOLATILE COMPOUNDS *(continued)*															
22V. Methylene Chloride (75-09-2)	☑	☐	☑	<0.005						1	mg/L				
23V. 1,1,2,2 – Tetra-chloroethane (79-34-5)	☑	☐	☑	<0.005						1	mg/L				
24V. Tetrachloroethylene (127-18-4)	☑	☐	☑	<0.005						1	mg/L				
25V. Toluene (108-88-3)	☑	☐	☑	<0.005						1	mg/L				
26V. 1,2 – Trans Dichloroethylene (156-60-5)	☑	☐	☑	<0.005						1	mg/L				
27V. 1,1,1 – Tri – chloroethane (71-55-6)	☑	☐	☑	<0.005						1	mg/L				
28V. 1,1,2 – Tri-chloroethane (79-00-5)	☑	☐	☑	<0.005						1	mg/L				
29V. Trichloro – ethylene (79-01-6)	☑	☐	☑	<0.005						1	mg/L				
30V. Trichloro – fluoromethane (75-69-4)	☑	☐	☑	<0.005						1	mg/L				
31V. Vinyl Chloride (75-01-4)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2 – Chlorophenol (95-57-8)	☑	☐	☑	<0.005						1	mg/L				
2A. 2,4 – Dichloro – phenol (120-83-2)	☑	☐	☑	<0.005						1	mg/L				
3A. 2,4 – Dimethyl – phenol (105-67-9)	☑	☐	☑	<0.005						1	mg/L				
4A. 4,6 – Dinitro - O-Cresol (534-52-1)	☑	☐	☑	<0.071						1	mg/L				
5A. 2,4 – Dinitro – phenol (51-28-5)	☑	☐	☑	<0.082						1	mg/L				
6A. 2-Nitrophenol (88-75-5)	☑	☐	☑	<0.005						1	mg/L				
7A. 4-Nitrophenol (100-02-7)	☑	☐	☑	<0.016						1	mg/L				
8A. P – Chloro – M Cresol (59-50-7)	☑	☐	☑	<0.002						1	mg/L				
9A. Pentachloro – phenol (87-86-5)	☑	☐	☑	<0.010						1	mg/L				
10A. Phenol (108-952)	☑	☐	☑	<0.002						1	mg/L				
11A. 2,4,6 – Trichloro-phenol (88-06-2)	☑	☐	☑	<0.002						1	mg/L				
12A. 2 - methyl – 4,6 dinitrophenol (534-52-1)	☑	☐	☑	<0.071						1	mg/L				

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	☑	☐	☑	<0.005						1	mg/L				
2B. Acenaphtylene (208-96-8)	☑	☐	☑	<0.005						1	mg/L				
3B. Anthracene (120-12-7)	☑	☐	☑	<0.005						1	mg/L				
4B. Benzidine (92-87-5)	☑	☐	☑	<0.087						1	mg/L				
5B. Benzo (a) Anthracene (56-55-3)	☑	☐	☑	<0.005						1	mg/L				
6B. Benzo (a) Pyrene (50-32-8)	☑	☐	☑	<0.005						1	mg/L				
7B. 3,4 – Benzofluoranthene (205-99-2)	☑	☐	☑	<0.010						1	mg/L				
8B. Benzo (ghi) Perylene (191-24-2)	☑	☐	☑	<0.015						1	mg/L				
9B. Benzo (k) Fluoranthene (207-08-9)	☑	☐	☑	<0.005						1	mg/L				
10B. Bis (2-Chloroethoxy) Methane (111-91-1)	☑	☐	☑	<0.005						1	mg/L				
11B. Bis (2-Chloroethyl) Ether (111-44-4)	☑	☐	☑	<0.005						1	mg/L				
12B. Bis (2-Chloroisopropyl) Ether (39638-32-9)	☑	☐	☑	<0.005						1	mg/L				
13B. Bis (2-Ethylhexyl) Phthalate (117-81-7)	☑	☐	☑	<0.082						1	mg/L				
14B. 4-Bromophenyl Phenyl Ether (101-55-3)	☑	☐	☑	<0.005						1	mg/L				
15B. Butyl Benzyl Phthalate (85-68-7)	☑	☐	☑	<0.005						1	mg/L				
16B. 2-Chloronaphthalene (91-58-7)	☑	☐	☑	<0.005						1	mg/L				
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)	☑	☐	☑	<0.005						1	mg/L				
18B. Chrysene (218-01-9)	☑	☐	☑	<0.005						1	mg/L				
19B. Dibenzo (a.h) Anthracene (53-70-3)	☑	☐	☑	<0.051						1	mg/L				
20B. 1,2 – Dichlorobenzene (95-50-1)	☑	☐	☑	<0.005						1	mg/L				
21B. 1,3 – Dichlorobenzene (541-73-1)	☑	☐	☑	<0.005						1	mg/L				

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NPDES # (IF ASSIGNED)	OUTFALL NUMBER
MO-000097675	003

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1, 4-Dichlorobenzene (106-46-7)	☑	☐	☑	<0.005						1	mg/L				
23B. 3, 3'-Dichlorobenzidine (91-94-1)	☑	☐	☑	<0.061						1	mg/L				
24B. Diethyl Phthalate (84-66-2)	☑	☐	☑	<0.005						1	mg/L				
25B. Dimethyl Phthalate (131-11-3)	☑	☐	☑	<0.005						1	mg/L				
26B. Di-N-butyl Phthalate (84-74-2)	☑	☐	☑	<0.005						1	mg/L				
27B. 2,4-Dinitrotoluene (121-14-2)	☑	☐	☑	<0.005						1	mg/L				
28B. 2,6-Dinitrotoluene (606-20-2)	☑	☐	☑	<0.005						1	mg/L				
29B. Di-N-Octyphthalate (117-84-0)	☑	☐	☑	<0.031						1	mg/L				
30B. 1,2-Diphenylhydrazine (*as Azobenzene*) (122-66-7)	☑	☐	☑	<0.020						1	mg/L				
31B. Fluoranthene (206-44-0)	☑	☐	☑	<0.005						1	mg/L				
32B. Fluorene (86-73-7)	☑	☐	☑	<0.005						1	mg/L				
33B. Hexachlorobenzene (87-68-3)	☑	☐	☑	<0.005						1	mg/L				
34B. Hexachlorobutadiene (87-68-3)	☑	☐	☑	<0.005						1	mg/L				
35B. Hexachloro-cyclopentadiene (77-47-4)	☑	☐	☑	<0.061						1	mg/L				
36B. Hexachloroethane (67-72-1)	☑	☐	☑	<0.005						1	mg/L				
37B. Indeno (1,2,3-c-d) Pyrene (193-39-5)	☑	☐	☑	<0.014						1	mg/L				
38B. Isophorone (78-59-1)	☑	☐	☑	<0.005						1	mg/L				
39B. Naphthalene (91-20-3)	☑	☐	☑	<0.005						1	mg/L				
40B. Nitrobenzene (98-95-3)	☑	☐	☑	<0.005						1	mg/L				
41B. N-Nitro-sodimethylamine (62-75-9)	☑	☐	☑	<0.005						1	mg/L				

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TES-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
42B. N-Nitroso N-Propylamine (621-64-7)	☑	☐	☑	<0.005						1	mg/L				
43B. N-Nitro-sodiphenylamine (86-30-6)	☑	☐	☑	<0.005						1	mg/L				
44B. Phenanthrene (85-01-8)	☑	☐	☑	<0.005						1	mg/L				
45B. Pyrene (129-00-0)	☑	☐	☑	<0.005						1	mg/L				
46B. 1,2,4-Tri chlorobenzene (120-82-1)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)	☐	☐	☑												
2P. α-BHC (319-84-6)	☐	☐	☑												
3P. β-BHC (319-84-6)	☐	☐	☑												
4P. γ-BHC (58-89-9)	☐	☐	☑												
5P. δ-BHC (319-86-8)	☐	☐	☑												
6P. Chlordane (57-74-9)	☐	☐	☑												
7P. 4,4'-DDT (50-29-3)	☐	☐	☑												
8P. 4,4'-DDE (72-55-9)	☐	☐	☑												
9P. 4,4'-DDD (72-54-8)	☐	☐	☑												
10P. Dieldrin (60-57-1)	☐	☐	☑												
11P. α-Endosulfan (115-29-7)	☐	☐	☑												
12P. β-Endosultan (115-29-7)	☐	☐	☑												
13P. Endosulfan Sulfate (1031-07-8)	☐	☐	☑												
14P. Endrin (72-20-8)	☐	☐	☑												
15P. Endrin Aldehyde (7421-93-4)	☐	☐	☑												
16P. Heptachlor (76-44-8)	☐	☐	☑												

CONTINUED ON PAGE 8

CONTINUED FROM PAGE 7

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-000097675	003

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – PESTICISES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)	☐	☐	☑												
18P. PCB-1242 (53469-21-9)	☐	☐	☑												
19P. PBC-1254 (11097-69-1)	☐	☐	☑												
20P. PCB-1221 (11104-28-2)	☐	☐	☑												
21P. PCB-1232 (11141-16-5)	☐	☐	☑												
22P. PCB-1248 (12672-29-6)	☐	☐	☑												
23P. PCB-1260 (11096-82-5)	☐	☐	☑												
24P. PCB-1016 (12674-11-2)	☐	☐	☑												
25P. Toxaphene (8001-35-2)	☐	☐	☑												
J. RADIOACTIVITY															
(1) Alpha Total	☐	☐	☑												
(2) Beta Total	☐	☐	☑												
(3) Radium Total	☐	☐	☑												
(4) Radium 226 Total	☐	☐	☑												

APPLICATION FOR DISCHARGE PERMIT
FORM D – PRIMARY INDUSTRIES

TABLE II

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-000097675	005

1.30 If you are a primary industry and this outfall contains process wastewater, refer to Table A in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-A for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. Mark "X" in column 2-B for each pollutant you know or have reason to believe is present. Mark "X" in column 2-C for each pollutant you believe to be absent. If you mark either columns 2-A or 2-B for any pollutant, you must provide the results of at least one analysis for that pollutant. Note that there are seven pages to this part, please review each carefully. Complete one table (*all seven pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TEST-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-9)	✓		✓	<0.008						1	mg/L				
2M. Arsenic, Total (7440-38-2)	✓		✓	<0.008						1	mg/L				
3M. Beryllium, Total (7440-41-7)	✓		✓	<0.008						1	mg/L				
4M. Cadmium, Total (7440-43-9)	✓		✓	<0.008						1	mg/L				
5M. Chromium III (16065-83-1)	✓		✓	<0.025						1	mg/L				
6M. Chromium VI (18540-29-9)	✓		✓	<0.025						1	mg/L				
7M. Copper, Total (7440-50-8)	✓	✓		0.014						1	mg/L				
8M. Lead, Total (7439-92-1)	✓		✓	<0.008						1	mg/L				
9M. Magnesium Total (7439-95-4)	✓	✓		4.22						1	mg/L				
10M. Mercury, Total (7439-97-6)	✓		✓	<0.0002						1	mg/L				
11M. Molybdenum Total (7439-98-7)	✓		✓	<0.008						1	mg/L				
12M. Nickel, Total (7440-02-0)	✓		✓	<0.008						1	mg/L				
13M. Selenium, Total (7782-49-2)	✓		✓	<0.008						1	mg/L				
14M. Silver, Total (7440-22-4)	✓		✓	<0.008						1	mg/L				
15M. Thallium, Total (7440-28-0)	✓		✓	<0.008						1	mg/L				
16M. Tin Total (7440-31-5)	✓		✓	<0.050						1	mg/L				
17M. Titanium Total (7440-32-6)	✓		✓	<0.020						1	mg/L				
18M. Zinc, Total (7440-66-6)	✓		✓	<0.008						1	mg/L				

CONTINUED FROM PAGE 3

19M. Cyanide, Amenable to Chlorination	☑	☐	☑	<0.02						1	mg/L				
20M. Phenols, Total	☑	☐	☑	<0.050						1	mg/L				
DIOXIN															
2,3,7,8 – Tetra – chlorodibenzo-P-Dioxin (1764-01-6)	☑	☐	☑	**DESCRIBE RESULTS** <5 mg/L											

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	☑	☐	☑	<0.050						1	mg/L				
2V. Acrylonitrile (107-13-1)	☑	☐	☑	<0.050						1	mg/L				
3V. Benzene (71-43-2)	☑	☐	☑	<0.005						1	mg/L				
4V. Bis (*Chloromethyl*) Ether (542-88-1)	☑	☐	☑	N/D						1	mg/L				
5V. Bromoform (75-25-2)	☑	☐	☑	<0.005						1	mg/L				
6V. Carbon Tetrachloride (56-23-5)	☑	☐	☑	<0.005						1	mg/L				
7V. Chlorobenzene (108-90-7)	☑	☐	☑	<0.005						1	mg/L				
8V. Chlorodibromomethane (124-48-1)	☑	☐	☑	<0.005						1	mg/L				
9V. Chloroethane (75-00-3)	☑	☐	☑	<0.005						1	mg/L				
10V. 2-Chloroethylvinyl Ether (110-75-8)	☑	☐	☑	<0.005						1	mg/L				
11V. Chloroform (67-66-3)	☑	☐	☑	<0.005						1	mg/L				
12V. Dichlorobromomethane (75-27-4)	☑	☐	☑	<0.005						1	mg/L				
13V. Dichloro-difluoromethane (75-71-8)	☑	☐	☑	<0.005						1	mg/L				
14V. 1,1 – Dichloroethane (75-34-3)	☑	☐	☑	<0.005						1	mg/L				
15V. 1,2 – Dichloroethane (107-06-2)	☑	☐	☑	<0.005						1	mg/L				
16V. 1,1 – Dichloroethylene (75-35-4)	☑	☐	☑	<0.005						1	mg/L				
17V. 1,3 – Dichloropropane (78-87-5)	☑	☐	☑	<0.005						1	mg/L				
18V. 1,2 –Dichloropropylene (542-75-6)	☑	☐	☑	<0.005						1	mg/L				
19V. Ethylbenzene (100-41-4)	☑	☐	☑	<0.005						1	mg/L				
20V. Methyl Bromide (74-83-9)	☑	☐	☑	<0.005						1	mg/L				
21V. Methyl Chloride (74-87-3)	☑	☐	☑	<0.005						1	mg/L				

NPDES # (*IF ASSIGNED*) MO-000097675 | OUTFALL NUMBER 005

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING RE-QUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC.MS FRACTION – VOLATILE COMPOUNDS *(continued)*															
22V. Methylene Chloride (75-09-2)	☑	☐	☑	<0.005						1	mg/L				
23V. 1,1,2,2 – Tetra-chloroethane (79-34-5)	☑	☐	☑	<0.005						1	mg/L				
24V. Tetrachloroethylene (127-18-4)	☑	☐	☑	<0.005						1	mg/L				
25V. Toluene (108-88-3)	☑	☐	☑	<0.005						1	mg/L				
26V. 1,2 – Trans Dichloroethylene (156-60-5)	☑	☐	☑	<0.005						1	mg/L				
27V. 1,1,1 – Tri – chloroethane (71-55-6)	☑	☐	☑	<0.005						1	mg/L				
28V. 1,1,2 – Tri-chloroethane (79-00-5)	☑	☐	☑	<0.005						1	mg/L				
29V. Trichloro – ethylene (79-01-6)	☑	☐	☑	<0.005						1	mg/L				
30V. Trichloro – fluoromethane (75-69-4)	☑	☐	☑	<0.005						1	mg/L				
31V. Vinyl Chloride (75-01-4)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2 – Chlorophenol (95-57-8)	☑	☐	☑	<0.005						1	mg/L				
2A. 2,4 – Dichloro – phenol (120-83-2)	☑	☐	☑	<0.005						1	mg/L				
3A. 2,4 – Dimethyl – phenol (105-67-9)	☑	☐	☑	<0.005						1	mg/L				
4A. 4,6 – Dinitro - O-Cresol (534-52-1)	☑	☐	☑	<0.071						1	mg/L				
5A. 2,4 – Dinitro – phenol (51-28-5)	☑	☐	☑	<0.082						1	mg/L				
6A. 2-Nitrophenol (88-75-5)	☑	☐	☑	<0.005						1	mg/L				
7A. 4-Nitrophenol (100-02-7)	☑	☐	☑	<0.016						1	mg/L				
8A. P – Chloro – M Cresol (59-50-7)	☑	☐	☑	<0.002						1	mg/L				
9A. Pentachloro – phenol (87-86-5)	☑	☐	☑	<0.010						1	mg/L				
10A. Phenol (108-952)	☑	☐	☑	<0.002						1	mg/L				
11A. 2,4,6 – Trichloro-phenol (88-06-2)	☑	☐	☑	<0.002						1	mg/L				
12A. 2 - methyl – 4,6 dinitrophenol (534-52-1)	☑	☐	☑	<0.071						1	mg/L				

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	☑	☐	☑	<0.005						1	mg/L				
2B. Acenaphtylene (208-96-8)	☑	☐	☑	<0.005						1	mg/L				
3B. Anthracene (120-12-7)	☑	☐	☑	<0.005						1	mg/L				
4B. Benzidine (92-87-5)	☑	☐	☑	<0.087						1	mg/L				
5B. Benzo (a) Anthracene (56-55-3)	☑	☐	☑	<0.005						1	mg/L				
6B. Benzo (a) Pyrene (50-32-8)	☑	☐	☑	<0.005						1	mg/L				
7B. 3,4 – Benzofluoranthene (205-99-2)	☑	☐	☑	<0.010						1	mg/L				
8B. Benzo (ghi) Perylene (191-24-2)	☑	☐	☑	<0.015						1	mg/L				
9B. Benzo (k) Fluoranthene (207-08-9)	☑	☐	☑	<0.005						1	mg/L				
10B. Bis (2-Chloroethoxy) Methane (111-91-1)	☑	☐	☑	<0.005						1	mg/L				
11B. Bis (2-Chloroethyl) Ether (111-44-4)	☑	☐	☑	<0.005						1	mg/L				
12B. Bis (2-Chloroisopropyl) Ether (39638-32-9)	☑	☐	☑	<0.005						1	mg/L				
13B. Bis (2-Ethylhexyl) Phthalate (117-81-7)	☑	☐	☑	<0.082						1	mg/L				
14B. 4-Bromophenyl Phenyl Ether (101-55-3)	☑	☐	☑	<0.005						1	mg/L				
15B. Butyl Benzyl Phthalate (85-68-7)	☑	☐	☑	<0.005						1	mg/L				
16B. 2-Chloronaphthalene (91-58-7)	☑	☐	☑	<0.005						1	mg/L				
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)	☑	☐	☑	<0.005						1	mg/L				
18B. Chrysene (218-01-9)	☑	☐	☑	<0.005						1	mg/L				
19B. Dibenzo (a.h) Anthracene (53-70-3)	☑	☐	☑	<0.051						1	mg/L				
20B. 1,2 – Dichlorobenzene (95-50-1)	☑	☐	☑	<0.005						1	mg/L				
21B. 1,3 – Dichlorobenzene (541-73-1)	☑	☐	☑	<0.005						1	mg/L				

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NPDES # (IF ASSIGNED): MO-000097675 | OUTFALL NUMBER: 005

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1, 4-Dichlorobenzene (106-46-7)	☑	☐	☑	<0.005						1	mg/L				
23B. 3, 3'-Dichlorobenzidine (91-94-1)	☑	☐	☑	<0.061						1	mg/L				
24B. Diethyl Phthalate (84-66-2)	☑	☐	☑	<0.005						1	mg/L				
25B. Dimethyl Phthalate (131-11-3)	☑	☐	☑	<0.005						1	mg/L				
26B. Di-N-butyl Phthalate (84-74-2)	☑	☐	☑	<0.005						1	mg/L				
27B. 2,4-Dinitrotoluene (121-14-2)	☑	☐	☑	<0.005						1	mg/L				
28B. 2,6-Dinitrotoluene (606-20-2)	☑	☐	☑	<0.005						1	mg/L				
29B. Di-N-Octyphthalate (117-84-0)	☑	☐	☑	<0.031						1	mg/L				
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7)	☑	☐	☑	<0.020						1	mg/L				
31B. Fluoranthene (206-44-0)	☑	☐	☑	<0.005						1	mg/L				
32B. Fluorene (86-73-7)	☑	☐	☑	<0.005						1	mg/L				
33B. Hexachlorobenzene (87-68-3)	☑	☐	☑	<0.005						1	mg/L				
34B. Hexachlorobutadiene (87-68-3)	☑	☐	☑	<0.005						1	mg/L				
35B. Hexachloro-cyclopentadiene (77-47-4)	☑	☐	☑	<0.061						1	mg/L				
36B. Hexachloroethane (67-72-1)	☑	☐	☑	<0.005						1	mg/L				
37B. Indeno (1,2,3-c-d) Pyrene (193-39-5)	☑	☐	☑	<0.014						1	mg/L				
38B. Isophorone (78-59-1)	☑	☐	☑	<0.005						1	mg/L				
39B. Naphthalene (91-20-3)	☑	☐	☑	<0.005						1	mg/L				
40B. Nitrobenzene (98-95-3)	☑	☐	☑	<0.005						1	mg/L				
41B. N-Nitro-sodimethylamine (62-75-9)	☑	☐	☑	<0.005						1	mg/L				

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TES-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
42B. N-Nitroso N-Propylamine (621-64-7)	☑	☐	☑	<0.005						1	mg/L				
43B. N-Nitro-sodiphenylamine (86-30-6)	☑	☐	☑	<0.005						1	mg/L				
44B. Phenanthrene (85-01-8)	☑	☐	☑	<0.005						1	mg/L				
45B. Pyrene (129-00-0)	☑	☐	☑	<0.005						1	mg/L				
46B. 1,2,4-Tri chlorobenzene (120-82-1)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)	☐	☐	☑												
2P. α-BHC (319-84-6)	☐	☐	☑												
3P. β-BHC (319-84-6)	☐	☐	☑												
4P. γ-BHC (58-89-9)	☐	☐	☑												
5P. δ-BHC (319-86-8)	☐	☐	☑												
6P. Chlordane (57-74-9)	☐	☐	☑												
7P. 4,4'-DDT (50-29-3)	☐	☐	☑												
8P. 4,4'-DDE (72-55-9)	☐	☐	☑												
9P. 4,4'-DDD (72-54-8)	☐	☐	☑												
10P. Dieldrin (60-57-1)	☐	☐	☑												
11P. α-Endosulfan (115-29-7)	☐	☐	☑												
12P. β-Endosultan (115-29-7)	☐	☐	☑												
13P. Endosulfan Sulfate (1031-07-8)	☐	☐	☑												
14P. Endrin (72-20-8)	☐	☐	☑												
15P. Endrin Aldehyde (7421-93-4)	☐	☐	☑												
16P. Heptachlor (76-44-8)	☐	☐	☑												

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CONTINUED FROM PAGE 7

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-000097675	005

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – PESTICISES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)	☐	☐	☑												
18P. PCB-1242 (53469-21-9)	☐	☐	☑												
19P. PBC-1254 (11097-69-1)	☐	☐	☑												
20P. PCB-1221 (11104-28-2)	☐	☐	☑												
21P. PCB-1232 (11141-16-5)	☐	☐	☑												
22P. PCB-1248 (12672-29-6)	☐	☐	☑												
23P. PCB-1260 (11096-82-5)	☐	☐	☑												
24P. PCB-1016 (12674-11-2)	☐	☐	☑												
25P. Toxaphene (8001-35-2)	☐	☐	☑												
J. RADIOACTIVITY															
(1) Alpha Total	☐	☐	☑												
(2) Beta Total	☐	☐	☑												
(3) Radium Total	☐	☐	☑												
(4) Radium 226 Total	☐	☐	☑												

APPLICATION FOR DISCHARGE PERMIT
FORM D – PRIMARY INDUSTRIES

TABLE II

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-000097675	008

1.30 If you are a primary industry and this outfall contains process wastewater, refer to Table A in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-A for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. Mark "X" in column 2-B for each pollutant you know or have reason to believe is present. Mark "X" in column 2-C for each pollutant you believe to be absent. If you mark either columns 2-A or 2-B for any pollutant, you must provide the results of at least one analysis for that pollutant. Note that there are seven pages to this part, please review each carefully. Complete one table (*all seven pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TEST-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-9)	☑	☐	☑	<0.008						1	mg/L				
2M. Arsenic, Total (7440-38-2)	☑	☐	☑	<0.008						1	mg/L				
3M. Beryllium, Total (7440-41-7)	☑	☐	☑	<0.008						1	mg/L				
4M. Cadmium, Total (7440-43-9)	☑	☐	☑	<0.008						1	mg/L				
5M. Chromium III (16065-83-1)	☑	☐	☑	<0.025						1	mg/L				
6M. Chromium VI (18540-29-9)	☑	☐	☑	<0.025						1	mg/L				
7M. Copper, Total (7440-50-8)	☑	☐	☑	<0.008						1	mg/L				
8M. Lead, Total (7439-92-1)	☑	☐	☑	<0.008						1	mg/L				
9M. Magnesium Total (7439-95-4)	☑	☑	☐	12.2						1	mg/L				
10M. Mercury, Total (7439-97-6)	☑	☐	☑	<0.0002						1	mg/L				
11M. Molybdenum Total (7439-98-7)	☑	☐	☑	<0.008						1	mg/L				
12M. Nickel, Total (7440-02-0)	☑	☐	☑	<0.008						1	mg/L				
13M. Selenium, Total (7782-49-2)	☑	☐	☑	<0.008						1	mg/L				
14M. Silver, Total (7440-22-4)	☑	☐	☑	<0.008						1	mg/L				
15M. Thallium, Total (7440-28-0)	☑	☐	☑	<0.008						1	mg/L				
16M. Tin Total (7440-31-5)	☑	☐	☑	<0.050						1	mg/L				
17M. Titanium Total (7440-32-6)	☑	☐	☑	<0.020						1	mg/L				
18M. Zinc, Total (7440-66-6)	☑	☑	☐	0.008						1	mg/L				

CONTINUED FROM PAGE 3

19M. Cyanide, Amenable to Chlorination	☑	☐	☑	<0.02						1	mg/L					
20M. Phenols, Total	☑	☐	☑	<0.050						1	mg/L					
DIOXIN																
2,3,7,8 – Tetra – chlorodibenzo-P-Dioxin (1764-01-6)	☑	☐	☑	**DESCRIBE RESULTS** <5 mg/L												

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"			3. EFFLUENT						D. NO. OF ANALYSES	4. UNITS		5. INTAKE *(optional)*		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE *(if available)*		C. LONG TERM AVRG. VALUE *(if available)*			A. CONCENTRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	☑	☐	☑	<0.050						1	mg/L				
2V. Acrylonitrile (107-13-1)	☑	☐	☑	<0.050						1	mg/L				
3V. Benzene (71-43-2)	☑	☐	☑	<0.005						1	mg/L				
4V. Bis (*Chloromethyl*) Ether (542-88-1)	☑	☐	☑	N/D						1	mg/L				
5V. Bromoform (75-25-2)	☑	☐	☑	<0.005						1	mg/L				
6V. Carbon Tetrachloride (56-23-5)	☑	☐	☑	<0.005						1	mg/L				
7V. Chlorobenzene (108-90-7)	☑	☐	☑	<0.005						1	mg/L				
8V. Chlorodibromomethane (124-48-1)	☑	☐	☑	<0.005						1	mg/L				
9V. Chloroethane (75-00-3)	☑	☐	☑	<0.005						1	mg/L				
10V. 2-Chloroethylvinyl Ether (110-75-8)	☑	☐	☑	<0.010						1	mg/L				
11V. Chloroform (67-66-3)	☑	☐	☑	<0.005						1	mg/L				
12V. Dichlorobromomethane (75-27-4)	☑	☐	☑	<0.005						1	mg/L				
13V. Dichloro-difluoromethane (75-71-8)	☑	☐	☑	<0.005						1	mg/L				
14V. 1,1 – Dichloroethane (75-34-3)	☑	☐	☑	<0.005						1	mg/L				
15V. 1,2 – Dichloroethane (107-06-2)	☑	☐	☑	<0.005						1	mg/L				
16V. 1,1 – Dichloroethylene (75-35-4)	☑	☐	☑	<0.005						1	mg/L				
17V. 1,3 – Dichloropropane (78-87-5)	☑	☐	☑	<0.005						1	mg/L				
18V. 1,2 –Dichloropropylene (542-75-6)	☑	☐	☑	<0.005						1	mg/L				
19V. Ethylbenzene (100-41-4)	☑	☐	☑	<0.005						1	mg/L				
20V. Methyl Bromide (74-83-9)	☑	☐	☑	<0.005						1	mg/L				
21V. Methyl Chloride (74-87-3)	☑	☐	☑	<0.005						1	mg/L				

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CONTINUED FROM THE FRONT

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-000097675	008

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC.MS FRACTION – VOLATILE COMPOUNDS *(continued)*															
22V. Methylene Chloride (75-09-2)	☑	☐	☑	<0.005						1	mg/L				
23V. 1,1,2,2 – Tetra-chloroethane (79-34-5)	☑	☐	☑	<0.005						1	mg/L				
24V. Tetrachloroethylene (127-18-4)	☑	☐	☑	<0.005						1	mg/L				
25V. Toluene (108-88-3)	☑	☐	☑	<0.005						1	mg/L				
26V. 1,2 – Trans Dichloroethylene (156-60-5)	☑	☐	☑	<0.005						1	mg/L				
27V. 1,1,1 – Tri – chloroethane (71-55-6)	☑	☐	☑	<0.005						1	mg/L				
28V. 1,1,2 – Tri-chloroethane (79-00-5)	☑	☐	☑	<0.005						1	mg/L				
29V. Trichloro – ethylene (79-01-6)	☑	☐	☑	<0.005						1	mg/L				
30V. Trichloro – fluoromethane (75-69-4)	☑	☐	☑	<0.005						1	mg/L				
31V. Vinyl Chloride (75-01-4)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2 – Chlorophenol (95-57-8)	☑	☐	☑	<0.005						1	mg/L				
2A. 2,4 – Dichloro – phenol (120-83-2)	☑	☐	☑	<0.005						1	mg/L				
3A. 2,4 – Dimethyl – phenol (105-67-9)	☑	☐	☑	<0.005						1	mg/L				
4A. 4,6 – Dinitro - O-Cresol (534-52-1)	☑	☐	☑	<0.071						1	mg/L				
5A. 2,4 – Dinitro – phenol (51-28-5)	☑	☐	☑	<0.082						1	mg/L				
6A. 2-Nitrophenol (88-75-5)	☑	☐	☑	<0.005						1	mg/L				
7A. 4-Nitrophenol (100-02-7)	☑	☐	☑	<0.041						1	mg/L				
8A. P – Chloro – M Cresol (59-50-7)	☑	☐	☑	<0.005						1	mg/L				
9A. Pentachloro – phenol (87-86-5)	☑	☐	☑	<0.026						1	mg/L				
10A. Phenol (108-952)	☑	☐	☑	<0.005						1	mg/L				
11A. 2,4,6 – Trichloro-phenol (88-06-2)	☑	☐	☑	<0.005						1	mg/L				
12A. 2 - methyl – 4,6 dinitrophenol (534-52-1)	☑	☐	☑	<0.071						1	mg/L				

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	☑	☐	☑	<0.005						1	mg/L				
2B. Acenaphtylene (208-96-8)	☑	☐	☑	<0.005						1	mg/L				
3B. Anthracene (120-12-7)	☑	☐	☑	<0.005						1	mg/L				
4B. Benzidine (92-87-5)	☑	☐	☑	<0.087						1	mg/L				
5B. Benzo (a) Anthracene (56-55-3)	☑	☐	☑	<0.005						1	mg/L				
6B. Benzo (a) Pyrene (50-32-8)	☑	☐	☑	<0.005						1	mg/L				
7B. 3,4 – Benzofluoranthene (205-99-2)	☑	☐	☑	<0.010						1	mg/L				
8B. Benzo (ghi) Perylene (191-24-2)	☑	☐	☑	<0.015						1	mg/L				
9B. Benzo (k) Fluoranthene (207-08-9)	☑	☐	☑	<0.005						1	mg/L				
10B. Bis (2-Chloroethoxy) Methane (111-91-1)	☑	☐	☑	<0.005						1	mg/L				
11B. Bis (2-Chloroethyl) Ether (111-44-4)	☑	☐	☑	<0.005						1	mg/L				
12B. Bis (2-Chloroisopropyl) Ether (39638-32-9)	☑	☐	☑	<0.005						1	mg/L				
13B. Bis (2-Ethylhexyl) Phthalate (117-81-7)	☑	☐	☑	<0.082						1	mg/L				
14B. 4-Bromophenyl Phenyl Ether (101-55-3)	☑	☐	☑	<0.005						1	mg/L				
15B. Butyl Benzyl Phthalate (85-68-7)	☑	☐	☑	<0.005						1	mg/L				
16B. 2-Chloronaphthalene (91-58-7)	☑	☐	☑	<0.005						1	mg/L				
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)	☑	☐	☑	<0.005						1	mg/L				
18B. Chrysene (218-01-9)	☑	☐	☑	<0.005						1	mg/L				
19B. Dibenzo (a.h) Anthracene (53-70-3)	☑	☐	☑	<0.051						1	mg/L				
20B. 1,2 – Dichlorobenzene (95-50-1)	☑	☐	☑	<0.005						1	mg/L				
21B. 1,3 – Dichlorobenzene (541-73-1)	☑	☐	☑	<0.005						1	mg/L				

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NPDES # (IF ASSIGNED)	OUTFALL NUMBER
MO-000097675	008

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1, 4-Dichlorobenzene (106-46-7)	☑	☐	☑	<0.005						1	mg/L				
23B. 3, 3'-Dichlorobenzidine (91-94-1)	☑	☐	☑	<0.061						1	mg/L				
24B. Diethyl Phthalate (84-66-2)	☑	☐	☑	<0.005						1	mg/L				
25B. Dimethyl Phthalate (131-11-3)	☑	☐	☑	<0.005						1	mg/L				
26B. Di-N-butyl Phthalate (84-74-2)	☑	☐	☑	<0.005						1	mg/L				
27B. 2,4-Dinitrotoluene (121-14-2)	☑	☐	☑	<0.005						1	mg/L				
28B. 2,6-Dinitrotoluene (606-20-2)	☑	☐	☑	<0.005						1	mg/L				
29B. Di-N-Octyphthalate (117-84-0)	☑	☐	☑	<0.031						1	mg/L				
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7)	☑	☐	☑	<0.020						1	mg/L				
31B. Fluoranthene (206-44-0)	☑	☐	☑	<0.005						1	mg/L				
32B. Fluorene (86-73-7)	☑	☐	☑	<0.005						1	mg/L				
33B. Hexachlorobenzene (87-68-3)	☑	☐	☑	<0.005						1	mg/L				
34B. Hexachlorobutadiene (87-68-3)	☑	☐	☑	<0.005						1	mg/L				
35B. Hexachloro-cyclopentadiene (77-47-4)	☑	☐	☑	<0.061						1	mg/L				
36B. Hexachloroethane (67-72-1)	☑	☐	☑	<0.005						1	mg/L				
37B. Indeno (1,2,3-c-d) Pyrene (193-39-5)	☑	☐	☑	<0.014						1	mg/L				
38B. Isophorone (78-59-1)	☑	☐	☑	<0.005						1	mg/L				
39B. Naphthalene (91-20-3)	☑	☐	☑	<0.005						1	mg/L				
40B. Nitrobenzene (98-95-3)	☑	☐	☑	<0.005						1	mg/L				
41B. N-Nitro-sodimethylamine (62-75-9)	☑	☐	☑	<0.005						1	mg/L				

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CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TES-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
42B. N-Nitroso N-Propylamine (621-64-7)	☑	☐	☑	<0.005						1	mg/L				
43B. N-Nitro-sodiphenylamine (86-30-6)	☑	☐	☑	<0.005						1	mg/L				
44B. Phenanthrene (85-01-8)	☑	☐	☑	<0.005						1	mg/L				
45B. Pyrene (129-00-0)	☑	☐	☑	<0.005						1	mg/L				
46B. 1,2,4-Tri chlorobenzene (120-82-1)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)	☐	☐	☑												
2P. α-BHC (319-84-6)	☐	☐	☑												
3P. β-BHC (319-84-6)	☐	☐	☑												
4P. γ-BHC (58-89-9)	☐	☐	☑												
5P. δ-BHC (319-86-8)	☐	☐	☑												
6P. Chlordane (57-74-9)	☐	☐	☑												
7P. 4,4'-DDT (50-29-3)	☐	☐	☑												
8P. 4,4'-DDE (72-55-9)	☐	☐	☑												
9P. 4,4'-DDD (72-54-8)	☐	☐	☑												
10P. Dieldrin (60-57-1)	☐	☐	☑												
11P. α-Endosulfan (115-29-7)	☐	☐	☑												
12P. β-Endosultan (115-29-7)	☐	☐	☑												
13P. Endosulfan Sulfate (1031-07-8)	☐	☐	☑												
14P. Endrin (72-20-8)	☐	☐	☑												
15P. Endrin Aldehyde (7421-93-4)	☐	☐	☑												
16P. Heptachlor (76-44-8)	☐	☐	☑												

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CONTINUED FROM PAGE 7

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-000097675	008

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – PESTICISES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)	☐	☐	☑												
18P. PCB-1242 (53469-21-9)	☐	☐	☑												
19P. PBC-1254 (11097-69-1)	☐	☐	☑												
20P. PCB-1221 (11104-28-2)	☐	☐	☑												
21P. PCB-1232 (11141-16-5)	☐	☐	☑												
22P. PCB-1248 (12672-29-6)	☐	☐	☑												
23P. PCB-1260 (11096-82-5)	☐	☐	☑												
24P. PCB-1016 (12674-11-2)	☐	☐	☑												
25P. Toxaphene (8001-35-2)	☐	☐	☑												
J. RADIOACTIVITY															
(1) Alpha Total	☐	☐	☑												
(2) Beta Total	☐	☐	☑												
(3) Radium Total	☐	☐	☑												
(4) Radium 226 Total	☐	☐	☑												

APPLICATION FOR DISCHARGE PERMIT
FORM D – PRIMARY INDUSTRIES

TABLE II

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-0097675	009

1.30 If you are a primary industry and this outfall contains process wastewater, refer to Table A in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-A for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. Mark "X" in column 2-B for each pollutant you know or have reason to believe is present. Mark "X" in column 2-C for each pollutant you believe to be absent. If you mark either columns 2-A or 2-B for any pollutant, you must provide the results of at least one analysis for that pollutant. Note that there are seven pages to this part, please review each carefully. Complete one table (*all seven pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TEST-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-9)	✓		✓	<0.008						1	mg/L				
2M. Arsenic, Total (7440-38-2)	✓		✓	<0.008						1	mg/L				
3M. Beryllium, Total (7440-41-7)	✓		✓	<0.008						1	mg/L				
4M. Cadmium, Total (7440-43-9)	✓		✓	<0.008						1	mg/L				
5M. Chromium III (16065-83-1)	✓		✓	<0.025						1	mg/L				
6M. Chromium VI (18540-29-9)	✓		✓	<0.025						1	mg/L				
7M. Copper, Total (7440-50-8)	✓		✓	<0.008						1	mg/L				
8M. Lead, Total (7439-92-1)	✓		✓	<0.008						1	mg/L				
9M. Magnesium Total (7439-95-4)	✓		✓	9.68						1	mg/L				
10M. Mercury, Total (7439-97-6)	✓		✓	<0.0005						1	mg/L				
11M. Molybdenum Total (7439-98-7)	✓		✓	<0.008						1	mg/L				
12M. Nickel, Total (7440-02-0)	✓		✓	<0.008						1	mg/L				
13M. Selenium, Total (7782-49-2)	✓		✓	<0.008						1	mg/L				
14M. Silver, Total (7440-22-4)	✓		✓	<0.008						1	mg/L				
15M. Thallium, Total (7440-28-0)	✓		✓	<0.008						1	mg/L				
16M. Tin Total (7440-31-5)	✓		✓	<0.050						1	mg/L				
17M. Titanium Total (7440-32-6)	✓		✓	<0.020						1	mg/L				
18M. Zinc, Total (7440-66-6)	✓		✓	<0.008						1	mg/L				

