west virginia department of environmental protection

Division of Water and Waste Management
601 57th Street SE
Charleston, WV 25304
Phone:304-926-0495/Fax: 304-926-0463

Harold D. Ward, Cabinet Secretary
dep.wv.gov

February 23, 2026

CERTIFICATION

RE: WV/NPDES Permit Registration Number WV0078875
Appalachian Power Co
Kanawha County

APPEAL NO.: 25-12-EQB

I, Jeremy W. Bandy, Division of Water and Waste Management, Department of Environmental Protection, in compliance with Chapter 22B, Article 1, Section 7(e), Code of West Virginia, as amended, do hereby certify that the enclosed is a true and accurate reproduction of the record of the proceedings out of which the appeal arises including documents and correspondence in the Director's file relating to the matter in question. Due to reproduction problems, maps have been omitted. These items are available for inspection at the Division of Water and Waste Management in Charleston.

DIVISION OF WATER AND WASTE MANAGEMENT

Jeremy W. Bandy
Jeremy W. Bandy
Director

JWB:ld

Enclosures

WEST VIRGINIA ENVIRONMENTAL QUALITY BOARD
CHARLESTON, WEST VIRGINIA

APPALACHIAN POWER COMPANY, d/b/a AEP

Appellant,

v. **Appeal No.** 25-12-EQB

DIRECTOR, DIVISION OF WATER AND WASTE MANAGEMENT, WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Appellee.

NOTICE OF APPEAL

The Appellant Appalachian Power Company ("APCo"), doing business as AEP, ("Appellant" "AEP" or the "Company"), respectfully represent(s) that it is aggrieved by certain terms and conditions contained in final WV NPDES Permit No. WV0078875, issued on October 23, 2025, for the London Hydroelectric Plant. **Exhibit A.** On October 10, 2025, timely comments were filed by APCo concerning the draft permit. **Exhibit B.** A copy of this permit was received by email to Jonathan Magalski, American Electric Power Service Corporation, on October 24, 2025, and this appeal is timely per Section 21, Article 11, Chapter 22 of the Code of West Virginia, as it is filed within thirty (30) days after the date of receipt of the permit.

Relief Requested: The appellant therefore prays that this matter be reviewed and that the Board grant the following relief by amending the permit to revise or eliminate those conditions described in the Specific Objections.

Specific Objections: The specific objections to the action, including questions of fact and law to be determined by the Board, are set forth in detail in separate numbered paragraphs and

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attached hereto as **Attachment A**. The objections may be factual or legal and are summarized in **Attachment B.**

Dated this 24th day of November, 2025.

Respectfully submitted,

Appalachian Power Company d/b/a AEP

By counsel:

Kathy G. Beckett (W. Va. Bar No. 4998)
Keeleigh S. Huffman (W.Va. Bar No. 14389)
STEPTOE & JOHNSON PLLC
707 Virginia Street, East
Charleston, West Virginia 25301
(304) 353-8172

Counsel for Appalachian Power Company, d/b/a AEP

Attachment A

Attachment A
Specific Permit Conditions On Appeal

1. Copper Effluent Limits at Outlet 001

   a. WVDEP failed to provide adequate technical justification for the terms and conditions of the permit raising legal and factual questions about the agency's permitting decision and requirements. For example, the assigned copper effluent limit is not consistent with effluent limitation development policy and therefore renders the permit arbitrary and capricious. The permittee is unable to technically reconstruct data to support the agency's reasonable potential decision.

   b. The schedule of compliance includes terms and conditions are not consistent with the operation or modification of a hydroelectric plant and are therefore legally and factually arbitrary and capricious.

Attachment B

Attachment B
Questions of Fact and Law

1. **Does WVDEP have adequate technical basis for prescribing effluent limitations for copper in this permit?**

WEST VIRGINIA ENVIRONMENTAL QUALITY BOARD
CHARLESTON, WEST VIRGINIA

APPALACHIAN POWER COMPANY, d/b/a AEP

Appellant,

v. **Appeal No. ______________**

DIRECTOR, DIVISION OF WATER AND WASTE MANAGEMENT, WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Appellee.

CERTIFICATE OF SERVICE

I, Kathy G. Beckett, counsel for Appalachian Power Company d/b/a AEP, do hereby certify that a true and exact copy of the foregoing "Notice of Appeal" was caused to be served upon the following via hand delivery, on this 24th day of November, 2025.

Kenna M. DeRaimo, Clerk
West Virginia Environmental Quality Board
601 57th Street SE
Charleston, WV 25304

Office of Legal Services
WV Department of Environmental Protection
601 57th Street SE
Charleston, WV 25304

Jeremy Bandy, Director
Division of Water and Waste Management
WV Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

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Kathy G. Beckett (W. Va. Bar No. 4998)

	Applicant: APPALACHIAN POWER COMPANY Reference ID: London Hydro Renewal 2025 (05/07/2025) Status: ERIS - Closed - Issued	Type: Reissue NPDES Industrial #5 Permit ID: WV0078875 Printed: Nov. 25, 2025 8:26 AM

Sections I - III: Facility Information

I. NAME OF FACILITY:

Appalachian Power Company - London Hydroelectric Plant

II. FACILITY CONTACT:

A. Name(last, first): c/o Jonathan M Magalski

Title: Environmental Manager

B. Phone number: 614-716-2240 (###-###-####)

III. FACILITY MAILING ADDRESS:

A. Street or Post Office Box:

Address Line 1: 1 Riverside Plaza

Address Line 2:

B. City: Columbus

C. State: Ohio

D. Zip: 43215

Section IV: Facility Location

IV. FACILITY LOCATION:

A. Street, Route No. or other specific identifier:

26715 Second Ave.

B. City, Town or Nearest Post Office:

Handley

C. County: Kanawha

D. Zip: 25102

Directions to Facility:

From I-77/ I-64 Exit 85, proceed south on State Route 61. Travel south approximately 9.2 miles on State Route 61. London Hydroelectric Plant will be on the left-hand side.

Section V: Ownership and Operator Information

V.	OWNERSHIP INFORMATION:	
A.	Name:	APPALACHIAN POWER COMPANY
B.	Phone:	614-716-2240 (###-###-####)
	Attention:	c/o Jonathan M Magalski (Environmental Manager)
	Address of Owner:	
	Address Line 1:	1 RIVERSIDE PLAZA
	Address Line 2:	
	City:	COLUMBUS
	Country:	United States of America
	State:	Ohio
	Zip:	43215 PostalCode Ref.
	Email Address:	jmmagalski@aep.com

C. Is name listed in Item V-A also the operator?

(●) Yes (go to Item V-E) ( ) No (complete V-D)

	OPERATOR INFORMATION:	
D.	Name:	
	Phone:	(###-###-####)
	Attention:	
	Address of Operator:	
	Address Line 1:	
	Address Line 2:	
	City:	
	Country:	United States of America
	State:	West Virginia
	Zip:	PostalCode Ref.
	Email Address:	

E. Status of Operator (If "Other" specify)

( ) Federal ( ) State (●) Private

( ) Public ( ) Other Specify:

Section VI: Applicant Request

VI. APPLICANT REQUEST:

(●) 1. Allow sewage, industrial wastes or other wastes, or effluent therefrom, produced by or emanating from any point source, to flow into the waters of this State;

( ) 2. Make, cause or permit to be made any outlet, or substantially enlarge or add to the load of any existing outlet, for the discharge of sewage, industrial wastes or other wastes, or the effluent therefrom, into the waters of this State:

( ) 3. Acquire, construct, install, modify, or operate a disposal system or part thereof for the direct or indirect discharge or deposit of treated or untreated sewage, industrial wastes or other wastes, or the effluent therefrom, into the waters of this State, or any extension to or addition to such disposal system;

( ) 4. Increase in volume or concentration of any sewage, industrial wastes or other wastes in excess of the discharges or disposition specified or permitted under any existing permit;

( ) 5. Extend, modify or add to any point source, the operation of which would cause an increase in the volume or concentration of any sewage, industrial wastes discharging or flowing into the waters of this State;

Section VII: Reissuance of Existing Permits

VII. REISSUANCE OF EXISTING PERMITS:

A. Since issuance of your existing permit have you added any outlets, modified or added to your treatment or disposal system in any way, increased the volume or concentration or your waste(s) or waste stream(s), or extended, modified or added to your facility any operation which would cause an increase in the volume or concentration of waste(s) discharged?

( ) Yes (●) No (see instructions before completing remainder of this form)

Section VIII: SIC Codes

Primary SIC: 4911 Electric services

Secondary SIC: 4911 Electric services

Section IX: Existing Environmental Permits

IX. EXISTING ENVIRONMENTAL PERMITS (including other Division of Water and Waste Management Permits)

Issuing Agency and Address:	WVDEP, 601 57th Street SE, Charleston, WV 25304
Type of Permit or License:	Individual NPDES
Permit Number:	WV0078875
Effective Date yr/mo/day:	04/01/2021
Expiration Date yr/mo/day:	02/07/2026

Section X: Map or Drawing

X. MAP OR DRAWING:

A. Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all wells, sinkholes, springs, rivers and other surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant in the map area. See instructions for precise requirements.

Map attached how: ( ) Paper (●) Electronic

For attached SHP files, please select from below:

Datum: Projection:

Section XI: Nature of Business

XI. **NATURE OF BUSINESS (provide a brief description)**

A. **Provide a brief description of the business.**

London Hydroelectric Plant is a hydroelectric power generating facility that consists of three (3) turbine generator units capable of producing a total of 14.4 megawatts of electricity.

B. **Do you qualify as a small business? (See instructions for qualification criteria)**

○ Yes ◉ No

Section XIII: Outlet Location

XIII. OUTLET LOCATION

For each outlet, list the latitude and longitude to the nearest second, the River Mile Point (if known) and the name of the immediate receiving water. (see instructions)

A.	Outlet Number:	001
B.	Latitude:	38 ° 11 ' 30 "
C.	Longitude:	81 ° 22 ' 14 "
	UTM Zone:	17
	UTM Northing:	
	UTM Easting:	
D.	River Mile Point:	82.8

E. Immediate Receiving Water (include all streams to Major Basin):

☐ Unnamed Tributary of

tributary of	tributary of
tributary of	tributary of

	Major Basin:	Upper Kanawha River
F.	Geospatial Method	Topograhic Map
	Datum:	NAD27
G.	Actual Average Flow	180000 GPD (Gallons Per Day)

Section XVII A: Intake and Effluent Characteristics - Table A

TABLE A. You must provide the results of at least one analysis for every pollutant in this table. See instructions for additional details.

☐ Check for Storm Water only outlet.

1.POLLUTANT	2.EFFLUENT						
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*		d. No.OF ANALYSES
	(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS	
a. Biochemical Oxygen Demand (BOD)	2.55	0.01836	2.55				1
b. Chemical Oxygen Demand	37.5	0.26997	37.5				1
c. Total Organic Carbon (TOC)	2.06	0.01483	2.06				1
d. Total Suspended Solids (TSS)	155	1.11586	155				1
e. Ammonia *(as N)*	0.0416	0.00030	0.0416				1
f. Flow	VALUE	0.23	VALUE	0.23	VALUE	0.18	46
g. Temperature *(winter)*	VALUE	67	VALUE	67	VALUE	54.9	46
g. Temperature *(summer)*	VALUE	89	VALUE	89	VALUE	73.8	46
i. pH	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM			1
	6.94	6.94	6.94	6.94			

1.POLLUTANT	3.UNITS *(specify if blank)*		4.INTAKE *(optional)*		
	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No.OF ANALYSES
			(1) CONC	(2) MASS	
a. Biochemical Oxygen Demand (BOD)	mg/l	kg/day	2.60		
b. Chemical Oxygen Demand	mg/l	kg/day	5.14		
c. Total Organic Carbon (TOC)	mg/l	kg/day	1.43		
d. Total Suspended Solids (TSS)	mg/l	kg/day	9.00		
e. Ammonia *(as N)*	mg/l	kg/day	0.0330		
f. Flow	MGD	N/A	VALUE		
g. Temperature *(winter)*	Degree F	N/A	VALUE		
g. Temperature *(summer)*	Degree F	N/A	VALUE		
i. pH	STANDARD UNITS				

Section XVII B: Intake and Effluent Characteristics - Table B

TABLE B - Select column 2-a for each pollutant you know or have reason to believe is present. Select column 2-b for each pollutant you believe to be absent. If you mark column 2-a for any pollutant, you must provide the results of at least one analysis for that pollutant. Each pollutant has four items (numbered 2-4) which are required to be filled out if "Believed Present" is selected. It should noted that Item 5 is optional. See instructions for additional details and requirements.

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (if available)	2. SELECT a or b		3. EFFLUENT						
	a. Believed Present	b. Believed Absent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*		d. No. OF ANALYSES
			(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS	
a. Bromide (24959-67-9)	○	◉							
b. Chloride	○	◉							
c. Chloride Residual	○	◉							
d. Color	○	◉							
e. Fecal Coliform	○	◉							
f. Fluoride (16984-48-8)	○	◉							
g. Nitrate-Nitrite *(as N)*	◉	○	0.765	0.00551	0.765	0.00551	0.765	0.00551	1
h. Nitrogen, Total Organic *(as N)*	◉	○	14.0	0.10079	14.0	0.10079	14.0	0.10079	1
i. Oil and Grease	○	◉							
j. Phosphorus *(as P)*, Total (7723-14-0)	◉	○	0.0753	0.00054	0.0753	0.00054	0.0753	0.00054	1
k. Radioactivity									
(1) Alpha, Total	○	◉							
(2) Beta, Total	○	◉							
(3) Radium, Total	○	◉							
(4) Radium 226, Total	○	◉							
l. Sulfate *(as SO_4)* (14808-79-8)	○	◉							
m. Sulfide *(as S)*	○	◉							
n. Sulfite *(as SO_3)* (14265-45-3)	○	◉							

o. Surfactants	○	◉							
p. Aluminum, Total (7429-90-5)	◉	○	4.98	0.03585	4.98	0.03585	4.98	0.03585	1
q. Barium, Total (7440-39-3)	◉	○	0.0891	0.00064	0.0891	0.00064	0.0891	0.00064	1
r. Boron, Total (7440-42-8)	○	◉							
s. Cobalt, Total (7440-48-4)	◉	○	0.00711	0.00005	0.00711	0.00005	0.00711	0.00005	1
t. Iron, Total (7439-89-6)	◉	○	8.08	0.05817	8.08	0.05817	8.08	0.05817	1
u. Magnesium, Total (7439-95-4)	◉	○	6.61	0.04759	6.61	0.04759	6.61	0.04759	1
v. Molybdenum Total (7439-98-7)	○	◉							
w. Manganese, Total (7439-96-5)	◉	○	0.562	0.00405	0.562	0.00405	0.562	0.00405	1
x. Tin, Total (7440-31-5)	○	◉							
y. Titanium, Total (7440-32-6)	◉	○	0.0949	0.00068	0.0949	0.00068	0.0949	0.00068	1

1.POLLUTANT and CAS NO. (If available)	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	a. CONC	b. MASS	a. LONG TERM AVG. VALUE (1) CONC	a. LONG TERM AVG. VALUE (2) MASS	b. No. OF ANALYSES
a. Bromide (24959-67-9)					
b. Chloride					
c. Chloride Residual					
d. Color					
e. Fecal Coliform					
f. Fluoride (16984-48-8)					
g. Nitrate-Nitrite *(as N)*	mg/l	kg/day			
h. Nitrogen, Total Organic *(as N)*	mg/l	kg/day			
i. Oil and Grease					
j. Phosphorus *(as P)*, Total (7723-14-0)	mg/l	kg/day			
k. Radioactivity					
(1) Alpha, Total					
(2) Beta, Total					
(3) Radium, Total					
(4) Radium 226, Total					
l. Sulfate *(as SO_4)* (14808-79-8)					
m. Sulfide *(as S)*					
n. Sulfite *(as SO_3)* (14265-45-3)					
o. Surfactants					
p. Aluminum, Total (7429-90-5)	mg/l	kg/day			
q. Barium, Total (7440-39-3)	mg/l	kg/day			
r. Boron, Total (7440-42-8)					
s. Cobalt, Total (7440-48-4)	mg/l	kg/day			
t. Iron, Total (7439-89-6)	mg/l	kg/day			
u. Magnesium, Total (7439-95-4)	mg/l	kg/day			
v. Molybdenum Total (7439-98-7)					
w. Manganese, Total (7439-96-5)	mg/l	kg/day			
x. Tin, Total (7440-31-5)					
y. Titanium, Total (7440-32-6)	mg/l	kg/day			

Section XVII C: Intake and Effluent Characteristics - Table C Metals

☐ Check for Storm Water only outlet.	

TABLE C - If you are a primary industry and this outlet contains process wastewater, refer to Table 2 in the instructions to determine which of the GC/MS fractions you must test for. Select column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (secondary industries, non-process wastewater outlet, and non-required GC/MS fractions) select column 2-b for each pollutant you know or have reason to believe is present. Select column 2-c for each pollutant you believe to be absent. If you Select either column 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. Each pollutant has four items (numbered 2-4) which are required to be filled out if "Testing Required" or "Believed Present" is selected. It should noted that Item 5 is optional. See instructions for additional details and requirements.

1. POLLUTANT and CAS NO. (If available)	2. Select			3. EFFLUENT					
	a. Testing Required	b. Believed Present	c. Believed Absent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
METALS, CYANIDE, AND TOTAL PHENOLS									
1M. Antimony, Total(7440-38-2)	☐	○	◉						
2M. Arsenic, Total(7440-38-2)	☐	◉	○	0.00231	0.00002	-	-	-	-
3M.Beryllium, Total (74440-41-7)	☐	◉	○	0.000596	0.00000	-	-	-	-
4M. Cadmium, Total(7440-43-9)	☐	◉	○	0.000154	0.00000	-	-	-	-
5M.Chromium, Total(7440-47-3)	☐	◉	○	0.00666	0.00005	-	-	-	-
6M. Copper, Total(7550-50-8)	☐	◉	○	0.0198	0.00014	-	-	-	-
7M. Lead, Total (7439-97-6)	☐	◉	○	0.00868	0.00006	-	-	-	-
8M. Mercury, Total(7439-97-8)	☐	○	◉						
9M. Nickel, Total(7440-02-0)	☐	◉	○	0.0121	0.00009	-	-	-	-
10M. Selenium, Total(7782-49-2)	☐	◉	○	0.000960	0.00001	-	-	-	-
11M. Silver, Total(7440-22-4)	☐	○	◉						
12M. Thallium, Total(7440-28-0)	☐	○	◉						
13M. Zinc, Total(7440-66-6)	☐	◉	○	0.0949	0.00068	-	-	-	-
14M. Cyanide, Total(57-12-5)	☐	○	◉						
15M. Phenols, Total	☐	○	◉						
DIOXIN									
2,3,7,8-tetra-chlorobibenzo-P-Dioxin (1764-01-6)	☐	○	◉	DESCRIBE RESULTS					

TABLE C -

1.POLLUTANT and CAS NO. (If available)	3. EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
1M. Antimony, Total(7440-38-2)						
2M. Arsenic, Total(7440-38-2)	1	mg/l	kg/day			
3M.Beryllium, Total (74440-41-7)	1	mg/l	kg/day			
4M. Cadmium, Total(7440-43-9)	1	mg/l	kg/day			
5M.Chromium, Total(7440-47-3)	1	mg/l	kg/day			
6M. Copper, Total(7550-50-8)	1	mg/l	kg/day			
7M. Lead, Total (7439-97-6)	1	mg/l	kg/day			
8M. Mercury, Total(7439-97-8)						
9M. Nickel, Total(7440-02-0)	1	mg/l	kg/day			
10M. Selenium, Total(7782-49-2)	1	mg/l	kg/day			
11M. Silver, Total(7440-22-4)						
12M. Thallium, Total(7440-28-0)						
13M. Zinc, Total(7440-66-6)	1	mg/l	kg/day			
14M. Cyanide, Total(57-12-5)						
15M. Phenols, Total						

Section XVII C: Intake and Effluent Characteristics - Table C Volatile Compounds

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (If available)	2. Select			3. EFFLUENT					
	a. Tes-ting Req-uired	b. Beli-eved Pre-sent	c. Beli-eved Abs-ent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
GC/MS FRACTION - VOLATILE COMPOUNDS									
1V. Acrolein (107-02-8)	☐	○	◉						
2V. Acrylonitrile (107-13-1)	☐	○	◉						
3V. Benzene (71-43-2)	☐	○	◉						
4V. Bromoform (75-25-2)	☐	○	◉						
5V. Carbon Tetrachloride (56-23-5)	☐	○	◉						
6V. Chlorobenzene (108-90-7)	☐	○	◉						
7V. Chlorodi-bromomethene (124-48-1)	☐	○	◉						
8V. Chloroethane (75-00-3)	☐	○	◉						
9V. 2-Chloro-ethylvinyl Ether (110-75-8)	☐	○	◉						
10V. Chloroform (67-66-3)	☐	○	◉						
11V. Dichloro-bromomethane (75-27-4)	☐	○	◉						
12V. 1,1-Dichloro-ethane (75-34-3)	☐	○	◉						
13V. 1,2- Dichloro-ethane (107-06-2)	☐	○	◉						
14V. 1,1-Dichloro-ethylene (75-35-4)	☐	○	◉						
15V. 1,2-Dichloro-propane (78-87-5)	☐	○	◉						
16V. 1,3-Dichloro-propylene (542-75-6)	☐	○	◉						
17V. Ethylbenzene (100-41-4)	☐	○	◉						
18V. Methyl Bromide (74-83-9)	☐	○	◉						
19V. Methyl Chloride (74-87-3)	☐	○	◉						
20V. Methylene Chloride (75-09-2)	☐	○	◉						

21V. 1,1,2,2-Tetra-chloroethane (79-34-5)	☐	○	◉						
22V. Tetrachloro-ethylene(127-18-4)	☐	○	◉						
23V. Toluene (108-88-3)	☐	○	◉						
24V. 1,2-Trans-Dichloroethylene (156-60-5)	☐	○	◉						
25V. 1,1,1-Tri-chloroethane (71-55-6)	☐	○	◉						
26V. 1,1,2-Tri-chloroethane (79-00-5)	☐	○	◉						
27V. Trichloro-ethylene(79-01-61)	☐	○	◉						
28V. Vinyl Chloride(75-01-4)	☐	○	◉						

1.POLLUTANT and CAS NO. (If available)	3.EFFLUENT d. No. OF ANALYSES	4.UNITS *(specify if blank)* a. CONC	b. MASS	5.INTAKE *(optional)* a. LONG TERM AVG. VALUE (1) CONC	(2) MASS	b. No. OF ANALYSES
GC/MS FRACTION - VOLATILE COMPOUNDS						
1V. Acrolein (107-02-8)						
2V. Acrylonitrile (107-13-1)						
3V. Benzene (71-43-2)						
4V. Bromoform (75-25-2)						
5V. Carbon Tetrachloride (56-23-5)						
6V. Chlorobenzene (108-90-7)						
7V. Chlorodi-bromomethene (124-48-1)						
8V. Chlroethane (75-00-3)						
9V. 2-Chloro-ethylvinyl Ether (110-75-8)						
10V. Chloroform (67-66-3)						
11V. Dichloro-bromomethane (75-27-4)						
12V. 1,1-Dichloro-ethane (75-34-3)						
13V. 1,2- Dichloro-ethane (107-06-2)						
14V. 1,1-Dichloro-ethylene (75-35-4)						
15V. 1,2-Dichloro-propane (78-87-5)						
16V. 1,3-Dichloro-propylene (542-75-6)						
17V. Ethylbenzene (100-41-4)						
18V. Methyl Bromide (74-83-9)						
19V. Methyl Chloride (74-87-3)						
20V. Methylene Chloride (75-09-2)						
21V. 1,1,2,2-Tetra-chloroethane (79-34-5)						
22V. Tetrachloro-ethylene(127-18-4)						

23V. Toluene (108-88-3)						
24V. 1,2-Trans-Dichloroethylene (156-60-5)						
25V. 1,1,1-Tri-chloroethane (71-55-6)						
26V. 1,1,2-Tri-chloroethane (79-00-5)						
27V. Trichloro-ethylene(79-01-61)						
28V. Vinyl Chloride(75-01-4)						

Section XVII C: Intake and Effluent Characteristics - Table C Acid Compounds

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (If available)	2. SELECT			3. EFFLUENT					
	a. Tes-ting Req-uired	b. Beli-eved Pre-sent	c. Beli-eved Abs-ent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
GC/MS FRACTION - ACID COMPOUNDS									
1A. 2-Chlorophenol (95-57-8)	☐	○	◉						
2A. 2,4-Dichloro-phenol (120-83-2)	☐	○	◉						
3A. 2,4-Dimethyl-phenol (105-67-9)	☐	○	◉						
4A. 4,6-Dinitro-O-Cresol (534-52-1)	☐	○	◉						
5A. 2,4-Dinitro-phenol (51-28-5)	☐	○	◉						
6A. 2-Nitro-phenol (88-75-5)	☐	○	◉						
7A. 4-Nitro-phenol (100-02-7)	☐	○	◉						
8A. P-Chloro-M-Cresol (59-50-7)	☐	○	◉						
9A. Pentachloro-phenol (87-86-5)	☐	○	◉						
10A. Phenol (108-95-2)	☐	○	◉						
11A. 2,4,6-Tri-chlorophenol (88-06-2)	☐	○	◉						

1.POLLUTANT and CAS NO. (If available)	3.EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
GC/MS FRACTION - ACID COMPOUNDS						
1A. 2-Chlorophenol (95-57-8)						
2A. 2,4-Dichloro-phenol (120-83-2)						
3A. 2,4-Dimethyl-phenol (105-67-9)						
4A. 4,6-Dinitro-O-Cresol (534-52-1)						
5A. 2,4-Dinitro-phenol (51-28-5)						
6A. 2-Nitro-phenol (88-75-5)						
7A. 4-Nitro-phenol (100-02-7)						
8A. P-Chloro-M-Cresol (59-50-7)						
9A. Pentachloro-phenol (87-86-5)						
10A. Phenol (108-95-2)						
11A. 2,4,6-Tri-chlorophenol (88-06-2)						

Section XVII C: Intake and Effluent Characteristics - Table C Base/Neutral Compounds

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (If available)	2. SELECT			3. EFFLUENT					
	a. Testing Required	b. Believed Present	c. Believed Absent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS									
1B. Acenaphthene (83-32-9)	☐	○	◉						
2B.Acenaphtylene (208-96-8)	☐	○	◉						
3B.Anthracene (120-12-7)	☐	○	◉						
4B. Benzidine (92-87-5)	☐	○	◉						
5B. Benzo (a) Anthracene (56-55-3)	☐	○	◉						
6B.Benzo(a)Pyrene (50-32-8)	☐	○	◉						
7B. 3,4-Benzo-fluoranthene (205-99-2)	☐	○	◉						
8B. Benzo (ghi) Perylene (191-24-2)	☐	○	◉						
9B. Benzo (k) Fluoranthene (207-08-9)	☐	○	◉						
10B. Bis*(2-Chloro-ethoxy)* Methane (111-91-1)	☐	○	◉						
11B. Bis*(2-Chloro-ethyl)* Ether(111-44-4)	☐	○	◉						
12B. Bis*(2-Chloro-isopropyl)* Ether(39638-32-9)	☐	○	◉						
13B. Bis*(2-Ethyl-hexyl)* Phthalate(117-81-7)	☐	○	◉						
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	☐	○	◉						
15B. Butyl Benzyl Phthalate (85-86-7)	☐	○	◉						
16B. 2-Chloro-naphthalene (91-58-7)	☐	○	◉						
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	☐	○	◉						
18B. Chrysene (218-01-9)	☐	○	◉						
19B. Dibenzo (a,h) Anthracene (53-70-3)	☐	○	◉						
20B. 1,2-Dichloro-benzene(95-50-1)	☐	○	◉						
21B. 1,3-Dichloro-benzene (541-73-1)	☐	○	◉						
22B. 1,4-Dichloro-benzene (106-46-7)	☐	○	◉						

23B. 3,3-Dichloro-benzidine (91-94-1)	☐	○	◉						
24B. Diethyl Phthalate (84-66-2)	☐	○	◉						
25B. Dimethyl Phthalate (131-11-3)	☐	○	◉						
26B. Di-N-Butyl Phthalate (84-74-2)	☐	○	◉						
27B. 2,4-Dinitro-toluene (121-14-2)	☐	○	◉						
28B. 2,6-Dinitro-toluene (206-20-2)	☐	○	◉						
29B. Di-N-Octyl Phthalate (117-84-0)	☐	○	◉						
30B. 1,2-Diphenyl-hydrazine *(as Azo-benzene)*(122-66-7)	☐	○	◉						
31B. Fluoranthene (206-44-0)	☐	○	◉						
32B. Fluorene (86-73-7)	☐	○	◉						
33B. Hexa-chlorobenzene (118-71-1)	☐	○	◉						
34B. Hexa-chlorobutadiene (87-68-3)	☐	○	◉						
35B. Hexachloro-cyclopentadiene (77-47-4)	☐	○	◉						
36B. Hexachloro-ethane (67-72-1)	☐	○	◉						
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)	☐	○	◉						
38B. Isophorone (78-59-1)	☐	○	◉						
39B. Naphthalene (91-20-3)	☐	○	◉						
40B. Nitrobenzene (98-95-3)	☐	○	◉						
41B. N-Nitro-sodimethylamine(62-75-9)	☐	○	◉						
42B. N-Nitrosodi-N-Propylamine (621-64-7)	☐	○	◉						
43B. N-Nitro-sodiphenylamine (86-30-6)	☐	○	◉						
44B. Phenanthrene (85-01-8)	☐	○	◉						
45B. Pyrene (129-00-0)	☐	○	◉						
46B. 1,2,4-Tri-chlorobenzene (120-82-1)	☐	○	◉						

1.POLLUTANT and CAS NO. (If available)	3. EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS						
1B. Acenaphthene (83-32-9)						
2B.Acenaphtylene (208-96-8)						
3B.Anthracene (120-12-7)						
4B. Benzidine (92-87-5)						
5B. Benzo (a) Anthracene (56-55-3)						
6B.Benzo(a)Pyrene (50-32-8)						
7B. 3,4-Benzo-fluoranthene (205-99-2)						
8B. Benzo (ghi) Perylene (191-24-2)						
9B. Benzo (k) Fluoranthene (207-08-9)						
10B. Bis*(2-Chloro-ethoxy)* Methane (111-91-1)						
11B. Bis*(2-Chloro-ethyl)* Ether(111-44-4)						
12B. Bis*(2-Chloro-Isopropyl)* Ether(39638-32-9)						
13B. Bis*(2-Ethyl-hexyl)* Phthalate(117-81-7)						
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)						
15B. Butyl Benzyl Phthalate (85-86-7)						
16B. 2-Chloro-naphthalene (91-58-7)						
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)						
18B. Chrysene (218-01-9)						
19B. Dibenzo (a,h) Anthracene (53-70-3)						
20B. 1,2-Dichloro-benzene(95-50-1)						
21B. 1,3-Dichloro-benzene (541-73-1)						
22B. 1,4-Dichloro-benzene (106-46-7)						
23B. 3,3-Dichloro-benzidine (91-94-1)						
24B. Diethyl Phthalate (84-66-2)						
25B. Dimethyl Phthalate (131-11-3)						

26B. Di-N-Butyl Phthalate (84-74-2)						
27B. 2,4-Dinitro-toluene (121-14-2)						
28B. 2,6-Dinitro-toluene (206-20-2)						
29B. Di-N-Octyl Phthalate (117-84-0)						
30B. 1,2-Diphenyl-hydrazine *(as Azo-benzene)*(122-66-7)						
31B. Fluoranthene (206-44-0)						
32B. Fluorene (86-73-7)						
33B. Hexa-chlorobenzene (118-71-1)						
34B. Hexa-chlorobutadiene (87-68-3)						
35B. Hexachloro-cyclopentadiene (77-47-4)						
36B. Hexachloro-ethane (67-72-1)						
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)						
38B. Isophorone (78-59-1)						
39B. Naphthalene (91-20-3)						
40B. Nitrobenzene (98-95-3)						
41B. N-Nitro-sodimethylamine(62-75-9)						
42B. N-Nitrosodi-N-Propylamine (621-64-7)						
43B. N-Nitro-sodiphenylamine (86-30-6)						
44B. Phenanthrene (85-01-8)						
45B. Pyrene (129-00-0)						
46B. 1,2,4-Tri-chlorobenzene (120-82-1)						

Section XVII C: Intake and Effluent Characteristics - Table C Pesticides

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (If available)	2. SELECT			3. EFFLUENT					
	a. Testing Required	b. Believed Present	c. Believed Absent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
GC/MS FRACTION - PESTICIDES									
1P. Aldrin (309-00-2)	☐	○	◉						
2P. -BHC (319-84-6)	☐	○	◉						
3P. -BHC (319-85-7)	☐	○	◉						
4P. -BHC (58-89-9)	☐	○	◉						
5P. -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. -Endosulfan (115-29-7)	☐	○	◉						
12P. -Endosulfan (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)	☐	○	◉						
17P. Heptachlor Epoxide (1024-57-3)	☐	○	◉						
18P. PCB-1242 (53469-21-9)	☐	○	◉						
19P. PCB-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)	☐	○	◉						

1.POLLUTANT and CAS NO. (If available)	3.EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
GC/MS FRACTION - PESTICIDES						
1P. Aldrin (309-00-2)						
2P. -BHC (319-85-7)						
3P. -BHC (319-85-7)						
4P. -BHC (58-89-9)						
5P. -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. -Endosulfan (115-29-7)						
12P. -Endosulfan (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)						
17P. Heptachlor Epoxide (1024-57-3)						
18P. PCB-1242 (53469-21-9)						
19P. PCB-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)						

Section XVII D: Intake and Effluent Characteristics - Part D

☑ Check for no Storm Water.

Part D - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outlet. See instructions for additional details.

Pollutant and CAS Number (if available)	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite		
Oil and Grease						
Biological Oxygen demand (BOD5)						
Chemical Oxygen Demand (COD)						
Total Suspended Solids (TSS)						
Total Kjeldahl Nitrogen						
Nitrite plus Nitrate Nitrogen						
Total Phosphorus						
pH	Minimum		Maximum			

Section XVII E: Intake and Effluent Characteristics - Part E

Part E - List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outlet. See instructions for additional details and requirements.

Pollutant and CAS Number (if available	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite		

Section XVII F: Intake and Effluent Characteristics - Part F

Part F- List each pollutant shown in Table B and C of this application that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outlet.

Pollutant and CAS Number (if available	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite		

Section XVII G: Intake and Effluent Characteristics - Part G

Part G - Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1.Date of Storm Event	2.Duration of Strom (in minutes)	3.Total Rainfall during storm event (in inches)	4.Number of days and/or hours between beginning of storm measured and the end of previous measurable rain event	5.Maximum during rain event (gallons/ minute or specify units)	6.Total flow from rain event (gallons or specify units)	Season sample was taken	Form of Precipitation (rainfall, snowmelt)

9. Provide a description of the method of flow measurement or estimate.

Section XVII H: Intake and Effluent Characteristics - Part H

☑ Check if all believed Absent.

H. Select any of the pollutants listed below, which you know or have reasons to believe is discharged or may be discharged from any outlet. For every pollutant you select, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

	Believed Present	Believed Absent	
Toxic Pollutants			
Asbestos	○	◉	
Hazardous Substances			
Acetaldehyde	○	◉	
Allyl alcohol	○	◉	
Allyl chloride	○	◉	
Amyl acetate	○	◉	
Aniline	○	◉	
Benzonitrile	○	◉	
Benzyl chloride	○	◉	
Butyl acetate	○	◉	
Butylamine	○	◉	
Captan	○	◉	
Carbaryl	○	◉	
Carbofuran	○	◉	
Carbon disulfide	○	◉	
Chlorpyrifos	○	◉	
Coumaphos	○	◉	
Cresol	○	◉	
Crotonaldehyde	○	◉	
Cyclohexane	○	◉	
Strychnine	○	◉	
Cyclohexane	○	◉	

2,4-D(2,4-Dichlorophenoxy acetic acid)	○	◉	
Diazinon	○	◉	
Dicamba	○	◉	
Dichlobenil	○	◉	
Dichlone	○	◉	
2,2-Dichloropropionic acid	○	◉	
Dichlorvos	○	◉	
Diethyl amine	○	◉	
Dimethyl amine	○	◉	
Dinitrobenzene	○	◉	
Diquat	○	◉	
Disulfoton	○	◉	
Diuron	○	◉	
Epichlorohydrin	○	◉	
Ethanolamine	○	◉	
Ethion	○	◉	
Ethylene diamine	○	◉	
Ethylene dibromide	○	◉	
Formaldehyde	○	◉	
Furfural	○	◉	
Guthion	○	◉	
Isoprene	○	◉	
Isopropanolamine	○	◉	
Kelthane	○	◉	
Kepone	○	◉	
Malathion	○	◉	
Mercaptodimethur	○	◉	

Methoxychlor	○	◉	
Methyl mercaptan	○	◉	
Methyl methacrylate	○	◉	
Methyl parathion	○	◉	
Mevinphos	○	◉	
Mexacarbate	○	◉	
Monoethyl amine	○	◉	
Monomethyl amine	○	◉	
Naled	○	◉	
Napthenic acid	○	◉	
Nitrotoluene	○	◉	
Parathion	○	◉	
Phenolsulfanate	○	◉	
Phosgene	○	◉	
Propargite	○	◉	
Propylene oxide	○	◉	
Pyrethrines	○	◉	
Quinoline	○	◉	
Resorcinol	○	◉	
Strontium	○	◉	
Strychnine	○	◉	
Styrene	○	◉	
2,4,5-T (2,4,5-Trichlorophenoxy acetic acid)	○	◉	
TDE (Tetrachlorodiphenyl ethane)	○	◉	
2,4,5-TP (2-(2,4,5-Trichlorophenoxy propanic acid)	○	◉	
Trichlorofon	○	◉	

Triethanolamine	○	◉	
Triethylamine	○	◉	
Trimethylamine	○	◉	
Uranium	○	◉	
Vanadium	○	◉	
Vinyl Acetate	○	◉	
Xylene	○	◉	
Xylenol	○	◉	
Zirconium	○	◉	

Section XIII: Outlet Location

XIII. OUTLET LOCATION

For each outlet, list the latitude and longitude to the nearest second, the River Mile Point (if known) and the name of the immediate receiving water. (see instructions)

A.	Outlet Number:	002
B.	Latitude:	38 ° 11 ' 30 "
C.	Longitude:	81 ° 22 ' 14 "
	UTM Zone:	17
	UTM Northing:	
	UTM Easting:	
D.	River Mile Point:	82.8

E. Immediate Receiving Water (include all streams to Major Basin):

☐ Unnamed Tributary of

tributary of	tributary of
tributary of	tributary of

	Major Basin:	Upper Kanawha River
F.	Geospatial Method	Topograhic Map
	Datum:	NAD27
G.	Actual Average Flow	160000 GPD (Gallons Per Day)

Section XVII A: Intake and Effluent Characteristics - Table A

TABLE A. You must provide the results of at least one analysis for every pollutant in this table. See instructions for additional details.

☐ Check for Storm Water only outlet.

1.POLLUTANT	2.EFFLUENT						
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*		d. No.OF ANALYSES
	(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS	
a. Biochemical Oxygen Demand (BOD)	ND	ND	ND				1
b. Chemical Oxygen Demand	4.83	0.03784	4.83				1
c. Total Organic Carbon (TOC)	1.46	0.01144	1.46				1
d. Total Suspended Solids (TSS)	27.3	0.21389	27.3				1
e. Ammonia *(as N)*	0.0422	0.00033	0.0422				1
f. Flow	VALUE	0.21	VALUE	0.21	VALUE	0.16	35
g. Temperature *(winter)*	VALUE	65	VALUE	65	VALUE	55.2	35
g. Temperature *(summer)*	VALUE	87	VALUE	87	VALUE	76.1	35
i. pH	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM			1
	6.37	6.37	6.37	6.37			

1.POLLUTANT	3.UNITS *(specify if blank)*		4.INTAKE *(optional)*		
	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No.OF ANALYSES
			(1) CONC	(2) MASS	
a. Biochemical Oxygen Demand (BOD)	mg/l	kg/day			
b. Chemical Oxygen Demand	mg/l	kg/day			
c. Total Organic Carbon (TOC)	mg/l	kg/day			
d. Total Suspended Solids (TSS)	mg/l	kg/day			
e. Ammonia *(as N)*	mg/l	kg/day			
f. Flow	mg/l	kg/day	VALUE		
g. Temperature *(winter)*	mg/l	kg/day	VALUE		
g. Temperature *(summer)*	mg/l	kg/day	VALUE		
i. pH	STANDARD UNITS				

Section XVII B: Intake and Effluent Characteristics - Table B

TABLE B - Select column 2-a for each pollutant you know or have reason to believe is present. Select column 2-b for each pollutant you believe to be absent. If you mark column 2-a for any pollutant, you must provide the results of at least one analysis for that pollutant. Each pollutant has four items (numbered 2-4) which are required to be filled out if "Believed Present" is selected. It should noted that Item 5 is optional. See instructions for additional details and requirements.

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (If available)	2. SELECT a or b		3. EFFLUENT						
	a. Believed Present	b. Believed Absent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*		d. No. OF ANALYSES
			(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS	
a. Bromide (24959-67-9)	○	◉							
b. Chloride	○	◉							
c. Chloride Residual	○	◉							
d. Color	○	◉							
e. Fecal Coliform	○	◉							
f. Fluoride (16984-48-8)	○	◉							
g. Nitrate-Nitrite *(as N)*	◉	○	0.493	0.00386	0.493	0.00386	0.493	0.00386	1
h. Nitrogen, Total Organic *(as N)*	◉	○	13.2	0.10342	13.2	0.10342	13.2	0.10342	1
i. Oil and Grease	◉	○	2.14	0.01677	2.14	0.01677	2.14	0.01677	1
j. Phosphorus *(as P)*, Total (7723-14-0)	○	◉							
k. Radioactivity									
(1) Alpha, Total	○	◉							
(2) Beta, Total	○	◉							
(3) Radium, Total	○	◉							
(4) Radium 226, Total	○	◉							
l. Sulfate*(as SO_4)* (14808-79-8)	○	◉							
m. Sulfide *(as S)*	○	◉							
n. Sulfite*(as SO_3)* (14265-45-3)	○	◉							

o. Surfactants	○	◉							
p. Aluminum, Total (7429-90-5)	◉	○	0.485	0.00380	0.485	0.00380	0.485	0.00380	1
q. Barium, Total (7440-39-3)	◉	○	0.0322	0.00025	0.0322	0.00025	0.0322	0.00025	1
r. Boron, Total (7440-42-8)	◉	○	0.0171	0.00013	0.0171	0.00013	0.0171	0.00013	1
s. Cobalt, Total (7440-48-4)	◉	○	0.000536	0.00000	0.000536	0.00000	0.000536	0.00000	1
t. Iron, Total (7439-89-6)	◉	○	0.612	0.00479	0.612	0.00479	0.612	0.00479	1
u. Magnesium, Total (7439-95-4)	◉	○	5.42	0.04247	5.42	0.04247	5.42	0.04247	1
v. Molybdenum Total (7439-98-7)	○	◉							
w. Manganese, Total (7439-96-5)	◉	○	0.0572	0.00045	0.0572	0.00045	0.0572	0.00045	1
x. Tin, Total (7440-31-5)	○	◉							
y. Titanium, Total (7440-32-6)	◉	○	0.0202	0.00016	0.0202	0.00016	0.0202	0.00016	1

1.POLLUTANT and CAS NO. (If available)	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
			a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
	a. CONC	b. MASS	(1) CONC	(2) MASS	
a. Bromide (24959-67-9)					
b. Chloride					
c. Chloride Residual					
d. Color					
e. Fecal Coliform					
f. Fluoride (16984-48-8)					
g. Nitrate-Nitrite *(as N)*	mg/l	kg/day	0.503		
h. Nitrogen, Total Organic *(as N)*	mg/l	kg/day	ND		
i. Oil and Grease					
j. Phosphorus *(as P)*, Total (7723-14-0)					
k. Radioactivity					
(1) Alpha, Total					
(2) Beta, Total					
(3) Radium, Total					
(4) Radium 226, Total					
l. Sulfate *(as SO_4)* (14808-79-8)					
m. Sulfide *(as S)*					
n. Sulfite *(as SO_3)* (14265-45-3)					
o. Surfactants					
p. Aluminum, Total (7429-90-5)	mg/l	kg/day	0.312		
q. Barium, Total (7440-39-3)	mg/l	kg/day	0.0295		
r. Boron, Total (7440-42-8)	mg/l	kg/day	ND		
s. Cobalt, Total (7440-48-4)	mg/l	kg/day	0.000396		
t. Iron, Total (7439-89-6)	mg/l	kg/day	0.469		
u. Magnesium, Total (7439-95-4)	mg/l	kg/day	5.43		
v. Molybdenum Total (7439-98-7)					
w. Manganese, Total (7439-96-5)	mg/l	kg/day	0.0353		
x. Tin, Total (7440-31-5)					
y. Titanium, Total (7440-32-6)	mg/l	kg/day	0.00810		

Section XVII C: Intake and Effluent Characteristics - Table C Metals

☐ Check for Storm Water only outlet.

TABLE C - If you are a primary industry and this outlet contains process wastewater, refer to Table 2 in the instructions to determine which of the GC/MS fractions you must test for. Select column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (secondary industries, non-process wastewater outlet, and non-required GC/MS fractions) select column 2-b for each pollutant you know or have reason to believe is present. Select column 2-c for each pollutant you believe to be absent. If you Select either column 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. Each pollutant has four items (numbered 2-4) which are required to be filled out if "Testing Required" or "Believed Present" is selected. It should noted that Item 5 is optional. See instructions for additional details and requirements.