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19M. Cyanide, Amenable to Chlorination	☑	☐	☑	<0.02						1	mg/L				
20M. Phenols, Total	☑	☐	☑	<0.050						1	mg/L				
DIOXIN																
2,3,7,8 – Tetra – chlorodibenzo-P-Dioxin (1764-01-6)	☑	☐	☑	**DESCRIBE RESULTS** <1 mg/L												

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE *(if available)*		C. LONG TERM AVRG. VALUE *(if available)*		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	☑	☐	☑	<0.050						1	mg/L				
2V. Acrylonitrile (107-13-1)	☑	☐	☑	<0.050						1	mg/L				
3V. Benzene (71-43-2)	☑	☐	☑	<0.005						1	mg/L				
4V. Bis (*Chloromethyl*) Ether (542-88-1)	☑	☐	☑	N/D						1	mg/L				
5V. Bromoform (75-25-2)	☑	☐	☑	<0.005						1	mg/L				
6V. Carbon Tetrachloride (56-23-5)	☑	☐	☑	<0.005						1	mg/L				
7V. Chlorobenzene (108-90-7)	☑	☐	☑	<0.005						1	mg/L				
8V. Chlorodibromomethane (124-48-1)	☑	☐	☑	<0.005						1	mg/L				
9V. Chloroethane (75-00-3)	☑	☐	☑	<0.005						1	mg/L				
10V. 2-Chloroethylvinyl Ether (110-75-8)	☑	☐	☑	<0.010						1	mg/L				
11V. Chloroform (67-66-3)	☑	☐	☑	<0.005						1	mg/L				
12V. Dichlorobromomethane (75-27-4)	☑	☐	☑	<0.005						1	mg/L				
13V. Dichloro-difluoromethane (75-71-8)	☑	☐	☑	<0.005						1	mg/L				
14V. 1,1 – Dichloroethane (75-34-3)	☑	☐	☑	<0.005						1	mg/L				
15V. 1,2 – Dichloroethane (107-06-2)	☑	☐	☑	<0.005						1	mg/L				
16V. 1,1 – Dichloroethylene (75-35-4)	☑	☐	☑	<0.005						1	mg/L				
17V. 1,3 – Dichloropropane (78-87-5)	☑	☐	☑	<0.005						1	mg/L				
18V. 1,2 –Dichloropropylene (542-75-6)	☑	☐	☑	<0.005						1	mg/L				
19V. Ethylbenzene (100-41-4)	☑	☐	☑	<0.005						1	mg/L				
20V. Methyl Bromide (74-83-9)	☑	☐	☑	<0.005						1	mg/L				
21V. Methyl Chloride (74-87-3)	☑	☐	☑	<0.005						1	mg/L				

CONTINUE ON PAGE 4

CONTINUED FROM THE FRONT

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-0097675	009

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING RE-QUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC.MS FRACTION – VOLATILE COMPOUNDS *(continued)*															
22V. Methylene Chloride (75-09-2)	☑	☐	☑	<0.005						1	mg/L				
23V. 1,1,2,2 – Tetra-chloroethane (79-34-5)	☑	☐	☑	<0.005						1	mg/L				
24V. Tetrachloroethylene (127-18-4)	☑	☐	☑	<0.005						1	mg/L				
25V. Toluene (108-88-3)	☑	☐	☑	<0.005						1	mg/L				
26V. 1,2 – Trans Dichloroethylene (156-60-5)	☑	☐	☑	<0.005						1	mg/L				
27V. 1,1,1 – Tri – chloroethane (71-55-6)	☑	☐	☑	<0.005						1	mg/L				
28V. 1,1,2 – Tri-chloroethane (79-00-5)	☑	☐	☑	<0.005						1	mg/L				
29V. Trichloro – ethylene (79-01-6)	☑	☐	☑	<0.005						1	mg/L				
30V. Trichloro – fluoromethane (75-69-4)	☑	☐	☑	<0.005						1	mg/L				
31V. Vinyl Chloride (75-01-4)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2 – Chlorophenol (95-57-8)	☑	☐	☑	<0.002						1	mg/L				
2A. 2,4 – Dichloro – phenol (120-83-2)	☑	☐	☑	<0.002						1	mg/L				
3A. 2,4 – Dimethyl – phenol (105-67-9)	☑	☐	☑	<0.002						1	mg/L				
4A. 4,6 – Dinitro - O-Cresol (534-52-1)	☑	☐	☑	<0.029						1	mg/L				
5A. 2,4 – Dinitro – phenol (51-28-5)	☑	☐	☑	<0.033						1	mg/L				
6A. 2-Nitrophenol (88-75-5)	☑	☐	☑	<0.002						1	mg/L				
7A. 4-Nitrophenol (100-02-7)	☑	☐	☑	<0.017						1	mg/L				
8A. P – Chloro – M Cresol (59-50-7)	☑	☐	☑	<0.002						1	mg/L				
9A. Pentachloro – phenol (87-86-5)	☑	☐	☑	<0.011						1	mg/L				
10A. Phenol (108-952)	☑	☐	☑	<0.002						1	mg/L				
11A. 2,4,6 – Trichloro-phenol (88-06-2)	☑	☐	☑	<0.002						1	mg/L				
12A. 2 - methyl – 4,6 dinitrophenol (534-52-1)	☑	☐	☑	<0.029						1	mg/L				

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	☑	☐	☑	<0.002						1	mg/L				
2B. Acenaphtylene (208-96-8)	☑	☐	☑	<0.002						1	mg/L				
3B. Anthracene (120-12-7)	☑	☐	☑	<0.002						1	mg/L				
4B. Benzidine (92-87-5)	☑	☐	☑	<0.035						1	mg/L				
5B. Benzo (a) Anthracene (56-55-3)	☑	☐	☑	<0.002						1	mg/L				
6B. Benzo (a) Pyrene (50-32-8)	☑	☐	☑	<0.002						1	mg/L				
7B. 3,4 – Benzofluoranthene (205-99-2)	☑	☐	☑	<0.004						1	mg/L				
8B. Benzo (ghi) Perylene (191-24-2)	☑	☐	☑	<0.006						1	mg/L				
9B. Benzo (k) Fluoranthene (207-08-9)	☑	☐	☑	<0.004						1	mg/L				
10B. Bis (2-Chloroethoxy) Methane (111-91-1)	☑	☐	☑	<0.002						1	mg/L				
11B. Bis (2-Chloroethyl) Ether (111-44-4)	☑	☐	☑	<0.002						1	mg/L				
12B. Bis (2-Chloroisopropyl) Ether (39638-32-9)	☑	☐	☑	<0.002						1	mg/L				
13B. Bis (2-Ethylhexyl) Phthalate (117-81-7)	☑	☐	☑	<0.033						1	mg/L				
14B. 4-Bromophenyl Phenyl Ether (101-55-3)	☑	☐	☑	<0.002						1	mg/L				
15B. Butyl Benzyl Phthalate (85-68-7)	☑	☐	☑	<0.004						1	mg/L				
16B. 2-Chloronaphthalene (91-58-7)	☑	☐	☑	<0.002						1	mg/L				
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)	☑	☐	☑	<0.002						1	mg/L				
18B. Chrysene (218-01-9)	☑	☐	☑	<0.002						1	mg/L				
19B. Dibenzo (a,h) Anthracene (53-70-3)	☑	☐	☑	<0.021						1	mg/L				
20B. 1,2 – Dichlorobenzene (95-50-1)	☑	☐	☑	<0.005						1	mg/L				
21B. 1,3 – Dichlorobenzene (541-73-1)	☑	☐	☑	<0.005						1	mg/L				

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NPDES # (IF ASSIGNED)	OUTFALL NUMBER
MO-0097675	009

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1, 4-Dichlorobenzene (106-46-7)	☑	☐	☑	<0.005						1	mg/L				
23B. 3, 3'-Dichlorobenzidine (91-94-1)	☑	☐	☑	<0.025						1	mg/L				
24B. Diethyl Phthalate (84-66-2)	☑	☐	☑	<0.002						1	mg/L				
25B. Dimethyl Phthalate (131-11-3)	☑	☐	☑	<0.002						1	mg/L				
26B. Di-N-butyl Phthalate (84-74-2)	☑	☐	☑	<0.002						1	mg/L				
27B. 2,4-Dinitrotoluene (121-14-2)	☑	☐	☑	<0.002						1	mg/L				
28B. 2,6-Dinitrotoluene (606-20-2)	☑	☐	☑	<0.002						1	mg/L				
29B. Di-N-Octyphthalate (117-84-0)	☑	☐	☑	<0.012						1	mg/L				
30B. 1,2-Diphenylhydrazine (*as Azobenzene*) (122-66-7)	☑	☐	☑	<0.008						1	mg/L				
31B. Fluoranthene (206-44-0)	☑	☐	☑	<0.002						1	mg/L				
32B. Fluorene (86-73-7)	☑	☐	☑	<0.002						1	mg/L				
33B. Hexachlorobenzene (87-68-3)	☑	☐	☑	<0.002						1	mg/L				
34B. Hexachlorobutadiene (87-68-3)	☑	☐	☑	<0.002						1	mg/L				
35B. Hexachloro-cyclopentadiene (77-47-4)	☑	☐	☑	<0.025						1	mg/L				
36B. Hexachloroethane (67-72-1)	☑	☐	☑	<0.002						1	mg/L				
37B. Indeno (1,2,3-c-d) Pyrene (193-39-5)	☑	☐	☑	<0.006						1	mg/L				
38B. Isophorone (78-59-1)	☑	☐	☑	<0.002						1	mg/L				
39B. Naphthalene (91-20-3)	☑	☐	☑	<0.002						1	mg/L				
40B. Nitrobenzene (98-95-3)	☑	☐	☑	<0.002						1	mg/L				
41B. N-Nitro-sodimethylamine (62-75-9)	☑	☐	☑	<0.002						1	mg/L				

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TES-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
42B. N-Nitroso N-Propylamine (621-64-7)	☑	☐	☑	<0.002						1	mg/L				
43B. N-Nitro-sodiphenylamine (86-30-6)	☑	☐	☑	<0.002						1	mg/L				
44B. Phenanthrene (85-01-8)	☑	☐	☑	<0.002						1	mg/L				
45B. Pyrene (129-00-0)	☑	☐	☑	<0.002						1	mg/L				
46B. 1,2,4-Tri chlorobenzene (120-82-1)	☑	☐	☑	<0.002						1	mg/L				
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)	☐	☐	☑												
2P. α-BHC (319-84-6)	☐	☐	☑												
3P. β-BHC (319-84-6)	☐	☐	☑												
4P. γ-BHC (58-89-9)	☐	☐	☑												
5P. δ-BHC (319-86-8)	☐	☐	☑												
6P. Chlordane (57-74-9)	☐	☐	☑												
7P. 4,4'-DDT (50-29-3)	☐	☐	☑												
8P. 4,4'-DDE (72-55-9)	☐	☐	☑												
9P. 4,4'-DDD (72-54-8)	☐	☐	☑												
10P. Dieldrin (60-57-1)	☐	☐	☑												
11P. α-Endosulfan (115-29-7)	☐	☐	☑												
12P. β-Endosultan (115-29-7)	☐	☐	☑												
13P. Endosulfan Sulfate (1031-07-8)	☐	☐	☑												
14P. Endrin (72-20-8)	☐	☐	☑												
15P. Endrin Aldehyde (7421-93-4)	☐	☐	☑												
16P. Heptachlor (76-44-8)	☐	☐	☑												

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CONTINUED FROM PAGE 7

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-0097675	009

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – PESTICISES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)	☐	☐	☑												
18P. PCB-1242 (53469-21-9)	☐	☐	☑												
19P. PBC-1254 (11097-69-1)	☐	☐	☑												
20P. PCB-1221 (11104-28-2)	☐	☐	☑												
21P. PCB-1232 (11141-16-5)	☐	☐	☑												
22P. PCB-1248 (12672-29-6)	☐	☐	☑												
23P. PCB-1260 (11096-82-5)	☐	☐	☑												
24P. PCB-1016 (12674-11-2)	☐	☐	☑												
25P. Toxaphene (8001-35-2)	☐	☐	☑												
J. RADIOACTIVITY															
(1) Alpha Total	☐	☐	☑												
(2) Beta Total	☐	☐	☑												
(3) Radium Total	☐	☐	☑												
(4) Radium 226 Total	☐	☐	☑												

APPLICATION FOR DISCHARGE PERMIT
FORM D – PRIMARY INDUSTRIES

TABLE II

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-000097675	011

1.30 If you are a primary industry and this outfall contains process wastewater, refer to Table A in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-A for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. Mark "X" in column 2-B for each pollutant you know or have reason to believe is present. Mark "X" in column 2-C for each pollutant you believe to be absent. If you mark either columns 2-A or 2-B for any pollutant, you must provide the results of at least one analysis for that pollutant. Note that there are seven pages to this part, please review each carefully. Complete one table (*all seven pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT						D. NO. OF ANALYSES	4. UNITS		5. INTAKE (*optional*)		
	A. TEST-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)			A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-9)	☑	☐	☑	<0.008						1	mg/L				
2M. Arsenic, Total (7440-38-2)	☑	☐	☑	<0.008						1	mg/L				
3M. Beryllium, Total (7440-41-7)	☑	☐	☑	<0.008						1	mg/L				
4M. Cadmium, Total (7440-43-9)	☑	☐	☑	<0.008						1	mg/L				
5M. Chromium III (16065-83-1)	☑	☐	☑	<0.025						1	mg/L				
6M. Chromium VI (18540-29-9)	☑	☐	☑	<0.025						1	mg/L				
7M. Copper, Total (7440-50-8)	☑	☐	☑	<0.008						1	mg/L				
8M. Lead, Total (7439-92-1)	☑	☐	☑	<0.008						1	mg/L				
9M. Magnesium Total (7439-95-4)	☑	☑	☐	10.9						1	mg/L				
10M. Mercury, Total (7439-97-6)	☑	☐	☑	<0.0002						1	mg/L				
11M. Molybdenum Total (7439-98-7)	☑	☐	☑	<0.008						1	mg/L				
12M. Nickel, Total (7440-02-0)	☑	☐	☑	<0.008						1	mg/L				
13M. Selenium, Total (7782-49-2)	☑	☐	☑	<0.008						1	mg/L				
14M. Silver, Total (7440-22-4)	☑	☐	☑	<0.008						1	mg/L				
15M. Thallium, Total (7440-28-0)	☑	☐	☑	<0.008						1	mg/L				
16M. Tin Total (7440-31-5)	☑	☐	☑	<0.050						1	mg/L				
17M. Titanium Total (7440-32-6)	☑	☐	☑	<0.020						1	mg/L				
18M. Zinc, Total (7440-66-6)	☑	☐	☑	<0.008						1	mg/L				

CONTINUED FROM PAGE 3

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X" A. TESTING REQUIRED	2. MARK "X" B. BELIEVED PRESENT	2. MARK "X" C. BELIEVED ABSENT	3. EFFLUENT A. MAXIMUM DAILY VALUE (1) CONCENTRATION	3. EFFLUENT A. MAXIMUM DAILY VALUE (2) MASS	3. EFFLUENT B. MAXIMUM 30 DAY VALUE (*if available*) (1) CONCENTRATION	3. EFFLUENT B. MAXIMUM 30 DAY VALUE (*if available*) (2) MASS	3. EFFLUENT C. LONG TERM AVRG. VALUE (*if available*) (1) CONCENTRATION	3. EFFLUENT C. LONG TERM AVRG. VALUE (*if available*) (2) MASS	D. NO. OF ANALYSES	4. UNITS A. CONCENTRATION	4. UNITS B. MASS	5. INTAKE (*optional*) A. LONG TERM AVRG. VALUE (1) CONCENTRATION	5. INTAKE (*optional*) A. LONG TERM AVRG. VALUE (2) MASS	5. INTAKE (*optional*) B. NO OF ANALYSES
19M. Cyanide, Amenable to Chlorination	☑	☐	☑	<0.02						1	mg/L				
20M. Phenols, Total	☑	☐	☑	<0.050						1	mg/L				
DIOXIN															
2,3,7,8 – Tetra – chlorodibenzo-P-Dioxin (1764-01-6)	☑	☐	☑	**DESCRIBE RESULTS** <5 mg/L											
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	☑	☐	☑	<0.050						1	mg/L				
2V. Acrylonitrile (107-13-1)	☑	☐	☑	<0.050						1	mg/L				
3V. Benzene (71-43-2)	☑	☐	☑	<0.005						1	mg/L				
4V. Bis (*Chloromethyl*) Ether (542-88-1)	☑	☐	☑	N/D						1	mg/L				
5V. Bromoform (75-25-2)	☑	☐	☑	<0.005						1	mg/L				
6V. Carbon Tetrachloride (56-23-5)	☑	☐	☑	<0.005						1	mg/L				
7V. Chlorobenzene (108-90-7)	☑	☐	☑	<0.005						1	mg/L				
8V. Chlorodibromomethane (124-48-1)	☑	☐	☑	<0.005						1	mg/L				
9V. Chloroethane (75-00-3)	☑	☐	☑	<0.005						1	mg/L				
10V. 2-Chloroethylvinyl Ether (110-75-8)	☑	☐	☑	<0.010						1	mg/L				
11V. Chloroform (67-66-3)	☑	☐	☑	<0.005						1	mg/L				
12V. Dichlorobromomethane (75-27-4)	☑	☐	☑	<0.005						1	mg/L				
13V. Dichloro-difluoromethane (75-71-8)	☑	☐	☑	<0.005						1	mg/L				
14V. 1,1 – Dichloroethane (75-34-3)	☑	☐	☑	<0.005						1	mg/L				
15V. 1,2 – Dichloroethane (107-06-2)	☑	☐	☑	<0.005						1	mg/L				
16V. 1,1 – Dichloroethylene (75-35-4)	☑	☐	☑	<0.005						1	mg/L				
17V. 1,3 – Dichloropropane (78-87-5)	☑	☐	☑	<0.005						1	mg/L				
18V. 1,2 –Dichloropropylene (542-75-6)	☑	☐	☑	<0.005						1	mg/L				
19V. Ethylbenzene (100-41-4)	☑	☐	☑	<0.005						1	mg/L				
20V. Methyl Bromide (74-83-9)	☑	☐	☑	<0.005						1	mg/L				
21V. Methyl Chloride (74-87-3)	☑	☐	☑	<0.005						1	mg/L				

CONTINUE ON PAGE 4

CONTINUED FROM THE FRONT

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-0000976750	011

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING RE-QUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC.MS FRACTION – VOLATILE COMPOUNDS *(continued)*															
22V. Methylene Chloride (75-09-2)	☑	☐	☑	<0.005						1	mg/L				
23V. 1,1,2,2 – Tetra-chloroethane (79-34-5)	☑	☐	☑	<0.005						1	mg/L				
24V. Tetrachloroethylene (127-18-4)	☑	☐	☑	<0.005						1	mg/L				
25V. Toluene (108-88-3)	☑	☐	☑	<0.005						1	mg/L				
26V. 1,2 – Trans Dichloroethylene (156-60-5)	☑	☐	☑	<0.005						1	mg/L				
27V. 1,1,1 – Tri – chloroethane (71-55-6)	☑	☐	☑	<0.005						1	mg/L				
28V. 1,1,2 – Tri-chloroethane (79-00-5)	☑	☐	☑	<0.005						1	mg/L				
29V. Trichloro – ethylene (79-01-6)	☑	☐	☑	<0.005						1	mg/L				
30V. Trichloro – fluoromethane (75-69-4)	☑	☐	☑	<0.005						1	mg/L				
31V. Vinyl Chloride (75-01-4)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2 – Chlorophenol (95-57-8)	☑	☐	☑	<0.005						1	mg/L				
2A. 2,4 – Dichloro – phenol (120-83-2)	☑	☐	☑	<0.005						1	mg/L				
3A. 2,4 – Dimethyl – phenol (105-67-9)	☑	☐	☑	<0.005						1	mg/L				
4A. 4,6 – Dinitro - O-Cresol (534-52-1)	☑	☐	☑	<0.071						1	mg/L				
5A. 2,4 – Dinitro – phenol (51-28-5)	☑	☐	☑	<0.082						1	mg/L				
6A. 2-Nitrophenol (88-75-5)	☑	☐	☑	<0.005						1	mg/L				
7A. 4-Nitrophenol (100-02-7)	☑	☐	☑	0.041						1	mg/L				
8A. P – Chloro – M Cresol (59-50-7)	☑	☐	☑	<0.005						1	mg/L				
9A. Pentachloro – phenol (87-86-5)	☑	☐	☑	<0.026						1	mg/L				
10A. Phenol (108-952)	☑	☐	☑	<0.005						1	mg/L				
11A. 2,4,6 – Trichloro-phenol (88-06-2)	☑	☐	☑	<0.005						1	mg/L				
12A. 2 - methyl – 4,6 dinitrophenol (534-52-1)	☑	☐	☑	<0.071						1	mg/L				

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT						D. NO. OF ANALYSES	4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)			A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	☑	☐	☑	<0.005						1	mg/L				
2B. Acenaphtylene (208-96-8)	☑	☐	☑	<0.005						1	mg/L				
3B. Anthracene (120-12-7)	☑	☐	☑	<0.005						1	mg/L				
4B. Benzidine (92-87-5)	☑	☐	☑	<0.087						1	mg/L				
5B. Benzo (a) Anthracene (56-55-3)	☑	☐	☑	<0.005						1	mg/L				
6B. Benzo (a) Pyrene (50-32-8)	☑	☐	☑	<0.005						1	mg/L				
7B. 3,4 – Benzofluoranthene (205-99-2)	☑	☐	☑	<0.010						1	mg/L				
8B. Benzo (ghi) Perylene (191-24-2)	☑	☐	☑	<0.015						1	mg/L				
9B. Benzo (k) Fluoranthene (207-08-9)	☑	☐	☑	<0.005						1	mg/L				
10B. Bis (2-Chloroethoxy) Methane (111-91-1)	☑	☐	☑	<0.005						1	mg/L				
11B. Bis (2-Chloroethyl) Ether (111-44-4)	☑	☐	☑	<0.005						1	mg/L				
12B. Bis (2-Chloroisopropyl) Ether (39638-32-9)	☑	☐	☑	<0.005						1	mg/L				
13B. Bis (2-Ethylhexyl) Phthalate (117-81-7)	☑	☐	☑	<0.082						1	mg/L				
14B. 4-Bromophenyl Phenyl Ether (101-55-3)	☑	☐	☑	<0.005						1	mg/L				
15B. Butyl Benzyl Phthalate (85-68-7)	☑	☐	☑	<0.005						1	mg/L				
16B. 2-Chloronaphthalene (91-58-7)	☑	☐	☑	<0.005						1	mg/L				
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)	☑	☐	☑	<0.005						1	mg/L				
18B. Chrysene (218-01-9)	☑	☐	☑	<0.005						1	mg/L				
19B. Dibenzo (a.h) Anthracene (53-70-3)	☑	☐	☑	<0.051						1	mg/L				
20B. 1,2 – Dichlorobenzene (95-50-1)	☑	☐	☑	<0.005						1	mg/L				
21B. 1,3 – Dichlorobenzene (541-73-1)	☑	☐	☑	<0.005						1	mg/L				

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NPDES # (*IF ASSIGNED*): MO-000097675 | OUTFALL NUMBER: 011

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1, 4-Dichlorobenzene (106-46-7)	☑	☐	☑	<0.005						1	mg/L				
23B. 3, 3'-Dichlorobenzidine (91-94-1)	☑	☐	☑	<0.061						1	mg/L				
24B. Diethyl Phthalate (84-66-2)	☑	☐	☑	<0.005						1	mg/L				
25B. Dimethyl Phthalate (131-11-3)	☑	☐	☑	<0.005						1	mg/L				
26B. Di-N-butyl Phthalate (84-74-2)	☑	☐	☑	<0.005						1	mg/L				
27B. 2,4-Dinitrotoluene (121-14-2)	☑	☐	☑	<0.005						1	mg/L				
28B. 2,6-Dinitrotoluene (606-20-2)	☑	☐	☑	<0.005						1	mg/L				
29B. Di-N-Octyphthalate (117-84-0)	☑	☐	☑	<0.031						1	mg/L				
30B. 1,2-Diphenylhydrazine (*as Azobenzene*) (122-66-7)	☑	☐	☑	<0.020						1	mg/L				
31B. Fluoranthene (206-44-0)	☑	☐	☑	<0.005						1	mg/L				
32B. Fluorene (86-73-7)	☑	☐	☑	<0.005						1	mg/L				
33B. Hexachlorobenzene (87-68-3)	☑	☐	☑	<0.005						1	mg/L				
34B. Hexachlorobutadiene (87-68-3)	☑	☐	☑	<0.005						1	mg/L				
35B. Hexachloro-cyclopentadiene (77-47-4)	☑	☐	☑	<0.061						1	mg/L				
36B. Hexachloroethane (67-72-1)	☑	☐	☑	<0.005						1	mg/L				
37B. Indeno (1,2,3-c-d) Pyrene (193-39-5)	☑	☐	☑	<0.014						1	mg/L				
38B. Isophorone (78-59-1)	☑	☐	☑	<0.005						1	mg/L				
39B. Naphthalene (91-20-3)	☑	☐	☑	<0.005						1	mg/L				
40B. Nitrobenzene (98-95-3)	☑	☐	☑	<0.005						1	mg/L				
41B. N-Nitro-sodimethylamine (62-75-9)	☑	☐	☑	<0.005						1	mg/L				

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TES-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
42B. N-Nitroso N-Propylamine (621-64-7)	☑	☐	☑	<0.005						1	mg/L				
43B. N-Nitro-sodiphenylamine (86-30-6)	☑	☐	☑	<0.005						1	mg/L				
44B. Phenanthrene (85-01-8)	☑	☐	☑	<0.005						1	mg/L				
45B. Pyrene (129-00-0)	☑	☐	☑	<0.005						1	mg/L				
46B. 1,2,4-Tri chlorobenzene (120-82-1)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)	☐	☐	☑												
2P. α-BHC (319-84-6)	☐	☐	☑												
3P. β-BHC (319-84-6)	☐	☐	☑												
4P. γ-BHC (58-89-9)	☐	☐	☑												
5P. δ-BHC (319-86-8)	☐	☐	☑												
6P. Chlordane (57-74-9)	☐	☐	☑												
7P. 4,4'-DDT (50-29-3)	☐	☐	☑												
8P. 4,4'-DDE (72-55-9)	☐	☐	☑												
9P. 4,4'-DDD (72-54-8)	☐	☐	☑												
10P. Dieldrin (60-57-1)	☐	☐	☑												
11P. α-Endosulfan (115-29-7)	☐	☐	☑												
12P. β-Endosultan (115-29-7)	☐	☐	☑												
13P. Endosulfan Sulfate (1031-07-8)	☐	☐	☑												
14P. Endrin (72-20-8)	☐	☐	☑												
15P. Endrin Aldehyde (7421-93-4)	☐	☐	☑												
16P. Heptachlor (76-44-8)	☐	☐	☑												

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CONTINUED FROM PAGE 7

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – PESTICISES (*continued*)															
17P. Heptachlor Epoxide (1024-57-3)	☐	☐	☑												
18P. PCB-1242 (53469-21-9)	☐	☐	☑												
19P. PBC-1254 (11097-69-1)	☐	☐	☑												
20P. PCB-1221 (11104-28-2)	☐	☐	☑												
21P. PCB-1232 (11141-16-5)	☐	☐	☑												
22P. PCB-1248 (12672-29-6)	☐	☐	☑												
23P. PCB-1260 (11096-82-5)	☐	☐	☑												
24P. PCB-1016 (12674-11-2)	☐	☐	☑												
25P. Toxaphene (8001-35-2)	☐	☐	☑												
J. RADIOACTIVITY															
(1) Alpha Total	☐	☐	☑												
(2) Beta Total	☐	☐	☑												
(3) Radium Total	☐	☐	☑												
(4) Radium 226 Total	☐	☐	☑												

APPLICATION FOR DISCHARGE PERMIT
FORM D – PRIMARY INDUSTRIES

TABLE II

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-000097675	014

1.30 If you are a primary industry and this outfall contains process wastewater, refer to Table A in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-A for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. Mark "X" in column 2-B for each pollutant you know or have reason to believe is present. Mark "X" in column 2-C for each pollutant you believe to be absent. If you mark either columns 2-A or 2-B for any pollutant, you must provide the results of at least one analysis for that pollutant. Note that there are seven pages to this part, please review each carefully. Complete one table (*all seven pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT						D. NO. OF ANALYSES	4. UNITS		5. INTAKE (*optional*)		
	A. TEST-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)			A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-9)	✓		✓	<0.008						1	mg/L				
2M. Arsenic, Total (7440-38-2)	✓		✓	<0.008						1	mg/L				
3M. Beryllium, Total (7440-41-7)	✓		✓	<0.008						1	mg/L				
4M. Cadmium, Total (7440-43-9)	✓		✓	<0.008						1	mg/L				
5M. Chromium III (16065-83-1)	✓		✓	<0.025						1	mg/L				
6M. Chromium VI (18540-29-9)	✓		✓	<0.025						1	mg/L				
7M. Copper, Total (7440-50-8)	✓		✓	<0.008						1	mg/L				
8M. Lead, Total (7439-92-1)	✓		✓	<0.008						1	mg/L				
9M. Magnesium Total (7439-95-4)	✓	✓		6.52						1	mg/L				
10M. Mercury, Total (7439-97-6)	✓		✓	<0.0002						1	mg/L				
11M. Molybdenum Total (7439-98-7)	✓		✓	<0.008						1	mg/L				
12M. Nickel, Total (7440-02-0)	✓		✓	<0.008						1	mg/L				
13M. Selenium, Total (7782-49-2)	✓		✓	<0.008						1	mg/L				
14M. Silver, Total (7440-22-4)	✓		✓	<0.008						1	mg/L				
15M. Thallium, Total (7440-28-0)	✓		✓	<0.008						1	mg/L				
16M. Tin Total (7440-31-5)	✓		✓	<0.050						1	mg/L				
17M. Titanium Total (7440-32-6)	✓		✓	<0.020						1	mg/L				
18M. Zinc, Total (7440-66-6)	✓		✓	<0.008						1	mg/L				

CONTINUED FROM PAGE 3

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X" A. TESTING REQUIRED	2. MARK "X" B. BELIEVED PRESENT	2. MARK "X" C. BELIEVED ABSENT	3. EFFLUENT A. MAXIMUM DAILY VALUE (1) CONCENTRATION	3. EFFLUENT A. MAXIMUM DAILY VALUE (2) MASS	3. EFFLUENT B. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	3. EFFLUENT B. MAXIMUM 30 DAY VALUE (if available) (2) MASS	3. EFFLUENT C. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	3. EFFLUENT C. LONG TERM AVRG. VALUE (if available) (2) MASS	3. EFFLUENT D. NO. OF ANALYSES	4. UNITS A. CONCENTRATION	4. UNITS B. MASS	5. INTAKE (optional) A. LONG TERM AVRG. VALUE (1) CONCENTRATION	5. INTAKE (optional) A. LONG TERM AVRG. VALUE (2) MASS	5. INTAKE (optional) B. NO OF ANALYSES
19M. Cyanide, Amenable to Chlorination	☑	☐	☑	<0.02						1	mg/L				
20M. Phenols, Total	☑	☐	☑	<0.050						1	mg/L				
DIOXIN															
2,3,7,8 – Tetra – chlorodibenzo-P-Dioxin (1764-01-6)	☑	☐	☑	**DESCRIBE RESULTS** <5 mg/L											
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	☑	☐	☑	<0.050						1	mg/L				
2V. Acrylonitrile (107-13-1)	☑	☐	☑	<0.050						1	mg/L				
3V. Benzene (71-43-2)	☑	☐	☑	<0.005						1	mg/L				
4V. Bis (*Chloromethyl*) Ether (542-88-1)	☑	☐	☑	N/D						1	mg/L				
5V. Bromoform (75-25-2)	☑	☐	☑	<0.005						1	mg/L				
6V. Carbon Tetrachloride (56-23-5)	☑	☐	☑	<0.005						1	mg/L				
7V. Chlorobenzene (108-90-7)	☑	☐	☑	<0.005						1	mg/L				
8V. Chlorodibromomethane (124-48-1)	☑	☐	☑	<0.005						1	mg/L				
9V. Chloroethane (75-00-3)	☑	☐	☑	<0.005						1	mg/L				
10V. 2-Chloroethylvinyl Ether (110-75-8)	☑	☐	☑	<0.010						1	mg/L				
11V. Chloroform (67-66-3)	☑	☐	☑	<0.005						1	mg/L				
12V. Dichlorobromomethane (75-27-4)	☑	☐	☑	<0.005						1	mg/L				
13V. Dichloro-difluoromethane (75-71-8)	☑	☐	☑	<0.005						1	mg/L				
14V. 1,1 – Dichloroethane (75-34-3)	☑	☐	☑	<0.005						1	mg/L				
15V. 1,2 – Dichloroethane (107-06-2)	☑	☐	☑	<0.005						1	mg/L				
16V. 1,1 – Dichloroethylene (75-35-4)	☑	☐	☑	<0.005						1	mg/L				
17V. 1,3 – Dichloropropane (78-87-5)	☑	☐	☑	<0.005						1	mg/L				
18V. 1,2 –Dichloropropylene (542-75-6)	☑	☐	☑	<0.005						1	mg/L				
19V. Ethylbenzene (100-41-4)	☑	☐	☑	<0.005						1	mg/L				
20V. Methyl Bromide (74-83-9)	☑	☐	☑	<0.005						1	mg/L				
21V. Methyl Chloride (74-87-3)	☑	☐	☑	<0.005						1	mg/L				

CONTINUE ON PAGE 4

CONTINUED FROM THE FRONT

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-000097675	014

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING RE-QUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC.MS FRACTION – VOLATILE COMPOUNDS *(continued)*															
22V. Methylene Chloride (75-09-2)	☑	☐	☑	<0.005						1	mg/L				
23V. 1,1,2,2 – Tetra-chloroethane (79-34-5)	☑	☐	☑	<0.005						1	mg/L				
24V. Tetrachloroethylene (127-18-4)	☑	☐	☑	<0.005						1	mg/L				
25V. Toluene (108-88-3)	☑	☐	☑	<0.005						1	mg/L				
26V. 1,2 – Trans Dichloroethylene (156-60-5)	☑	☐	☑	<0.005						1	mg/L				
27V. 1,1,1 – Tri – chloroethane (71-55-6)	☑	☐	☑	<0.005						1	mg/L				
28V. 1,1,2 – Tri-chloroethane (79-00-5)	☑	☐	☑	<0.005						1	mg/L				
29V. Trichloro – ethylene (79-01-6)	☑	☐	☑	<0.005						1	mg/L				
30V. Trichloro – fluoromethane (75-69-4)	☑	☐	☑	<0.005						1	mg/L				
31V. Vinyl Chloride (75-01-4)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2 – Chlorophenol (95-57-8)	☑	☐	☑	<0.005						1	mg/L				
2A. 2,4 – Dichloro – phenol (120-83-2)	☑	☐	☑	<0.005						1	mg/L				
3A. 2,4 – Dimethyl – phenol (105-67-9)	☑	☐	☑	<0.005						1	mg/L				
4A. 4,6 – Dinitro - O-Cresol (534-52-1)	☑	☐	☑	<0.071						1	mg/L				
5A. 2,4 – Dinitro – phenol (51-28-5)	☑	☐	☑	<0.082						1	mg/L				
6A. 2-Nitrophenol (88-75-5)	☑	☐	☑	<0.005						1	mg/L				
7A. 4-Nitrophenol (100-02-7)	☑	☐	☑	<0.041						1	mg/L				
8A. P – Chloro – M Cresol (59-50-7)	☑	☐	☑	<0.005						1	mg/L				
9A. Pentachloro – phenol (87-86-5)	☑	☐	☑	<0.026						1	mg/L				
10A. Phenol (108-952)	☑	☐	☑	<0.005						1	mg/L				
11A. 2,4,6 – Trichloro-phenol (88-06-2)	☑	☐	☑	<0.005						1	mg/L				
12A. 2 - methyl – 4,6 dinitrophenol (534-52-1)	☑	☐	☑	<0.071						1	mg/L				

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	☑	☐	☑	<0.005						1	mg/L				
2B. Acenaphtylene (208-96-8)	☑	☐	☑	<0.005						1	mg/L				
3B. Anthracene (120-12-7)	☑	☐	☑	<0.005						1	mg/L				
4B. Benzidine (92-87-5)	☑	☐	☑	<0.087						1	mg/L				
5B. Benzo (a) Anthracene (56-55-3)	☑	☐	☑	<0.005						1	mg/L				
6B. Benzo (a) Pyrene (50-32-8)	☑	☐	☑	<0.005						1	mg/L				
7B. 3,4 – Benzofluoranthene (205-99-2)	☑	☐	☑	<0.010						1	mg/L				
8B. Benzo (ghi) Perylene (191-24-2)	☑	☐	☑	<0.015						1	mg/L				
9B. Benzo (k) Fluoranthene (207-08-9)	☑	☐	☑	<0.005						1	mg/L				
10B. Bis (2-Chloroethoxy) Methane (111-91-1)	☑	☐	☑	<0.005						1	mg/L				
11B. Bis (2-Chloroethyl) Ether (111-44-4)	☑	☐	☑	<0.005						1	mg/L				
12B. Bis (2-Chloroisopropyl) Ether (39638-32-9)	☑	☐	☑	<0.005						1	mg/L				
13B. Bis (2-Ethylhexyl) Phthalate (117-81-7)	☑	☐	☑	<0.082						1	mg/L				
14B. 4-Bromophenyl Phenyl Ether (101-55-3)	☑	☐	☑	<0.005						1	mg/L				
15B. Butyl Benzyl Phthalate (85-68-7)	☑	☐	☑	<0.005						1	mg/L				
16B. 2-Chloronaphthalene (91-58-7)	☑	☐	☑	<0.005						1	mg/L				
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)	☑	☐	☑	<0.005						1	mg/L				
18B. Chrysene (218-01-9)	☑	☐	☑	<0.005						1	mg/L				
19B. Dibenzo (a.h) Anthracene (53-70-3)	☑	☐	☑	<0.051						1	mg/L				
20B. 1,2 – Dichlorobenzene (95-50-1)	☑	☐	☑	<0.005						1	mg/L				
21B. 1,3 – Dichlorobenzene (541-73-1)	☑	☐	☑	<0.005						1	mg/L				

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NPDES # (IF ASSIGNED): MO-000097675 | OUTFALL NUMBER: 014

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT						D. NO. OF ANALYSES	4. UNITS		5. INTAKE (optional)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)			A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1, 4-Dichlorobenzene (106-46-7)	☑	☐	☑	<0.005						1	mg/L				
23B. 3, 3'-Dichlorobenzidine (91-94-1)	☑	☐	☑	<0.061						1	mg/L				
24B. Diethyl Phthalate (84-66-2)	☑	☐	☑	<0.005						1	mg/L				
25B. Dimethyl Phthalate (131-11-3)	☑	☐	☑	<0.005						1	mg/L				
26B. Di-N-butyl Phthalate (84-74-2)	☑	☐	☑	<0.005						1	mg/L				
27B. 2,4-Dinitrotoluene (121-14-2)	☑	☐	☑	<0.005						1	mg/L				
28B. 2,6-Dinitrotoluene (606-20-2)	☑	☐	☑	<0.005						1	mg/L				
29B. Di-N-Octyphthalate (117-84-0)	☑	☐	☑	<0.031						1	mg/L				
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7)	☑	☐	☑	<0.020						1	mg/L				
31B. Fluoranthene (206-44-0)	☑	☐	☑	<0.005						1	mg/L				
32B. Fluorene (86-73-7)	☑	☐	☑	<0.005						1	mg/L				
33B. Hexachlorobenzene (87-68-3)	☑	☐	☑	<0.005						1	mg/L				
34B. Hexachlorobutadiene (87-68-3)	☑	☐	☑	<0.005						1	mg/L				
35B. Hexachloro-cyclopentadiene (77-47-4)	☑	☑	☐	0.065						1	mg/L				
36B. Hexachloroethane (67-72-1)	☑	☐	☑	<0.005						1	mg/L				
37B. Indeno (1,2,3-c-d) Pyrene (193-39-5)	☑	☐	☑	<0.014						1	mg/L				
38B. Isophorone (78-59-1)	☑	☐	☑	<0.005						1	mg/L				
39B. Naphthalene (91-20-3)	☑	☐	☑	<0.005						1	mg/L				
40B. Nitrobenzene (98-95-3)	☑	☐	☑	<0.005						1	mg/L				
41B. N-Nitro-sodimethylamine (62-75-9)	☑	☐	☑	<0.005						1	mg/L				