1. POLLUTANT and CAS NO. (If available)	2. Select			3. EFFLUENT					
	a. Testing Required	b. Believed Present	c. Believed Absent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
METALS, CYANIDE, AND TOTAL PHENOLS									
1M. Antimony, Total(7440-38-2)	☐	○	◉						
2M. Arsenic, Total(7440-38-2)	☐	◉	○	0.000558	0.00000	0.000558	0.00000	0.000558	0.00000
3M.Beryllium, Total (74440-41-7)	☐	○	◉						
4M. Cadmium, Total(7440-43-9)	☐	○	◉						
5M.Chromium, Total(7440-47-3)	☐	◉	○	0.00142	0.00001	0.00142	0.00001	0.00142	0.00001
6M. Copper, Total(7550-50-8)	☐	◉	○	0.0270	0.00021	0.0270	0.00021	0.0270	0.00021
7M. Lead, Total (7439-97-6)	☐	◉	○	0.00173	0.00001	0.00173	0.00001	0.00173	0.00001
8M. Mercury, Total(7439-97-8)	☐	○	◉						
9M. Nickel, Total(7440-02-0)	☐	◉	○	0.00180	0.00001	0.00180	0.00001	0.00180	0.00001
10M. Selenium, Total(7782-49-2)	☐	○	◉						
11M. Silver, Total(7440-22-4)	☐	○	◉						
12M. Thallium, Total(7440-28-0)	☐	○	◉						
13M. Zinc, Total(7440-66-6)	☐	◉	○	0.0220	0.00017	0.0220	0.00017	0.0220	0.00017
14M. Cyanide, Total(57-12-5)	☐	○	◉						
15M. Phenols, Total	☐	○	◉						
DIOXIN									
2,3,7,8-tetra-chlorobibenzo-P-Dioxin (1764-01-6)	☐	○	◉	DESCRIBE RESULTS					

TABLE C -

1.POLLUTANT and CAS NO. (If available)	3. EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
1M. Antimony, Total(7440-38-2)						
2M. Arsenic, Total(7440-38-2)	1	mg/l	kg/day	0.000359		
3M.Beryllium, Total (74440-41-7)						
4M. Cadmium, Total(7440-43-9)						
5M.Chromium, Total(7440-47-3)	1	mg/l	kg/day	0.00137		
6M. Copper, Total(7550-50-8)	1	mg/l	kg/day	0.00136		
7M. Lead, Total (7439-97-6)	1	mg/l	kg/day	0.000598		
8M. Mercury, Total(7439-97-8)						
9M. Nickel, Total(7440-02-0)	1	mg/l	kg/day	0.00125		
10M. Selenium, Total(7782-49-2)						
11M. Silver, Total(7440-22-4)						
12M. Thallium, Total(7440-28-0)						
13M. Zinc, Total(7440-66-6)	1	mg/l	kg/day	0.00770		
14M. Cyanide, Total(57-12-5)						
15M. Phenols, Total						

Section XVII C: Intake and Effluent Characteristics - Table C Volatile Compounds

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (if available)	2. Select a. Testing Required	2. Select b. Believed Present	2. Select c. Believed Absent	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONC	3. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONC	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVG. VALUE (if available) (1) CONC	c. LONG TERM AVG. VALUE (if available) (2) MASS
GC/MS FRACTION - VOLATILE COMPOUNDS									
1V. Acrolein (107-02-8)	☐	○	◉						
2V. Acrylonitrile (107-13-1)	☐	○	◉						
3V. Benzene (71-43-2)	☐	○	◉						
4V. Bromoform (75-25-2)	☐	○	◉						
5V. Carbon Tetrachloride (56-23-5)	☐	○	◉						
6V. Chlorobenzene (108-90-7)	☐	○	◉						
7V. Chlorodi-bromomethene (124-48-1)	☐	○	◉						
8V. Chloroethane (75-00-3)	☐	○	◉						
9V. 2-Chloro-ethylvinyl Ether (110-75-8)	☐	○	◉						
10V. Chloroform (67-66-3)	☐	○	◉						
11V. Dichloro-bromomethane (75-27-4)	☐	○	◉						
12V. 1,1-Dichloro-ethane (75-34-3)	☐	○	◉						
13V. 1,2- Dichloro-ethane (107-06-2)	☐	○	◉						
14V. 1,1-Dichloro-ethylene (75-35-4)	☐	○	◉						
15V. 1,2-Dichloro-propane (78-87-5)	☐	○	◉						
16V. 1,3-Dichloro-propylene (542-75-6)	☐	○	◉						
17V. Ethylbenzene (100-41-4)	☐	○	◉						
18V. Methyl Bromide (74-83-9)	☐	○	◉						
19V. Methyl Chloride (74-87-3)	☐	○	◉						
20V. Methylene Chloride (75-09-2)	☐	○	◉						

21V. 1,1,2,2-Tetra-chloroethane (79-34-5)	☐	○	◉						
22V. Tetrachloro-ethylene(127-18-4)	☐	○	◉						
23V. Toluene (108-88-3)	☐	○	◉						
24V. 1,2-Trans-Dichloroethylene (156-60-5)	☐	○	◉						
25V. 1,1,1-Tri-chloroethane (71-55-6)	☐	○	◉						
26V. 1,1,2-Tri-chloroethane (79-00-5)	☐	○	◉						
27V. Trichloro-ethylene(79-01-61)	☐	○	◉						
28V. Vinyl Chloride(75-01-4)	☐	○	◉						

1.POLLUTANT and CAS NO. (If available)	3.EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS						
1V. Acrolein (107-02-8)						
2V. Acrylonitrile (107-13-1)						
3V. Benzene (71-43-2)						
4V. Bromoform (75-25-2)						
5V. Carbon Tetrachloride (56-23-5)						
6V. Chlorobenzene (108-90-7)						
7V. Chlorodi-bromomethene (124-48-1)						
8V. Chlroethane (75-00-3)						
9V. 2-Chloro-ethylvinyl Ether (110-75-8)						
10V. Chloroform (67-66-3)						
11V. Dichloro-bromomethane (75-27-4)						
12V. 1,1-Dichloro-ethane (75-34-3)						
13V. 1,2- Dichloro-ethane (107-06-2)						
14V. 1,1-Dichloro-ethylene (75-35-4)						
15V. 1,2-Dichloro-propane (78-87-5)						
16V. 1,3-Dichloro-propylene (542-75-6)						
17V. Ethylbenzene (100-41-4)						
18V. Methyl Bromide (74-83-9)						
19V. Methyl Chloride (74-87-3)						
20V. Methylene Chloride (75-09-2)						
21V. 1,1,2,2-Tetra-chloroethane (79-34-5)						
22V. Tetrachloro-ethylene(127-18-4)						

23V. Toluene (108-88-3)						
24V. 1,2-Trans-Dichloroethylene (156-60-5)						
25V. 1,1,1-Tri-chloroethane (71-55-6)						
26V. 1,1,2-Tri-chloroethane (79-00-5)						
27V. Trichloro-ethylene(79-01-61)						
28V. Vinyl Chloride(75-01-4)						

Section XVII C: Intake and Effluent Characteristics - Table C Acid Compounds

☐ Check for Storm Water only outlet.									
1. POLLUTANT and CAS NO. (If available)	2. SELECT			3. EFFLUENT					
	a. Tes-ting Req-uired	b. Beli-eved Pre-sent	c. Beli-eved Abs-ent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
GC/MS FRACTION - ACID COMPOUNDS									
1A. 2-Chlorophenol (95-57-8)	☐	○	◉						
2A. 2,4-Dichloro-phenol (120-83-2)	☐	○	◉						
3A. 2,4-Dimethyl-phenol (105-67-9)	☐	○	◉						
4A. 4,6-Dinitro-O-Cresol (534-52-1)	☐	○	◉						
5A. 2,4-Dinitro-phenol (51-28-5)	☐	○	◉						
6A. 2-Nitro-phenol (88-75-5)	☐	○	◉						
7A. 4-Nitro-phenol (100-02-7)	☐	○	◉						
8A. P-Chloro-M-Cresol (59-50-7)	☐	○	◉						
9A. Pentachloro-phenol (87-86-5)	☐	○	◉						
10A. Phenol (108-95-2)	☐	○	◉						
11A. 2,4,6-Tri-chlorophenol (88-06-2)	☐	○	◉						

1.POLLUTANT and CAS NO. (If available)	3.EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
GC/MS FRACTION - ACID COMPOUNDS						
1A. 2-Chlorophenol (95-57-8)						
2A. 2,4-Dichloro-phenol (120-83-2)						
3A. 2,4-Dimethyl-phenol (105-67-9)						
4A. 4,6-Dinitro-O-Cresol (534-52-1)						
5A. 2,4-Dinitro-phenol (51-28-5)						
6A. 2-Nitro-phenol (88-75-5)						
7A. 4-Nitro-phenol (100-02-7)						
8A. P-Chloro-M-Cresol (59-50-7)						
9A. Pentachloro-phenol (87-86-5)						
10A. Phenol (108-95-2)						
11A. 2,4,6-Tri-chlorophenol (88-06-2)						

Section XVII C: Intake and Effluent Characteristics - Table C Base/Neutral Compounds

	☐ Check for Storm Water only outlet.								
1. POLLUTANT and CAS NO. (If available)	2. SELECT			3. EFFLUENT					
	a. Testing Required	b. Believed Present	c. Believed Absent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS									
1B. Acenaphthene (83-32-9)	☐	○	◉						
2B.Acenaphtylene (208-96-8)	☐	○	◉						
3B.Anthracene (120-12-7)	☐	○	◉						
4B. Benzidine (92-87-5)	☐	○	◉						
5B. Benzo (a) Anthracene (56-55-3)	☐	○	◉						
6B.Benzo(a)Pyrene (50-32-8)	☐	○	◉						
7B. 3,4-Benzo-fluoranthene (205-99-2)	☐	○	◉						
8B. Benzo (ghi) Perylene (191-24-2)	☐	○	◉						
9B. Benzo (k) Fluoranthene (207-08-9)	☐	○	◉						
10B. Bis*(2-Chloro-ethoxy)* Methane (111-91-1)	☐	○	◉						
11B. Bis*(2-Chloro-ethyl)* Ether(111-44-4)	☐	○	◉						
12B. Bis*(2-Chloro-isopropyl)* Ether(39638-32-9)	☐	○	◉						
13B. Bis*(2-Ethyl-hexyl)* Phthalate(117-81-7)	☐	○	◉						
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	☐	○	◉						
15B. Butyl Benzyl Phthalate (85-86-7)	☐	○	◉						
16B. 2-Chloro-naphthalene (91-58-7)	☐	○	◉						
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	☐	○	◉						
18B. Chrysene (218-01-9)	☐	○	◉						
19B. Dibenzo (a,h) Anthracene (53-70-3)	☐	○	◉						
20B. 1,2-Dichloro-benzene(95-50-1)	☐	○	◉						
21B. 1,3-Dichloro-benzene (541-73-1)	☐	○	◉						
22B. 1,4-Dichloro-benzene (106-46-7)	☐	○	◉						

23B. 3,3-Dichloro-benzidine (91-94-1)	☐	○	◉						
24B. Diethyl Phthalate (84-66-2)	☐	○	◉						
25B. Dimethyl Phthalate (131-11-3)	☐	○	◉						
26B. Di-N-Butyl Phthalate (84-74-2)	☐	○	◉						
27B. 2,4-Dinitro-toluene (121-14-2)	☐	○	◉						
28B. 2,6-Dinitro-toluene (206-20-2)	☐	○	◉						
29B. Di-N-Octyl Phthalate (117-84-0)	☐	○	◉						
30B. 1,2-Diphenyl-hydrazine *(as Azo-benzene)*(122-66-7)	☐	○	◉						
31B. Fluoranthene (206-44-0)	☐	○	◉						
32B. Fluorene (86-73-7)	☐	○	◉						
33B. Hexa-chlorobenzene (118-71-1)	☐	○	◉						
34B. Hexa-chlorobutadiene (87-68-3)	☐	○	◉						
35B. Hexachloro-cyclopentadiene (77-47-4)	☐	○	◉						
36B. Hexachloro-ethane (67-72-1)	☐	○	◉						
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)	☐	○	◉						
38B. Isophorone (78-59-1)	☐	○	◉						
39B. Naphthalene (91-20-3)	☐	○	◉						
40B. Nitrobenzene (98-95-3)	☐	○	◉						
41B. N-Nitro-sodimethylamine(62-75-9)	☐	○	◉						
42B. N-Nitrosodi-N-Propylamine (621-64-7)	☐	○	◉						
43B. N-Nitro-sodiphenylamine (86-30-6)	☐	○	◉						
44B. Phenanthrene (85-01-8)	☐	○	◉						
45B. Pyrene (129-00-0)	☐	○	◉						
46B. 1,2,4-Tri-chlorobenzene (120-82-1)	☐	○	◉						

1.POLLUTANT and CAS NO. (If available)	3. EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS						
1B. Acenaphthene (83-32-9)						
2B.Acenaphtylene (208-96-8)						
3B.Anthracene (120-12-7)						
4B. Benzidine (92-87-5)						
5B. Benzo (a) Anthracene (56-55-3)						
6B.Benzo(a)Pyrene (50-32-8)						
7B. 3,4-Benzo-fluoranthene (205-99-2)						
8B. Benzo (ghi) Perylene (191-24-2)						
9B. Benzo (k) Fluoranthene (207-08-9)						
10B. Bis*(2-Chloro-ethoxy)* Methane (111-91-1)						
11B. Bis*(2-Chloro-ethyl)* Ether(111-44-4)						
12B. Bis*(2-Chloro-isopropyl)* Ether(39638-32-9)						
13B. Bis*(2-Ethyl-hexyl)* Phthalate(117-81-7)						
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)						
15B. Butyl Benzyl Phthalate (85-86-7)						
16B. 2-Chloro-naphthalene (91-58-7)						
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)						
18B. Chrysene (218-01-9)						
19B. Dibenzo (a,h) Anthracene (53-70-3)						
20B. 1,2-Dichloro-benzene(95-50-1)						
21B. 1,3-Dichloro-benzene (541-73-1)						
22B. 1,4-Dichloro-benzene (106-46-7)						
23B. 3,3-Dichloro-benzidine (91-94-1)						
24B. Diethyl Phthalate (84-66-2)						
25B. Dimethyl Phthalate (131-11-3)						

26B. Di-N-Butyl Phthalate (84-74-2)						
27B. 2,4-Dinitro-toluene (121-14-2)						
28B. 2,6-Dinitro-toluene (206-20-2)						
29B. Di-N-Octyl Phthalate (117-84-0)						
30B. 1,2-Diphenyl-hydrazine *(as Azo-benzene)*(122-66-7)						
31B. Fluoranthene (206-44-0)						
32B. Fluorene (86-73-7)						
33B. Hexa-chlorobenzene (118-71-1)						
34B. Hexa-chlorobutadiene (87-68-3)						
35B. Hexachloro-cyclopentadiene (77-47-4)						
36B. Hexachloro-ethane (67-72-1)						
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)						
38B. Isophorone (78-59-1)						
39B. Naphthalene (91-20-3)						
40B. Nitrobenzene (98-95-3)						
41B. N-Nitro-sodimethylamine(62-75-9)						
42B. N-Nitrosodi-N-Propylamine (621-64-7)						
43B. N-Nitro-sodiphenylamine (86-30-6)						
44B. Phenanthrene (85-01-8)						
45B. Pyrene (129-00-0)						
46B. 1,2,4-Tri-chlorobenzene (120-82-1)						

Section XVII C: Intake and Effluent Characteristics - Table C Pesticides

☐ Check for Storm Water only outlet.										
1. POLLUTANT and CAS NO. (If available)	2. SELECT			3. EFFLUENT						
	a. Testing Required	b. Believed Present	c. Believed Absent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*		
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS	
GC/MS FRACTION - PESTICIDES										
1P. Aldrin (309-00-2)	☐	○	◉							
2P. -BHC (319-84-6)	☐	○	◉							
3P. -BHC (319-85-7)	☐	○	◉							
4P. -BHC (58-89-9)	☐	○	◉							
5P. -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. -Endosulfan (115-29-7)	☐	○	◉							
12P. -Endosulfan (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)	☐	○	◉							
17P. Heptachlor Epoxide (1024-57-3)	☐	○	◉							
18P. PCB-1242 (53469-21-9)	☐	○	◉							
19P. PCB-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)	☐	○	◉						

1.POLLUTANT and CAS NO. (If available)	3.EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
GC/MS FRACTION - PESTICIDES						
1P. Aldrin (309-00-2)						
2P. -BHC (319-85-7)						
3P. -BHC (319-85-7)						
4P. -BHC (58-89-9)						
5P. -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. -Endosulfan (115-29-7)						
12P. -Endosulfan (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)						
17P. Heptachlor Epoxide (1024-57-3)						
18P. PCB-1242 (53469-21-9)						
19P. PCB-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)						

Section XVII D: Intake and Effluent Characteristics - Part D

☑ Check for no Storm Water.

Part D - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outlet. See instructions for additional details.

Pollutant and CAS Number (if available)	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite		
Oil and Grease						
Biological Oxygen demand (BOD5)						
Chemical Oxygen Demand (COD)						
Total Suspended Solids (TSS)						
Total Kjeldahl Nitrogen						
Nitrite plus Nitrate Nitrogen						
Total Phosphorus						
pH	Minimum		Maximum			

Section XVII E: Intake and Effluent Characteristics - Part E

Part E - List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outlet. See instructions for additional details and requirements.

Pollutant and CAS Number (if available	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite		

Section XVII F: Intake and Effluent Characteristics - Part F

Part F- List each pollutant shown in Table B and C of this application that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outlet.

Pollutant and CAS Number (if available	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite		

Section XVII G: Intake and Effluent Characteristics - Part G

Part G - Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1.Date of Storm Event	2.Duration of Strom (in minutes)	3.Total Rainfall during storm event (in inches)	4.Number of days and/or hours between beginning of storm measured and the end of previous measurable rain event	5.Maximum during rain event (gallons/ minute or specify units)	6.Total flow from rain event (gallons or specify units)	Season sample was taken	Form of Precipitation (rainfall, snowmelt)
10							

9. Provide a description of the method of flow measurement or estimate.

Section XVII H: Intake and Effluent Characteristics - Part H

☑ Check if all believed Absent.

H. Select any of the pollutants listed below, which you know or have reasons to believe is discharged or may be discharged from any outlet. For every pollutant you select, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

	Believed Present	Believed Absent	
Toxic Pollutants			
Asbestos	○	◉	
Hazardous Substances			
Acetaldehyde	○	◉	
Allyl alcohol	○	◉	
Allyl chloride	○	◉	
Amyl acetate	○	◉	
Aniline	○	◉	
Benzonitrile	○	◉	
Benzyl chloride	○	◉	
Butyl acetate	○	◉	
Butylamine	○	◉	
Captan	○	◉	
Carbaryl	○	◉	
Carbofuran	○	◉	
Carbon disulfide	○	◉	
Chlorpyrifos	○	◉	
Coumaphos	○	◉	
Cresol	○	◉	
Crotonaldehyde	○	◉	
Cyclohexane	○	◉	
Strychnine	○	◉	
Cyclohexane	○	◉	

2,4-D(2,4-Dichlorophenoxy acetic acid)	○	◉	
Diazinon	○	◉	
Dicamba	○	◉	
Dichlobenil	○	◉	
Dichlone	○	◉	
2,2-Dichloropropionic acid	○	◉	
Dichlorvos	○	◉	
Diethyl amine	○	◉	
Dimethyl amine	○	◉	
Dinitrobenzene	○	◉	
Diquat	○	◉	
Disulfoton	○	◉	
Diuron	○	◉	
Epichlorohydrin	○	◉	
Ethanolamine	○	◉	
Ethion	○	◉	
Ethylene diamine	○	◉	
Ethylene dibromide	○	◉	
Formaldehyde	○	◉	
Furfural	○	◉	
Guthion	○	◉	
Isoprene	○	◉	
Isopropanolamine	○	◉	
Kelthane	○	◉	
Kepone	○	◉	
Malathion	○	◉	
Mercaptodimethur	○	◉	

Methoxychlor	
Methyl mercaptan	
Methyl methacrylate	
Methyl parathion	
Mevinphos	
Mexacarbate	
Monoethyl amine	
Monomethyl amine	
Naled	
Napthenic acid	
Nitrotoluene	
Parathion	
Phenolsulfanate	
Phosgene	
Propargite	
Propylene oxide	
Pyrethrines	
Quinoline	
Resorcinol	
Strontium	
Strychnine	
Styrene	
2,4,5-T (2,4,5-Trichlorophenoxy acetic acid)	
TDE (Tetrachlorodiphenyl ethane)	
2,4,5-TP (2-(2,4,5-Trichlorophenoxy propanic acid)	
Trichlorofon	

Triethanolamine	○	◉	
Triethylamine	○	◉	
Trimethylamine	○	◉	
Uranium	○	◉	
Vanadium	○	◉	
Vinyl Acetate	○	◉	
Xylene	○	◉	
Xylenol	○	◉	
Zirconium	○	◉	

Section XIII: Outlet Location

XIII. OUTLET LOCATION

For each outlet, list the latitude and longitude to the nearest second, the River Mile Point (if known) and the name of the immediate receiving water. (see instructions)

A.	Outlet Number:	003
B.	Latitude:	38 ° 11 ' 30 "
C.	Longitude:	81 ° 22 ' 14 "
	UTM Zone:	17
	UTM Northing:	
	UTM Easting:	
D.	River Mile Point:	82.8

E. Immediate Receiving Water (include all streams to Major Basin):

☐ Unnamed Tributary of

tributary of	tributary of
tributary of	tributary of

	Major Basin:	Upper Kanawha River
F.	Geospatial Method	Topograhic Map
	Datum:	NAD27
G.	Actual Average Flow	150000 GPD (Gallons Per Day)

Section XVII A: Intake and Effluent Characteristics - Table A

TABLE A. You must provide the results of at least one analysis for every pollutant in this table. See instructions for additional details.

☐ Check for Storm Water only outlet.

1.POLLUTANT	2.EFFLUENT						
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*		d. No.OF ANALYSES
	(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS	
a. Biochemical Oxygen Demand (BOD)	ND	ND	ND				1
b. Chemical Oxygen Demand	54.4	0.36136	54.4				1
c. Total Organic Carbon (TOC)	3.05	0.02026	3.05				1
d. Total Suspended Solids (TSS)	345	2.29172	345				1
e. Ammonia *(as N)*	0.0335	0.00022	0.0335				1
f. Flow	VALUE	0.22	VALUE	0.22	VALUE	0.15	35
g. Temperature *(winter)*	VALUE	66	VALUE	66	VALUE	56.4	35
g. Temperature *(summer)*	VALUE	84	VALUE	84	VALUE	75.7	35
i. pH	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM			1
	7.02	7.02	7.02	7.02			

1.POLLUTANT	3.UNITS *(specify if blank)*		4.INTAKE *(optional)*		
	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No.OF ANALYSES
			(1) CONC	(2) MASS	
a. Biochemical Oxygen Demand (BOD)	mg/l	kg/day			
b. Chemical Oxygen Demand	mg/l	kg/day	5.14		
c. Total Organic Carbon (TOC)	mg/l	kg/day	1.43		
d. Total Suspended Solids (TSS)	mg/l	kg/day	9.00		
e. Ammonia *(as N)*	mg/l	kg/day	0.0330		
f. Flow	mg/l	kg/day	VALUE		
g. Temperature *(winter)*	mg/l	kg/day	VALUE		
g. Temperature *(summer)*	mg/l	kg/day	VALUE		
i. pH	STANDARD UNITS				

Section XVII B: Intake and Effluent Characteristics - Table B

TABLE B - Select column 2-a for each pollutant you know or have reason to believe is present. Select column 2-b for each pollutant you believe to be absent. If you mark column 2-a for any pollutant, you must provide the results of at least one analysis for that pollutant. Each pollutant has four items (numbered 2-4) which are required to be filled out if "Believed Present" is selected. It should noted that Item 5 is optional. See instructions for additional details and requirements.

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (If available)	2. SELECT a or b		3. EFFLUENT						
	a. Believed Present	b. Believed Absent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*		d. No. OF ANALYSES
			(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS	
a. Bromide (24959-67-9)	○	◉							
b. Chloride	○	◉							
c. Chloride Residual	○	◉							
d. Color	○	◉							
e. Fecal Coliform	○	◉							
f. Fluoride (16984-48-8)	○	◉							
g. Nitrate-Nitrite*(as N)*	◉	○	0.480	0.00319	0.480	0.00319	0.480	0.00319	1
h. Nitrogen, Total Organic *(as N)*	◉	○	12.4	0.08237	12.4	0.08237	12.4	0.08237	1
i. Oil and Grease	◉	○	2.40	0.01594	2.40	0.01594	2.40	0.01594	1
j. Phosphorus *(as P)*, Total (7723-14-0)	◉	○	0.0655	0.00044	0.0655	0.00044	0.0655	0.00044	1
k. Radioactivity									
(1) Alpha, Total	○	◉							
(2) Beta, Total	○	◉							
(3) Radium, Total	○	◉							
(4) Radium 226, Total	○	◉							
l. Sulfate*(as SO_4)* (14808-79-8)	○	◉							
m. Sulfide *(as S)*	○	◉							
n. Sulfite*(as SO_3)* (14265-45-3)	○	◉							

o. Surfactants	○	●							
p. Aluminum, Total (7429-90-5)	●	○	3.99	0.02650	3.99	0.02650	3.99	0.02650	1
q. Barium, Total (7440-39-3)	●	○	0.00254	0.00002	0.00254	0.00002	0.00254	0.00002	1
r. Boron, Total (7440-42-8)	○	●							
s. Cobalt, Total (7440-48-4)	●	○	0.00920	0.00006	0.00920	0.00006	0.00920	0.00006	1
t. Iron, Total (7439-89-6)	●	○	8.47	0.05626	8.47	0.05626	8.47	0.05626	1
u. Magnesium, Total (7439-95-4)	●	○	6.59	0.04378	6.59	0.04378	6.59	0.04378	1
v. Molybdenum Total (7439-98-7)	○	●							
w. Manganese, Total (7439-96-5)	●	○	0.728	0.00484	0.728	0.00484	0.728	0.00484	1
x. Tin, Total (7440-31-5)	●	○	0.00167	0.00001	0.00167	0.00001	0.00167	0.00001	1
y. Titanium, Total (7440-32-6)	●	○	0.0722	0.00048	0.0722	0.00048	0.0722	0.00048	1

1.POLLUTANT and CAS NO. (If available)	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
			(1) CONC	(2) MASS	
a. Bromide (24959-67-9)					
b. Chloride					
c. Chloride Residual					
d. Color					
e. Fecal Coliform					
f. Fluoride (16984-48-8)					
g. Nitrate-Nitrite *(as N)*	mg/l	kg/day	0.503		
h. Nitrogen, Total Organic *(as N)*	mg/l	kg/day	ND		
i. Oil and Grease					
j. Phosphorus *(as P)*, Total (7723-14-0)	mg/l	kg/day	ND		
k. Radioactivity					
(1) Alpha, Total					
(2) Beta, Total					
(3) Radium, Total					
(4) Radium 226, Total					
l. Sulfate *(as SO_4)* (14808-79-8)					
m. Sulfide *(as S)*					
n. Sulfite *(as SO_3)* (14265-45-3)					
o. Surfactants					
p. Aluminum, Total (7429-90-5)	mg/l	kg/day	0.312		
q. Barium, Total (7440-39-3)	mg/l	kg/day	0.0295		
r. Boron, Total (7440-42-8)	mg/l	kg/day	ND		
s. Cobalt, Total (7440-48-4)	mg/l	kg/day	0.000396		
t. Iron, Total (7439-89-6)	mg/l	kg/day	0.469		
u. Magnesium, Total (7439-95-4)	mg/l	kg/day	5.43		
v. Molybdenum Total (7439-98-7)					
w. Manganese, Total (7439-96-5)	mg/l	kg/day	0.0353		
x. Tin, Total (7440-31-5)	mg/l	kg/day	ND		
y. Titanium, Total (7440-32-6)	mg/l	kg/day	0.00810		

<u>Section XVII C: Intake and Effluent Characteristics - Table C Metals</u>

☐ Check for Storm Water only outlet.

TABLE C - If you are a primary industry and this outlet contains process wastewater, refer to Table 2 in the instructions to determine which of the GC/MS fractions you must test for. Select column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (secondary industries, non-process wastewater outlet, and non-required GC/MS fractions) select column 2-b for each pollutant you know or have reason to believe is present. Select column 2-c for each pollutant you believe to be absent. If you Select either column 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. Each pollutant has four items (numbered 2-4) which are required to be filled out if "Testing Required" or "Believed Present" is selected. It should noted that Item 5 is optional. See instructions for additional details and requirements.

1. POLLUTANT and CAS NO. (If available)	2. Select			3. EFFLUENT					
	a. Testing Required	b. Believed Present	c. Believed Absent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
METALS, CYANIDE, AND TOTAL PHENOLS									
1M. Antimony, Total(7440-38-2)	☐	○	●						
2M. Arsenic, Total(7440-38-2)	☐	●	○	0.00254	0.00002	0.00254	0.00002	0.00254	0.00002
3M.Beryllium, Total (74440-41-7)	☐	●	○	0.000706	0.00000	0.000706	0.00000	0.000706	0.00000
4M. Cadmium, Total(7440-43-9)	☐	●	○	0.000183	0.00000	0.000183	0.00000	0.000183	0.00000
5M.Chromium, Total(7440-47-3)	☐	●	○	0.00587	0.00004	0.00587	0.00004	0.00587	0.00004
6M. Copper, Total(7550-50-8)	☐	●	○	0.0406	0.00027	0.0406	0.00027	0.0406	0.00027
7M. Lead, Total (7439-97-6)	☐	●	○	0.0121	0.00008	0.0121	0.00008	0.0121	0.00008
8M. Mercury, Total(7439-97-8)	☐	○	●						
9M. Nickel, Total(7440-02-0)	☐	●	○	0.0158	0.00010	0.0158	0.00010	0.0158	0.00010
10M. Selenium, Total(7782-49-2)	☐	●	○	0.00111	0.00001	0.00111	0.00001	0.00111	0.00001
11M. Silver, Total(7440-22-4)	☐	○	●						
12M. Thallium, Total(7440-28-0)	☐	○	●						
13M. Zinc, Total(7440-66-6)	☐	●	○	0.0662	0.00044	0.0662	0.00044	0.0662	0.00044
14M. Cyanide, Total(57-12-5)	☐	○	●						
15M. Phenols, Total	☐	○	●						
DIOXIN									
2,3,7,8-tetra-chlorobibenzo-P-Dioxin (1764-01-6)	☐	○	●	DESCRIBE RESULTS					

TABLE C -

1.POLLUTANT and CAS NO. (If available)	3. EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
1M. Antimony, Total(7440-38-2)						
2M. Arsenic, Total(7440-38-2)	1	mg/l	kg/day	0.000359		
3M.Beryllium, Total (74440-41-7)	1	mg/l	kg/day	ND		
4M. Cadmium, Total(7440-43-9)	1	mg/l	kg/day	ND		
5M.Chromium, Total(7440-47-3)	1	mg/l	kg/day	0.00137		
6M. Copper, Total(7550-50-8)	1	mg/l	kg/day	0.00136		
7M. Lead, Total (7439-97-6)	1	mg/l	kg/day	0.000598		
8M. Mercury, Total(7439-97-8)						
9M. Nickel, Total(7440-02-0)	1	mg/l	kg/day	0.00125		
10M. Selenium, Total(7782-49-2)	1	mg/l	kg/day			
11M. Silver, Total(7440-22-4)						
12M. Thallium, Total(7440-28-0)						
13M. Zinc, Total(7440-66-6)	1	mg/l	kg/day	0.00770		
14M. Cyanide, Total(57-12-5)						
15M. Phenols, Total						

Section XVII C: Intake and Effluent Characteristics - Table C Volatile Compounds

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (If available)	2. Select			3. EFFLUENT					
	a. Testing Required	b. Believed Present	c. Believed Absent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
GC/MS FRACTION - VOLATILE COMPOUNDS									
1V. Acrolein (107-02-8)	☐	○	◉						
2V. Acrylonitrile (107-13-1)	☐	○	◉						
3V. Benzene (71-43-2)	☐	○	◉						
4V. Bromoform (75-25-2)	☐	○	◉						
5V. Carbon Tetrachloride (56-23-5)	☐	○	◉						
6V. Chlorobenzene (108-90-7)	☐	○	◉						
7V. Chlorodi-bromomethene (124-48-1)	☐	○	◉						
8V. Chloroethane (75-00-3)	☐	○	◉						
9V. 2-Chloro-ethylvinyl Ether (110-75-8)	☐	○	◉						
10V. Chloroform (67-66-3)	☐	○	◉						
11V. Dichloro-bromomethane (75-27-4)	☐	○	◉						
12V. 1,1-Dichloro-ethane (75-34-3)	☐	○	◉						
13V. 1,2- Dichloro-ethane (107-06-2)	☐	○	◉						
14V. 1,1-Dichloro-ethylene (75-35-4)	☐	○	◉						
15V. 1,2-Dichloro-propane (78-87-5)	☐	○	◉						
16V. 1,3-Dichloro-propylene (542-75-6)	☐	○	◉						
17V. Ethylbenzene (100-41-4)	☐	○	◉						
18V. Methyl Bromide (74-83-9)	☐	○	◉						
19V. Methyl Chloride (74-87-3)	☐	○	◉						
20V. Methylene Chloride (75-09-2)	☐	○	◉						

21V. 1,1,2,2-Tetra-chloroethane (79-34-5)	☐	○	◉							
22V. Tetrachloro-ethylene(127-18-4)	☐	○	◉							
23V. Toluene (108-88-3)	☐	○	◉							
24V. 1,2-Trans-Dichloroethylene (156-60-5)	☐	○	◉							
25V. 1,1,1-Tri-chloroethane (71-55-6)	☐	○	◉							
26V. 1,1,2-Tri-chloroethane (79-00-5)	☐	○	◉							
27V. Trichloro-ethylene(79-01-61)	☐	○	◉							
28V. Vinyl Chloride(75-01-4)	☐	○	◉							

1.POLLUTANT and CAS NO. (If available)	3.EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS						
1V. Acrolein (107-02-8)						
2V. Acrylonitrile (107-13-1)						
3V. Benzene (71-43-2)						
4V. Bromoform (75-25-2)						
5V. Carbon Tetrachloride (56-23-5)						
6V. Chlorobenzene (108-90-7)						
7V. Chlorodi-bromomethene (124-48-1)						
8V. Chlroethane (75-00-3)						
9V. 2-Chloro-ethylvinyl Ether (110-75-8)						
10V. Chloroform (67-66-3)						
11V. Dichloro-bromomethane (75-27-4)						
12V. 1,1-Dichloro-ethane (75-34-3)						
13V. 1,2- Dichloro-ethane (107-06-2)						
14V. 1,1-Dichloro-ethylene (75-35-4)						
15V. 1,2-Dichloro-propane (78-87-5)						
16V. 1,3-Dichloro-propylene (542-75-6)						
17V. Ethylbenzene (100-41-4)						
18V. Methyl Bromide (74-83-9)						
19V. Methyl Chloride (74-87-3)						
20V. Methylene Chloride (75-09-2)						
21V. 1,1,2,2-Tetra-chloroethane (79-34-5)						
22V. Tetrachloro-ethylene(127-18-4)						

23V. Toluene (108-88-3)						
24V. 1,2-Trans-Dichloroethylene (156-60-5)						
25V. 1,1,1-Tri-chloroethane (71-55-6)						
26V. 1,1,2-Tri-chloroethane (79-00-5)						
27V. Trichloro-ethylene(79-01-61)						
28V. Vinyl Chloride(75-01-4)						

Section XVII C: Intake and Effluent Characteristics - Table C Acid Compounds

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (If available)	2. SELECT			3. EFFLUENT					
	a. Tes-ting Req-uired	b. Beli-eved Pre-sent	c. Beli-eved Abs-ent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
GC/MS FRACTION - ACID COMPOUNDS									
1A. 2-Chlorophenol (95-57-8)	☐	○	◉						
2A. 2,4-Dichloro-phenol (120-83-2)	☐	○	◉						
3A. 2,4-Dimethyl-phenol (105-67-9)	☐	○	◉						
4A. 4,6-Dinitro-O-Cresol (534-52-1)	☐	○	◉						
5A. 2,4-Dinitro-phenol (51-28-5)	☐	○	◉						
6A. 2-Nitro-phenol (88-75-5)	☐	○	◉						
7A. 4-Nitro-phenol (100-02-7)	☐	○	◉						
8A. P-Chloro-M-Cresol (59-50-7)	☐	○	◉						
9A. Pentachloro-phenol (87-86-5)	☐	○	◉						
10A. Phenol (108-95-2)	☐	○	◉						
11A. 2,4,6-Tri-chlorophenol (88-06-2)	☐	○	◉						

1.POLLUTANT and CAS NO. (If available)	3.EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
GC/MS FRACTION - ACID COMPOUNDS						
1A. 2-Chlorophenol (95-57-8)						
2A. 2,4-Dichloro-phenol (120-83-2)						
3A. 2,4-Dimethyl-phenol (105-67-9)						
4A. 4,6-Dinitro-O-Cresol (534-52-1)						
5A. 2,4-Dinitro-phenol (51-28-5)						
6A. 2-Nitro-phenol (88-75-5)						
7A. 4-Nitro-phenol (100-02-7)						
8A. P-Chloro-M-Cresol (59-50-7)						
9A. Pentachloro-phenol (87-86-5)						
10A. Phenol (108-95-2)						
11A. 2,4,6-Tri-chlorophenol (88-06-2)						

Section XVII C: Intake and Effluent Characteristics - Table C Base/Neutral Compounds

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (If available)	2. SELECT a. Testing Required	2. SELECT b. Believed Present	2. SELECT c. Believed Absent	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONC	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONC	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVG. VALUE *(if available)* (1) CONC	c. LONG TERM AVG. VALUE *(if available)* (2) MASS
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS									
1B. Acenaphthene (83-32-9)	☐	○	◉						
2B.Acenaphtylene (208-96-8)	☐	○	◉						
3B.Anthracene (120-12-7)	☐	○	◉						
4B. Benzidine (92-87-5)	☐	○	◉						
5B. Benzo (a) Anthracene (56-55-3)	☐	○	◉						
6B.Benzo(a)Pyrene (50-32-8)	☐	○	◉						
7B. 3,4-Benzo-fluoranthene (205-99-2)	☐	○	◉						
8B. Benzo (ghi) Perylene (191-24-2)	☐	○	◉						
9B. Benzo (k) Fluoranthene (207-08-9)	☐	○	◉						
10B. Bis*(2-Chloro-ethoxy)* Methane (111-91-1)	☐	○	◉						
11B. Bis*(2-Chloro-ethyl)* Ether(111-44-4)	☐	○	◉						
12B. Bis*(2-Chloro-isopropyl)* Ether(39638-32-9)	☐	○	◉						
13B. Bis*(2-Ethyl-hexyl)* Phthalate(117-81-7)	☐	○	◉						
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	☐	○	◉						
15B. Butyl Benzyl Phthalate (85-86-7)	☐	○	◉						
16B. 2-Chloro-naphthalene (91-58-7)	☐	○	◉						
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	☐	○	◉						
18B. Chrysene (218-01-9)	☐	○	◉						
19B. Dibenzo (a,h) Anthracene (53-70-3)	☐	○	◉						
20B. 1,2-Dichloro-benzene(95-50-1)	☐	○	◉						
21B. 1,3-Dichloro-benzene (541-73-1)	☐	○	◉						
22B. 1,4-Dichloro-benzene (106-46-7)	☐	○	◉						

23B. 3,3-Dichloro-benzidine (91-94-1)	☐	○	◉						
24B. Diethyl Phthalate (84-66-2)	☐	○	◉						
25B. Dimethyl Phthalate (131-11-3)	☐	○	◉						
26B. Di-N-Butyl Phthalate (84-74-2)	☐	○	◉						
27B. 2,4-Dinitro-toluene (121-14-2)	☐	○	◉						
28B. 2,6-Dinitro-toluene (206-20-2)	☐	○	◉						
29B. Di-N-Octyl Phthalate (117-84-0)	☐	○	◉						
30B. 1,2-Diphenyl-hydrazine *(as Azo-benzene)*(122-66-7)	☐	○	◉						
31B. Fluoranthene (206-44-0)	☐	○	◉						
32B. Fluorene (86-73-7)	☐	○	◉						
33B. Hexa-chlorobenzene (118-71-1)	☐	○	◉						
34B. Hexa-chlorobutadiene (87-68-3)	☐	○	◉						
35B. Hexachloro-cyclopentadiene (77-47-4)	☐	○	◉						
36B. Hexachloro-ethane (67-72-1)	☐	○	◉						
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)	☐	○	◉						
38B. Isophorone (78-59-1)	☐	○	◉						
39B. Naphthalene (91-20-3)	☐	○	◉						
40B. Nitrobenzene (98-95-3)	☐	○	◉						
41B. N-Nitro-sodimethylamine(62-75-9)	☐	○	◉						
42B. N-Nitrosodi-N-Propylamine (621-64-7)	☐	○	◉						
43B. N-Nitro-sodiphenylamine (86-30-6)	☐	○	◉						
44B. Phenanthrene (85-01-8)	☐	○	◉						
45B. Pyrene (129-00-0)	☐	○	◉						
46B. 1,2,4-Tri-chlorobenzene (120-82-1)	☐	○	◉						

1.POLLUTANT and CAS NO. (If available)	3. EFFLUENT d. No. OF ANALYSES	4.UNITS *(specify if blank)* a. CONC	b. MASS	5.INTAKE *(optional)* a. LONG TERM AVG. VALUE (1) CONC	(2) MASS	b. No. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS						
1B. Acenaphthene (83-32-9)						
2B.Acenaphtylene (208-96-8)						
3B.Anthracene (120-12-7)						
4B. Benzidine (92-87-5)						
5B. Benzo (a) Anthracene (56-55-3)						
6B.Benzo(a)Pyrene (50-32-8)						
7B. 3,4-Benzo-fluoranthene (205-99-2)						
8B. Benzo (ghi) Perylene (191-24-2)						
9B. Benzo (k) Fluoranthene (207-08-9)						
10B. Bis*(2-Chloro-ethoxy)* Methane (111-91-1)						
11B. Bis*(2-Chloro-ethyl)* Ether(111-44-4)						
12B. Bis*(2-Chloro-isopropyl)* Ether(39638-32-9)						
13B. Bis*(2-Ethyl-hexyl)* Phthalate(117-81-7)						
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)						
15B. Butyl Benzyl Phthalate (85-86-7)						
16B. 2-Chloro-naphthalene (91-58-7)						
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)						
18B. Chrysene (218-01-9)						
19B. Dibenzo (a,h) Anthracene (53-70-3)						
20B. 1,2-Dichloro-benzene(95-50-1)						
21B. 1,3-Dichloro-benzene (541-73-1)						
22B. 1,4-Dichloro-benzene (106-46-7)						
23B. 3,3-Dichloro-benzidine (91-94-1)						
24B. Diethyl Phthalate (84-66-2)						
25B. Dimethyl Phthalate (131-11-3)						

26B. Di-N-Butyl Phthalate (84-74-2)						
27B. 2,4-Dinitro-toluene (121-14-2)						
28B. 2,6-Dinitro-toluene (206-20-2)						
29B. Di-N-Octyl Phthalate (117-84-0)						
30B. 1,2-Diphenyl-hydrazine *(as Azo-benzene)*(122-66-7)						
31B. Fluoranthene (206-44-0)						
32B. Fluorene (86-73-7)						
33B. Hexa-chlorobenzene (118-71-1)						
34B. Hexa-chlorobutadiene (87-68-3)						
35B. Hexachloro-cyclopentadiene (77-47-4)						
36B. Hexachloro-ethane (67-72-1)						
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)						
38B. Isophorone (78-59-1)						
39B. Naphthalene (91-20-3)						
40B. Nitrobenzene (98-95-3)						
41B. N-Nitro-sodimethylamine(62-75-9)						
42B. N-Nitrosodi-N-Propylamine (621-64-7)						
43B. N-Nitro-sodiphenylamine (86-30-6)						
44B. Phenanthrene (85-01-8)						
45B. Pyrene (129-00-0)						
46B. 1,2,4-Tri-chlorobenzene (120-82-1)						

Section XVII C: Intake and Effluent Characteristics - Table C Pesticides

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (If available)	2. SELECT			3. EFFLUENT					
	a. Testing Required	b. Believed Present	c. Believed Absent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
GC/MS FRACTION - PESTICIDES									
1P. Aldrin (309-00-2)	☐	○	◉						
2P. -BHC (319-84-6)	☐	○	◉						
3P. -BHC (319-85-7)	☐	○	◉						
4P. -BHC (58-89-9)	☐	○	◉						
5P. -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. -Endosulfan (115-29-7)	☐	○	◉						
12P. -Endosulfan (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)	☐	○	◉						
17P. Heptachlor Epoxide (1024-57-3)	☐	○	◉						
18P. PCB-1242 (53469-21-9)	☐	○	◉						
19P. PCB-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)									

1.POLLUTANT and CAS NO. (If available)	3.EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
GC/MS FRACTION - PESTICIDES						
1P. Aldrin (309-00-2)						
2P. -BHC (319-85-7)						
3P. -BHC (319-85-7)						
4P. -BHC (58-89-9)						
5P. -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. -Endosulfan (115-29-7)						
12P. -Endosulfan (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)						
17P. Heptachlor Epoxide (1024-57-3)						
18P. PCB-1242 (53469-21-9)						
19P. PCB-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)						

Section XVII D: Intake and Effluent Characteristics - Part D

☑ Check for no Storm Water.

Part D - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outlet. See instructions for additional details.

Pollutant and CAS Number (if available)	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite		
Oil and Grease						
Biological Oxygen demand (BOD5)						
Chemical Oxygen Demand (COD)						
Total Suspended Solids (TSS)						
Total Kjeldahl Nitrogen						
Nitrite plus Nitrate Nitrogen						
Total Phosphorus						
pH	Minimum		Maximum			

Section XVII E: Intake and Effluent Characteristics - Part E

Part E - List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outlet. See instructions for additional details and requirements.

Pollutant and CAS Number (if available	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite		

Section XVII F: Intake and Effluent Characteristics - Part F

Part F- List each pollutant shown in Table B and C of this application that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outlet.

Pollutant and CAS Number (if available	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite		

Section XVII G: Intake and Effluent Characteristics - Part G

Part G - Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1.Date of Storm Event	2.Duration of Strom (in minutes)	3.Total Rainfall during storm event (in inches)	4.Number of days and/or hours between beginning of storm measured and the end of previous measurable rain event	5.Maximum during rain event (gallons/ minute or specify units)	6.Total flow from rain event (gallons or specify units)	Season sample was taken	Form of Precipitation (rainfall, snowmelt)

9. Provide a description of the method of flow measurement or estimate.

Section XVII H: Intake and Effluent Characteristics - Part H

☑ Check if all believed Absent.

H. Select any of the pollutants listed below, which you know or have reasons to believe is discharged or may be discharged from any outlet. For every pollutant you select, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

	Believed Present	Believed Absent	
Toxic Pollutants			
Asbestos	○	◉	
Hazardous Substances			
Acetaldehyde	○	◉	
Allyl alcohol	○	◉	
Allyl chloride	○	◉	
Amyl acetate	○	◉	
Aniline	○	◉	
Benzonitrile	○	◉	
Benzyl chloride	○	◉	
Butyl acetate	○	◉	
Butylamine	○	◉	
Captan	○	◉	
Carbaryl	○	◉	
Carbofuran	○	◉	
Carbon disulfide	○	◉	
Chlorpyrifos	○	◉	
Coumaphos	○	◉	
Cresol	○	◉	
Crotonaldehyde	○	◉	
Cyclohexane	○	◉	
Strychnine	○	◉	
Cyclohexane	○	◉	

2,4-D(2,4-Dichlorophenoxy acetic acid)	○	◉	
Diazinon	○	◉	
Dicamba	○	◉	
Dichlobenil	○	◉	
Dichlone	○	◉	
2,2-Dichloropropionic acid	○	◉	
Dichlorvos	○	◉	
Diethyl amine	○	◉	
Dimethyl amine	○	◉	
Dinitrobenzene	○	◉	
Diquat	○	◉	
Disulfoton	○	◉	
Diuron	○	◉	
Epichlorohydrin	○	◉	
Ethanolamine	○	◉	
Ethion	○	◉	
Ethylene diamine	○	◉	
Ethylene dibromide	○	◉	
Formaldehyde	○	◉	
Furfural	○	◉	
Guthion	○	◉	
Isoprene	○	◉	
Isopropanolamine	○	◉	
Kelthane	○	◉	
Kepone	○	◉	
Malathion	○	◉	
Mercaptodimethur	○	◉	

Methoxychlor	○	◉	
Methyl mercaptan	○	◉	
Methyl methacrylate	○	◉	
Methyl parathion	○	◉	
Mevinphos	○	◉	
Mexacarbate	○	◉	
Monoethyl amine	○	◉	
Monomethyl amine	○	◉	
Naled	○	◉	
Napthenic acid	○	◉	
Nitrotoluene	○	◉	
Parathion	○	◉	
Phenolsulfanate	○	◉	
Phosgene	○	◉	
Propargite	○	◉	
Propylene oxide	○	◉	
Pyrethrines	○	◉	
Quinoline	○	◉	
Resorcinol	○	◉	
Strontium	○	◉	
Strychnine	○	◉	
Styrene	○	◉	
2,4,5-T (2,4,5-Trichlorophenoxy acetic acid)	○	◉	
TDE (Tetrachlorodiphenyl ethane)	○	◉	
2,4,5-TP (2-(2,4,5-Trichlorophenoxy propanic acid)	○	◉	
Trichlorofon	○	◉	

Triethanolamine	○	◉	
Triethylamine	○	◉	
Trimethylamine	○	◉	
Uranium	○	◉	
Vanadium	○	◉	
Vinyl Acetate	○	◉	
Xylene	○	◉	
Xylenol	○	◉	
Zirconium	○	◉	

Section XIII: Outlet Location

XIII. OUTLET LOCATION

For each outlet, list the latitude and longitude to the nearest second, the River Mile Point (if known) and the name of the immediate receiving water. (see instructions)

A.	Outlet Number:	008
B.	Latitude:	38 ° 11 ' 29 "
C.	Longitude:	81 ° 22 ' 14 "
	UTM Zone:	17
	UTM Northing:	
	UTM Easting:	
D.	River Mile Point:	82.8

E. Immediate Receiving Water (include all streams to Major Basin):

☐ Unnamed Tributary of

tributary of	tributary of
tributary of	tributary of

	Major Basin:	Upper Kanawha River
F.	Geospatial Method	Topograhic Map
	Datum:	NAD27
G.	Actual Average Flow	0 GPD (Gallons Per Day)

Section XVII A: Intake and Effluent Characteristics - Table A

TABLE A. You must provide the results of at least one analysis for every pollutant in this table. See instructions for additional details.

	Check for Storm Water only outlet.						
1.POLLUTANT	2.EFFLUENT						
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*		d. No.OF ANALYSES
	(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS	
a. Biochemical Oxygen Demand (BOD)	-	-	-				-
b. Chemical Oxygen Demand	-	-	-				-
c. Total Organic Carbon (TOC)	-	-	-				-
d. Total Suspended Solids (TSS)	-	-	-				-
e. Ammonia *(as N)*	-	-	-				-
f. Flow	VALUE		VALUE		VALUE		-
g. Temperature *(winter)*	VALUE		VALUE		VALUE		-
g. Temperature *(summer)*	VALUE		VALUE		VALUE		-
i. pH	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM			-
	-	-	-	-			

1.POLLUTANT	3.UNITS *(specify if blank)*		4.INTAKE *(optional)*		
	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No.OF ANALYSES
			(1) CONC	(2) MASS	
a. Biochemical Oxygen Demand (BOD)	-	-			
b. Chemical Oxygen Demand	-	-			
c. Total Organic Carbon (TOC)	-	-			
d. Total Suspended Solids (TSS)	-	-			
e. Ammonia *(as N)*	-	-			
f. Flow	-	-	VALUE		
g. Temperature *(winter)*	-	-	VALUE		
g. Temperature *(summer)*	--	-	VALUE		
i. pH	STANDARD UNITS				

Section XVII B: Intake and Effluent Characteristics - Table B

TABLE B - Select column 2-a for each pollutant you know or have reason to believe is present. Select column 2-b for each pollutant you believe to be absent. If you mark column 2-a for any pollutant, you must provide the results of at least one analysis for that pollutant. Each pollutant has four items (numbered 2-4) which are required to be filled out if "Believed Present" is selected. It should noted that Item 5 is optional. See instructions for additional details and requirements.

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (If available)	2. SELECT a or b		3. EFFLUENT						
	a. Beli-eved Pre-sent	b. Beli-eved Abs-ent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*		d. No. OF ANALYS-ES
			(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS	
a. Bromide (24959-67-9)	○	◉							
b. Chloride	○	◉							
c. Chloride Residual	○	◉							
d. Color	○	◉							
e. Fecal Coliform	○	◉							
f. Fluoride (16984-48-8)	○	◉							
g. Nitrate-Nitrite*(as N)*	○	◉							
h. Nitrogen, Total Organic *(as N)*	○	◉							
i. Oil and Grease	○	◉							
j. Phosphorus *(as P)*, Total (7723-14-0)	○	◉							
k. Radioactivity									
(1) Alpha, Total	○	◉							
(2) Beta, Total	○	◉							
(3) Radium, Total	○	◉							
(4) Radium 226, Total	○	◉							
l. Sulfate*(as SO_4)* (14808-79-8)	○	◉							
m. Sulfide *(as S)*	○	◉							
n. Sulfite*(as SO_3)* (14265-45-3)	○	◉							

o. Surfactants	○	◉							
p. Aluminum, Total (7429-90-5)	○	◉							
q. Barium, Total (7440-39-3)	○	◉							
r. Boron, Total (7440-42-8)	○	◉							
s. Cobalt, Total (7440-48-4)	○	◉							
t. Iron, Total (7439-89-6)	○	◉							
u. Magnesium, Total (7439-95-4)	○	◉							
v. Molybdenum Total (7439-98-7)	○	◉							
w. Manganese, Total (7439-96-5)	○	◉							
x. Tin, Total (7440-31-5)	○	◉							
y. Titanium, Total (7440-32-6)	○	◉							

1.POLLUTANT and CAS NO. (If available)	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
			(1) CONC	(2) MASS	
a. Bromide (24959-67-9)					
b. Chloride					
c. Chloride Residual					
d. Color					
e. Fecal Coliform					
f. Fluoride (16984-48-8)					
g. Nitrate-Nitrite *(as N)*					
h. Nitrogen, Total Organic *(as N)*					
i. Oil and Grease					
j. Phosphorus *(as P)*, Total (7723-14-0)					
k. Radioactivity					
(1) Alpha, Total					
(2) Beta, Total					
(3) Radium, Total					
(4) Radium 226, Total					
l. Sulfate *(as SO_4)* (14808-79-8)					
m. Sulfide *(as S)*					
n. Sulfite *(as SO_3)* (14265-45-3)					
o. Surfactants					
p. Aluminum, Total (7429-90-5)					
q. Barium, Total (7440-39-3)					
r. Boron, Total (7440-42-8)					
s. Cobalt, Total (7440-48-4)					
t. Iron, Total (7439-89-6)					
u. Magnesium, Total (7439-95-4)					
v. Molybdenum Total (7439-98-7)					
w. Manganese, Total (7439-96-5)					
x. Tin, Total (7440-31-5)					
y. Titanium, Total (7440-32-6)					

Section XVII C: Intake and Effluent Characteristics - Table C Metals

☐ Check for Storm Water only outlet.

TABLE C - If you are a primary industry and this outlet contains process wastewater, refer to Table 2 in the instructions to determine which of the GC/MS fractions you must test for. Select column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (secondary industries, non-process wastewater outlet, and non-required GC/MS fractions) select column 2-b for each pollutant you know or have reason to believe is present. Select column 2-c for each pollutant you believe to be absent. If you Select either column 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. Each pollutant has four items (numbered 2-4) which are required to be filled out if "Testing Required" or "Believed Present" is selected. It should noted that Item 5 is optional. See instructions for additional details and requirements.