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TES-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
42B. N-Nitroso N-Propylamine (621-64-7)	☑	☐	☑	<0.005						1	mg/L				
43B. N-Nitro-sodiphenylamine (86-30-6)	☑	☐	☑	<0.005						1	mg/L				
44B. Phenanthrene (85-01-8)	☑	☐	☑	<0.005						1	mg/L				
45B. Pyrene (129-00-0)	☑	☐	☑	<0.005						1	mg/L				
46B. 1,2,4-Tri chlorobenzene (120-82-1)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)	☐	☐	☑												
2P. α-BHC (319-84-6)	☐	☐	☑												
3P. β-BHC (319-84-6)	☐	☐	☑												
4P. γ-BHC (58-89-9)	☐	☐	☑												
5P. δ-BHC (319-86-8)	☐	☐	☑												
6P. Chlordane (57-74-9)	☐	☐	☑												
7P. 4,4'-DDT (50-29-3)	☐	☐	☑												
8P. 4,4'-DDE (72-55-9)	☐	☐	☑												
9P. 4,4'-DDD (72-54-8)	☐	☐	☑												
10P. Dieldrin (60-57-1)	☐	☐	☑												
11P. α-Endosulfan (115-29-7)	☐	☐	☑												
12P. β-Endosultan (115-29-7)	☐	☐	☑												
13P. Endosulfan Sulfate (1031-07-8)	☐	☐	☑												
14P. Endrin (72-20-8)	☐	☐	☑												
15P. Endrin Aldehyde (7421-93-4)	☐	☐	☑												
16P. Heptachlor (76-44-8)	☐	☐	☑												

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NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-000097675	014

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – PESTICISES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)	☐	☐	☑												
18P. PCB-1242 (53469-21-9)	☐	☐	☑												
19P. PBC-1254 (11097-69-1)	☐	☐	☑												
20P. PCB-1221 (11104-28-2)	☐	☐	☑												
21P. PCB-1232 (11141-16-5)	☐	☐	☑												
22P. PCB-1248 (12672-29-6)	☐	☐	☑												
23P. PCB-1260 (11096-82-5)	☐	☐	☑												
24P. PCB-1016 (12674-11-2)	☐	☐	☑												
25P. Toxaphene (8001-35-2)	☐	☐	☑												
J. RADIOACTIVITY															
(1) Alpha Total	☐	☐	☑												
(2) Beta Total	☐	☐	☑												
(3) Radium Total	☐	☐	☑												
(4) Radium 226 Total	☐	☐	☑												

APPLICATION FOR DISCHARGE PERMIT
FORM D – PRIMARY INDUSTRIES

TABLE II

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-0097675	017

1.30 If you are a primary industry and this outfall contains process wastewater, refer to Table A in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-A for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. Mark "X" in column 2-B for each pollutant you know or have reason to believe is present. Mark "X" in column 2-C for each pollutant you believe to be absent. If you mark either columns 2-A or 2-B for any pollutant, you must provide the results of at least one analysis for that pollutant. Note that there are seven pages to this part, please review each carefully. Complete one table (*all seven pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TEST-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE (1) CONCENTRATION	A. MAXIMUM DAILY VALUE (2) MASS	B. MAXIMUM 30 DAY VALUE (*if available*) (1) CONCENTRATION	B. MAXIMUM 30 DAY VALUE (*if available*) (2) MASS	C. LONG TERM AVRG. VALUE (*if available*) (1) CONCENTRATION	C. LONG TERM AVRG. VALUE (*if available*) (2) MASS	D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS	A. LONG TERM AVRG. VALUE (1) CONCENTRATION	A. LONG TERM AVRG. VALUE (2) MASS	B. NO OF ANALYSES
METALS, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-9)	✓		✓	<0.008						1	mg/L				
2M. Arsenic, Total (7440-38-2)	✓		✓	<0.008						1	mg/L				
3M. Beryllium, Total (7440-41-7)	✓		✓	<0.008						1	mg/L				
4M. Cadmium, Total (7440-43-9)	✓		✓	<0.008						1	mg/L				
5M. Chromium III (16065-83-1)	✓		✓	<0.025						1	mg/L				
6M. Chromium VI (18540-29-9)	✓		✓	<0.025						1	mg/L				
7M. Copper, Total (7440-50-8)	✓		✓	<0.008						1	mg/L				
8M. Lead, Total (7439-92-1)	✓		✓	<0.008						1	mg/L				
9M. Magnesium Total (7439-95-4)	✓		✓	9.43						1	mg/L				
10M. Mercury, Total (7439-97-6)	✓		✓	<0.0005						1	mg/L				
11M. Molybdenum Total (7439-98-7)	✓		✓	<0.008						1	mg/L				
12M. Nickel, Total (7440-02-0)	✓		✓	<0.008						1	mg/L				
13M. Selenium, Total (7782-49-2)	✓		✓	<0.008						1	mg/L				
14M. Silver, Total (7440-22-4)	✓		✓	<0.008						1	mg/L				
15M. Thallium, Total (7440-28-0)	✓		✓	<0.008						1	mg/L				
16M. Tin Total (7440-31-5)	✓		✓	<0.050						1	mg/L				
17M. Titanium Total (7440-32-6)	✓		✓	<0.020						1	mg/L				
18M. Zinc, Total (7440-66-6)	✓		✓	<0.008						1	mg/L				

CONTINUED FROM PAGE 3

19M. Cyanide, Amenable to Chlorination	☑	☐	☑	<0.02						1	mg/L				
20M. Phenols, Total	☑	☐	☑	<0.050						1	mg/L				
DIOXIN															
2,3,7,8 – Tetra – chlorodibenzo-P-Dioxin (1764-01-6)	☑	☐	☑	**DESCRIBE RESULTS** <1 mg/L											

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE *(if available)*		C. LONG TERM AVRG. VALUE *(if available)*		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	☑	☐	☑	<0.050						1	mg/L				
2V. Acrylonitrile (107-13-1)	☑	☐	☑	<0.050						1	mg/L				
3V. Benzene (71-43-2)	☑	☐	☑	<0.005						1	mg/L				
4V. Bis (*Chloromethyl*) Ether (542-88-1)	☑	☐	☑	N/D						1	mg/L				
5V. Bromoform (75-25-2)	☑	☐	☑	<0.005						1	mg/L				
6V. Carbon Tetrachloride (56-23-5)	☑	☐	☑	<0.005						1	mg/L				
7V. Chlorobenzene (108-90-7)	☑	☐	☑	<0.005						1	mg/L				
8V. Chlorodibromomethane (124-48-1)	☑	☐	☑	<0.005						1	mg/L				
9V. Chloroethane (75-00-3)	☑	☐	☑	<0.005						1	mg/L				
10V. 2-Chloroethylvinyl Ether (110-75-8)	☑	☐	☑	<0.010						1	mg/L				
11V. Chloroform (67-66-3)	☑	☐	☑	<0.005						1	mg/L				
12V. Dichlorobromomethane (75-27-4)	☑	☐	☑	<0.005						1	mg/L				
13V. Dichloro-difluoromethane (75-71-8)	☑	☐	☑	<0.005						1	mg/L				
14V. 1,1 – Dichloroethane (75-34-3)	☑	☐	☑	<0.005						1	mg/L				
15V. 1,2 – Dichloroethane (107-06-2)	☑	☐	☑	<0.005						1	mg/L				
16V. 1,1 – Dichloroethylene (75-35-4)	☑	☐	☑	<0.005						1	mg/L				
17V. 1,3 – Dichloropropane (78-87-5)	☑	☐	☑	<0.005						1	mg/L				
18V. 1,2 –Dichloropropylene (542-75-6)	☑	☐	☑	<0.005						1	mg/L				
19V. Ethylbenzene (100-41-4)	☑	☐	☑	<0.005						1	mg/L				
20V. Methyl Bromide (74-83-9)	☑	☐	☑	<0.005						1	mg/L				
21V. Methyl Chloride (74-87-3)	☑	☐	☑	<0.005						1	mg/L				

CONTINUED FROM THE FRONT

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-0097675	017

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING RE-QUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC.MS FRACTION – VOLATILE COMPOUNDS *(continued)*															
22V. Methylene Chloride (75-09-2)	☑	☐	☑	<0.005						1	mg/L				
23V. 1,1,2,2 – Tetra-chloroethane (79-34-5)	☑	☐	☑	<0.005						1	mg/L				
24V. Tetrachloroethylene (127-18-4)	☑	☐	☑	<0.005						1	mg/L				
25V. Toluene (108-88-3)	☑	☐	☑	<0.005						1	mg/L				
26V. 1,2 – Trans Dichloroethylene (156-60-5)	☑	☐	☑	<0.005						1	mg/L				
27V. 1,1,1 – Tri – chloroethane (71-55-6)	☑	☐	☑	<0.005						1	mg/L				
28V. 1,1,2 – Tri-chloroethane (79-00-5)	☑	☐	☑	<0.005						1	mg/L				
29V. Trichloro – ethylene (79-01-6)	☑	☐	☑	<0.005						1	mg/L				
30V. Trichloro – fluoromethane (75-69-4)	☑	☐	☑	<0.005						1	mg/L				
31V. Vinyl Chloride (75-01-4)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2 – Chlorophenol (95-57-8)	☑	☐	☑	<0.001						1	mg/L				
2A. 2,4 – Dichloro – phenol (120-83-2)	☑	☐	☑	<0.001						1	mg/L				
3A. 2,4 – Dimethyl – phenol (105-67-9)	☑	☐	☑	<0.001						1	mg/L				
4A. 4,6 – Dinitro - O-Cresol (534-52-1)	☑	☐	☑	<0.014						1	mg/L				
5A. 2,4 – Dinitro – phenol (51-28-5)	☑	☐	☑	<0.016						1	mg/L				
6A. 2-Nitrophenol (88-75-5)	☑	☐	☑	<0.001						1	mg/L				
7A. 4-Nitrophenol (100-02-7)	☑	☐	☑	<0.008						1	mg/L				
8A. P – Chloro – M Cresol (59-50-7)	☑	☐	☑	<0.001						1	mg/L				
9A. Pentachloro – phenol (87-86-5)	☑	☐	☑	<0.005						1	mg/L				
10A. Phenol (108-952)	☑	☐	☑	<0.001						1	mg/L				
11A. 2,4,6 – Trichloro-phenol (88-06-2)	☑	☐	☑	<0.001						1	mg/L				
12A. 2 - methyl – 4,6 dinitrophenol (534-52-1)	☑	☐	☑	<0.014						1	mg/L				

CONTINUE ON PAGE 5

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	☑	☐	☑	<0.001						1	mg/L				
2B. Acenaphtylene (208-96-8)	☑	☐	☑	<0.001						1	mg/L				
3B. Anthracene (120-12-7)	☑	☐	☑	<0.001						1	mg/L				
4B. Benzidine (92-87-5)	☑	☐	☑	<0.017						1	mg/L				
5B. Benzo (a) Anthracene (56-55-3)	☑	☐	☑	<0.001						1	mg/L				
6B. Benzo (a) Pyrene (50-32-8)	☑	☐	☑	<0.001						1	mg/L				
7B. 3,4 – Benzofluoranthene (205-99-2)	☑	☐	☑	<0.001						1	mg/L				
8B. Benzo (ghi) Perylene (191-24-2)	☑	☐	☑	<0.003						1	mg/L				
9B. Benzo (k) Fluoranthene (207-08-9)	☑	☐	☑	<0.001						1	mg/L				
10B. Bis (2-Chloroethoxy) Methane (111-91-1)	☑	☐	☑	<0.001						1	mg/L				
11B. Bis (2-Chloroethyl) Ether (111-44-4)	☑	☐	☑	<0.001						1	mg/L				
12B. Bis (2-Chloroisopropyl) Ether (39638-32-9)	☑	☐	☑	<0.001						1	mg/L				
13B. Bis (2-Ethylhexyl) Phthalate (117-81-7)	☑	☐	☑	<0.016						1	mg/L				
14B. 4-Bromophenyl Phenyl Ether (101-55-3)	☑	☐	☑	<0.001						1	mg/L				
15B. Butyl Benzyl Phthalate (85-68-7)	☑	☐	☑	<0.002						1	mg/L				
16B. 2-Chloronaphthalene (91-58-7)	☑	☐	☑	<0.001						1	mg/L				
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)	☑	☐	☑	<0.001						1	mg/L				
18B. Chrysene (218-01-9)	☑	☐	☑	<0.001						1	mg/L				
19B. Dibenzo (a.h) Anthracene (53-70-3)	☑	☐	☑	<0.010						1	mg/L				
20B. 1,2 – Dichlorobenzene (95-50-1)	☑	☐	☑	<0.005						1	mg/L				
21B. 1,3 – Dichlorobenzene (541-73-1)	☑	☐	☑	<0.005						1	mg/L				

CONTINUED FROM PAGE 5

NPDES # (IF ASSIGNED)	OUTFALL NUMBER
MO-0097675	017

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1, 4-Dichlorobenzene (106-46-7)	☑	☐	☑	<0.005						1	mg/L				
23B. 3, 3'-Dichlorobenzidine (91-94-1)	☑	☐	☑	<0.012						1	mg/L				
24B. Diethyl Phthalate (84-66-2)	☑	☐	☑	<0.001						1	mg/L				
25B. Dimethyl Phthalate (131-11-3)	☑	☐	☑	<0.001						1	mg/L				
26B. Di-N-butyl Phthalate (84-74-2)	☑	☐	☑	<0.001						1	mg/L				
27B. 2,4-Dinitrotoluene (121-14-2)	☑	☐	☑	<0.001						1	mg/L				
28B. 2,6-Dinitrotoluene (606-20-2)	☑	☐	☑	<0.001						1	mg/L				
29B. Di-N-Octyphthalate (117-84-0)	☑	☐	☑	<0.006						1	mg/L				
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7)	☑	☐	☑	<0.004						1	mg/L				
31B. Fluoranthene (206-44-0)	☑	☐	☑	<0.001						1	mg/L				
32B. Fluorene (86-73-7)	☑	☐	☑	<0.001						1	mg/L				
33B. Hexachlorobenzene (87-68-3)	☑	☐	☑	<0.001						1	mg/L				
34B. Hexachlorobutadiene (87-68-3)	☑	☐	☑	<0.001						1	mg/L				
35B. Hexachloro-cyclopentadiene (77-47-4)	☑	☐	☑	<0.012						1	mg/L				
36B. Hexachloroethane (67-72-1)	☑	☐	☑	<0.001						1	mg/L				
37B. Indeno (1,2,3-c-d) Pyrene (193-39-5)	☑	☐	☑	<0.003						1	mg/L				
38B. Isophorone (78-59-1)	☑	☐	☑	<0.002						1	mg/L				
39B. Naphthalene (91-20-3)	☑	☐	☑	<0.002						1	mg/L				
40B. Nitrobenzene (98-95-3)	☑	☐	☑	<0.002						1	mg/L				
41B. N-Nitro-sodimethylamine (62-75-9)	☑	☐	☑	<0.002						1	mg/L				

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT						D. NO. OF ANALYSES	4. UNITS		5. INTAKE (*optional*)		
	A. TES-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)			A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
42B. N-Nitroso N-Propylamine (621-64-7)	☑	☐	☑	<0.002						1	mg/L				
43B. N-Nitro-sodiphenylamine (86-30-6)	☑	☐	☑	<0.002						1	mg/L				
44B. Phenanthrene (85-01-8)	☑	☐	☑	<0.002						1	mg/L				
45B. Pyrene (129-00-0)	☑	☐	☑	<0.002						1	mg/L				
46B. 1,2,4-Tri chlorobenzene (120-82-1)	☑	☐	☑	<0.001						1	mg/L				
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)	☐	☐	☑												
2P. α-BHC (319-84-6)	☐	☐	☑												
3P. β-BHC (319-84-6)	☐	☐	☑												
4P. γ-BHC (58-89-9)	☐	☐	☑												
5P. δ-BHC (319-86-8)	☐	☐	☑												
6P. Chlordane (57-74-9)	☐	☐	☑												
7P. 4,4'-DDT (50-29-3)	☐	☐	☑												
8P. 4,4'-DDE (72-55-9)	☐	☐	☑												
9P. 4,4'-DDD (72-54-8)	☐	☐	☑												
10P. Dieldrin (60-57-1)	☐	☐	☑												
11P. α-Endosulfan (115-29-7)	☐	☐	☑												
12P. β-Endosultan (115-29-7)	☐	☐	☑												
13P. Endosulfan Sulfate (1031-07-8)	☐	☐	☑												
14P. Endrin (72-20-8)	☐	☐	☑												
15P. Endrin Aldehyde (7421-93-4)	☐	☐	☑												
16P. Heptachlor (76-44-8)	☐	☐	☑												

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CONTINUED FROM PAGE 7

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – PESTICISES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)	☐	☐	☑												
18P. PCB-1242 (53469-21-9)	☐	☐	☑												
19P. PBC-1254 (11097-69-1)	☐	☐	☑												
20P. PCB-1221 (11104-28-2)	☐	☐	☑												
21P. PCB-1232 (11141-16-5)	☐	☐	☑												
22P. PCB-1248 (12672-29-6)	☐	☐	☑												
23P. PCB-1260 (11096-82-5)	☐	☐	☑												
24P. PCB-1016 (12674-11-2)	☐	☐	☑												
25P. Toxaphene (8001-35-2)	☐	☐	☑												
J. RADIOACTIVITY															
(1) Alpha Total	☐	☐	☑												
(2) Beta Total	☐	☐	☑												
(3) Radium Total	☐	☐	☑												
(4) Radium 226 Total	☐	☐	☑												

APPLICATION FOR DISCHARGE PERMIT
FORM D – PRIMARY INDUSTRIES

TABLE II

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-000097675	018

1.30 If you are a primary industry and this outfall contains process wastewater, refer to Table A in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-A for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. Mark "X" in column 2-B for each pollutant you know or have reason to believe is present. Mark "X" in column 2-C for each pollutant you believe to be absent. If you mark either columns 2-A or 2-B for any pollutant, you must provide the results of at least one analysis for that pollutant. Note that there are seven pages to this part, please review each carefully. Complete one table (*all seven pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TEST-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE (1) CONCENTRATION	A. MAXIMUM DAILY VALUE (2) MASS	B. MAXIMUM 30 DAY VALUE (*if available*) (1) CONCENTRATION	B. MAXIMUM 30 DAY VALUE (*if available*) (2) MASS	C. LONG TERM AVRG. VALUE (*if available*) (1) CONCENTRATION	C. LONG TERM AVRG. VALUE (*if available*) (2) MASS	D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS	A. LONG TERM AVRG. VALUE (1) CONCENTRATION	A. LONG TERM AVRG. VALUE (2) MASS	B. NO OF ANALYSES
METALS, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-9)	☑	☑	☐	0.011						1	mg/L				
2M. Arsenic, Total (7440-38-2)	☑	☐	☑	<0.008						1	mg/L				
3M. Beryllium, Total (7440-41-7)	☑	☐	☑	<0.008						1	mg/L				
4M. Cadmium, Total (7440-43-9)	☑	☐	☑	<0.008						1	mg/L				
5M. Chromium III (16065-83-1)	☑	☐	☑	<0.025						1	mg/L				
6M. Chromium VI (18540-29-9)	☑	☐	☑	<0.025						1	mg/L				
7M. Copper, Total (7440-50-8)	☑	☐	☑	<0.008						1	mg/L				
8M. Lead, Total (7439-92-1)	☑	☐	☑	<0.008						1	mg/L				
9M. Magnesium Total (7439-95-4)	☑	☑	☐	8.84						1	mg/L				
10M. Mercury, Total (7439-97-6)	☑	☐	☑	<0.0002						1	mg/L				
11M. Molybdenum Total (7439-98-7)	☑	☐	☑	<0.008						1	mg/L				
12M. Nickel, Total (7440-02-0)	☑	☐	☑	<0.008						1	mg/L				
13M. Selenium, Total (7782-49-2)	☑	☐	☑	<0.008						1	mg/L				
14M. Silver, Total (7440-22-4)	☑	☐	☑	<0.008						1	mg/L				
15M. Thallium, Total (7440-28-0)	☑	☐	☑	<0.008						1	mg/L				
16M. Tin Total (7440-31-5)	☑	☐	☑	<0.050						1	mg/L				
17M. Titanium Total (7440-32-6)	☑	☐	☑	<0.020						1	mg/L				
18M. Zinc, Total (7440-66-6)	☑	☑	☐	0.015						1	mg/L				

CONTINUED FROM PAGE 3

19M. Cyanide, Amenable to Chlorination	☑	☐	☑	<0.02						1	mg/L				
20M. Phenols, Total	☑	☐	☑	<0.050						1	mg/L				
DIOXIN															
2,3,7,8 – Tetra – chlorodibenzo-P-Dioxin (1764-01-6)	☑	☐	☑	**DESCRIBE RESULTS** <1 mg/L											

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE *(if available)*		C. LONG TERM AVRG. VALUE *(if available)*		D. NO. OF ANALYSES	A. CONCENTRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	☑	☐	☑	<0.050						1	mg/L				
2V. Acrylonitrile (107-13-1)	☑	☐	☑	<0.050						1	mg/L				
3V. Benzene (71-43-2)	☑	☐	☑	<0.005						1	mg/L				
4V. Bis (*Chloromethyl*) Ether (542-88-1)	☑	☐	☑	N/D						1	mg/L				
5V. Bromoform (75-25-2)	☑	☐	☑	<0.005						1	mg/L				
6V. Carbon Tetrachloride (56-23-5)	☑	☐	☑	<0.005						1	mg/L				
7V. Chlorobenzene (108-90-7)	☑	☐	☑	<0.005						1	mg/L				
8V. Chlorodibromomethane (124-48-1)	☑	☐	☑	<0.005						1	mg/L				
9V. Chloroethane (75-00-3)	☑	☐	☑	<0.005						1	mg/L				
10V. 2-Chloroethylvinyl Ether (110-75-8)	☑	☐	☑	<0.010						1	mg/L				
11V. Chloroform (67-66-3)	☑	☐	☑	<0.005						1	mg/L				
12V. Dichlorobromomethane (75-27-4)	☑	☐	☑	<0.005						1	mg/L				
13V. Dichloro-difluoromethane (75-71-8)	☑	☐	☑	<0.005						1	mg/L				
14V. 1,1 – Dichloroethane (75-34-3)	☑	☐	☑	<0.005						1	mg/L				
15V. 1,2 – Dichloroethane (107-06-2)	☑	☐	☑	<0.005						1	mg/L				
16V. 1,1 – Dichloroethylene (75-35-4)	☑	☐	☑	<0.005						1	mg/L				
17V. 1,3 – Dichloropropane (78-87-5)	☑	☐	☑	<0.005						1	mg/L				
18V. 1,2 –Dichloropropylene (542-75-6)	☑	☐	☑	<0.005						1	mg/L				
19V. Ethylbenzene (100-41-4)	☑	☐	☑	<0.005						1	mg/L				
20V. Methyl Bromide (74-83-9)	☑	☐	☑	<0.005						1	mg/L				
21V. Methyl Chloride (74-87-3)	☑	☐	☑	<0.005						1	mg/L				

CONTINUE ON PAGE 4

CONTINUED FROM THE FRONT

NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-000097675	018

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT						D. NO. OF ANALYSES	4. UNITS		5. INTAKE (*optional*)		
	A. TESTING RE-QUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)			A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC.MS FRACTION – VOLATILE COMPOUNDS *(continued)*															
22V. Methylene Chloride (75-09-2)	☑	☐	☑	<0.005						1	mg/L				
23V. 1,1,2,2 – Tetra-chloroethane (79-34-5)	☑	☐	☑	<0.005						1	mg/L				
24V. Tetrachloroethylene (127-18-4)	☑	☐	☑	<0.005						1	mg/L				
25V. Toluene (108-88-3)	☑	☐	☑	<0.005						1	mg/L				
26V. 1,2 – Trans Dichloroethylene (156-60-5)	☑	☐	☑	<0.005						1	mg/L				
27V. 1,1,1 – Tri – chloroethane (71-55-6)	☑	☐	☑	<0.005						1	mg/L				
28V. 1,1,2 – Tri-chloroethane (79-00-5)	☑	☐	☑	<0.005						1	mg/L				
29V. Trichloro – ethylene (79-01-6)	☑	☐	☑	<0.005						1	mg/L				
30V. Trichloro – fluoromethane (75-69-4)	☑	☐	☑	<0.005						1	mg/L				
31V. Vinyl Chloride (75-01-4)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2 – Chlorophenol (95-57-8)	☑	☐	☑	<0.005						1	mg/L				
2A. 2,4 – Dichloro – phenol (120-83-2)	☑	☐	☑	<0.005						1	mg/L				
3A. 2,4 – Dimethyl – phenol (105-67-9)	☑	☐	☑	<0.005						1	mg/L				
4A. 4,6 – Dinitro - O-Cresol (534-52-1)	☑	☐	☑	<0.071						1	mg/L				
5A. 2,4 – Dinitro – phenol (51-28-5)	☑	☐	☑	<0.082						1	mg/L				
6A. 2-Nitrophenol (88-75-5)	☑	☐	☑	<0.005						1	mg/L				
7A. 4-Nitrophenol (100-02-7)	☑	☐	☑	<0.041						1	mg/L				
8A. P – Chloro – M Cresol (59-50-7)	☑	☐	☑	<0.005						1	mg/L				
9A. Pentachloro – phenol (87-86-5)	☑	☐	☑	<0.026						1	mg/L				
10A. Phenol (108-952)	☑	☐	☑	<0.005						1	mg/L				
11A. 2,4,6 – Trichloro-phenol (88-06-2)	☑	☐	☑	<0.005						1	mg/L				
12A. 2 - methyl – 4,6 dinitrophenol (534-52-1)	☑	☐	☑	<0.071						1	mg/L				

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	☑	☐	☑	<0.005						1	mg/L				
2B. Acenaphtylene (208-96-8)	☑	☐	☑	<0.005						1	mg/L				
3B. Anthracene (120-12-7)	☑	☐	☑	<0.005						1	mg/L				
4B. Benzidine (92-87-5)	☑	☐	☑	<0.087						1	mg/L				
5B. Benzo (a) Anthracene (56-55-3)	☑	☐	☑	<0.005						1	mg/L				
6B. Benzo (a) Pyrene (50-32-8)	☑	☐	☑	<0.005						1	mg/L				
7B. 3,4 – Benzofluoranthene (205-99-2)	☑	☐	☑	<0.010						1	mg/L				
8B. Benzo (ghi) Perylene (191-24-2)	☑	☐	☑	<0.015						1	mg/L				
9B. Benzo (k) Fluoranthene (207-08-9)	☑	☐	☑	<0.005						1	mg/L				
10B. Bis (2-Chloroethoxy) Methane (111-91-1)	☑	☐	☑	<0.005						1	mg/L				
11B. Bis (2-Chloroethyl) Ether (111-44-4)	☑	☐	☑	<0.005						1	mg/L				
12B. Bis (2-Chloroisopropyl) Ether (39638-32-9)	☑	☐	☑	<0.005						1	mg/L				
13B. Bis (2-Ethylhexyl) Phthalate (117-81-7)	☑	☐	☑	<0.082						1	mg/L				
14B. 4-Bromophenyl Phenyl Ether (101-55-3)	☑	☐	☑	<0.005						1	mg/L				
15B. Butyl Benzyl Phthalate (85-68-7)	☑	☐	☑	<0.005						1	mg/L				
16B. 2-Chloronaphthalene (91-58-7)	☑	☐	☑	<0.005						1	mg/L				
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)	☑	☐	☑	<0.005						1	mg/L				
18B. Chrysene (218-01-9)	☑	☐	☑	<0.005						1	mg/L				
19B. Dibenzo (a.h) Anthracene (53-70-3)	☑	☐	☑	<0.051						1	mg/L				
20B. 1,2 – Dichlorobenzene (95-50-1)	☑	☐	☑	<0.005						1	mg/L				
21B. 1,3 – Dichlorobenzene (541-73-1)	☑	☐	☑	<0.005						1	mg/L				

CONTINUED FROM PAGE 5

NPDES # (IF ASSIGNED)	OUTFALL NUMBER
MO-000097675	018

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1, 4-Dichlorobenzene (106-46-7)	☑	☐	☑	<0.005						1	mg/L				
23B. 3, 3'-Dichlorobenzidine (91-94-1)	☑	☐	☑	<0.061						1	mg/L				
24B. Diethyl Phthalate (84-66-2)	☑	☐	☑	<0.005						1	mg/L				
25B. Dimethyl Phthalate (131-11-3)	☑	☐	☑	<0.005						1	mg/L				
26B. Di-N-butyl Phthalate (84-74-2)	☑	☐	☑	<0.005						1	mg/L				
27B. 2,4-Dinitrotoluene (121-14-2)	☑	☐	☑	<0.005						1	mg/L				
28B. 2,6-Dinitrotoluene (606-20-2)	☑	☐	☑	<0.005						1	mg/L				
29B. Di-N-Octyphthalate (117-84-0)	☑	☐	☑	<0.031						1	mg/L				
30B. 1,2-Diphenylhydrazine (*as Azobenzene)* (122-66-7)	☑	☐	☑	<0.020						1	mg/L				
31B. Fluoranthene (206-44-0)	☑	☐	☑	<0.005						1	mg/L				
32B. Fluorene (86-73-7)	☑	☐	☑	<0.005						1	mg/L				
33B. Hexachlorobenzene (87-68-3)	☑	☐	☑	<0.005						1	mg/L				
34B. Hexachlorobutadiene (87-68-3)	☑	☐	☑	<0.005						1	mg/L				
35B. Hexachloro-cyclopentadiene (77-47-4)	☑	☐	☑	<0.061						1	mg/L				
36B. Hexachloroethane (67-72-1)	☑	☐	☑	<0.005						1	mg/L				
37B. Indeno (1,2,3-c-d) Pyrene (193-39-5)	☑	☐	☑	<0.014						1	mg/L				
38B. Isophorone (78-59-1)	☑	☐	☑	<0.005						1	mg/L				
39B. Naphthalene (91-20-3)	☑	☐	☑	<0.005						1	mg/L				
40B. Nitrobenzene (98-95-3)	☑	☐	☑	<0.005						1	mg/L				
41B. N-Nitro-sodimethylamine (62-75-9)	☑	☐	☑	<0.005						1	mg/L				

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	A. TES-ING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
42B. N-Nitroso N-Propylamine (621-64-7)	☑	☐	☑	<0.005						1	mg/L				
43B. N-Nitro-sodiphenylamine (86-30-6)	☑	☐	☑	<0.005						1	mg/L				
44B. Phenanthrene (85-01-8)	☑	☐	☑	<0.005						1	mg/L				
45B. Pyrene (129-00-0)	☑	☐	☑	<0.005						1	mg/L				
46B. 1,2,4-Tri chlorobenzene (120-82-1)	☑	☐	☑	<0.005						1	mg/L				
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)	☐	☐	☑												
2P. α-BHC (319-84-6)	☐	☐	☑												
3P. β-BHC (319-84-6)	☐	☐	☑												
4P. γ-BHC (58-89-9)	☐	☐	☑												
5P. δ-BHC (319-86-8)	☐	☐	☑												
6P. Chlordane (57-74-9)	☐	☐	☑												
7P. 4,4'-DDT (50-29-3)	☐	☐	☑												
8P. 4,4'-DDE (72-55-9)	☐	☐	☑												
9P. 4,4'-DDD (72-54-8)	☐	☐	☑												
10P. Dieldrin (60-57-1)	☐	☐	☑												
11P. α-Endosulfan (115-29-7)	☐	☐	☑												
12P. β-Endosultan (115-29-7)	☐	☐	☑												
13P. Endosulfan Sulfate (1031-07-8)	☐	☐	☑												
14P. Endrin (72-20-8)	☐	☐	☑												
15P. Endrin Aldehyde (7421-93-4)	☐	☐	☑												
16P. Heptachlor (76-44-8)	☐	☐	☑												

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NPDES # (*IF ASSIGNED*)	OUTFALL NUMBER
MO-000097675	018

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (*optional*)		
	A. TESTING REQUIRED	B. BELIEVED PRESENT	C. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (*if available*)		C. LONG TERM AVRG. VALUE (*if available*)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE	B. NO OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION / (2) MASS	
GC/MS FRACTION – PESTICISES *(continued)*														
17P. Heptachlor Epoxide (1024-57-3)	☐	☐	☑											
18P. PCB-1242 (53469-21-9)	☐	☐	☑											
19P. PBC-1254 (11097-69-1)	☐	☐	☑											
20P. PCB-1221 (11104-28-2)	☐	☐	☑											
21P. PCB-1232 (11141-16-5)	☐	☐	☑											
22P. PCB-1248 (12672-29-6)	☐	☐	☑											
23P. PCB-1260 (11096-82-5)	☐	☐	☑											
24P. PCB-1016 (12674-11-2)	☐	☐	☑											
25P. Toxaphene (8001-35-2)	☐	☐	☑											
J. RADIOACTIVITY														
(1) Alpha Total	☐	☐	☑											
(2) Beta Total	☐	☐	☑											
(3) Radium Total	☐	☐	☑											
(4) Radium 226 Total	☐	☐	☑											

2.00 POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

A. IS ANY POLLUTANT LISTED IN ITEM 1.30 A SUBSTANCE OR A COMPONENT OF A SUBSTANCE WHICH YOU DO OR EXPECT THAT YOU WILL OVER THE NEXT FIVE YEARS USE OR MANUFACTURE AS AN INTERMEDIATE OR FINAL PRODUCT OR BYPRODUCT?

☐ **YES** *(LIST ALL SUCH POLLUTANTS BELOW)* ☒ **NO** *(GO TO B)*

B. ARE YOUR OPERATIONS SUCH THAT YOUR RAW MATERIALS, PROCESSES OR PRODUCTS CAN REASONABLE BE EXPECTED TO VARY SO THAT YOUR DISCHARGES OF POLLUTANTS MAY DURING THE NEXT FIVE YEARS EXCEED TWO TIMES THE MAXIMUM VALUES REPORTED IN ITEM 1.30?

☐ **YES** *(COMPLETE C BELOW)* ☒ **NO** *(GO TO SECTION 3.00)*

C. IF YOU ANSWERED "YES" TO ITEM B, EXPLAIN BELOW AND DESCRIBE IN DETAIL THE SOURCES AND EXPECTED LEVELS OF SUCH POLLUTANTS THAT YOU ANTICIPATE WILL BE DISCHARGED FROM EACH OUTFALL OVER THE NEXT FIVE YEARS, TO THE BEST OF YOUR ABILIITY AT THIS TIME. CONTINUE ON ADDITIONAL SHEETS IF YOU NEED MORE SPACE.

3.00 CONTRACT ANALYSIS INFORMATION

WERE ANY OF THE ANALYSES REPORTED IN 1.30 PERFORMED BY A CONTRACT LABORATORY OR CONSULTING FIRM?

☒ **YES** *(LIST THE NAME, ADDRESS, AND TELEPHONE NUMBER OF, AND ANALYZED BY, EACH SUCH LABORATORY OR FIRM BELOW)*

☐ **NO** *(GO TO SECTION 4.00)*

A. NAME	B. ADDRESS	C. TELEPHONE *(area code and number)*	D. POLLUTANTS ANALYZED *(list)*
Inovatia Laboratories, LLC	120 E Davis St, Fayette, MO 652	(660) 248-1911	SEE ATTACHMENT

4.00 CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME AND OFFICIAL TITLE (TYPE OR PRINT)	PHONE NUMBER (AREA CODE AND NUMBER)
Ken Wilmot - Senior Vice President & Chief Operations Officer	(417) 881-1204
SIGNATURE DocuSigned by: A2D5437A24BC42C...	DATE SIGNED 12/17/2020

§ 316(b) 40 CFR § 122.21(r)(2) – (5) Information for the Thomas Hill Energy Center

Associated Electric Cooperative Inc.

Thomas Hill Energy Center
Project No. 122776

Final
December 8, 2020

§ 316(b) 40 CFR § 122.21(r)(2) – (5) Information for the Thomas Hill Energy Center

prepared for

Associated Electric Cooperative Inc.
Thomas Hill Energy Center
Randolph County, MO

Project No. 122776

Final
December 8, 2020

prepared by

Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
ºC	degrees Celsius
§	Section
µS/cm	microSiemens per centimeter
AECI	Associated Electric Cooperative Inc.
AIF	actual intake flow
BO	Biological Opinion
BTA	best technology available
CFR	Code of Federal Regulations
cfs	cubic feet per second
CWA	Clean Water Act
CWIS	cooling water intake structures
DIF	design intake flow
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
fps	feet per second
ft	feet
gpm	gallons per minute
HZI	hydraulic zone of influence
IM	impingement mortality
in	inch
MDC	Missouri Department of Conservation

Abbreviation	Term/Phrase/Name
MDNR	Missouri Department of Natural Resources
MGD	million gallons per day
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
THEC	Thomas Hill Energy Center
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 INTRODUCTION

1.1 Final Rule Requirements

On August 15, 2014, the U.S. Environmental Protection Agency (EPA) published in the Federal Register the *National Pollutant Discharge Elimination System – Final Regulations to Establish Requirements for Cooling Water Intake Structures at Existing Facilities and Amend Requirements at Phase I Facilities* (EPA, 2014). The Final Rule establishes requirements under Section (§) 316(b) of the Clean Water Act (CWA) to ensure that location, design, construction, and capacity of cooling water intake structures (CWIS) reflect the best technology available (BTA) for minimizing adverse environmental impacts. The purpose of this action is to reduce impingement and entrainment of fish and other aquatic organisms at CWIS used by power generation and manufacturing facilities to withdraw cooling water. The Final Rule became effective on October 14, 2014. EPA defines impingement, impingement mortality (IM), and entrainment as the following:

- Impingement occurs when any life stage of fish and shellfish are pinned against the outer part of an intake structure or against a screening device during intake water withdrawal. Impingement may also occur when an organism is near a screen but unable to swim away from the intake structure because of the water velocity at the CWIS.
- IM is the death of fish or shellfish due to impingement. Impingement may cause harm to the organism which results in mortality at some time after impingement. EPA has defined IM as the death of those organisms collected or retained by a sieve with a maximum opening of 0.56 inch.
- Entrainment occurs when any life stage of fish and shellfish are drawn into the intake water flow entering and passing through a CWIS and into a cooling system.

The regulations apply to facilities that use CWIS to withdraw water from waters of the U.S. and have or require a National Pollutant Discharge Elimination System (NPDES) permit. The Final Rule establishes requirements for facilities that are designed to withdraw more than 2 million gallons per day (MGD) of water from waters of the U.S. and use at least 25 percent or more of the water withdrawn exclusively for cooling purposes.

The Final Rule requires that certain permit application requirements, consisting of data and studies, be provided by affected facilities to the Director (i.e., permitting authority) as part of the NPDES permit renewal application. The applicable permit application requirements as described in § 122.21(r) of the Code of Federal Regulations (CFR) are dependent upon the cooling system type, design intake flow (DIF) and actual intake flow (AIF) (Table 1-1).