1. POLLUTANT and CAS NO. (If available)	2. Select			3. EFFLUENT					
	a. Testing Required	b. Believed Present	c. Believed Absent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
METALS, CYANIDE, AND TOTAL PHENOLS									
1M. Antimony, Total(7440-38-2)	☐	○	◉						
2M. Arsenic, Total(7440-38-2)	☐	○	◉						
3M.Beryllium, Total (74440-41-7)	☐	○	◉						
4M. Cadmium, Total(7440-43-9)	☐	○	◉						
5M.Chromium, Total(7440-47-3)	☐	○	◉						
6M. Copper, Total(7550-50-8)	☐	○	◉						
7M. Lead, Total (7439-97-6)	☐	○	◉						
8M. Mercury, Total(7439-97-8)	☐	○	◉						
9M. Nickel, Total(7440-02-0)	☐	○	◉						
10M. Selenium, Total(7782-49-2)	☐	○	◉						
11M. Silver, Total(7440-22-4)	☐	○	◉						
12M. Thallium, Total(7440-28-0)	☐	○	◉						
13M. Zinc, Total(7440-66-6)	☐	○	◉						
14M. Cyanide, Total(57-12-5)	☐	○	◉						
15M. Phenols, Total	☐	○	◉						
DIOXIN									
2,3,7,8-tetra-chlorobibenzo-P-Dioxin (1764-01-6)	☐	○	◉	DESCRIBE RESULTS					

TABLE C -						
1.POLLUTANT and CAS NO. (If available)	3. EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
1M. Antimony, Total(7440-38-2)						
2M. Arsenic, Total(7440-38-2)						
3M.Beryllium, Total (74440-41-7)						
4M. Cadmium, Total(7440-43-9)						
5M.Chromium, Total(7440-47-3)						
6M. Copper, Total(7550-50-8)						
7M. Lead, Total (7439-97-6)						
8M. Mercury, Total(7439-97-8)						
9M. Nickel, Total(7440-02-0)						
10M. Selenium, Total(7782-49-2)						
11M. Silver, Total(7440-22-4)						
12M. Thallium, Total(7440-28-0)						
13M. Zinc, Total(7440-66-6)						
14M. Cyanide, Total(57-12-5)						
15M. Phenols, Total						

Section XVII C: Intake and Effluent Characteristics - Table C Volatile Compounds

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (If available)	2. Select			3. EFFLUENT					
	a. Testing Required	b. Believed Present	c. Believed Absent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
GC/MS FRACTION - VOLATILE COMPOUNDS									
1V. Acrolein (107-02-8)	☐	○	◉						
2V. Acrylonitrile (107-13-1)	☐	○	◉						
3V. Benzene (71-43-2)	☐	○	◉						
4V. Bromoform (75-25-2)	☐	○	◉						
5V. Carbon Tetrachloride (56-23-5)	☐	○	◉						
6V. Chlorobenzene (108-90-7)	☐	○	◉						
7V. Chlorodi-bromomethene (124-48-1)	☐	○	◉						
8V. Chloroethane (75-00-3)	☐	○	◉						
9V. 2-Chloro-ethylvinyl Ether (110-75-8)	☐	○	◉						
10V. Chloroform (67-66-3)	☐	○	◉						
11V. Dichloro-bromomethane (75-27-4)	☐	○	◉						
12V. 1,1-Dichloro-ethane (75-34-3)	☐	○	◉						
13V. 1,2- Dichloro-ethane (107-06-2)	☐	○	◉						
14V. 1,1-Dichloro-ethylene (75-35-4)	☐	○	◉						
15V. 1,2-Dichloro-propane (78-87-5)	☐	○	◉						
16V. 1,3-Dichloro-propylene (542-75-6)	☐	○	◉						
17V. Ethylbenzene (100-41-4)	☐	○	◉						
18V. Methyl Bromide (74-83-9)	☐	○	◉						
19V. Methyl Chloride (74-87-3)	☐	○	◉						
20V. Methylene Chloride (75-09-2)	☐	○	◉						

21V. 1,1,2,2-Tetra-chloroethane (79-34-5)	☐	○	◉						
22V. Tetrachloro-ethylene(127-18-4)	☐	○	◉						
23V. Toluene (108-88-3)	☐	○	◉						
24V. 1,2-Trans-Dichloroethylene (156-60-5)	☐	○	◉						
25V. 1,1,1-Tri-chloroethane (71-55-6)	☐	○	◉						
26V. 1,1,2-Tri-chloroethane (79-00-5)	☐	○	◉						
27V. Trichloro-ethylene(79-01-61)	☐	○	◉						
28V. Vinyl Chloride(75-01-4)	☐	○	◉						

1.POLLUTANT and CAS NO. (If available)	3.EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS						
1V. Acrolein (107-02-8)						
2V. Acrylonitrile (107-13-1)						
3V. Benzene (71-43-2)						
4V. Bromoform (75-25-2)						
5V. Carbon Tetrachloride (56-23-5)						
6V. Chlorobenzene (108-90-7)						
7V. Chlorodi-bromomethene (124-48-1)						
8V. Chlroethane (75-00-3)						
9V. 2-Chloro-ethylvinyl Ether (110-75-8)						
10V. Chloroform (67-66-3)						
11V. Dichloro-bromomethane (75-27-4)						
12V. 1,1-Dichloro-ethane (75-34-3)						
13V. 1,2- Dichloro-ethane (107-06-2)						
14V. 1,1-Dichloro-ethylene (75-35-4)						
15V. 1,2-Dichloro-propane (78-87-5)						
16V. 1,3-Dichloro-propylene (542-75-6)						
17V. Ethylbenzene (100-41-4)						
18V. Methyl Bromide (74-83-9)						
19V. Methyl Chloride (74-87-3)						
20V. Methylene Chloride (75-09-2)						
21V. 1,1,2,2-Tetra-chloroethane (79-34-5)						
22V. Tetrachloro-ethylene(127-18-4)						

23V. Toluene (108-88-3)						
24V. 1,2-Trans-Dichloroethylene (156-60-5)						
25V. 1,1,1-Tri-chloroethane (71-55-6)						
26V. 1,1,2-Tri-chloroethane (79-00-5)						
27V. Trichloro-ethylene(79-01-61)						
28V. Vinyl Chloride(75-01-4)						

Section XVII C: Intake and Effluent Characteristics - Table C Acid Compounds

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (If available)	2. SELECT			3. EFFLUENT					
	a. Tes-ting Req-uired	b. Beli-eved Pre-sent	c. Beli-eved Abs-ent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
GC/MS FRACTION - ACID COMPOUNDS									
1A. 2-Chlorophenol (95-57-8)	☐	○	◉						
2A. 2,4-Dichloro-phenol (120-83-2)	☐	○	◉						
3A. 2,4-Dimethyl-phenol (105-67-9)	☐	○	◉						
4A. 4,6-Dinitro-O-Cresol (534-52-1)	☐	○	◉						
5A. 2,4-Dinitro-phenol (51-28-5)	☐	○	◉						
6A. 2-Nitro-phenol (88-75-5)	☐	○	◉						
7A. 4-Nitro-phenol (100-02-7)	☐	○	◉						
8A. P-Chloro-M-Cresol (59-50-7)	☐	○	◉						
9A. Pentachloro-phenol (87-86-5)	☐	○	◉						
10A. Phenol (108-95-2)	☐	○	◉						
11A. 2,4,6-Tri-chlorophenol (88-06-2)	☐	○	◉						

1.POLLUTANT and CAS NO. (If available)	3.EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
GC/MS FRACTION - ACID COMPOUNDS						
1A. 2-Chlorophenol (95-57-8)						
2A. 2,4-Dichloro-phenol (120-83-2)						
3A. 2,4-Dimethyl-phenol (105-67-9)						
4A. 4,6-Dinitro-O-Cresol (534-52-1)						
5A. 2,4-Dinitro-phenol (51-28-5)						
6A. 2-Nitro-phenol (88-75-5)						
7A. 4-Nitro-phenol (100-02-7)						
8A. P-Chloro-M-Cresol (59-50-7)						
9A. Pentachloro-phenol (87-86-5)						
10A. Phenol (108-95-2)						
11A. 2,4,6-Tri-chlorophenol (88-06-2)						

Section XVII C: Intake and Effluent Characteristics - Table C Base/Neutral Compounds

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (If available)	2. SELECT			3. EFFLUENT					
	a. Testing Required	b. Believed Present	c. Believed Absent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS									
1B. Acenaphthene (83-32-9)	☐	○	◉						
2B.Acenaphtylene (208-96-8)	☐	○	◉						
3B.Anthracene (120-12-7)	☐	○	◉						
4B. Benzidine (92-87-5)	☐	○	◉						
5B. Benzo (a) Anthracene (56-55-3)	☐	○	◉						
6B.Benzo(a)Pyrene (50-32-8)	☐	○	◉						
7B. 3,4-Benzo-fluoranthene (205-99-2)	☐	○	◉						
8B. Benzo (ghi) Perylene (191-24-2)	☐	○	◉						
9B. Benzo (k) Fluoranthene (207-08-9)	☐	○	◉						
10B. Bis*(2-Chloro-ethoxy)* Methane (111-91-1)	☐	○	◉						
11B. Bis*(2-Chloro-ethyl)* Ether(111-44-4)	☐	○	◉						
12B. Bis*(2-Chloro-isopropyl)* Ether(39638-32-9)	☐	○	◉						
13B. Bis*(2-Ethyl-hexyl)* Phthalate(117-81-7)	☐	○	◉						
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	☐	○	◉						
15B. Butyl Benzyl Phthalate (85-86-7)	☐	○	◉						
16B. 2-Chloro-naphthalene (91-58-7)	☐	○	◉						
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	☐	○	◉						
18B. Chrysene (218-01-9)	☐	○	◉						
19B. Dibenzo (a,h) Anthracene (53-70-3)	☐	○	◉						
20B. 1,2-Dichloro-benzene(95-50-1)	☐	○	◉						
21B. 1,3-Dichloro-benzene (541-73-1)	☐	○	◉						
22B. 1,4-Dichloro-benzene (106-46-7)	☐	○	◉						

23B. 3,3-Dichloro-benzidine (91-94-1)	☐	○	◉						
24B. Diethyl Phthalate (84-66-2)	☐	○	◉						
25B. Dimethyl Phthalate (131-11-3)	☐	○	◉						
26B. Di-N-Butyl Phthalate (84-74-2)	☐	○	◉						
27B. 2,4-Dinitro-toluene (121-14-2)	☐	○	◉						
28B. 2,6-Dinitro-toluene (206-20-2)	☐	○	◉						
29B. Di-N-Octyl Phthalate (117-84-0)	☐	○	◉						
30B. 1,2-Diphenyl-hydrazine *(as Azo-benzene)*(122-66-7)	☐	○	◉						
31B. Fluoranthene (206-44-0)	☐	○	◉						
32B. Fluorene (86-73-7)	☐	○	◉						
33B. Hexa-chlorobenzene (118-71-1)	☐	○	◉						
34B. Hexa-chlorobutadiene (87-68-3)	☐	○	◉						
35B. Hexachloro-cyclopentadiene (77-47-4)	☐	○	◉						
36B. Hexachloro-ethane (67-72-1)	☐	○	◉						
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)	☐	○	◉						
38B. Isophorone (78-59-1)	☐	○	◉						
39B. Naphthalene (91-20-3)	☐	○	◉						
40B. Nitrobenzene (98-95-3)	☐	○	◉						
41B. N-Nitro-sodimethylamine(62-75-9)	☐	○	◉						
42B. N-Nitrosodi-N-Propylamine (621-64-7)	☐	○	◉						
43B. N-Nitro-sodiphenylamine (86-30-6)	☐	○	◉						
44B. Phenanthrene (85-01-8)	☐	○	◉						
45B. Pyrene (129-00-0)	☐	○	◉						
46B. 1,2,4-Tri-chlorobenzene (120-82-1)	☐	○	◉						

1.POLLUTANT and CAS NO. (If available)	3. EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS						
1B. Acenaphthene (83-32-9)						
2B.Acenaphtylene (208-96-8)						
3B.Anthracene (120-12-7)						
4B. Benzidine (92-87-5)						
5B. Benzo (a) Anthracene (56-55-3)						
6B.Benzo(a)Pyrene (50-32-8)						
7B. 3,4-Benzo-fluoranthene (205-99-2)						
8B. Benzo (ghi) Perylene (191-24-2)						
9B. Benzo (k) Fluoranthene (207-08-9)						
10B. Bis*(2-Chloro-ethoxy)* Methane (111-91-1)						
11B. Bis*(2-Chloro-ethyl)* Ether(111-44-4)						
12B. Bis*(2-Chloro-isopropyl)* Ether(39638-32-9)						
13B. Bis*(2-Ethyl-hexyl)* Phthalate(117-81-7)						
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)						
15B. Butyl Benzyl Phthalate (85-86-7)						
16B. 2-Chloro-naphthalene (91-58-7)						
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)						
18B. Chrysene (218-01-9)						
19B. Dibenzo (a,h) Anthracene (53-70-3)						
20B. 1,2-Dichloro-benzene(95-50-1)						
21B. 1,3-Dichloro-benzene (541-73-1)						
22B. 1,4-Dichloro-benzene (106-46-7)						
23B. 3,3-Dichloro-benzidine (91-94-1)						
24B. Diethyl Phthalate (84-66-2)						
25B. Dimethyl Phthalate (131-11-3)						

26B. Di-N-Butyl Phthalate (84-74-2)						
27B. 2,4-Dinitro-toluene (121-14-2)						
28B. 2,6-Dinitro-toluene (206-20-2)						
29B. Di-N-Octyl Phthalate (117-84-0)						
30B. 1,2-Diphenyl-hydrazine *(as Azo-benzene)*(122-66-7)						
31B. Fluoranthene (206-44-0)						
32B. Fluorene (86-73-7)						
33B. Hexa-chlorobenzene (118-71-1)						
34B. Hexa-chlorobutadiene (87-68-3)						
35B. Hexachloro-cyclopentadiene (77-47-4)						
36B. Hexachloro-ethane (67-72-1)						
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)						
38B. Isophorone (78-59-1)						
39B. Naphthalene (91-20-3)						
40B. Nitrobenzene (98-95-3)						
41B. N-Nitro-sodimethylamine(62-75-9)						
42B. N-Nitrosodi-N-Propylamine (621-64-7)						
43B. N-Nitro-sodiphenylamine (86-30-6)						
44B. Phenanthrene (85-01-8)						
45B. Pyrene (129-00-0)						
46B. 1,2,4-Tri-chlorobenzene (120-82-1)						

<u>Section XVII C: Intake and Effluent Characteristics - Table C Pesticides</u>

☐ Check for Storm Water only outlet.

1. POLLUTANT and CAS NO. (If available)	2. SELECT			3. EFFLUENT					
	a. Testing Required	b. Believed Present	c. Believed Absent	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVG. VALUE *(if available)*	
				(1) CONC	(2) MASS	(1) CONC	(2) MASS	(1) CONC	(2) MASS
GC/MS FRACTION - PESTICIDES									
1P. Aldrin (309-00-2)	☐	○	◉						
2P. -BHC (319-84-6)	☐	○	◉						
3P. -BHC (319-85-7)	☐	○	◉						
4P. -BHC (58-89-9)	☐	○	◉						
5P. -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. -Endosulfan (115-29-7)	☐	○	◉						
12P. -Endosulfan (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)	☐	○	◉						
17P. Heptachlor Epoxide (1024-57-3)	☐	○	◉						
18P. PCB-1242 (53469-21-9)	☐	○	◉						
19P. PCB-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)	☐	○	◉						

1.POLLUTANT and CAS NO. (If available)	3.EFFLUENT	4.UNITS *(specify if blank)*		5.INTAKE *(optional)*		
	d. No. OF ANALYSES	a. CONC	b. MASS	a. LONG TERM AVG. VALUE		b. No. OF ANALYSES
				(1) CONC	(2) MASS	
GC/MS FRACTION - PESTICIDES						
1P. Aldrin (309-00-2)						
2P. -BHC (319-85-7)						
3P. -BHC (319-85-7)						
4P. -BHC (58-89-9)						
5P. -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. -Endosulfan (115-29-7)						
12P. -Endosulfan (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)						
17P. Heptachlor Epoxide (1024-57-3)						
18P. PCB-1242 (53469-21-9)						
19P. PCB-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)						

Section XVII D: Intake and Effluent Characteristics - Part D

☑ Check for no Storm Water.

Part D - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outlet. See instructions for additional details.

Pollutant and CAS Number (if available)	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite		
Oil and Grease						
Biological Oxygen demand (BOD5)						
Chemical Oxygen Demand (COD)						
Total Suspended Solids (TSS)						
Total Kjeldahl Nitrogen						
Nitrite plus Nitrate Nitrogen						
Total Phosphorus						
pH	Minimum		Maximum			

Section XVII E: Intake and Effluent Characteristics - Part E

Part E - List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outlet. See instructions for additional details and requirements.

Pollutant and CAS Number (if available	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite		

Section XVII F: Intake and Effluent Characteristics - Part F

Part F- List each pollutant shown in Table B and C of this application that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outlet.

Pollutant and CAS Number (if available	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite	Grab Sample Taken During First 30 Minutes	Flow Weighted Composite		

Section XVII G: Intake and Effluent Characteristics - Part G

Part G - Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1.Date of Storm Event	2.Duration of Strom (in minutes)	3.Total Rainfall during storm event (in inches)	4.Number of days and/or hours between beginning of storm measured and the end of previous measurable rain event	5.Maximum during rain event (gallons/ minute or specify units)	6.Total flow from rain event (gallons or specify units)	Season sample was taken	Form of Precipitation (rainfall, snowmelt)
10							

9. Provide a description of the method of flow measurement or estimate.

Section XVII H: Intake and Effluent Characteristics - Part H

☑ Check if all believed Absent.

H. Select any of the pollutants listed below, which you know or have reasons to believe is discharged or may be discharged from any outlet. For every pollutant you select, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

	Believed Present	Believed Absent	
Toxic Pollutants			
Asbestos	○	◉	
Hazardous Substances			
Acetaldehyde	○	◉	
Allyl alcohol	○	◉	
Allyl chloride	○	◉	
Amyl acetate	○	◉	
Aniline	○	◉	
Benzonitrile	○	◉	
Benzyl chloride	○	◉	
Butyl acetate	○	◉	
Butylamine	○	◉	
Captan	○	◉	
Carbaryl	○	◉	
Carbofuran	○	◉	
Carbon disulfide	○	◉	
Chlorpyrifos	○	◉	
Coumaphos	○	◉	
Cresol	○	◉	
Crotonaldehyde	○	◉	
Cyclohexane	○	◉	
Strychnine	○	◉	
Cyclohexane	○	◉	

2,4-D(2,4-Dichlorophenoxy acetic acid)	○	◉	
Diazinon	○	◉	
Dicamba	○	◉	
Dichlobenil	○	◉	
Dichlone	○	◉	
2,2-Dichloropropionic acid	○	◉	
Dichlorvos	○	◉	
Diethyl amine	○	◉	
Dimethyl amine	○	◉	
Dinitrobenzene	○	◉	
Diquat	○	◉	
Disulfoton	○	◉	
Diuron	○	◉	
Epichlorohydrin	○	◉	
Ethanolamine	○	◉	
Ethion	○	◉	
Ethylene diamine	○	◉	
Ethylene dibromide	○	◉	
Formaldehyde	○	◉	
Furfural	○	◉	
Guthion	○	◉	
Isoprene	○	◉	
Isopropanolamine	○	◉	
Kelthane	○	◉	
Kepone	○	◉	
Malathion	○	◉	
Mercaptodimethur	○	◉	

Methoxychlor	○	◉	
Methyl mercaptan	○	◉	
Methyl methacrylate	○	◉	
Methyl parathion	○	◉	
Mevinphos	○	◉	
Mexacarbate	○	◉	
Monoethyl amine	○	◉	
Monomethyl amine	○	◉	
Naled	○	◉	
Napthenic acid	○	◉	
Nitrotoluene	○	◉	
Parathion	○	◉	
Phenolsulfanate	○	◉	
Phosgene	○	◉	
Propargite	○	◉	
Propylene oxide	○	◉	
Pyrethrines	○	◉	
Quinoline	○	◉	
Resorcinol	○	◉	
Strontium	○	◉	
Strychnine	○	◉	
Styrene	○	◉	
2,4,5-T (2,4,5-Trichlorophenoxy acetic acid)	○	◉	
TDE (Tetrachlorodiphenyl ethane)	○	◉	
2,4,5-TP (2-(2,4,5-Trichlorophenoxy propanic acid)	○	◉	
Trichlorofon	○	◉	

Triethanolamine	○	◉	
Triethylamine	○	◉	
Trimethylamine	○	◉	
Uranium	○	◉	
Vanadium	○	◉	
Vinyl Acetate	○	◉	
Xylene	○	◉	
Xylenol	○	◉	
Zirconium	○	◉	

Section XII: Certification

XII. CERTIFICATION (see instructions)

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 upon 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.

A. NAME Jonathan M Magalski

OFFICIAL TITLE Environmental Manager

B. SIGNATURE ______________________________

C. DATE SIGNED 7/7/2025

Please Print, Sign, Scan and attach this document rather than mailing as a wet ink signature is no longer required.

Section XIV: Flows, Sources of Pollution and Treatment Technologies

XIV. **FLOWS, SOURCES OF POLLUTION AND TREATMENT TECHNOLOGIES**

A. Include with this application:

(1) A site layout drawing (see instructions for precise details);

Site layout drawings are attached and are CBI/CEII.

☑ **(2) A line drawing showing the water flow through the facility (see details and Figure 1 of the instructions for an example); and** Figure 1

(3) Details and drawings of each treatment unit (see instructions for precise details).

Plant water balance is attached.

B. For each outlet provide a description of: (1)(a) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff (including material handling and storage area run-off and areas where pesticides, herbicides, soil conditioners and fertilizers are applied); (1)(b) The average flow contributed by each operation; and (2) The treatment received by the wastewater. Use the table below to enter this information. For additional outlets click the Add 1 Row button.

	Outlet Number (list):	001
	Operation(s) Contributing to Flow:	
a.	Operation (list):	Unit 1 Generator and Thrust Bearing Cooler: once-through non-contact cooling water
b.	Average Flow (mgd):	0.18 (April 2021 - April 2025)
a.	Treatment Description:	N/A (see Section XXII for further description)
b.	Treatment List Codes from Table 1 (see instructions):	4-A
	Outlet Number (list):	002
	Operation(s) Contributing to Flow:	
a.	Operation (list):	Unit 2 Generator and Thrust Bearing Cooler: once-through, non-contact cooling water
b.	Average Flow (mgd):	0.16 (April 2021 - April 2025)
a.	Treatment Description:	N/A (see Section XXII for further description)
b.	Treatment List Codes from Table 1 (see instructions):	4-A
	Outlet Number (list):	003
	Operation(s) Contributing to Flow:	
a.	Operation (list):	Unit 3 Generator and Thrust Bearing Cooler: once-through non-contact cooling water.
b.	Average Flow (mgd):	0.15 (April 2021 - April 2025)
a.	Treatment Description:	N/A (see Section XXII for further description)
b.	Treatment List Codes from Table 1 (see instructions):	4-A
	Outlet Number (list):	005
	Operation(s) Contributing to Flow:	
a.	Operation (list):	Unit 1 Guide Bearing Cooler: once-through, non-contact cooling water.
b.	Average Flow (mgd):	0.136 (est.)
a.	Treatment Description:	N/A (see Section XXII for further description)
b.	Treatment List Codes from Table 1 (see instructions):	4-A
	Outlet Number (list):	006
	Operation(s) Contributing to Flow:	
a.	Operation (list):	Unit 2 Guide Bearing Cooler: once-through, non-contact cooling water.
b.	Average Flow (mgd):	0.136 (est.)
a.	Treatment Description:	N/A (see Section XXII for further description)
b.	Treatment List Codes from Table 1 (see instructions):	4-A

	Outlet Number (list):	007
	Operation(s) Contributing to Flow:	
a.	Operation (list):	Unit 3 Guide Bearing Cooler: once-through, non-contact cooling water.
b.	Average Flow (mgd):	0.136 (est.)
a.	Treatment Description:	N/A (see Section XXII for further description)
b.	Treatment List Codes from Table 1 (see instructions):	4-A
	Outlet Number (list):	008
	Operation(s) Contributing to Flow:	
a.	Operation (list):	Sanitary Treatment Package Plant: sanitary wastes and intermittent plant sump water.
b.	Average Flow (mgd):	Intermittent
a.	Treatment Description:	Septic tank, dosing tank, peat biofilters and UV
b.	Treatment List Codes from Table 1 (see instructions):	1-Q, 1-U, 2-H, 4-A

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items XIV-A or B intermittent or seasonal?

◉ Yes (complete the following table) ◯ No (go to Section XV)

1.	Outlet Number (list):	008
2.	Operation(s) Contributing Flow (list):	Sanitary Waste and Plant Sump
3.	**Frequency (Avg):**	
a.	Days Per Week:	No flow during permit period
b.	Months Per Year:	No flow during permit period
4.	**Flow:**	
a.	**Flow Rate (mgd):**	
1.	Long Term Avg	N/A
2.	Max Daily:	N/A
b.	**Duration (in days):**	N/A

Section XV: Effluent Guideline Information

XV.	EFFLUENT GUIDELINE INFORMATION (see instructions)

A. Does an effluent guideline limitation promulgated by EPA under 304 of the Clean Water Act apply to your facility?

○ Yes (complete Item XV-B&C) ◉ No (go to Item XVI)

B. What specific effluent guideline(s) apply to your operation? Include appropriate subcategory of industry.

C. Are limitations in the applicable effluent guideline expressed in terms of production?

○ Yes (complete XV-D) ○ No (go to Item XV-E)

D. List the quantity which represents 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 outlets. Please use the Quantity table below.

Please fill out the form below for each affected outlet

E. Provide the appropriate basis for calculating guideline based effluent limitations.

1.MAXIMUM QUANTITY a.Quantity/day	1.MAXIMUM QUANTITY b.Units of Measure	1.MAXIMUM QUANTITY c.Operation, product, material, etc. (specify)	2.AFFECTED OUTLETS (list outlet numbers)

Section XVI: Improvements

XVI. IMPROVEMENTS

A. Are you now 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 Item XVI-B)

1. Identification of Condition Agreement, etc:

2. Affected Outlets:
   a. Number
   b. Source of Discharge

3. Brief Description of Project

4. Final Compliance Date:
   a. Required
   b. Projected

XVI B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

If description of additional control programs is attached. ○Paper ○Electronic

Section XVIII: Potential Discharges not Covered by Analysis

XVIII. **POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS**

A. Provide a list of any toxic pollutant not otherwise listed in Item XVII-C which you do or expect that you will over the next 5 years use or manufacture as an immediate of final product or byproduct. Also list sources and expected levels of such pollutants and provide MATERIAL SAFETY DATA SHEETS (MSDS) for each pollutant listed. Continue on additional sheets if necessary.

No additional toxic pollutants are expected to be used or manufactured as a product or as a by-product at London Hydroelectric Plant over the next permit cycle.

B. Provide a listing and frequency of all chemical or treatment agents used in cooling water systems, boiler water systems, well redevelopment operations, and each wastewater treatment system utilized. Also list all pesticides, herbicides, soil conditioners and fertilizers used at this site, and provide MSDS Sheets for each agent list. Continue on additional sheets if necessary.

The majority of substances listed on the attached are periodically used or stored at London Hydroelectric Plant in minimal quantities. Materials maintained at the facility in larger volumes include a quantity estimate. Materials not stored on-site may be used at times for the use indicated. Material Safety Data Sheets (MSDS) are available upon request. Similar products other than those listed may be used from time to time based on need. However, usage should not contribute to the effluent quality. Examples include cleaning supplies, paints, petroleum fluid for small combustion engines, etc. The name of the products and their manufacturers are listed as a requirement of the NPDES permit application. Product usage does not imply endorsement by the applicant and the permittee reserves the right to change products or manufacturers to similar types if deemed necessary.

Section XIX: Biological Toxicity Testing Data

XIX. **BIOLOGICAL TOXICITY TESTING DATA**

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

○ Yes (identify the test(s) and describe their purpose) ◉ No (go to Item XX)

Or, you can attach a document: ○ Paper ○ Electronic

Section XX: Sampling and Analysis Information

XX. SAMPLING AND ANALYSIS INFORMATION

A. Sampling Method: Briefly describe procedure followed including type of equipment or collection apparatus used.

Section XX. Sample collection consisted of grab samples at all locations since Outlets 001-003 are once-through cooling water and effluent quality is not expected to change. Outlet 008 is a combination of the plant sump which is manually discharged on an intermittent, as-needed basis and sanitary wastewater. There was no discharge from Outlet 008 (see prior description) during the
renewal sampling. Outlets 005, 006 and 007 are inaccessible for sampling (see prior description). See attached sampling plan.

B. Were sample preservatives used? ◉ Yes ○ No

C. Was the latest approved edition of Standard Methods used during analysis?

◉ Yes (go to XX-E) ○ No (complete Item XX-D)

D. Describe method used during analysis.

Sample collection consisted of grab samples at all locations since Outlets 001-003 are once-through cooling water and effluent is not expected to change. Outlet 008 is a combination of the plant sump which is manually discharged on an intermittent, as-needed basis and sanitary wastewater. There was no discharge at Outlet 008 during the renewal sampling. Outlets 005,006, and 007 are inaccessible for sampling. See attached agency correspondence and sampling plan.

E.Outlet Sampled	F.Time Sampled	G.Date Sampled	H.Date Analyzed	I Name and Address of Laboratory
Plant Intake	14:10	4/7/2025	4/12/2025	(Inorganics and Metals) ALS Environmental 1740 Union Carbide Drive South Charleston, West Virginia 25303 (pH, Flow, BOD) ALS Environmental 3352 128th Ave.
Outfall 001	13:46	4/7/2025	4/12/2025	(Inorganics and Metals) ALS Environmental 1740 Union Carbide Drive South Charleston, West Virginia 25303 (pH, Flow, BOD) ALS Environmental 3352 128th Ave.
Outfall 002	13:53	4/7/2025	4/12/2025	(Inorganics and Metals) ALS Environmental 1740 Union Carbide Drive South Charleston, West Virginia 25303 (pH, Flow, BOD) ALS Environmental 3352 128th Ave.
Outfall 003	13:55	4/7/2025	4/12/2025	(Inorganics and Metals) ALS Environmental 1740 Union Carbide Drive South Charleston, West Virginia 25303 (pH, Flow, BOD) ALS Environmental 3352 128th Ave.

J.	Has the laboratory in Item XX-I received any required certification to perform the waste analysis associated with this application? ◉ Yes (complete Item XX-K) ○ No (go to Item XX-L)
K.	Provide the name and address of certifying agency. West Virginia Department of Environmental Protection 601 57th Street SE Charleston, West Virginia 25304
L.	Has any Performance Audit Inspection (PAI) been performed at the laboratory listed in Item XX-I? ◉ Yes (complete Item XX-M) ○ No (go to Item XXI)
M.	Provide the name and address of the agency conducting the audit and the date of the most recent audit performed. West Virginia Department of Environmental Protection 601 57th Street SE Most recent Audits were conducted by ALS (Holland, Michigan) on 4/29-4/30, 2025 and by ALS (South Charleston, West Virginia) on

Section XXI: Sludge Disposal

Does or will your facility generate sludges, other solid wastes, or other pollutants for disposal?

◉ Yes (complete A and B below) ○ No (go to XXII)

A. Describe method of disposal (landfill, incineration, other)

Domestic trash is collected and generally disposed of by Waste Management. Tires collected at the plant intake are generally recycled to by West Virginia Tire or similar facility. The permittee reserves the right to use other similar companies for domestic trash disposal and tire recycling.

B. Submit name, location, Agency issuing permit for landfill and attach letter of acceptance of wastes from disposal operator if other than "on-site".

Waste Management
7 Spring Street

Section XXI Waste: Industrial Solid Waste Disposal Facility

A. Is this application being submitted to obtain a permit to operate and/or monitor an Industrial Solid Waste Disposal Facility?

○ Yes ◉ No

Please complete and attach the Application Requirements for a Class F Industrial Solid Waste Facility document.

Section XXII: Operation and Maintenance

A. Has a Best Management Practice (BMP) plan been developed for your facility?

○ Yes ◉ No

B. Specify a plan of maintenance for each treatment unit described in Item XIV-B.

Or, attach a document ○ Paper ◉ Electronic

1. Outlet Number	2. Treatment Unit	3. Plan of Maintenance
001	Unit 1 generator and thrust bearing cooler: once-through non-contact cooling water.	See attachments.
002	Unit 2 generator and thrust bearing cooler: once-through, non-contact cooling water.	See attachments.
003	Unit 3 generator and thrust bearing cooler: once-through, non-contact cooling water.	See attachments.
005	Unit 1 Guide bearing cooler: once-through, non-contact cooling water.	See attachments.
006	Unit 2 guide bearing cooler: once-through, non-contact cooling water.	See attachments.
007	Unit 3 guide bearing cooler: once-through, non-contact cooling water.	See attachments.
008	Sanitary Treatment Package Plant: sanitary wastes and intermittent plant sump water.	Outlet 008 is the combined discharge of treated sanitary wastewater and the plant sump. The plant sump is intermittently discharged from the main and backup pumps. The sump and pumps are inspected periodically when the plant is staffed. Any mechanical failure would be addressed upon discovery. Oil absorbents are provided in the sump to absorb any potential residual oils and are replaced when necessary. See attachment for sanitary treatment details.

C. Describe means of coping with inplant spills and upsets and practices to be employed during idle periods caused by power failures, repairs, etc. in the treatment units.

Facility personnel receive training in spill prevention, spill containment and control, and emergency response to oil and chemical spills. Oil is handled and stored as described in the facility SPCC plan. In the event of a spill within the powerhouse, all drains lead to the plant sump which serves as containment. Power failure would not affect the plant sump as it is manually discharged on an as-needed basis.

D. Describe provisions for coping with spills at barge, rail or truck loading and unloading facilities.

Large quantities of chemicals or petroleum products are not expected to be used at the facility. Deliveries of such products would be via truck. In the event that delivery of a spillable substance is expected, precautionary measures are taken and cleanup materials are readily available. Any small quantities of spilled material is subject to immediate cleanup by facility personnel or their contractor.

Section A: GPP Facility

1. Name and Address of Facility

a. Facility Name: London Hydroelectric Plant

b. Location (Street or Highway): 26715 MacCorkle Avenue

City: Handley

Postal Code: 25102 PostalCode Ref.

Facility Telephone Number: 614-716-1233 (###-###-####)

c. County: Kanawha

d. Latitude:

Degrees: 38 Minutes: 11 Seconds: 29 N (ss.ssss)

Longitude:

Degrees: 81 Minutes: 22 Seconds: 14 W (ss.ssss) *Interactive Mapper*

Geospatial Method: Topograhic Map

Datum: NAD27

☐ Is the Mailing Address of this Facility different from Facility Address?

e. Facility Address:

Address Line 1:

Address Line 2:

Address City:

Address State:

Address Postal Code: PostalCode Ref.

Email Address:

Country: United States of America

2. Person Developing the GPP

a. Name: Joshua Blake

b. Address Line 1: 13392 Winfield Road

Address Line 2:	
Address City:	Winfield
Address State:	West Virginia
Address Postal Code:	25213 PostalCode Ref.
c. Telephone No.:	304-348-5765 (###-###-####)
Email Address:	
Country:	United States of America

3. Person Responsible for Implementing GPP

a. Name:	Brandon Yates
b. Address Line 1:	26715 Second Ave
Address Line 2:	
Address City:	Handley
Address State:	West Virginia
Address Postal Code:	25102 PostalCode Ref.
c. Telephone No.:	304-380-8371 (###-###-####)
d. Email Address:	

4.
Brief Description of Facility Operation:

London Hydroelectric Plant is a hydroelectric power generating facility that consists of three (3) turbine generator units capable of producing a total of 14.4 megawatts of electricity.

Section B: GPP Section B

2. Person Developing GPP

List all the activities that are conducted at your facility that require a GPP (grading, concrete/asphalt work, painting, stucco, storing fuel, fertilizer and other chemicals, etc.). List actual activities; do not quote the regulation.

No operations at this facility have been identified as having any significant potential to contaminate groundwater. Numerous areas were evaluated that were not anticipated to contaminate groundwater, but were included in the GPP to demonstrate that these activities were evaluated.

Say: store diesel fuel in 1,000-gallon underground storage tank.

Don't say: "Storing, treating, disposing, or related handling of hazardous waste.......in tanks, drums, or other containers, or in piles."

Include all activities at your site subject to the regulation, even if protective practices are already being implemented.

Equipment cleaning, yard storage, drum storage (new petroleum products, used oils, antifreeze, hazardous waste, etc.), transmission electrical equipment.

Give complete details about aboveground and underground tanks, including

1. Number of each type of tank
2. Capacity of each tank
3. Identification of contents of each tank

There is a single, portable temporary oil storage tank with a volume of 185 gallons at the facility. This tank is a double walled steel tank. In addition to this tank, there is an oil storage building on location that may house up to 2955-gallon drums that building has a 450-gallon secondary containment in it that the drums are stored in. The generating unit reservoirs and main power transformers that contain oil are all in appropriate secondary containment.

Section C: GPP Section C

- For each activity listed in Section B, describe the practice (BMP) that will be used to protect groundwater. The BMPs must be described. Simply stating that BMPs will be used is unacceptable.
- Practices in SPCC or Storm Water Pollution Prevention Plans (SWPPP) may be used in the GPP provided, that they are equally protective of groundwater.
- Include all activities at your site subject to the regulation, even if protective practices are already being implemented.
- Information about secondary containment for ASTs must include the kind of material (metal, concrete, asphalt) making up the floor and berms (sides) of the containment area.
- Tanks that are double-walled are considered secondarily contained.

There are no activities at this location that are reasonably anticipated to contaminate groundwater. Please see attached groundwater protection plan. The only tank on location is a 185 gallon portable temporary oil storage tank. This tank is a double walled steel tank.

Section D: GPP Section D

- The GPP must be implemented upon approval.
- Having a GPP on file in an office somewhere does not keep a facility in compliance WV0115924. The GPP must be retained and implemented at the site for which it was developed.
- Procedures for protecting groundwater when designing and adding new equipment and operations. Adequate design of these operations should be considered in the GPP when making changes in areas of karst, wetlands, faults, subsidence, areas determined by the Bureau for Public Health to be delineated wellhead protection areas, or other areas determined by the Director to be vulnerable based upon geologic or hydrogeologic information.
- The permittee must revise the GPP within 30 calendar days to address any newly delineated areas or other vulnerable areas upon notification by the Director or the Bureau for Public Health.

The GPP is currently being kept on site and is being implemented by the individual listed in the contact section. The plan contains procedures for protecting groundwater when designing and adding new equipment and operations. The plan is updated as needed.

Section E: GPP Section E

- You are developing a Groundwater Protection Plan; therefore, training must focus on groundwater protection.
- Training must include educating the employees about the importance of groundwater protection and include all aspects of the GPP. Briefly describe topics to be covered in training the employees about groundwater protection practices.
- Procedures for protecting groundwater when designing and adding new equipment and operations. Adequate design of these operations should be considered in the GPP when making changes in areas of karst, wetlands, faults, subsidence, areas determined by the Bureau for Public Health to be delineated wellhead protection areas, or other areas determined by the Director to be vulnerable based upon geologic or hydrogeologic information.
- The permittee must revise the GPP within 30 calendar days to address any newly delineated areas or other vulnerable areas upon notification by the Director or the Bureau for Public Health.

The company has developed and implemented a training program for its employees to implement the GPP at London Hydroelectric facility.

Section F; GPP Section F

- Inspections are conducted to insure that the practices selected to prevent groundwater pollution are being used and are properly functioning.
- State the frequency of the inspections and what is to be inspected.
- Include an Inspection Checklist. The checklist is documentation that you are implementing the GPP. The checklist must include date, name of inspector, what is to be inspected, observations, actions taken, if any.

Inspections by operations and maintenance personnel are conducted at London Hydroelectric Plant.

Section G: GPP Section G

- Waste material will not be used for deicing, fill, or any other use, unless that use is allowed by regulation or permit.

All wastes are disposed of in an approved manner.

Section H: GPP Section H

- Material Safety Data Sheets or Safety Data Sheets shall be provided for all chemicals, or substances, used or stored on site.

Material Safety Data Sheets (MSDS) are available upon request.

Section I: GPP Section I

- Provide all available groundwater quality data for the facility as well as well locations or other sampling points.

Very little groundwater information exists for this facility. Groundwater is used at this facility for non-drinking water purposes (floor washing, bathrooms, etc.). During a onetime sampling event in June 1991, a groundwater sample was collected from a bathroom tap and analyzed for lead, iron, manganese, and hardness (as $CaCO_3$). The results of these analyses were 0.002 mg/l, 6.67 mg/l, 1.64 mg/l, and 154.0 mg/l, respectively.

Section J: GPP Section J

(a) Sinkhole Mitigation shall be carried out according to the WVDEP Sinkhole Mitigation Guidance Document (August 2005, revised 2018), or other applicable standards as recommended by the G or PE and approved by the West Virginia Department of Environmental Protection (WVDEP).

Design Requirements

1. The location of all sinkholes shall be shown on the existing conditions scale drawing, included with the preliminary plan submission. The edge of the sinkhole is to be considered the last closed contour based on five foot (5') contour mapping.
2. All sinkholes identified prior to construction shall be either remediated or separated from construction by a minimum one hundred-feet (100').
3. Remediation shall be carried out under the direction of a qualified Geologist or Geotechnical Engineer. Mitigation shall be carried out according to the WVDEP Sinkhole Management Guidance Document (August 2005 et. seq.), or other applicable standards as recommended by the G or PE and approved by the WVDEP.
4. Any improvements planned to fall within one hundred feet (100') of any sinkhole (remediated or not), shall require a thorough subsurface investigation conducted by a qualified G or PE to ensure that the planned improvements do not present a threat to human health, safety, or the environment. Should these investigations detect previously unknown sinkhole features, paragraph 2 applies.
5. For any subsurface investigations requiring boreholes, such as air track drilling or rock coring, the boreholes must be grouted upon completion. All air track drilling operations used to determine the depth of overburden and continuity of bedrock shall be monitored full-time by a G or PE or other qualified individual.
6. Underground utilities located within one-hundred feet (100') of a karst feature, then a dike of clay or other suitable material shall be placed across the trench at twenty-foot (20') intervals or less along the entire length which passes through the one hundred foot (100') radius, or as directed by a G or PE.
7. Do not apply any fertilizer, pesticides, or other chemicals within at least one-hundred feet (100') of a sinkhole.
8. Immediately (within 24 hours) after disturbing any soil, lightly fertilize, seed, and mulch the area to control erosion. A geotextile may be needed on steep slopes.
9. At least one subsurface cross section should be submitted with the storm water plan, showing confining layers, depth to bedrock, and water table, if encountered. It should extend through the centerline of any proposed impounding storm water facility.
10. Natural karst swales should be protected whenever possible as an effective element in storm water design in karst regions.

There are no known sinkholes in the project area.

Certification: GPP Certification

- The person who can make the managerial and/or financial decisions that are required to implement your plan should be the one signing the certification statement.
- Use the following certification statement verbatim.

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.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.

Use the following certification statement verbatim.

Designated Representative: Jonathan M Magalski

Title: Environmental Manager

Signature:

Date: 7/7/2025

Please Print, Sign, Scan and attach this document rather than mailing as a wet ink signature is no longer required.

Form: Statement For Billing, Class I

The Appalachian Power Company - London Hydroelectric Plant , of which I am an

name of company or facility

authorized representative, has applied for a West Virginia National Pollutant Discharge Elimination System permit from the West Virginia Department of Environmental Protection, Division of Water and Waste Management. Under the West Virginia Legislative Rules, Title 47, Series 10, Section 12.1.c.2, the costs of publishing a Class I legal advertisement are to be paid by the applicant who must also send the certificate of publication to the Division of Water and Waste Management within twenty (20) days after publication..

The Appalachian Power Company - London Hydroelectric Plant , hereby agrees to pay

name of company or facility

the cost of such legal advertisement. The publishing newspaper should send the certificate of publication and bill to:

Company or Facility name and address:

Name: Appalachian Power Company - London Hydroelectric Plant

Address Line 1: Attn: Jonathan M Magalski

Address Line 2: 1 Riverside Plaza, Floor 24

Country: United States of America

City: Columbus

State: Ohio

Zip: 43215 PostalCode Ref.

Jonathan M Magalski 614-716-2240 (###-###-####)

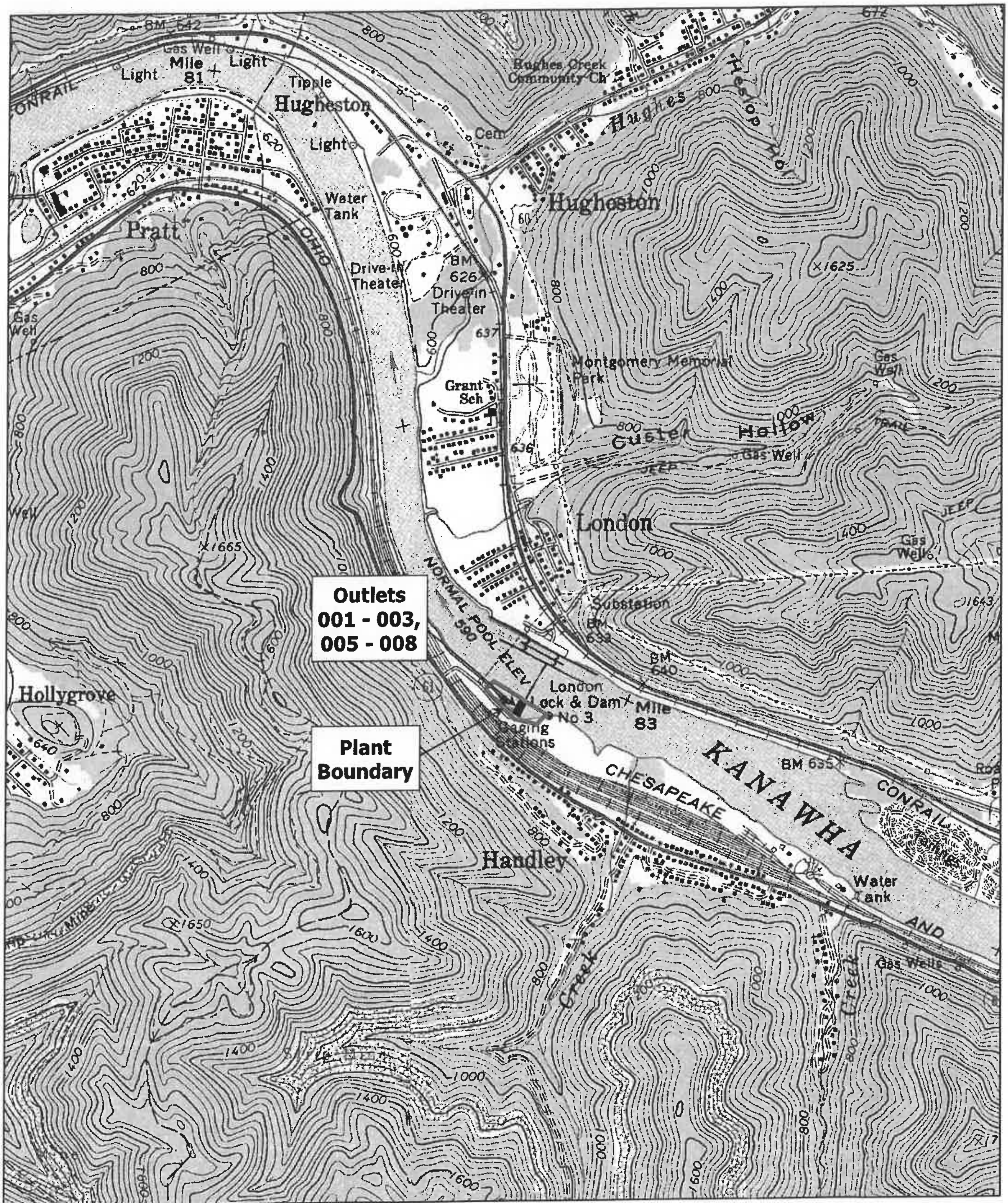
authorized representative area code phone number

Signature of Authorized Representative

Sworn and subscribed to before me this______________ day of
______________ , 20_______.

Notary Public

Commission Expires



12.31.24

N

Montgomery, WVa
Quadrangle
USGS Topographic Map

Plant Latitude 38° 11' 29"
Plant Longitude 81° 22' 14"

0 ½ 1mi

Appalachian Power Company

London Hydroelectric Plant

USGS Site Location Map

Water & Ecological Resource Services AEP

Applicant:	APPALACHIAN POWER COMPANY	Type:	Reissue NPDES Industrial
Reference ID:	London Hydro Renewal 2025 (05/07/2025)	Permit ID:	WV0078875
Section XII: Certification			
Status	New	Printed:	Jul. 07, 2025 8:48 AM

XII. CERTIFICATION (see instructions)

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 upon 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.

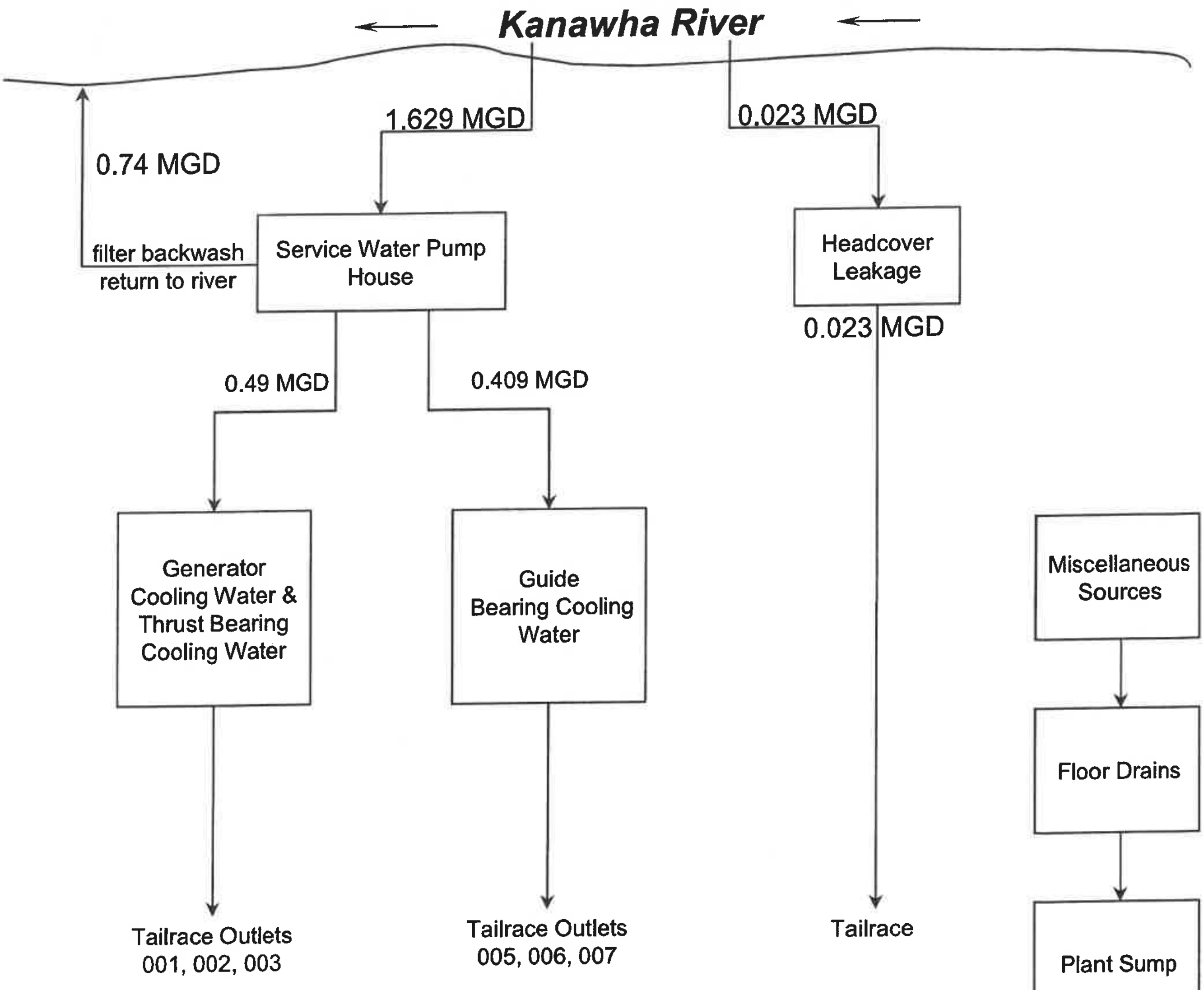
A. NAME Jonathan M Magalski

OFFICIAL TITLE Environmental Manager

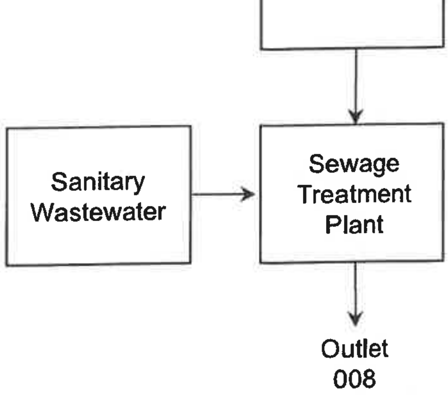
B. SIGNATURE

C. DATE SIGNED 7/7/2025

Please Print, Sign, Scan and attach this document rather than mailing as a wet ink signature is no longer required.



Outlet Number	Receiving Water	Average Flow (MGD)*
001	Kanawha River	0.18
002	Kanawha River	0.16
003	Kanawha River	0.15
005	Kanawha River	0.136
006	Kanawha River	0.136
007	Kanawha River	0.136
008	Kanawha River	Intermittent



*** Reported flows for Outlets 001-003 are the average of those measured April 2021 - April 2025. Other flows have been historically calculated (see note).**

6/2/2025

Appalachian Power Company
London Hydroelectric Plant

Water Balance Diagram

Water & Ecological Resource Services

AEP

Introduction

Appalachian Power Company believes the U.S. Environmental Protection Agency (USEPA) never intended the 316(b) rule to be applicable to hydroelectric facilities as reflected in the various 316(b) rulemakings (Phase I, Phase II (withdrawn), Phase III (partially withdrawn) and Replacement Phase II/III (2014 Existing Facilities Rule)) and the related rulemaking records (including the 2011 proposed rule). Below are the main points of each rule demonstrating why the rules are not applicable to hydroelectric facilities, including the London and Marmet Hydroelectric Plants (London and Marmet). Key aspects are highlighted in bold.

Phase I Rule

The Phase I 316(b) rule applies to cooling water intake structures for "New Facilities". The Phase I rule became effective on December 18, 2001. On Page 65282 of Vol. 66, No. 243 of the Federal Register, the second full paragraph states:

"…today's **final rule only applies to those electric generating facilities that generate electricity with a steam prime mover** and that meet certain requirements (e.g., have or need to have an NPDES permit, withdraw equal to or greater than 2 MGD from waters of the U.S.)."

Although London and Marmet are existing facility and the Phase I rule only applies to new facilities, we want to make the point that USEPA explicitly states the rule only applies to **"…electric generating facilities that generate electricity with a steam prime mover…"**. London and Marmet are not electric generating plants that utilize steam as the prime mover to generate electricity and the rule clearly does not apply to hydroelectric facilities. On June 19, 2003, USEPA issued Minor Amendments to the Phase I rule, none affecting the statement referenced. Furthermore, if a new hydroelectric facility was constructed today, the Phase I rule would not apply (steam is not the prime mover to generate electricity). Therefore, we firmly believe that the 2014 Existing Facilities Rule would similarly not apply to hydro facilities in operation prior to the Phase I rule.

Phase II Rule

On July 9, 2004, USEPA issued a final Phase II rule for "Existing Electric Power Plants" (Vol. 69, No. 131, Pages 41576-41693). Although the rule was withdrawn in a Notice of Suspension on July 9, 2007 (Vol. 72, No. 130, Pages 37107-37109), nowhere in the remanded Phase II rule, nor the 2014 Existing Facilities Rule, did USEPA mention the rule applying to hydroelectric facilities and EPA provides examples of regulated facilities with the emphasis being "steam electric". Cited examples include:

"**Steam electric generating point source dischargers** that employ cooling water intake structures." and,

"**Steam electric generating industrial point source dischargers** that employ cooling water intake structures (this includes utilities and nonutilities)."

As with the Phase I rule, the Phase II rule would have applied to facility intake structures that withdraw water for "steam electric" cooling purposes, and would not have been applicable to hydroelectric facilities.