Table 1-1: Section 316(b) Final Rule Permit Application Requirements at 40 CFR § 122.21(r)

Submittal Requirement		Existing Units with Closed Cycle Cooling	Existing Units with Once-through Cooling[a]		New Unit at Existing Facility
§ 122.21(r)	Description		DIF > 2 MGD, AIF ≤ 125 MGD	AIF > 125 MGD	
(2)	Source water physical data	X	X	X	X
(3)	Cooling water intake structure data	X	X	X	X
(4)	Source water baseline biological characterization data	X	Applicable provisions[b]	Applicable provisions[b]	Applicable provisions[b]
(5)	Cooling water system data	X	X	X	X
(6)	Chosen method of compliance with IM standard	X	X	X	Applicable provisions[b]
(7)	Entrainment performance studies		X	X	Applicable provisions[b]
(8)	Operational status	X	X	X	X
(9)	Entrainment characterization study	If > 125 MGD[c]		X	If > 125 MGD[c]
(10)	Comprehensive technical feasibility & cost evaluation study	If > 125 MGD[c]		X	If > 125 MGD[c]
(11)	Benefits valuation study	If > 125 MGD[c]		X	If > 125 MGD[c]
(12)	Non-water quality & other environmental impacts study	If > 125 MGD[c]		X	If > 125 MGD[c]
(13)	Peer review	If > 125 MGD[c]		X	If > 125 MGD[c]
(14)	Method of compliance for new units				X

(a) AIF = actual intake flow over the previous 3 years; DIF = design intake flow; MGD = million gallons per day
(b) Specific provisions within that permit requirement may apply and are based on the selected compliance option.
(c) Facility may request alternative requirements or the permitting authority has the discretion to reduce or waive some or all of the information if the facility complies with the best technology available (BTA standards for entrainment using a closed-cycle recirculating system).

1.2 Final Rule Applicability

Associated Electric Cooperative Inc. (AECI) owns and operates the Thomas Hill Energy Center (THEC), located on the southeastern shore of Thomas Hill Reservoir in the town of Clifton Hill, in Randolph

County, Missouri (Figure 1-1). THEC is a coal-fired steam-electric power generating facility, consisting of three units (Units 1, 2, and 3) with a combined capacity of 1,155 megawatts. Thomas Hill Reservoir, the primary component to the cooling water system, meets the definition of a closed-cycle recirculating system (CCRS) at §125.92(c) of the Final Rule. Water is withdrawn through two CWIS located in Thomas Hill Reservoir, and is discharged into the Brush Creek arm of the reservoir.

The Final Rule applies to the THEC due to the following:

- THEC has a NPDES permit (MO-0097675) and is a point source for industrial discharge of wastewater. The NPDES permit effective date is January 1, 2018, and the permit expiration date is June 30, 2021.
- Units 1 and 2 have a common CWIS and Unit 3 has a separate CWIS. Both CWIS are equipped with 3/8-inch mesh traveling screens. The Thomas Hill Reservoir meets the definition of a closed-cycle recirculating system per §125.92 of the Final Rule because it is a man-made impoundment that was created to provide cooling water for the THEC. The DIF for the two CWIS combined is 972 MGD, greater than the 2 MGD threshold. The AIF, as defined at §125.92(a), is 752.5 MGD based on intake flow data over the three most recent calendar years (January 1, 2017 through December 31, 2019). The AIF is greater than the 125 MGD threshold.
- THEC uses approximately 99 percent of the water withdrawn from Thomas Hill Reservoir for cooling water purposes; therefore, the percentage of flow withdrawn from the reservoir that is used exclusively for cooling purposes is greater than 25 percent criteria.

In Part D, Item 4 of THEC's permit, the Missouri Department of Natural Resources (MDNR) included the following § 316(b) requirements:

A. The facility shall provide the information as required by 40 CFR 122.21(r)(2), (r)(3), (r)(4), and (r)(5) to the department.
B. Six months prior to permit expirations, the facility shall submit the information required in Section (a) of this special condition
C. The permit may be reopened and modified, or alternatively, revoked and reissued to incorporate new or modified requirements applicable to existing cooling water intake structures under Section 316(b) of the Clean Water Act. In the event it is necessary for this permit to be reopened and modified, or alternatively revoked and reissued, permittee shall comply with any such new or modified requirements or standards applicable to the existing cooling water intake structures under §316(b) of the Clean Water Act.

On page 19 of the Fact sheet, MDNR also states the following:

On February 12, 2016, the department received applicable and appropriate information which allowed an exemption from many of the 316(b) requirements. The facility submitted a copy of the original registered professional engineer stamped contract for construction of the cooling water reservoir from 1964 and an accompanying project description and contract which specifically mentions the construction of the reservoir for the purposes of supplying cooling water for the power plant. On February 25, 2016, the department replied to the facility waiving impingement and entrainment studies with a clause requiring a reexamination of the rule's conditions if the lake should be deemed a critical habitat or if an endangered species is found.

At the time of this report, there has been no change in the status of critical habitat or endangered species absence at the facility. As such, per MDNR guidance, this report has been prepared to meet the information requirements of 40 CFR § 122.21(r)(2), (r)(3), (r)(4), and (r)(5).

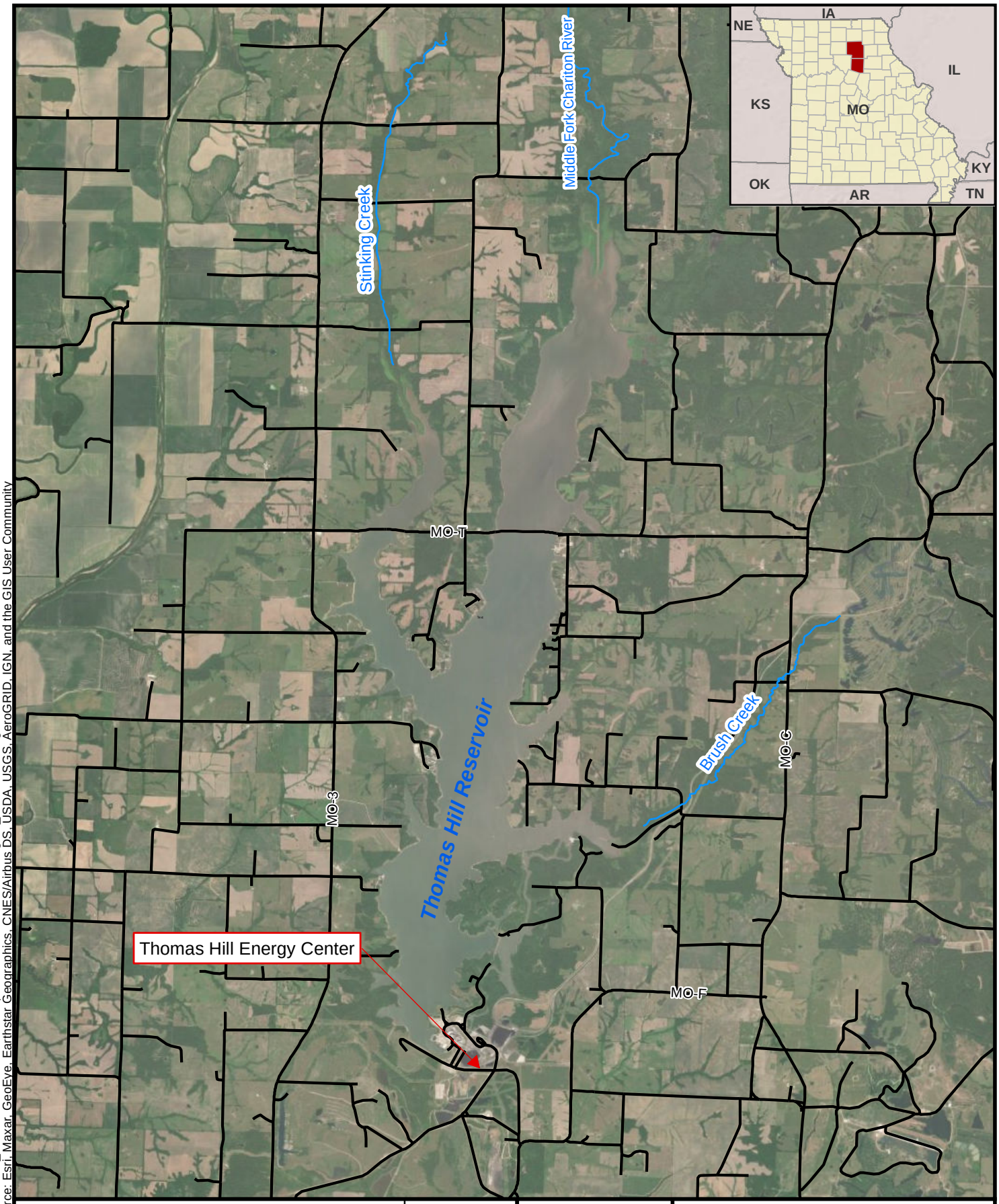


Figure 1-1
Location Map
Thomas Hill Energy Center
AECI
Macon and Randolph
Counties, Missouri

Path: Z:\Clients\ENS\AECI\122776_AECITH316b\Studies\GeospatialDataFiles\ArcDocs\Fig1-1_v2.mxd mlhogan 12/2/2020
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Source: Esri and Burns & McDonnell Engineering Company, Inc.

Issued: 12/2/2020

1.3 Report Organization

The report elements contained in this document are intended to meet the § 122.21(r) information requirements (2) through (5) for THEC. Table 1-2 shows the organization of this report.

Table 1-2: Report Organization

Section	Relevant Permit Requirement	Report Chapter Title
Chapter 2	§ 122.21(r)(2)	Source Water Physical Data
Chapter 3	§ 122.21(r)(3)	Cooling Water Intake Structure Data
Chapter 4	§ 122.21(r)(4)	Source Water Baseline Biological Characterization Data
Chapter 5	§ 122.21(r)(5)	Cooling Water System Data

2.0 SOURCE WATER PHYSICAL DATA

This chapter provides the following permit application requirements in the Final Rule under § 122.21(r)(2), Source Water Physical Data:

i. A narrative description and scaled drawings showing the physical configuration of all source water bodies used by the facility, including areal dimensions, depths, salinity and temperature regimes, and other documentation that supports the determination of the water body type where each cooling water intake structure is located;
ii. Identification and characterization of the source waterbody's hydrological and geomorphological features, as well as the methods used to conduct any physical studies to determine the intake's area of influence within the waterbody and the results of such studies; and
iii. Locational maps

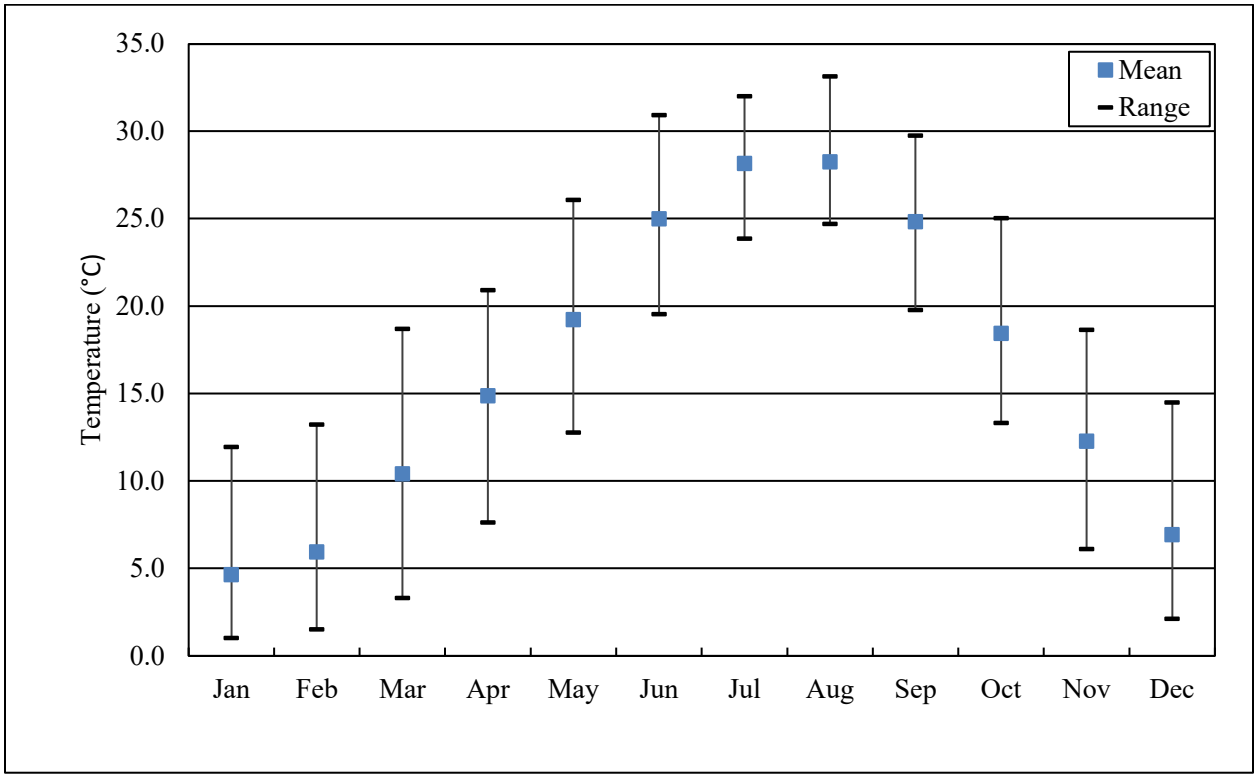
2.1 Source Waterbody Description

Thomas Hill Reservoir was constructed in the 1960s for the purpose of providing cooling water for the THEC. The 4,950-acre reservoir and the surrounding lands are managed by the Missouri Department of Conservation (MDC) as a public use recreational area for boating, fishing, hunting, camping, hiking, and wildlife viewing.

Representative temperature data were obtained from three data loggers at the THEC CWIS that correspond to each unit at THEC and conductivity data were retrieved using the Water Quality Portal, which is a cooperative service sponsored by the U.S. Geological Survey (USGS), the EPA, and the National Water Quality Monitoring Council. Conductivity data were retrieved from long-term studies completed by three agencies, USGS, MDNR and the University of Missouri-Columbia. Data are considered to be representative of the conditions near the CWIS because temperature data were collected at the CWIS, where the THEC withdraws water from Thomas Hill Reservoir, and the majority of the conductivity data were collected near the dam of the reservoir, which is near the CWIS.

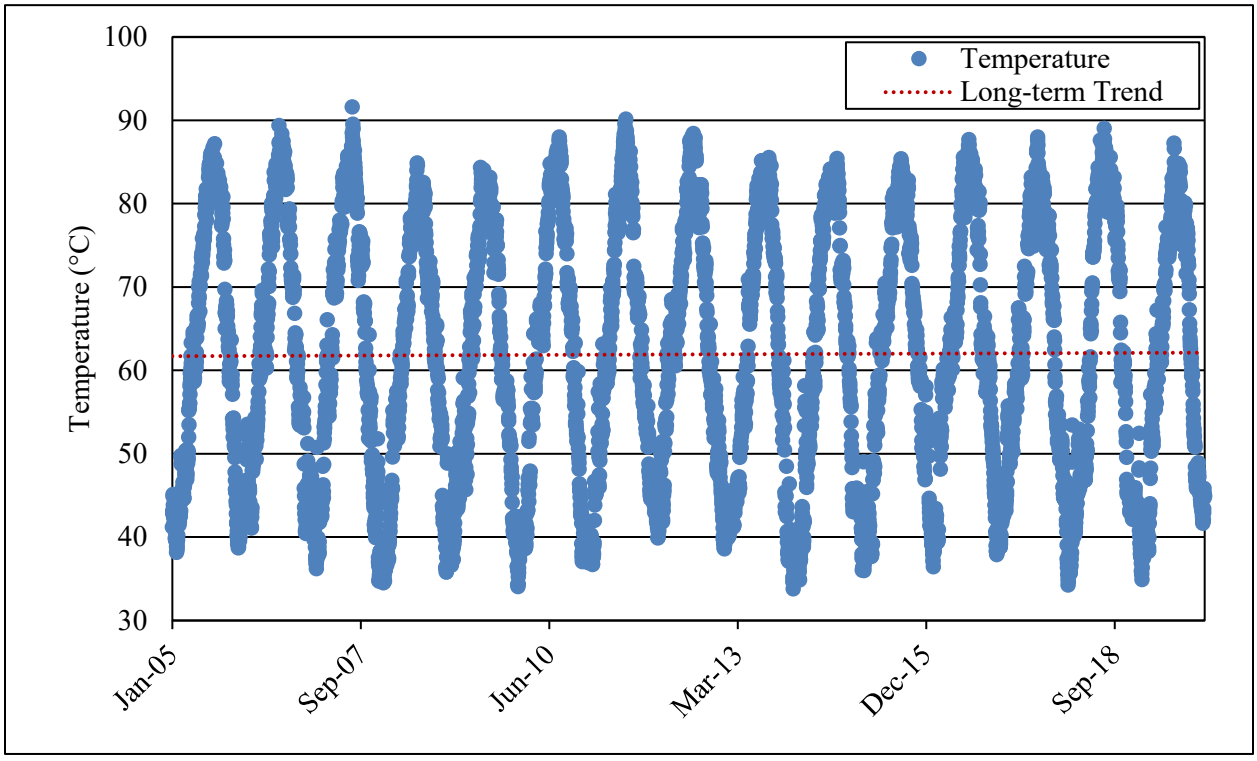
Daily temperature data were available from January 1, 2017 to December 31, 2019. The temperature readings from each CWIS were averaged for the purposes of this report. Temperature from 2005 through 2019 ranged from 1.0 degrees Celsius (ºC) in January 2014 to 33.1 ºC in August 2007. Average monthly temperatures ranged from 4.6 ºC in January to 28.2 ºC in August (Figure 2-1). Water temperature data demonstrated typical seasonal variation from 2005 to 2019, with the lowest temperatures in the winter and highest temperatures in summer (Figure 2-2). The available data indicate a steady temperature trend in Thomas Hill Reservoir over this period.

Figure 2-1: Monthly Average Temperature in Thomas Hill Reservoir at the CWIS (2005 – 2019)



Source: THEC Intake Temperature Data

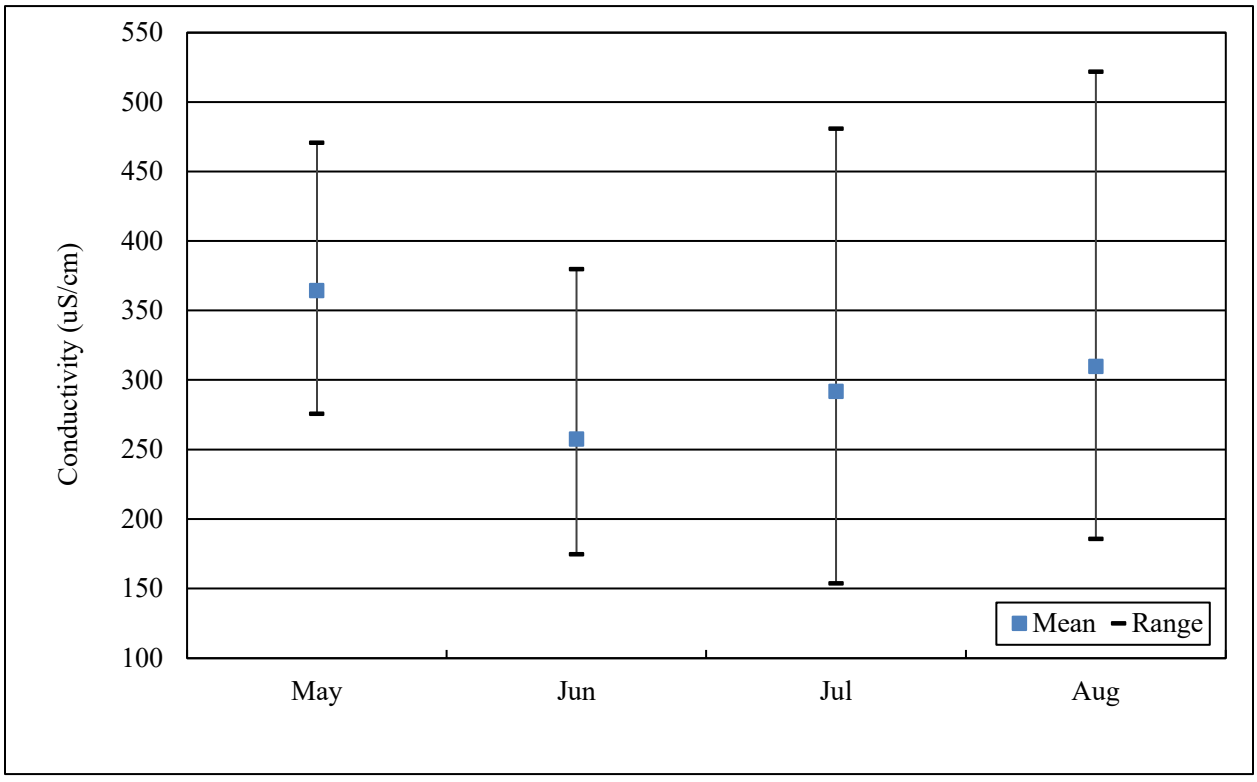
Figure 2-2: Temperature Trend in Thomas Hill Reservoir (2005 – 2019)



Source: THEC Intake Temperature Data

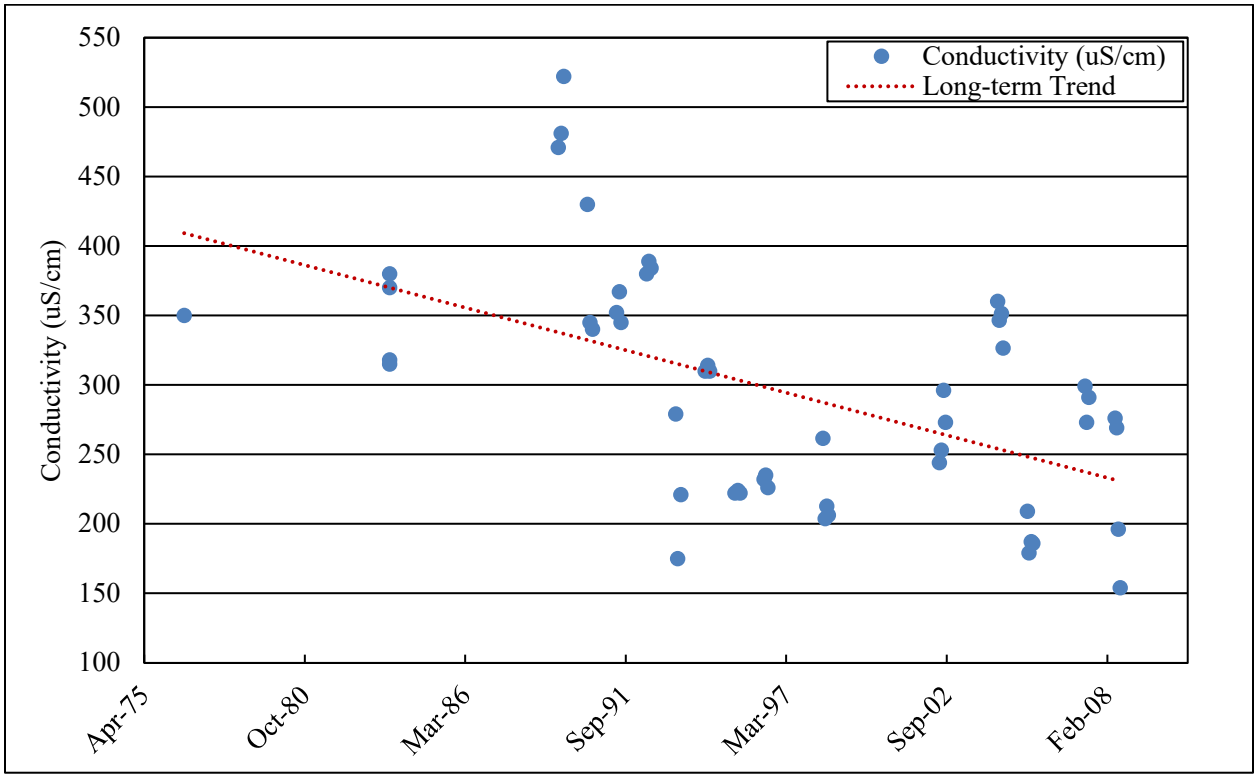
Conductivity is the ability of water to conduct electricity and a function of the concentration of dissolved solids (i.e., salts). The conductivity of freshwater rivers in the United States generally ranges from 50 to 1,500 microSeimens per centimeter (µS/cm), while ocean water is approximately 50,000 uS/cm. Sporadic conductivity data were available from August 25, 1976 to July 30, 2008. A total of 52 conductivity readings were gathered from four sites on Thomas Hill Reservoir. Of the 52 conductivity measurements, 47 were collected near the dam by the University of Missouri-Columbia from 1989 to 2008. Conductivity measurements were only collected during the summer months (May, June, July, and August). Conductivity from 1976 to 2008 ranged from 154 µS/cm in July 2008 to 522 µS/cm in August 1989. Average monthly conductivity from all available recorded conductivity data ranged from 257.9 in June to 364.7 in May (Figure 2-3) and averaged 295.4 µS/cm overall. The long-term conductivity data indicate a decrease in conductivity from 1976 to 2008 (Figure 2-4). The observed values of conductivity in Thomas Hill reservoir are typical of freshwater river systems.

Figure 2-3: Monthly Average Conductivity in Thomas Hill Reservoir (1976 – 2008)



Source: USGS, MDNR, and University of Missouri-Columbia

Figure 2-4: Conductivity Trend in Thomas Hill Reservoir (1976 to 2008)



Source: USGS, MDNR, and University of Missouri-Columbia

2.2 Hydrologic and Geomorphological Features

The Thomas Hill Reservoir is a 4,950-acre reservoir that receives flow from numerous streams and tributaries including Stinking Creek, Middle Fork Little Chariton River, Brush Creek, and Claybank Creek. The total drainage area into Thomas Hill Reservoir is 91,153 acres, according to the USGS StreamStats online tool (https://streamstats.usgs.gov/ss/). Normal pool elevation is 712 feet above mean sea level. Nautical charts indicate that under normal water level conditions, the lake bottom generally slopes from the shoreline downward to depths of approximately 30 feet in the main lake, although the various arms of the reservoir are shallower. The thalweg of the various channels that flow into the reservoir are the deepest portions, with the reservoir generally being deeper near the dam and shallower near the tailwater.

A bathymetric map of the reservoir near the CWIS was created to support a biological characterization study in 2007 (Burns & McDonnell, 2008). The bathymetric map was prepared from 10 transect depth profiles made using a boat mounted, strip-chart recording sonar. The boat was piloted at a constant speed while continuous depth measurements were recorded. The starting and ending points for each transect were recorded simultaneously using a GPS with real-time differential correction and sub-meter accuracy.

Water level at the time of mapping was 715 feet above mean sea level. Latitudes and longitudes of depth contours intervals were calculated from the sonar transects and GPS data and plotted on an aerial photograph of the study area (Figure 2-5). Points of equal depth were connected to complete the bathymetric map with 3-foot contour intervals. The bathymetric map indicates that water depth increases rapidly with distance from shore in the vicinity of each CWIS. Water depth at each CWIS was approximately 30 feet.

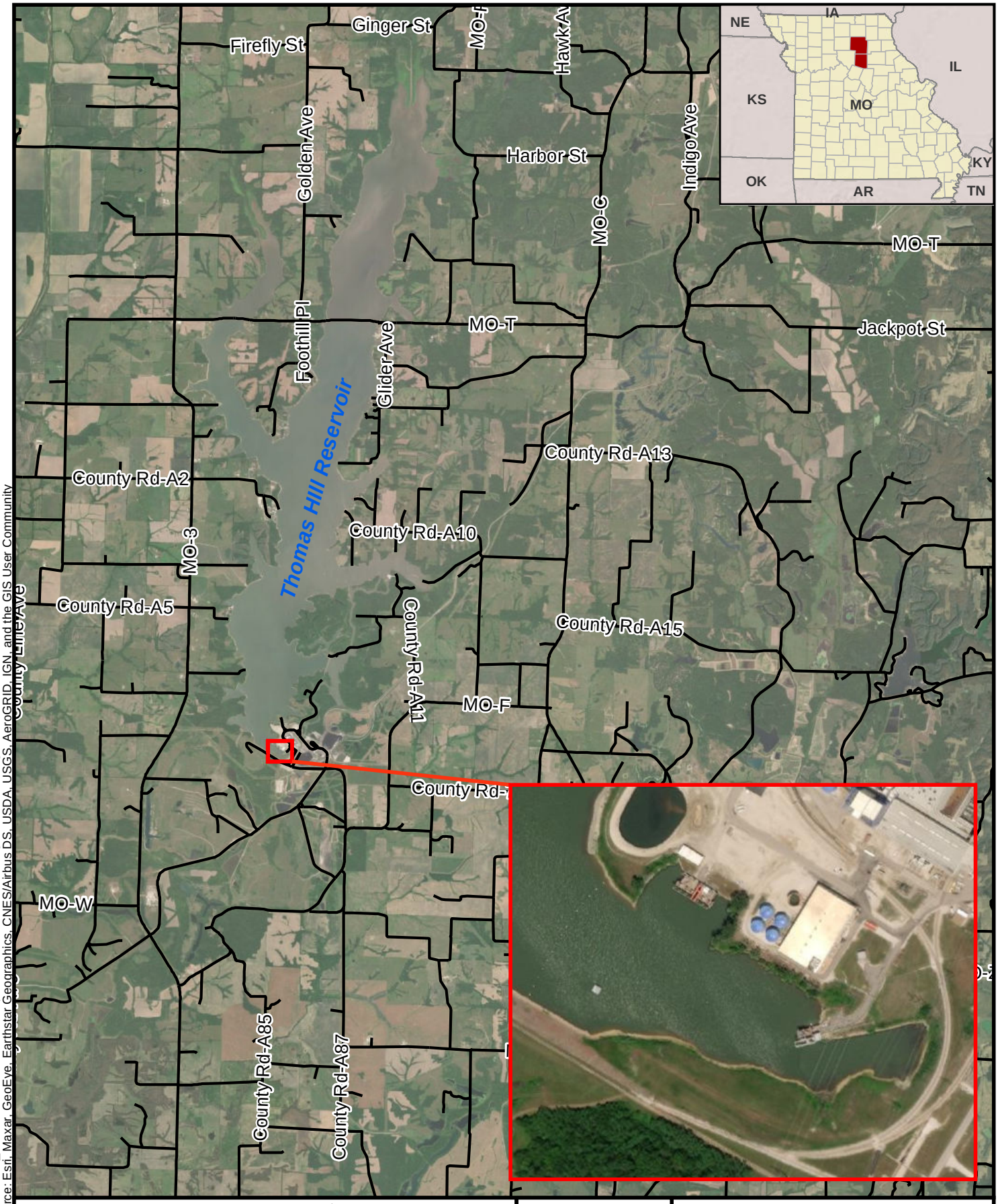
Figure 2-5: Bathymetry of Thomas Hill Reservoir near the CWIS

2.3 Hydraulic Zone of Influence

The hydraulic zone of influence (HZI) refers to the portion of the source water body hydraulically affected by the CWIS withdrawal of water, as defined by EPA (2001) in the preamble to the Phase I rule for new facilities. The HZI extends to the approximate boundary where hydraulic velocities from the CWIS fall below the ambient hydraulic velocities in the waterbody resulting from river currents or tides. The HZI is based on the ambient hydraulic characteristics of the source waterbody and the facility withdrawal rate. No physical studies have been performed to determine the THEC CWIS HZI.

2.4 Locational Maps

THEC is located at the southern end of the reservoir, just east of the dam (Figure 1-1; Figure 2-6).



NORTH

2 1 0 2

Miles

BURNS McDONNELL

Figure 2-6
Thomas Hill Reservoir and the
Thomas Hiill Energy Center CWIS
AECI
Macon and Randolph
Counties, Missouri

Path: Z:\Clients\ENS\AECI\122776_AECITH316b\Studies\GeospatialDataFiles\ArcDocs\Fig2-6.mxd mlhogan 9/8/2020
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Source: Esri, USDA NAIP Mosaic (2014), and Burns & McDonnell Engineering Company, Inc.

Issued: 9/8/2020

3.0 COOLING WATER INTAKE STRUCTURE DATA

This chapter provides the following permit application requirements in the Final Rule under § 122.21(r)(3), Cooling Water Intake Structure Data:

i. A narrative description of the configuration of each cooling water intake structure and where it is located in the waterbody and in the water column;
ii. Latitude and longitude in degrees, minutes, and seconds for each cooling water intake structure;
iii. A narrative description of the operation of each of cooling water intake structure, including design intake flows, daily hours of operation, number of days of the year in operation and seasonal changes, if applicable;
iv. A flow distribution and water balance diagram that includes all sources of water to the facility, recirculating flows, and discharges; and
v. Engineering drawings of the cooling water intake structure

3.1 Configuration

THEC uses two independent CWIS to withdraw cooling water from Thomas Hill Reservoir (Figure 3-1). Water is withdrawn through the CWIS located in the southeastern arm of Thomas Hill Reservoir and is discharged into the Brush Creek arm of the reservoir. Units 1 and 2 have a common CWIS and Unit 3 has a separate CWIS. Both intakes have stop gates and bar screens. The DIF at THEC is 675,000 gpm or 972 MGD.

The CWIS for Units 1 and 2, located approximately 60 feet (ft) from the shoreline, consists of four intake bays, four FMC (Link-Belt) dual flow (double entry, single exit) traveling screens with 3/8-inch mesh and two circulating water pumps (one for each unit). The Unit 1 circulating water pump has a design capacity of 100,000 gallons per minute (gpm), and the Unit 2 circulating pump has a design capacity of 140,000 gpm. The estimated through-screen velocity at the Units 1 and 2 CWIS is 1.61 feet per second (fps) at the low water surface elevation of 698 ft (Table 3-1). The Unit 3 CWIS, located approximately 50 ft from the shoreline, consists of six intake bays, six FMC (Link-Belt) dual flow (double entry, single exit) traveling screens with 3/8-inch mesh and three circulating water pumps. All three pumps have design capacities of 145,000 gpm. The estimated through-screen velocity at the Unit 3 CWIS is 0.98 fps at the low water surface elevation of 698 ft (Table 3-1). Calculating through-screen velocity at the low water elevation represents the maximum through-screen velocity conditions at each CWIS.

Table 3-1: Estimated Through-Screen Velocities at THEC

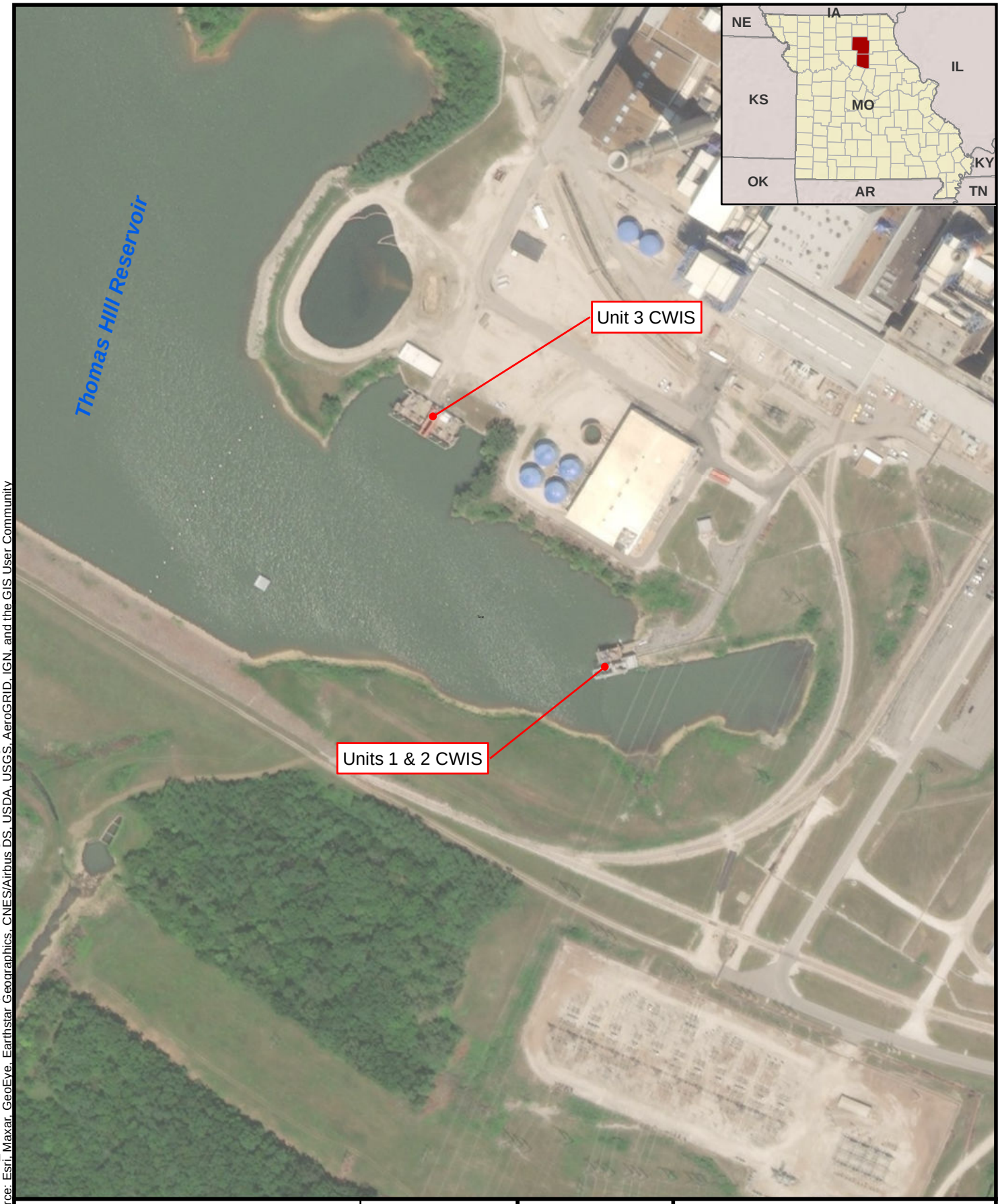
Parameter	Unit 1/2 CWIS	Unit 3 CWIS
Design intake rate (MGD)	346	626
Number of screens	8	12
Flow per screen (cfs)	66.84	80.77

Parameter	Unit 1/2 CWIS	Unit 3 CWIS
Water surface elevation (low) (ft)	698.00	698.00
Screen bay bottom elevation (ft)	680.00	680.00
Screen bottom seal height (ft)	1.00	1.00
Screen submergence depth (ft)	17.00	17.00
Screen width (ft)	4.00	8.00
Available screen area (ft^2)	68.00	136.00
Mesh open height (in)	0.375	0.375
Mesh open width (in)	0.375	0.375
Wire mesh diameter (in)	0.1055	0.1055
Percent open area (%)	61%	61%
Screen unit open area (ft^2)	41.4	82.8
Approach velocity (fps)	0.98	0.59
Through-screen velocity Clean (fps)	**1.61**	**0.98**

Approach and through-screen velocities will vary depending upon intake flow and water surface elevation. In 1984, Environmental Sciences and Engineering conducted an approach velocity study at the Unit 3 CWIS. Velocity data were collected using an impeller-type current meter. Measurements were taken at three horizontal locations in front of each of the six sets of trash bars. Measurements were then taken at five equidistant depths at each of the 18 horizontal locations for each sample date. To adjust for velocity variation caused by changes in water level, measurements were made at normal reservoir pool and low reservoir pool elevations. The average approach velocity was at or below the 0.5 fps design criteria with the exception of a few specific locations that had velocities above 0.5 fps.

3.2 Latitude and Longitude

The Units 1 and 2 CWIS is located at 39° 33' 05.65" north latitude and 92° 38' 28.84" west longitude. The Unit 3 CWIS is located at 39° 33' 01.13" north latitude and 92° 38' 24.42" west longitude. Each CWIS is shown on Figure 3-1.



NORTH

250 125 0 250

Feet

BURNS McDONNELL

Figure 3-1
CWIS at Thomas Hill Energy Center
AECI
Macon and Randolph
Counties, Missouri

Path: Z:\Clients\ENS\AECI\122776_AECITH316b\Studies\Geospatial\DataFiles\ArcDocs\Fig 3-1.mxd mlhogan 9/8/2020
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Source: Esri, USDA NAIP Mosaic (2014), and Burns & McDonnell Engineering Company, Inc.

Issued: 9/8/2020

3.3 Operations

THEC is a baseload electric generation facility that operates continuously year-round (24 hours per day for 365 days per year). In general, the operation of the CWIS is directly related to the water demands, station and unit output, and operations at THEC. Operations of the CWIS are represented by the number of circulating pumps operating and the volume of water withdrawn from Thomas Hill Reservoir.

In lieu of flow meters, intake flow at THEC was estimated using the number of days per month that each unit operated and the number of circulating pumps that were running each day. The circulating pumps in the CWIS for Units 1 and 2 were de-rated from their design capacity while it was assumed that the circulating pumps in the CWIS for Unit 3 operated at design capacity. The Unit 1 and 2 pumps were assumed to operate at a maximum of 85,000 gpm and 130,000 gpm, respectively. Actual intake flows were estimated for a 3 year period from January 1, 2017, through December 31, 2019 (Figure 3-2).

The maximum AIF rate recorded over the 3-year period was 946.3 MGD. The AIF, as defined at §125.92(a), is 752.5 MGD based on the 3-year period of January 1, 2017 through December 31, 2019 (Table 3-2). The average annual AIF increased slightly between 2017 and 2019, ranging from 736.6 MGD in 2017 to 770.4 MGD in 2019 (Table 3-2). The average monthly AIF ranged from 603.1 MGD in April to 936.0 MGD in July (Table 3-3).

Figure 3-2: Average Daily AIF at THEC from January 1, 2017, through December 31, 2019

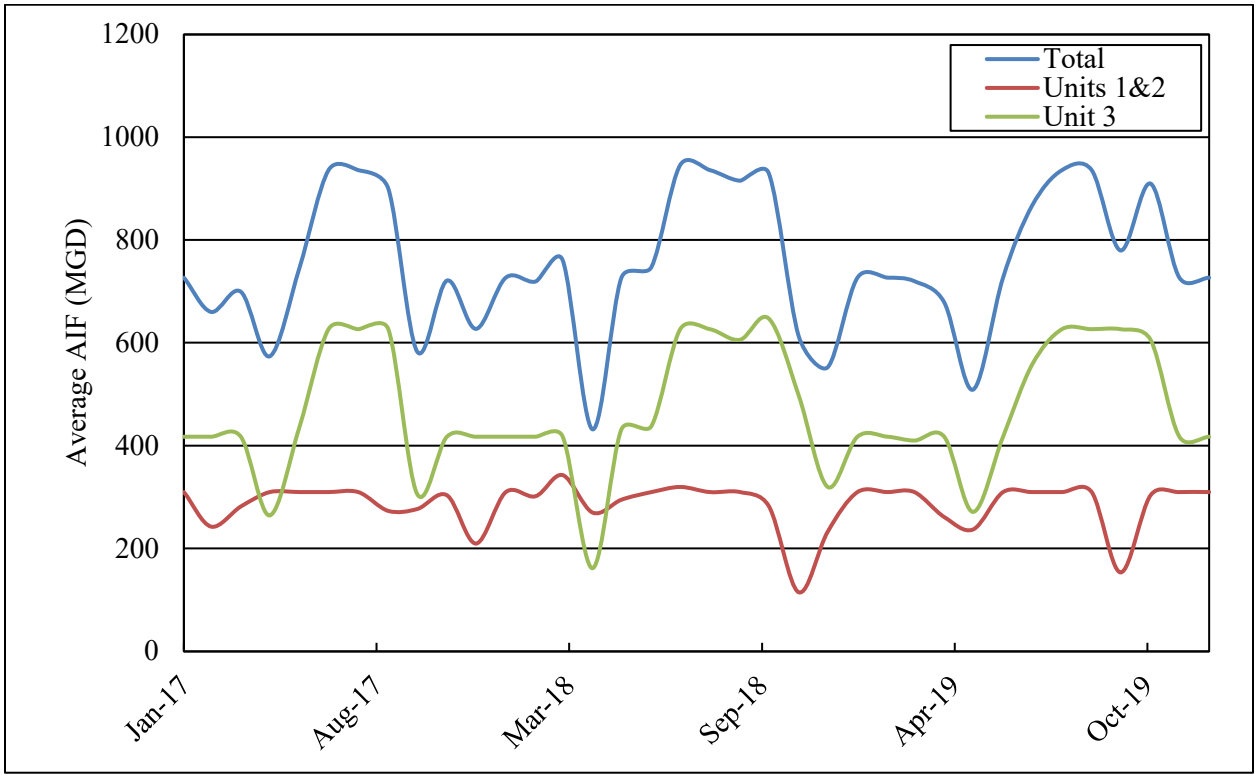


Table 3-2: Average and Range of Annual Intake Flow Rates at THEC

Year	Average (MGD)	Minimum (MGD)	Maximum (MGD)
2017	736.6	574.1	936.0
2018	750.5	431.8	946.3
2019	770.4	508.8	936.0
Average	752.5	--	--

Table 3-3: Average and Range of Monthly Intake Flow Rates at THEC

Month	Average	Minimum	Maximum
January	724.6	719.3	727.2
February	713.6	660.3	760.4
March	603.4	431.8	699.6
April	603.1	508.8	726.5
May	740.7	727.2	747.4
June	916.2	866.4	946.3
July	936.0	936.0	936.0
August	917.2	899.8	936.0
September	764.2	583.2	929.8
October	748.1	613.4	909.8
November	635.8	552.7	727.2
December	727.2	727.2	727.2

The average intake flow rate in winter (December, January and February) was 721.8 MGD. Intake flow rates generally decreased in spring (March through May), when average intake flow rate was 649.1 MGD, likely reflecting lower energy demands as air temperatures increase. Intake flow rates were highest in the summer (June through August) with an average intake flow rate of 923.1 MGD because of increased demand and warmer river water. Intake flow rates generally declined in fall (September through November) when average intake flow was 716.0 MGD, due to decreasing river temperatures and energy demand. Diel variation in the intake flow rates (i.e., hourly intake rate measurements) was not evaluated as these data were not available; however, diel variation is expected to be non-existent or minimal because THEC is always in operation.

3.4 Flow Distribution and Water Balance

A water balance diagram is provided in Appendix B. Based on the average daily flows, the THEC withdraws approximately 840.3 MGD from Thomas Hill Reservoir. According to the water balance, stream number 001 represents the Units 1 and 2 CWIS (257 MGD) and stream number 003 represents the Unit 3 CWIS (583.3 MGD). For the Units 1 and 2 CWIS, stream number 033 represents the amount of the water used for cooling purposes (245.2 MGD) and for the Unit 3 CWIS, stream numbers 049 and 055 represent the amount of water used for cooling purposes (583 MGD). In total, the CWIS at THEC use 828.2 MGD out of the 840 MGD withdrawn on average daily for cooling, or approximately 99 percent. The remaining 1 percent (11.8 MGD) is used in water treatment clarifiers, air compressors, and ash systems at the THEC, as indicated in the water balance diagram in Appendix B.

3.5 Engineering Drawings

Engineering drawings of the CWIS are provided in Appendix A.

4.0 SOURCE WATER BASELINE BIOLOGICAL DATA

This chapter provides the following permit application requirements in the Final Rule under §122.21(r)(4), Source Water Baseline Biological Data:

i. A list of the below data that are not available and efforts made to identify sources of the data;
ii. A list of species (or relevant taxa) for all life stages and their relative abundance in the vicinity of the cooling water intake structure;
iii. Identification of the species and life stages that would be most susceptible to impingement and entrainment. Species evaluated must include the forage base as well as those most important in terms of significance to commercial and recreational fisheries;
iv. Identification and evaluation of the primary period of reproduction, larval recruitment, and period of peak abundance for relevant taxa;
v. Data representative of the seasonal and daily activities (e.g., feeding and water column migration) of biological organisms in the vicinity of the cooling water intake structure;
vi. Identification of all threatened, endangered, and other protected species that might be susceptible to impingement and entrainment at your cooling water intake structures;
vii. Documentation of any public participation or consultation with Federal or State agencies undertaken in development of the plan;
viii. Descriptions of field studies conducted to characterize the aquatic communities in the vicinity of the plants' CWIS (if any). Such descriptions will include all methods and quality assurance procedures for sampling and data analysis including a description of the study area; taxonomic identification of sampled and evaluated biological assemblages (including all life stages of fish and shellfish); and sampling and data analysis methods;
ix. Clarification that the Source Water Baseline Characterization Data is the information in paragraphs (r)(4)(i) through (xii)
x. Identification of protective measures and stabilization activities that have been implemented, and a description of how these measures and activities affected the baseline water condition in the vicinity of the intake;
xi. A list of fragile species, as defined at 40 CFR 125.92(m); and
xii. Information submitted to obtain an incidental take permit.

4.1 Unavailable Data

Relevant data to characterize the biological community in Thomas Hill Reservoir were available and are provided in the proceeding sections. A limited number of mussel studies have been conducted on Thomas Hill reservoir, and therefore, information regarding the shellfish in the vicinity of the THEC CWIS was not readily available.

4.2 Species and Relevant Abundances in the Vicinity of the CWIS

Thomas Hill Reservoir supports a diverse assemblage of freshwater aquatic fauna. Fish and shellfish species diversity, abundance, and spatial and temporal variation are dependent on numerous abiotic and biotic environmental factors. Several aquatic ecology and fisheries studies have been conducted in Thomas Hill Reservoir and impingement and entrainment studies have been conducted at THEC. The fish

and shellfish species with the potential to be in the vicinity of the THEC CWIS were identified based on the following available information sources:

- *Report on the Assessment of Impingement and Entrainment Effects at the Associated Electric Cooperative's Coal-Fired Power Plant on Thomas Hill Reservoir* (Kangas and Hummel, 1979)
- *The Second Annual Report on the Assessment of Impingement and Entrainment Effects at Associated Electric Cooperative's Coal-Fired Power Plant on Thomas Hill Reservoir* (Hummel et.al., 1980)
- *Interactions of Associated Electric Cooperative's Coal-Fired Power Plant and Thomas Hill Reservoir – The 3rd Annual Assessment on the Impingement and Entrainment Effects of a Coal-Fired Generating Plant* (Kangas et.al., 1982)
- *Impingement and Entrainment Studies at Unit 3 Thomas Hill Power Plant* (Environmental Sciences and Engineering, 1984)
- *Section 316(b) Impingement Study for the Thomas Hill Energy Center* (Burns & McDonnell, 2006)
- *Biological Characterization Study of Thomas Hill Reservoir* (Burns & McDonnell, 2008)
- *Thomas Hill Reservoir 2019 Fish Community and Management Update* (MDC, 2019)

The following subsections summarize pertinent information and data representative of the species and their relative abundance in the vicinity of the CWIS. Relevant impingement and/or entrainment studies are also provided in this section but are summarized in Section 4.3 because these studies indicate the species and life stages that are susceptible to impingement and entrainment. Based on a synthesis of the aforementioned studies, 25 fish species were identified to inhabit Thomas Hill Reservoir (Table 4-1).

Table 4-1: List of Fish Species Collected in Thomas Hill Reservoir

Common Name	Scientific Name	Common Name	Scientific Name
Bigmouth buffalo	*Ictiobus cyprinellus*	Golden shiner	*Notemigonus crysoluecas*
Black bullhead	*Ameiurus melas*	Green sunfish	*Lepomis cyanellus*
Black crappie	*Pomoxis nigromaculatus*	Hybrid striped bass	*Morone chrysops x Morone saxatilis*
Bluegill	*Lepomis macrochirus*	Largemouth bass	*Micropterus salmoides*
Bluegill x green sunfish hybrid	*Lepomis macrochirus x lepomis cyanellus*	Mosquitofish	*Gambusia affinis*
Brooke silverside	*Labidesthes sicculus*	Orangespotted sunfish	*Lepomis humilis*
Channel catfish	*Ictalurus punctatus*	Red shiner	*Cyprinella lutrensis*

Common Name	Scientific Name	Common Name	Scientific Name
Common carp	*Cyprinus carpio*	Redfin shiner	*Lythrurus umbratilis*
Emerald shiner	*Notropis atherinoides*	Tadpole madtom	*Noturus gyrinus*
Fathead minnow	*Pimephales promelas*	Threadfin shad	*Dorosoma petenense*
Flathead catfish	*Pylodictis olivaris*	White crappie	*Pomoxis annularis*
Freshwater drum	*Aplodinotus grunniens*	Yellow bullhead	*Ameiurus natalis*
Gizzard shad	*Dorosoma cepedianum*		

Sources: Kangas and Hummel (1979), Hummel et.al. (1980), Kangas et.al. (1982), Environmental Sciences and Engineering (1984), Burns & McDonnell (2006), Burns & McDonnell (2008), and MDC (2019).

4.2.1 Kangas and Hummel (1979)

An impingement and entrainment study was conducted at THEC from September 1977 through August 1978. At this time, only Units 1 and 2 existed. The study was conducted as part of an Environmental Impact Statement for a proposed expansion at the plant. From September through January, twice monthly samples were collected. From February through August samples were collected at least once a week. Between March and April, no samples were collected because the plant was not in operation.

Impingement samples were taken by placing a removable net bag over the discharge pipe of the intake screen sluiceway. Impingement rates were calculated and extrapolated to an annual impingement rate and weight. Entrainment samples were taken from the four auxiliary water pump strainers within the plant and from the discharge canal. The auxiliary water pump strainers were sampled by removing the strainer and washing trapped material into plankton netting. To sample the discharge canal, a net was placed directly in front of the opening of the discharge structure.

From May through August, sampling was conducted on Thomas Hill Reservoir once a week at five stations with a Tucker trawl. One additional station was sampled irregularly during the first month. The sampling alternated between daytime and nighttime sampling. Samples were taken at the surface and various depths depending on the depth of the water and location. Abiotic parameters, such as water temperature, ambient air temperature, dissolved oxygen (DO), turbidity, and lake water level, were also measured and recorded. All adult and juvenile fish were measured for total length; most were also weighed unless a subsample was used because of high numbers of one species.

4.2.1.1 Impingement (Kangas and Hummel, 1979)

The impingement portion of this study totaled 90 samples taken over 750.75 hours and yielded 15 fish species, 1 amphibian species, and numerous invertebrates. The total number of fish impinged was 294,322 with a total mass of 1,051.9 kilograms (kg) (Table 4-2). These data equaled an estimated annual

impingement of 4 million fish with a weight of 16,440 kg. Gizzard shad (*Dorosoma Cepedianum*) accounted for 49 percent of the impingement by number and 50 percent of the mass impinged.

Table 4-2: Mass of Fish Impinged at the Thomas Hill Energy Center in 1979

Common Name	Scientific Name	Total Mass (kg)	Average Mass (kg/hr)	% of Total Mass
Gizzard shad	*Dorosoma cepedianum*	526.523	0.7013	49.99
Threadfin shad	*Dorosoma petenense*	207.487	0.2764	19.70
White crappie	*Pomoxis annularis*	219.677	0.2926	20.86
Channel catfish	*Ictalurus punctatus*	70.654	0.0941	6.71
Tadpole madtom	*Noturus gyrinus*	3.421	0.0046	0.32
Bluegill	*Lepomis macrochirus*	10.127	0.0135	0.96
Green sunfish	*Lepomis cyanellus*	0.730	0.0010	0.07
Black bullhead	*Ameiurus melas*	0.694	0.0009	0.07
Yellow bullhead	*Ameiurus natalis*	0.059	0.0001	0.01
Common carp	*Cyprinus carpio*	3.418	0.0046	0.32
Largemouth bass	*Micropterus salmoides*	2.857	0.0038	0.27
Redfin shiner	*Lythrurus umbratilis*	0.005	0.0000	<0.01
Red shiner	*Bothriocephalus acheilognathi*	0.013	0.000	<0.01
Bigmouth buffalo	*Ictiobus cyprinellus*	0.384	0.0005	0.04
Freshwater drum	*Aplodinotus grunniens*	0.013	0.0000	<0.01
Unidentified shad	*Dorosoma sp.*	5.799	0.0077	0.55
Total		**1,051.861**	**1.4011**	**100**

Source: Kangas and Hummel (1979)

Impingement of gizzard shad increased during December, January, and February. Gizzard shad were impinged at a significantly higher rate at night versus the daytime. Threadfin shad (*Dorosoma pentense*) accounted for 41 percent of the impingement by number and 19.7 percent of mass impinged. All threadfin shad were collected from September through March. White crappie (*Pomoxis annularis*) impingement totaled 7.2 percent of the number and 20.9 percent of the mass impinged. Most of the mass (60 percent) of the impinged white crappie occurred while the electric fish repeller grid was operating, from September to December. The fish repeller was hypothesized to be stunning the fish, much like electrofishing, and they were subsequently unable to escape impingement. First year white crappie were impinged at a high rate in July and August. Only one freshwater drum (*Aplodinotus grunniens*) was impinged. Tadpole madtoms (*Noturus gyrinus*) were impinged at higher rates in May and June. Channel catfish (*Ictalurus punctatus*) accounted for 1.07 percent of all impinged fish and 6.7 percent of the total mass impinged.

4.2.1.2 Entrainment (Kangas and Hummel, 1979)

A total of 28 species of fauna including 4 fish species were collected on the auxiliary water pump strainers (Table 4-3). A total of 27 samples from the discharge canal yielded 23 species including 4 fish species and 32 individual fish (Table 4-4). Gizzard shad and white crappie were 72 percent of the total number of entrained fish in the discharge canal and 93.9 percent of the fish collected in the pump strainers. The estimated annual entrainment included 6.6 million gizzard shad juveniles and 5.2 million juvenile white crappie.

Table 4-3: Entrained Species Collected from the Auxiliary Water Pump Strainers at the Thomas Hill Energy Center in 1979

Common Name	Scientific Name	Life Stage	Sample Occurrence	Total No.	Mean No./Hr.	Mean No./ Filtered Volume*	Percent Composition
Gizzard shad	*Dorosoma cepedianum*	Postlarvae	4	4,592	9.801	0.061	35.4
Gizzard shad	*Dorosoma cepedianum*	Juvenile	24	4,260	9.903	0.057	32.8
White crappie	*Pomoxis annularis*	Juvenile	19	3,339	7.127	0.045	25.7
Threadfin shad	*Dorosoma petenense*	Juvenile	11	730	1.558	0.010	5.6
Channel catfish	*Ictalurus punctatus*	Juvenile	9	50	0.107	0.001	0.4
Total				**12,971**	**27.686**	**0.174**	**100.0**

*total volume filtered = 74,970 gallons
Source: Kangas and Hummel (1979)

Table 4-4: Entrained Species and Abundance Collected from the Discharge Canal at the Thomas Hill Energy Center in 1979

Common Name	Scientific Name	Total Number	Percent Abundance
Gizzard shad	*Dorosoma cepedianum*	13	40.6
White crappie	*Pomoxis annularis*	10	31.1
Red shiner	*Bothriocephalus acheilognathi*	8	25.0
Threadfin shad	*Dorosome petenese*	1	3.1
Total		**32**	**100.0**

Source: Kangas and Hummel (1979)

4.2.1.3 Tucker Trawl (Kangas and Hummel, 1979)

A total of 374 samples were collected from Thomas Hill Reservoir. Habitats were separated into four types; limnetic, cove, warm water cove, and intake cove. A total of 10 fish species were collected (Table 4-5). Larval and juvenile gizzard shad and white crappie accounted for the majority of the catch.

Table 4-5: Species Collected from Thomas Hill Reservoir in 1979

Common Name	Scientific Name	Common Name	Scientific Name
Gizzard shad	*Dorosoma cepedianum*	Bluegill	*Lepomis macrochirus*
Common carp	*Cyrpinus carpio*	Largemouth bass	*Micropterus salmoides*
Golden shiner	*Notemigonus crysoleucas*	White crappie	*Pomoxis annularis*
Red shiner	*Notropis lutrensis*	Channel catfish	*Ictalurus punctatus*
Redfin shiner	*Notropis umbratillis*	Tadpole madtom	*Noturus gyrinus*

Source: Kangas and Hummel (1979)

4.2.2 Hummel et al. (1980)

Personnel from Northeast Missouri State University conducted a study of the impingement, entrainment, and related fishery of Thomas Hill Reservoir from March 1979 through February 1980. Data were collected on the physical and chemical environments, impingement, entrainment in the discharge canal, Tucker trawl samples, electrofishing, cove renovation, and creel census. Sampling was completed throughout the year on varying schedules depending on the portion of the study being completed. Sampling methods were the same as those used in the previous study.

Additional fish sampling was conducted on the lake once a week at five stations with a Tucker trawl. The dates of the sampling were not given. Samples were taken at the surface and various depths depending on the depth of the water and location. Water temperature, ambient air temperature, DO, turbidity, and lake level were also measured. All adult and juvenile fish were measured for total length; most were also weighed unless subsampled because of high numbers of one species.

4.2.2.1 Impingement Study (Hummel et. al., 1980)

Samples of the intake screen impingement were taken approximately every other week at 0800, 1600, and 0000. This protocol yielded 67 samples over 540 hours. A total of 67,890 fish were impinged representing 13 species (Table 4-6). Total estimated annual impingement was 1.09 million fish with an estimated mass of 6,500 kg. Juvenile gizzard shad (less than 130 mm) and white crappie (less than 100 mm) accounted for 97 percent of the fish impinged. Ten of the sampled species were impinged at a rate of less than one fish per hour. Seasonal variations in impingement rates were noted for gizzard shad, white crappie, and bluegill. The highest monthly impingement occurred in December and was considered likely a result of

holes in the blocknet. Impingement was 75 percent less in this study compared to the Kangas and Hummel (1979) study.

Table 4-6: Fish Species Impinged at the Thomas Hill Energy Center in 1980

Common Name	Scientific Name	No.	Mean No./Hour	Mass	Percent Mass	Percent Composition
Gizzard shad (adult)	*Dorosoma cepedianum*	206	0.381	4.787	1.22	0.3
Gizzard shad (juvenile)	*Dorosoma cepedianum*	45,256	83.807	265.633	67.87	66.7
White crappie (adult)	*Pomoxis annularis*	896	1.659	23.454	5.99	1.3
White crappie (juvenile)	*Pomoxis annularis*	19,436	35.993	47.054	12.02	28.6
Bluegill (adult)	*Lepomis macrochirus*	54	0.100	2.223	0.57	0.1
Bluegill (juvenile)	*Lepomis macrochirus*	132	0.244	0.589	0.15	0.2
Green sunfish (adult)	*Lepomis cyanellus*	8	0.015	0.452	0.12	<0.1
Green sunfish (juvenile)	*Lepomis cyanellus*	1	0.002	0.004	0.00	<0.1
Largemouth bass	*Micropterus Salmoides*	12	0.022	4.196	1.07	<0.1
Channel catfish	*Ictalurus punctatus*	1,778	3.293	38.896	9.94	2.6
Black bullhead	*Ameiurus melas*	1	0.002	0.003	0.00	<0.1
Yellow bullhead	*Ameiurus natalis*	3	0.006	0.799	0.20	<0.1
Tadpole madtom	*Noturus gyrinus*	71	0.131	0.199	0.05	0.1
Bigmouth buffalo	*Ictiobus cyprinellus*	4	0.007	0.164	0.04	<0.1
Freshwater drum	*Aplodinotus grunniens*	12	0.022	0.497	0.13	<0.1
Common carp	*Cyprinus carpio*	18	0.033	1.361	0.35	<0.1
Flathead catfish	*Pylodictis olivaris*	2	0.004	1.080	0.28	<0.1
Total		**67,890**	**125.721**	**391.388**	**100.00**	100.0

Source: Hummel et. al. (1980)

4.2.2.2 Entrainment Study (Hummel et. al., 1980)

The discharge canal was the only site for entrainment sampling. Samples were collected using a quarter-meter net positioned for 3 minutes approximately 10 meters in front of the mouth of the outfall structure.

The frequency of sampling was approximately every other week. Sampling the discharge canal during this study produced 24 samples. A total of four species of fish were collected including common carp (*Cyprinus carpio*), redfin shiner (*Notropis umbratillis*), white crappie, and channel catfish. Assuming a 100 percent mortality rate, the estimated daily entrainment was less than 2 percent of the estimated standing crop of plankton and larval fish in the reservoir.

4.2.2.3 Tucker Trawl Study (Hummel et. al., 1980)

Samples were taken at four stations in the reservoir with a Tucker trawl net that, when towed correctly, presented a 1-meter square opening at its mouth that was unobstructed by any lines or cables. Sampling was completed once a week from April through June, and every other week from July through October when possible. Samples were collected at various depths depending on the location and abiotic factors of each sampling station. Eight identifiable fish species were sampled along with numerous unidentifiable Centrarchid (sunfish family) and Catostomid (sucker family) species (Table 4-7). Sampled larval fish densities ranged from 0 to 90 fish per 100 cubic meters. Correlations were found between fish densities and abiotic factors and between fish densities and other species densities. Natural mortality estimates calculated for gizzard shad postlarvae (0.116) and white crappie (0.038) were approximately 7 and 2 times greater, respectively, than estimated entrainment rates for these species.

Table 4-7: Fish Species Collected by Tucker Trawl from Thomas Hill Reservoir in 1980

Common Name	Scientific Name	Life Stage	Total Number	Percent Composition
Gizzard shad	*Dorosoma cepedianum*	Juvenile	428	6.9
Gizzard shad	*Dorosoma cepedianum*	Postlarvae	3,447	55.6
Gizzard shad	*Dorosoma cepedianum*	Prolarvae	127	2.1
White crappie	*Pomoxis annularis*	Juvenile	592	9.6
White crappie	*Pomoxis annularis*	Postlarvae	566	9.1
White crappie	*Pomoxis annularis*	Adult	47	0.8
Unidentified sunfish	Centrachidae	Juvenile	146	2.4
Unidentified sunfish	Centrachidae	Postlarvae	769	12.4
Unidentified sunfish	Centrachidae	Prolarvae	27	0.4
Redfin shiner	*Notropis umbratillis*	Juvenile	10	0.2
Unidentified sucker	Catostomidae	Prolarvae	13	0.2
Unidentified sucker	Catostomidae	Postlarvae	4	0.1
Red shiner	*Notropis lutrensis*	Juvenile	10	0.2
Channel catfish	*Ictalurus punctatus*	Adult	4	0.1
Common carp	*Cyrpinus carpio*	Postlarvae	2	<0.1

Common Name	Scientific Name	Life Stage	Total Number	Percent Composition
Bluegill	*Lepomis macrochirus*	Adult	2	<0.1
Fathead minnow	*Pimephales promelas*	Adult	1	<0.1
Total			**6,195**	**100.0**

Source: Hummel et. al. (1980)

4.2.2.4 Electrofishing Study (Hummel et. al., 1980)

Electrofishing was conducted from 19 July through 19 October 1979 at seven sites in the reservoir yielding 21 samples. Sampling was conducted at each site for approximately one hour at dusk. A total of 3,348 fish were collected representing 12 species (Table 4-8). Bluegill (*Lepomis macrochirus*), gizzard shad, largemouth bass (*Micropterus salmoides*), and channel catfish made up over 86 percent of the total collection. Differences in species composition between the intake cover and the hot-water dam and the rest of the reservoir were observed.

Table 4-8: Species Collected by Electrofishing from Thomas Hill Reservoir in 1980

Common Name	Scientific Name	Total Number	Percent Composition
Gizzard shad	*Dorosoma cepedianum*	707	21.1
Bigmouth buffalo	*Ictiobus cyprinellus*	5	0.1
Common carp	*Cyprinus carpio*	51	1.5
Green sunfish	*Lepomis cyanellus*	132	3.9
Bluegill	*Lepomis macrochirus*	1,162	34.7
Largemouth bass	*Micropterus salmoides*	698	20.8
White crappie	*Pomoxis annularis*	154	4.6
Freshwater drum	*Aplodinotus grunniens*	2	0.1
Black bullhead	*Ameiurus melas*	40	1.2
Yellow bullhead	*Ameiurus natalis*	55	1.6
Channel catfish	*Ictalurus punctatus*	331	9.9
Flathead catfish	*Pylodictis olivaris*	11	0.3
Total		**3,348**	**100.0**

Source: Hummel et.al. (1980)

4.2.2.5 Rotenone Study (Hummel et. al., 1980)

One cove in the restricted area by the Thomas Hill Energy Center was selected for cove renovation by using rotenone to kill all of the fish in the sampling area. Electrofishing was conducted in the blocked off cove to capture and mark fish for a mark and recapture study. After rotenone application, 1,481 fish representing 15 species were collected (Table 4-9). Bluegill comprised 47.8 percent of the total number

and common carp accounted for 53.4 percent of the total mass. Lengths and weights were taken from the 798 fish collected on the first day of rotenone application. Dead fish found on the second day were enumerated through standard "plus counting" methods. No dead fish were found after the second day. Cove renovation was considered ineffective because of low recapture rate of marked fish.

Table 4-9: Fish Collected by Rotenone sampling from Thomas Hill Reservoir in 1980

Common Name	Scientific Name	Total Number	Total Mass	Percent Composition	Percent by Mass
Bluegill	*Lepomis macrochirus*	708	4,691.29	47.8	11.5
Tadpole madtom	*Noturus gyrinus*	183	464.61	12.4	1.1
Channel catfish	*Ictalurus punctatus*	165	4,413.66	11.1	10.8
White crappie	*Pomoxis annularis*	117	863.31	7.9	2.1
Largemouth bass	*Micropterus salmoides*	64	3,541.16	4.3	8.7
Green sunfish	*Lepomis cyanellus*	62	816.07	4.2	2.0
Common carp	*Cyprinus carpio*	54	21,847.24	3.6	53.4
Gizzard shad	*Dorosoma cepedianum*	55	3,817.13	3.7	9.3
Orangespotted sunfish	*Lepomis humilis*	30	181.50	2.0	0.4
Freshwater drum	*Aplodinotus grunniens*	17	109.26	1.1	0.3
Redfin shiner	*Notropis umbratillis*	11	24.09	0.7	0.1
Black bullhead	*Ameiurus melas*	8	35.10	0.5	0.1
Mosquitofish	*Gambusia affinis*	3	1.43	0.2	0.0
Yellow bullhead	*Ameiurus natalis*	1	102.00	0.1	0.2
Bigmouth buffalo	*Ictiobus cyprinellus*	3	N/A	0.2	N/A
Total		**1,481**	**40,907.85**	**100.0**	**100.0**

Source: Hummel et.al. (1980)

4.2.3 Kangas et al. (1982)

Personnel from Northeast Missouri State University completed a study of the impingement, entrainment, and fishery of Thomas Hill Reservoir at THEC. This study included a historical literature review and collection of data from the physical and chemical environments, impingement, discharge canal entrainment, Tucker trawl samples, electrofishing, cove renovation, and creel census. Sampling was completed between May 1980 and May 1981.

4.2.3.1 Impingement Study (Kangas et. al., 1982)

A total of 27 sampling events totaling 638 hours were collected using a removable net bag over the discharge pipe. Twelve species were impinged during the study (Table 4-10). Threadfin shad were restocked in the reservoir in the summer of 1980. Threadfin shad impingement made up 43 and 65 percent

of the catch in October and November, respectively. Largemouth bass, bluegill, and other game species were impinged at a rate of less than three fish per day.

An estimated 3.82 million fish were impinged annually equaling 16.2 pound of fish per acre of the reservoir. In May 1980, a shad “run” produced a much higher impingement rate than all other dates in the study. More than 95 percent of the fish impinged over the entire study were gizzard shad. Shad impingement was seasonal with the higher rates of impingement consistently during the winter.

Table 4-10: Fish Species Impinged at Thomas Hill Energy Center in 1982

Common Name	Scientific Name	Life Stage	Total Number	No. of Samples with Occurrence	Mean No./Hour	Total Mass Impinged	Percent Mass	Percent Composition
Gizzard shad	*Dorosoma cepedianum*	Harvestable	32	23	0.050	2.554	0.11	0.0
Gizzard shad	*Dorosoma cepedianum*	Intermediate	111,631	28	174.970	1,235.844	51.52	35.8
Gizzard shad	*Dorosoma cepedianum*	Young fish	197,236	66	309.147	1,115.569	46.51	63.2
White crappie	*Pomoxis annularis*	Harvestable	18	15	0.028	5.733	0.24	<0.1
White crappie	*Pomoxis annularis*	Intermediate	822	66	1.288	11.437	0.48	0.3
White crappie	*Pomoxis annularis*	Young fish	33	15	0.052	0.148	0.01	<0.1
Bluegill	*Lepomis macrochirus*	Harvestable	6	4	0.009	0.463	0.02	<0.1
Bluegill	*Lepomis macrochirus*	Intermediate	35	16	0.055	0.385	0.02	<0.1
Bluegill	*Lepomis macrochirus*	Young fish	13	11	0.020	0.047	0.00	<0.1
Green sunfish	*Lepomis cyanellus*	Intermediate	3	2	0.005	0.071	0.00	<0.1
Green sunfish	*Lepomis cyanellus*	Young fish	1	1	0.002	0.011	0.00	<0.1
Largemouth bass	*Micropterus salmoides*	Harvestable	3	3	0.005	1.325	0.06	<0.1
Largemouth bass	*Micropterus salmoides*	Young fish	2	2	0.003	0.010	0.00	<0.1
Channel catfish	*Ictalurus punctatus*	Harvestable	36	15	0.056	4.259	0.18	<0.1
Channel catfish	*Ictalurus punctatus*	Intermediate	200	38	0.313	6.670	0.28	0.1
Channel catfish	*Ictalurus punctatus*	Young fish	172	17	0.270	0.785	0.03	0.1
Tadpole madtom	*Noturus gyrinus*	-	10	7	0.016	0.115	0.00	<0.1
Bigmouth buffalo	*Ictiobus cyprinellus*	Young fish	1	1	0.002	0.011	0.00	<0.1
Freshwater drum	*Aplodinotus grunniens*	Harvestable	23	14	0.036	4.039	0.17	<0.1
Freshwater drum	*Aplodinotus grunniens*	Intermediate	5	3	0.008	0.217	0.01	<0.1
Freshwater drum	*Aplodinotus grunniens*	Young fish	2	2	0.003	0.009	0.00	<0.1
Common carp	*Cyprinus carpio*	Harvestable	17	10	0.027	5.264	0.22	<0.1
Common carp	*Cyprinus carpio*	Intermediate	2	2	0.003	0.435	0.02	<0.1

Common Name	Scientific Name	Life Stage	Total Number	No. of Samples with Occurrence	Mean No./Hour	Total Mass Impinged	Percent Mass	Percent Composition
Flathead catfish	*Pylodictis olivaris*	Harvestable	1	1	0.002	0.011	0.00	<0.1
Threadfin shad	*Dorosoma petenense*	Harvestable	1	1	0.002	0.014	0.00	<0.1
Threadfin shad	*Dorosoma petenense*	Young fish	1,237	30	1.995	2.831	0.12	0.4
Unidentified shad	*Dorosoma sp.*	Young fish	444	20	0.696	0.421	0.02	0.1
Total			**312,022**	**81**	**489.063**	**2,398.678**	**100.00**	**100.0**

Source: Kangas et.al. (1982)

4.2.3.2 Entrainment Study (Kangas et al., 1982)

Entrainment samples were collected from the intake cove, discharge pipe, hot water pond, and the Brush Creek Arm of the reservoir. Five taxa of larval fish were found including gizzard shad, white crappie, and largemouth bass in addition to two groups of unidentified larvae including *Dorosoma* sp. (shad) and centrachid (sunfish) species. Shad were the most frequently entrained group of fish.

Estimated annual entrainment was 160 million shad and 122 million white crappie. Mortality as a result of entrainment was assumed to be 100 percent.

4.2.3.3 Tucker Trawl Study (Kangas et. al., 1982)

Samples of the ichthyoplankton were collected at five sites including 14 stations using a Tucker trawl every other week from April 21 to July 14, 1980 and every week from July 28 to October 6, 1980. Additional samples were taken on April 24 and May 20, 1981. This protocol yielded 316 samples. Daily sampling timing varied between day and night; depth varied depending on trawl location.

A total of eight species and two unidentifiable groups of species were collected during this portion of the study (Table 4-11). During the period of April through June, gizzard shad larvae densities were analyzed separately from other *Dorosoma* sp. Additional analyses considered *Dorosoma* sp. rather than gizzard shad individually because of the threadfin shad stocking efforts. Species in the genus *Lepomis* (small sunfishes) were considered one group for analytical purposes because of the difficulty in making species determination at the larval life stages. Species most likely to be included in this group were bluegill and green sunfish.

Table 4-11: Fish Species Collected by Tucker Trawl from Thomas Hill Reservoir in 1982

Common Name	Scientific Name	Common Name	Scientific Name
Gizzard shad	*Dorosoma cepedianum*	Red shiner	*Notropis lutrensis*
Threadfin shad	*Dorosoma petenense*	Redfin shiner	*Notropis umbratillis*
White crappie	*Pomoxis annularis*	Unidentified minnows	Cyprinid
Unidentified sunfish	*Lepomis* sp.	Bluegill	*Lepomis macrochirus*
Common carp	*Cyprinus carpio*	Largemouth bass	*Micropterus salmoides*

Source: Kangas et.al. (1982)

4.2.4 Environmental Science and Engineering, Inc. (1984)

In 1984, Environmental Science and Engineering, Inc. conducted impingement and entrainment sampling study at THEC.

4.2.4.1 Impingement Study (Environmental Science and Engineering Inc., 1984)

Impingement samples were taken weekly at Unit 3 over a period of one year for a total of 52 samples. Sampling days during the week were chosen randomly. Three nets were placed in front of the six traveling screens (two screens per net). Nets were removed after 24 hours. Fish were processed separately for each of the three baskets. Fish that were collected were identified to species, counted, and measured for length and mass.

During the 1983 study at Unit 3, 725,953 fish were estimated to be impinged comprising eleven different species (Table 4-12). Gizzard shad made up for 98.6 percent of the total numbers and 95.2 percent of the total mass. The most common age class affected by impingement was the young-of-the-year. Of the fish impinged, 99.6 percent were less than 150 mm in total length. A direct relationship to decreasing temperatures and increasing impingement rates could be seen. Over 50 percent of the impinged fish were collected between December 22 and February 7. A sharp decrease in air temperature on October 20-21 resulted in impinging 46.8 percent of the total year's impingement on one date because of the cold temperatures.

Table 4-12: Fish Species Impinged at Thomas Hill Energy Center in 1983

Common Name	Scientific Name	Total No.	Percent Composition	Total Mass (g)	Percent Composition	Percent by Mass
Gizzard shad	*Dorosoma cepedianum*	715,472	98.55	4,489,056	98.6	95.2
Threadfin shad	*Dorosoma petenense*	5,981	0.82	31,749	0.8	0.67
White crappie	*Pomoxis annularis*	3,256	0.45	148,857	0.4	3.16
Freshwater drum	*Aplodintus grunniens*	466	0.06	30,766	0.1	0.65
Bluegill	*Lepomis marochirus*	263	0.04	8,050	<0.1	0.17
Channel catfish	*Ictalurus punctatus*	260	0.04	5,133	<0.1	0.11
Largemouth bass	*Micropterus salmoides*	23	<0.01	486	<0.1	<0.01
Flathead catfish	*Pylodictis oliveris*	7	<0.01	605	<0.1	0.01
Orangespotted sunfish	*Lepomis humilis*	21	<0.01	23	<0.1	<0.01

Common Name	Scientific Name	Total No.	Percent Composition	Total Mass (g)	Percent Composition	Percent by Mass
Brooke silverside	*Labidesthes sicculus*	28	<0.01	377	<0.1	<0.01
Green sunfish	*Lepomis cyanellus*	38	<0.01	51	<0.1	<0.01
Unidentifiable		138	0.02	136	<0.1	<0.01
Total		**725,953**	**99.98**	**4,715,289**	**100.0**	100.0

Source: Environmental Science and Engineering Inc. (1984)

4.2.4.2 Entrainment Study (Environmental Science and Engineering Inc., 1984)

Entrainment samples were taken weekly during the study. Samples were only collected from March through August 1983 at Unit 3. Sample days during the week were randomly chosen using a computerized random numbers generator. Duplicate samples were collected from the water discharge near the beginning of the discharge canal using 0.5-meter (m) diameter, conical, 505-micron mesh ichthyoplankton nets equipped with flow meters. An additional nighttime sample was collected once a month during the study period to assess any potential nocturnal variation. In total, 66 ichthyoplankton samples were taken (54 day and 12 night).