Phase III Rule

On June 16, 2006, USEPA issued a Phase III rule to regulate cooling water intake structures for "Other Existing Facilities and New Offshore Oil & Gas Extraction Facilities". While portions of this rule were remanded along with the Phase II rule, nowhere in this Phase III rule does it discuss or imply regulation of intake structures at hydroelectric facilities.

2011 Proposed Rule

On April 20, 2011, USEPA published in Vol. 76, No. 76 of the Federal Register a proposed 316(b) rule for "Cooling Water Intake Structures at Existing Facilities and Phase I Facilities". In the proposed 2011 rule on Page 22190, second full paragraph, hydroelectric facilities are exempted from 316(b) requirements. The specific reference states:

"Given the diversity of industrial processes across the U.S., **there are many other industrial uses of water not intended to be addressed by today's proposed rule**. Emergency water withdrawals, such as fire control systems and nuclear safety systems, are not considered as part of a facility's design intake flow. Warming water at liquefied natural gas terminals, and **hydro-electric plant withdrawals for electricity generation are not cooling water uses and are not addressed by today's proposal.**"

Replacement Phase II/III Rule (2014 Existing Facilities Rule)

The replacement rule issued in 2014 (Existing Facilities Rule) applies to "...cooling water intake structures used by **certain** [not all] existing power generation and manufacturing facilities for the withdrawal of cooling water from waters of the United States" (Page 48300 of Vol. 79, No. 158 of the Federal Register). The final rule became effective October 14, 2014 and constitutes the replacement rule for the remanded Phase II and Phase III rules. In its final version, nowhere does it implicitly or explicitly subject hydroelectric facilities to the rule. Furthermore, nowhere in the record of the rule development does it suggest the rule applies to hydroelectric facilities. In support, on Page 4-22 of the May 2014 *Technical Development Document for the Final Section 316(b) Existing Facilities Rule* (EPA-821-R-14-002), a "Water Turbine" is defined as follows:

"Water Turbine: Units with water turbines, or "hydroelectric units," use either falling water or the force of a natural river current to spin turbines and produce electricity. These units are used for all types of loads. **These units do not use a steam loop and do not use cooling water, as they typically do not generate excess waste heat.**"

In this definition, USEPA recognizes hydroelectric facilities as not utilizing a "steam loop" and further suggests that hydroelectric facilities "do not use cooling water" in a fashion that the rule applies as "they typically do not generate excess waste heat". It should be noted the 316(b) rule purpose is to reduce entrainment and impingement mortality at applicable cooling water intake structures, not thermal effluent, which is *de minimis* at London and Marmet. Further, on Page 4-23 of the May 2014 *Technical Development Document for the Final Section 316(b) Existing Facilities Rule* (EPA-821-R-14-002), USEPA defines what electric generators are subject to the rule and defines those facilities of interest. The section reads:

"**Section 316(b) is only relevant for electric generators that use cooling water**. However, not all prime movers require cooling water. **Only prime movers with a steam-electric generating cycle use large enough amounts of cooling water to fall under the scope of the proposed rule. EPA identified the two types of prime movers (steam turbine and combined cycle steam turbine) that constitute the steam electric prime movers of interest.**"

Clearly the rule does not apply to hydroelectric facilities because USEPA stated in the definition of "water turbine" that hydroelectric facilities "do not use cooling water" and further go on to state the 316(b) rule "...is only relevant for electric generators that use cooling water". Furthermore, USEPA specifically states "Only prime movers with a steam-electric generating cycle use large enough amounts of cooling water to fall under the scope of the proposed rule." Hydroelectric facilities do not use a "steam-electric generating cycle", and therefore do not "fall under the scope" of the rule.

Additionally, nowhere in the supporting documents of the rule is there discussion of the rule applying to hydroelectric facilities. This includes the Economic Analysis (EPA-821-R-14-001) and Benefit Analysis (EPA-821-R-14-005). Furthermore, and also of critical importance, hydroelectric facilities were never surveyed by USEPA for information to develop the rule or evaluate intake technologies. Only steam electric generators and other related manufacturing facilities were surveyed. If USEPA intended for the rule to apply to hydroelectric facilities, it would be necessary for them to perform such survey and analyses. Finally, hydroelectric facilities do not employ "cooling water intake structures" as contemplated by the rules, and to which "structures" the 316(b) rules apply.

Summary and Conclusion

As demonstrated above, none of the final or proposed / rescinded 316(b) rules are applicable to London and Marmet. We note that in most of the rulemakings, EPA does not attempt to list every possible type of facility to which a rule does not apply. Therefore, there is not a specific exemption listed in the rules for hydroelectric or any other specific classification of facilities. Although London and Marmet (and many other hydroelectric facilities) use water for miscellaneous cooling purposes in some fashion, the volume withdrawn for cooling is *de minimis* compared to the water withdrawn for hydroelectric generation. Furthermore, London and Marmet do not use a "steam-electric generating cycle", "use large enough amounts of cooling water to fall under the scope" of the rules, nor "generate excess waste heat".

Fish entrainment and impingement at hydroelectric facilities is addressed in the Federal Energy Regulatory Commission (FERC) operating license and conditioning 401 Water Quality Certification (WQC) in the context of the use of water as the primary energy production source. Additionally, certain federal and state resource agencies have the authority under Section 10(j) of the Federal Power Act to condition a FERC license if adverse impacts might occur. A fish entrainment and impingement study was performed at London and Marmet during the relicensing of those facilities around 2010. At that time, resource agencies (U.S. Fish and Wildlife Service (USFWS), West Virginia Department of Environmental Protection (WVDEP) and West Virginia Division of Natural Resources (WVDNR)) and other stakeholders, including USEPA were afforded the opportunity to participate, comment and influence conditions of the new license and 401 WQC. The outcome of the new license and 401 WQC resulted in no further study, mitigation or other actions regarding fish entrainment and impingement at London or Marmet.

For all the reasons contained herein, Appalachian Power Company believes 316(b) does not apply to London or Marmet and that fish entrainment and impingement is addressed through the FERC license and associated 401 WQC. However, while there is much disagreement across the U.S. whether Section 316(b) of the Clean Water Act is applicable to hydroelectric facilities, provided below are the applicable sections and information found at 40CFR §122.21(r) regarding cooling water systems at London and Marmet.

Application Requirements for Facilities with Cooling Water Intake Structure [§122.21(r)]

Existing Facilities [§122.21(r)(1)(ii)(A)]

The owner or operator of an existing facility defined at 40 CFR 125.92(k) must submit to the Director for review the information required under paragraphs (r)(2) and (3) of this section and applicable provisions of paragraphs (r)(4), (5), (6), (7), and (8) of this section.

The information for §122.21(r)(2)-(8) are presented below.

Additional Information [§122.21(r)(1)(ii)(C)]

The owner or operator of an existing facility must also submit such additional information as the Director determines is necessary pursuant to 40 CFR 125.98(i).

As of the date of this renewal application submittal, WVDEP has not requested any additional information for London or Marmet.

All Facilities [§122.21(r)(1)(ii)(H)]

The owner or operator of any existing facility or new unit at any existing facility must also submit with its permit application all information received as a result of any communication with a Field Office of the Fish and Wildlife Service and/or Regional Office of the National Marine Fisheries Service.

During the FERC relicensing of the London and Marmet Hydroelectric Project (FERC No. 1175-015 or Project), the West Virginia USFWS Field Office and other USFWS offices were afforded the opportunity to participate in the relicensing proceedings and file comments or requests. Additionally, under Section 10(j) of the Federal Power Act, the USFWS has the authority to condition a FERC license for the protection, mitigation or enhancement of fish and wildlife resources. At that time, no USFWS office participated in the proceedings and FERC concluded the Project is not likely to adversely affect listed species.

Source Water Physical Data [§122.21(r)(2)]

As mentioned above, London and Marmet are a FERC licensed Project located on the Kanawha River in Kanawha County, West Virginia (Figure 1). The U.S. Geological Survey (USGS) Topographic Map showing the surrounding features of each plant is included with the renewal applications. London and Marmet are located at existing U.S. Army Corps of Engineers' (USACE) locks and dams. London and Marmet, located at River Mile 82.8 near Handley and River Mile 67.7 in Marmet, respectively, are identical facilities each having a combined hydraulic capacity of approximately 10,000 cubic feet per second (cfs) and a generating capacity of 14.4 megawatts (MWs). Both Projects were constructed in 1935 and are operated in "run-of-river" mode.

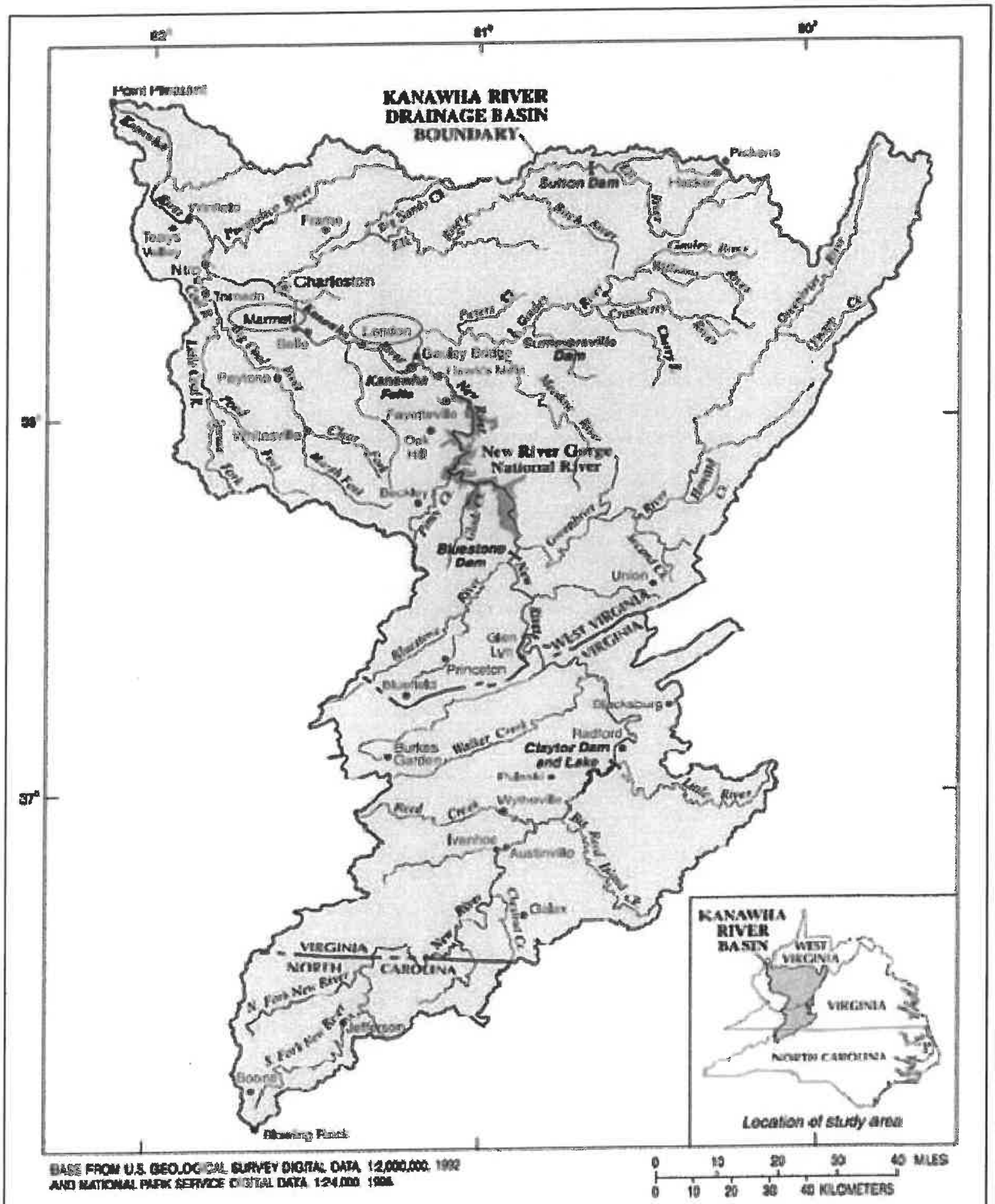


Figure 1 – Kanawha River Watershed Map.

The London reservoir extends upstream from the dam approximately 9.4 miles to the base of Kanawha Falls. The reservoir has a surface area of 910 acres at the normal full pool elevation of 614.0 feet and approximately 21 miles of shoreline (including backwater into tributaries, but excluding islands). The storage capacity of the reservoir is estimated to be 19,000 acre-feet. The Marmet reservoir extends upstream from the dam approximately 15.2 miles to the base of London dam. The reservoir has a surface area of 1,420 acres at the normal full pool elevation of 590.0 feet and approximately 36 miles of shoreline (including backwater into tributaries, but excluding islands). The storage capacity of the reservoir is estimated to be 12,000 acre-feet.

While water quality monitoring of the Kanawha River has been periodically conducted for many years by the WVDEP, USACE and USGS, the most current and comprehensive data set was commissioned during a year-long study by West Virginia American Water (WVAW) in June 2015. In this study (https://www.amwater.com/wvaw/resources/PDF/Raw%20Water%20and%20Sediment%20Study%20v3.pdf), extensive water quality and sediment sampling was conducted between Charleston upstream to Montgomery. Water quality samples were collected bi-monthly over a 12 month period at four locations. At each sample site, two sample locations were established and samples were collected 1 foot below the surface and 10 feet above the river bottom. A total of 392 grab samples were collected and analyzed for 32 different volatile organic compounds and 104 composite samples were analyzed for 121 additional parameters. The water quality sampling data resulted in no appreciable difference across the four sampled sites. Five parameters resulted in levels above the Federal Safe Drinking Water Act primary and secondary drinking water standards (bacteria, aluminum, iron, manganese and bis(2-ethylhexyl)phathalate).

Sediment sampling was conducted at seven sites in the Kanawha River between Charleston and Cabin Creek and four additional tributary locations upstream of Cabin Creek. Sediments were sampled twice, once during low flow conditions and once following high flows. The sediment samples were analyzed for total organic carbon, various metals, polychlorinated biphenyls, volatile organic compounds and semi-volatile organic compounds and dioxins. Two parameters resulted in levels above the probable effect concentration (copper and nickel) at just one sample site.

During the FERC relicensing of the London and Marmet Project, a water quality study was conducted above and below each dam, in addition to assimilating publically available water quality information. As the study related to water quality parameters that could be influenced by Project operations, dissolved oxygen (DO) and temperature (the two water quality parameters that typically influence the location of fish species the most in a waterbody), as well as pH and conductivity, were monitored. The focus of the in-field water quality monitoring was during the summer and early fall period when higher temperature and lower flow conditions tend to contribute the most to depressed DO.

The water quality data was collected along three transects downstream and along two transects upstream on a weekly basis and continuously in the London and Marmet tailraces from June 15 through October 17, 2009. The in-field water quality monitoring locations at London and Marmet are shown in Figures 2 and 3, respectively.

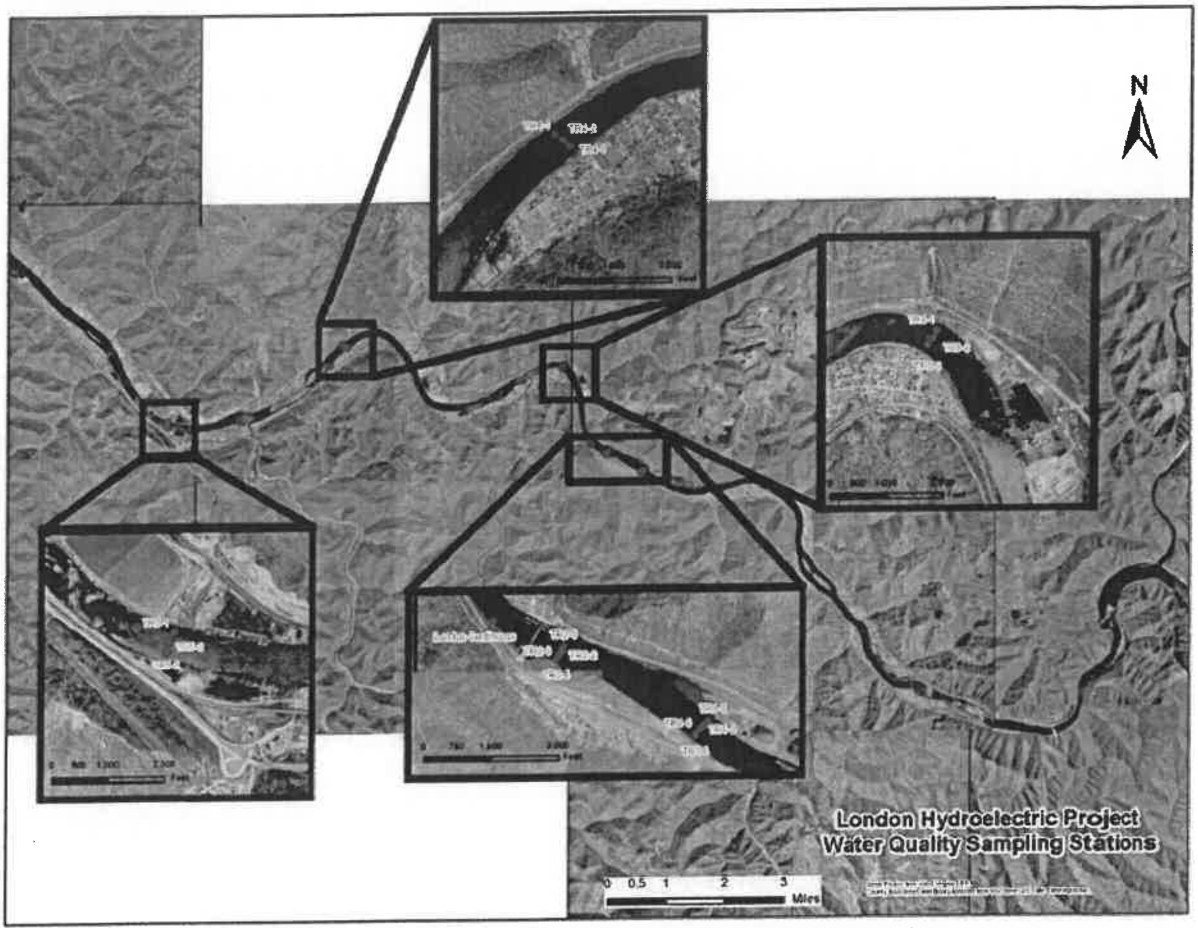


Figure 2 – FERC Relicensing Water Quality Study Monitoring Locations at London.

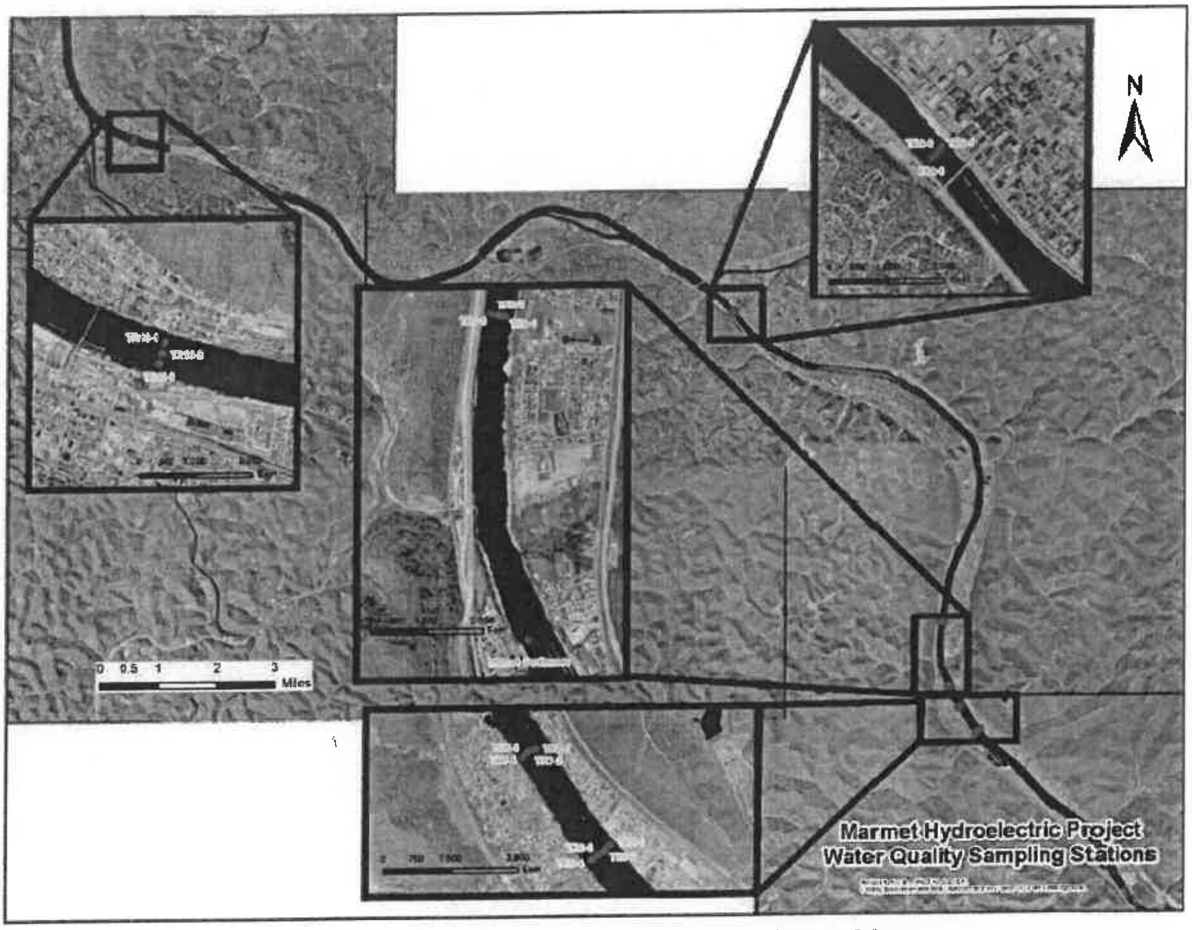


Figure 3 – FERC Relicensing Water Quality Study Monitoring Locations at Marmet.

As shown in respective Figures 4 and 5 below, DO percent saturation, temperature, pH and specific conductivity for each of the 18 weekly surveys resulted in little variation; however, there are several general patterns. First, vertical stratification was minimal during most sampling events and at most sampling locations. These include a slight variation of temperature and DO percent saturation stratification at times in the upper 2 meters of water immediately above London and Marmet. There was virtually no stratification difference for pH or specific conductivity at London or Marmet. In summary, there are subtly depressed DO and increased temperature in the upper 2 meters immediately above London and Marmet which may indicate the lack of fish occupancy in those areas at certain times of the year.

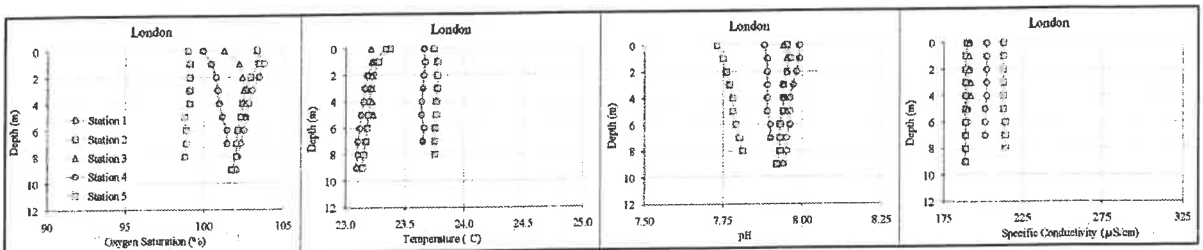


Figure 4 – Averages of Water Quality Profile Data Collected at each Monitoring Location for London.

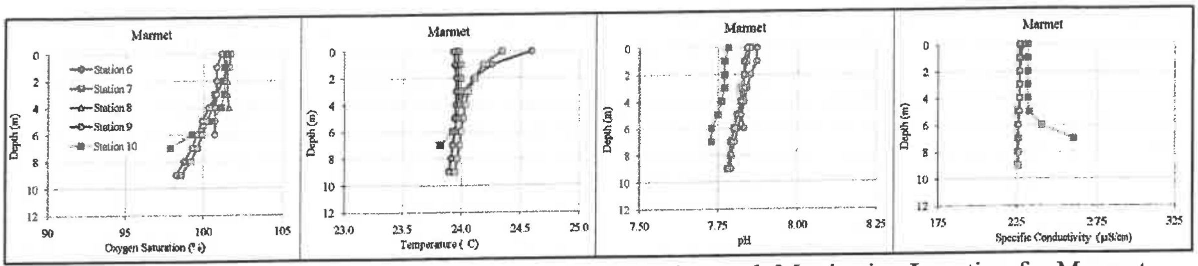


Figure 5 – Averages of Water Quality Profile Data Collected at each Monitoring Location for Marmet.

Cooling Water Intake Structure Data [§122.21(r)(3)]

The cooling water intake structures at London and Marmet are identical in design and construction (Figure 6). The London and Marmet intake structures are located immediately upstream of the powerhouses on the left-descending banks at 38° 11' 28" N / 81° 22' 12.5" W and 38° 15' 08" N / 81° 34' 10.6" W, respectively. The intake pipe is 12 inches in diameter with the pipe opening situated in a concrete sump that is 4 feet long by 3.33 feet wide. The 12-inch pipe opening in the concrete sump is located at elevation 609.5 and 585.5 feet on center at London and Marmet, respectively. The nominal pool elevations at London and Marmet are 614 and 590 feet, respectively.

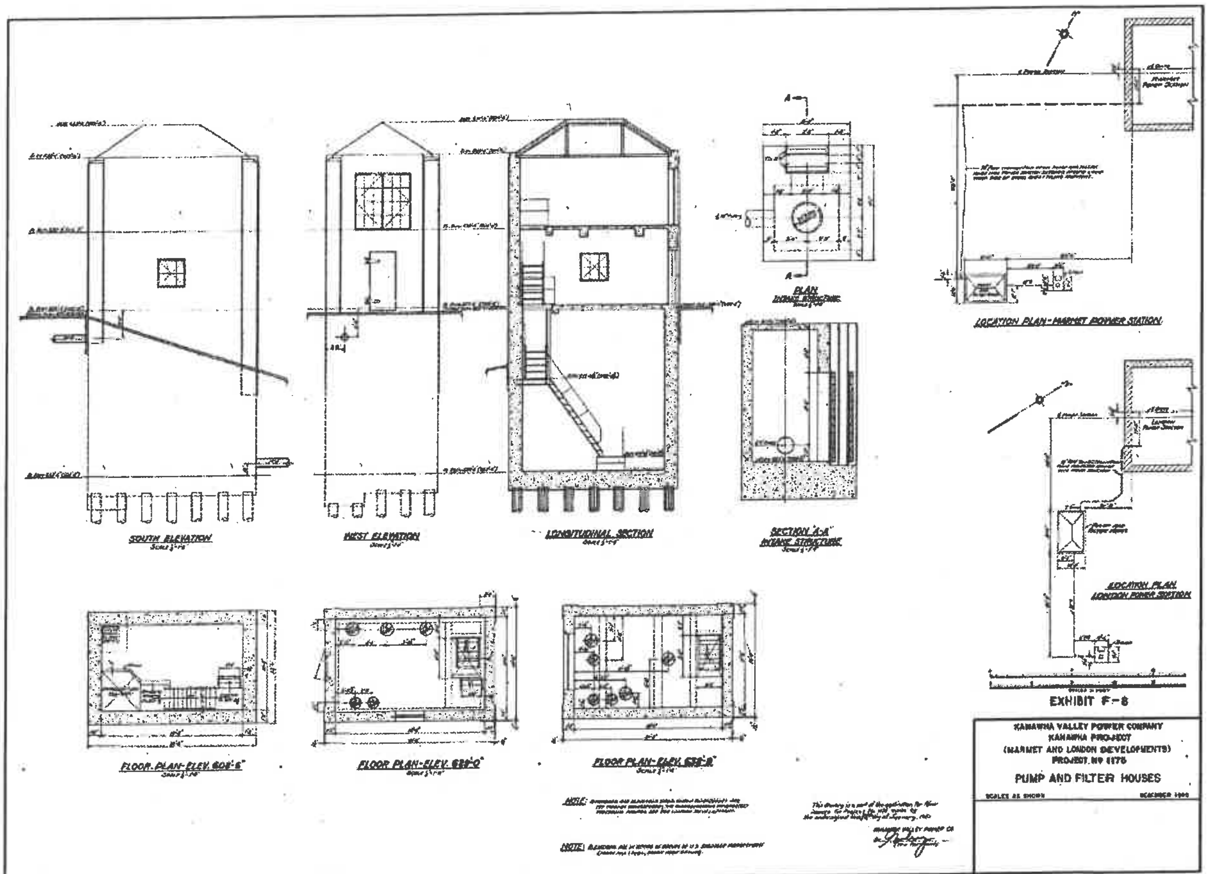


Figure 6 – London and Marmet Intakes and Filter Houses (CEII)

The openings of the concrete intake sumps to the Kanawha River at London and Marmet are 2 feet wide and 4.5 feet deep (Figure 7). In order to prevent debris and trash from entering the sump, the opening is positioned facing downstream and provided with two, in-series reinforced Johnson screens that are separated by 6 inches. Each screen is 2.67 feet wide and just over 4.5 feet deep. Each horizontal reinforcement bar is 1½ inches by 3/8 inch and spaced 2 inches on center. The fine mesh Johnson screen covering the reinforced bar portion of the screen is 18 gauge and is positioned on both screens.

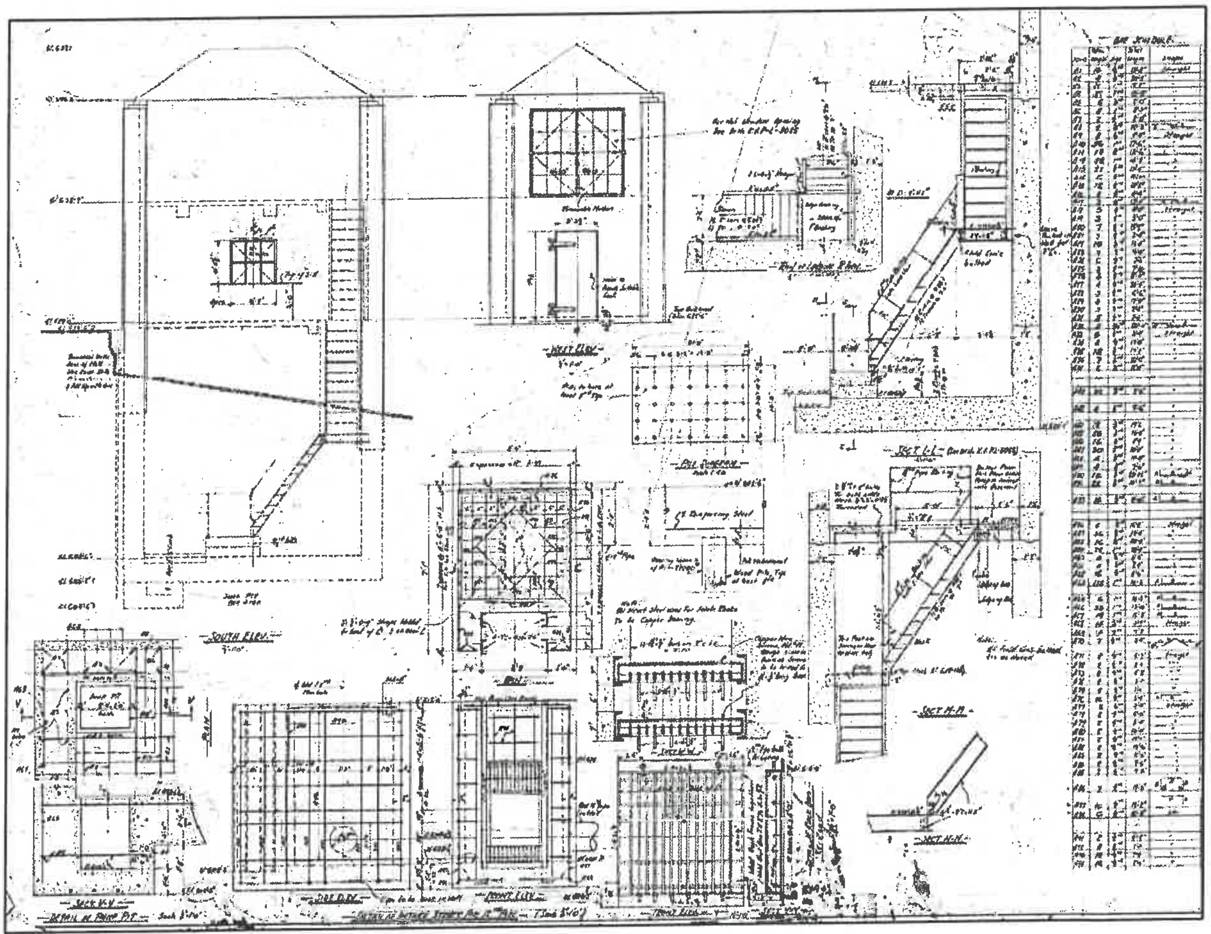


Figure 7 – London and Marmet Intake Screens (CEII)

From the concrete intake sump at London and Marmet, the 12-inch pipe leads into the adjacent filter house at elevation 610 and 586 feet on center, respectively, at floor level. Once inside the filter house, dual 25 horsepower Flygt pumps with a combined pump capacity of 1,040 gallons per minute (gpm) (1.5 million gallons per day (MGD)) pump the water through a pipe 8 inches in diameter to the third floor of the filter houses located at elevation 638.75 and 616.25 feet, respectively. The cooling water flow equates to approximately 0.1% of the 7Q10 of the Kanawha River (1,980 cfs).

Located on the third floor is a Tate Andale Model 1260 self-cleaning filter strainer (https://www.tateandale.com/products/build-to-order-strainers-filters/self-cleaning-strainers/model-1260/) that removes fine debris and backwashes the collected material through an 8-inch pipe that combines with a 10-inch filter strainer overflow pipe back to the Kanawha River. The nominal capacity of the filter strainer is 1,200 gpm (1.73 MGD). The strainer filter screen is 1,200 microns (0.047 inch) wedgewire mesh that is automatically backwashed when the differential pressure reaches 4 pounds per square inch. When the

Kanawha River is highly turbid, backwashing may occur once per day. Otherwise, the system may backwash approximately 150 times per year.

After the water passes through the filter strainer, it is sent through a 10-inch pipe to the power house where it is used for equipment cooling purposes. As shown on Figures 8 and 9, after the cooling water is supplied to a unit, the pipe diameter is subsequently reduced by 2 inches to maintain pressure in the supply system. As such, starting after Unit 1, the pipe is reduced from 8 inches to 6 inches. After Unit 2, the piping is reduced to a 6-inch pipe to supply Units 3.

The cooling water leading into each unit is delivered through two, 4-inch pipes that come off the main supply pipe described above. Each 4-inch pipe is further reduced to a 3-inch pipe which provides cooling water to the generator coolers (two per unit). In addition, two 1 ½-inch pipes come off the 3-inch pipe to provide cooling and lubricating water to the unit's thrust bearings and guide bearings. The piping that provides water to the generator coolers and thrust bearing later rejoin into a 4-inch pipe that discharge to the tailrace via Outlets 001, 002 and 003 for Units 1, 2 and 3, respectively. The guide bearing cooling and lubricating water is continuously provided to the shaft seal where it is discharged through the shaft into the draft tube where it is subsequently discharged to the tailrace via Outlets 005, 006 and 007 for Units 1, 2 and 3, respectively.

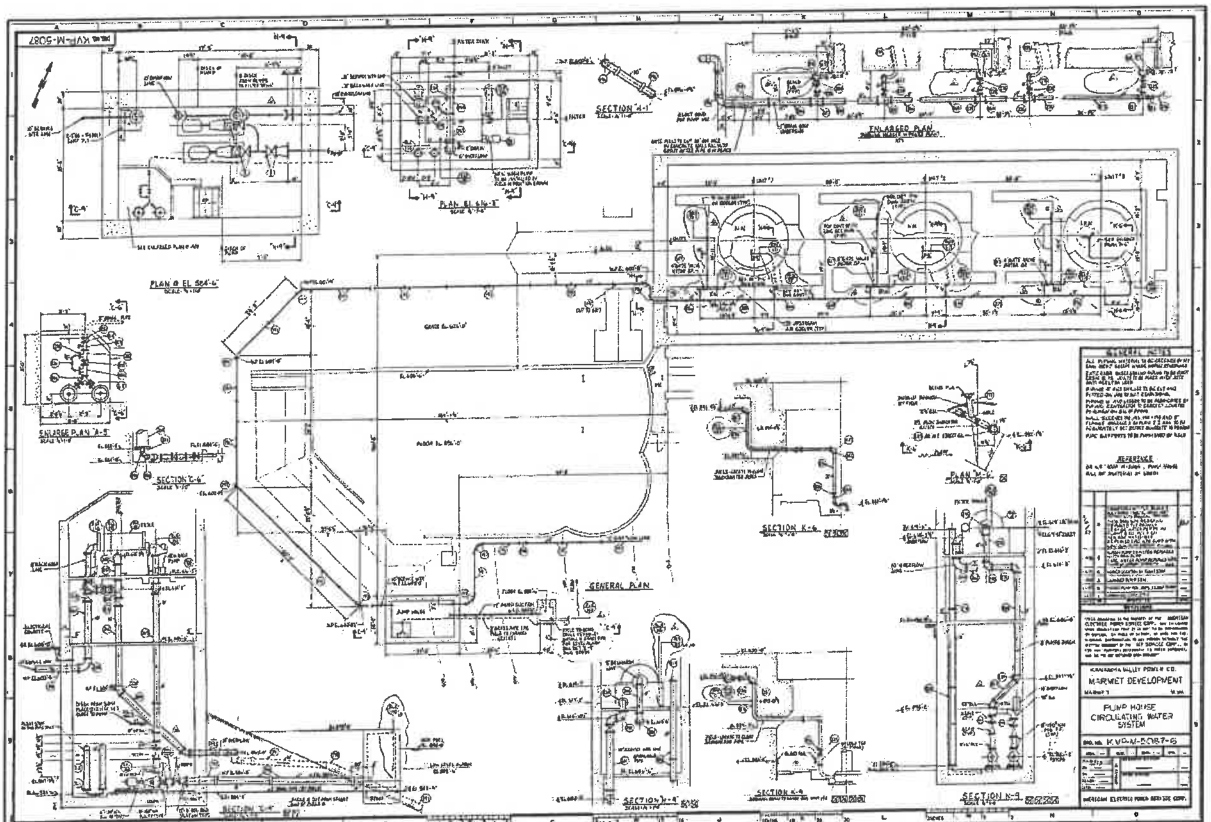


Figure 8 – London and Marmet Service and Cooling Water System (CEII)

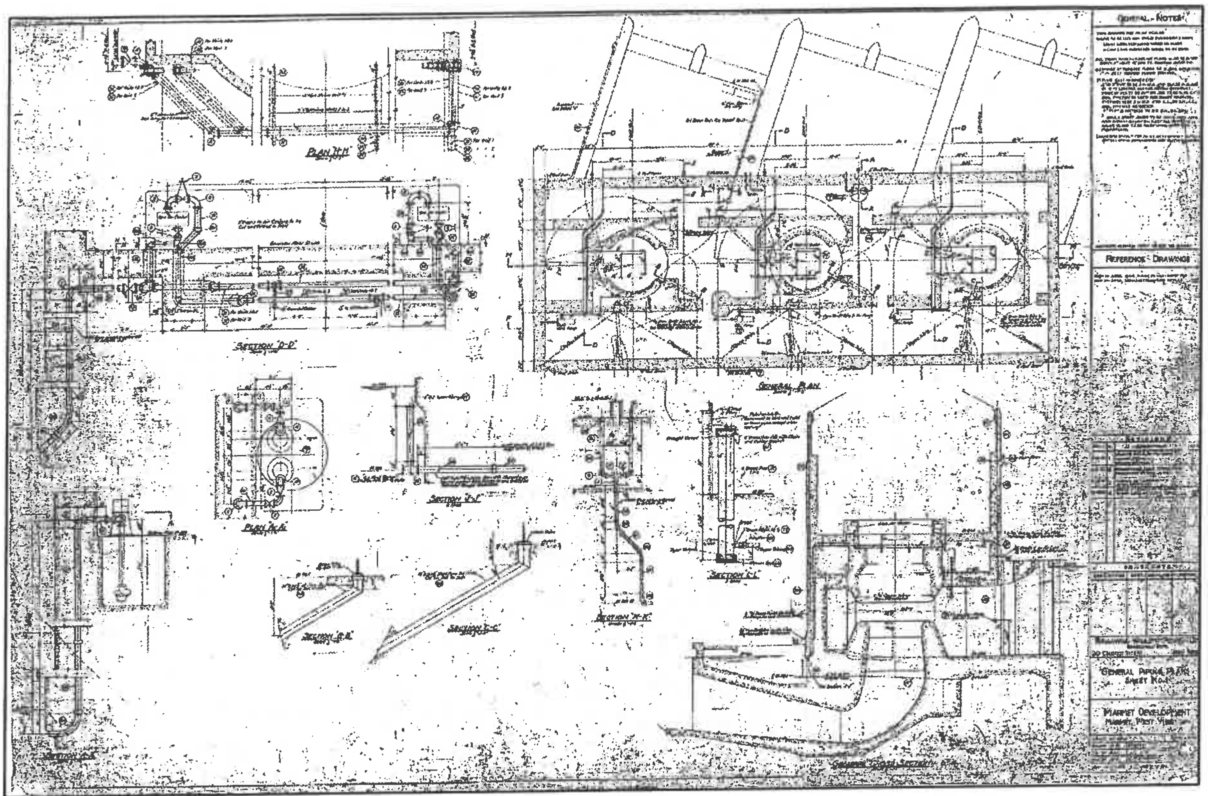


Figure 9 – London and Marmet General Piping Plans (CEII)

Source Water Baseline Biological Characterization Data [§122.21(r)(4)]

The Kanawha River in the vicinity of London and Marmet can generally be characterized as industrial. As evident by the presence of the USACE locks, the river serves as a means for commercial navigation. As such, anthropogenic changes associated with navigational requirements have substantially influenced the aquatic habitat in the area. These changes include creation of locks and dams, channel modifications and shoreline alterations. In the early 1990's, the USACE conducted a navigational study of the Kanawha River and found that the pools above London and Marmet provide a homogeneous, low value habitat type that is relatively abundant in the Kanawha River. The approaches to the locks are also of low value due to frequent disturbance by boat traffic and periodic maintenance dredging activity by the USACE. The pools are approximately 25 to 30 feet deep, with a sandy and highly unstable substrate. Except for the littoral zones of the channel borders, it is not considered to provide high quality habitat. The littoral zones around London and Marmet, including around the cooling and generating water intake structure, is of poor quality and have been significantly disturbed through construction of the powerhouses, removal of riparian vegetation and placement of riprap. The tailwaters below the impoundments are highly productive and dynamic areas with coarse substrates, swift currents, and relatively shallow depths. The tailwater areas represent a valuable remnant of pre-impoundment conditions, which may be essential for spawning of certain species.

Forty-nine (49) native and introduced species, representing 15 families, characterize the fish assemblage commonly known in the Kanawha River (Table 1). In the vicinity of the London and Marmet upstream pools, the fishery is dominated by redhorse, hogsucker, gizzard shad, bluegill, longnose gar, white bass, and channel catfish. Popular game species include largemouth and smallmouth bass, white and hybrid striped bass, crappie, sauger, saugeye and walleye. The principal forage species include gizzard shad and skipjack herring, which are considered fragile species, in addition to young and smaller individuals of other species. No federally listed threatened or endangered fishes are known to occur in the Kanawha River.

Table 1. Fish Assemblages Commonly Known to Occur in the Kanawha River.

FAMILY *(GENUS SPECIES)*	SPECIES (COMMON NAME)
Petromyzontidae	
Ichthyomyzon bdellium	Ohio Lamprey
Acipenseridae	
Scaphirhynchus albus	Shovelnose Sturgeon
Polyodontidae	
Polyodon spathula	Paddlefish
Lepisosteidae	
Lepisosteus osseus	Longnose Gar
Hiodontidae	
Hiodon tergisus	Mooneye
Clupeidae	
Alosa chrysochloris	Skipjack Herring
Dorosoma cepedianum	Gizzard shad
Cyprinidae	
Cyprinella spiloptera	Spotfin shiner
Cyprinus carpio	Common carp
Erimystax dissimilis	Streamline Chub
Hybopsis amblops	Bigeye Chub
Notropis atherinoides	Emerald shiner
Notropis hudsonius	Spottail Shiner
Notropis rubellus	Rosyface Shiner
Notropis volucellus	Mimic shiner
Notropis wickliffi	Channel Shiner
Pimephales notatus	Bluntnose minnow
Catostomidae	
Carpiodes carpio	River Carpsucker
Carpiodes cyprinus	Quillback
Carpiodes velifer	Highfin Carpsucker
Ictiobus bubalus	Smallmouth Buffalo
Ictiobus niger	Black Buffalo
Moxostoma anisurum	Silver Redhorse
Moxostoma carinatum	River Redhorse
Moxostoma duquesnei	Black Redhorse
Moxostoma erythrurum	Golden redhorse
Moxostoma macrolepidotum	Shorthead Redhorse
Ictaluridae	
Ictalurus furcatus	Blue Catfish
Ictalurus punctatus	Channel Catfish
Pylodictis olivaris	Flathead Catfish
Atherididae	
Labidesthes sicculus	Brook Silverside
Esocidae	
Esox masquinongy	Muskellunge
Percichthyidae	
Morone chrysops	White Bass
Morone saxatilis x Morone chrysops	Hybrid Striped Bass
Centrarchidae	
Ambloplites rupestris	Rock Bass

Lepomis cyanellus	Green Sunfish
Lepomis macrochirus	Bluegill
Lepomis megalotis	Longear Sunfish
Micropterus dolomieu	Smallmouth Bass
Micropterus punctulatus	Spotted Bass
Micropterus salmoides	Largemouth Bass
Pomoxis annularis	White Crappie
Percidae	
Percina caprodes	Logperch
Percina copelandi	Channel Darter
Percina maculata	Blackside Darter
Sander canadensis	Sauger
Sander vitreus	Walleye
Sander vitreus x Sander canadense	Saugeye
Sciaenidae	
Aplodinotus grunniens	Freshwater Drum

Cooling Water System Data [§122.21(r)(5)]

A powerhouse intake velocity study was conducted at both London and Marmet during the FERC relicensing in May 2010. To be completely clear, the cooling water intake structures previously discussed are completely separate and upstream of the powerhouse intake structures that withdrawal water for power generation purposes only. Due to safety concerns related to personnel being in a boat in the forebays during generation, the majority of data were collected at a single transect between the concrete piers immediately upstream (approximately 10 feet) of the generating unit intakes using an Acoustic Doppler Current Profiler (ADCP). Because of this limitation, the data collected were primarily representative of the immediate "at-rack" intake velocities as opposed to approach velocities. These represent the highest velocities within the forebay and were closest in proximity to the shoreline cooling water intake structure. For cross-sectional transects collected immediately upstream of the generating unit intakes, a minimum of three passes were performed for each turbine at the most efficient gate opening, as well as at full capacity. It should be noted that velocity data were not collected at Marmet Unit 3 due to an unexpected maintenance outage during the data collection period. However, data were collected for London Unit 3, which is virtually identical in design to Marmet Unit 3 and should have similar intake velocity characteristics. The results of the velocity study are summarized in Table 2 below.

Table 2. Measured Unit Intake Velocities (Feet per Second) at London and Marmet.

	Efficient Gate						Full Capacity					
	Intake 1			Intake 2			Intake 1			Intake 2		
	Max	Average	SD	Max	Average	SD	Max	Average	SD	Max	Average	SD
London												
Unit 1	3.67	2.40	0.14	3.36	1.99	0.12	4.38	2.79	0.03	4.43	2.73	0.09
Unit 2	5.74	3.64	0.09	3.54	3.08	0.23	5.58	4.12	0.05	5.43	3.39	0.22
Unit 3	5.39	3.10	0.52	6.23	2.59	0.29	5.21	3.78	0.19	5.08	3.09	0.17
Marmet												
Unit 1	3.55	2.03	0.13	3.60	1.82	0.25	3.94	2.21	0.09	4.18	2.22	0.06
Unit 2	4.94	3.12	0.09	5.68	2.57	0.29	5.20	3.34	0.19	6.13	3.01	0.46

Based on the location, positioning and pump capacities of the cooling water intakes at London and Marmet, velocities at those intake screens are expected to be significantly lower or actually in the reverse direction away from the screens due to the river flow influence of the water entering the generating unit intakes.

Chosen Method(s) of Compliance with Impingement Mortality Standards [§122.21(r)(6)]

London and Marmet cooling water intakes are positioned such that fish are highly unlikely to become impinged on the screens due to the intuitively low intake velocities at the screens. Additionally, due to the lack of suitable spawning habitat and poor habitat quality in general, it is unlikely spawning and rearing occurs in the immediate vicinity of the intakes. Fish that could potentially become impinged on the screens should have the capability to overcome the velocity and swim away from the screen. As such, no compliance for impingement mortality is proposed.

Entrainment Performance Studies [§122.21(r)(7)]

Other than the entrainment and impingement studies completed during the FERC relicensing of London and Marmet, no other studies have been conducted. As noted on Page 35 of FERC's Environmental Assessment for the licensing, "In summary, most fish would be able to avoid impingement on the trash rack but most small and medium size fish would be susceptible to entrainment through the project turbine. The results of the entrainment study suggest that fish entrained into the [London and Marmet] turbine units have a low probability of blade strike and that survival is quite high for most small and medium size fish likely to be entrained. Furthermore, nothing in the record for the [London and Marmet] Projects suggests that entrainment is currently having an adverse effect on fish populations in the project areas." Given the conclusion by FERC, the results of the entrainment studies conducted during the FERC relicensing, the null velocities and positioning of the cooling water intake structures, the tight screen spacing and lack of suitable habitat, including spawning and rearing habitat, entrainment through the cooling system is not expected.

Operational Status [§122.21(r)(8)]

As part of AEP's integrated power system, London and Marmet are brought on-line, taken offline and operated based upon inflow and needs identified from Columbus Operations Center located in Columbus, Ohio. Both London and Marmet have nominal flexibility as the FERC license and the USACE allow for only minimal pool fluctuations upstream. Additionally, there are no proposed changes to operations or the equipment at London or Marmet that would change the quantity of cooling water required at either facility. If such changes are proposed, the FERC and resource agencies would need to be consulted per the current license.