During the study, an estimated 52.8 million larval fish were estimated to have been entrained (Table 4-13). Of these 91.2 percent were gizzard shad, 5.1 percent were freshwater drum, 2.5 percent were white crappie, and 1.1 percent were bluegill. The highest entrainment rates occurred during the peak spawning periods from late May through the end of June when water temperature were between 17 to 30 °C. The highest entrainment density was 1.86/m^3 on June 23. In comparison to the 1981 study, Unit 1 and 2 entrainment rates and Unit 3 were also highest during the same time period in the spring. The estimated entrainment total for Units 1 and 2, however, was approximately three times greater than Unit 3.

Table 4-13: Fish Species Entrained at Thomas Hill Energy Center in 1984

Common Name	Scientific Name	Estimated Annual Entrainment	Percent Composition
Shad species	*Dorosoma spp.*	48,158,660	91.2
Crappie species	*Pomoxis spp.*	1,310,983	2.5
Sunfish species	*Lepomis spp.*	560,107	1.1
Freshwater drum	*Aplodinotus grunniens*	2,681,065	5.1
Others		84,293	0.2
Total		**52,795,108**	**100.0**

Source: Environmental Sciences and Engineering Inc. 1984

4.2.5 Burns & McDonnell Impingement Study (2006)

Burns & McDonnell conducted impingement sampling at THEC from January through December of 2005. The basic procedures for impingement monitoring were to collect the debris (including fish and shellfish) in the traveling screen wash water over a period of 24 hours. Collections were made every other week (bi-weekly) over 12 months for a total of 26 sampling events.

At the Units 1 and 2 intakes, the most frequently impinged species were gizzard shad, freshwater drum, channel catfish, white crappie, and black crappie. Gizzard shad made up 97 percent of the total catch for Units 1 and 2 (Table 4-14). The annual impingement rate for Units 1 and 2 was estimated to be 480,425 fish and 289 shellfish. Gizzard shad, freshwater drum, channel catfish, and white crappie were also frequently impinged at Unit 3, comprising 98 percent of the total catch at that intake. The annual impingement rate for Unit 3 was estimated to be 6,212 fish and 44 shellfish. Notably, one unique species was collected as "dead on arrival" that was otherwise not impinged alive. This individual was an unidentified sturgeon. The impingement rate at the Unit 3 intake was 22.2 percent of the rate at the Units 1 and 2 intake even though the annual intake of water at the Unit 3 intake was 1.7 time greater than Units 1 and 2. The reduction in impingement at the Unit 3 intake was likely the result of the lower through-screen velocity that was designed into this intake to reduce impingement.

Table 4-14: Species Impinged at Thomas Hill Energy Center in 2005

Common Name	Scientific Name	Number Collected	Percent Composition
Units 1&2			
Unidentified crappie	*Pomoxis sp.*	1	<0.01
Common carp	*Cyprinus carpio*	1	<0.01
Largemouth bass	*Micropterus salmoides*	1	<0.01
Unidentified sunfish	*Lepomis sp.*	1	<0.01
Unidentifiable	-	2	<0.01
Hybrid striped bass	*Morone chrysops x Morone saxatilis*	17	0.1
Bluegill	*Lepomis macrochirus*	18	0.1
Other	-	41	0.1
Black crappie	*Pomoxis nigromaculatus*	28	0.1
White crappie	*Pomoxis annularis*	64	0.2
Channel catfish	*Ictalurus punctatus*	388	1.4
Freshwater drum	*Aplodinotus grunniens*	396	1.4
Gizzard shad	*Dorosoma cepedianum*	27,190	96.7
Total		**28,107**	**100.0**

Common Name	Scientific Name	Number Collected	Percent Composition
Unit 3			
White crappie	*Pomoxis annularis*	1	0.3
Channel catfish	*Ictalurus punctatus*	2	0.5
Freshwater drum	*Aplodinotus grunniens*	4	1.1
Gizzard shad	*Dorosoma cepedianum*	356	98.1
Total		**363**	**100.0**

Source: Burns & McDonnell (2006)

Of the shellfish impinged, only one was a native mussel. The rest were determined to be Asiatic clams or crayfish, which made up 87 percent of the shellfish impingement.

4.2.6 Burns & McDonnell Biological Characterization Study (2008)

The fisheries community in the vicinity of the Thomas Hill intake structures was evaluated using shoreline seining, beach seining, and a boat electrofishing. Samples were collected from four sites in the arm of Thomas Hill Reservoir were the energy center's two cooling water intakes were located. Sampling occurred seasonally, once each in the summer and fall of 2005, and the winter and spring of 2006. Nighttime and daytime samples were taken during each seasonal event to assess diel changes in fish communities.

Over the course of the study, 3,735 fish representing 17 species (Table 4-15) were collected. A total of 2,697 were collected by seining and 1,038 were collected by electrofishing. Thirteen species were collected by seining and 15 species were collected by electrofishing. Bluegill was by far the species most frequently collected by both sampling gear. The next two species most commonly collected by seining were sand shiner (*Notropis ludibundus*) and western mosquitofish (*Gambusia affinis*). These two species plus emerald shiner (*Notropis atherinoides*) were only collected by seining. For electrofishing, the next two most commonly collected species were largemouth bass and gizzard shad (Table 4-15). Common carp, hybrid striped bass (*Morone chrysops x M. saxatalis*), flathead catfish (*Pylodictis olivaris*), freshwater drum, bigmouth buffalo (), and bluegill x green sunfish hybrid (*Lepomis macrochirus x L. cyanellus ctis olivaris*) were only collected by electrofishing (Table 4-15).

Table 4-15: Fish Collected via Electrofishing and Seining on Thomas Hill Reservoir in 2005

Common Name	Scientific Name	Seining	Electrofishing	Total	Percent Composition
Bluegill	*Lepomis macrochirus*	2,260	508	2,768	74.1
Largemouth bass	*Micropterus salmoides*	20	200	220	5.9

Common Name	Scientific Name	Seining	Electrofishing	Total	Percent Composition
Sand shiner	*Notropis ludibundus*	134	0	134	3.6
Gizzard shad	*Dorosoma cepedianum*	17	104	121	3.2
Western mosquitofish	*Gambusia affinis*	120	0	120	3.2
Brook silverside	*Labidesthes sicculus*	75	35	110	2.9
Channel catfish	*Ictalurus punctatus*	18	56	74	2.0
White crappie	*Pomoxis annularis*	11	55	66	1.8
Black crappie	*Pomoxis nigromaculatus*	36	22	58	1.6
Green sunfish	*Lepomis cyanellus*	4	15	19	0.5
Common carp	*Cyprinus carpio*	0	18	18	0.5
Hybrid striped bass	*Morone chrysops x M. saxatalis*	0	9	9	0.2
Flathead catfish	*Pylodictis olivaris*	0	6	6	0.2
Freshwater drum	*Aplodinotus grunniens*	0	5	5	0.1
Bigmouth buffalo	*Ictiobus cyprinellus*	0	3	3	0.1
Bluegill x green sunfish hybrid	*Lepomis macrochirus x L. cyanellus*	0	2	2	0.1
Emerald shiner	*Notropis atherinoides*	2	0	2	0.1
Total No. of specimens		**2,697**	**1,038**	**3,735**	**-**
Number of species		**11**	**14**	**17**	**-**

Source: Burns & McDonnell (2008)

4.2.7 Thomas Hill Reservoir 2019 Fish Community and Management Update (2019)

As part of planned management activities, MDC conducts annual electrofishing on Thomas Hill Reservoir to assess the overall health of the fish community. Specifically, the update details the status of game fish species including largemouth bass and white crappie based on electrofishing and trap netting as well as long-term stocking information for hybrid striped bass. In 2019, a trend of increasing capture rates for largemouth bass dating back to 2014 finally ended, as capture rates in 2019 were 63 percent lower than in 2018. Some of the decrease was attributed to sample timing and water levels. White crappie populations were reportedly fair in 2019, although a decrease of 50 percent in capture rate was observed compared to 2018. Hybrid striped bass have been stocked in Thomas Hill Reservoir dating back to 1993. Initially 1 to 2-inch fish were stocked, but since 2004, 4-inch fish have been stocked. Stocking rates have ranged between <1 and 20 fish/acre, or 1,106 to 99,910 fish.

4.3 Species and Life Stages Most Susceptible to Impingement and Entrainment

The following subsections provide the species and life stages most susceptible to impingement and entrainment. Subsections 4.3.1 and 4.3.2 provide insight into the species and life stages that are susceptible to impingement and entrainment at THEC, respectively.

4.3.1 Species and Life Stages Most Susceptible to Impingement

Since 1979, five impingement studies have been conducted at THEC. These studies occurred in 1979 (Kangas and Hummel, 1979), 1980 (Hummel et.al. 1980), 1982 (Kangas et.al 1982), 1984 (Environmental Science and Engineering 1984) and 2005 (Burns & McDonnell, 2006). A total of20 species were impinged at THEC across all five studies (Table 4-16).

Table 4-16: Fish Species Impinged at Thomas Hill Energy Center in Previous Studies

Common Name	Scientific Name	Common Name	Scientific Name
Bigmouth buffalo	*Ictiobus cyprinellus*	Green sunfish	*Lepomis cyanellus*
Black bullhead	*Ameiurus melas*	Hybrid striped bass	*Morone chrysops x Morone saxatilis*
Black crappie	*Pomoxis nigromaculatus*	Largemouth bass	*Micropterus salmoides*
Bluegill	*Lepomis macrochirus*	Orangespotted sunfish	*Lepomis humilis*
Brooke silverside	*Labidesthes sicculus*	Red shiner	*Cyprinella lutrensis*
Channel catfish	*Ictalurus punctatus*	Redfin shiner	*Lythrurus umbratilis*
Common carp	*Cyprinus carpio*	Tadpole madtom	*Noturus gyrinis*
Flathead catfish	*Pylodictis olivaris*	Threadfin shad	*Dorosoma petenense*
Freshwater drum	*Aplodinotus grunniens*	White crappie	*Pomoxis annularis*
Gizzard shad	*Dorosoma cepedianum*	Yellow bullhead	*Ameiurus natalis*

Sources: Kangas and Hummel (1979); Hummel et.al. (1980); Kangas et.al. (1982); Environmental Science and Engineering (1984); and Burns & McDonnell (2006)

Only six species were ever impinged at greater that 1 percent of the total impingement (either by mass or number): gizzard shad, threadfin shad, white crappie, channel catfish, largemouth bass, and freshwater drum. Juvenile gizzard shad was by far the most impinged life stage and species, accounting for between 67.0 and 99.0 percent of the total catch each study.

4.3.2 Species and Life Stages Most Susceptible to Entrainment

To be susceptible to entrainment, a species' early life stages (eggs and larvae) must occur in the same area as the CWIS. The THEC CWIS are located along the west, bank of Thomas Hill Reservoir, near the dam (Figure 3-1). The water depth in front of the CWIS is approximately 30 feet deep. Four entrainment studies have been conducted at THEC. These studies occurred from 1979 to 1984 (Kangas and Hummel,

1979; Hummel et.al. 1980; Kangas et.al. 1982; and Environmental Sciences and Engineering 1984). A total of 10 taxonomic groups were identified in these entrainment studies (Table 4-17).

Table 4-17: Fish Species Entrained at Thomas Hill Energy Center in Previous Studies

Common Name	Scientific Name	Common Name	Scientific Name
Channel catfish	*Ictalurus punctatus*	Largemouth bass	*Micropterus salmoides*
Common carp	*Cyprinus carpio*	Redfin shiner	*Lythrurus umbratilis*
Crappie	*Pomoxis* sp.	Shad	*Dorosoma* sp.
Freshwater drum	*Aplodinotus grunniens*	Sunfish	*Lepomis* sp.
Gizzard shad	*Dorosoma cepedianum*	Threadfin shad	*Dorosoma petenense*

Source: Kangas and Hummel (1979); Hummel et.al. (1980); Kangas et.al. (1982); and Environmental Science and Engineering (1984)

Gizzard shad, white crappie, and freshwater drum were the most common species entrained and are therefore the most susceptible species to entrainment at the THEC. Gizzard shad and freshwater drum are pelagic, broadcast spawners that release large numbers of eggs into the water column during spawning (Boschung and Mayden, 2004 and Ohio Department of Natural Resources, 2015). Due to their spawning strategy, eggs and larvae would be most susceptible to entrainment. White crappie lay eggs in nests built in depressional areas within the substrate, which are aggressively defended by males (Tingle, 2015). White crappie is also a species that has been widely introduced into U.S. waters due to its high recreational value (Tingle, 2015). The spawning behavior of white crappie suggests that it would be less susceptible to entrainment, but the fact that white crappie are regularly stocked in Thomas Hill Reservoir could explain why this species was somewhat abundantly observed in previous entrainment studies at THEC.

4.4 Primary Period of Reproduction, Larval Recruitment, and Period of Peak Abundance for Relevant Taxa

In Missouri, most fish species spawn in the spring months as water temperatures begin to warm. As such, larval recruitment and peak abundances occur in the late spring and summer months. Environmental Sciences and Engineering (1984) observed the highest entrainment rates from late May through the end of June when water temperature was between 17 to 30 degrees °C. Kangas et.al. (1982) noted that gizzard shad and white crappie entrainment occurred in May and June only. The only largemouth bass larvae entrained occurred in April. Sunfish larvae were collected in July and August.

4.5 Seasonal and Daily Activities

The most common fish species in Thomas Hill Reservoir do not exhibit significant daily or seasonal activities outside of their normal foraging and spawning activities. They do not endure long spawning

runs but can migrate to more suitable sections of the river for the purpose of spawning (i.e., moving from the main channel to lower flow backwaters).

Thomas Hill Reservoir water levels may affect seasonal fish distribution. The highest water levels typically occur in late spring and early summer. These higher water levels provide a larger area of suitable habitat over which fish species can disperse because of the inundation of backwaters and lower-gradient channel border areas. When the waters recede to lower levels, fish species that are present in high abundance during the late summer and fall migrate from the protected backwater to channel border habitats.

4.6 Protected Species Susceptible to Impingement and Entrainment

The EPA consulted with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) on the development of the Final Rule. The Biological Opinion (BO), issued jointly by the USFWS and NMFS, concluded that implementation of the Final Rule is not likely to jeopardize the continued existence of Endangered Species Act (ESA) listed species evaluated in the BO (195 species under USFWS jurisdiction and 71 species under NMFS jurisdiction) and is not likely to destroy or adversely modify designated critical habitat for these species. However, the USFWS and NMFS added a number of conditions to the Final Rule that expanded the reach of the ESA.

The Final Rule does not authorize the take of federally endangered or threatened species. Under the ESA, take is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting, or attempting to engage in any such conduct, of endangered or threatened species. Federal agencies comply with the ESA through consultation under Section 7 of the ESA, which applies to issued NPDES permits through which the § 316(b) requirements are implemented.

The Final Rule requires that facilities identify all federally listed threatened and endangered species and designated critical habitat that are present in the "action area." The "action area," as defined by the USFWS and NMFS under Section 7, includes all areas that may be directly or indirectly affected by the operation of a facility's CWIS and not merely the immediate area involved in the action; this is because the USFWS and NMFS consider that the effects of CWIS can extend well beyond the footprint of the CWIS.

Federally listed threatened and endangered species were identified using the following online resources:

- USFWS Information for Planning and Conservation system (2020a)
- USFWS Environmental Conservation Online System (2020b)

- MDC Missouri Fish and Wildlife Information System (2020)

Only one federally protected aquatic species, the Topeka shiner (*Notropis topeka*), was identified as potentially occurring in Randolph County, Missouri. Other protected terrestrial bird, reptile, mammal and plant species occur within Randolph and Macon Counties, but their habitats are not in the vicinity of the THEC CWIS. Therefore, it is unlikely that any of their respective life stages would be subject to impingement or entrainment at the THEC, and the THEC CWIS will not impact their critical habitat. These protected species were not considered for further evaluation.

The Topeka shiner (*Notropis topeka*) is a Federally and State-listed endangered species with the potential to inhabit the Thomas Hill Reservoir. The following provides key life history information and an evaluation of its potential to be susceptible to impingement and entrainment.

The Topeka shiner inhabits pools in small non-turbid streams with substrate consisting of sand, gravel, or rubble (Pflieger, 1997). This species is almost always found with sand shiner, orangespotted sunfish (*Lepomis humilus*), green sunfish (*Lepomis cyanellus*), fathead minnows (*Pimephales promelas*), white sucker (*Catostomus commersonii*), and black bullhead (*Ameiurus melas*). Streams preferred by this species are generally slow-moving and sinuous (USFWS, 2020c). Topeka shiner spawn from late May to mid-July when water temperatures reach 22 °C (Pflieger, 1997 and USFWS, 2007). Males utilize other fish nests (including those of orangespotted and green sunfish) and aggressively defend a small territory (USFWS, 2020c and Pfleiger, 1997). Females produce clutches of eggs between 150-800 eggs, depending on the size of the female, which are released in small increments throughout spawning (USFWS, 2007). The eggs are demersal and adhesive, and hatch in approximately 5 days (Katula, 2015).

The habitat in the vicinity of the THEC CWIS consists of a deep, approximately 30-foot pool. Thomas Hill Reservoir is an impoundment and its' waters are lentic in nature. Due to the habitat preferences and life history of the Topeka shiner, it is highly unlikely that the Topeka shiner would occur in Thomas Hill Reservoir, near THEC. Therefore, the susceptibility of the Topeka shiner to impingement and entrainment at the THEC CWIS would be considered extremely low.

4.7 Public Participation or Consultation with Federal or State Agencies

No pertinent public participation or consultation with Federal or State agencies has been undertaken.

4.8 Field Studies

Field studies conducted at THEC are discussed in the preceding sections. No new field studies were conducted to generate the source water baseline biological characterization data for THEC.

4.9 Clarification of the Information

The Final Rule at § 122.21(r)(4)(ix) requires a statement of clarification that the Source Water Baseline Characterization Data for owners/operators of existing facilities or new units at existing facilities is the information in paragraphs (r)(4)(i) through (xii). This provision does not require any specific information other than the clarification statement.

The Source Water Baseline Characterization Data is the information in paragraphs (r)(4)(i) through (xii) provided in Sections 4.1 through 4.7.

4.10 Protective Measures and Stabilization Activities Implemented

No additional protective measures or stabilization activities have been implemented in the vicinity of the THEC CWIS that could have affected the baseline water condition in the vicinity of the intakes.

4.11 New Fragile Species

Fragile species at § 125.92(m) of the Final Rule are defined as those species of fish and shellfish that are least likely to survive any form of impingement. Fragile species are defined as those with an impingement survival rate of less than 30 percent, including but not limited to alewife, American shad (*Alosa sapidissima*), Atlantic herring (*Clupea harengus*), Atlantic long-finned squid (*Doryteuthis pealeii*), Atlantic menhaden (*Brevoortia tyrannus*), bay anchovy (*Anchoa mitchilli*), blueback herring (*Alosa aetivalis*), bluefish (*Pomatomus saltatrix*), butterfish (*Peprilus triacanthus*), gizzard shad, grey snapper (*Lutjanus griseus*), hickory shad (*Alosa mediocris*), rainbow smelt (*Osmerus mordax*), round herring (*Spratelloides gracillis*), and silver anchovy (*Engraulis eurystole*).

Gizzard shad, listed as a fragile species at § 125.92(m), was the most dominant species collected during the impingement and entrainment studies at THEC.

4.12 Incidental Take Exemption or Authorization

AECI has not obtained an incidental take exemption or authorization for the THEC CWIS from the USFWS or the NMFS.

5.0 COOLING WATER SYSTEM DATA

This chapter provides the following permit application requirements in the Final Rule under §122.21(r)(5), Cooling Water System Data:

i. A narrative description of the following:
   - Operation of the cooling water system and its relationship to cooling water intake structures;
   - The proportion of the design intake flow that is used in the system including a distribution of water used for contact cooling, non-contact cooling, and process uses;
   - A distribution of water reuse (to include cooling water reused as process water, process water reused for cooling, and the use of gray water for cooling);
   - Description of reductions in total water withdrawals including cooling water intake flow reductions already achieved through minimized process water withdrawals;
   - Description of any cooling water that is used in a manufacturing process either before or after it is used for cooling, including other recycled process water flows;
   - The proportion of the source waterbody withdrawn (on a monthly basis);
   - The number of days of the year the cooling water system is in operation and seasonal changes in the operation of the system, if applicable;

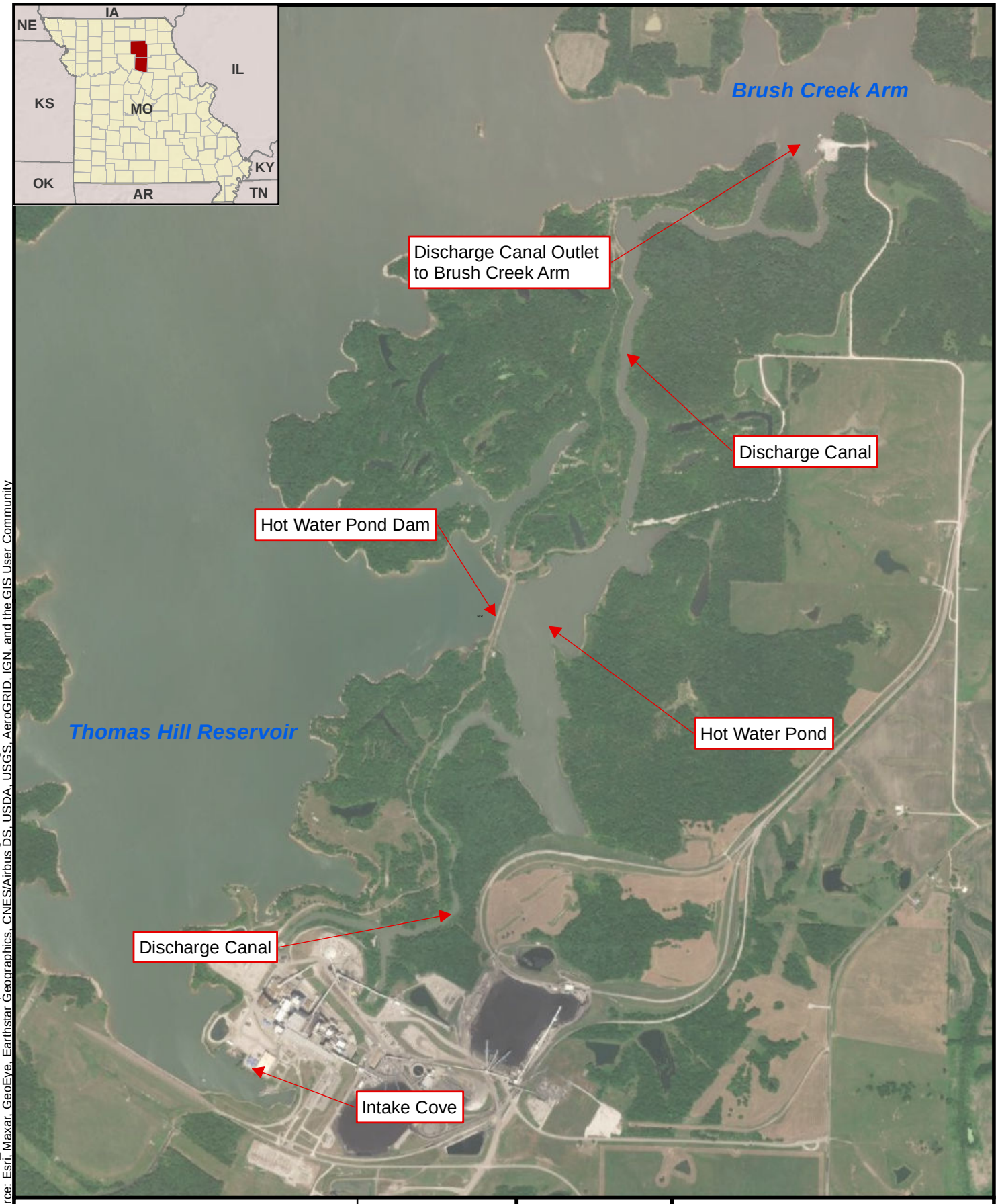
i. Design and engineering calculations and supporting data to support the description above;

ii. Description of existing impingement and entrainment technologies or operational measures and a summary of their performance, including but not limited to reductions in entrainment mortality due to intake location and reductions in total water withdrawals and usage.

5.1 Cooling Water System Description

Cooling water is water used to absorb waste heat rejected from a process or processes used, or from auxiliary operations at a facility. Cooling water can be used for both contact and non-contact cooling. At thermoelectric power stations, cooling water is used to condense steam from the turbine exhaust. Water is pumped from the source and through the tubes of a steam condenser. As steam condenses on the outside of the tubes, the heat of condensation is absorbed by the water flowing through the tubes. The warmer water exiting the condenser is returned to the original source.

THEC uses a closed-cycle recirculating system (CCRS). THEC uses Thomas Hill Reservoir, a 4,950-acre, purpose-built, cooling lake, as the primary component of its cooling water system. Cooling water for the generating units is recycled continuously through the cooling reservoir. Water is pumped through the two CWIS and the unit condensers to the discharge canal. From the discharge canal heated effluent moves to the hotwater pond and hotwater discharge canal to the Brush Creek Arm of the Thomas Hill Reservoir. Water is then circulated in a counterclockwise direction within the reservoir back towards the CWIS where it is withdrawn again and reused in the condensers. Figure 5-1 identifies the major features of the CCRS.



NORTH

1,500 750 0 1,500

Feet

BURNS McDONNELL

Figure 5-1
Closed Cycle Cooling System
Thomas Hill Energy Center
AECI
Macon and Randolph
Counties, Missouri

Path: Z:\Clients\ENS\AECI\122776_AECITH316b\Studies\GeospatialData\Files\ArcDocs\Fig5-1.mxd mlhogan 9/8/2020
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Source: Esri and Burns & McDonnell Engineering Company, Inc.

Issued: 9/8/2020

5.1.1 Operation In Relation To Intake Structure

THEC is an existing power generation facility that operates continuously year round (24 hours per day for 365 days per year). The two CWIS primarily serves to provide condenser cooling water to the facility.

5.1.2 Proportion of Design Intake Flow Used in the System

Approximately 99 percent of the water withdrawn by the CWIS is used for condenser cooling. The remaining 1 percent is used for a variety of other purposes including water treatment clarifiers, air compressors, and the ash handling systems as indicated in the water balance diagram provided in Appendix B.

5.1.3 Distribution of Water Reuse

THEC reuses the water in Thomas Hill Reservoir for cooling water within the plant. The Thomas Hill Reservoir is the source and receiver of cooling water for the station. Water is pumped through the two CWIS and the unit condensers to the discharge canal. From the discharge canal heated effluent moves to the hotwater pond and hotwater discharge canal to the Brush Creek Arm of the Thomas Hill Reservoir. Water is then circulated in a counterclockwise direction within the reservoir back towards the CWIS where it is withdrawn again and reused in the condensers.

5.1.4 Reductions In Total Water Withdrawals

The DIF at THEC is 972 MGD. The AIF, as defined in § 125.92(a) of the Final Rule, is the average volume of water withdrawn on an annual basis by the CWIS over the past 3 calendar years. Based on the three-year period of January 1, 2017 through December 31, 2019, the AIF at THEC is 752.2 MGD, which is lower than the DIF. Therefore, THEC reduces water withdrawal of Thomas Hill Reservoir by approximately 23 percent as compared to operating the system at DIF.

$$Percent\ Reduction\ in\ Water\ Withdrawl = \left(1 - \left(\frac{752.2}{972.0}\right)\right) * 100 = 22.6$$

5.1.5 Cooling Water Used in a Manufacturing Process

This requirement is not applicable to THEC.

5.1.6 Proportion of the Source Waterbody Withdrawn

According to a 1977 eutrophication study that was conducted, the estimated volume of Thomas Hill Reservoir is 73.021 x 10^6 cubic meters, or 19,290.1 million gallons (US EPA, 1977). At AIF, the THEC

withdraws 752.2 MGD, which is a negligible percentage (less than 0.1 percent) of the total reservoir volume.

5.1.7 Number of Days of the Year the Cooling Water System is in Operation and Seasonal Changes

THEC is a baseload existing electric generating facility that operates continuously year-round (24 hours per day for 365 days per year). Based on the intake flow data from January 1, 2017 through December 31, 2019, the Unit 1 circulating pump was in operation 1,022 out of the possible 1,095 days, or 93.3 percent of the time. The circulating pump for Unit 2 was in operation 992 out of a possible 1,095 days, or 90.5 percent of the time. The Unit pumps were in operation 1,045 out of a possible 1,095 days, or 95.4 percent of the time.

5.2 Design and Engineering Calculations

Design and engineering calculations prepared and data to support § 122.21(r)(5)(i) are provided in the associated sections above.

5.3 Description of Existing Impingement and Entrainment Technologies or Operational Measures

THEC uses two independent CWIS to withdraw cooling water from Thomas Hill Reservoir. Water is withdrawn through intake structures located in the southeastern arm of Thomas Hill Reservoir and is discharged into the Brush Creek arm of the lake. Units 1 and 2 have a common CWIS and Unit 3 has a separate CWIS. No specialized technologies to reduce IM or entrainment existing at the two CWIS. However, the Unit 3 CWIS extends approximately 50 feet from shoreline and was designed to have a through-screen velocity of approximately 0.7 fps to reduce impingement. The results of the 2008 impingement study conducted by Burns & McDonnell indicated that the impingement rate at the Unit 3 intake was 22.2 percent of the rate at the Units 1 and 2 intake even though the annual intake of water at the Unit 3 intake was 1.7 time greater than Units 1 and 2.

EPA deems a through-screen velocity of less than 0.5 fps as one of the options to comply with the IM standard in the Final Rule at 125.94(c)(2) and (3). IM can be greatly reduced by reducing the through-screen velocity in any screen. EPA compiled fish swimming speed data as it varies with the length of the tested fish and with water temperature. These data show that a 1.0 fps velocity standard would protect 78 percent of the tested fish, and a 0.5 fps velocity standard would protect 96 percent of these fish (EPA, 2014b). Since screen fouling can increase the velocity in the screen areas that remain open, EPA concluded that a through-screen velocity of 1.0 fps may not be protective under the expected range of

operating conditions and that a through-screen velocity of 0.5 fps would provide a reasonable safety margin (EPA, 2014b). Therefore, the estimated IM reduction of juvenile and adult fish at the THEC Unit 3 CWIS is anticipated to be at least 78 percent.

In addition, THEC reuses the water in the Thomas Hill Reservoir for cooling purposes. The Thomas Hill Reservoir is a 4,950-acre man-made impoundment that was created for the purpose of serving as the primary component to the THEC cooling water system. The Thomas Hill Reservoir is the source and receiver of cooling water for the station. Water is pumped through the two CWIS and the unit condensers to the discharge canal. From the discharge canal heated effluent moves to the hotwater pond and hotwater discharge canal to the Brush Creek Arm of the Thomas Hill Reservoir. Water is then circulated in a counterclockwise direction within the reservoir back towards the CWIS where it is withdrawn again and reused in the condensers. The reuse of water within the Thomas Hill Reservoir reduces IM and entrainment as compared to a once-through cooling system design.

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APPENDIX A - ENGINEERING DRAWINGS

MATCH LINE THIS DWG.

N14000 N13000 N12000 N11000 N10000

E11000 E10000 E9000 E8000 E7000

FUTURE COAL PREPARATION
MINING EQUIPMENT SPUR
EXISTING ASSOCIATED RAILROAD
COAL HAUL ROAD
LAYDOWN AREA NO 3
READY PILE
RECLAIM HOPPER
COAL RUNOFF POND
COAL YARD
141 LAYDOWN AREA
ASH POND
PLANT R.R. SPUR
READY PILE
LAYDOWN AREA NO 4
STORAGE WAREHOUSE NO 2
STORAGE WAREHOUSE NO 3
SITE SERVICES BUILDING
ASH STORAGE
CONSTRUCTION ENTRANCE RD.
COAL RUNOFF POND ACCESS RD.
MAIN ENTRANCE ROAD (NOT FOR CONSTRUCTION USE)
LOT NO 1 ACCESS RD.
CONSTRUCTION PARKING LOT NO 1
EXIST COAL STORAGE
SANITARY SEWER LAGOON
SUBSTATION ACCESS ROAD
CONVEYOR ACCESS ROAD
CONSTR WAREHOUSE
OWNERS WAREHOUSE
161 CONSTR PARKING LOT
345 KV SUBSTATION
CONSTRUCTION PARKING LOT NO 2
COAL TUNNEL RUNOFF POND
WATER TOWER
SURVEY MONUMENT NO 4
SURVEY MONUMENT NO 1
& COAL CONVEYORS
161 KV SUBSTATION
CONSTRUCTION RUNOFF POND NO 1
UNIT NO 1
DISCHARGE CANAL
GATE HOUSE
FIRE TRUCK PORT
UNIT NO 3 HOUSE SPUR
CONSTR TOILET
UNIT NO 2 FIRST AID TRAILER
RAMP NO 5
CONSTR WATER STATION
CONSTR POWER CENTER NO 1
UNIT NO 3 CONSTR POWER CENTER NO 2
INTAKE STRUCTURE
DIKE WASTE AREA RUNOFF POND
LIMESTONE READY PILE
SURVEY MONUMENT NO 3
CONSTR TOILET
WATER AND AIR PLANT
WASTE AREA
BABCOCK & WILCOX WAREHOUSE
DISCHARGE CANAL ACCESS ROAD
& LIMESTONE CONVEYOR
PRECIPITATORS
MINERAL RUNOFF POND
GAS CLEANING CONTROL BUILDING
SCRUBBER
INTAKE STRUCTURE
OWNERS ENGR OFFICE
CONSTR. TOILET
PLANT DRAIN STRUCTURE
CONSTRUCTION RUNOFF POND NO 2
PROCESS WASTE POND
CHLORINE UNLOADING PLATFORM
OIL WATER SEPARATOR
THICKENER THICKENER
WASTE OIL TANK
THOMAS HILL RESERVOIR
WASTE OIL LOADING PLATFORM
THICKENER THICKENER
CONSTRUCTION RUNOFF POND NO 3
RECREATION AREA

PLAN NORTH
31°41'52"
TRUE NORTH
NORTH

400 0 400
SCALE IN FEET

N14000 E14000 N12000 E12000

EXISTING STATE ROAD "P"
CONSTRUCTION ENTRANCE RD
APPROXIMATE LIMITS OF COMMON STORAGE AREA.
& EXISTING ASSOCIATED RR.

400 0 400
SCALE IN FEET

MATCH LINE THIS DWG.