Section XVIII. – Potential Discharges Not Covered by Analysis

Product	Bulk Volume	Manufacturer	Use	Frequency
Equipment Operation and Maintenance				
DURA-LITH Grease EP-1	500 lbs.	Chevron	Lubricant	As-needed
Unleaded gasoline		Chevron	Fuel	As-needed
No. 2 Diesel		Ashland	Fuel	As-needed
Gear Oil GX85W-140		Exxon	Lubricant	As-needed
Hydraulic Oil		Mobil	Hydraulic Fluid	As-needed
Aircraft Hydraulic Oil		Texaco	Lubricant	As-needed
Transformer Oil		Texaco	Governor Dashpots	As-needed
SAE 30 Motor Oil		Unocal 76	Motor Oil	As-needed
10W-30 Motor Oil		Unocal 76	Motor Oil	As-needed
Never Seez		Bostik	Solvent	As-needed
Super Duty Oil		Chevron	Lubricant	As-needed
LIDOK EP-1	500 lbs.	Exxon	Lubricant	As-needed
DELO 300 10W-30 Oil		Chevron	Lubricant	As-needed
DEL SAE 30		Chevron	Lubricant	As-needed
Supreme Motor Oil		Chevron	Lubricant	As-needed
Hydraulic Fluid		Chevron	Hydraulic Fluid	As-needed
Ronex Extra Duty	1000 lbs.	Exxon	Lubricant	As-needed
Superflo SAE 30		Exxon	Lubricant	As-needed
SAE 30 Oil		Mobil	Lubricant	As-needed
TERESSIC 68		Exxon	Lubricant	As-needed
Homelite 2-cycle/32		Westland Oil	Lubricant	As-needed
Homelite 2-cycle/16		Westland Oil	Lubricant	As-needed
UNIVOLT 60	8760 gallons*	Exxon	Insulation	As-needed
Homelite Exact Mix		Westland Oil	Lubricant	As-needed
Enerpac Hydraulic Oil	2 gallons	Filmite Oil	Hydraulic Fluid	As-needed
Diesel High Sulfur Oliver	20 gallons	Exxon	Fuel	As-needed
3-36 Aerosol		CRC	Lubricant	As-needed
Lead Acid Battery		Johnson Controls	Electric Storage	As-needed
Premium Solvent		Safety-Kleen	Solvent	As-needed
Thread Cutting Oil		Rigid	Cutting Oil	As-needed
Quin-Syn 127462		Quincy Compressor	Lubricant	As-needed
Quin-Cip Oil		Quincy Compressor	Reciprocating Oil	As-needed
Aerokroil		Kano Laboratories	Lubricant	As-needed
ACC 22P		ACC	Coating	As-needed
Envirotemp FR3	3400 gallons	Cooper Power Sys	Transformer Fluid	As-needed
6BR Sensor Safe Silicon		Permatex	Silicone	As-needed
Mobilgrease XHP 461		Exxon Mobile	Lubricant	As-needed
CFC Free Electro Cleaner		LPS	Contact Cleaner	As-needed
Mobil EAL 224H		Exxon Mobile	Additive	As-needed
680 Retaining Compound		Loctite	Adhesive	As-needed
Rustproof Compound	3 gallons	Texaco	Coating	As-needed
CRC 3-36		CRC Inc.	Lubricant	As-needed
Dielectric Solvent		Ecolink Inc.	Solvent	As-needed
Exxon 10w30 motor oil		Exxon	Motor Oil	As-needed
Exxon transformer oil		ExxonMobil	Transformer Oil	As-needed
Exxon terrisstic 46		ExxonMobil	Lubricant	As-needed
Gasoline		Chevron	Fuel	As-needed
Glyptal 1201 red enamel		General Electric Co.	Paint	As-needed
Havoline 10w30 motor oil		Havoline	Motor Oil	As-needed
Encon Hydrosep Potable Water Additive		Encon	Additive	As-needed
Ingersoll-Rand compressor oil		Ingersoll-Rand	Compressor Oil	As-needed
LPS Labs. Inc Contact Cleaner		LPS Laboratories	Degreaser	As-needed
Mobil gear oil		Mobil	Lubricant	As-needed
Quincy compressor oil SAE 20		Quincy Compressor	Lubricant	As-needed
Relton corp. Rapid Tap		Relton	Mineral Oil	As-needed
Ridgid dark cutting oil		Ridgid	Cutting Oil	As-needed
Sherwin Williams Industrial enamel safety yellow		Sherwin Williams	Paint	As-needed
Sherwin Williams Kem Kromile Primer		Sherwin Williams	Paint	As-needed
Teresstic 68 Turbine oil		Exxon	Turbine Oil	As-needed
Texaco rust proof compound L		Texaco	Coating	As-needed

Section XVIII. – Potential Discharges Not Covered by Analysis

Facility Maintenance				
Bolc-Aid		Spartan Chemical	Cleaner	As-needed
Kem Kromik		Sherwin Williams	Primer	As-needed
DA-70		Spartan Chemical	Wax Stripper	As-needed
Foamy Q&A		Spartan Chemical	Disinfectant Cleaner	As-needed
Peladow		DOW	Snow/Ice Melter	As-needed
GERMICIDAL		Spartan Chemical	Bowl Cleaner	As-needed
SD-20		Spartan Chemical	Cleaner	As-needed
Herbicides and Pesticides				
ACCORD		Monsanto	Herbicide	Annually
Big Sur 90		Brewer International	Herbicide	Annually
Pendulum		American Cyanamid	Herbicide	Annually
Spike 80W		DOW-Elanco	Herbicide	Annually
Rodeo		DOW-Elanco	Herbicide	Annually

* Amount used in on-site transformers – none stored otherwise.

APPALACHIAN POWER COMPANY

London Hydroelectric Plant
NPDES Permit No. WV0078875

Groundwater Protection Plan

Prepared by:

American Electric Power Service Corporation
Environmental Services
1 Riverside Plaza
Columbus, Ohio 43215

Prepared for:

Appalachian Power Company
London Hydroelectric Plant
26715 Second Avenue
Handley, West Virginia 25102

June 2025

Revision 3

TABLE OF CONTENT

LIST OF FIGURES

I. <u>Purpose</u>

This Groundwater Protection Plan (GPP) has been prepared in accordance with the West Virginia Groundwater Protection Regulations (WV CSR Title 47, Series 58). The purpose of this document is to describe the operations at the London Hydroelectric Plant (Plant) that may reasonably be expected to have the potential to contaminate groundwater and to outline measures taken to prevent groundwater contamination.

II. <u>Plant Description</u>

The Plant is located on the left-descending bank of the Kanawha River near Handley, Kanawha County, West Virginia. The Plant consists of three hydroelectric generating units with a combined capacity of approximately 16 megawatts. Figure 1 shows the location of the Plant on the U.S.G.S. Montgomery Quadrangle map.

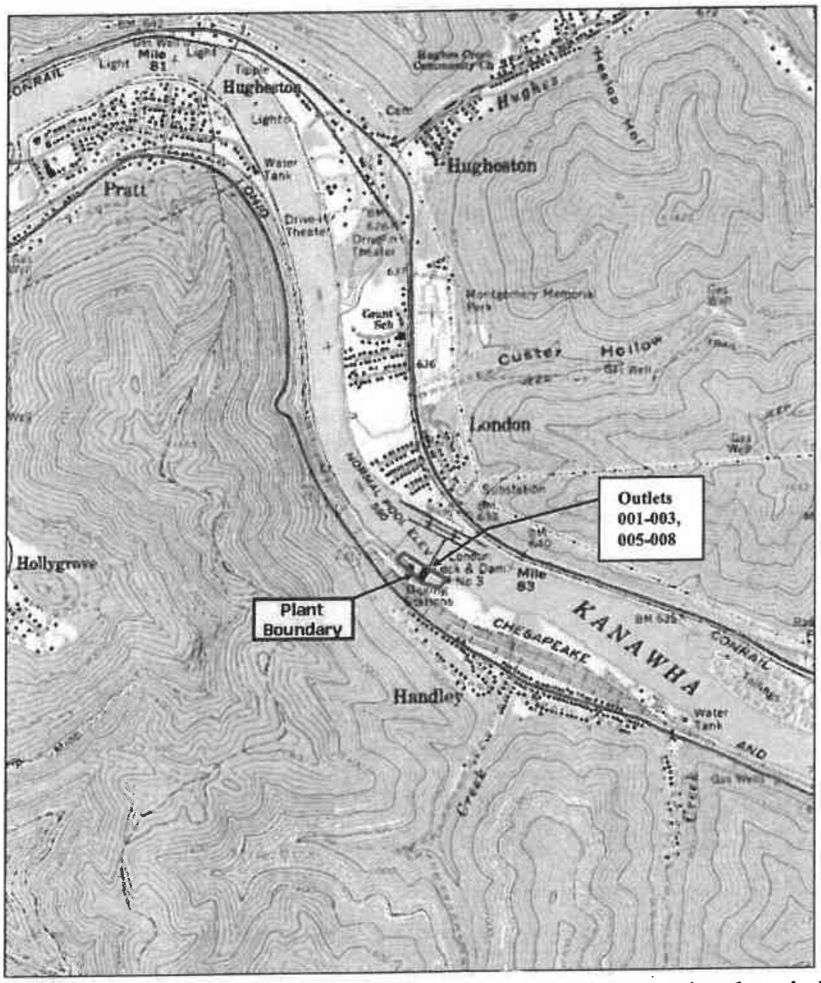


Figure 1: U.S.G.S. Montgomery Quadrangle Map for London Hydroelectric Plant.

III. Summary of Activities Carried Out Under Other Regulatory Programs That Have Relevance to Groundwater Protection

The following sections summarize regulatory programs, both state and federal, which influence groundwater protection practices. Specifically, these programs are:

A. Spill Prevention Control and Countermeasures (SPCC)

This program is mandated by the Federal Water Pollution Control Act at 40 CFR Part 112. The program is intended to prevent the release of oil (petroleum) into or upon navigable waters of the United States or adjoining shorelines, and is applied to facilities which have an aggregate storage capacity greater than or equal to 1,320 gallons of oil in containers 55 gallons or larger. These regulations require that a SPCC Plan be developed, implemented, and maintained at the Plant.

The SPCC Plan for the Plant is reviewed and updated as necessary at least once every five (5) years or soon if determined necessary. A copy of the SPCC Plan is available for inspection at the Plant.

B. West Virginia Aboveground Storage Tank Act and Public Water Supply Protection Act

The West Virginia Aboveground Storage Tank (AST) Act and the Public Water Supply Protection Act were originally signed into law on April 1, 2014, and later amended effective June 12, 2015. The Plant does not have any AST's subject to the AST Act or related legislative rules under WV CSR Title 47, Series 63.

C. Toxic Substances Control Act (TSCA)

The Plant no longer handles any PCB oils since removal of all related equipment in the 1980's as discussed herein.

D. Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA)

The Plant generates very small quantities of hazardous materials. The Plant complies with CERCLA requirements as mandated by 42 U. S. C. § 9601 et seq., and the Superfund Amendments and Reauthorization Act of 1986 (SARA). All records documenting CERCLA activities are maintained at the Plant.

E. West Virginia Hazardous Waste Regulations (Conditionally Exempt Small Quantity Generator)

The Plant is regulated under WV CSR Title 33, Series 20, as a hazardous waste generator. The EPA Identification Number for the Plant is WVD 988 786 620.

The Plant is a "conditionally exempt small quantity generator" for regulatory purposes. Records regarding the facilities hazardous waste generation and disposal activities are maintained at the Plant.

F. National Pollutant Discharge Elimination System (NPDES)

The Plant is regulated under WV CSR Title 47, Series 10. The Plant's NPDES permit number is WV0078875. The NPDES permit, discharge monitoring reports (DMR's), analytical testing results, and other related documents are maintained at the Plant.

G. West Virginia Requirements Governing Groundwater Standards

As required by WV CSR Title 46, Series 12, the Plant complies with the West Virginia Requirements Governing Groundwater Standards.

H. West Virginia Groundwater Quality Standard Variances

As required by WV CSR Title 47, Series 57, the Plant complies with the West Virginia Groundwater Quality Standard Variances.

I. West Virginia Proof of Proper Solid Waste Disposal Regulations

As required under WV CSR Title 33, Series 7, the Plant retains all receipts for the collection and disposal of all solid wastes generated at the Plant.

J. West Virginia Solid Waste Regulations

The Plant is regulated under WV CSR Title 33, Series 1. The Plant meets the requirements of the regulation by properly handling the solid waste it generates.

K. West Virginia Special Rules

The Plant is subject to WV CSR Title 47, Series 11 (Special Rules) which establish requirements governing pollution control measures which are considered special situations that are not generally covered in WV CSR Title 46, Series 1 or WV CSR Title 47.

IV. Operational Description of the Plant

A. Inventory of Plant Operations That May Reasonably Be Expected To Have The Potential to Contaminate Groundwater

No operation at the Plant has been identified as having any significant potential to contaminate groundwater.

B. Inventory of Plant Operations That Are Not Expected To Contaminate Groundwater

The following Plant operations are not anticipated to contaminate groundwater, but were included in this GPP to demonstrate that these areas were evaluated.

1. Equipment Cleaning

On occasion, a medium size front end loader/yard tractor and fork lift may be rinsed down at the Plant. This process merely involves rinsing the equipment with a normal water hose (not high pressure), to remove built-up dirt and dust.

No other equipment cleaning operations are performed at the Plant. Company owned vehicles are washed at a local car wash facility. None of the cleaning operations described above have a significant potential to contaminate groundwater.

2. Yard Storage

Depending upon the maintenance activity at the Plant, a variety of inert materials may be stored on the ground at the Plant site. Generally, these materials may include intake and tailrace water stop blocks (constructed of steel and wood), spare turbines, and inert construction materials such as wood, concrete block, etc. These storage areas do not have a significant potential to contaminate groundwater.

3. Drum Storage

New Petroleum Products. New petroleum products received by the Plant, such as hydraulic oils and motor oils, are delivered in 55 gallon drums. All new petroleum products received by the Plant are stored in a specially designed storage building manufactured by Haz-Stor, Inc. This building, purchased as a prefabricated structure which is positively ventilated, provides built-in secondary containment and has locking mechanisms in place to restrict access.

Used Oils. Used oils, such as motor oils and hydraulic oils, are stored onsite in drums until they are picked up by an approved recycling contractor or approved disposal contractor. These drums are also stored in the Haz-Stor storage building previously described.

Antifreeze. New antifreeze is received at the Plant in one gallon containers. All antifreeze is stored in the Haz-Stor storage building previously described.

Hazardous Waste. Very small quantities of hazardous waste are sporadically generated, drummed, and temporarily stored in the Plant. Any drum containing hazardous waste that is temporarily stored at the Plant is stored in the Haz-Stor storage building until a licensed waste hauler can pick it up and deliver it to an approved permitted facility. The storage of new oil products, used oil, and occasionally hazardous waste, does not have a significant potential to contaminate groundwater at the Plant due to the storage building's design and inspection frequency.

4. PCB Wastes

In the mid-1980's, an electrical equipment rehabilitation program was initiated at the Plant. This rehabilitation program included only equipment used in the electricity generation process located within the powerhouse (i.e. separate from equipment used in the electricity transmission process). As part of this program, all of the equipment which contained PCB oils were replaced. There is currently no known equipment located at the Plant which contain oils with PCB's.

5. Salts

Commercially available and commonly used salts are periodically used at the Plant to de-ice paved surfaces, walkways, steps etc. when conditions warrant. If salts are stored onsite, they will be stored undercover or in sealed containers to eliminate the potential to contaminate groundwater. No ash, coal combustion residuals or other wastes will be used at the Plant for traction control, deicing, fills, etc., unless provided for in existing regulations.

6. Oil Containing Equipment

Oil containing equipment, including transformers, are either provided with secondary containment or located within the powerhouse which drains to the Plant's sump that acts as secondary containment. The oil containing equipment and Plant sump are inspected by Plant personnel per the Plant's SPCC Plan. If oil leaked from any of the equipment, it would be quickly observed either through inspections, routine occupancy of the Plant or equipment alarms thereby reducing the potential to contaminate groundwater.

7. Filter House

A river water filter house is located to the southeast of the powerhouse. This structure is utilized to screen (filter) river water entering the Plant a non-contact cooling water. A small sump is located in the lowermost levels of this structure, which embedded into the concrete foundation. The sump receives spilled and/or leaked river water from the filter system. Waters collected in the sump is pumped and combined with overflow water from the filter system, which are returned to the forebay. The sump does not have a significant potential to contaminate groundwater.

C. Description of Procedures To Protect Groundwater

The following sections describe groundwater protection practices utilized by the Plant for specific operations.

1. Equipment Cleaning

The only equipment cleaning activity at the Plant is the rising of a medium size front-end loader/yard tractor and fork lift. Rinsing the loader and fork lift do not generate a significant quantity of rinse water. In addition, since the equipment is not pressure washed, nor is a detergent used, there is no significant potential for possible contaminants to be present in the rinse water. The purpose of this cleaning is to remove built-up dirt and dust that accumulates through normal usage of the equipment.

2. Drum Storage

New petroleum products, used oils, antifreeze, and on occasion, hazardous wastes and PCB wastes, are stored in a specially designed Haz-Stor containment storage building. This building is equipped with a positive ventilation system and locking mechanisms to restrict access. This storage building is visually inspected per the Plant's SPCC plan.

3. Salts

Salts for ice control are used sparingly and as-needed to provide a safe, ice-free surface. If salts are stored onsite, they will be stored undercover or in sealed containers. No ash or other coal combustion residuals will be used at the Plant for traction control or other purposes.

4. Oil Containing Equipment

Oil containing equipment, provided secondary containment and the Plant sump are inspected by Plant personnel per the Plant's SPCC plan. Accumulated rainwater in uncovered secondary containment and the Plant sump are inspected for visual pollutants prior to being discharged. As a precaution, an oil absorbing sock is maintained in the sump to remove any residual oils.

5. Filter House

There is a small volume sump located in the lower level of the filter house. The sump receives spilled and/or leaked river water from the non-contact cooling water filtering system located in the upper part of this building. The sump is inspected per the Plant's SPCC Plan by Plant personnel. As a precaution, an oil absorbing sock is maintained in the sump to remove any residual oils.

V. Discussion of Available Information Regarding Groundwater Quality

Very little groundwater information exists for the Plant. Groundwater is used at the Plant for non-drinking water purposes (e.g. floor washing, bathrooms, etc.). During a onetime sampling event in June 1991, a groundwater sample was collected from a bathroom tap in powerhouse and analyzed for lead, iron, manganese and hardness (as $CaCO_3$). The results of these analyses were 0.002 mg/l, 6.67 mg/l, 1.64 mg/l, and 154.0 mg/l, respectively.

The primary operations of the Plant occur in the powerhouse structure which, for all practical purposes, is wholly located over the Kanawha River. Very small parcels of property are required (estimated at less than 3 acres) to support Plant operations. However, due to the proximity of the Kanawha River, and the very limited extent of the Plant's land area adjacent to the river, it is expected that the river has significant impact upon the local groundwater quality immediately underlying the Plant property.

VI. Disposal Practices

Waste products generated by the Plant are properly managed in compliance with all federal, state, and local laws and regulations.

1. Solid Waste (Refuse)

The Plant retains records demonstrating that a solid waste collection service is utilized for delivering the waste to an approved solid waste disposal facility.

2. Non-hazardous Special Solid Wastes

If any non-hazardous special wastes (e.g. sandblasting grit, petroleum contaminated soils, etc.) are generated at the Plant, they are properly handled and disposed of at an approved disposal facility. Waste materials are profiled for hazardous characteristics before disposal.

Asbestos-containing wastes are properly bagged and all are ultimately disposed of at permitted facility that accept asbestos.

All non-hazardous special solid wastes are manifested and records are maintained at the Plant.

3. Other Non-hazardous Waste

Used oil and non-hazardous parts washer solvents are recycled through an approved contractor. All vehicles and tractors used in conjunction with the operation of the Plant rely on garage facilities located offsite, separate from this location, to properly recover, and recycle and antifreeze on an as-needed basis.

4. Hazardous Waste

Hazardous wastes generated at the Plant are properly disposed of at an approved permitted facility. Hazardous parts washer solvent is recycled through an approved contractor. All wastes are manifested and records are maintained at the Plant.

VII. Provisions For Training Regarding Responsibility To Ensure Groundwater Protection

Plant staff are adequately trained and are prepared to implement the Oil Spill Prevention Control and Countermeasures (SPCC) plan which outlines procedures for cleaning up, and disposing of, spilled materials. However, to comply with the Groundwater Protection Regulations, additional groundwater awareness training has been conducted.

VIII. List of Procedures To Be Employed In The Design of New Equipment

1. Outside Material Storage Or Disposal Areas

New areas used for the storage or disposal of construction materials or wastes, which have the potential to contaminate groundwater, will be designed, constructed and operated to prevent releases of contaminants to groundwater.

2. Pipelines, Pumps And Drums

Pipelines conveying materials that have the potential to contaminate groundwater will preferentially be installed aboveground and will be corrosion resistant to the elements and to the product to be conveyed.

Pumps and ancillary equipment (e.g., valves, flanges, and instrumentation) which handle materials that have the potential to contaminate groundwater will be selected and installed to prevent or contain spills or leaks.

Drums, containing materials that have the potential to contaminate groundwater, will be stored so that spills and leaks are contained. Measures will be taken to control drum deterioration and/or damage due to handling.

3. Tanks And Sumps

If a new storage tank should be required at the Plant for a material that has the potential to contaminate groundwater, it will only be installed underground if there are overriding safety, legal, security or fire protection concerns.

Should an underground storage tank (UST), and any associated piping, that would contain materials that have the potential to contaminate groundwater be installed at the Plant, it will consist of a double-walled tank and piping system. The outer walls will be constructed of non-corrosive materials. Appropriate leak detection systems will be installed with these new UST systems.

Should an aboveground tank that would contain materials that have the potential to contaminate groundwater, be installed at the Plant, it will be equipped with secondary containment. The volume of the secondary containment will be designed based on the applicable regulations and best engineering practices.

Should any sumps be installed at the Plant that contain materials which have the potential to contaminate groundwater, they will be designed, constructed and operated utilizing leak detection, secondary containment or other appropriate controls that are capable of preventing groundwater contamination.

IX. Inspections

The Plant is small enough to be informally observed for leaks and spills whenever staffed. All Plant personnel have been trained per the Plant's SPCC plan to be able to respond to oil and chemical spills. Inspections for GPP purposes will be performed monthly in conjunction with the Plant's SPCC plan prescribed inspection program.

Section XXII – Outlets 001 - 007

Service Water

Service water is used as the cooling medium in several types of the equipment coolers as described herein. The filter to prevent river-borne contaminants from entering this system was upgraded during 2003. This project consisted of replacing the traveling screen filter with two self-cleaning strainers. Operation of the new equipment is fully automatic with continuous removal of debris, which is discharged through the tailrace. Product information and specifications for the system are included herein. The manufacturer of the strainers is Tate Andale; Model No. 1260, Size – 8". Each of the three turbine scroll cases has an intake for the two Allis Chalmers service water pumps. These cast iron pumps are double-suction eye-centrifugal pumps with bronze impellers. The nominal capacity of the water filtering equipment is 1,200 GPM (1.73 MGD).

It is expected that the strainer will back flush approximately 150 times per year; in conditions of high turbidity, the frequency could be as high as once per day. A pressure differential of 4 psi would actuate the back flushing of the strainer's 1,200 μm mesh screen. A 5-hp self-priming pump provides supplementary vacuum to pull river detritus from the screen through the clean-out line. The sump in the filter house will remain to remove minor leaks and condensate.

Appalachian Power Company does not believe that the service water back-flushing should be regulated in the permit as it is not a discharge or addition of pollutants to navigable waters as contemplated by the Clean Water Act. This discharge is not considered a point source discharge in the current permit. Appalachian Power Company requests that this status be maintained in the renewed permit.

Outlets 001, 002, and 003 – Generator Cooling and Thrust Bearing Cooling Water

These outlets are the discharge points for the non-contact cooling water systems that remove heat from the hydroelectric power turbine and generator bearings, and the generator stator. The current permit requires once per month monitoring of intake temperature, discharge temperature and flow.

As the rotor of a hydroelectric generator turns and creates a current from the surrounding magnetic coils, heat is generated as a by-product. Generator coolers, two per unit, are situated on each side of the generator to absorb the heat and to maintain a cooler air temperature within the generator. The generator coolers are radiator-like devices made up of a series of small-diameter copper tubes through which service water from the Kanawha River is passed. As the warm air of the generator passes across the outer surface of the cooler tubes, heat is absorbed by the cooler water inside the tubes. The numerous water-carrying tubes provide the needed surface area for adequate cooling efficiency.

Thrust bearings are located at the point where the turbine-generator rests on its support structure, allowing unencumbered rotation of the shaft. Friction between the thrust bearing and the generator produces heat that is absorbed by lubricating oil. The purpose of the thrust bearing cooler is to lower the elevated lubricating oil temperatures. The transfer of heat is accomplished by passing the heated oil over a series of cooling coils containing service water pumped from the Kanawha River. This process transfers heat from the lubricating oil to the cooling water.

Service water exiting the generator and thrust bearing coolers combines to form a single discharge from each unit. The discharge points from Units 1, 2, and 3 at the London Plant are designated as Outlets 001, 002, and 003, respectively.

Outlets 005, 006, and 007 – Guide Bearing Cooling Water

The shaft connecting the turbine and generator of each unit is held in place by an alignment bearing composed of either rubber or smooth inert plastic. The clearance between the surfaces of the shaft and the alignment bearing is approximately 0.020 inches. To lubricate and cool this interface, service water is constantly pumped into the interstice of the shaft and alignment bearing while a unit is operating. The resultant heated water is discharged through the turbine blades to the Kanawha River. These discharge points are designated as Outlets 005, 006, and 007 for Units 1, 2, and 3, respectively.

Access to these discharge points is not available because the turbine area is approximately 17 feet below the river's surface and is kept pressurized during operation. Consequently it is not possible to obtain samples from any of the three guide bearing discharges while the units are operational. Guide bearing cooling water only contacts the cast iron service water header that is common to all of the cooling systems, the shaft of the turbine, and the shaft alignment bearing which is composed of inert plastic or rubber. As such, there is no reason to believe that a chemical analysis of guide bearing cooling water would indicate results different from a sample taken of a thrust bearing cooler or generator cooler.

Head Cover Leakage

Head cover leakage is water that has leaked out of the inlet chamber and turbine cavity through the seal (or head cover) around the main shaft and wicket (control) gate shafts. This leakage is pumped to the wet side of the turbine and returned to the Kanawha River.

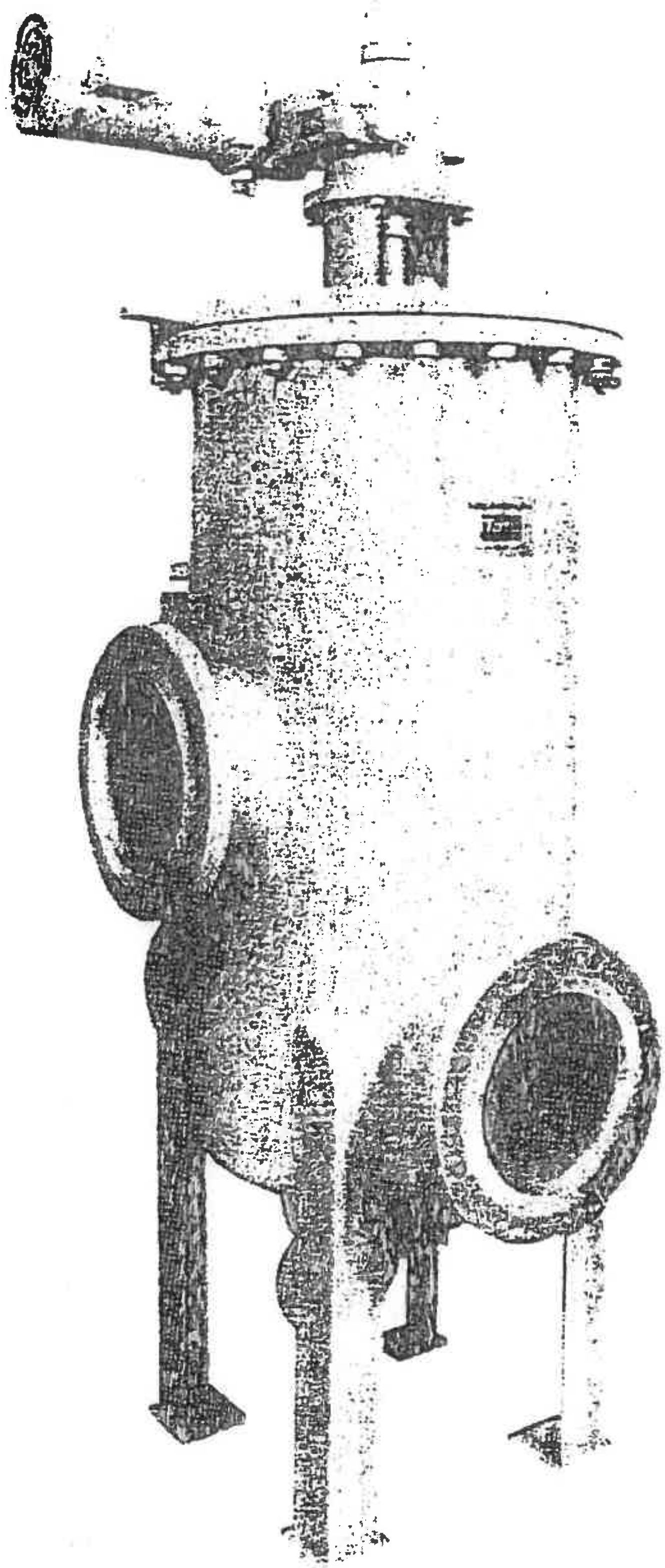
Appalachian Power Company does not believe that head cover leakage should be regulated in the permit as it is not a discharge or addition of pollutants to navigable waters as contemplated by the Clean Water Act. This discharge is not considered a point source discharge in the current permit. Appalachian Power Company requests that this status be maintained in the renewed permit.

The tailrace is cleaned every scheduled workday, weather conditions and available staff permitting. Any refuse collected is disposed of in plant dumpsters. Facility personnel visually monitor river conditions and make proper notifications if abnormalities are noticed.

Filter House Sump

A sump is located in the service water filter house. This sump collects water from within the filter house, consisting of the condensate that forms periodically due to differences in temperature between the ambient air and river water flowing through the piping, and ambient humidity. It is estimated that approximately 100 gallons of condensate are pumped to the river each year. Due to the extremely small volume that is collected, the Company does not believe this release should be regulated. Analytical data for water discharged from this sump has not been collected.

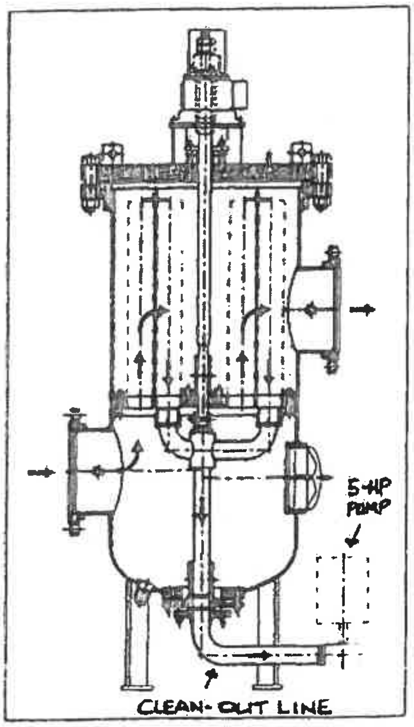
Self-Cleaning Strainers



Tate Andale self-cleaning strainers are designed with performance being the utmost priority. Offering high straining ratios from traditionally accepted basket designs, these strainers can reduce operating costs due to longer cycle periods when used in the intermittent/ automatic backwash mode. The basket design should be the major concern when evaluating self-cleaning strainers Quite often artificially high straining ratios are achieved by "unusual methods" such as "accordianed" elements. While these elements may technically possess a higher amount of open area achieved by folding the perforated plate into the shape of an accordian, the resultant valleys will clog with debris twice as fast Tate Andale basket elements have legitimate open area, whether using highly durable wedgewire or perforated plate. From the cast units to the customizable fabricated units, Tate Andale strainers offer a design that translates directly into longevity and durability. For the strainer for a lifetime, select Tate Andale.

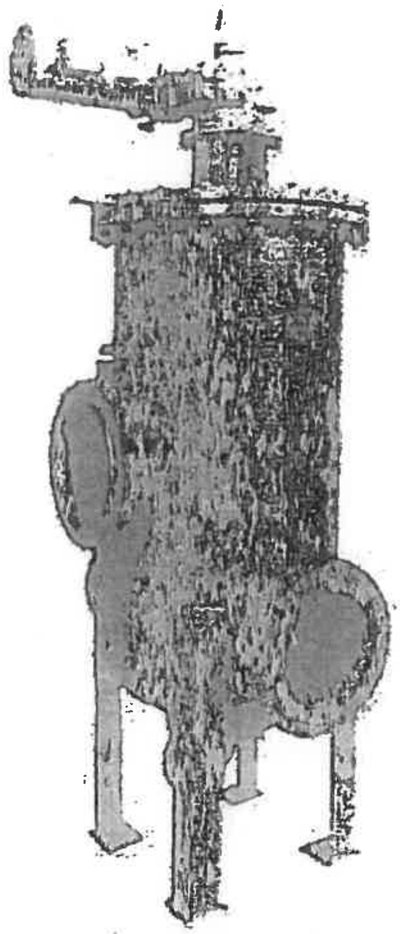
Typical Applications

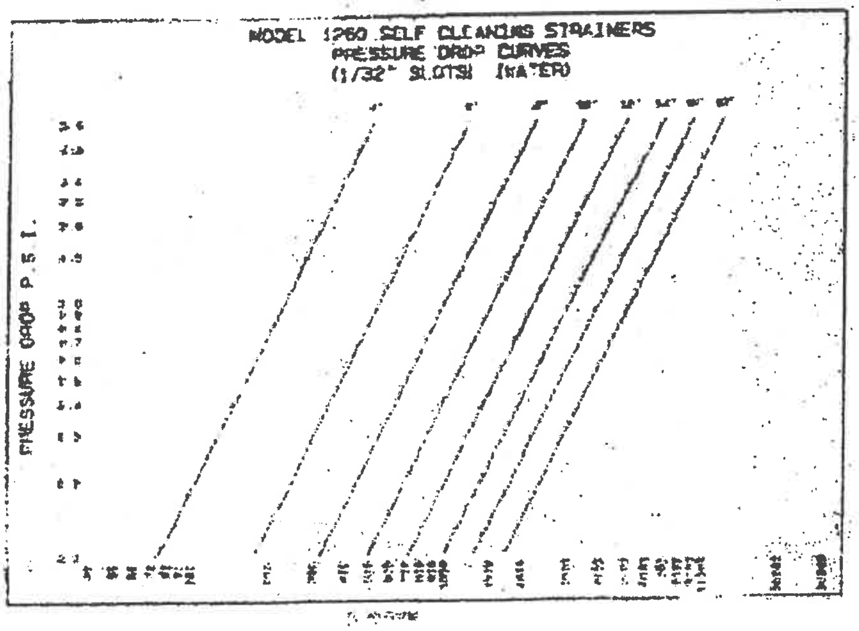
- Large amounts of debris
- Uninterrupted flow
- Fully automatic operation
- Continuous removal of debris



Tate Andale Model 1260 Self-Cleaning Strainer

Where reliability and durability are a necessity and not an option— The "1260" is the answer.





Description

The Model 1260 self-cleaning strainer provides a highly efficient and reliable means of removing solids from process fluids. A bank of WEDGEWIRE straining elements provide positive straining. The exclusive WEDGEWIRE straining elements are designed with a unique "V" shape to promote free flow of the incoming liquid and to discourage wedging of any particles. Normal flow is from the inside to the outside of the straining elements and backwashing is accomplished by the reversal of the flow through the elements. The WEDGEWIRE straining elements are arranged to accumulate debris on the inside. A rotating arm, which is vented to atmosphere, isolates each WEDGE-WIRE element for cleaning. Cleaning is accomplished by taking advantage of the system pressure and the use of a small portion of the system flow. When a WEDGEWIRE element is isolated, an effective backwashing action is created without disturbing total flow. Accumulated debris is flushed out of the WEDGEWIRE element through the backwashing arm and to the drain.

The Model 1260 self-cleaning strainer can be arranged for either continuous backwashing or, with the addition of a variety of optional control packages, intermittent backwashing.

The Model 1260 self-cleaning strainers are capable of handling flow up to 32,000 USGPM and straining as fine as .0025".

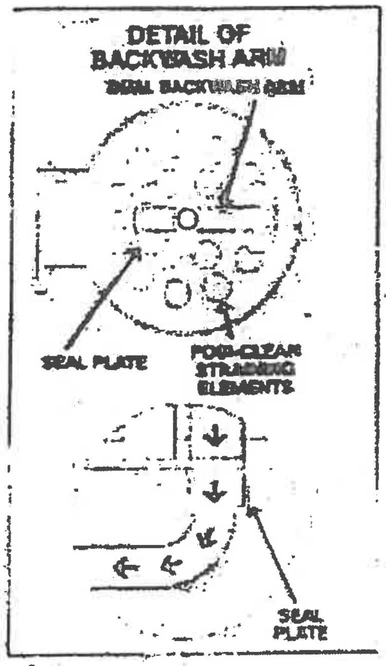
With reduced maintenance budgets the automatic self-cleaning strainer will help compensate for fewer personnel on the crew.

Standard Materials

Body, covers .... Internal epoxy-coated carbon steel or stainless steel

Straining elements .... 304 or 316 Stainless steel

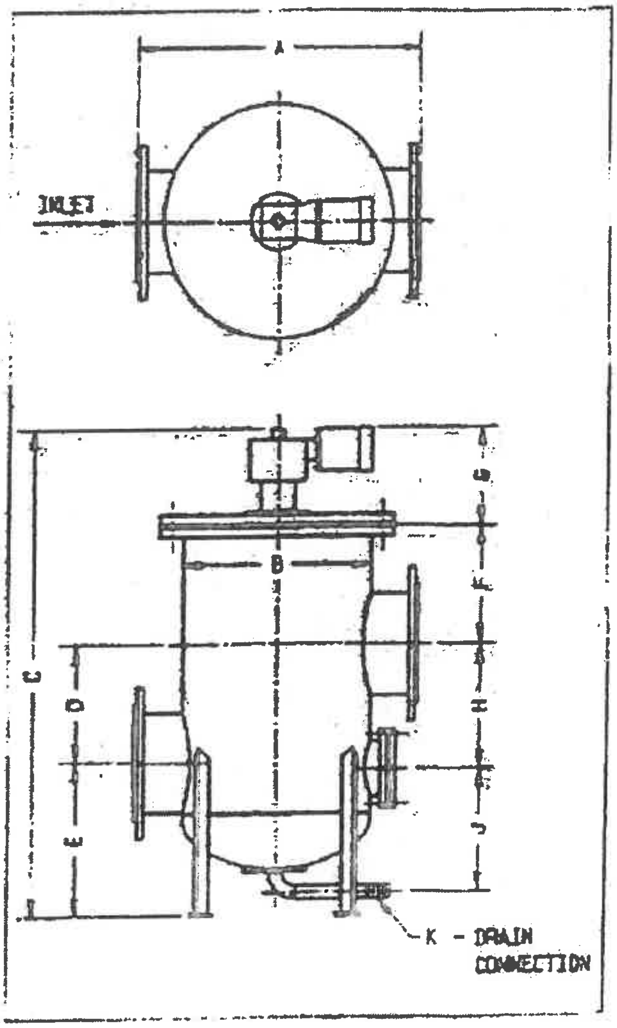
Other materials on request.



Standard Features

- Low initial cost
- Low lifecycle cost
- Intermittent or continuous backwashing
- Stainless steel backwash assembly guided by maintenance-free marine-type cutless bearings
- Continuous flow even while backwashing
- Low backwashing flow requirements

CUSTOM DESIGNS FOR SPECIAL APPLICATIONS



Model 1260 Dimensions (Approx.) 150 PSI

SIZE	4"	6"	8"	10"	12"	14"	16"	18"
A	22	26	30	34	38	40	48	48
B	14	16	20	24	28	30	36	36
C	56[illegible]	58[illegible]	79[illegible]	81[illegible]	86[illegible]	89[illegible]	94[illegible]	97[illegible]
D	12	12	16	20	22	24	24	26
E	17[illegible]	18[illegible]	26[illegible]	27[illegible]	30[illegible]	32	34[illegible]	36
F	9[illegible]	9[illegible]	18[illegible]	16	14[illegible]	15	17	16
G	18[illegible]	18[illegible]	18[illegible]	18[illegible]	18[illegible]	18[illegible]	19[illegible]	19[illegible]
H	12	12	16	20	22	24	24	26
J	11[illegible]	12[illegible]	20[illegible]	22[illegible]	24[illegible]	25[illegible]	28[illegible]	29[illegible]
K	1[illegible]	1[illegible]	2	2	2	2	2	2
Weight (lbs)	670	860	1280	1920	2280	2720	3750	4000

Section XXII – Outlet 008

Outlet 008 – Sanitary Treatment Package Plant (treats sanitary wastes and plant sump water)

During 2014, the Jet, Inc. home aeration sanitary wastewater treatment system that was installed in the early 1990's was replaced. The old system consisted of the following treatment components: primary chamber (pre-treatment), secondary chamber (aeration), clarification chamber (settling) and disinfection via chlorine. The discharge from the old system was to the Kanawha River via Outlet 004. The new system is manufactured by Bord Na Mona Puraflo and consists of a 1,000 gallon septic tank, a 1,000 gallon peat dosing tank, two peat bio-filters and ultraviolet light for final disinfection. The septic tank gravity flows into the peat dosing tank. The peat dosing tank pumps into the two peat fiber bio-filters. The peat fiber bio-filters gravity drains thru the ultraviolet disinfection unit before being discharged to the Kanahwa River at the same location as Outlet 004. The discharge from the new system is designated as Outlet 008. The Bord Na Mona Puraflo system is designed for intermittent flows, making it an ideal application at this plant. In addition to the treatment system receiving sanitary wastes generated at the plant, it also receives intermittent discharges from the plant sump as described below. Attached are the design drawings and a Bord Na Mona Puraflo brochure describing the installed treatment system. The system is inspected and maintained by an outside vendor.

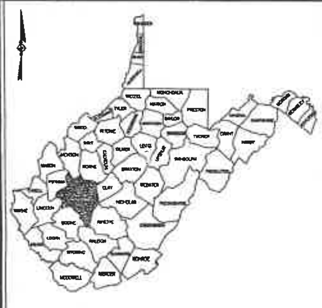
The sump at the plant has an approximate capacity of 1,425 gallons; it is designed to receive water from the floor drain system. All water channeled directly to the floor drains results from equipment cleanup (such as the infrequent washing of the outside of the turbines and cleaning the floors), air conditioner condensate, leakage of river water through the walls, and infrequently, non-contact generator cooling water. Oil sorbent materials are maintained in the plant sump and around leaky equipment to absorb any potential oil.

Two sump pumps are utilized to discharge water from the sump. These pumps are run automatically from float switches controlled by the water level of the sump. Normally, only the No. 1 lead pump operates. However, during a condition of high influent flow the backup pump will be placed into parallel operation. Although each pump has a separate discharge pipe, these lines combine and discharge through a common header to the on-site sewage treatment package plant (as described above), which discharges to the Kanawha River via Outlet 008. Since the new sanitary treatment package plant was installed, no discharge (with the exception of one upset) via Outlet 008 has occurred as a result of the wastewaters being absorbed by the peat fiber bio-filters.

AMERICAN ELECTRIC POWER

SEWAGE TREATMENT PLANT
LONDON HYDROELECTRIC PLANT

LONDON, WEST VIRGINIA


WEST VIRGINIA

DRAWING INDEX

DRAWING NO.	TITLE
1	COVER SHEET AND INDEX
2	PLAN VIEW
3	MISCELLANEOUS DETAILS

POTESTA & ASSOCIATES, INC.
ENGINEERS AND ENVIRONMENTAL CONSULTANTS
7012 MacCorkle Ave. SE, Charleston, WV 25304
TEL: (304) 342-1400 FAX: (304) 343-9031
E-Mail Address: potesta@potesta.com

SEAL

Date

No.	Date	Revision

PRELIMINARY

Client: AMERICAN ELECTRIC POWER
1 RIVERSIDE PLAZA
COLUMBUS, OHIO 43215

Title: COVER SHEET AND INDEX
SEWAGE TREATMENT PLANT
LONDON HYDROELECTRIC PLANT

Drawing No. 1

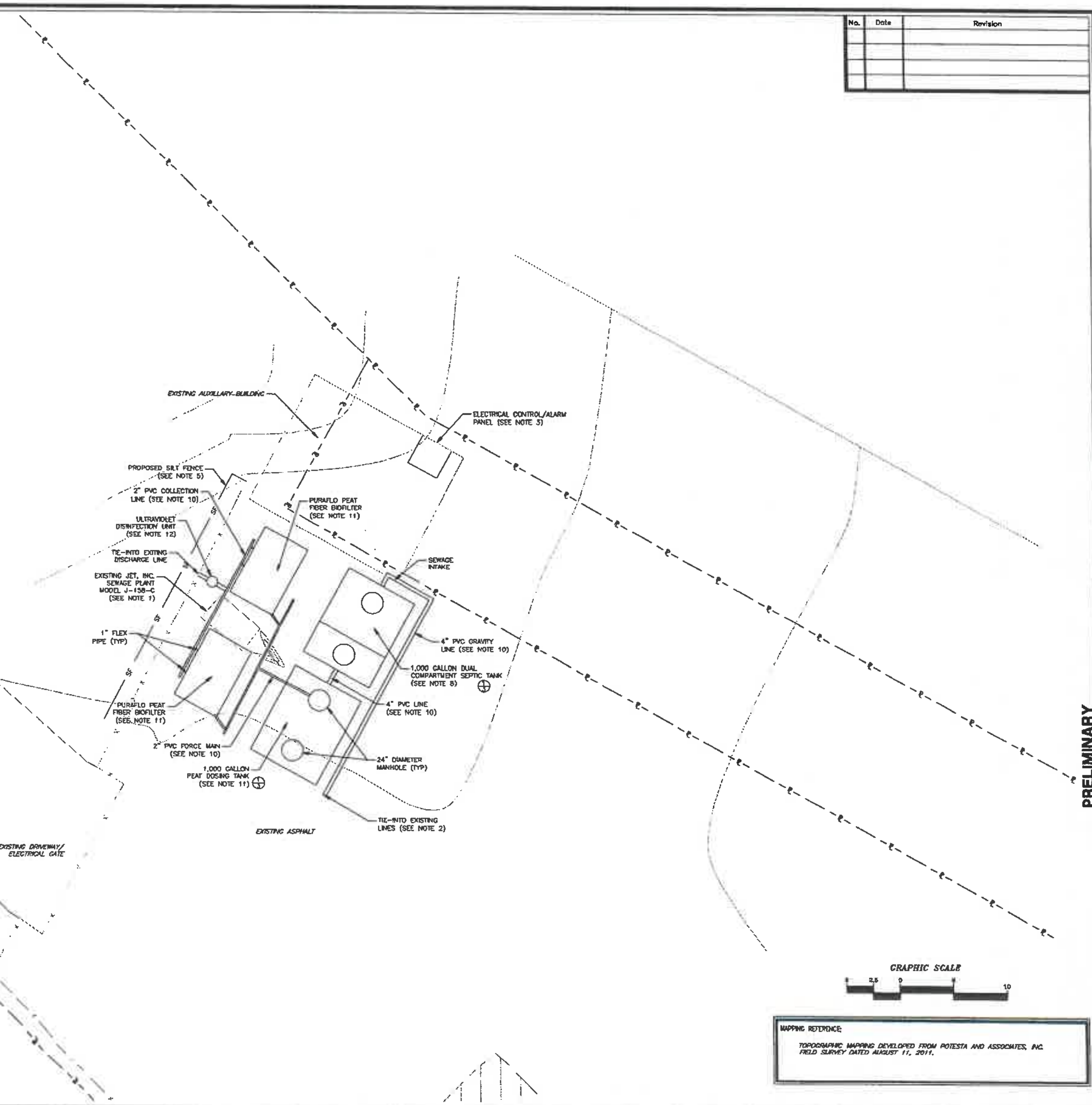
DESIGN
CAD File No.
PAT — Drawn
PAT — Checked
JWS — Approved
NOTED — Scale
JANUARY 2013 — Date
11-0208-003 — Project No.

LEGEND

SYMBOL	DESCRIPTION
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
—— x —— x ——	EXISTING FENCE
—— ℓ —— ℓ ——	EXISTING PROPERTY LINE
	PROPOSED GATE VALVE
—— SF —— SF ——	PROPOSED SILT FENCE

GENERAL NOTES:

1. CONTRACTOR SHALL DEMOLISH EXISTING STRUCTURE BY REMOVING SEWAGE, CLEANING STRUCTURE THOROUGHLY, CRUSHING CONCRETE STRUCTURE AND PROPERLY DISPOSING OF MATERIAL AS DIRECTED BY AEP.
2. CONTRACTOR SHALL FIELD DETERMINE THE TIE-IN TO EXISTING SEWER AND PLANT SUMP LINES. CONTRACTOR SHALL INSTALL 4" SCHEDULE 40 PVC GRAVITY LINE, AT POSITIVE SLOPE TO PASS FULL FLOW AT 2 FEET PER SECOND TO INTAKE OF THE SEPTIC TANK.
3. CONTRACTOR SHALL REMOVE EXISTING WASTE TREATMENT PLANT CONTROL, ELECTRICAL CONTROL PANEL AND INSTALL THE ANUA PURAFIL ELECTRICAL CONTROLS PANEL THAT MEETS AND IS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. ELECTRICAL HOOKUP AND PANEL SHALL COMPLY WITH LOCAL, AND STATE ELECTRICAL CODES.
4. CONTRACTOR SHALL FIELD DETERMINE THE INLET AND OUTLET ELEVATION OF THE ULTRAVIOLET DISINFECTION SYSTEM AND PEAT TANKS TO ALLOW GRAVITY FLOW FROM THE PROPOSED TREATMENT SYSTEM.
5. CONTRACTOR SHALL INSTALL AND MAINTAIN SILT FENCE AS INDICATED ON THE DRAWINGS UNTIL VEGETATION HAS BEEN ESTABLISHED. DETAIL SHOWN ON
6. CONTRACTOR SHALL BE RESPONSIBLE CONTACTING MISS UTILITY TO LOCATE EXISTING UTILITIES ON SITE 24 HOURS BEFORE STARTING DIGGING. 3
7. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING UNDERGROUND UTILITIES.
8. DETAIL OF THE SEPTIC TANK AND PEAT DOSING TANK LAYOUT SHOWN ON
9. PROFILE VIEW OF THE COMPLETE TREATMENT SYSTEM SHOWN ON 1/3
10. PIPING SHALL BE SCHEDULE 40 PVC OR APPROVED EQUIVALENT. 2/3
11. PURAFLO PEAT FIBER BIOFILTER MODULES
    - MODULES SHALL BE UV RESISTANT, DURABLE HDPE.
    - DIMENSIONS: 7.08 FEET LENGTH X 4.58 FEET WIDTH X 2.5 FEET HEIGHT.
    - MODULE WEIGHT: APPROXIMATELY 1,800 LBS
12. ULTRAVIOLET DISINFECTION DEVICE SHALL BE A JET MODEL 952.
13. CONTRACTOR SHALL FIELD FIT SEWAGE TREATMENT PLANT LAYOUT COMPONENTS TO MINIMIZE THE SPATIAL AREA.
14. 1,000 GALLON DUAL COMPARTMENT SEPTIC TANK AND SINGLE COMPARTMENT PEAT DOSING TANK TO BE H-20 RATED. FRAME AND COVERS FOR BOTH TANKS SHALL BE CAST IRON H-20 RATED.
15. COMPONENTS (PUMPS, PIPING, ALARMS) OF SEWAGE TREATMENT PLANT SHALL COMPLY WITH ANUA PURAFIL MANUFACTURE RECOMMENDATIONS.
16. SUITABLE BACKFILL MATERIAL FROM EXCAVATION OR OFFSITE MEETING REQUIREMENTS. COMPACT BACKFILL TO 95% DENSITY.



MAPPING REFERENCE:
TOPOGRAPHIC MAPPING DEVELOPED FROM POTESTA AND ASSOCIATES, INC. FIELD SURVEY DATED AUGUST 11, 2011.

No.	Date	Revision

PRELIMINARY

CAD File No.	~DESIGN
Drawn	JWS
Checked	PAT
Approved	PAT
Scale:	1" = 5'
Date:	JANUARY 2013
Project No.	11-0208-003

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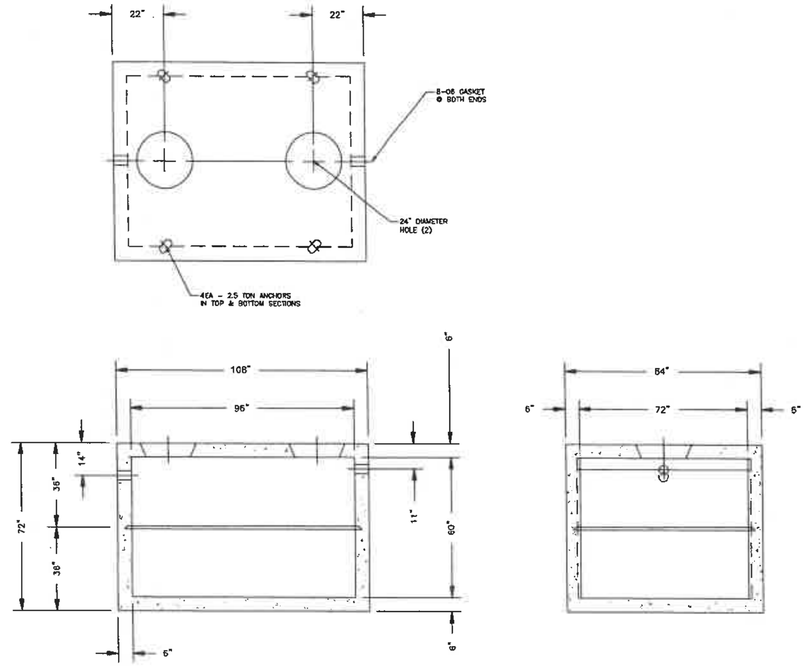
POTESTA

Client: AMERICAN ELECTRIC POWER
1 RIVERSIDE PLAZA
COLUMBUS, OHIO 43215

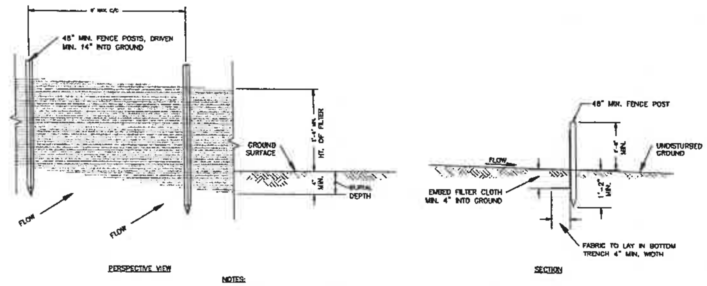
Title: PLAN VIEW
SEWAGE TREATMENT PLANT
LONDON HYDROELECTRIC PLANT

Drawing No. 2



PURAFLO SEPTIC TANK DETAIL $\frac{1}{3}$

NO SCALE

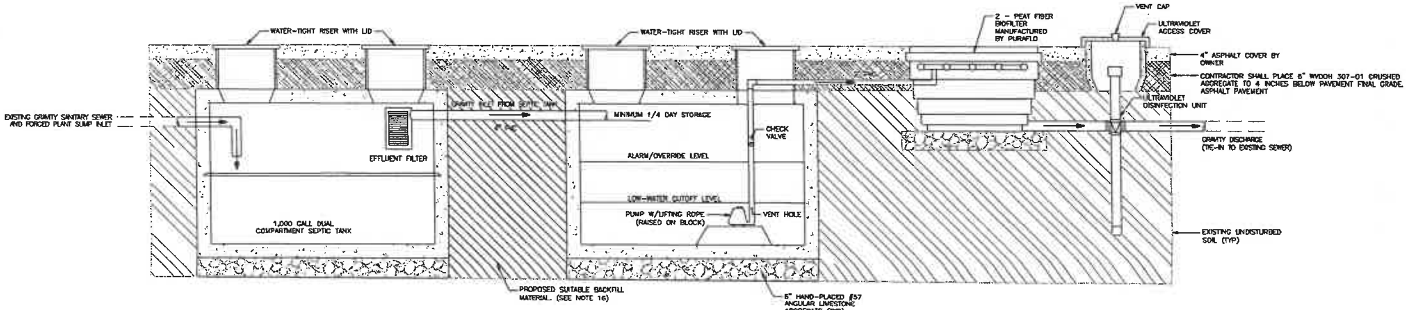


NOTES:

1. WHEN TWO SECTIONS OF SILT FENCE JOIN, OVERLAP ACCORDING TO MANUFACTURERS PUBLISHED RECOMMENDATIONS.
2. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE, OR WHEN HALF OF EXPOSED SILT FENCE IS COVERED WITH SEDIMENT.
3. POSTS SHALL BE CONSTRUCTED OF STEEL EITHER "T" OR "U" TYPE OR 1.5" HARDWOOD.
4. FILTER CLOTH SHALL BE "FILTER X", "MIRAFI 100X", "LINQ CTF 180" OR APPROVED EQUAL.
5. ALL SILT FENCE SHALL BE CHECKED AFTER ANY SIGNIFICANT RAINFALL (IN EXCESS OF 1/2"). DAMAGED SILT FENCE MUST BE REPAIRED WITHIN 24 HOURS; SOONER, IF ADDITIONAL RAINFALL IS EXPECTED.

SILT FENCE DETAIL $\frac{3}{3}$

NO SCALE



SEWER TREATMENT PLANT PROFILE $\frac{2}{3}$

NO SCALE

No.	Date	Revision

PRELIMINARY

Client: APPALACHIAN POWER COMPANY
1 RIVERSIDE PLAZA
COLUMBUS, OHIO 43215

Title: MISCELLANEOUS DETAILS
LONDON HYDROELECTRIC PLANT
SANTARY SEWER LINE

POTESTA

POTESTA & ASSOCIATES, INC.
ENGINEERS AND ENVIRONMENTAL CONSULTANTS
7012 MacCorkle Ave. SE, Charleston, WV 25304
TEL: (304) 342-1400 FAX: (304) 343-9031
E-Mail Address: potesta@potesta.com

-DESIGN
CAD File No.
JWS
Drawn
PAT
Checked
PAT
Approved
N.T.S.
Scale:
JANUARY 2013
Date:
11-0208-003
Project No.

3
Drawing No.

Wastewater Treatment

Water Reuse and Rainwater Harvesting

Clean Air Solutions

Wastewater Solutions

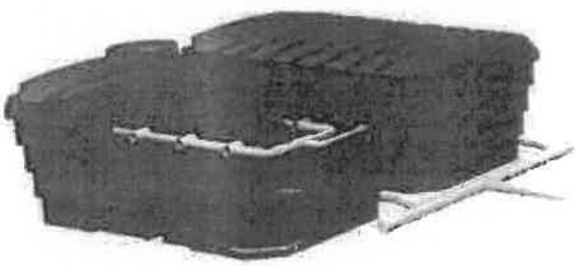
BORD NA MÓNA

ENVIRONMENTAL PRODUCTS U.S. INC.

Puraflo

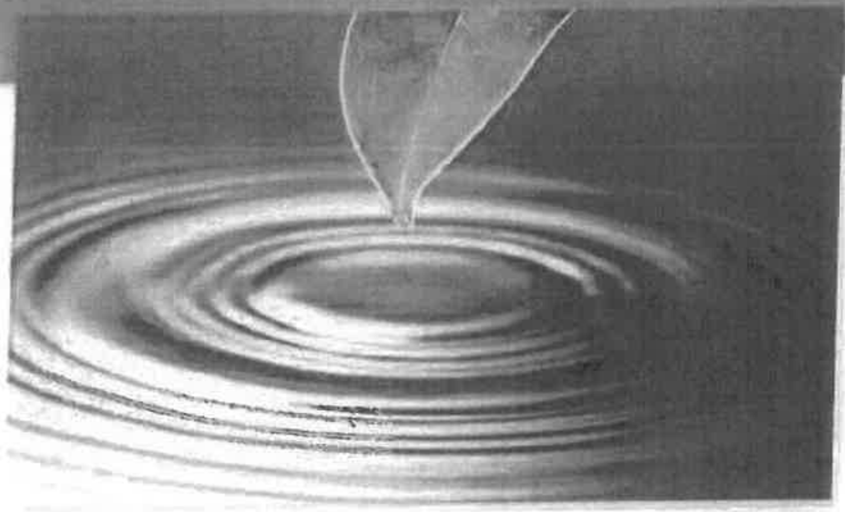
WASTEWATER TREATMENT

www.bnm-us.com



NSF Certified To NSF/ANSI Standard 40

- Modular design, pre-assembled
- Superior treatment performance
- Ideal for intermittent use
- Low energy & no power solutions
- Reliable, minimal maintenance
- Proven track record
- Certified To NSF/ANSI Standard 40



Puraflo® Wastewater Treatment

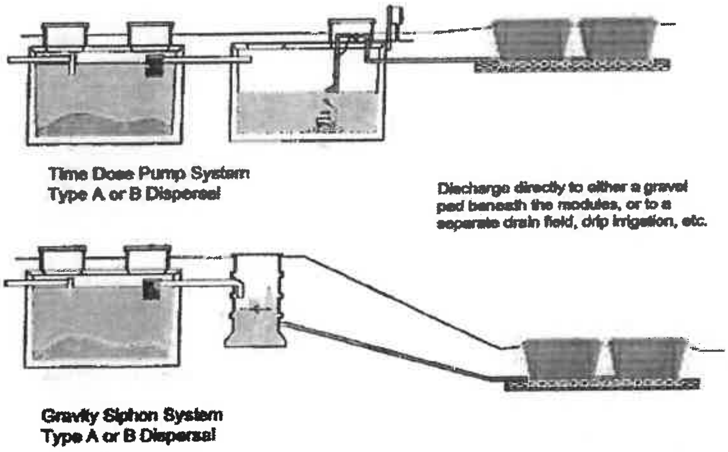
1. Collection
Wastewater flows from the home into a watertight septic tank. The solids settle and the liquid effluent flows by gravity to a pump basin/tank.

2. Treatment
The liquid effluent is pumped by time-dosing at specific intervals into the Puraflo® modules, where it is distributed evenly onto the biofibrous peat media. A combination of biological, chemical, and physical processes treat the wastewater as it filters through the biofibrous peat media.

3. Dispersal
Treated effluent emerges from the Puraflo® modules and disperses either into a gravel pad directly below the modules or is collected for dispersal by other methods, including gravel trenches, LPP, drip irrigation and other conventional disposal methods.

Puraflo®:
If you have a residential or light commercial development requiring a wastewater treatment system, a site subject to intermittent use or an existing site needing repairs or upgrades, the Puraflo® Peat Fiber Biofilter system is the green-friendly, low energy, natural solution where simple, reliable operation & maintenance are required.

Bord na Móna Environmental Products US: Green by Nature.
Bord na Móna has over 60 years experience, and is a leading designer, manufacturer and supplier of innovative, high performance, air, wastewater treatment and water reuse solutions focused on reducing energy & chemical demand, incorporation of recycled materials and water conservation. Our extensive, in-house R&D capability has produced a range of technologies that provide superior quality to homeowners, communities & municipalities and significant benefits to our environment.

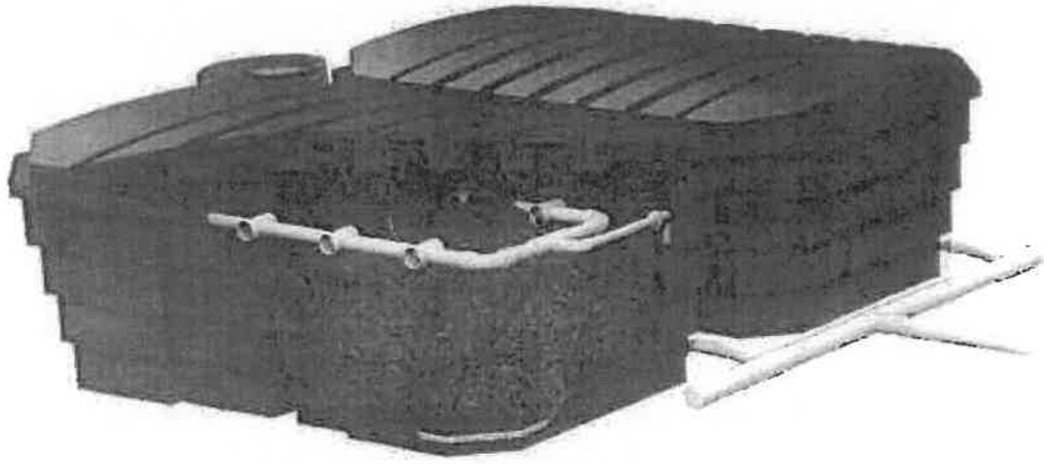


Puraflo® Peat Fiber Biofilter Module
- Modules are manufactured from UV resistant, durable HDPE
- Low profile module, 7.08 ft (L) x 4.58 ft (W) x 2.5 ft (H)
- Module weight ~ 1800 lbs, easily maneuvered with a forklift or backhoe

Bord na Móna: Green by Nature

ANUA

Think Green



It's Time for a New Contract with Nature

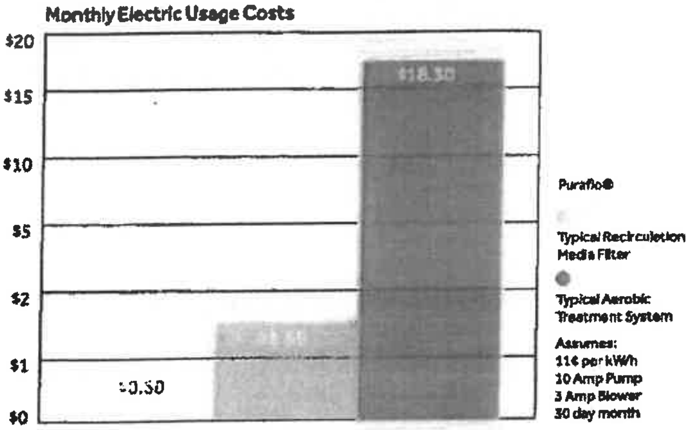
- More than double the life of other peat media
- Low operating and maintenance costs
- Suitable for LEED certification
- Odor-free natural system
- Guaranteed, high quality performance protects health and the environment
- Compact wastewater treatment system
- Pre-assembled - Installs in hours not days
- Superior solution for difficult soils, shallow water tables and size restrictive sites
- Ideal for home, schools, offices, parks, churches, and communities
- High-quality treatment protects receiving waters
- Ideal for repairs
- Ideal for vacation homes and sites subject to intermittent use

Call: 336-547-9338 or visit: www.anua-us.com

Low Power + Low Maintenance = Big Savings

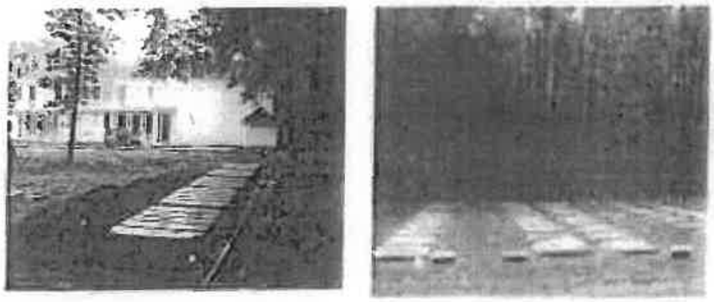
Reducing cost to the homeowner, Puraflo® requires significantly less power than many other treatment systems recirculating media filter aerobic treatment unit.

Compare with ATU's and typical media fiters and it is easy to see, the Puraflo peat biofilter is the green friendly, energy saving solution for home, office, and community developments.



Reduced Complexity Lowers the Cost of Operation and Maintenance.

No blowers or pumps required. Treated effluent emerges from the Puraflo modules and disperses either into a gravel pad directly below the modules or is collected for dispersal by other methods, including gravel trenches, LPP, drip irrigation and other conventional disposal methods.

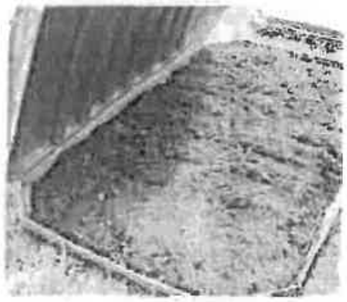


Residential Systems

Community Systems

The Difference is the Fiber - It Lasts Twice as Long as our Competitors

Puraflo peat fiber is imported from the Republic of Ireland and has a greater resistance to decay and degradation than other peat media. This is due to its extremely fibrous structure and high lignin content.



Call: 336-547-9338 or visit: www.anua-us.com

Puraflo® Effluent Quality

Parameters	Effluent	% Reduction	NSF Certified Data
B.O.D. (mg/l)	< 10	95+	2
T.S.S. (mg/l)	< 10	95+	2
NH3-N (mg/l)	< 5	90+	< 1
Fecal Coliforms	6000	99.9+	3000
System Design Considerations			
Maximum design organic loading			0.0140 lbs/sq.ft.day
Maximum design hydraulic loading			5.57 gpd/sq.ft.
Maximum design organic loading per module			0.3755 lbs/day
Maximum design hydraulic loading per modlue			150 gal/day

Why choose the Puraflo® System?

- Modular design assures flexible phasing options
- System designs incorporate either a Type A (gravity/pad) or Type B (discharge to separate drain field area) Go to www.bnm-us.com for additional details
- Completely odor-free
- Very low or no power requirements
- Timed-dosing and Siphon-dosing systems available
- Ideal for seasonal or intermittent usage
- Factory constructed and installed by Certified Installers
- Certified to NSF/ANSI Standard 40
- Denitrification and Phosphorus removal systems available

Features and benefits of the Puraflo® treatment system:

- Green solution, based on simple, passive, single pass biofiltration principles
- Unique peat fiber media with 15+ year longevity, on average
- Minimal system maintenance with no annual maintenance of the peat fiber media: a biomat does not form
- Optional remote monitoring using telemetry

It's time for a new contract with nature.

The air we breathe. The water we drink. It's the environment we live in and we need to protect it. Bord na Móna, a $550 million, multi-national provider of environmental solutions, offers sustainable thinking about wastewater pollution, water conservation and clean air that can enable development while helping municipalities, communities and homeowners live in harmony with the world around them. If our green principles align with your values, contact us today.

Call 1-800-787-2356 or email: info@bnm-us.com
And stop by www.bnm-us.com anytime.

www.bnm-us.com

www.bnm-us.com

Contact us:

Bord na Móna Environmental Products U.S., Inc.
P.O. Box 77457
Greensboro, NC 27417

Tel: 1-800-787-2356
Tel: 336.547.9338
Fax: 336.547.8559
E-mail: info@bnm-us.com
Web: www.bnm-us.com

Product Range:

Wastewater Solutions for:

- High strength
- Pre-treatment
- Nitrogen reduction
- Phosphorus reduction
- Tertiary treatment

On-site/Residential:

- Puraflo® Peat Fiber Biofilter
- PuraMc® Compact Membrane
- Pura-Dn® Post Anoxic Denitrification

Municipal Decentralized Community and Commercial:

- PuraM® Membrane Bioreactor
- PuraMax® Moving Bed Biological Reactor
- PuraSAF® Submerged Aerated Filter
- Puraflo® Community

Rainwater Harvesting:

- Residential and Commercial Systems

Clean Air Solutions – Odor & VOC:

- MÓNASHELL® Biofiltration System
- MÓNAFIL® Peat Based Biofilter
- MÓNASHELL® EBf Enhanced Biofiltration System

SERVICE AGREEMENT

SERVICE AGREEMENT NO. 215X02639355 **DATE 05/15/13**

ISSUED BY: Appalachian Power Company (OWNER)

TO CONTRACTOR:

W. J. Clark Septic Tank Co.
6519 Mud River Road
Barboursville, WV 25504-9744

joellenboback@gmail.com

DESCRIPTION OF WORK:

Contractor to provide labor, supervision, equipment, and necessary to supply a two year maintenance agreement on the London Hydro Puraflo sewage system. Scope of work and cost shall be in accordance with the quotation dated January 9, 2013, copy attached.

Please include the service agreement number and work order number on all invoices and correspondence.

Service Agreement: 215X02639355
Work Order: 41950181 11

Work shall be started on 07/01/13 and satisfactorily completed on or before 07/31/15. The cost of this Work shall not exceed $1,220.00 and shall be performed on a lump sum basis at the pricing included in this Agreement.

MAIL INVOICES TO:

Appalachian Power Company
PO Box 2021
Roanoke, VA 24022

Attention: Judy Emery – Hydro Generation

Service Agreement General Terms and Conditions are attached hereto and made a part of this Agreement and by signing below, Contractor agrees to the terms and conditions.

OWNER:
By: Judith E. Emery
Printed Name: Judith E. Emery
Title: Administrative Supervisor

CONTRACTOR:
By: [signature]
Printed Name:
Title:

Zebra Mussel Treatment Program

Zebra mussels have been present in the Kanawha River for over 20 years. They were first identified at the Marmet Locks on August 25, 1992 and at the Winfield Locks on August 26, 1992. Since then, London Hydroelectric Plant has performed periodic inspections of water systems for the presence of zebra mussels, with presence being observed on the turbine gates. While zebra mussel treatment has not been judged necessary to date, Appalachian Power Company (APCo) wishes to retain the ability to treat should it become necessary for the reliability of the plant in the future. If treatment is performed, it will be a vendor supplied bromine/chlorine chemical with treatment application to occur in two phases.

The systems treated will be those most vulnerable to zebra mussel infestation due to contact with untreated river water. The vulnerable plant water systems include all piping, pumps, valves, and filters from the fore bay intake to the generator air cooler, thrust bearing oil cooler, and the turbine guide bearing. Schematics of these systems are provided in Section XIV. Phase I of the chemical feed program would be an intermittent daily chemical application and would provide preventative protection of the plant's vulnerable water systems. Phase II would be performed on an as-needed basis to eradicate adult mussels from the circulating water systems by applying the chemicals at the same feed rate continuously for several days. Treatments would begin only after the concentration of zebra mussels is sufficient to threaten the reliability of the systems.

This treatment program has been proposed because it is a proven approach for macro-fouling control, is lower in cost than that of other options evaluated, and the halogen chemistry is more environmentally acceptable than that of a non-oxidizing biocide. Through the intermittent feed program, lower free residuals can be used to maintain control, and chemical injection can be performed with the units on-line. The total program provides the flexibility to apply a preventative treatment for discouraging settlement of zebra mussel veligers and a more radical treatment for the eradication of translocated adults that may settle within the plant systems, both of which will be applied only on an as-needed basis.

Phase I Treatment

The Phase I chemical feed is proposed to be performed six (6) times throughout the day, at evenly spaced intervals providing fifteen (15) minutes of chemical introduction into the system, each application interval. We believe chemical treatment would be required about 225 days per year, from April to October, dependent on river water temperatures. Spawning normally occurs at temperatures above 57 to 61 degrees Fahrenheit; therefore this chemical will be applied when river temperatures exceed this range. To maintain a feed concentration of 1.2 mg/l at the injection point, the biocide will be fed at a rate of 0.010 lbs/min. System flow requiring treatment is approximately 1,000 gallons per minute. The point of injection will be the inlet of the suction line to the circulating water pump.

Phase II Treatment

Phase II of the program will be performed to provide eradication of mussels that result from the current season's spawning period. The phase consists of a continuous feed of the bromine/chlorine, 24 hours a day, for 15 continuous days. It would be performed at the end of the mussel-spawning season, as determined by the river temperature, normally in the month of September. The feed rate, point of injection, and concentration will remain the same as that of the intermittent chemical feed program. The discharge to the river is estimated to be between 0.045 - 0.45 ppb in the tailrace.

Various control options were evaluated for cost, environmental impact, and benefit to other plant operations. Other methods reviewed by the company include microfiltration, heat treatment, and alternate water supplies using a municipal supply or developing wellfields for this specific purpose. Details of this evaluation and economic analysis as well as technical papers concerning zebra mussel chlorine/bromine treatment are included below.

Monitoring Program

The plant will continue to inspect underwater systems and surfaces for the settling of zebra mussels, whenever feasible. If treatment is initiated, the discharge of the sump and other systems that will be exposed to chemicals during treatment will be monitored. This monitoring will include sampling and analyzing the effluent for total residual oxidant. The monitoring is proposed to be performed once every two weeks. Periodic checks on the feed system will be performed by the vendor to maintain efficient use of the products.

Zebra Mussel Treatments Evaluation and Economic Analysis

Introduction and Background

At the direction of the Zebra Mussel Task Force, a multidisciplinary team was formed to evaluate zebra mussel control options for the three Kanawha Valley Power (KVPCo) hydroelectric projects located on the Kanawha River and Ohio Power Company's (OPCo's) Racine hydroelectric project on the Ohio River. These projects were targeted because they have plant systems vulnerable to infestation due to contact with untreated river water and because they are located on streams where zebra mussels have been documented. Zebra mussels were first identified on the Ohio River at Olmstead, IL on October 1, 1991, at the Kanawha River Marmet locks on August 25, 1992, and at the Kanawha River Winfield locks on August 26, 1992.

A zebra mussel monitoring program was initiated at all AEP System hydro facilities in late spring of 1992. Test cells comprised of concrete blocks supported on a nylon rope with a PVC pipe sleeve were placed upstream of the unit intakes approximately 6 feet below the surface. Plant personnel were asked to inspect the test cells every two to three weeks. As of this report, no zebra mussels have been detected on the test cells at any of the projects.

Adult zebra mussels were first discovered at the Racine Locks and Dam by the U.S. Army Corps of Engineers on August 27, 1992. Racine plant personnel discovered zebra mussels ranging in size from 0.2" to 0.5" on the upstream bulkheads used during the July-September 1993 outage of Racine Unit 1. Distribution of the mussels was spotty and was roughly estimated at 5-7 mussels per square foot. Subsequently, the Racine plant sump was inspected and a sample of material collected from the sump was sent to the AEPSC Environmental Laboratory for analysis. No zebra mussels were discovered during the visual inspection of the sump and no veligers were detected in the lab analysis. On the Kanawha River, an inspection of the upstream bulkhead pulled at KVPCo's Winfield plant after a two month outage of Unit 3 in the fall of 1993 revealed no zebra mussels.

Option Evaluation

The multidiscipline team that evaluated control options for KVPCo's London, Marmet and Winfield projects, and OPCo's Racine project was comprised of representatives from: Mechanical Engineering's Chemical, ESP & Flue Gas System, Piping, Valves & Fire Protection, and Heat Exchangers, Pumps & HVAC sections; Environmental Engineering's Water & Solid Waste section; and Civil Engineering's Geotech/Hydro/Site section. Appropriate operating company and plant personnel were kept informed of progress made by the team during the evaluation process and provided comments on the team's recommendations. These comments have been incorporated into this document.

Control options chosen for evaluation were specific to each plant's vulnerable system or systems. For the KVPCo hydros, the circulating water systems are vulnerable; for Racine, the sump, dewatering and various monitoring systems are vulnerable to infestation. Feasible options evaluated were as follows:

- o KVPCo Hydros
  - Chemical controls
  - Microfiltration
  - Heat Treatment
  - Wellfields
  - Private supply system

- o Racine Hydro
  - Chemical controls
  - Heat treatment

Cost estimates were developed for the options. Economic analyses were conducted for each, taking into account capital costs, O&M costs and savings, cost of lost generation and auxiliary power requirements. Study periods were assumed to be the remaining FERC license terms. Each option was also ranked in terms of environmental impact, and evaluated in terms of benefits to the plants other than zebra mussel control. Details of the option evaluations and economic analyses are included in the following pages and in the attached appendices.

Recommendations

KVPCo Hydros

Recommended Treatment Option: Vendor-Supplied Two Phase Bromine/Chlorine Chemical System

Phase I: Intermittent, preventative

Treatment frequency: Six 15-minute treatments/day

Treatment duration: April-October (approx. 225 days/year)

Oxidizing biocide feed rate: 0.010 lb/min.

Oxidizing biocide feed concentration: 1.2 ppm (instantaneous)

Estimated total residual oxidant: 0.045-0.45 ppb (London/Marmet)
0.039-0.65 ppb (Winfield)

Feed injection point: Open end of circ. water pump 12" suction line (London and Marmet); Tap 10" suction lines near to scroll case as possible (Winfield)

Phase II: Continuous, eradication

Treatment frequency: 24 hour continuous

Treatment duration: 15 days at end of spawning season

Oxidizing biocide feed rate: 0.010 lb/min.

Oxidizing biocide feed concentration: 1.2 ppm (instantaneous)

Estimated total residual oxidant: 0.045-0.45 ppb (London/Marmet)
0.039-0.65 ppb (Winfield)

Feed injection point: Same as Phase I

Estimated Levelized Annual Cost: $13,541 (London)
$13,541 (Marmet)
$13,664 (Winfield)

Justification: The two phase bromine/chlorine chemical system was recommended because:

1) it is a well-proven oxidizing approach for macrofouling control;

2) it is lower in cost than the non-chemical options evaluated;

3) it is halogen biocide, which is more acceptable to permitting agencies than non-oxidizing biocides;

4) it allows intermittent application and lowers the free residual required as compared to the other halogen biocide evaluated;

5) it combines preventative treatment of veligers with an as needed "kill" program for adult zebra mussels;

6) it can be accomplished with the units on-line and without loss of generation.

7) utilizing a single biocide for both a preventative and an as-needed "kill" program allows the same vendor service contract and equipment to be used, thus keeping costs down; also, utilizing one biocide for both prevention and "kills" simplifies the environmental permitting.

<u>Recommended Implementation</u>: It is recommended that a monitoring program and treatment plan be implemented as follows:

1) Install bio-boxes on service water piping at each plant in 1994; number and location of bio-boxes to be determined by Environmental Engineering, Chemical ESP & Flue Gas and Geotech/Hydro/Site in consultation with operating company and plant personnel.

2) Initiate bio-box monitoring program to be developed by Environmental Engineering; analyses of bio-box samples to be done at AEPSC Environmental Laboratory or nearby AEP fossil plant since necessary facilities and trained personnel are not available at the KVPCo plants.

3) Environmental Engineering and appropriate operating company personnel to begin work on obtaining NPDES permit modifications required for recommended treatment option, with input obtained from Chemical ESP & Flue Gas and Geotech/Hydro/Site.

4) Actual treatment to begin at first sign of zebra mussels in bio-boxes.

5) Develop review schedule and review treatment success via bio-boxes or other appropriate indicators.

6) Adjust treatments and monitoring as required.

Racine Hydro

<u>Recommended Treatment Option</u>: Vendor-Supplied Non-Oxidizing Biocide Chemical System

MARMET HYDROELECTRIC PROJECT
EVALUATION OF ZEBRA MUSSEL CONTROL STRATEGIES

I. Vulnerable Plant Systems

The entire circulating water system, which includes all piping, pumps, valves and filters from the forebay intake to the generator air cooler, thrust bearing oil cooler and turbine guide bearing discharges, is vulnerable to infestation.

II. Treatment Options and Costs

A. Chemical Controls

i) **Two-Phase Bromine/Chlorine System:** The first phase of the program would consist of intermittent treatment to prevent microbial fouling and to kill veligers and adults in the circ. water system during the spawning season. The second phase would be implemented on an as-needed basis based on bio-box results and would involve a "kill" program to eradicate zebra mussel adults. Labor, chemical and equipment would be vendor-supplied.

Advantages: Control of asiatic clams and other biofouling organisms would be achieved with this approach. Initial capital cost for installation of bio-box is low. Modification of existing piping is not required. Corrosion rates are lowered by using the Br/Cl combination as opposed to chlorine alone. Higher concentrations of bromine result in faster kills and lower the free residual required. As opposed to chlorine, intermittent application may be used for preventative treatment. Treatment accomplished without loss of generation. Permitting agencies have prior experience with halogens used for microbial control, therefore approval will be easier for halogen biocides than for the non-oxidizing treatment system evaluated.

Disadvantages: Because there is no way to recirculate the treated service water given the existing turbine guide bearings, it is not possible to completely dechlorinate/debrominate prior to discharge. Environmental permitting may be complicated by the discharge of halogen residuals, even at low concentrations with rapid mixing. An NPDES permit modification is required.

20-yr Levelized Cost: $13,541

ii) Chlorine Dioxide System: A ClO_2 system consisting of a single fall treatment at 1 ppm ClO_2 was evaluated. Labor, chemical and equipment would be vendor-supplied.

Advantages: Control of asiatic clams and other biofouling organisms would be achieved with this approach. Initial capital cost for installation of bio-box is low. Modification of existing piping is not required. Treatment accomplished without loss of generation.

Disadvantages: Because there is no way to recirculate the treated service water given the existing turbine guide bearings, it is not possible to completely dechlorinate prior to discharge. Environmental permitting may be complicated by the discharge of chlorine residuals, even at low concentrations with rapid mixing. Industrial wastewater permitting agencies probably do no have as much experience with chlorine dioxide systems as with other halogen biocides. An NPDES permit modification is required. As opposed to the bromine/chlorine system evaluated, a higher free residual is required to maintain biological control, corrosion rates are higher and continuous residuals are required for treatment and intermittent treatment would not be possible.

20-yr Levelized Cost: $8,876

iii) No-Oxidizing Biocide Treatment at Zero Load: A vendor supplied biocide such as Betz CT-2 or Nalco 9210 would be injected. Application labor and equipment would also be vendor-supplied.

Advantages: Control of asiatic clams and other biofouling organisms would be achieved with this approach. Initial capital cost for installation of bio-box is low. Modification of existing piping is not required.

Disadvantages: There is no way to recirculate the treated service water or completely detoxify the discharge given the existing turbine guide bearings. An NPDES permit modification is required. Permitting agencies will look less favorably upon non-oxidizing treatments as compared to halogen biocides.

20-yr Levelized Cost: $7,652

B. Microfiltration

A microfiltration system equipped with 20-30 micron fine mesh screens was evaluated. The microfilters would replace the existing drum filter set-up and would provide zebra mussel control downstream of the circ. water pumps. The existing 15-hp pumps would need to be replaced with 75-hp pumps in order to effectively backwash the microfilters. In addition, existing piping would need to be revised to accommodate the new filter system and some electrical revisions associated with the filter control panel and pump motors would be required. Because the microfilters would provide zebra mussel control downstream of the filters only, an alternate treatment from the forebay intake to the filters is required. For this evaluation, a vendor supplied closed loop non-oxidizing biocide treatment at zero load of piping upstream of the filters was assumed.

Advantages: With a combination microfiltration/chemical treatment, control of asiatic clams and other biofouling organisms would be achieved. Also, silt and debris loading of the circ. water downstream of the filters would be greatly reduced. This is anticipated to reduce plant maintenance required to clean out the existing filter and the generator air coolers, and to reduce wear on the turbine bearing surfaces. Maintenance associated with the existing drum filter would be eliminated. Minimizing chemical use would likely ease environmental permitting.

Disadvantages: This option has an initial capital cost greater than chemical controls or heat treatment. There is no known previous experience with this type of application on the AEP System. There are additional energy costs to the plant for running a 75-hp pump as opposed to the existing 15-hp pump. An NPDES permit modification is required due to non-oxidizing chemical use on the front end of the circ. water system.

20-yr Levelized Cost: $42,247

C. Heat Treatment

A two-stage vendor supplied heat treatment system was evaluated. During the first stage, piping downstream of the drum filter would be treated. The second stage would involve treatment of the pump house piping. Piping from the intake structure up to the pumps would be mechanically cleaned. For this evaluation, cleaning with a hydrolaser using divers was assumed. One treatment would be done in the spring, another would be done in the fall. Water source would be the discharge of the drum filter. A portion of the discharge from the generator air coolers and from the thrust bearing oil coolers would be recirculated.

Advantages: This option is likely to be more acceptable to permitting agencies because it does not involve the introduction of chemicals. Heat treatment should also be beneficial in the control of asiatic clams and other biofouling organisms.

Disadvantages: This option is higher in annual costs than chemical controls or microfiltration. The plant must be taken off-line to treat, so there is a loss of generation. Experience with heat treatment for zebra mussel control on the system is still in the experimental stage. Modifications to existing plant piping is required. An NPDES permit modification is required.

20-yr Levelized Cost: $56,386

D. <u>Municipal Water Source</u>

Establishing a contract with WV American Water Company to supply plant service water was evaluated. WV American provided a monthly cost estimate for service through an 8" meter based on our monthly usage estimates. The estimate did not include cost of laying additional water mains by WV American which may be backcharged to KVPCo if revenues from the contract did not justify WV American bearing the expense. Piping for the municipal source would tie in to the existing circ. water piping downstream of the filter drums. The existing pumps and filter system would no longer be required since the new water source would be from a pressurized line and would be treated water free from debris.

Advantages: With a municipal water source, all biofouling problems in the circ. water system would be eliminated. Silt and debris loading in the circ. water and associated maintenanace costs would be eliminated. Maintenance of the existing pumps and drum filter would be eliminated. For environmental permitting, an amendment to the existing permit application would likely suffice rather than an NPDES permit modification.

Disadvantages: This option has very high annual costs as compared to the other options evaluated. Costs associated with installing new water mains, if backcharged to KVPCo, could drive up the initial capital costs tremendously.

20-yr Levelized Cost: $111,914

E. Wellfields

Results of a ground water resources evaluation indicate that development of large capacity supply wells from the alluvial aquifer at Marmet is not feasible. The evaluation indicates that sufficient capacity is available from the bedrock aquifer. A cost estimate for a bedrock wellfield comprised of seven 200 gpm wells on 200 ft. staggered centers was developed. Piping from the wellfield would tie in to the existing circ. water piping downstream of the filter drums. The existing pumps and filter system would no longer be required since the new water source would be from the well pumps and would be free from debris.

Advantages: With a well water source, all biofouling problems in the circ. water system would be eliminated. Silt and debris loading in the circ. water and associated maintenanace costs would be eliminated. Maintenance of the existing pumps and drum filter would be eliminated. For environmental permitting, an amendment to the existing permit application would likely suffice rather than an NPDES permit modification.

Disadvantages: This option has the highest capital cost as compared to the other options evaluated. Land or easement aquisition may be required, which could drive the cost up significantly. There are additional energy costs to the plant for running seven 30-hp pumps as opposed to one 15-hp pump. Mineral loading of well water may pose build-up problems for existing piping. Lead time for well drilling is required; this is not a quick-fix solution.

20-yr Levelized Cost: $117,771

Technical Papers
Zebra Mussel Chlorine/Bromine Treatment

Preventive Macrofouling Strategies for Nuclear and Fossil Fired Power Plants

NALCO

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INTRODUCTION

Much of the current emphasis in the war against macrofouling in utility cooling water systems assumes a problem condition with an existing in-system population of bivalves or other fouling species. While a variety of chemical and non-chemical strategies could be used to kill existing in-plant populations of macrofoulers, empty shells can still cause tube pluggage and flow restrictions. Further, the impact of under-deposit corrosion associated with adherent shell and organic waste is suspect but has not been adequately addressed to date.

Another approach to macrofouling control makes use of chemical technology designed to *prevent* infestation of plant systems. With the intermittent application of a sodium bromide-surfactant product and a chlorine source throughout the spawning season, fouling caused by several prominent macrofoulers can be prevented. These include sea water barnacles (*Balanus eberneus*), blue mussels (*Mytilus edulis*), and the fresh water zebra mussel (*Dreissena polymorpha*).

This paper initially summarizes the development of bromide-surfactant technology for microbiological control in cooling water systems that lays a framework for later work that demonstrates the value of the same technology as a preventive strategy for macrofouling control. U.S. and foreign case histories in both fresh and marine water environments are presented.

BROMIDE-SURFACTANT TECHNOLOGY DEVELOPED FOR MICROBIOLOGICAL FOULING

The unchecked growth of microorganisms in plant cooling water systems is a problem that often imposes significant economic penalty. The utility industry, for example, is well aware that biofouling of surface condensers can severely impair heat transfer efficiency with a resulting reduction in net plant heat rate.

For many years, chlorine was the predominant weapon in controlling microbiological growth in most utility cooling water systems. But concerns over the toxicity and fate of chlorinated organics being released to the environment resulted in detailed reviews of chlorine usage by government scientists. Finally in 1982, the EPA promulgated regulations that generally limited the utility industry to chlorine feed of no more than two hours per day with effluent discharge limits of no more than 0.2 ppm total residual chlorine.

Implementation of these regulations was difficult in some cases. In some plants, microbiological control became difficult especially where water pH values were much above 8.0. In other cases, the residual limit could not be met without dechlorination. It was clear that alternatives to chlorine were needed to ensure effective microbiological control.

Bromine chemistry had long been known to offer several technical advantages over chlorine, but had never been commercially used to any extent due to severe handling and safety concerns. Bromine chloride, an innovative combination of the two halogens and a strong bactericide, was developed, but it too never achieved market prominence due to safety and handling concerns.

During this same period, researchers at Nalco had demonstrated that the addition of bromide salts to a chlorinated water stream would convert hypochlorous acid to hypobromous acid, and that the proportion of each could intentionally be varied by varying the molar ratios of chlorine to bromide being fed to the system. It was also found that the inclusion of penetrating surfactants in the formulation was helpful in the prevention of biofilm formation on heat transfer surfaces. The resulting bromide-surfactant technology when coupled with chlorine (as a gas or as the safer, liquid hypochlorite) was expected to provide significant benefits to the utility industry over the use of chlorine alone.

CHLORINATION CHEMISTRY

When added as a gas or as liquid sodium hypochlorite, chlorine rapidly hydrolyzes to form hypochlorous acid.

$$Cl_2 + H_2O - HOCl + HCl$$

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The hypochlorous acid then partly dissociates to give hypochlorite ions.

$$HOCl \rightleftharpoons H^+ + OCl^-$$

The three forms of free available chlorine involved in these reactions exist together in equilibrium. These species are molecular chlorine (Cl_2), unionized hypochlorous acid ($HOCl$), and hypochlorite ion (OCl^-). Their relative proportions are determined by pH (Figure 1), temperature, and dissolved solids. It is important to note that these proportions are the same for any given set of conditions whether the chlorine is introduced as chlorine gas or as liquid hypochlorite.

As a bactericide, HOCl is a much more rapidly acting biocide than OCl^- ion (Figure 2). Consequently, in free residual chlorination, the higher the pH value the less active the residual because of its reduced HOCl concentration. This is particularly important for electric utility plants that normally are limited to chlorine feed of no more than two hours per day. Given reduced contact times, especially in once-through cooling water systems, the rate of bacteria kill is an important consideration.

Chlorine can also undergo reactions with ammonia to form chloramines, which is a type of combined chlorine. Free available chlorine plus combined chlorine make up total available chlorine.

$$HOCl + NH_3 \rightleftharpoons NH_2Cl + H_2O$$

$$HOCl + NH_2Cl \rightleftharpoons NHCl_2 + H_2O$$

$$HOCl + NHCl_2 \rightleftharpoons NCl_3 + H_2O$$

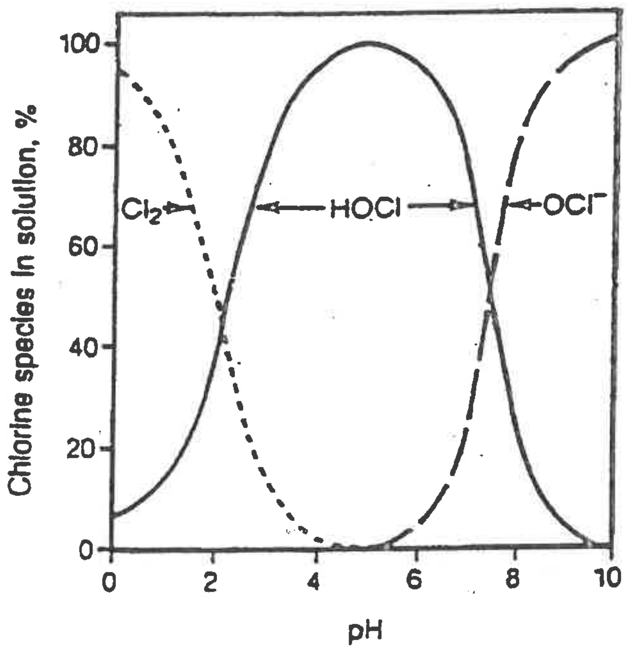

Figure 1 — Relative concentrations of chlorine compounds vs. pH

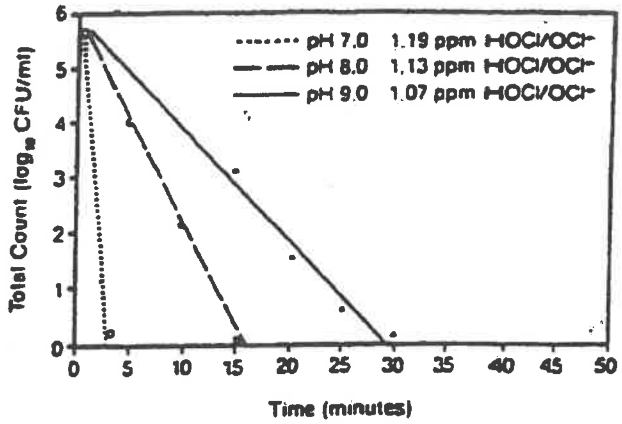

Figure 2 — *Effect of HOCl/OCl⁻ on slime-forming* Pseudomonas

Chloramines are much less effective biocides than free hypochlorous acid.

BROMIDE-SURFACTANT CHEMISTRY

Technology incorporating a combination of sodium bromide and a surfactant penetrant is activated *in situ* by chlorine or industrial grade sodium hypochlorite to form hypobromous and hypochlorous acid. The amounts of each acid can be varied by altering the molar ratios of bromide and chlorine.

The chemical reactions for activation are given by:

$$Cl_2 + H_2O \rightleftharpoons HOCl + HCl$$

$$HOCl + NaBr \rightleftharpoons HOBr + NaCl$$

or

$$NaOCl + H_2O \rightleftharpoons HOCl + NaOH$$

$$HOCl + NaBr \rightleftharpoons HOBr + NaCl$$

Hypobromous acid is a weak acid and an excellent oxidizing agent. It partly dissociates to give hydrogen and hypobromite ions:

$$HOBr \rightleftharpoons H^+ + OBr^-$$

The two forms of free available bromine involved in these reactions, hypobromous acid (HOBr) and hypobromite ion (OBr^-), exist together in equilibrium. As with chlorine, their relative proportions are largely determined by pH.

As cited earlier, the short-term biocidal effectiveness of hypochlorite ion is significantly less reactive compared to hypochlorous acid. As shown in Figure 3, at pH 8.0, solutions of free chlorine are composed of only 20% HOCl, i.e., 80% is OCl^-. At the same pH, however, solutions of free bromine are composed of 80% HOBr and 20% of OBr^-. Furthermore, the short-term biocidal effectivensss of OBr^- is virtually identical to HOBr. Therefore, where chlorine is used under alkaline conditions, bromine can be even more cost-effective.

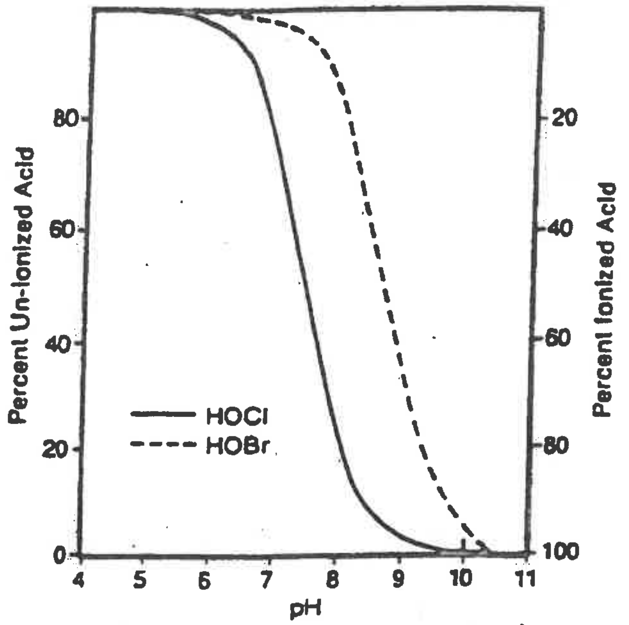

Figure 3 — *Distribution of aqueous chlorine and bromine solutions at various pH values*

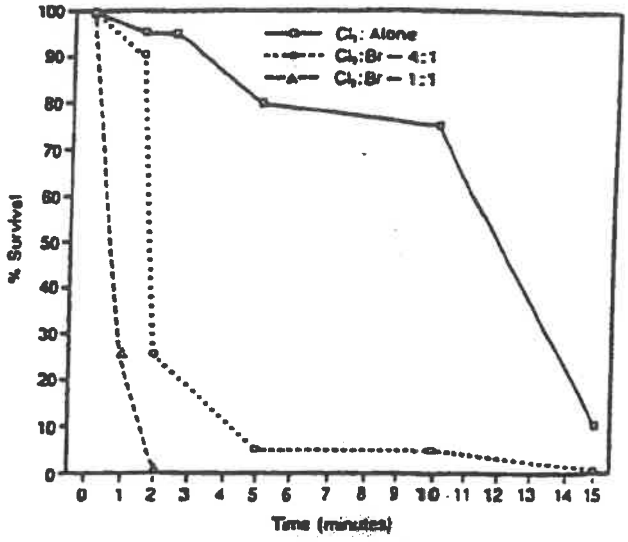

Figure 4 — *Effect of molar ratios of activated bromide on chlorine kill rate*

It has been well documented in the literature and field that bromine chemistry gives a much faster kill than chlorine chemistry. In addition, bromamines are almost as biocidal as bromine itself, whereas chloramines have little if any biocidal effects. These two features make bromine an ideal fit for utility applications. See Figure 4.

There are other advantages associated with bromine chemistry besides faster kill, ammonia contamination, and high pH dissociation. Because bromine is such an effective biocide, it can be maintained at lower residuals. Lower residuals mean reduced corrosion and reduced environmental impact. Additional benefits include reduced tower lumber delignification and reduced degradation of other cooling water treatment chemicals.

Sodium bromide-surfactant can be combined with various levels of chlorine or hypochlorite. Depending on the combined molar ratio of chlorine to bromide, the resulting species can range from 100% HOBr to various mixtures of HOBr and HOCl. The following examples illustrate this.

1. The stoichiometric ratio required to produce 100% HOBr is one mole of chlorine to one mole of bromide.

$$Cl_2 + H_2O \rightarrow HOCl + HCl$$
$$HOCl + NaBr \rightarrow HOBr + NaCl$$

2. A ratio of four moles of chlorine to one mole of bromide will yield a 75/25% mixture of HOCl and HOBr.

$$4Cl_2 + 4H_2O \rightarrow 4HOCl + 4HCl$$
$$4HOCl + 1NaBr \rightarrow 3HOCl + HOBr + NaCl$$

This molar ratio decision is important because the higher the percent of bromine, the faster the kill and the lower the residual required to maintain biological control. However, the greater the percent of bromine, the higher will be the cost. This ability to dial-in a ratio as needed affords flexibility, often needed in utility cooling water applications.

Bromine chemistry also results in reduced corrosion; and where copper alloys are used, effluent copper discharge can be reduced.

MICROBIOLOGICAL CASE HISTORIES

In the safety-related raw cooling water system at one nuclear power plant, leaks were being experienced in weld regions. Failure analysis indicated microbiologically-induced corrosion which resulted in tunneling and pitting. After significant in-house laboratory testing, plant personnel concluded that "implementation of activated sodium bromide was a relatively safe, acceptable, and reasonable counter measure to the acute MIC degradation" being experienced.

Compared to the prior sole use of sodium hypochlorite, experience with activated bromide/biodispersant has shown numerous benefits:

- 75% reduction in chlorine usage (from 1,500 gal/day of bleach to 367 gal/day)
- 25–30% reduction in copper corrosion rates
- 50–60% reduction in carbon steel corrosion
- Net biocontrol cost savings of $58,440/year
- No evidence of new leaks in the system

In a second utility, severe corrosion, manganese deposition, and biofouling problems were experienced in early operation. Makeup water pH ranged from 8.0 to 8.8. Manganese fouling and pitting corrosion of 304 stainless steel condenser tubing was eliminated after chemical cleaning and initiation of bromine-surfactant chemistry. Chemical removal of deposits enabled recovery of about 80 MW of lost capacity. After several years of treatment, condenser tubes remain bright clean in contrast to the black, slimy manganese and slime deposits seen before. Condenser chlorination has been reduced from 4,000 lb/day for two hours to 2,500 lb/day for half an hour.

In one utility with two supercritical, gas-fired units of 565 MW and 775 MW capacity, lake water with a pH of 8.8 to 9.1 is used for cooling. The auxiliary cooling water system had experienced severe corrosion problems with poor biofouling control, even though chlorination rates were very high. Bromine chemistry was initiated, with reduced chlorine rates used for activation of bromide. Corrosion rates have been reduced substantially (Table 1), and shutdown inspections indicate effective biofouling control.

Table 1 — *Reduced corrosion with bromine chemistry*

Chemistry	Treatment rate (lb/day)	Treatment time/day (hours)	Corrosion (mpy)
Chlorine alone	1,500	1.0	0.8
Chlorine/ bromine	750	0.5	0.3
Chlorine/ bromine	200	0.5	0.1

CHLORINATION FOR MACROFOULING CONTROL

Chlorination is the most commonly used approach for macrofouling control throughout the world. In industrial plants in the United States, chlorine for macrofouling control is normally applied on a continuous feed basis to achieve a 0.2 to 0.5 ppm free residual and is preferably utilized as a preventive approach by targeting the more susceptible larval stages of various macrofoulers. In some cases, continuous chlorine feed is scheduled to coincide with peak spawning periods.

Chlorine can also be used to affect mortality in systems infested with bivalves. However, killing adult bivalves is difficult given their ability to close in the presence of certain toxicants. Therefore, uninterrupted chlorine feed for at least two to three weeks and at concentrations from 0.5 to 1.0 ppm is normally required.

Chlorination at these levels will exacerbate corrosion rates, especially on copper alloys. While dechlorination can be done, reliable and redundant bisulfite or sulfur dioxide feed capability is necessary. This requirement would add considerable cost to treat large effluent streams.

In those plants, especially utilities, that can apply chlorine only on an intermittent basis, chlorine alone may have limited value as a macrofouling control agent.

BROMIDE-SURFACTANT TECHNOLOGY FOR MACROFOULING CONTROL

As discussed previously, bromide-surfactant technology was initially developed for improved microbiological control. However, on-going research and actual in-plant use at a growing number of utility and industrial plants in the U.S. and British Isles is also demonstrating its value as a macrofouling prevention strategy.

BARNACLE CONTROL

Virginia Power reported in 1988 at the International Water Conference of their success in controlling barnacle and bryozoa growth with an intermittent program of chlorine-activated bromide-surfactant. Over a four-year period, a number of studies were planned and completed in an effort to reduce problems associated with macrofouling at the company's Yorktown Station.

Since units 1 and 2 went into service, intermittent applications of gaseous chlorine were used in an effort to control fouling from barnacles, bryozoa, and other foulants common to the plant's brackish water cooling source. Results were not acceptable, as fouling of bearing cooling water exchangers and new stainless steel condenser tubes installed in 1982 was excessive.

In 1984, Virginia Power awarded a contract to the Virginia Institute of Marine Science (VIMS) to investigate the potential value of continuous chlorination at Yorktown. Results of sidestream studies conducted by the Institute included:

1. Low level continuous chlorination (0.05 ppm to 0.10 ppm total residual oxidant [TRO]) almost completely eliminated all sessile fouling species except barnacles.
2. Barnacle fouling actually increased with continuous chlorination vs the control (this was attributed to chlorine eliminating competing species).
3. There was no clear advantage in either general fouling or barnacle control by increasing feed from 0.05 ppm TRO to 0.20 ppm TRO.
4. A 12 hour on, 12 hour off feed was as effective as continuous feed at 0.2 ppm TRO.
5. Four 30-minute shocks at 5.0 ppm TRO was as effective as continuous feed at 0.5 ppm TRO.