CALLAO
MACON
BURLINGTON NORTHERN R.R.
MO. 3
BRIER SOUTHERN R.R.
ASSOCIATED RAILROAD
THOMAS HILL RESERVOIR
PLANT SITE
NORFOLK AND WESTERN RR
MO. 3
HUNTSVILLE
MOBERLY
N
VICINITY MAP
NOT TO SCALE

LEGEND

	EXISTING	THIS CONTRACT
STRUCTURES		
TRANSMISSION TOWER		
EXISTING CONTOURS	750	750
SLOPE INDICATORS		
POWER POLE		
RIPRAP		
CRUSHED ROCK		
RAILROAD		
WATER		
FENCE		
ORIGINAL CONTOURS	710	
PROPERTY LINE		
OVERHEAD POWER LINES	P	
STORM SEWER		
AREA OF WORK & STRUCTURE (THIS CONT)		
LAYDOWN AREA		

SURVEY MONUMENTS ⊕ BRASS CAP

MON NO.	NORTH	EAST	ELEV.
1	10991 883	8863.260	733 52
3	12032.527	8129 036	764.67
4	11918.433	9025 579	774 14

NO	DATE	BY	REVISION
	3-28-79	Lloyd	ISSUED AS BID
	2-9-82	FOBA	CONFORMING TO CONSTRUCTION RECORDS

KENNETH I. KORNER NUMBER E-14742 REGISTERED PROFESSIONAL ENGINEER STATE OF MISSOURI

SITE PLAN

CONTRACT NO. 374
CIRCULATING WATER STRUCTURE

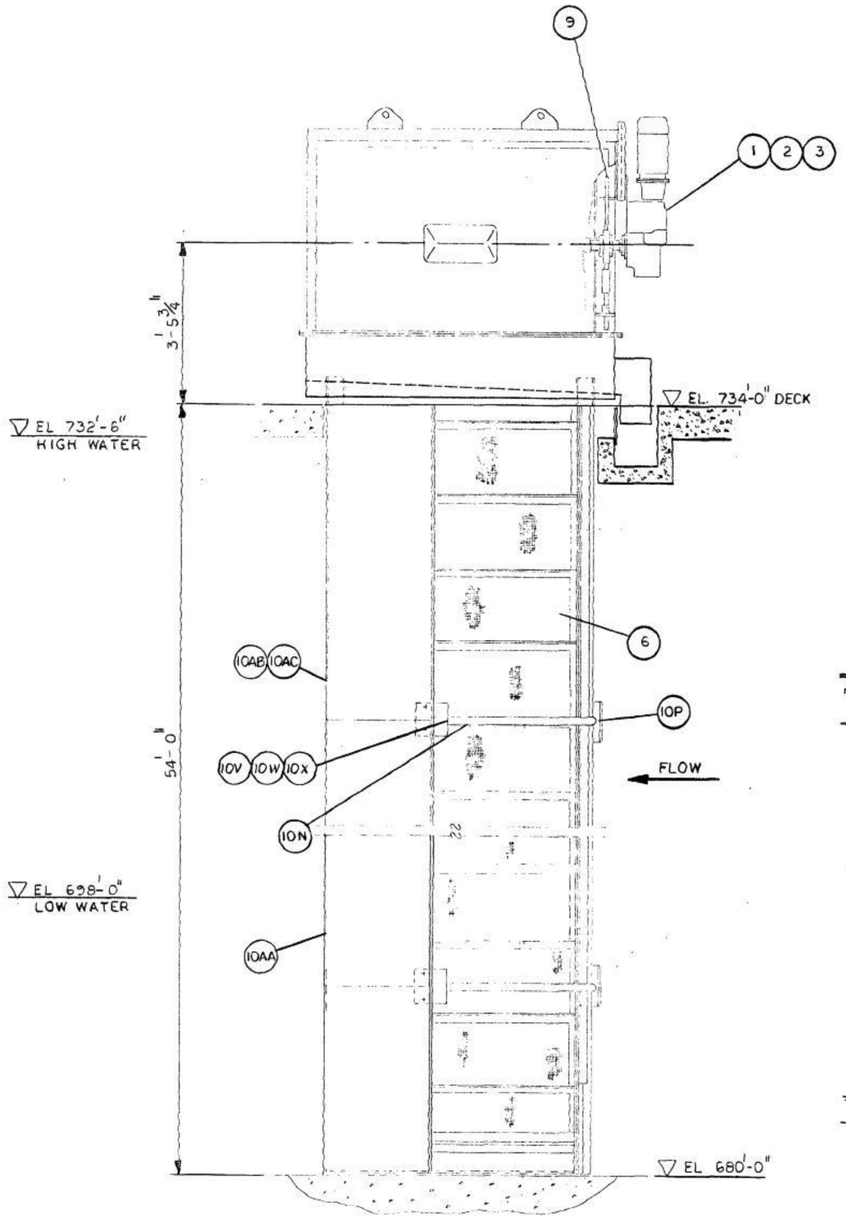
THOMAS HILL POWER PLANT UNIT NO. 3

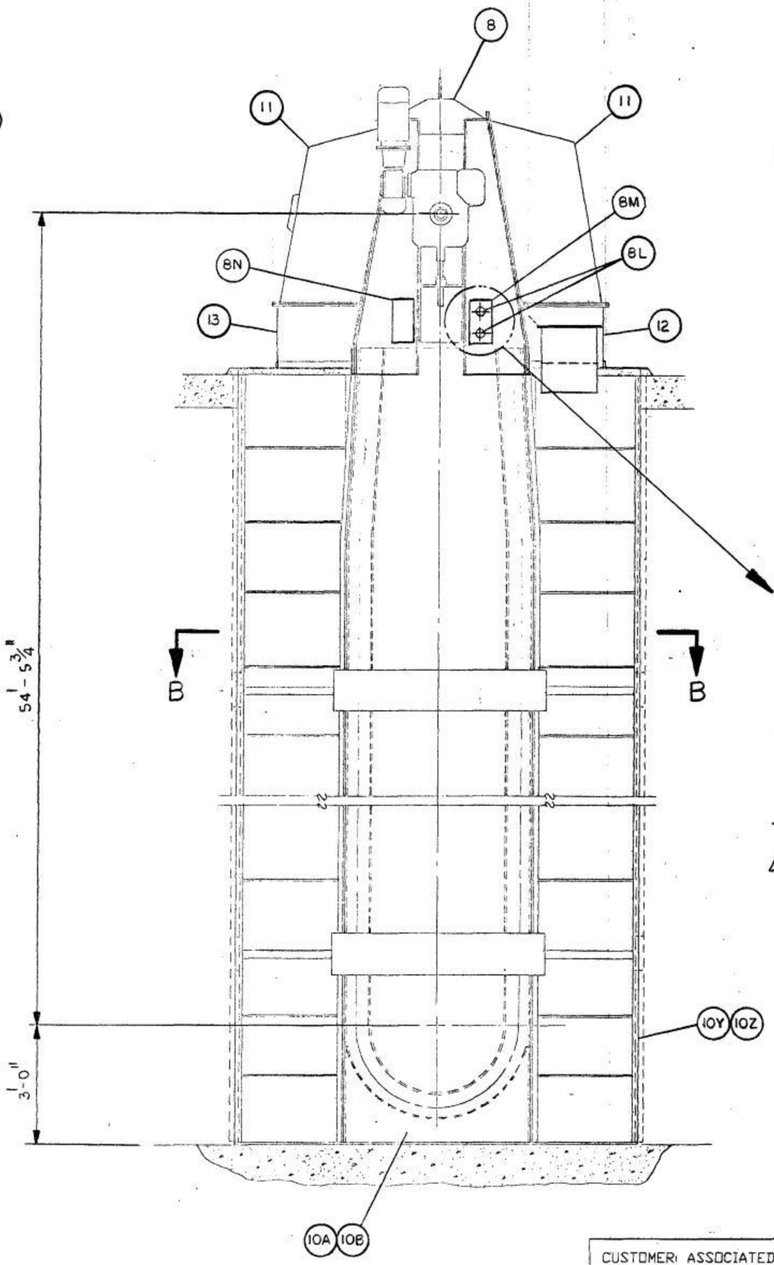
ASSOCIATED ELECTRIC COOPERATIVE
MISSOURI 73

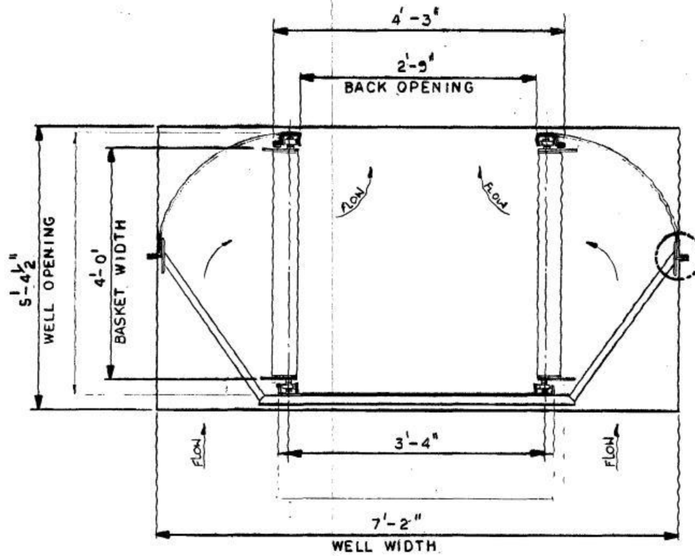
Burns & McDonnell
Engineers – Architects – Consultants
KANSAS CITY, MISSOURI

DESIGNED	DETAILED	CHECKED
JJB	FOBA	

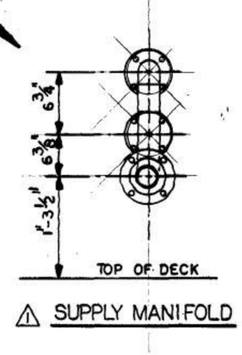
DATE 8-27-78	DRAWING NO. Y121 REV —
APP REA 12-6-78	PROJECT 76-017-1
APP 12-6-78	SHEET 1 OF 42 SHEETS



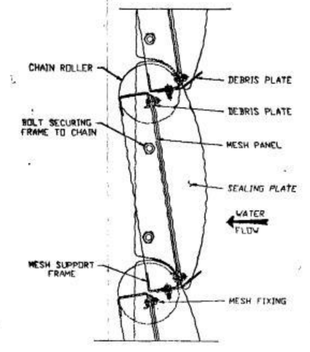


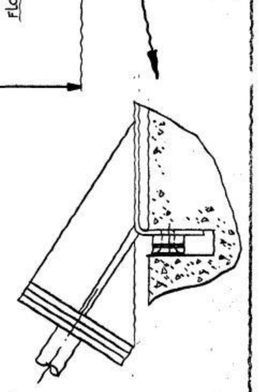


SECTION B-B



⚠ SUPPLY MANIFOLD





NOTES:

EACH SCREEN WILL PASS 75,000 GPM WITH A VELOCITY OF 2.21 FPS AT LOW WATER OF 18'-0" FT THRU 100% CLEAN SCREEN

70 GPM AT 30 PSI MINIMUM
164 GPM AT 70 PSI MAXIMUM

ESTIMATED SHIPPING WEIGHT = 28,821 #

CUSTOMER: ASSOCIATED ELECTRIC COOPERATIVE INC.

PURCHASE ORDER: TH401425

LOCATION: THOMAS HILL ENERGY CENTER, POWER DIVISION CLIFTON HILL, MISSOURI

B.G.I. JOB No: J94-565

REV	ECN #	BY	CHD	APPD.	DATE
10					
9					
8					
7					
6					
5					
4					
3					
2					
1	1488	DKM	WAR	VCC	21 APRIL 95

ENGINEERING CHANGES

Q. A. LEVEL "C"

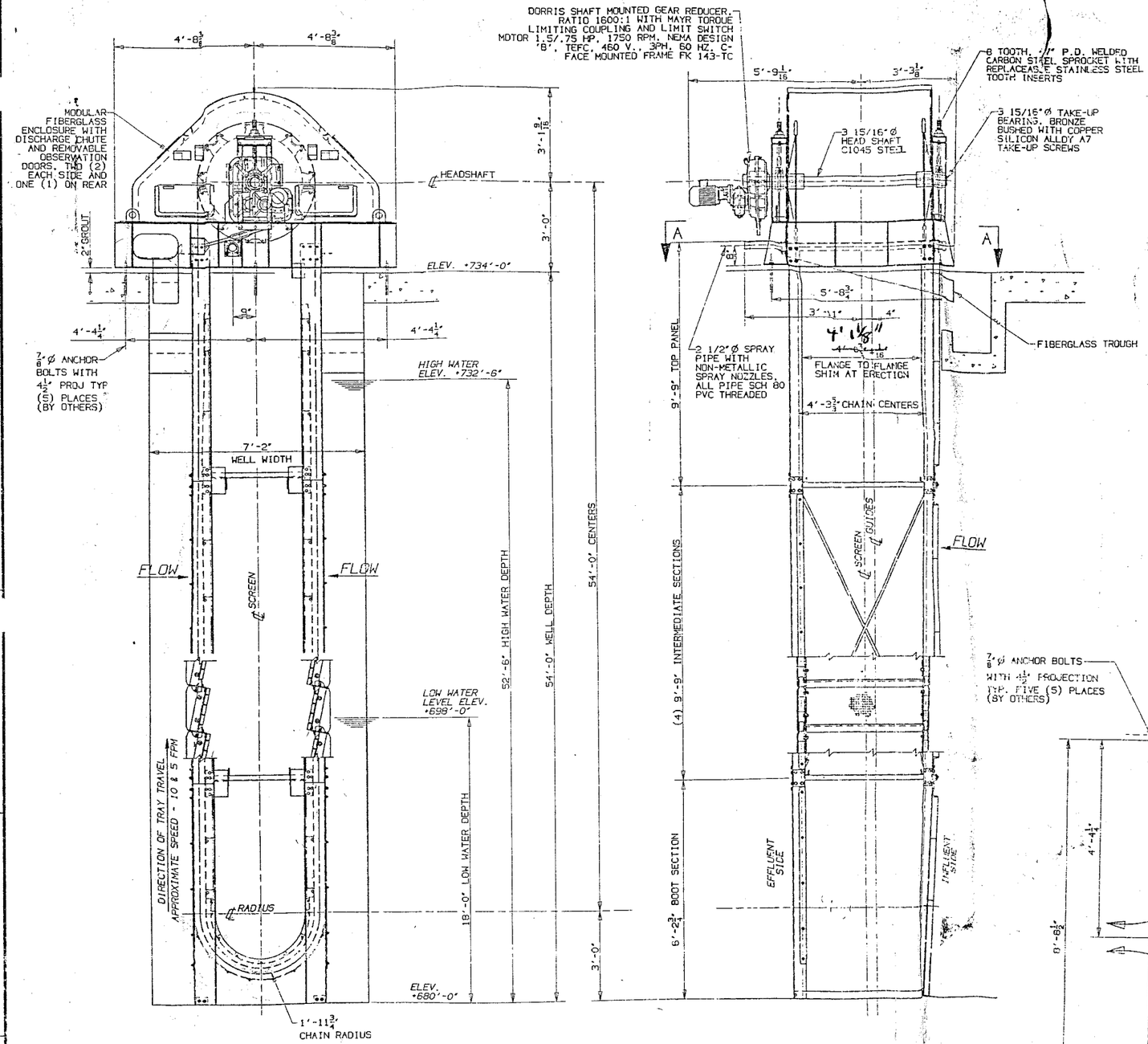
FRAC. ± ____ ± ____
DEC. ± ____ ± ____
ANGLES ± ____ ± ____
FINISH ____ ____

FIRST USED ON ✓

BRACKETT GREEN
HOUSTON, TEXAS

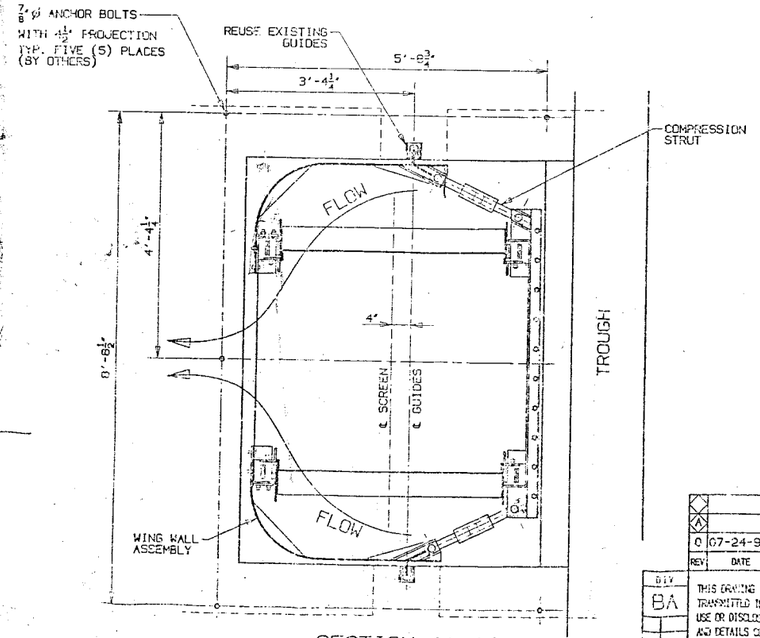
GENERAL ARRANGEMENT
DUAL FLOW SCREEN
4'-0" BASKET - 54'-0" WELL DEPTH

DR.	DKM.	SC:	DATE: 1-9-95
CKD.	WAR		
APPD.	VCC	D-J94-565-002	REV 1



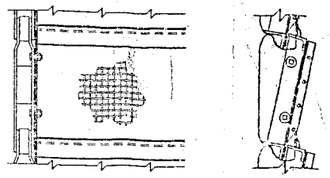
EFFLUENT SIDE

WING WALL/COMPRESSION STRUT ASSY NOT SHOWN FOR CLARITY



SECTION 'A-A'

HEAD SECTION NOT SHOWN FOR CLARITY



CHAIN AND SCREEN TRAY ASSEMBLY

CHAIN - 18" PITCH NON-LUBRICATED
SIDEBAR - 3" x 3/8" C1040 CARBON STEEL
PINS - #17-4 PH STAINLESS STEEL
BUSHINGS - #17-4 PH SSTL WTIH NON-METALLIC LINER
ROLLERS - NON-METALLIC

TRAY FRAME - 1/4" MIN. THICKNESS 304 STAINLESS STEEL
RETAINER BARS - 1/4" MIN. THICKNESS 304 STAINLESS STEEL
WIRE SCREEN CLOTH - 304 STAINLESS STEEL
#14 W & M GAUGE (.080"Ø) WITH 0.50" SQ OPENINGS
FASTENERS - TRAY TO CLOTH - 304 STAINLESS STEEL
TRAY TO CHAIN - ELECTRO-ZINC PLATED

SEAL PLATE - NON-METALLIC

SCREEN DATA

TWO (2) 18" PITCH DUAL FLOW TRAVELING WATER SCREENS
4'-0" WIDE x 54'-0" CENTERS

CAPACITY (PER SCREEN):
50,000 GPM WITH A SCREEN CLOTH VELOCITY OF 1.24 FPS AND EFFLUENT VELOCITY OF 2.30 FPS AT A LOW WATER DEPTH OF 18'-0" AND 100% CLEAN SCREEN.

SPRAY WATER (PER SCREEN):
82 GPM @ 40 PSI FOR SMALL AMOUNTS OF REFUSE.
100 GPM @ 60 PSI FOR LEAVES AND GENERAL REFUSE.
118-131 GPM @ 85-100 PSI FOR REFUSE CLINGING TO TRAYS.

ESTIMATED WEIGHT (PER SCREEN):

STRUCTURAL	20091 lbs
MACHINERY	2196 lbs
TRAYS	5666 lbs
CHAIN	2800 lbs
TOTAL	30754 lbs

PAINTING INSTRUCTIONS

ALL STRUCTURAL STEEL AND CASTINGS EXCEPT MACHINERY, MACHINED ITEMS, STAINLESS STEEL, NON-METALLICS AND MAIN TRAY CHAIN SHALL HAVE SURFACE PREP IN ACCORDANCE WITH SSPC-SP10 TO BE FOLLOWED BY TWO (2) SHOP COATS OF COAL TAR EPOXY AT 8 MILS D.F.T. PER COAT FOR A TOTAL SYSTEM D.F.T. OF 16 MILS. MACHINED SURFACES SHALL RECEIVE ONE (1) COAT HOUGHTONS #344-RUST-VETO RUST PREVENTATIVE. REDUCER AND MOTOR SHALL HAVE MANUFACTURER'S STANDARD FINISH.

SCREEN CONSTRUCTION

FRAME - SUBMERGED STEEL 3/8" MINIMUM THICKNESS A36 CARBON STEEL
HEAD SECTION - NON-SUBMERGED STEEL 3/8" MINIMUM THICKNESS A36 CARBON STEEL
WING WALL ASSY - NON-SUBMERGED STEEL 1/4" MINIMUM THICKNESS A36 CARBON STEEL
FASTENERS - ELECTRO-ZINC PLATED
SPLASH HOUSINGS - 3/16" MINIMUM THICKNESS FIBERGLASS

SCREEN DESIGN

THIS SCREEN'S DRIVE COMPONENTS ARE DESIGNED TO START THE SCREEN AT A DIFFERENTIAL HEAD OF 2.5' AT HIGH WATER DEPTH (52.5') AND RUN CONTINUOUSLY AT A DIFFERENTIAL HEAD OF 1.0' AT HIGH WATER DEPTH. THIS SCREEN IS DESIGNED TO STRUCTURALLY WITHSTAND A 10.0' DIFFERENTIAL HEAD AT HIGH WATER DEPTH. PROVISION SHALL BE MADE TO SHUT DOWN CIRC. PUMPS BEFORE EXCEEDING DESIGN DIFFERENTIAL HEAD.

FIELD NOTE

HOLES FOR BOLTING FIBERGLASS HOUSINGS TO THE SCREEN HEAD SECTION ARE TO BE DRILLED IN THE FIBERGLASS DURING FIELD INSTALLATION USING HOLES IN STEEL HEAD SECTION AS A TEMPLATE.

CONTRACT NOTE

THIS DRAWING SHOWS ONE (1) OF THE TWO (2) IDENTICAL WATER SCREENS PROVIDED BY FMC ON THIS CONTRACT TO REPLACE THE EXISTING MODEL 15A THRU FLOW SCREENS ORIGINALLY PROVIDED ON LINK-BELT ORDER NO. K7992.

SHOP ASSEMBLY

EACH OF THE TWO (2) IDENTICAL TRAVELING WATER SCREENS SHALL HAVE THE FRAME ASSEMBLED TO THE GREATEST EXTENT POSSIBLE. THE HEAD TERMINAL ASSEMBLY, TRAYS, CHAIN AND HOUSINGS SHALL BE SHIPPED LOOSE FOR FIELD ASSEMBLY.

CUSTOMER PURCHASE ORDER NO.: TH600814
FMC CONTRACT NO.: 53JK6527

FEB 18 1997

REV.	DATE	DRAWN	CHECKED	APPROVED	DESCRIPTION OF REVISION UNLESS NOTED
0	07-24-96	B. HERMAN	B S H		

DIV BA

SCALE NONE
DIMENSION TOLERANCES EXCEPT AS SPECIFIED FRACTIONAL ±1/16" MACHINED FRACTIONAL ±1/32"

GENERAL ARRANGEMENT DUAL FLOW TRAVELING WATER SCREEN
4'-0" WIDE x 54'-0" CENTERS

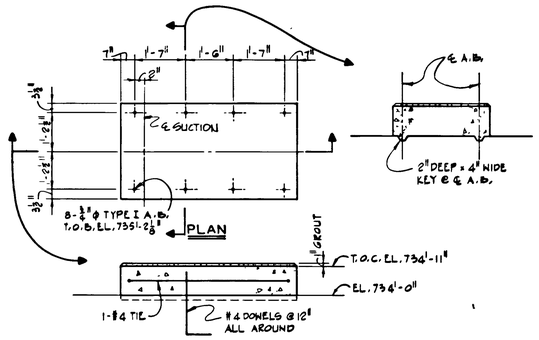
FORM | REFERENCE

FMC Corporation
MATERIAL HANDLING SYSTEMS DIV.

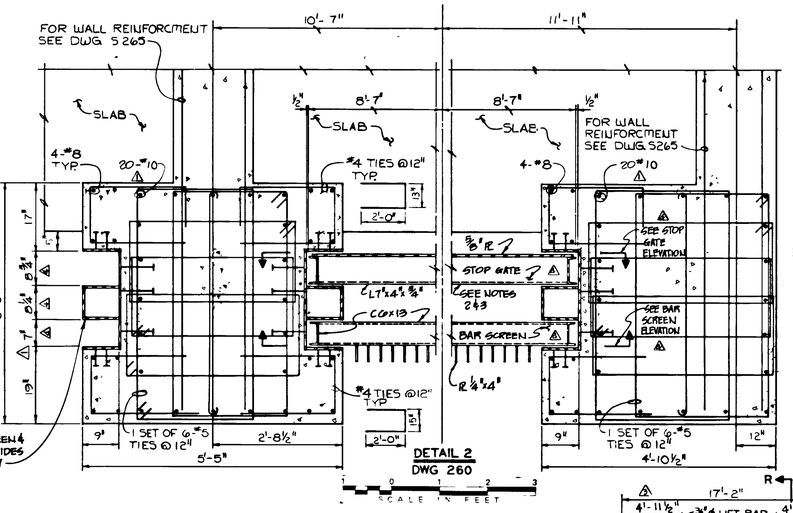
JK6527-1

GRAPHICS NO. J_W_6627_BA_DUO1_0

PLOTTED: Thu Jul 25 12:57:18 EDT 1996 hermanbs 6627-1.pru

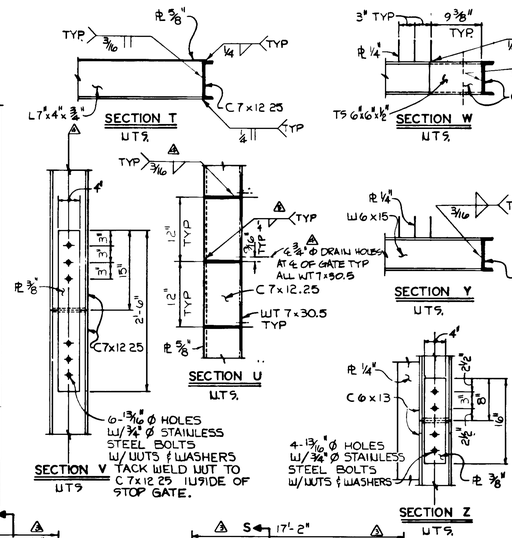


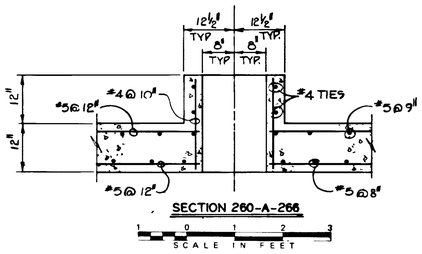
⚠ SCREEN WASH PUMP FDN.
(2 REQ'D)



DETAIL 2
DWG 260

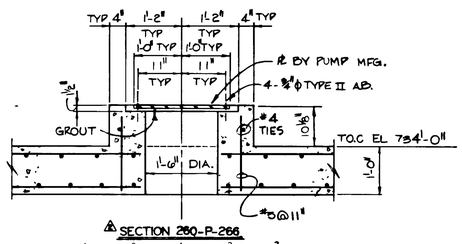
SCALE IN FEET





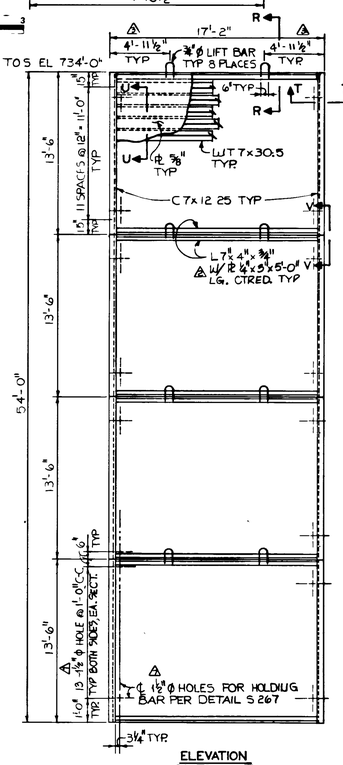
SECTION 260-A-266

SCALE IN FEET



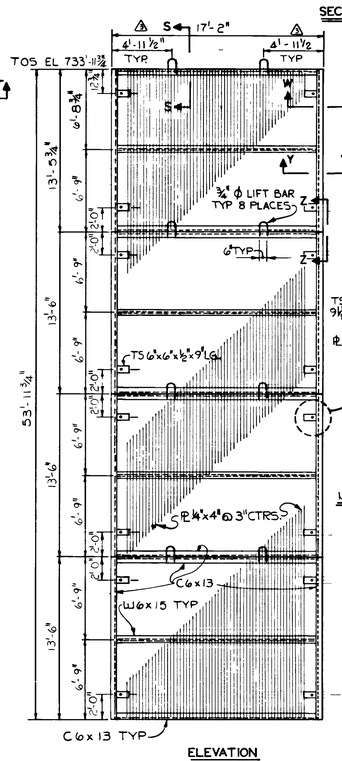
⚠ SECTION 260-P-266

SCALE IN FEET



ELEVATION
STOP GATE

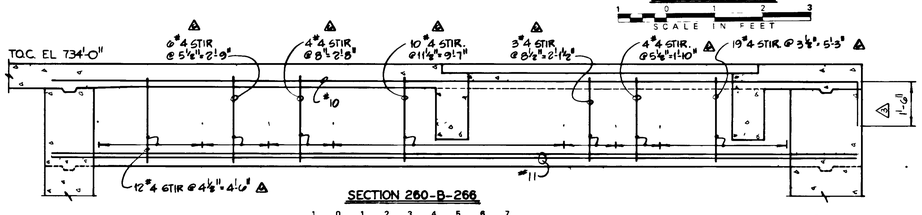
SCALE IN FEET



ELEVATION
BAR SCREEN

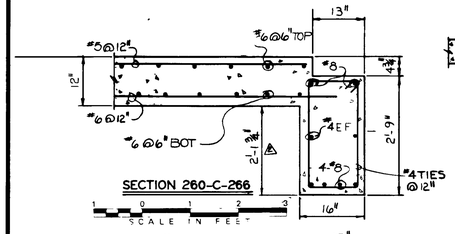
SCALE IN FEET

NOTE:
1. PROVIDE BAR SCREEN FOR ALL OPENINGS
2. PROVIDE 12 13'-6" SECTIONS OF STOP GATE
3. STOP GATES WILL BE USED FOR DEWATERING INSTALL 2 SECTIONS OF STOP GATES IN EACH OPENING WITH BOTTOM AT WATER LEVEL WHEN NOT DEWATERING A CELL
4.



SECTION 260-B-266

SCALE IN FEET



SECTION 260-C-266

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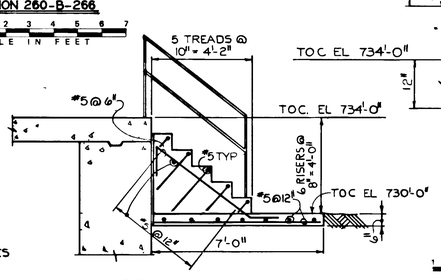
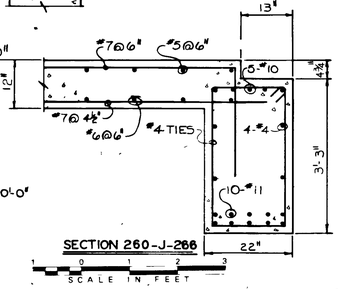


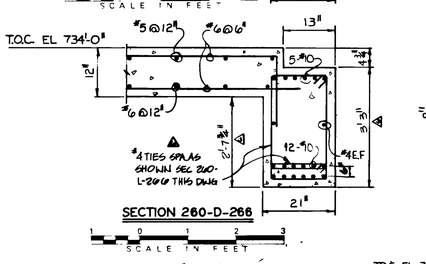
SECTION 260-F-266

SCALE IN FEET



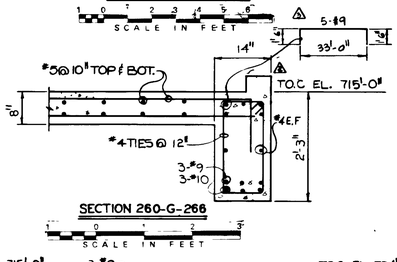
SECTION 260-J-266

SCALE IN FEET



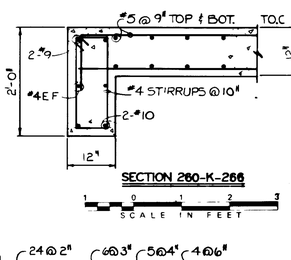
SECTION 260-D-266

SCALE IN FEET



SECTION 260-G-266

SCALE IN FEET

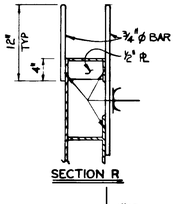


SECTION 260-K-266

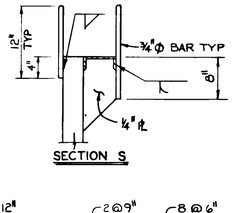
SCALE IN FEET

SECTION 260-M-266

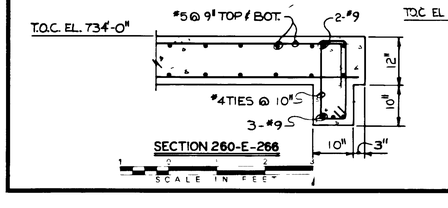
SCALE IN FEET



SECTION R

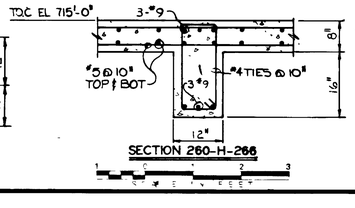


SECTION S



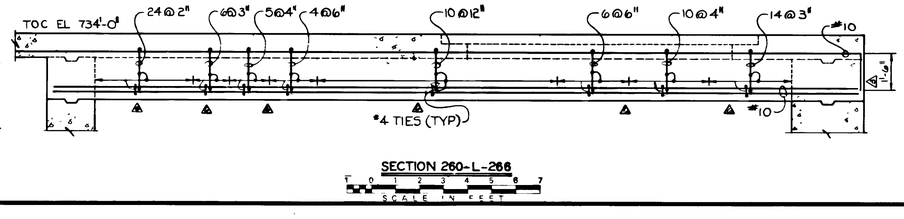
SECTION 260-E-266

SCALE IN FEET



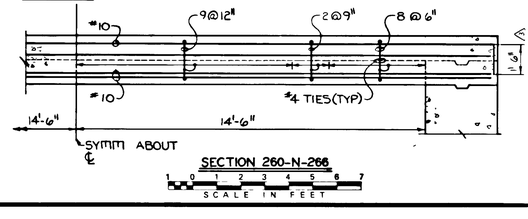
SECTION 260-H-266

SCALE IN FEET



SECTION 260-L-266

SCALE IN FEET



SECTION 260-N-266

SCALE IN FEET

NO	DATE	BY	REVISION
	3-28-79	Seyb	ISSUED AS BID
⚠	4-9-79	BCA	ADDED SCREEN WASH PUMP FDN. DETAIL ADDED #10 BARS
	4/13/79	Seyb	ISSUED
⚠	5-21-79	RAR	REVISED DIM SEC 260 C 266 & ADDED CRUB SEC 260-G-266 & REVISED NOTE ON STOP GATE REVISED DIM'S DETAIL C ADDED SEC 260-P-266
	5/29/79	Seyb	ISSUED
⚠	B 6-79	BCA	REVISED DIM'S, ADDED BENDS.
	11/1/79	Seyb	ISSUED
⚠	10-29-79	KJS	REVERSED BAR SCREEN, STOP GATES, & GUIDES. ADDED SEALS REVISED WELD & FLANGE CALLOUT
	10-29-79	Seyb	ISSUED
⚠	1-23-80	BCA	DELETED SEAL. REVISED WELD.
	1-31-80	Seyb	ISSUED
⚠	7-29-80	KJS	REVISED STIR SPA SEC 260-B-266 ADDED STIR & CHANGED DIM'S @ SEC 260-D-266
	7/30/80	Seyb	ISSUED
⚠	12/17/80	KJS	REVISED HOLE DIA. FOR HOLDING BAR
	7-1-82	Seyb	ISSUED
	7-1 82	KJS	CONFORMING TO CONSTRUCTION RECORDS

KENNETH L. KORNEX NUMBER E-14742 STATE OF MISSOURI REGISTERED PROFESSIONAL ENGINEER

MISCELLANEOUS DETAILS

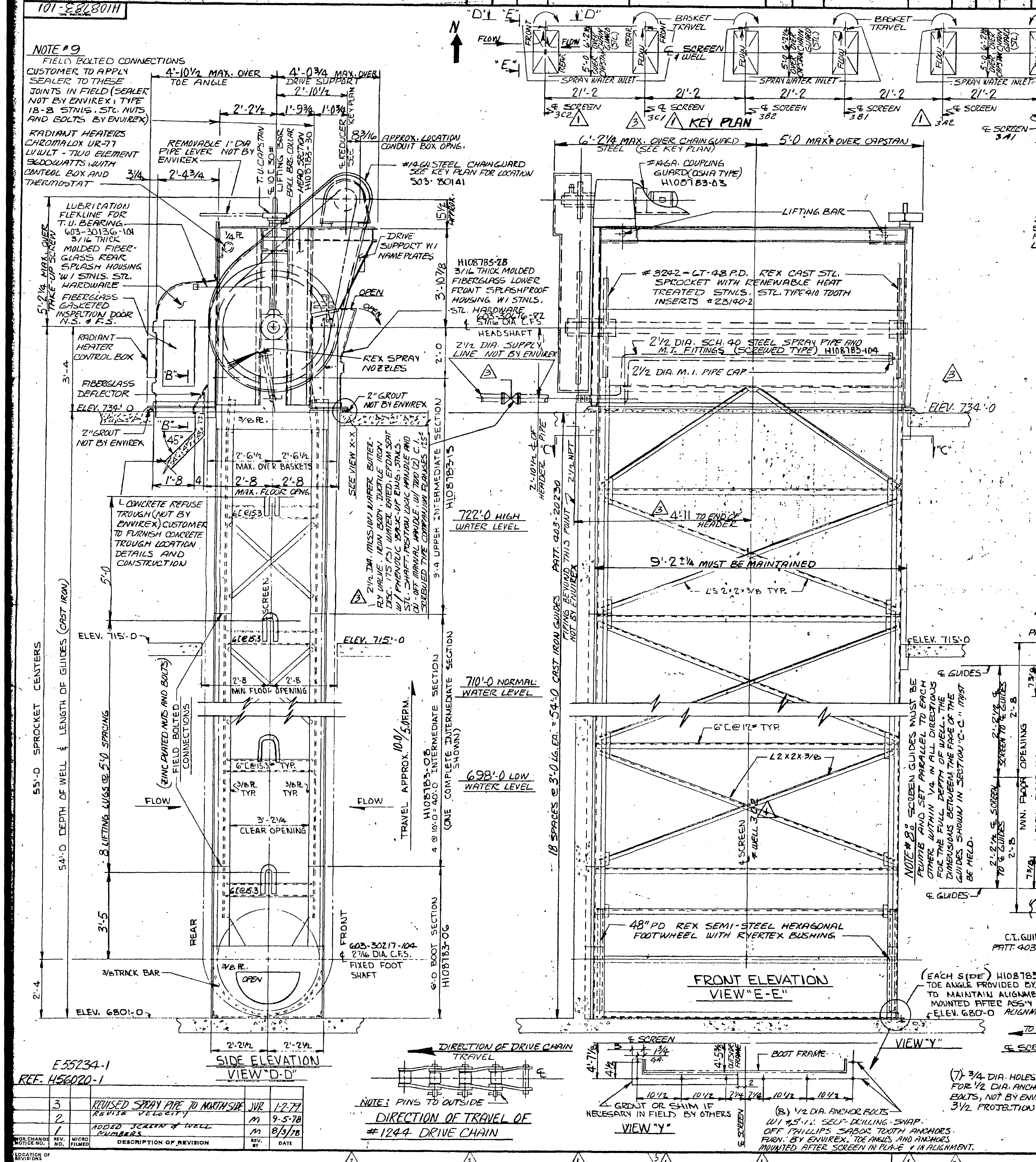
CONTRACT NO. 374
CIRCULATING WATER STRUCTURE

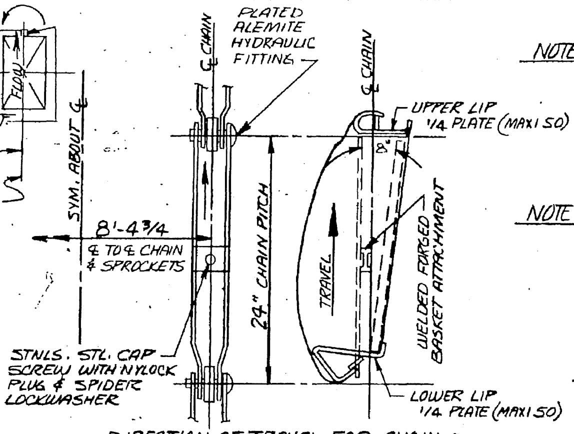
THOMAS HILL POWER PLANT
UNIT NO. 3
ASSOCIATED ELECTRIC COOPERATIVE
MISSOURI 73

Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI

DESIGNED	DETAILED	CHECKED	DRAWING NO	REV
SEK	RAR	DWE	S266 – 7	
DATE 10-20-78				
APP REA 12-6-78			PROJECT 76-017	
APP 12-15-78			SHEET 36 OF 42 SHEETS	

H108783-101





DIRECTION OF TRAVEL FOR CHAIN & BASKETS WHEN FACING FRONT OF SCREEN

NOTE #1: THE CHAINS SHOULD BE ASSEMBLED OVER THE SPROCKETS, TO TRAVEL IN THE DIRECTION SHOWN WHEN THE BASKETS ARE ERECTED ON THE CHAINS. THEY SHOULD BE BALANCED OR SOME MEANS PROVIDED FOR SNUBBING THE HEAD SHAFT.

603-80887-82
NOTE #3: 61 BASKETS REQUIRED FOR ONE SCREEN 24-P X 8'-0 LG. #12 W & M (0.1055 DIA.) TYPE 304 STNLS. STL. WIRE SCREEN CLOTH WITH 3/8 SQUARE OPENINGS. 503-1352
CL3243 BBB REX CHABELCO CHAIN, 244 LINEAL FEET OF CHAIN REQUIRED FOR ONE SCREEN
BASKET WIRE ATTACHMENT BOLTS TO BE STNLS. STL.
CLAMPING BARS TO BE CARBON STL., PAINTED

NOTE #4: THE SPRAY SYSTEM FOR ONE SCREEN WILL INCLUDE 7 SPRAY NOZZLES HAVING A TOTAL DISCHARGE 454 GPM AT A LINE PRESSURE OF 50 PSI, OF 168 GPM AT A LINE PRESSURE OF 60 PSI FOR LIGHT DEBRIS, OF 196 GPM AT A LINE PRESSURE OF 80 PSI, OF 224 GPM AT A LINE PRESSURE OF 100 PSI FOR HEAVY DEBRIS.
SPRAY NOZZLES TO BE BRASS

NOTE #7 - TAGGING: EACH MAJOR ASSEMBLY OF EQUIPMENT, BUNDLE, PALLET, OR BOX TO HAVE WATERPROOF WIRED OR STENCILED TAG WITH CONTRACT NO., PROJECT NO., ENVIREX ORDER NO., AND ITEM NO.

NOTE #5: EACH SCREEN WILL PASS APPROX. 76,000 GPM AT A WATER DEPTH OF 18.0 FT. IN THE INTAKE CHAMBER THROUGH A CLEAN SCREEN SURFACE AT A VELOCITY OF 1.16 FPS; OF 76,000 GPM AT A WATER DEPTH OF 30.0 FT., AT A VELOCITY OF 0.689 FPS; OF 95,000 GPM AT A WATER DEPTH OF 30.0 FT., AT A VELOCITY OF 0.862 FPS. CUSTOMER TO PROVIDE LEVEL BASE ON WHICH REX SCREEN WILL REST. CUSTOMER TO PROVIDE PROTECTIVE GRILLAGE AT THE MOUTH OF THE INTAKE, IF REQUIRED.

NOTE #2: DRIVE COMPONENTS

REDUCER: WESTINGHOUSE 76Q RATIO 450 TO 1, OUTPUT SPEED APPROX. 3.89/1.95 RPM COMPLETE WITH COUPLING GUARD

MOTOR: WESTINGHOUSE 5.0/2.5 HP, 1800/900 RPM, 460 VOLTS 3 PH, 60 HERTZ, TEFC ENCLOSURE, CLASS "B" POWERHOUSE INSULATION, TWO SPEED, TWO WINDING, CONSTANT TORQUE, MIN. BREAKDOWN TORQUE TO BE 225% ON BOTH WINDINGS, SQUIRREL CAGE TYPE, 1.0 SERVICE FACTOR MILL & CHEMICAL, TO HAVE REVERSING FEATURES TO STOP, TO START IN SLOW SPEED.