In 1986, plant chlorinators were found to be only 22% available for chlorine feed. In addition to the high cost of maintenance, it was known that the settling phase of the barnacle is only 24–48 hours. A reliable feed system was needed to preclude as much macrofouling as possible. As a result, a liquid sodium hypochlorite feed system was installed with redundant pumping capability to ensure reliable chemical feed. The system was built to handle feed of a second chemical if one could be found that would better control barnacle fouling.

Bromine chemistry using bromide addition alone was briefly considered as an adjunct to chlorine; but because bromide in the York River varies from 70 to 100 ppm, it was shown by sidestream testing that chlorination already showed 100% conversion of the chlorine to bromine species.

Reports that a bromide-surfactant approach might be the enhancement desired led to a second sidestream study being conducted on-site. Results of the study were very encouraging as shown in Table 2.

Based on positive sidestream testing results, the bromide-surfactant technology was evaluated on one of the unit condensers. Virginia Power concluded at the end of this work that:

1. Chlorine-activated sodium bromide/surfactant is much more effective in controlling biofouling than chlorine alone.
2. Intermittent feed of chlorine-sodium bromide and surfactant is nearly as effective as continuous feed.
3. Intermittent feed within EPA allowable TRO limits of 0.2 ppm can practically alleviate condenser fouling.

BLUE MUSSEL CONTROL

Ballylumford Power Station, situated on Larne Lough in North Eastern Northern Ireland, is a six unit oil-fired power plant utilizing once-through sea water for condenser and auxiliary cooling. The station was fully commissioned in 1974 and up until the mid-1980's had utilized intermittent gaseous chlorination to control macrofouling. The chlorine was applied 12 to 18 hours per day and fed to achieve target free residuals of 1 ppm at the condenser inlets. The primary fouling organisms at Ballylumford included *Mytilus edulis* (the Blue or edible mussel), *Balanus crenatus* (an acorn barnacle species), *Polychaeles* (tubeworms), slime-forming bacteria including *Pseudomonas* and *Enterobacter*, and sulfate-reducing bacteria.

Fouling control at Ballylumford was reasonably successful until 1986 and 1987 when severe fouling and excessive mussel growth were experienced in the system. Also during this period, plant personnel expressed serious concerns over the safe use and handling of gaseous chlorine. In response to the performance problems and mounting safety concerns, a laboratory mussel toxicity and biofilm rig study was commissioned to develop an alternate, more effective, and safer approach for the plant. Results of the studies indicated that fouling control could be most quickly re-established by first mechanically cleaning all culverts and auxiliaries, and then implementing a continuous chlorination program. The study also showed that the most effective and economical alternative to continuous chlorination would be a combined sodium hypochlorite-activated bromide-surfactant program using only one-tenth the amount of chlorine required for continuous feed.

By the end of 1988, the continuous chlorination program was fully implemented (0.6 to 1.0 ppm target free residual) with plans established for eventually converting to combined hypochlorite-activated bromide. Results obtained with continuous chlorination were very good. Mussel growth in the system was virtually eliminated, and barnacle and microbiological fouling were significantly reduced. Although the program was effective, concerns mounted over the use of chlorine gas. Over 4000 pounds per day of gaseous chlorine were required.

In the autumn of 1989, after 15 months of continuous gaseous chlorination, the hypochlorite-activated bromide

Table 2 — *Bromide/surfactant sidestream study from Virginia Power*

Treatment	Duration (days)	Barnacles (m^2)	Observations
Control (No treatment)	22	3,700	Heavy fouling slime, bryozoa, polydora, barnacles
Continuous Cl_2	22	18,000	Barnacles, higher density than control, void other species
Intermittent Cl_2 0.2 ppm TRO 30 min. x 6	12	32,000	Numerous barnacles, bryozoa
Continuous Cl_2/NaBr/ Surfactant	19	500	Virtually no fouling, any species
Intermittent Cl_2/NaBr 0.2 ppm TRO 30 min. x 6	12	1,100	Only few barnacles
Intermittent Cl_2/NaBr 0.2 ppm TRO 15 min x 8	12	800	Only few barnacles

program was finally implemented. Application of the program consisted of six 15-minute periods per day to provide a free bromine residual of 0.2 ppm at the condenser inlets. At the commencement of the program, the system was free of mussel growth. However, the rotary screens were noticeably contaminated with living barnacles. Within four weeks, 90% of the barnacles had been killed. Examination of water boxes, strainers, auxiliary, and condenser cooling circuits revealed no evidence of mussels, barnacles, tube worms, or bacterial deposits anywhere in the system. Condenser performance monitoring showed a 0.1 inch reduction in backpressure with terminal temperature difference reductions of 2 to 5°C, further indicating cleaner conditions.

By incorporating the combined hypochlorite-activated bromide-surfactant program at Ballylumford Power Station, the following benefits were realized:

1. Control of fouling by mussels, barnacles, and other macrofouling organisms as effective as continuous chlorination
2. Microbiological fouling control far more effectively than chlorine
3. Reduced treatment costs versus sodium hypochlorite alone by approximately 70% and $1800 per day
4. Improved condenser efficiencies, achieving fuel cost savings of up to 0.3%
5. Reduced oxidant discharge as a result of a six-fold reduction in chlorine usage

ZEBRA MUSSEL CONTROL

During the summer of 1989, water intakes from 19 large industrial water users on the southern shore of Lake Erie experienced infestations due to zebra mussels. One of these, Toledo Edison, Bayshore, is a four unit fossil fuel power station, noted as having one of the most severely infested intakes, had been using chlorine-activated bromide-surfactant for over five years for condenser and service water microbiological control. As a result of the existing treatment program, zebra mussel infestation has been prevented downstream of chemical injection points.

In mid-June, 1989, a zebra mussel monitoring program was initiated shortly after plant personnel learned of impending problems due to zebra mussels in the vicinity of the plant. Several concrete blocks (4" x 12" x 24") were suspended at various depths and locations of the plant inlet water channel. Inspections of rocks and other submerged surfaces in the inlet showed no evidence of zebra mussels in the channel at that time.

On July 21, 1989, approximately six weeks after exposure, juvenile zebra mussels were found for the first time on the test blocks at an approximate density of 50 per block. By September 8, 1989, the test blocks were completely covered with an initial layer of juvenile mussels, with average shell diameters approaching one-half inch.

Concurrent with the rapid coverage on the test surfaces, plant operators began reporting that large clusters of zebra mussels were showing up on the screen house rotating screens. Cluster size ranged from between golf ball and tennis ball in diameter. All submerged screen house surfaces were found to be completely covered with shells ½ to ¾" thick as were rocks and rip-rap throughout the inlet channel.

By the first week of November, despite lower water temperature, screen house fouling continued to increase and for the first time flow through the screen house trash racks was severely impeded. Growth on the trash rack bars began bridging the gap between the bars. Divers reported that in some locations the trash racks had the appearance of a flat wall with no depressions. Hydrolazing was required to remove the extensive growths.

Throughout the entire infestation period, the coolers and condensers in the plant system remained free of attachment and growth. A few dead mussel shells were occasionally found in quiescent areas of the condenser water boxes.

Chlorine-activated bromide-surfactant feed during the period was approximately 2.3 ppm total residual oxidant (TRO) for 10 minutes per half condenser per day. Each of the four condensers at the plant were treated one-half at a time, for ten minutes each. The service water system received treatment for ten minutes every other day. Chlorine to bromide ratio for the oxidant feed was 3:1 on a molar basis. Due to halogen demand of the inlet water, oxidant residual varied from approximately 0.5 ppm TRO in the supply piping to the condensers to 0.1 pm TRO at each condenser outlet. Water then flowed to a common mixing chamber (<0.1 ppm TRO), to a discharge pipe, and on to the discharge channel. No live mussels were found in any part of the treated system prior to the common mixing chamber. Isolated colonies of zebra mussels, however, were detected on surfaces in the mixing chamber, as was more severe infestation found on internal surfaces of the discharge pipe. The discharge channel leaving the plant was also severely infested.

Experience from Bayshore illustrates the effectiveness of chlorine-activated bromide mixture even at treatment intervals in this case of only ten minutes per day. Concentrations required for effective control were in the range of 0.1 to 0.5 ppm TRO. These were the same treatment levels utilized previously at the plant solely for microbial fouling control. At residuals less than 0.1 ppm level, mussel attachment was not prevented.

SUMMARY

Macrofouling is a growing problem of potentially grave economic significance in many areas of the world. Where chlorine alone cannot be used to preclude micro- and macro-fouling, chlorine activated bromide-surfactant technology provides a cost-effective solution to prevent plant infestations by a variety macrofouling species.

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ZEBRA MUSSEL CONTROL AT ROCHESTER GAS AND ELECTRIC CORPORATION'S ELECTRIC GENERATING STATIONS UTILIZING CHLORINE AND ACTI-BROM

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ZEBRA MUSSEL CONTROL AT ROCHESTER GAS AND ELECTRIC CORPORATION'S ELECTRIC GENERATING STATIONS UTILIZING CHLORINE AND ACTI-BROM

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ABSTRACT

In response to the zebra mussel infestations within industrial raw water systems in New York State, the NYS Department of Environmental Conservation (NYSDEC) has allowed pre-evaluated zebra mussel treatment programs, commonly termed "generic permit modifications" for holders of SPDES Permits, and additionally has authorized RG&E to conduct continuous chlorination studies for the smaller, yet vitally important, flows of the station's service water system (SWS). Two chemicals for which generic modifications are available are the oxidizing biocides chlorine and bromine. For these two chemicals the treatment program allowed at three RG&E facilities consisted of continuous treatment for 18 days with a Total Residual Oxidant level of 0.1ppm within the plant discharge. During 1991 RG&E conducted nine 18-day chlorine treatments while during 1992 six chlorine treatments were conducted along with three Acti-brom (a proprietary bromine compound manufactured by Nalco Chemical) treatments. During 1991 and 1992, continuous chlorination of the SWS at RG&E's Ginna Nuclear Power Station on Lake Ontario was studied utilizing Total Residual Chlorine (TRC) concentrations of ≤1.0ppm within the SWS. In all treatment programs, mortality rates were determined by utilizing adult mussels in bioboxes receiving sidestream water from circulating and/or service water systems. Evaluations of the twenty-five 18-day chlorine treatment tests conducted to date have shown the generic modification treatment program to be relatively ineffective, with practical overall mortalities approaching only 10%. Results of the nine 18-day Acti-brom treatment tests conducted to date were more encouraging, with mortalities ranging up to 65%. Latent mortalities were found with both chemicals. For the continuous chlorinations, at 0.75ppm >80% mortality was found to occur after 17 days, while at the 0.35ppm level 65% mortality was found after 35 days. All chlorine treatments were found to be greatly affected by water temperature, while Acti-brom effectiveness showed less temperature dependence.

ZEBRA MUSSEL CONTROL AT ROCHESTER GAS AND ELECTRIC CORPORATION'S ELECTRIC GENERATING STATIONS UTILIZING CHLORINE AND ACTI-BROM

INTRODUCTION

Rochester Gas and Electric (RG&E) has been treating raw water systems against zebra mussel biofouling within three power stations since the Fall of 1990. These treatments have primarily utilized chlorine, although during 1992 a bromine compound was also tested. This paper will present (1) the results of chlorine treatments conducted by RG&E using both the New York State Department of Environmental Conservation's (NYSDEC) 18-Day Treatment program as well as higher Total Residual Chlorine (TRC) level treatments in the service water system (SWS), and (2) the results of comparative studies between chlorine and Acti-brom.

METHODS

All control treatment programs conducted by RG&E were approved by NYSDEC. During 1990 NYSDEC developed a standardized zebra mussel chemical control treatment program utilizing chlorine, for raw water users possessing a State Pollution Discharge Elimination System (SPDES) Permit. This program, termed a "Generic Permit Modification", included the following conditions:

1) continuous chlorination for an 18-day period, with a TRC limitation at the point of discharge of 0.1ppm,
2) an interval of 45 days between treatments, and
3) a maximum of four treatments per year.

In addition, treatments for power stations located upon Lake Ontario were restricted to the May through October time period, in order to protect the winter salmonid fishery in the Lake. It was theorized that chlorine discharges of 0.1ppm may preclude salmonids from inhabiting the power station's thermal plume.

During 1991 and 1992, zebra mussel control treatments have been conducted at three RG&E power stations: two located on Lake Ontario and one located on the Genesee River in Rochester, NY.

During 1991 RG&E conducted nine 18-day chlorine treatments while during 1992 six 18-day chlorine treatments were conducted. Along with these treatments, in situ studies (or tests) of treatment effectiveness were conducted to quantify results. These studies monitor effectiveness under actual plant conditions, including normal operational variabilities (e.g., flow changes, temperature fluctuations, injection system inconsistencies, etc.). By placing monitoring stations at a number of locations throughout the station (such as intake waters, service water systems, and discharge effluent streams) and doing this over different seasons, a number of distinct tests were performed during each treatment and many different temperature regimes were monitored. Temperatures ranging from 10°C to 30°C were able to be studied this way.

Monitoring performed was similar to a bio-assay, utilizing bioboxes normally containing 100 zebra mussels per test location. Bioboxes were designed as flow-through systems receiving sidestream water from the raw water system being studied. Since translocating adult zebra mussels frequently enter the plant water systems, all tests were performed using adult zebra mussels. This approach will assure mortality of juvenile or newly settling mussels as well as adults.

Within a power plant there are two main raw water systems. The most substantial water flow in a power plant utilizing once-through cooling (such as RG&E's facilities) is the circulating cooling water system, which transfers waste heat from the plant's condensers to the receiving water body. The second system, the service water system (SWS), uses only about 5% of the total plant flow, however it is vital for operation and safety within the plant. Due to the wide range and size of components within a service water system there is a much greater potential for zebra mussel biofouling to occur within this system than in the circulating cooling water system. Therefore testing with TRC levels higher than the 0.1ppm allowed by the generic permit modification were requested of and approved by the NYSDEC. In general, these tests (1) were done within the lower flow areas of the plant, i.e., the SWS, (2) allowed TRC levels of up to about 1.0ppm at point of discharge from the SWS, and (3) were limited to 60-day continuous chlorination, maximum.

CHLORINE RESULTS

Since 1991 a total of 25 valid tests have been conducted evaluating the effectiveness of the generic permit modification for chlorine, i.e., 18-days continuous chlorination at 0.1ppm TRC. These results are summarized, by average test temperature, in Figure 1. It should be noted that, per the permit, chlorine injection was ended on Day 18, thus any mortality beyond that time would be latent mortality. Also, the number of tests conducted at each temperature are shown in the parentheses. Finally, while the target TRC level was 0.1ppm in the discharge effluent, consistently maintaining this concentration over an 18-day period under plant operating conditions is extremely difficult. In general, however, TRC levels normally remained within the 0.08-0.1ppm range. A substantial difference in efficacy is shown between the lower temperatures of 10-20°C and the higher temperatures of 25 and 30°C. While mortalities approaching 60% were found at the higher temperatures (20% of which were latent mortalities), less than 10% mortality occurs within the lower temperature range. Since ambient water temperatures at these power stations rarely attains 25°C, the effectiveness of the generic permit modification is limited to less than 10% for virtually all of the power station locations, aside from the discharge canal itself. It is suspected that the generic permit modification may be effective under ideal conditions of warmer water temperatures, TRC levels consistently at 0.1ppm, and optimum injection system performance. Unfortunately, these conditions rarely occur during standard station operations.

The higher level TRC study results, again summarized by average test temperature, are shown in Figure 2. Like the 0.1ppm results, these studies showed wide variations in mortality due to temperatures. The 0.75ppm studies resulted in mortalities ranging from 75-100% after 27 days of continual chlorination. Note that the 75% mortality occurred at the relatively low water temperatures of 14°C. At concentrations of 0.35ppm results ranged from 1 to 60%, again showing substantial increases in effectiveness as temperatures increased.

Figure 3 presents the results of all the chlorination studies performed, including 18-day 0.1ppm and longer term, higher level TRC chlorinations. The curves shown in this Figure are average results from each of the treatment levels irrespective of temperature, i.e., all temperature ranges have been combined. As before, sample size is in the parentheses. While it has been previously demonstrated that chlorine effectiveness is highly dependent upon water temperature, these curves provide a general picture of relative effectiveness for the various TRC levels within a water temperature regime representative of the Great Lakes Region. Figure 3 clearly shows that TRC efficacy increases as the TRC level increases. For example, after 15 days mortalities for TRC levels of 0.1ppm, 0.35ppm, 0.75ppm and 1.3ppm would be 13, 36, 74, and 98%, respectively. Lastly, using these curves allows an estimation of the number of days required for effective zebra mussel control with a given TRC level.

CHLORINE SUMMARY AND CONCLUSIONS

To conclude the chlorine treatment section of this analysis, the following concepts summarize the major findings:

1) The NYSDEC Generic Permit Modification for chlorine is generally ineffective in controlling zebra mussel biofouling within power stations in the Great Lakes Region.
2) A substantial increase in effectiveness of control treatments per the generic permit modification for chlorine occurs when water temperatures increase from 20°C to 25°C.
3) Water temperature severely affects all chlorine treatments, regardless of TRC levels, to the extent that low

level (e.g., 0.1-0.35ppm) treatments are probably not cost-effective in water temperatures below 20°C.

4) Continuous chlorination with TRC levels ranging from 0.1-1.0ppm can be effective depending upon duration and water temperature.

ACTI-BROM STUDIES AND RESULTS

Bromine, which is in the same class of chemicals as chlorine (halogens), has also been utilized for biofouling control. In addition, it is theoretically more chemically active than chlorine in higher pH waters such as Lake Ontario and the Genesee River (near pH 8). As previously described, overall results of the 18-day chlorine treatments showed little or no mortality at temperatures of 10-20°C while 40-65% mortality was found at temperatures of 25-30°C (Figure 1). Since water temperatures at the RG&E power stations are normally in the <25°C range, zebra mussel control using the generic permit modification for chlorine is extremely limited. Acti-brom, a proprietary bromine compound manufactured by Nalco Chemical Company, was therefore selected for study at one RG&E station on Lake Ontario in hopes that a slightly more active compound would increase effectiveness enough to control zebra mussel biofouling. Acti-brom is a combination product of sodium bromide and a surfactant penetrant that was activated in situ with chlorine at a 1:1 molar ratio to form hypobromous acid. Due to the similar nature of chlorine and Acti-brom, the NYSDEC treats both compounds the same with respect to a generic permit modification. Thus the treatment application for Acti-brom was exactly the same as that previously utilized for chlorine, i.e., 18-days at a concentration of 0.1ppm TRO (Total Residual Oxidant, instead of Chlorine). Monitoring was also conducted in the same manner as during previous chlorine treatments. This standardization in both treatment and monitoring allows for a direct comparison between results of Acti-brom and chlorine.

Acti-brom results, summarized by average test temperature, are presented in Figure 4. As indicated on this Figure, a total of nine valid Acti-brom test results were obtained during the study year. In all temperature ranges studied (15-25°C), mortalities of 18-27% were found at the end of the 18-day Acti-brom treatment period. Further, latent mortalities in the range of an additional 20-40% were observed during the next ten days after Acti-brom treatments ended, resulting in total mortalities of 35-65%. Figure 5 compares the Acti-brom results with the chlorine results for the three comparable water temperature ranges that were studied. This Figure clearly indicates that at the lower water temperatures of 15 and 20°C Acti-brom is much more effective than chlorine. At 25°C these two chemicals showed generally similar results, although this observation includes latent mortalities for Acti-brom, while latent mortalities for chlorine were not assessed. While Acti-brom appears more effective at lower temperatures, final mortalities of 35-65% are still not sufficient for zebra mussel biofouling control. Thus the zebra mussel control program allowed by the NYSDEC Generic Permit Modification for Acti-brom, like chlorine, is not a practical solution to the zebra mussel problem within raw water systems.

ACTI-BROM SUMMARY AND CONCLUSIONS

To conclude the Acti-brom treatment section of this analysis, the following concepts summarize the major findings:

1) While the NYSDEC Generic Permit Modification for Acti-brom is more effective than chlorine in controlling zebra mussel biofouling within power stations, mortality rates are still too low for effective zebra mussel fouling control.
2) Acti-brom effectiveness does not appear to be as temperature dependent as chlorine effectiveness.
3) Acti-brom is more effective at lower temperatures than chlorine for controlling zebra mussel biofouling.

4) At higher temperatures Acti-brom and chlorine appear comparable.

FINAL OBSERVATIONS

A few final observations concerning these treatment programs are worth noting. First, both chlorine and bromine treatments produce slow, steady mortality rates, as opposed to quick, total kills. This technique lends itself to an on-going clean-up and removal of zebra mussels over the entire treatment period, and may be better suited for on-line treatments since there is not a massive die-off occurring within a day (or even hours) which could quickly overload screens and strainers. Secondly, zebra mussel shells removed from service water systems following the 0.75ppm TRC treatments were very thin, brittle, and broken, suggesting that many of the shells were disintegrating from reaction with the chlorine and would pass through the system, thus eliminating the need for physical removal. Lastly, the relatively higher chemical cost of the Acti-brom treatments versus the chlorine treatments must be considered when determining the overall cost-effectiveness of these two chemical controls.

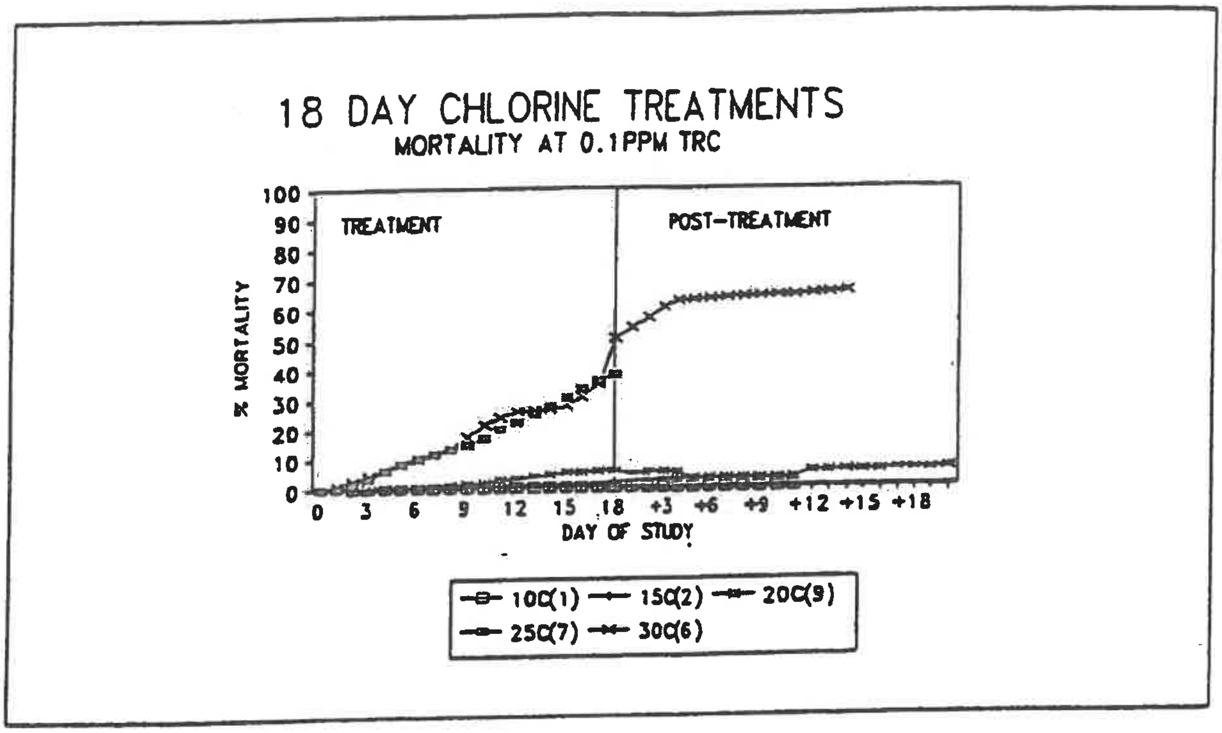

FIGURE 1

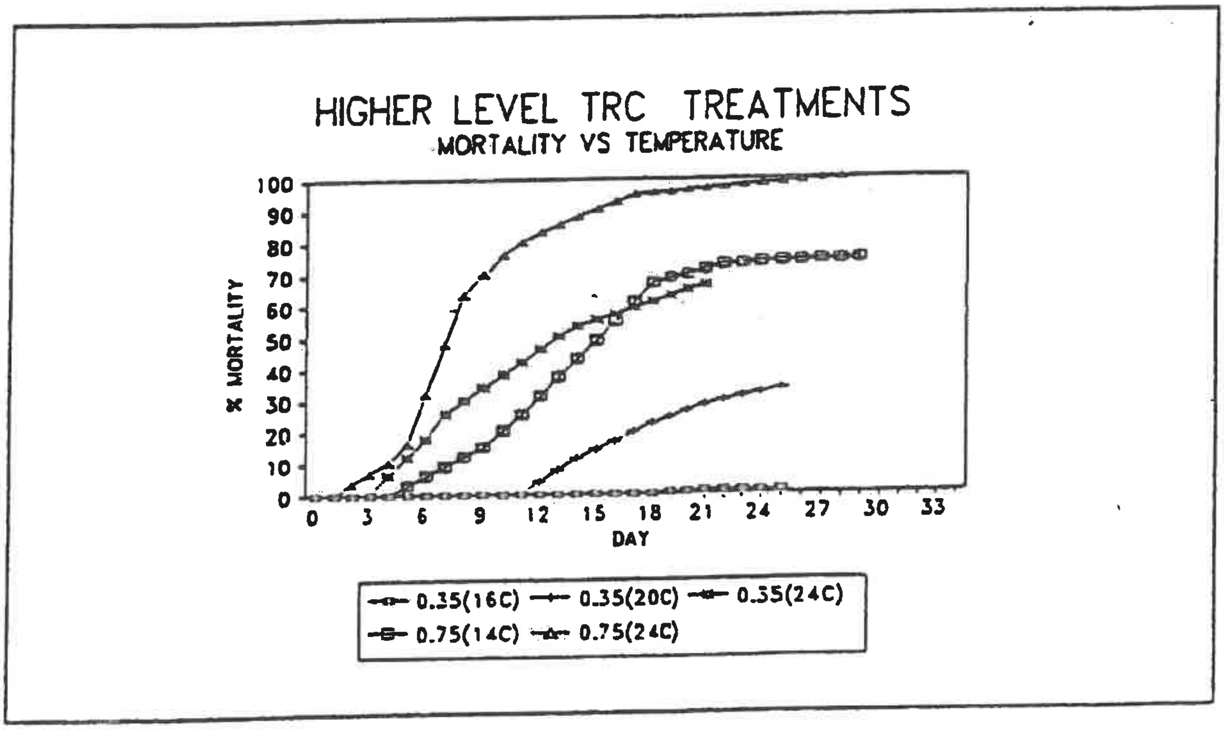

FIGURE 2

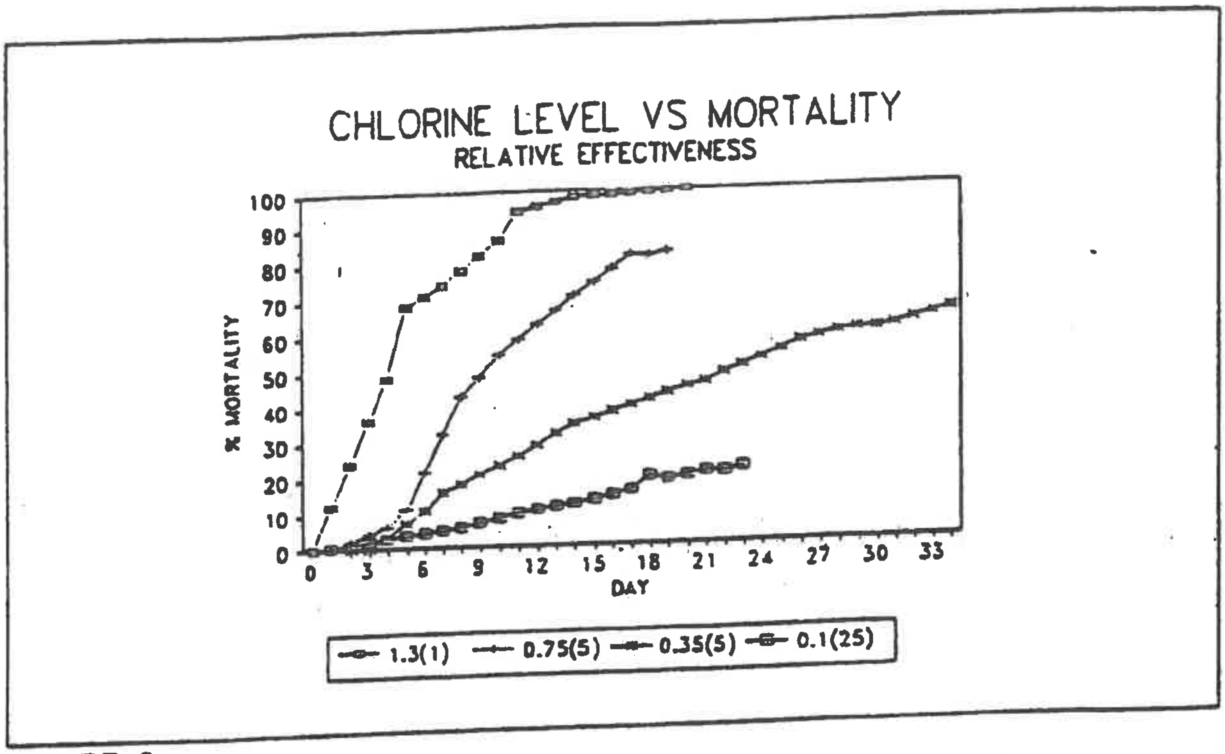

FIGURE 3

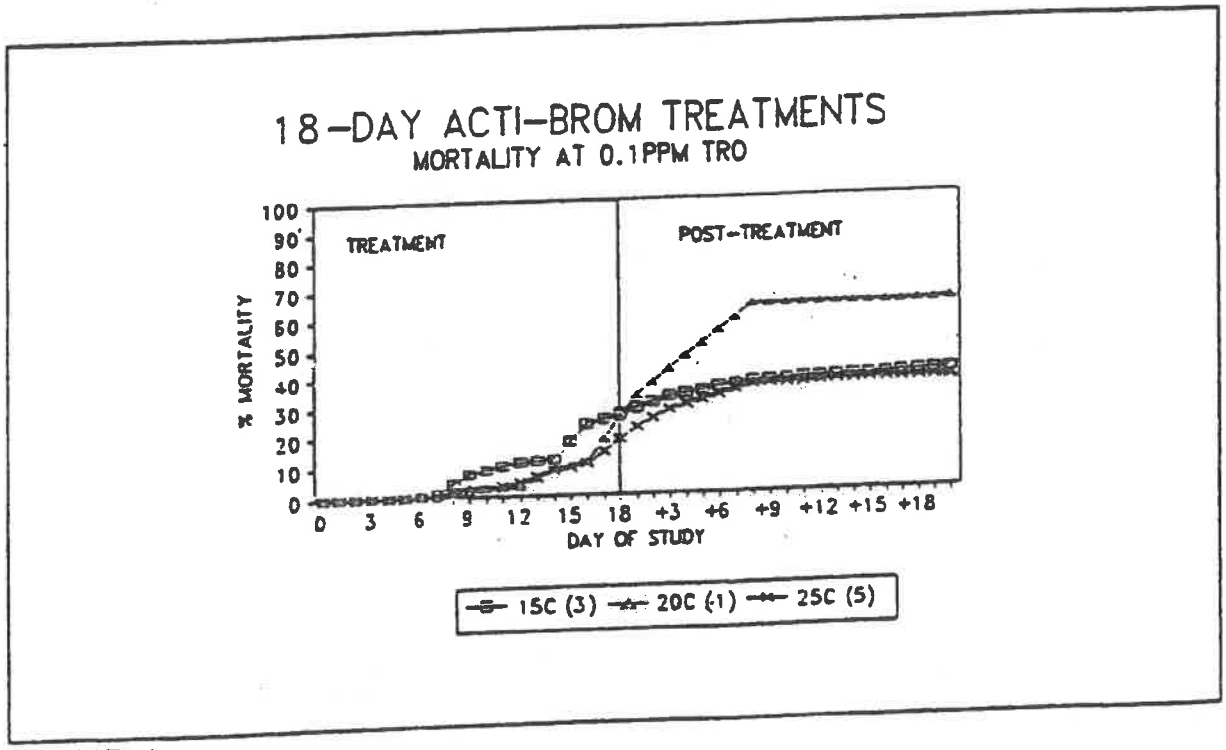

FIGURE 4

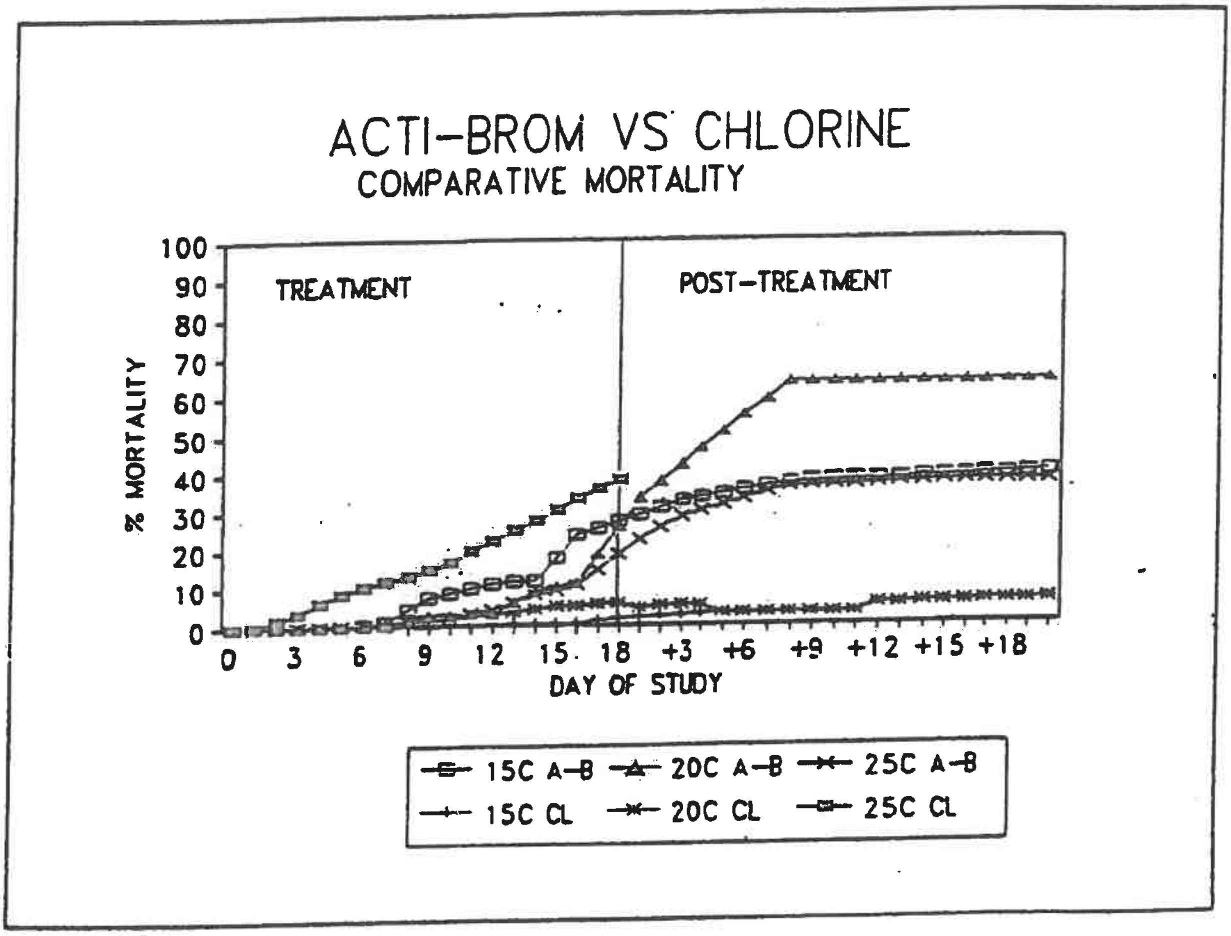
ACTI-BROM VS CHLORINE
COMPARATIVE MORTALITY
% MORTALITY
100
90
80
70
60
50
40
30
20
10
0
TREATMENT
POST-TREATMENT
0
3
6
9
12
15
18
+3
+6
+9
+12
+15
+18
DAY OF STUDY
15C A-B
20C A-B
25C A-B
15C CL
20C CL
25C CL

FIGURE 5

USE OF INTERMITTENT BROMINATION TO CONTROL ZEBRA MUSSELS AT TOLEDO EDISON BAY SHORE STATION

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1993

USE OF INTERMITTENT BROMINATION TO CONTROL ZEBRA MUSSELS

ABSTRACT

Toledo Edison Bay Shore Station has been using a sodium hypochlorite activated bromide solution to control zebra mussels, Dreissena polymorpha. Inspections performed in the plant water systems indicate that where the chemical is applied, no traces of zebra mussels are found. No other chemical treatments have been used to preclude mussel settlement.

This report is written in two sections. Section I discusses plant history, chemical treatments, and inspections. Section II is a report on an in depth bromination research effort. Both sections report the evidences of Bay Shore Station as having an effective chemical treatment program in place that prevents the settlement of zebra mussels.

A recent report by a chemical manufacturer (*An On-Site Evaluation of Zebra Mussel Control: Comparing Chlorine, Bromine, and a Nonoxidizing Molluscicide*, Betz Laboratories, Lyons et al.) on chlorine and bromine research states that "the objective of intermittent chlorine or bromine treatment programs to prevent the establishment of the zebra mussels was not achieved." This report refutes that claim.

USE OF INTERMITTENT BROMINATION TO CONTROL ZEBRA MUSSELS

Section I

Chemical Treatments and Inspections

INTRODUCTION

Toledo Edison personnel first became aware of the zebra mussel near the end of 1988 when they were found at a sister plant near Cleveland, Ohio. Very little was known about the mussel and not much concern was given. In the winter of 1988/1989 a draft publication (Hebert & Mackie) on the mussel was circulated and reviewed by plant technical personnel. In May of 1989, a paper published by The Academy of Sciences of the USSR was reviewed. On June 13, 1989 an information workshop was attended in Ann Arbor, Michigan, which related the experiences of several already infested facilities. With the information obtained from these sources, Toledo Edison, an operating company of Centerior Energy Corporation, had a clear picture of what the mussel was, what its impacts could be, and how to prepare for it.

BAY SHORE GENERATING STATION

The Bay Shore Station is a 631 MW, four unit fossil fuel plant located approximately five miles east of downtown Toledo, Ohio, at the western end of Lake Erie, at the mouth of the Maumee River. The plant draws its steam condensing cooling and plant service water supplies from an open intake channel. Prior to the June 13, 1989 workshop, sites in the Monroe, Michigan area were some of the most infested by the zebra mussel. Because Monroe is only fifteen miles to the north of Bay Shore, it was decided to implement monitoring programs immediately.

<u>Monitoring</u>

An inspection of Bay Shore's intake, trash racks, and pump suction wells revealed no presence of zebra mussels as late as May 1989. Cement monitoring blocks (24" x 12" x 4") were suspended at various depths and locations in the intake channel on June 15, 1989. The blocks were checked weekly for mussel settlement. On July 21, 1989, about 50 juvenile mussels, sized less than 1/8 inch, were found on one of the blocks at a depth of 10 feet. By the end of October, the same block had a mussel density of 3.2 lbs/ft^2 (see figure 1) with shell diameters greater than one half inch.

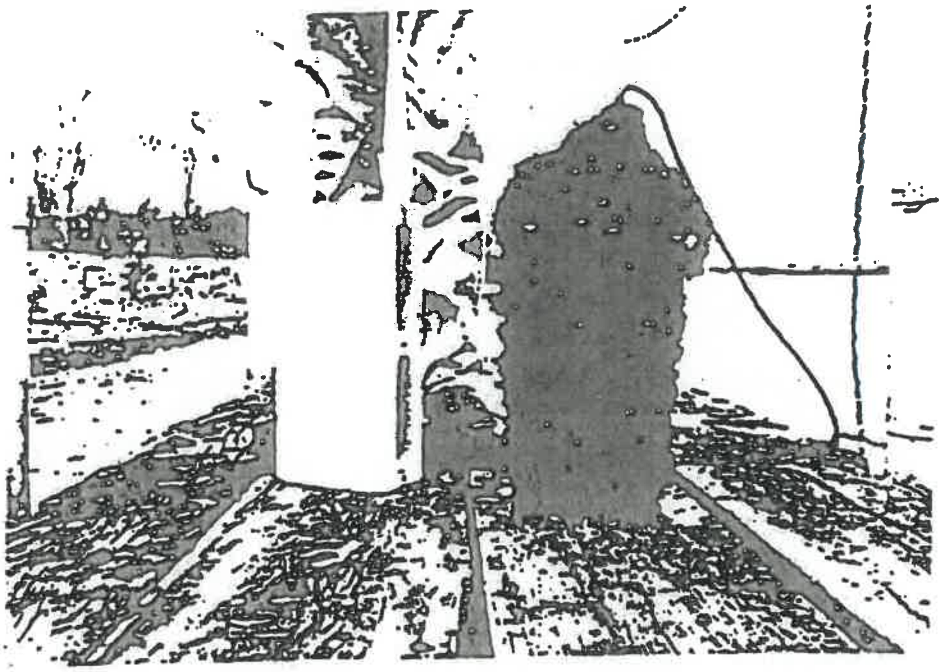

Figure 1. Intake monitoring blocks. A new block (left) next to a fouled block.

During the same period, plant operators reported large clusters of zebra mussels, or drusses, appearing on the condenser cooling water screen house travelling screens. Drusses ranged in size from golf ball to tennis ball in diameter. By October, divers reported that all structures, rocks, and debris in the intake were coated with mussels to a thickness approaching two inches.

Plant Chemical Treatments

Bay Shore has been using a sodium hypochlorite activated bromide/biodispersant for over seven years for condenser and service water microbiological control. The biodispersant used with the bromide is an oxyalkylate surfactant. The determination was made to change to the bromide regime after years of treatment with gaseous chlorine after a lengthy comparison study and the need to meet EPA compliance measures for total residual chlorine. The pH of the water varies from 7.8 to 8.5.

The bromide mixture is fed at approximately 2.3 ppm total residual oxidant (TRO) for ten minutes per half condenser per day. The service and raw water systems are also treated, but on alternating days. The in-plant cooling water system is a closed system, and is therefore not treated with the bromide mixture.

Chlorine to bromide ratio for the oxidant feed is 3:1 on a molar basis. Due to the halogen demand of the intake water, oxidant residual varies from approximately 0.5 ppm TRO in the supply piping to the condensers to 0.1 ppm TRO at each condenser outlet. After the condenser, water flows into a common mixing chamber where TRO is below detectable limits. The water then flows to a discharge pipe and then to the discharge channel.

Plant Experiences

With the heavy infestation in the intake structure area and the heavy carry-over of drusses on the travelling screens, it was presumed that the plant systems using the intake water would experience similar infestation.

In November 1989, water depth had dropped approximately three feet to reveal the intake trash bars had incurred considerable infestation. It was visually observed that mussels nearly bridged the three inch bar gap in some locations (see figure 2). Below the water line, divers reported that in some locations the bars were bridged, giving the appearance of a flat wall of mussels with no depressions to distinguish it as a trash rack.

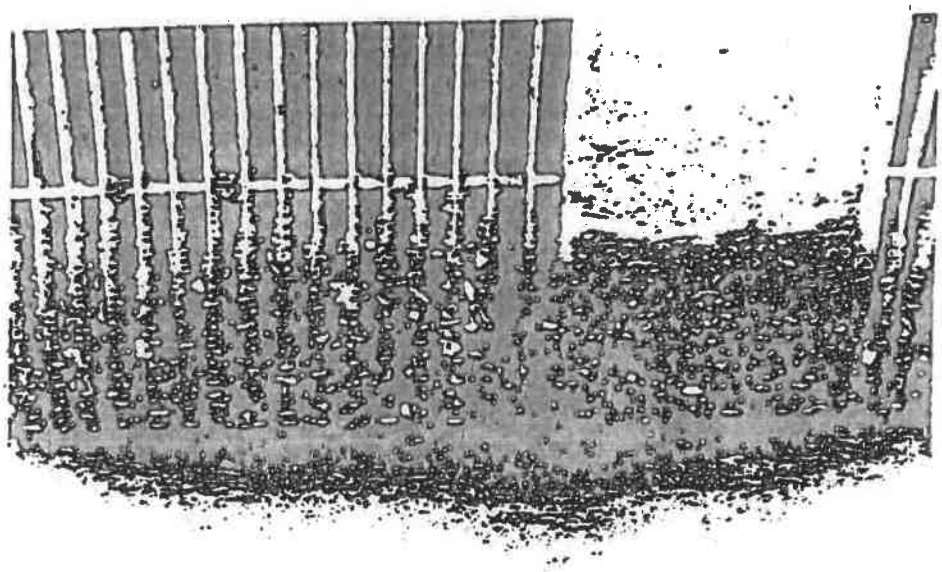

Figure 2. Zebra mussel infestation shown on intake trash racks after seasonal lake level decrease.

During March 1990, diver inspection of one of the plant's circulating water systems revealed no presence of zebra mussels from the circulating water pumps to the condenser inlet tube sheet, and through the tubes. At the condenser discharge mixing chamber however, live attached mussels were found in quiescent areas. Inspections of other systems that are treated daily showed no signs of attached mussels. Based upon these findings we concluded that the current bromide treatment regime appeared to be effective against settlement of the zebra mussel. Diver inspection of the intake pump suction wells (prior to chemical treatment at the pumps) revealed the walls to be completely covered with at least two inches of growth. The diver conducted the inspection of the wells in less than two hours. When complete, the diver's fiberglass ladder was removed and found mussels firmly attached to each leg.

During the spring of 1990, operators continued to remove drusses from the travelling screens. At one point mussel coverage was so heavy that shovels were used for removal. It was believed that since the screens were only operated periodically, the time the screens were left stationary was sufficient for the migratory drusses to generate new byssal attachment to the screens. It was decided after this to operate the screens on a continuous basis. This has greatly reduced mussel carry over on the screens. Operating the screens continuously created an environment suitable for colonization in the screen backwash sluiceway trough. By July, 1990, plant personnel found it necessary to clean the trough through hydrolazing (a high pressure water jet cleaning technique).

During the spring and summer of 1990, Bay Shore experienced mussel clump impingement on condenser tube sheets. Drusses were also found in smaller diameter piping. It was determined that these drusses were either being carried over the screens or falling off of the intake structure surrounding the circulating water pumps. Pluggage from these drusses caused several unit deratings. Additional costs were incurred in labor to clean the tube sheets.

Pluggage from the drusses continued over the summer. One of the most complete examples of macrofouling was discovered in late August on a small heat exchanger. Mussels impinged on the tube sheet to a depth of six inches. A reduction in flow followed that allowed entrainment of silt and other fine debris.

By the end of the summer of 1990, mass impingement of the drusses became correlated with the cleaning of the debris in the intake and the hydrolazing of the trash racks. Cleaning the trash racks would send large quantities of mussels into the water column entering the plant by screen carryover and then through intake pumps. When debris is removed from the intake, large amounts of sedimentation are stirred up and sent into the water column. It was observed on one occasion that the suspended solids count increased from 37 mg/l to 544 mg/l on the day of cleaning. The mussels and suspended solids made for an opportune macrofouling situation. As the mussels became impinged on the tube sheet, flow through the tubes was decreased. This gave the abnormally high count suspended solids an opportunity to settle out in the tubes. As a result, units were derated to clean thick layers of mud from chamber however, live attached mussels were found in quiescent areas. Inspections of other systems that are treated daily showed no signs of attached mussels. Based upon these findings we concluded that the current bromide treatment regime appeared to be effective against settlement of the zebra mussel. Diver inspection of the intake pump suction wells (prior to chemical treatment at the pumps) revealed the walls to be completely covered with at least two inches of growth. The diver conducted the inspection of the wells in less than two hours. When complete, the diver's fiberglass ladder was removed and found mussels firmly attached to each leg.

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In the fall of 1990, several locations of piping whose temperature and flow rate would allow for the settlement and growth of zebra mussels, were opened and inspected boroscopically. No zebra mussels were present nor was there any indication of prior byssal attachment.

CONCLUSIONS

The Bay Shore Station continues to use the bromide mixture for control of the zebra mussel settlement and growth. At the beginning of September 1990, the biodispersant was not used with the chlorine activated bromide. At the time of this writing, only one area that is treated with bromide showed evidence of mussel settlement. The area is a small quiescent location at a heat exchanger end cap. An area of approximately one square foot was covered with mussels sized approximately 1/8 inch. Due to its location and the absence of mussels in any other part of the system, it was determined that chemical residence time was not long enough in the quiescent area to prevent settlement or mitigate the mussel. Overall, the current bromide regime is deemed to be an effective control against mussel settlement at Bay Shore.

Drusses are the main concern at the plant. Thousands of gallons of mussels have been removed from the condensers over the past three years while the plant systems continue to show no signs of mussel settlement. Considerations for strainers and other mechanical devices to reduce cleaning efforts are currently being investigated.

Section II

Effects of Low Dose Bromination on Zebra Mussels

The following describes the effects of low dose bromination, as practiced at the Bay Shore Station, on the zebra mussel and details the methods by which these effects were determined. The first portion of the study directly examined the short term effects of the current treatment regime on Dreissena veligers (larvae) in the condenser water system at the Bay Shore plant. The second portion experimentally examined the effects of acute, low dose bromination for three different exposure periods on adult zebra mussels. This testing was performed in 1991.

PART I - JUVENILES

Thirty-eight liters (≈ 10 gal) of water, drawn equally from both sides of the No. 1 Unit condenser, were filtered through a Wisconsin net "collecting bucket" (Mesh size ≈ 80 u) just prior to the start of the daily bromination cycle. The water sample (Sample 1) retained in the collecting bucket provided baseline (control) data on abundance and mortality of veligers passing through the system under normal, pre-bromination conditions.

Subsequent specimens were drawn in sequence from sides one and two of the No. 1 and No. 3 Unit condensers during bromination. Collection of each of these specimens was initiated approximately five minutes after bromination of each unit started, when the residual oxidant level of water in the unit reached a minimum of 0.4 ppm (determined by Hach test kit). Collection from each unit ended as bromination of the unit ended (times based on the bromination schedule). The specimens from sides one and two of No. 1 Unit condenser (≈ 9.5 l of water filtered from each side) were treated as separate samples (Samples 2 and 3) but those from No. 3 Unit condenser were pooled (Sample 4) due to the very slow flow from side one (volume filtered/side one ≈ 3.33 l, side two ≈ 10 l). The three samples collected during bromination provided abundance and mortality data for veligers passing through the system during bromination.

Veliger counts for Samples 1 and 2 were performed by the standard method to obtain estimates of veliger abundance in the condenser water system. Veligers observed in the counting process were also scored as alive or dead. All samples were then thoroughly agitated and allowed to settle for 20 minutes to maximize the number of veligers observed and scored for mortality in each sample. Subsamples for counting were removed with as little disturbance to or mixing of the parent sample as possible. Counts were then done as usual. Movement of the cilia, the foot, and/or internal organs as well as swimming or crawling activity were considered as evidence of viability. The veligers counted in Samples 1 and 2 for the purpose of estimating abundance were included in the mortality data for those two samples.

Abundance of veligers passing through the condenser water system were estimated at one veliger/l (pre-bromination) and two veligers/l (during bromination). These values are not significantly different and agree with the veliger abundance determined for the Bay Shore intake channel two days before sampling of the condenser water system (two veligers/l).

Only one dead veliger was noted among the 27 zebra mussel larvae observed in the pre-bromination sample (3.7% mortality). This animal had a broken shell and most probably died as a result of physical damage. The vast majority of all other kinds of animals seen in this sample were also alive and active (including cladocerans, copepods, rotifers, ciliates, hydrozoans, etc.) the relative ratios of zebra mussel larvae to other animals collected by the Wisconsin net have ranged from approximately 7:1 (veligers:ciliates or hydrozoans) to 1:18 (veligers:cladocerans or rotifers) throughout the summer.

There were seven dead veligers among the 36 counted in the three bromination samples (19.4% mortality). One of these veligers had a broken shell. A large majority of other kinds of animals seen in these samples were also dead or dying. Other animals that were alive in the brominated samples (three crustaceans, two hydrozoans, tow rotifers) seemed to be very weak and did not behave normally compared to those in the pre-bromination sample.