DRIVE SPROCKET: #1244-8T-10.62 PD. FABRICATED STL. SPROCKET WITH DOUBLE SHEAR PIN DEVICE.

DRIVEN SPROCKET: #1244-37T-47.31 PD. FABRICATED STL. SPROCKET

DRIVE CHAIN: #1244 REX CHABELCO

CHAIN GUARD: #14 GA. STEEL ENCLOSED TYPE WITH OIL RESERVOIR.

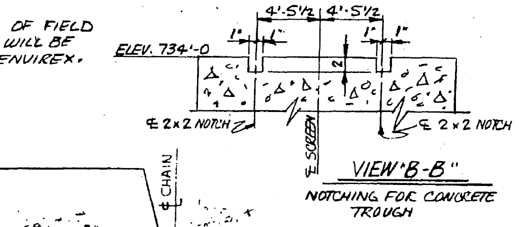
STARTING CONTROLS: NOT BY ENVIREX - CUSTOMER STARTER TO HAVE SCREEN DRIVE REVERSE POSITION. THIS IS TO STOP MOTOR AND REVERSE SCREEN TO GO AT SLOW SPEED.

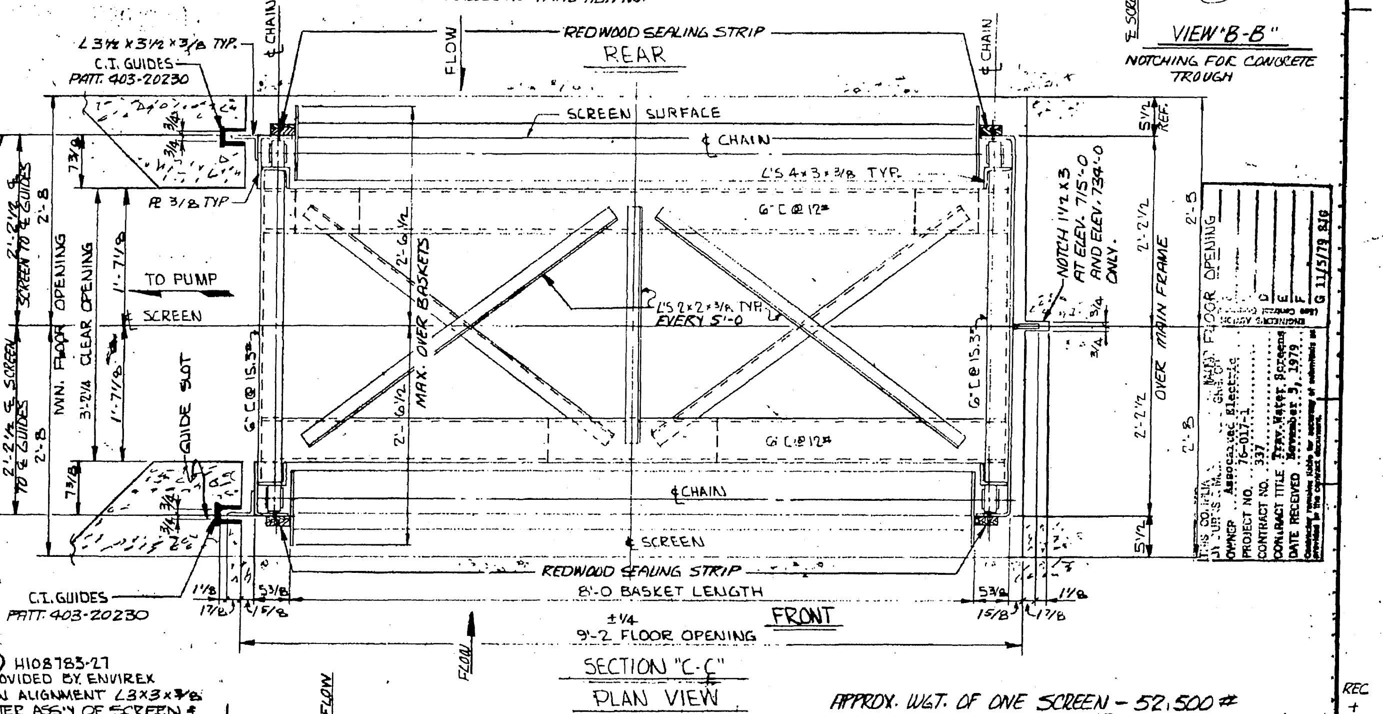
* COUPLING: TWIN DISC 9.4 HCM FLUID TYPE COUPLING W/ FAST SHROUD BOLT COUPLING

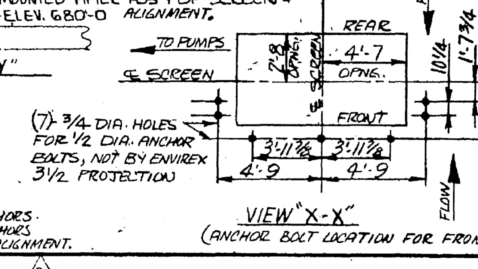
NOTE #6: PAINTING

BRASS, BRONZE, STAINLESS OR GALVANIZED MATERIAL WILL NOT BE PAINTED.
CHAINS WILL RECEIVE A COATING OF SLUSHING COMPOUND.
HEAD AND FOOT SHAFTS WILL BE GIVEN A SHOP COAT OF MOBIL ARMA 683.
MOTORS, REDUCERS AND COUPLING GUARDS WILL REMAIN MFG. STD. PAINT.
DRIVE AND DRIVEN SPROCKETS WILL REMAIN MFG STD. PAINT.
FIBERGLASS FRONT AND REAR HOUSINGS WILL BE MFG. STD. GREY GEL COAT COLOR.
BEFORE SHIPMENT WE WILL BLAST CLEAN TO NEAR WHITE METAL SSPC-SP10-64, SHEAR EDGES OF PLATES WILL BE DE-BURRED, WELD SPLATTER AND BURN MARKS WILL BE REMOVED AND APPLY ONE SHOP COAT OF KOPPERS BITUMASTIC 300M TO THE BOOT, INTERMEDIATE AND UPPER INTERMEDIATE SECTIONS, HEAD SECTION, CHAIN GUARD, BASKET FRAMES, BASKET CLAMPING BARS, HEAD SPROCKETS, FOOTWHEELS, SPRAY PIPE ASS'Y, SPRAY PIPE HOLDER, T.U. BEARING, T.U. CAPSTAN, T.U. SEALING PLATE, LIFTING LUGS, FOOTSHAFT MTG. BRACKET, TOE-ANGLE, ETC.
CAST IRON GUIDES WILL NOT BE PAINTED OR COATED.

FIVE (5) GALLONS OF FIELD TOUCH-UP PAINT WILL BE FURNISHED BY ENVIREX.







APPROX. WGT. OF ONE SCREEN - 52,500 #
TOTAL WGT. OF GUIDES - 10,044 # (SIX WELLS)

CONTRACT NO. 337 PROJECT NO. 76-017-1

CUSTOMER: ASSOCIATED ELECTRIC COOPERATIVE		SCALE: NONE	TITLE: GENERAL ARRANGEMENT OF SIX DUAL FLOW TRAVELING WATER SCREEN 6 TOOTH-24" PITCH-3/8 CHAIN SIDE BARS (REAR SPRAY)
LOCATION: THOMAS HILL POWER PLANT UNIT #3	CUST. ORDER NO.: LATER	DIM. IN INCHES IF NOT SPECIFIED	
ENG'R.: BURNS & McDONNELL		DR'N.: JVR	
PROC. SPEC.	EST. NO.: 55224R2	CK'D.: M	
CONFIDENTIAL - ALL RIGHTS RESERVED - PROPERTY OF Envirex Water Quality Control Division Waukesha, WI 53186 a Rexnord Company		APP'D.: [illegible]	UNIT
		PROJ. ENGR.: RJM	ORDER NO.: H108783
		DATE ISSUED: 2/21/78	DRAWING NO.: H108783-101
DIST'N.	MADE FROM	PROD. CODE	

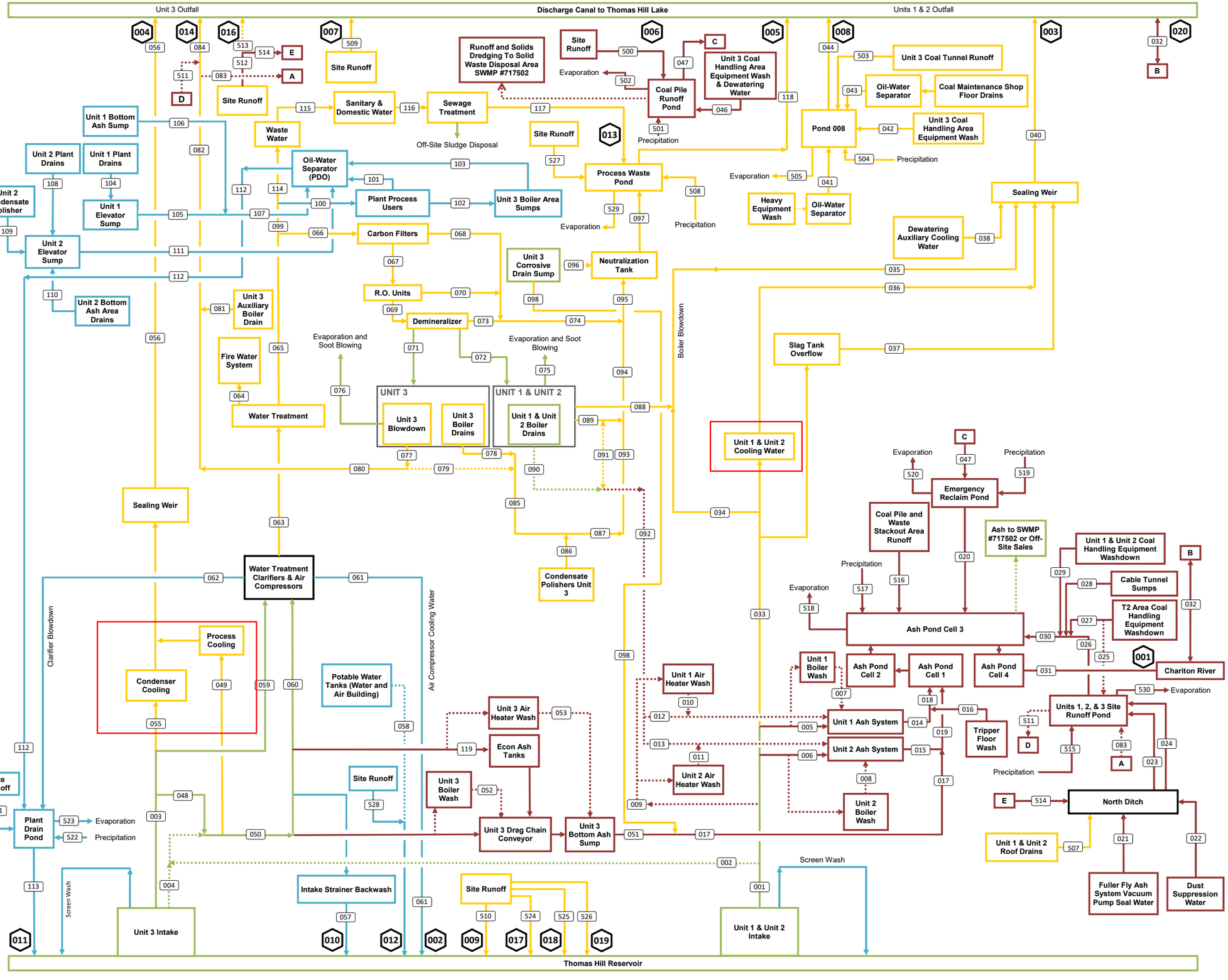
E55234-1
REF. H56020-1

MFR. CHANGE NOTICE NO.	REV. NO.	MICRO FILMED	DESCRIPTION OF REVISION	REV. BY	DATE
	3		REVISED SPRAY PIPE TO NORTH SIDE	JVR	1-2-79
	2		REVISE VELOCITY	M	9-5-78
	1		ADDED SCREEN & WELL NUMBERS	M	8/3/78

LOCATION OF REVISIONS

FORM NO. 12-12D
FORM NO. 12-12C

APPENDIX B - WATER BALANCE DIAGRAM



1. SELECT PRECIPITATION DESIGN BASIS

Exclude Precipitation & Runoff = 0.00 inches

2. SELECT UNIT MAINTENANCE AND OUTAGE FLOWS

- [x] Include Unit 1 Sluice Water
- [x] Include Unit 2 Sluice Water
- [x] Include Unit 3 Bottom Ash Sump
- [ ] Include Unit 1 Air Heater Wash
- [ ] Include Unit 2 Air Heater Wash
- [ ] Include Unit 3 Air Heater Wash
- [ ] Include Unit 1 Boiler Wash
- [ ] Include Unit 2 Boiler Wash (if selected uncheck U2 Sluice)
- [ ] Include Unit 3 Boiler Wash

3. SELECT COAL PILE RUNOFF POND FLOWS

Flow Percentage to Emergency Reclaim Pond 100%

- [x] Include Site Runoff to CPR Pond
- [x] Include Unit 3 Coal Handling Area Equipment Wash and Dewatering Water to CPR Pond

4. SELECT PDO (OIL-WATER SEPARATOR) FLOWS

- [x] Include Unit 1 Elevator Sump to PDO
- [x] Include Unit 2 Elevator Sump to PDO
- [x] Include Plant Process Users to PDO
- [x] Include Unit 1 Bottom Ash Sump to PDO
- [x] Include Unit 3 Boiler Area Sumps to PDO

5. SELECT POND 008 FLOWS

- [x] Include Unit 3 Coal Tunnel Runoff to Pond 008
- [x] Include Coal Maintenance Shop Floor Drains to Pond 008
- [x] Include Unit 3 Coal Handling Area Equipment Wash to Pond 008
- [x] Include Heavy Equipment Wash to Pond 008

6. SELECT ASH POND FLOWS

- [x] Include Emergency Reclaim Pond Discharge to Cell 3
- [x] Include Coal Pile & Waste Stackout Area Runoff to Cell 3
- [x] Include Unit 1 & Unit 2 Coal Handling Equip. Washdown to Cell 3
- [x] Include Cable Tunnel Sumps to Cell 3
- [x] Include T2 Area Coal Handling Equipment Washdown to Cell 3
- [x] Include Unit 1, Unit 2, & Unit 3 Runoff Pond Discharge to Cell 3
- [x] Include Tripper Floor Washdown to Ash Pond
- [x] Include Corrosive Drains Sump

Notes:

1. Normal flows are depicted as solid lines. Intermittent flows are depicted as dashed lines.
2. Average and peak flows are shown as gallons per minute (gpm). Daily flows are shown as million gallons per day (MGD).
3. Precipitation and runoff values are based on user-selected design basis. Flow values are calculated using SCS curve number method. Average annual rates are based on annual precipitation averaged over entire year. Storm flow rates are based on storm volume averaged over 24-hour period.
4. Evaporation rates are based on annual evaporation averaged over entire year.
5. Ash Pond cells are not depicted to scale.

KEY

Stream Number — Normal Flow

Plant NPDES Point — Intermittent Flow

Thomas Hill Energy Plant

Water Mass Balance - Line Diagram

Project	102044	DWG	WMB - 01
Designed	C.Kipp	REV	C
Checked	Z.Foster	Date	4/23/2018
Page	1	of	1

STREAM NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13
DESCRIPTION	Unit 1 & Unit 2 Intake	Unit 1 & Unit 2 Intake Alternate to Unit 3	Unit 3 Intake	Unit 3 Intake Direct Condensor Cooling Bypass	Unit 1 Sluice Water Intake	Unit 2 Sluice Water Intake	Unit 1 Boiler Wash	Unit 2 Boiler Wash	Unit 1 & Unit 2 Air Heater Wash Intake	Unit 1 Air Heater Wash	Unit 2 Air Heater Wash	Unit 1 & Unit 2 Boiler Drains Alternate to Unit 1 Ash System	Unit 1 & Unit 2 Boiler Drains Alternate to Unit 2 Ash System
Avg Daily Flow (MGD)	256.966	2.660	583.318	0.000	4.551	4.525	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Max Daily Flow (MGD)	361.551	4.750	679.977		5.330	5.571	0.000	0.000	0.000	0.000	0.000		
Avg Flow (gpm)	178,450	1,847	405,092	0	3,161	3,143	0	0	0	0	0	0	0
Peak Flow (gpm)	251,077	3,299	472,111		3,701	3,869	0	0	0	0	0		

STREAM NUMBER	14	15	16	17	18	19	20	21	22	23	24	25	26
DESCRIPTION	Unit 1 Ash System Discharge	Unit 2 Ash System Discharge	Tripper Floor Washdown	Unit 3 Bottom Ash Sump Discharge Line	Unit 1 Discharge to Ash Pond System	Unit 2 Discharge to Ash Pond System	Emergency Reclaim Pond Discharge to Ash Pond Cell 3	Fuller Fly Ash System Vacuum Pump Seal Water to North Ditch	Dust Suppression Water to North Ditch	North Ditch North Pipe to Units 1, 2, & 3 Site Runoff Pond	North Ditch South Pipe to Units 1, 2, & 3 Site Runoff Pond	T2 Area Coal Handling Equipment Alternate to Units 1, 2, & 3 Site Runoff Pond	Units 1, 2, & 3 Site Runoff Pond Discharge to Ash Pond Cell 3
Avg Daily Flow (MGD)	4.551	4.525	0.048	0.202	4.599	4.727	0.262	0.059	0.092	0.076	0.076	0.000	0.151
Max Daily Flow (MGD)	5.330	5.571	3.923	1.796	9.253	7.367	1.923	0.127	0.092	0.110	0.110		0.219
Avg Flow (gpm)	3,161	3,143	36	145	3,197	3,288	182	41	63	52	52	0	104
Peak Flow (gpm)	3,701	3,869	2,724	1,247	6,425	5,116	1,335	88	63	76	76		151

STREAM NUMBER	27	28	29	30	31	32	33	34	35	36	37	38	39
DESCRIPTION	T2 Area Coal Handling Equipment Washdown	Cable Tunnel Sumps to Ash Pond Cell 3	Unit 1 & Unit 2 Coal Handling Equipment Washdown	Combined Discharge to Ash Pond Cell 3	Ash Pond Cell 4 Discharge to Outfall 001	Thomas Hill Lake and Chariton River Interface via Outfall 020	Unit 1 & Unit 2 Cooling Water Intake	Unit 1 & Unit 2 Boiler Blowdown Cooling Water	Unit 1 & Unit 2 Cooled Boiler Blowdown to Sealing Weir	Unit 1 & Unit 2 Cooling Water Discharge to Sealing Weir	Unit 1 & Unit 2 Slag Tanks Overflow to Sealing Weir	Dewatering Auxiliary Cooling Water to Sealing Weir	Sampling Cooling Tower Blowdown to Sealing Weir
Avg Daily Flow (MGD)	0.091	0.000	0.224	0.465	9.961	9.961	245.230	0.030	0.060	245.200			
Max Daily Flow (MGD)	0.360	0.000	0.417	0.996	19.446	19.446	345.900	0.300	0.600	345.600			
Avg Flow (gpm)	63	0	154	321	6,924	6,924	170,299	21	42	170,278			
Peak Flow (gpm)	250	0	290	691	13,503	13,503	240,208	208	417	240,000			

STREAM NUMBER	40	41	42	43	44	~~45~~	46	47	48	49	50	51	52
DESCRIPTION	Sealing Weir Discharge to Outfall 003	Heavy Equipment Wash Oil-Separator Effluent to Pond 008	Unit 3 Coal Handling Area Equipment Wash to Pond 008	Coal Maintenance Shop Oil-Water Separator Effluent to Pond 008	Pond 008 Discharge to Outfall 008	~~Dewatering Water to Coal Pile Runoff Pond~~	Unit 3 Coal Handling Area Equipment Wash to Coal Pile Runoff Pond	Coal Pile Runoff Pond Discharge to Emergency Reclaim Pond	Unit 3 Intake Water to Process Users	Unit 3 Process Cooling Water	Unit 3 Non-Cooling Water to Unit 3 Process Users	Unit 3 Process Users to Unit 3 Bottom Ash Sump	Unit 3 Boiler Wash
Avg Daily Flow (MGD)	245.260	0.023	0.015	0.000	0.035	~~0.000~~	0.270	0.266	21.158	23.040	0.778	0.105	0.000
Max Daily Flow (MGD)	346.200	0.056	0.018	0.021	0.092	~~0.000~~	1.931	1.927	28.667	28.800	4.617	1.796	0.000
Avg Flow (gpm)	170,319	16	10	0	24	~~0~~	188	185	14,703	16,000	550	82	0
Peak Flow (gpm)	240,417	39	13	15	64	~~0~~	1,341	1,338	19,812	20,000	3,111	1,247	0

STREAM NUMBER	53	54	55	56	57	58	59	60	61	62	63	64	65
DESCRIPTION	Unit 3 Air Heater Wash	~~Unit 3 Bottom Ash Sump Alternate Discharge to Neutralization Tank~~	Unit 3 Condenser Cooling Water	Unit 3 Sealing Water to Outfall 004	Unit 3 Intake Strainer Backwash to Outfall 010	Potable Water Tanks Discharge to Outfall 012	Unit 3 Intake Water to Water Treatment (Cooling Water)	Unit 3 Intake Water to Water Treatment (Non-Cooling Water)	Water Treatment Building Air Compressor Cooling Water Discharge to Outfall 002	Water Treatment Clarifier Blowdown to Plant Drain Pond	Water Treatment Clarifier Effluent to Fire Water System and Secondary Treatment	Fire Water System	Water Treatment Clarifier Effluent to Secondary Treatment
Avg Daily Flow (MGD)	0.000	~~0.000~~	560.000	583.040	0.034	0.000	2.160	0.639	2.160	0.018	0.621	0.000	0.621
Max Daily Flow (MGD)	0.000		648.000	676.800	0.034		3.310	2.787	3.310	0.190	2.597		2.597
Avg Flow (gpm)	0	~~0~~	388,889	404,889	24	0	1,500	445	1,500	13	432	0	432
Peak Flow (gpm)	0		450,000	470,000	24		2,299	1,840	2,299	132	1,708		1,708

1. SELECT PRECIPITATION DESIGN BASIS

Exclude Precipitation & Runoff = 0.00 inches

2. SELECT UNIT MAINTENANCE AND OUTAGE FLOWS

Include Unit 1 Sluice Water
Include Unit 2 Sluice Water
Include Unit 3 Bottom Ash Sump
Exclude Unit 1 Air Heater Wash
Exclude Unit 2 Air Heater Wash
Exclude Unit 3 Air Heater Wash
Exclude Unit 1 Boiler Wash
Exclude Unit 2 Boiler Wash
Exclude Unit 3 Boiler Wash

3. SELECT COAL PILE RUNOFF POND FLOWS

Flow Percentage to Emergency Reclaim Pond = 100%

Exclude Dewatering Water to CPR Pond
Include Site Runoff to CPR Pond (Outfall 015)
Include Unit 3 Coal Handling Area Equipment Wash to CPR Pond

4. SELECT PDO (OIL-WATER SEPARATOR) FLOWS

Include Unit 1 Elevator Sump to PDO
Include Unit 2 Elevator Sump to PDO
Include Plant Process Uses to PDO
Include Unit 1 Bottom Ash Sump to PDO
Include Unit 3 Boiler Area Sumps to PDO

5. SELECT POND 008 FLOWS

Include Unit 3 Coal Tunnel Runoff to Pond 008
Include Coal Maintenance Shop Floor Drains to Pond 008
Include Unit 3 Coal Handling Area Equipment Wash to Pond 008
Include Heavy Equipment Wash to Pond 008

6. SELECT ASH POND FLOWS

Include Emergency Reclaim Pond Discharge to Cell 3
Include Coal Pile & Waste Stackout Area Runoff to Cell 3
Include Unit 1 & Unit 2 Coal Handling Equip. Washdown to Cell 3
Include Cable Tunnel Sumps to Cell 3
Include T2 Area Coal Handling Equipment Washdown to Cell 3
Include Unit 1, Unit 2, & Unit 3 Runoff Pond Discharge to Cell 3
Include Tripper Floor Wash to Ash Pond

Notes:

1. Average and peak flows are shown as gallons per minute (gpm). Daily flows are shown as million gallons per day (MGD).
2. Flows measured by BMcD are highlighted yellow. Input flows from the previous Thomas Hill WMB are highlighted in grey. Precipitation, runoff, and evaporation flows are highlighted in blue and designated by a stream number beginning with 5.
3. Precipitation and runoff values are based on user-selected design basis. Flow values are calculated using SCS curve number method. Average annual rates are based on annual precipitation averaged over entire year. Storm flow rates are based on storm volume averaged over 24-hour period.
4. If selected to be included, precipitation and runoff values for a stream are applied to all previous flow values for that stream (ie. average daily (MGD), max daily (MGD), average (gpm), and peak (gpm) without precipitation).
5. Evaporation rates are based on annual evaporation averaged over entire year.

aeci

Thomas Hill Energy Plant

Water Mass Balance - Flow Sheet

BURNS McDONNELL

Project 102044	DWG WMB - 02
Designed C.Kipp	REV C
Checked Z.Foster	Date 4/23/2018
Page 1 of 3	

STREAM NUMBER	66	67	68	69	70	71	72	73	74	75	76	77	78
DESCRIPTION	Water Treatment Clarifier Effluent to Carbon Filters	Carbon Filter Effluent to RO System	Carbon Filter Backwash	RO System Effluent to Demineralizer System	RO System Reject	Demineralized Water to Unit 3	Demineralized Water to Unit 1 & Unit 2	Demineralizer System Reject	Water Treatment Wastewater	Unit 1 & Unit 2 Evaporation and Soot Blowing Losses	Unit 3 Evaporation and Soot Blowing Losses	Unit 3 Boiler Blowdown	Unit 3 Boiler Drain
Avg Daily Flow (MGD)	0.243	0.233	0.010	0.175	0.058	0.105	0.060	0.010	0.078	0.030	0.055	0.050	0.000
Max Daily Flow (MGD)	1.583	1.573	0.010	1.180	0.393	0.680	0.440	0.060	0.463	0.140	0.120	0.560	
Avg Flow (gpm)	169	162	7	122	41	73	42	7	54	21	38	35	0
Peak Flow (gpm)	1,100	1,093	7	819	273	472	306	42	322	97	83	389	

STREAM NUMBER	79	80	81	82	83	84	85	86	87	88	89	90	91
DESCRIPTION	Unit 3 Boiler Blowdown Alternate to Neutralization Tank	Unit 3 Boiler Blowdown	Unit 3 Auxiliary Boiler Drain	Unit 3 Boiler Blowdown Discharge	Unit 3 Boiler Blowdown Alternate Discharge to Units 1, 2, & 3 Site Runoff Pond	Unit 3 Boiler Blowdown Discharge to Outfall 014	Unit 3 Boiler Drain	Unit 3 Condenate Polisher Discharge	Unit 3 Boiler Drain and Condensate Polisher Discharge	Unit 1 & Unit 2 Boiler Blowdown	Unit 1 & Unit 2 Boiler Drain	Unit 1 & Unit 2 Boiler Drain Alternate Discharge to Unit 1 & Unit 2 Ash System	Unit 1 & Unit 2 Boiler Drain Crossover
Avg Daily Flow (MGD)	0.000	0.050	0.000	0.050	0.000	0.050	0.000	0.030	0.030	0.030	0.000	0.000	0.000
Max Daily Flow (MGD)		0.560		0.560		0.560	0.000	0.100	0.100	0.300			0.000
Avg Flow (gpm)	0	35	0	35	0	35	0	21	21	21	0	0	0
Peak Flow (gpm)		389		389		389	0	69	69	208			0

STREAM NUMBER	92	93	94	95	96	97	98	99	100	101	102	103	104
DESCRIPTION	Unit 1 & Unit 2 Boiler Discharge to Unit 1 & Unit 2 Ash System	Unit 3 Discharge to Neutralization Tank	Unit 1, Unit 2, & Unit 3 Discharge to Neutralization Tank	Combined Discharge to Neutralization Tank	Unit 3 Corrosive Drain Sump to Neutralization Tank	Neutralization Tank Discharge to Process Waste Pond	Unit 3 Corrosive Drain Sump Alternate Discharge to Unit 3 Boiler Area Sumps Discharge Line	Service Water	Service Water to Plant Process Users	Plant Process Users to PDO	Plant Process Users to Unit 3 Boiler Area Sumps	Unit 3 Boiler Area Sumps to PDO	Unit 1 Plant Drains to Unit 1 Elevator Sump
Avg Daily Flow (MGD)	0.000	0.030	0.030	0.108	0.000	0.108	0.097	0.378	0.373	0.342	0.031	0.031	0.008
Max Daily Flow (MGD)	0.000	0.100	0.100	0.563		0.563		1.014	0.994	0.720	0.274	0.274	0.501
Avg Flow (gpm)	0	21	21	75	0	75	63	263	259	237	22	22	6
Peak Flow (gpm)	0	69	69	391		391		609	595	500	95	95	300

STREAM NUMBER	105	106	107	108	109	110	111	112	113	114	115	116	117
DESCRIPTION	Unit 1 Elevator Sump to PDO	Unit 1 Bottom Ash Sump to PDO	Unit 1 Elevator Sump and Bottom Ash Sump Discharge to PDO	Unit 2 Plant Drains to Unit 2 Elevator Sump	Unit 2 Condensate Polisher Discharge to Unit 2 Elevator Sump	Unti 2 Bottom Ash Area Drains to Unit 2 Elevator Sump	Unit 2 Elevator Sump to PDO	PDO Discharge to Plant Drain Pond	Plant Drain Pond Discharge to Outfall 011	Potable Water	Sanitary & Domestic Users	Sanitary & Domestic Wastewater to Treatment	Treated Sanitary Effluent to Internal Outfall 013 & Process Waste Pond
Avg Daily Flow (MGD)	0.008	0.029	0.037				0.090	0.500	0.516	0.005	0.005	0.005	0.005
Max Daily Flow (MGD)	0.501	0.029	0.530				0.090	1.614	1.802	0.020	0.020	0.020	0.020
Avg Flow (gpm)	6	20	26				63	348	359	3	3	3	3
Peak Flow (gpm)	300	68	368				63	1,026	1,156	14	14	14	14

STREAM NUMBER	118	119											
DESCRIPTION	Process Waste Pond Discharge to Outfall 005	Econ Ash Tanks											
Avg Daily Flow (MGD)	0.113	0.199											
Max Daily Flow (MGD)	0.583	0.213											
Avg Flow (gpm)	78	137											
Peak Flow (gpm)	405	148											

1. SELECT PRECIPITATION DESIGN BASIS

Exclude Precipitation & Runoff = 0.00 inches

2. SELECT UNIT MAINTENANCE AND OUTAGE FLOWS

Include Unit 1 Sluice Water
Include Unit 2 Sluice Water
Include Unit 3 Bottom Ash Sump
Exclude Unit 1 Air Heater Wash
Exclude Unit 2 Air Heater Wash
Exclude Unit 3 Air Heater Wash
Exclude Unit 1 Boiler Wash
Exclude Unit 2 Boiler Wash
Exclude Unit 3 Boiler Wash

3. SELECT COAL PILE RUNOFF POND FLOWS

Flow Percentage to Emergency Reclaim Pond = 100%

Exclude Dewatering Water to CPR Pond
Include Site Runoff to CPR Pond (Outfall 015)
Include Unit 3 Coal Handling Area Equipment Wash to CPR Pond

4. SELECT PDO (OIL-WATER SEPARATOR) FLOWS

Include Unit 1 Elevator Sump to PDO
Include Unit 2 Elevator Sump to PDO
Include Plant Process Uses to PDO
Include Unit 1 Bottom Ash Sump to PDO
Include Unit 3 Boiler Area Sumps to PDO

5. SELECT POND 008 FLOWS

Include Unit 3 Coal Tunnel Runoff to Pond 008
Include Coal Maintenance Shop Floor Drains to Pond 008
Include Unit 3 Coal Handling Area Equipment Wash to Pond 008
Include Heavy Equipment Wash to Pond 008

6. SELECT ASH POND FLOWS

Include Emergency Reclaim Pond Discharge to Cell 3
Include Coal Pile & Waste Stackout Area Runoff to Cell 3
Include Unit 1 & Unit 2 Coal Handling Equip. Washdown to Cell 3
Include Cable Tunnel Sumps to Cell 3
Include T2 Area Coal Handling Equipment Washdown to Cell 3
Include Unit 1, Unit 2, & Unit 3 Runoff Pond Discharge to Cell 3
Include Tripper Floor Wash to Ash Pond

Notes:

1. Average and peak flows are shown as gallons per minute (gpm). Daily flows are shown as million gallons per day (MGD).
2. Flows measured by BMcD are highlighted yellow. Input flows from the previous Thomas Hill WMB are highlighted in grey. Precipitation, runoff, and evaporation flows are highlighted in blue and designated by a stream number beginning with 5.
3. Precipitation and runoff values are based on user-selected design basis. Flow values are calculated using SCS curve number method. Average annual rates are based on annual precipitation averaged over entire year. Storm flow rates are based on storm volume averaged over 24-hour period.
4. If selected to be included, precipitation and runoff values for a stream are applied to all previous flow values for that stream (ie. average daily (MGD), max daily (MGD), average (gpm), and peak (gpm) without precipitation).
5. Evaporation rates are based on annual evaporation averaged over entire year.

aeci

Thomas Hill Energy Plant

Water Mass Balance - Flow Sheet

BURNS McDONNELL

Project 102044	DWG WMB - 02
Designed C.Kipp	REV C
Checked Z.Foster	Date 4/23/2018
Page 2 of 3	

STREAM NUMBER	500	501	502	503	504	505	~~506~~	507	508	509	510	511	512
DESCRIPTION	Site Runoff to Coal Pile Runoff Pond	Direct Precipitation to Coal Pile Runoff Pond	Evaporation from Coal Pile Runoff Pond	Unit 3 Coal Tunnel Runoff to Pond 008	Direct Precipitation to Pond 008	Evaporation from Pond 008	~~Site Runoff to Unit 1 & Unit 2 Sealing Weir~~	Unit 1 & Unit 2 Roof Drains to North Ditch	Direct Precipitation to Process Waste Pond	Site Runoff to Outfall 007	Site Runoff to Outfall 009	Units 1, 2, & 3 Site Runoff Pond Alternate Discharge to Outfall 014	Site Runoff from 016 Watershed
Avg Daily Flow (MGD)	0.000	0.000	0.004	0.000	0.000	0.003	~~0.000~~	0.000	0.000	0.000	0.000	0.000	0.000
Max Daily Flow (MGD)	0.000	0.000	0.004	0.000	0.000	0.003	~~0.000~~	0.000	0.000	0.000	0.000	0.000	0.000
Avg Flow (gpm)	0	0	3	0	0	2	~~0~~	0	0	0	0	0	0
Peak Flow (gpm)	0	0	3	0	0	2	~~0~~	0	0	0	0	0	0

STREAM NUMBER	513	514	515	516	517	518	519	520	521	522	523	524	525
DESCRIPTION	Site Runoff to Outfall 016	Site Runoff from 016 Watershed to Units 1, 2, & 3 Site Runoff Pond	Direct Precipitation to Units 1, 2, & 3 Site Runoff Pond	Coal Pile and Waste Stackout Area Runoff to Ash Pond Cell 3	Direct Precipitation to Ash Pond	Evaporation from Ash Pond	Direct Precipitation to Emergency Reclaim Pond	Evaporation from Emergency Reclaim Pond	Site Runoff to Plant Drain Pond	Direct Precipitation to Plant Drain Pond	Evaporation from Plant Drain Pond	Site Runoff to Outfall 017	Site Runoff to Outfall 018
Avg Daily Flow (MGD)	0.000	0.000	0.000	0.000	0.000	0.092	0.000	0.004	0.000	0.000	0.002	0.000	0.000
Max Daily Flow (MGD)	0.000	0.000	0.000	0.000	0.000	0.092	0.000	0.004	0.000	0.000	0.002	0.000	0.000
Avg Flow (gpm)	0	0	0	0	0	64	0	3	0	0	2	0	0
Peak Flow (gpm)	0	0	0	0	0	64	0	3	0	0	2	0	0

STREAM NUMBER	526	527	528	529	530								
DESCRIPTION	Site Runoff to Outfall 019	Site Runoff to Process Waste Pond	Site Runoff to Outfall 012	Evaporation from Process Waste Pond	Evaporation from Unit 1, 2, & 3 Site Runoff Pond								
Avg Daily Flow (MGD)	0.000	0.000	0.000	0.001	0.000								
Max Daily Flow (MGD)	0.000	0.000	0.000	0.001	0.000								
Avg Flow (gpm)	0	0	0	1	0								
Peak Flow (gpm)	0	0	0	1	0								

1. SELECT PRECIPITATION DESIGN BASIS

Exclude Precipitation & Runoff = 0.00 inches

2. SELECT UNIT MAINTENANCE AND OUTAGE FLOWS

Include Unit 1 Sluice Water
Include Unit 2 Sluice Water
Include Unit 3 Bottom Ash Sump
Exclude Unit 1 Air Heater Wash
Exclude Unit 2 Air Heater Wash
Exclude Unit 3 Air Heater Wash
Exclude Unit 1 Boiler Wash
Exclude Unit 2 Boiler Wash
Exclude Unit 3 Boiler Wash

3. SELECT COAL PILE RUNOFF POND FLOWS

Flow Percentage to Emergency Reclaim Pond = 100%

Exclude Dewatering Water to CPR Pond
Include Site Runoff to CPR Pond (Outfall 015)
Include Unit 3 Coal Handling Area Equipment Wash to CPR Pond

4. SELECT PDO (OIL-WATER SEPARATOR) FLOWS

Include Unit 1 Elevator Sump to PDO
Include Unit 2 Elevator Sump to PDO
Include Plant Process Uses to PDO
Include Unit 1 Bottom Ash Sump to PDO
Include Unit 3 Boiler Area Sumps to PDO

5. SELECT POND 008 FLOWS

Include Unit 3 Coal Tunnel Runoff to Pond 008
Include Coal Maintenance Shop Floor Drains to Pond 008
Include Unit 3 Coal Handling Area Equipment Wash to Pond 008
Include Heavy Equipment Wash to Pond 008

6. SELECT ASH POND FLOWS

Include Emergency Reclaim Pond Discharge to Cell 3
Include Coal Pile & Waste Stackout Area Runoff to Cell 3
Include Unit 1 & Unit 2 Coal Handling Equip. Washdown to Cell 3
Include Cable Tunnel Sumps to Cell 3
Include T2 Area Coal Handling Equipment Washdown to Cell 3
Include Unit 1, Unit 2, & Unit 3 Runoff Pond Discharge to Cell 3
Include Tripper Floor Wash to Ash Pond

Notes:

1. Average and peak flows are shown as gallons per minute (gpm). Daily flows are shown as million gallons per day (MGD).
2. Flows measured by BMcD are highlighted yellow. Input flows from the previous Thomas Hill WMB are highlighted in grey. Precipitation, runoff, and evaporation flows are highlighted in blue and designated by a stream number beginning with 5.
3. Precipitation and runoff values are based on user-selected design basis. Flow values are calculated using SCS curve number method. Average annual rates are based on annual precipitation averaged over entire year. Storm flow rates are based on storm volume averaged over 24-hour period.
4. If selected to be included, precipitation and runoff values for a stream are applied to all previous flow values for that stream (ie. average daily (MGD), max daily (MGD), average (gpm), and peak (gpm) without precipitation).
5. Evaporation rates are based on annual evaporation averaged over entire year.

aeci

Thomas Hill Energy Plant

Water Mass Balance - Flow Sheet

BURNS McDONNELL

Project 102044	DWG WMB - 02
Designed C.Kipp	REV C
Checked Z.Foster	Date 4/23/2018
Page 3 of 3	

BURNS McDONNELL

CREATE AMAZING.

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