Using the baseline results as a model, only 1.33 dead veligers would be expected among the 36 from the brominated samples. The increased mortality of zebra mussel larvae during bromination is very highly significant (Prob <.0001; Chi-square=25.099, df=1) and is the most probable explanation for the lack of juvenile colonization observed in the Bay Shore condensers to the present. Although 81% of the veligers observed after the brief period of bromination were still alive, any veligers settled in the condenser system suffer chronic exposure to low levels of hypobromous acid (on a daily basis) and are most unlikely to survive long enough to attach and grow. Raw data from this testing can be found in Table 6.

PART 2 - ADULTS

Two combinations of chemicals, mixed in a 1:3 ratio to produce hypobromous acid (an oxidant), were selected for testing against adult mussels. The first combination tested was sodium bromide

(NaBr-40% w/w) and sodium hypochlorite (NaClO-15% w/w) from the inhouse stocks used in the current bromination program and the second was made up of another bromide product containing an oxyalkylate surfactant (0.3%) added to aid in dispersal, etc., and NaClO. This product is henceforth referred to as bromide+.

Adult zebra mussels were allowed to attach to paired metal rods (1'x 1/2" or 1'x 3/4") in preparation for the experimental portion of the study. The animals were then acclimated to Acme intake channel water in flow-through bio-boxes for periods of one month (inhouse chemical mixture testing) or one week (bromide+ testing).

Three groups of adults were used as test animals in each experiment to determine the effects of three different exposure times (10, 60 and 120 minutes) for each of the chemical combinations. The test animals were placed in cell #1 of the chemical testing system (test skid) already in use at the Acme station. A fourth group of animals was placed in the control cell (#3) of the test skid and the flow of water from the intake channel was restarted.

A small chemical pump was used to inject the two mixtures into the test line, just upstream from a static mixer and the test cell. Pump rate (stroke frequency) and stroke length were calibrated to yield an oxidant residual of 0.5 ± 0.1 ppm in water exiting the test cell at the start of each test. Residual levels were tested (hand test kit) before starting injection of each mixture, 10 minutes after starting, and at 30 minute intervals thereafter until each test ended. If the residual level dropped below 0.4 ppm, the pump rate was increased to bring it back within range.

Ten minutes after starting chemical injection, the pump was stopped and the control animals and one group of test animals were removed from the test skid. Each group of animals was immediately scored for mortality and removal from the substrate. Control animal behavior was observed (and scored) for a maximum of ten minutes before returning them to the control cell and restarting the chemical pump (exposure timing resumed with pump restart). Control animals usually exhibited normal behavior (shell open, siphon extended, filtering, etc.) within five to ten minutes after removal from the control cell or bio-box. Test animal behavior was observed for a maximum of thirty minutes to allow adequate time for normal behavior to resume. The test animals were then place in bio-box #2 after the 120 minute exposure was completed. Monitoring of latent changes was done every 24 hours post-initiation of testing.

CONLUSIONS

There were no significant differences in survival, attachment, or behavior between the control animals in the inhouse bromination mixture test and the bromide+ test (Tables 1, 2, and 3). Survival averaged 100% in both tests, mean attachment was 95.5%, and the average % of control animals exhibiting normal behavior at any sampling point during and after the two tests was 99.7%. The control data in each category was pooled and a single control model for each category was generated. The test animal data in each category were compared to these models for both sets of tests.

Survival and attachment of adult zebra mussels were not altered significantly by acute, short-term exposure to low doses of either chemical mixture, regardless of duration of exposure (Tables 1, 2 and 4). Also, there were no significant differences between the two chemical mixtures in their effects on survival and attachment of the mussels (Tables 1, 2 and 5).

Both chemical mixtures noticeably reduced the percentage of adult zebra mussels exhibiting normal behavior at the end of treatment periods (Tables 1 and 2). The decrease in normal behavior was inversely and significantly proportional to duration of exposure for both chemical mixtures (see Figure 3). Negative, latent influences on behavior by both mixtures were also evident during the post-test monitoring period. The reduction in normal behavior resulting from 120 minutes of exposure to the inhouse bromination mixture differs significantly from the control results (Table 4). The reduction caused by bromide+ over 120 minutes is barely non-significant (results are considered significant if probability < .05). There is no significant difference between the inhouse mixture data for 120 minutes and the bromide+ data for the same period (Table 5).

A portion of the reduction in normal behavior after 60 and 120 minutes of either treatment is attributable to repeated disturbances at very short intervals caused by removal of test and control groups at the end of each exposure period. These deviations, evident in the control data for these exposure periods (Tables 1, 2), were not significantly different from normal behavior at the end of the 10 minute exposure periods and were incorporated into the control models used in statistical analyses.

The observed behavioral alterations indicate that acute, low dose bromination of sufficient duration can adversely affect the well-being of adult zebra mussels. Therefore, the possibility that chronic, short-term exposure to low dose bromination (e.g. one or two hours daily for four to six months) could effectively reduce survival and attachment of adult mussels cannot be ruled out without additional testing.

Given this possibility, further testing could be very worthwhile, especially in the light of Toledo Edison's existing bromination program and current permit status with the EPA (a maximum of two hours bromination daily at the levels tested). One major counter indicator that must be considered prior to additional testing is the capacity of the system to dilute the oxidant sufficiently over an extended period of time (>10 minutes/day) to meet permit requirements for discharge of treated water into natural systems.

Table 1. The effects of acute, low dose bromination (inhouse chemical mixture) on the survival, attachment, and behavior of adult zebra mussels. Parameters were monitored at the beginning and end of treatment periods and every 24 hours thereafter for five days (120 Hrs). There were 25 adult zebra mussels in each test or control group. Oxidant residuals were 0.5, 0.5 and 0.4 ppm at 10, 60 and 120 minutes respectively.

Treatment Duration	Test period		Post Test Monitoring (Hrs)				
	Start	End	24	48	72	96	120
			SURVIVAL				
(minutes)	(% animals alive)		(% original number alive)				
0[1]	100	100	100	100	100	100	100
10	100	100	100	100	100	100	100
60	100	100	100	100	100	100	100
120	100	100	100	100[2]	100	100	100
			ATTACHMENT				
(minutes)	(% attached)		(% original number attached)				
0[1]	100	100	100	100	100	100	96
10	100	100	100	100	100	100	100
60	100	100	100	100	100	100	100
120	100	100	100	96[2]	92	92	92
			BEHAVIOR				
(minutes)	(% normal)		(% live animals behaving normally)				
0	100[3]	100[3]	96[1]	100	100	100	100
	100	92					
	92	84					
10	100	84	92	92	92	100	92
60	100	52	80	92	96	96	96
120	100	12	80	71	100	92	96

1 - The mean % survival, or attachment of control animals at 10, 60, and 120 minutes and/or at 24, 48, 72, 96 and 120 Hrs.
2 - One animal missing/lost from the group and scored as loose from this point (missing) or the next time period (lost) on. Percent survival, from this period forward, calculated on the basis of live animals left at this point.
3 - The number of control animals exhibiting normal behavior changed between the start of chemical treatment and the end of treatment. The first pair of percentages is from 10 minutes, the second from 60 minutes, etc..

Table 2. The effects of acute, low dose bromination (bromide+) on the survival, attachment, and behavior of adult zebra mussels. Parameters were monitored at the beginning and end of treatment periods and every 24 hours thereafter for five days (120 Hrs). There were 20, 17, 19 and 21 adult zebra mussels in the control, 10, 60 and 120 minute treatment groups respectively. Oxidant residuals were 0.4, 0.4 and 0.4 ppm at 10, 60 and 120 minutes respectively.

Treatment Duration	Test period		Post Test Monitoring (Hrs)				
	Start	End	24	48	72	96	120
			SURVIVAL				
(minutes)	(% animals alive)		(% original number alive)				
0[1]	100	100	100	100	100	100	100
10	100	100	100	100	100	100	100
60	100	100	100	100[2]	100	100	100
120	100	100	100	95	95	95	95
			ATTACHMENT				
(minutes)	(% attached)		(% original number attached)				
0[1]	100	100	100	100	100	100	95
10	100	82	94	94	94	71[3]	71[3]
60	100	100	100	95[2]	95	95	95
120	100	100	100	100	100	100	100
			BEHAVIOR				
(minutes)	(% normal)		(% live animals behaving normally)				
0	100[4]	100[4]	100[1]	100	100	100	100
	100	95					
	95	85					
10	100	77	88	100	100	100	94
60	100	32	84	94	100	83	94
120	100	19	81	100	100	85	90

1 - The mean % survival, or attachment of control animals at 10, 60 and 120 minutes and/or at 24, 48, 72, 96 and 120 Hrs.
2 - One animal missing/lost from the group and scored as loose from this point (missing) or the next time period (lost) on. Percent survival, from his period forward, calculated on the basis of live animals left at this point.
3 - Animals did not attach to this rod easily and some had not been attached for a full week prior to testing.
4 - The number of control animals exhibiting normal behavior changed between the start of chemical treatment and the end of treatment. The first pair of percentages is from 10 minutes, the second from 60 minutes, etc..

Table 3. Summary of statistical analyses comparing survival, attachment and behavior of adult zebra mussels in the control groups from the inhouse bromination mixture and bromide+ tests. Comparisons were made by the Chi-square goodness of fit test.

Parameter	Chi-square	df	Prob.	Signif.
Survival	0.0000	6	1.00	NS[1]
Attached	0.0021	6	1.00	NS
Behavior (by exposure group)				
10	0.0333	6	0.999999	NS
60	0.0529	6	0.999997	NS
120	0.0553	6	0.999997	NS

1. NS = not significant.

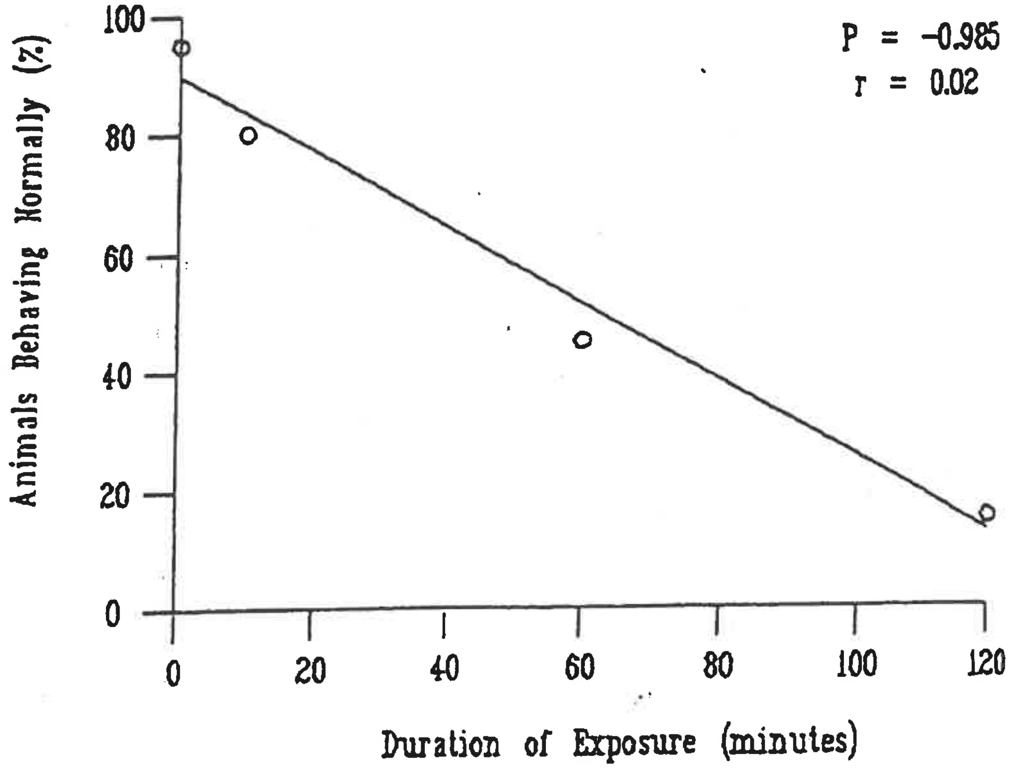

Figure 3. Normal behavior vs. duration of exposure. (Behavior means from both experiments.)

Table 4. Summary of statistical analyses of A) inhouse bromination mixture and B) bromide+ effects on the survival, attachment, and behavior of adult zebra mussels. Treatment data for each parameter and exposure time were compared to models incorporating control data from both sets of experiments by Chi-square test.

A. INHOUSE BROMINATION MIXTURE RESULTS

Treatment Duration (minutes)	Chi-square	df	Prob.	Signif.
		SURVIVAL		
10	0.0000	6	1.00	NS[1]
60	0.0000	6	1.00	NS
120	0.0000	6	1.00	NS
		ATTACHMENT		
10	0.0525	6	0.999997	NS
60	0.0525	6	0.999997	NS
120	0.3924	6	0.99891	NS
		BEHAVIOR		
10	1.2118	6	0.976	NS
60	5.7149	6	0.46	NS
120	19.0075	6	0.004	HS[1]

B. BROMIDE+ RESULTS

Treatment Duration (minutes)	Chi-square	df	Prob.	Signif.
		SURVIVAL		
10	0.0000	6	1.00	NS
60	0.0000	6	1.00	NS
120	0.1905	6	0.99987	NS
		ATTACHMENT		
10	3.2789	6	0.77	NS
60	0.1590	6	0.99992	NS
120	0.0440	6	0.999998	NS
		BEHAVIOR		
10	1.1654	6	0.98	NS
60	8.7757	6	0.19	NS
120	11.9147	6	0.06	NS

1. NS = not significant; HS = highly significant

Table 5. Summary of statistical analyses comparing the effects of the inhouse bromination mixture and bromide+ on the survival, attachment and behavior of adult zebra mussels. Comparisons were made by the Chi-square goodness of fit test.

Treatment Duration (minutes)	Chi-square	df	Prob.	Signif.
		SURVIVAL		
10	0.0000	6	1.00	NS[1]
60	0.0000	6	1.00	NS
120	0.1905	6	1.00	NS
		ATTACHMENT		
10	3.6471	6	0.72	NS
60	0.2105	6	0.9998	NS
120	0.6816	6	0.995	NS
		BEHAVIOR		
10	0.3857	6	0.99897	NS
60	1.9129	6	0.93	NS
120	3.4483	6	0.75	NS

1. NS = not significant.

Table 6. Raw data from veliger collection phase. Data collected on September 6, 1991. EPA accepted LaMotte DPD Free, Combined & Total Chlorine Octa-Slide Test Kit was used to determine free available oxidant (FAO) and total residual oxidant (TRO).

Sample	Time	Unit	Volume	FAO	TRO
1	7:20-7:29	Raw	76 l		
2	7:39-7:45	1-1	9.5 l	0.6	0.6
3	7:48-7:55	1-2	9.5 l	0.8	1.0
	7:55-8:05	2-1	Did not obtain oxidant		
	8:05-8:15	2-2	Did not obtain oxidant		
4[1]	8:15-8:25	3-1	3.3 l	0.4 0.8	0.9 1.0 @ 8:27[2]
4[1]	8:31-8:36	3-2	10 l	1.0 0.4	@ 8:36[2]

1. Sample 4 contained both halves of Unit No. 3.
2. To confirm the presence of oxidant at the end of sampling, both of Unit No. 3's sample lines were tested after collection.

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER AND WASTE MANAGEMENT

PUBLIC NOTICE

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S, PUBLIC INFORMATION OFFICE, 601 57TH STREET, CHARLESTON SE, WEST VIRGINIA 25304-2345 TELEPHONE: (304) 926-0440.

APPLICATION FOR A WEST VIRGINIA NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM WATER POLLUTION CONTROL PERMIT

Public Notice No.: L-82-25 **Public Notice Date:** September 10, 2025

Paper: *Charleston Gazette Mail*

The following has applied for a WV NPDES Water Pollution Control Permit for this facility or activity:

Appl. No.: WV0078875

Applicant: APPALACHIAN POWER COMPANY
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

Location: HANDLEY, KANAWHA COUNTY

Latitude: 38:11:29 **Longitude:** 81:22:14

Receiving Stream:
KANAWHA RIVER

Activity:
Operate and maintain disposal systems for the direct discharge of untreated industrial wastewater (non-contact cooling water) from Outlet Nos. 001, 002, 003, 005, 006, and 007 into the Kanawha River at Mile Point 82.8. Also, to discharge treated sewage and industrial sump wastewater via Outlet No. 008 into the Kanawha River at Mile Point 82.8. An antidegradation review has been conducted. Tier 1 protection is provided for all water use categories as defined in 47 CSR 2, Section 6.

Business conducted:
Hydroelectric Power Station

Implementation:
N/A

On the basis of review of the application, the "Water Pollution Control Act (Chapter 22, Article 11-8(a))," and the "West Virginia Legislative Rules," the State of West Virginia will act on the above application.

Any interested person may submit written comments on the draft permit and may request a public hearing by addressing such to the Director of the Division of Water and Waste Management within 30 days of the date of the public notice. Such comments or requests should be addressed to:

Director, Division of Water and Waste Management, DEP
ATTN: Lori Devereux, Permitting Section
601 57th Street SE
Charleston, WV 25304-2345

lori.k.devereux@wv.gov

The public comment period begins September 10, 2025 and ends October 10, 2025.

Comments received within this period will be considered prior to acting on the permit application. Correspondence should include the name, address and the telephone number of the writer and a concise statement of the nature of the issues raised. The Director shall hold a public hearing whenever a finding is made, on the basis of requests, that there is a significant degree of public interest on issues relevant to the Draft Permit(s). Interested persons may contact the public information office to obtain further information.

The application, draft permit and any required fact sheet may be inspected, by appointment, at the Division of Water and Waste Management Public Information Office, at 601 57th Street SE, Charleston, WV 25304-2345, between 8:00 a.m. and 4:00 p.m. on business days.

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER AND WASTE MANAGEMENT
601 57TH STREET SE
CHARLESTON, WV 25304-2345

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
WATER POLLUTION CONTROL PERMIT

NPDES PERMIT NO.: WV0078875
SUBJECT: Industrial Waste

ISSUE DATE:
EFFECTIVE DATE :
EXPIRATION DATE:
SUPERSEDES: Permit No. WV0078875 dated February 08, 2021

LOCATION:	HANDLEY	Kanawha	Upper Kanawha River
	(City)	**(County)**	**(Drainage Basin)**

See the next page for a list of Outlets.

TO WHOM IT MAY CONCERN:

This is to certify that: APPALACHIAN POWER COMPANY
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

is hereby granted a West Virginia NPDES Water Pollution Control Permit to:
operate and maintain disposal systems for the direct discharge of untreated industrial wastewater (non-contact cooling water) from Outlet Nos. 001, 002, 003, 005, 006 and 007 into the Kanawha River at Mile Point 82.8. Also, to operate and maintain disposal systems for the direct discharge of treated sewage and industrial sump wastewater via Outlet No. 008 into the Kanawha River at Mile Point 82.8.

This permit is subject to the following terms and conditions :
The information submitted on and with Permit Application No. WV0078875 dated the 7th day of July 2025 is all hereby made terms and conditions of this Permit with like effect as if all such permit application information were set forth herein and with other conditions set forth in Sections A, B, C and Appendix A.

The validity of this permit is contingent upon the payment of the applicable annual permit fee, as required by Chapter 22, Article 11, Section 10 of the Code of West Virginia.

Inspectable Unit	Latitude	Longitude	Receiving Stream	Dist. to Stream Mouth (in Mile)	Milepost
001	38°11'29"	81°22'14"	KANAWHA RV	N/A	82.8
002	38°11'29"	81°22'14"	KANAWHA RV	N/A	82.8
003	38°11'29"	81°22'14"	KANAWHA RV	N/A	82.8
005	38°11'29"	81°22'14"	KANAWHA RV -- No Monitoring Required	N/A	82.8
006	38°11'29"	81°22'14"	KANAWHA RV -- No Monitoring Required	N/A	82.8
007	38°11'29"	81°22'14"	KANAWHA RV -- No Monitoring Required	N/A	82.8
008	38°11'29"	81°22'14"	KANAWHA RV	N/A	82.8

A.001 DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS:

Permit Limits

During the period beginning Effective Date of Permit and lasting through midnight Expiration Date of Permit the permittee is authorized to discharge from Outlet Number(s) 001 (Noncontact Cooling Water)

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations: Quantity		Units		Other Units		Units	Monitoring Requirements: Measurement Frequency	Sample Type
50050 - (Flow,in Conduit or thru plant) (Year Round) (ML-1) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mgd	1/month	Estimated
01119 - (Copper, Total Recoverable) (Year Round) (ML-1) (RF-A) Interim (Initial 24 months)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/month	Grab
01119 - (Copper, Total Recoverable) (Year Round) (ML-1) (RF-A) Final (Remaining duration)	N/A	N/A	N/A	N/A	0.009 Avg. Monthly	0.027 Max. Daily	mg/l	1/month	Grab
01094 - (Zinc, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
01104 - (Aluminum, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
00980 - (Iron, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
00018 - (Temp. Diff. Discharge/Upstrea (Year Round) (ML-2) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Calculated
Temperature Difference between the Effluent and the Upstream/Intake. Refer to Section C.16.									
00011 - (Temperature, F) (Year Round) (ML-1) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Insitu
Effluent Temperature. Refer to Section C.16.									

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):
Outlet 001, at the sampling port on the effluent pipe prior to discharging to the Kanawha River. Outlet 001 sampling results shall be deemed representative of Outlet 005.

This discharge shall comply with Appendix A - I MANAGEMENT CONDITIONS I - 12.

A.001 DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS:

Permit Limits

During the period beginning Effective Date of Permit and lasting through midnight Expiration Date of Permit the permittee is authorized to discharge from Outlet Number(s) 001 (Noncontact Cooling Water)

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations: Quantity		Units	Other Units			Units	Monitoring Requirements: Measurement Frequency	Sample Type
00011 - (Temperature, F) (Year Round) (ML-7) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Insitu

Upstream/Intake Temperature. Refer to Section C.16.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):
Outlet 001, at the sampling port on the effluent pipe prior to discharging to the Kanawha River. Outlet 001 sampling results shall be deemed representative of Outlet 005.

This discharge shall comply with Appendix A - I MANAGEMENT CONDITIONS I - 12.

A.002 DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS:

Permit Limits

During the period beginning Effective Date of Permit and lasting through midnight Expiration Date of Permit the permittee is authorized to discharge from Outlet Number(s) 002 (Noncontact Cooling Water)

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations: Quantity		Units	Other Units			Units	Monitoring Requirements: Measurement Frequency	Sample Type
50050 - (Flow,in Conduit or thru plant) (Year Round) (ML-1) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mgd	1/month	Estimated
01119 - (Copper, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
00018 - (Temp. Diff. Discharge/Upstrea (Year Round) (ML-2) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Calculated
Temperature Difference between the Effluent and the Upstream/Intake. Refer to Section C.16.									
00011 - (Temperature, F) (Year Round) (ML-1) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Insitu
Effluent Temperature. Refer to Section C.16.									
00011 - (Temperature, F) (Year Round) (ML-7) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Insitu
Upstream/Intake Temperature. Refer to Section C.16.									

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):
Outlet 002, at the sampling port on the effluent pipe prior to discharging to the Kanawha River. Outlet 002 sampling results shall be deemed representative of Outlet 006.

This discharge shall comply with Appendix A - I MANAGEMENT CONDITIONS I - 12.

A.003 DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS:

Permit Limits

During the period beginning Effective Date of Permit and lasting through midnight Expiration Date of Permit the permittee is authorized to discharge from Outlet Number(s) 003 (Noncontact Cooling Water)

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations Quantity		Units		Other Units		Units	Monitoring Requirements Measurement Frequency	Sample Type
50050 - (Flow,in Conduit or thru plant) (Year Round) (ML-1) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mgd	1/month	Estimated
01119 - (Copper, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
01114 - (Lead, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
01104 - (Aluminum, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
00980 - (Iron, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
00018 - (Temp. Diff. Discharge/Upstrea (Year Round) (ML-2) (RF-A) Temperature Difference between the Effluent and the Upstream/Intake. Refer to Section C.16.	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Calculated
00011 - (Temperature, F) (Year Round) (ML-1) (RF-A) Effluent Temperature. Refer to Section C.16.	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Insitu
00011 - (Temperature, F) (Year Round) (ML-7) (RF-A) Upstream/Intake Temperature. Refer to Section C.16.	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Insitu

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):
Outlet 003, at the sampling port on the effluent pipe prior to discharging to the Kanawha River. Outlet 003 sampling results shall be deemed representative of Outlet 007.

This discharge shall comply with Appendix A - I MANAGEMENT CONDITIONS I - 12.

A.008 DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS:

Permit Limits

During the period beginning Effective Date of Permit and lasting through midnight Expiration Date of Permit the permittee is authorized to discharge from Outlet Number(s) 008 (Sanitary, Cooling Water, Storm Water Runoff, Other)

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations: Quantity		Units		Other Units		Units	Monitoring Requirements: Measurement Frequency	Sample Type
50050 - (Flow,in Conduit or thru plant) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mgd	1/quarter	Estimated
00310 - (BOD, 5-Day 20 Deg.C) (Year Round) (ML-1) (RF-B)	Rpt Only Avg. Monthly	Rpt Only Max. Daily	Lbs/Day	N/A	30 Avg. Monthly	60 Max. Daily	mg/l	1/quarter	Grab
00530 - (Total Suspended Solids) (Year Round) (ML-1) (RF-B)	Rpt Only Avg. Monthly	Rpt Only Max. Daily	Lbs/Day	N/A	30 Avg. Monthly	60 Max. Daily	mg/l	1/quarter	Grab
74055 - (Coliform, Fecal) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	200 Mon. Geo. Mean	400 Max. Daily	Cnts/100ml	1/quarter	Grab
00400 - (pH) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	6 Inst. Min.	N/A	9 Inst. Max.	S.U.	1/quarter	Grab
00610 - (Ammonia Nitrogen) (Year Round) (ML-1) (RF-B)	Rpt Only Avg. Monthly	Rpt Only Max. Daily	Lbs/Day	N/A	15 Avg. Monthly	30 Max. Daily	mg/l	1/quarter	Grab
01119 - (Copper, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
01114 - (Lead, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):
Outlet 008: Discharge from ultraviolet disinfection unit.

This discharge shall comply with Appendix A - I MANAGEMENT CONDITIONS I - 12.

A.008 DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS:

Permit Limits

During the period beginning Effective Date of Permit and lasting through midnight Expiration Date of Permit the permittee is authorized to discharge from Outlet Number(s) 008 (Sanitary, Cooling Water, Storm Water Runoff, Other)

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations							Monitoring Requirements	
	Quantity		Units		Other Units		Units	Measurement Frequency	Sample Type
01094 - (Zinc, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
00552 - (Oil and Grease, Hexane EXTI (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):
Outlet 008: Discharge from ultraviolet disinfection unit.

This discharge shall comply with Appendix A - I MANAGEMENT CONDITIONS I - 12.

B. SCHEDULE OF COMPLIANCE

1. **The permitee shall achieve compliance with the provisions for waste treatment and the monitoring requirements specified in the permit in accordance with the following schedule :**

03 months after Issuance:	The permittee shall submit a plan of action outlining measures to be taken to achieve compliance with the final effluent limitations for copper at Outlet 001.
06 months after Issuance:	The permittee shall submit a quarterly progress report summarizing actions that have been taken to achieve compliance with the final effluent limitations for copper at Outlet 001.
09 months after Issuance:	The permittee shall submit a quarterly progress report summarizing actions that have been taken to achieve compliance with the final effluent limitations for copper at Outlet 001.
12 months after Issuance:	The permittee shall have completed any designs and/or studies necessary to comply with the final effluent limitations for copper at Outlet 001. The permittee shall submit a quarterly progress report summarizing actions that have been taken to achieve compliance with the final effluent limitations for copper at Outlet 001.
15 months after Issuance:	The permittee shall submit a quarterly progress report summarizing actions that have been taken to achieve compliance with the final effluent limitations for copper at Outlet 001.
18 months after Issuance:	The permittee shall begin any necessary construction of upgrades or system modifications to achieve compliance with the final effluent limitations for copper at Outlet 001. The permittee shall submit a quarterly progress report summarizing actions that have been taken to achieve compliance with the final effluent limitations for copper at Outlet 001.
21 months after Issuance:	The permittee shall submit a quarterly progress report summarizing actions that have been taken to achieve compliance with the final effluent limitations for copper at Outlet 001.
24 months after Issuance:	The permittee shall complete any necessary construction/upgrades and achieve compliance with the final effluent limitations for copper at Outlet 001.

2. **Reports of compliance or non-compliance with, and progress reports on interim and final requirements contained in the above compliance schedule, if any, shall be postmarked no later than 14 days following each schedule date.**

Section C - Other Requirements

01. The permittee shall practice good housekeeping including maintaining the facility grounds. There shall be no scattered parts, equipment, debris, etc. Any and all drums shall be either stored in a covered area or kept upon pallets and properly sealed.

02. The issuance of this permit shall not relieve the permittee of the obligation to comply with any other federal, state or local laws. Compliance with this permit does not relieve the permittee from the obligation of Section 311 of the Clean Water Act. This permit does not authorize spills of hazardous substances/wastes from any permitted outlet into waters of the State. Such incidents are to be reported in accordance with Sections IV.1 and IV.2 of Appendix A of this permit.

03. Upon review of information submitted under terms and conditions of this permit, the permit may be modified to require additional effluent limitations/monitoring requirements and/or improved best management practices.

04. The permittee shall notify the Division of Water and Waste Management immediately when it becomes aware of any migration of any pollutant from any unpermitted source (such as contaminated groundwater and/or storm water) into surface waters of the State.

05. All trash generated at the permittee's facility shall be properly disposed in accordance with solid waste regulations. Trash and debris removed from the rake/sluicing system shall not be returned to the waterway and shall be properly disposed of.

06. The permittee shall submit each month according to the enclosed format, a Discharge Monitoring Report (DMR) indicating in terms of concentration and/or quantities the values of the constituents listed in Section A analytically determined to be in the plant effluent(s). Additional information pertaining to effluent monitoring and reporting can be found in Section III of Appendix A.

07. The required DMRs shall be received by the agency no later than 25 days following the end of the reporting period in accordance with the following requirements. The agency is now requiring the permittee to utilize our electronic discharge monitoring report (eDMR) system which is now mandatory. The permittee is not required to submit hard copies of the DMRs to the addresses listed below when using eDMR. Special circumstances may result in the agency granting an exemption to eDMR and are considered on case by case basis. If the permittee was exempted by the agency from using the eDMR system, then the permittee is required to send hard copies to the addresses below. The permittee may contact the agency for more information about the eDMR system and potential exemptions from using it. Regardless, in accordance with Appendix A, Section III.6 of this permit, the permittee shall maintain copies of DMRs (either hard copies or electronic copies) at the plant site and the DMRs shall be made readily available upon request for DEP personnel.

Director
Division of Water and Waste Management
601 57th Street, SE
Charleston, West Virginia 25304
Attn: Permitting Branch

Department of Environmental Protection
Environmental Enforcement
601 57th Street, SE
Charleston, West Virginia 25304

08. Effluent monitoring for the following pollutants shall be conducted using the most sensitive methods and detection levels commercially available and economically feasible. The following methods are to be used unless the permittee desires to use an EPA Approved Test Method with a listed lower method detection level. Regardless, it is recognized that detection levels can vary from analysis to analysis and that non-detect results at a different MDL for the specified test method would not constitute a permit violation.

Parameter	EPA Method No.	Method Detection Level (ug/l)
Aluminum, Total Recoverable	200.8	1.0
Copper, Total Recoverable	200.8	0.5
Iron, Total Recoverable	200.7	3.0
Lead, Total Recoverable	200.8	0.6
Zinc, Total Recoverable	200.8	1.8

Section C - Other Requirements

09. The analytical test procedures, set forth in 40 CFR Part 136, prescribe colorimetric methods for certain parameters. The digestion process for the performance of total recoverable is not sufficient for the utilization of a colorimetric procedure. Therefore, colorimetric procedures shall not be acceptable for the analysis of parameters prescribed as total recoverable.

10. Any "not detected (ND)" results by the permittee must be "ND" at the method detection limit (MDL) for the test method used for that parameter and must be reported as less than the MDL used. The permittee may not report the result as zero, "ND", or report the result as less than a minimum level (ML), reporting limit (RL), or practical quantitation limit (PQL).

    When averaging values of analytical results for DMR reporting purposes for monthly averages, the permittee should use actual analytical results when these results are greater than or equal to the MDL and should use zero (0) when these results are less than the MDL. If all analytical results are non-detect at the MDL (<MDL), then the permittee should use the actual MDL in the calculation for averaging and report the result as less than the average calculation.

11. In incidences where a specific test method is not defined, the permittee shall utilize an EPA approved method with a method detection limit (MDL) sensitive enough to confirm compliance with the permit effluent limit for that parameter. If a MDL is not sensitive enough to confirm compliance, the most sensitive approved method must be used. If a more sensitive EPA approved method becomes available, that method shall be used. Should the current and/or new method not be sensitive enough to confirm compliance with the permitted effluent limit, analytical results reported as "not detected" at the MDL of the most sensitive method available will be deemed compliant for purposes of permit compliance. Results shall be reported on the Discharge Monitoring Reports as a numeric value less than the MDL.

12. The permittee shall not use alternate DMRs without prior approval from this Agency.

13. The Groundwater Protection Plan (GPP) shall be maintained at the plant site and shall be available for inspection by the Division of Water and Waste Management personnel.

14. The permittee shall utilize EPA Method No. 1664 A (gravimetric analysis using the hexane extractable method [HEM]) for the analysis of oil and grease.

15. If any portion of the Permittee's discharge that is identified as being subject to Federal Effluent Guideline(s) and the new or revised requirements of the Federal Effluent Guideline(s) are not currently in this permit, the Director may reopen or reissue this permit to incorporate additional, more stringent requirements or limitations.

16. Upstream/Intake temperature monitoring and discharge temperature monitoring required in Section A of this permit shall be collected concurrently. There shall be no more than thirty minutes between monitoring collected at the intake and the discharge.

17. Certain characteristics of sewage, industrial wastes, and other wastes cause pollution and are objectionable in all waters of the State. Certain conditions are not to be allowed in any of the waters of the State. Therefore, the effluent discharge, and specifically the discharge via Outlets 001, 002, 003, 005, 006, 007 and 008, from the permittee's treatment facility shall not cause violation of Appendix A, Section I.12.

18. The permittee shall not use any treatment chemicals or additives that contain, or create as a by-product, total residual chlorine on any discharge. The permittee must first modify this permit for the use of any such chemicals.

19. Outlets 005, 006, and 007 are submerged outlets and no monitoring is currently required. However, the discharges from these outfalls shall not cause violation of Appendix A, Section I.12.

20. There shall be no net addition of pollutants to the river from operation of the filter backwash from service water pump house or from head cover leakage. Trash and debris removed from the rake/sluicing system shall not be returned to the waterway and shall be properly disposed of.

21. A list of chemicals used at the facility was submitted with the permit application. The agency does not object to the use of these chemicals contingent upon continued use is as recommended by the manufacturer and application of each individual chemical shall not result in the exceedance of 1/10th (for non-bio-accumulative chemicals) or 1/100th (for bioaccumulated chemicals) of the lowest LC50 listed in each products Material Safety Data Sheet (MSDS) at any Outlet.

Section C - Other Requirements

22. The permittee has provided information in the permit application that it does not intake more than 2 MGD on average and use more than 25% of the intake water for cooling purposes. If the permittee significantly alters its intake structure or increases the amount of cooling water used in its overall flow balance to exceed the above noted thresholds, the permittee shall update and resubmit the applicable information as required in 40 CFR 122.21(r)(2) - (r)(8) along with a major permit modification application.

The herein-described activity is to be extended, modified, added to, made, enlarged, acquired, constructed or installed, and operated, used and maintained strictly in accordance with the terms and conditions of this permit, with the plans and specifications submitted with Permit Application No. WV0078875; with the plan of maintenance and method of operation thereof submitted with such application(s); and with any applicable rules and regulations promulgated by the Environmental Quality Board and the Secretary of the Department of Environmental Protection.

Failure to comply with the terms and conditions of this permit, with the plans and specifications submitted with Permit Application No. WV0078875; and with the plan of maintenance and method of operation thereof submitted with such application(s) shall constitute grounds for the revocation or suspension of this permit and the invocation of all the enforcement procedures set forth in Chapter 22, Article 11, or 15 of the Code of West Virginia.

This permit is issued in accordance with the provisions of Chapter 22, Article 11 and 12 and/or 15 of the Code of West Virginia and is transferable under the terms of Section 11 of Article 11.

Jeremy W. Bandy, Director

Appendix A

I. MANAGEMENT CONDITIONS:

1. Duty to Comply

a) The permittee must comply with all conditions of this permit. Permit noncompliance constitutes a violation of the CWA and State Act and is grounds for enforcement action; for permit modification, revocation and reissuance, suspension or revocation; or for denial of a permit renewal application.

b) The permittee shall comply with all effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

2. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for a new permit at least 180 days prior to expiration of the permit.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit, which has a reasonable likelihood of adversely affecting human health or the environment.

4. Permit Actions

This permit may be modified, revoked and reissued, suspended, or revoked for cause. The filing of a request by the permittee for permit modification, revocation and reissuance, or revocation, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

5. Property Rights

This permit does not convey any property rights of any sort or any exclusive privilege.

6. Signatory Requirements

All applications, reports, or information submitted to the Director shall be signed and certified as required in Title 47, Series 10 , Section 4.6 of the West Virginia Legislative Rules.

7. Transfers

This permit is not transferrable to any person except after notice to the Director. The Director 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.

8. Duty to Provide Information

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

9. 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 Director, it shall promptly submit such facts or information.

10. Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

a) Enter upon the permittee's premises in which an effluent source or activity is located, or where records must be kept under the conditions of this 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 State Act, any substances or parameters at any location.

11. Permit Modification

This permit may be modified, suspended, or revoked in whole or in part during its term in accordance with the provisions of Chapter 22-11-12 of the Code of West Virginia.

12. Water Quality

This discharge shall not cause or materially contribute to: distinctly visible floating or settable solids, suspended solids, scum, foam or oily slicks; deposits or sludge bank on the bottom; odors in the vicinity of the waters; taste or odor that would adversely affect the designated uses of the affected waters; distinctly visible color which may impair or interfere with the designated uses of the affected waters; and shall not cause a fish or mussel kill. The limitations and conditions in this permit for the discharges identified in this permit are limitations and conditions that are necessary to meet applicable West Virginia water quality standards, Requirements Governing Water Quality Standards 47 CSR 2.

13. Outlet Markers

A permanent marker at the establishment shall be posted in accordance with Title 47, Series 11, Section 9 of the West Virginia Legislative Rules.

14. Liabilities

a) Any person who violates a permit condition implementing sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $25,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing sections 301, 302, 306, 307, 308 or 405 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

b) Any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 2 years, or by both.

c) 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 noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 2 years, or by both.

d) Nothing in I.14 a), b), and c) shall be construed to limit or prohibit any other authority the Director may have under the State Water Pollution Control Act, Chapter 22, Article 11.

II. OPERATION AND MAINTENANCE:

1. 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. Unless otherwise required by Federal or State law, this provision requires the operation of back-up auxiliary facilities or similar systems which are installed by the permittee only when the operation is necessary to achieve compliance with the conditions of the permit. For domestic waste treatment facilities, waste treatment operators as classified by the WV Bureau of Public Health Laws, W. Va. Code Chapter 16-1, will be required except that in circumstances where the domestic waste treatment facility is receiving any type of industrial waste, the Director may require a more highly skilled operator.

2. 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 the permit.

3. Bypass

a) Definitions
(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility; and
(2) "Severe property damage" means 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.

b) 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 provision of II.3.c) and II.3.d) of this permit.

c) (1) If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass;
(2) If the permittee does not know in advance of the need for bypass, notice shall be submitted as required in IV.2.b) of this permit.

d) Prohibition of bypass
(1) Bypass is permitted only under the following conditions, and the Director may take enforcement action against a permittee for a bypass, unless;
(A) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
(B) 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 backup equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
(C) The permittee submitted notices as required under II.3.c) of this permit.
(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed in II.3.d.(1) of this permit.

4. Upset

a) Definition. "Upset" means 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 preventative maintenance, or careless or improper operation.

b) Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitation if the requirements of II.4.c) 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.

c) 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:
(1) An upset occurred and that the permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated;
(3) The permittee submitted notice of the upset as required in IV.2.b) of this permit.
(4) The permittee complied with any remedial measures required under I.3. of this permit.

d) Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

5. Removed Substances

Where removed substances are not otherwise covered by the terms and conditions of this permit or other existing permit by the Director, any solids, sludges, filter backwash or other pollutants (removed in the course of treatment or control of wastewaters) and which are intended for disposal within the State, shall be disposed of only in a manner and at a site subject to the approval by the Director. If such substances are intended for disposal outside the State or for reuse, i.e., as a material used for making another product, which in turn has another use, the permittee shall notify the Director in writing of the proposed disposal or use of such substances, the identity of the prospective disposer or users, and the intended place of disposal or use, as appropriate.

III. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. Reporting

a) Permittee shall submit, according to the enclosed format, a Discharge Monitoring Report (DMR) indicating in terms of concentration, and/or quantities, the values of the constituents listed in Part A analytically determined to be in the plant effluent(s). DMR submissions shall be made in accordance with the terms contained in Section C of this permit.

b) Enter reported average and maximum values under "Quantity" and "Concentration" in the units specified for each parameter, as appropriate.

c) Specify the number of analyzed samples that exceed the allowable permit conditions in the columns labeled "N.E." (i.e., number exceeding).

d) Specify frequency of analysis for each parameter as number of analyses/specified period (e.g.,3/month is equivalent to 3 analyses performed every calendar month). If continuous, enter "Cont.". The frequency listed on format is the minimum required.

3. Test Procedures

Samples shall be taken, preserved and analyzed in accordance with the latest edition of 40 CFR Part 136, unless other test procedures have been specified elsewhere in this permit.

4. Recording of Results

For each measurement or sample taken pursuant to the permit, the permittee shall record the following information.

a) The date, exact place, and time of sampling or measurement;

b) The date(s) analyses were performed;

c) The individual(s) who performed the sampling or measurement;

d) The individual(s) who performed the analyses; if a commercial laboratory is used, the name and address of the laboratory;

e) The analytical techniques or methods used, and

f) The results of such analyses. Information not required by the DMR form is not to be submitted to this agency, but is to be retained as required in III.6.

5. Additional Monitoring by Permittee

If the permittee monitors any pollutant at any monitoring point specified in this permit more frequently than required by this permit, using approved test procedures or others as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report Form. Such increased frequency shall also be indicated. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

6. Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original chart recordings for continuous monitoring instrumentation, copies of all reports required by this 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 Director at any time.

7. Definitions

a) "Daily discharge" means the discharge of a pollutant measured during a calendar day or within any specified period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the day.

b) "Average monthly discharge limitation" means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

c) "Maximum daily discharge limitation" means the highest allowable daily discharge.

d) "Composite Sample" is a combination of individual samples obtained at regular intervals over a time period. Either the volume of each individual sample is proportional to discharge flow rates or the sampling interval (for constant volume samples) is proportional to the flow rates over the time period used to produce the composite. The maximum time period between individual samples shall be two hours.

e) "Grab Sample" is an individual sample collected in less than 15 minutes.

f) "is" = immersion stabilization - a calibrated device is immersed in the effluent stream until the reading is stabilized.

g) The "daily average temperature" means the arithmetic average of temperature measurements made on an hourly basis, or the mean value plot of the record of a continuous automated temperature recording instrument, either during a calendar month, or during the operating month if flows are of shorter duration.

h) The "daily maximum temperature" means the highest arithmetic average of the temperatures observed for any two (2) consecutive hours during a 24 hour day, or during the operating day if flows are of shorter duration.

i) The "monthly average fecal coliform" bacteria is the geometric average of all samples collected during the month.

j) "Measured Flow" means any method of liquid volume measurement, the accuracy of which has been previously demonstrated in engineering practice, or which a relationship to absolute volume has been obtained.

k) "Estimate" means to be based on a technical evaluation of the sources contributing to the discharge including, but not limited to pump capabilities, water meters and batch discharge volumes.

l) "Non-contact cooling water" means the water that is contained in a leak-free system, i.e., no contact with any gas, liquid, or solid other than the container for transport; the water shall have no net poundage addition of any pollutant over intake water levels, exclusive of approved anti-fouling agents.

IV. OTHER REPORTING

1. **Reporting Spills and Accidental Discharges**

   Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities or penalties established pursuant to Title 47, Series 11, Section 2 of the West Virginia Legislative Rules promulgated pursuant to Chapter 22, Article 11. Attached is a copy of the West Virginia Spill Alert System for use in complying with Title 47, Series 11, Section 2 of the Legislative rules as they pertain to the reporting of spills and accidental discharges.

2. **Immediate Reporting**

   a) The permittee shall report any noncompliance which may endanger health or the environment immediately after becoming aware of the circumstances by using the Agency's designated spill alert telephone number. A written submission shall be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

   b) The following shall also be reported immediately:

      (1) Any unanticipated bypass which exceeds any effluent limitation in the permit;

      (2) Any upset which exceeds any effluent limitation in the permit; and

      (3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit shall be reported immediately. This list shall include any toxic pollutant or hazardous substance, or any pollutant specifically identified as the method to control a toxic pollutant or hazardous substance.

   c) The Director may waive the written report on a case-by-case basis if the oral report has been received in accordance with the above.

   d) Compliance with the requirements of IV.2 of this section, shall not relieve a person of compliance with Title 47, Series 11, Section 2.

3. **Reporting Requirements**

   a) Planned changes. The permittee shall give notice to the Director of any planned physical alterations or additions to the permitted facility which may affect the nature or quantity of the discharge. Notice is required when:

      (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in Section 13.7.b of Series 10, Title 47; or

      (2) 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 IV.2 of this section.

   b) Anticipated noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

   c) In addition to the above reporting requirements, all existing manufacturing, commercial, and silvicultural discharges must notify the Director in writing as soon as they know or have reason to believe:

      (1) That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, or any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

         (A) One hundred micrograms per liter (100 ug/l);

         (B) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitro phenol; and for 2-methyl 4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

         (C) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with Section 4.4.b.9 of Series10, Title 47.

         (D) The level established by the Director in accordance with Section 6.3.g of Series 10, Title 47;

      (2) That any activity has occurred or will occur which would result in any discharge (on a non-routine or infrequent basis) of a toxic which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

         (A) Five hundred micrograms per liter (500 ug/l);

         (B) One milligram per liter (1 mg/l) for antimony;

         (C) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with Section 4.4.b.7 of Series 10, Title 47;

         (D) The level established by the Director in accordance with Section 6.3.g of Series 10, Title 47.

      (3) That they have begun or expect to begin to use or manufacture as an intermediate or final product or by-product of any toxic pollutant which was not reported in the permit application under Section 4.4.b.9 of Series 10, Title 47 and which will result in the discharge on a routine or frequent basis of that toxic pollutant at levels which exceed five times the detection limit for that pollutant under approved analytical procedure.

      (4) That they have begun or expect to begin to use or manufacture as an intermediate or final product or by-product of any toxic pollutant which was not reported in the permit application under Section 4.4.b.9 of Series 10, Title 47 and which will result in the discharge on a non-routine or infrequent basis of that toxic pollutant at levels which exceed ten times the detection limit for that pollutant under approved analytical procedure.

4. **Other Noncompliance**

   The permittee shall report all instances of noncompliance not reported under the above paragraphs at the time monitoring reports are submitted. The reports shall contain the information listed in IV.2.a). Should other applicable noncompliance reporting be required, these terms and conditions will be found in Section C of this permit.

WRD 2A-82

STATE OF WEST VIRGINIA
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
DISCHARGE MONITORING REPORT

Permit Limits

FACILITY NAME: (London Hydroelectric Plant) APPALACHIAN POWER COMPANY
LOCATION OF FACILITY: HANDLEY; Kanawha County
PERMIT NO.: WV0078875 001
WASTELOAD FOR THE MONTH OF:

CERTIFIED LABORATORY NAME:
CERTIFIED LABORATORY ADDRESS:
INDIVIDUAL PERFORMING ANALYSIS:

Parameter		Quantity		Units	N.E.	Other Units			CEL*	Units	N.E.	Measurement Frequency	Sample Type
50050 (ML-1) RF-A Flow,in Conduit or thru plant Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mgd		1/month	Estimated
01119 (ML-1) RF-A Copper, Total Recoverable Year Round Interim (Initial 24 months)	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/month	Grab
01119 (ML-1) RF-A Copper, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	0.009 Avg. Monthly	0.027 Max. Daily	N/A	mg/l		1/month	Grab
01094 (ML-1) RF-B Zinc, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab
01104 (ML-1) RF-B Aluminum, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab
00980 (ML-1) RF-B Iron, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab

* CEL = Compliance Evaluation Level

Name of Principal Executive Officer	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 a fine and imprisonment for knowing violations.	Date Completed
		Signature of Principal Executive Officer or Authorized Agent
Title of Officer		

WRD 2A-82

STATE OF WEST VIRGINIA
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
DISCHARGE MONITORING REPORT

Permit Limits

FACILITY NAME: (London Hydroelectric Plant) APPALACHIAN POWER COMPANY
LOCATION OF FACILITY: HANDLEY; Kanawha County
PERMIT NO.: WV0078875 001
WASTELOAD FOR THE MONTH OF:

CERTIFIED LABORATORY NAME:
CERTIFIED LABORATORY ADDRESS:
INDIVIDUAL PERFORMING ANALYSIS:

Parameter		Quantity		Units	N.E.	Other Units			CEL*	Units	N.E.	Measurement Frequency	Sample Type
00018 (ML-2) RF-A Temp. Diff. Discharge/Upstream Year Round	Reported								N/A	DEG.F		1/month	Calculated
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily					
00011 (ML-1) RF-A Temperature, F Year Round	Reported								N/A	DEG.F		1/month	Insitu
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily					
00011 (ML-7) RF-A Temperature, F Year Round	Reported								N/A	DEG.F		1/month	Insitu
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily					

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WRD 2A-82

STATE OF WEST VIRGINIA
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
DISCHARGE MONITORING REPORT

Permit Limits

FACILITY NAME: (London Hydroelectric Plant) APPALACHIAN POWER COMPANY
LOCATION OF FACILITY: HANDLEY; Kanawha County
PERMIT NO.: WV0078875 002
WASTELOAD FOR THE MONTH OF:

CERTIFIED LABORATORY NAME:
CERTIFIED LABORATORY ADDRESS:
INDIVIDUAL PERFORMING ANALYSIS:

Parameter		Quantity		Units	N.E.	Other Units			CEL*	Units	N.E.	Measurement Frequency	Sample Type
50050 (ML-1) RF-A Flow,in Conduit or thru plant Year Round	Reported								N/A	mgd		1/month	Estimated
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily					
01119 (ML-1) RF-B Copper, Total Recoverable Year Round	Reported								N/A	mg/l		1/quarter	Grab
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily					
00018 (ML-2) RF-A Temp. Diff. Discharge/Upstream Year Round	Reported								N/A	DEG.F		1/month	Calculated
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily					
00011 (ML-1) RF-A Temperature, F Year Round	Reported								N/A	DEG.F		1/month	Insitu
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily					
00011 (ML-7) RF-A Temperature, F Year Round	Reported								N/A	DEG.F		1/month	Insitu
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily					

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WRD 2A-82

STATE OF WEST VIRGINIA
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
DISCHARGE MONITORING REPORT

Permit Limits

FACILITY NAME: (London Hydroelectric Plant) APPALACHIAN POWER COMPANY
LOCATION OF FACILITY: HANDLEY; Kanawha County
PERMIT NO.: WV0078875 003
WASTELOAD FOR THE MONTH OF:

CERTIFIED LABORATORY NAME:
CERTIFIED LABORATORY ADDRESS:
INDIVIDUAL PERFORMING ANALYSIS:

Parameter		Quantity		Units	N.E.	Other Units			CEL*	Units	N.E.	Measurement Frequency	Sample Type
50050 (ML-1) RF-A Flow,in Conduit or thru plant Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mgd		1/month	Estimated
01119 (ML-1) RF-B Copper, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab
01114 (ML-1) RF-B Lead, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab
01104 (ML-1) RF-B Aluminum, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab
00980 (ML-1) RF-B Iron, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab
00018 (ML-2) RF-A Temp. Diff. Discharge/Upstream Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	DEG.F		1/month	Calculated

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WRD 2A-82

STATE OF WEST VIRGINIA
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
DISCHARGE MONITORING REPORT

Permit Limits

FACILITY NAME: (London Hydroelectric Plant) APPALACHIAN POWER COMPANY
LOCATION OF FACILITY: HANDLEY; Kanawha County
PERMIT NO.: WV0078875 003
WASTELOAD FOR THE MONTH OF:

CERTIFIED LABORATORY NAME:
CERTIFIED LABORATORY ADDRESS:
INDIVIDUAL PERFORMING ANALYSIS:

Parameter		Quantity				Other Units						Measurement Frequency	Sample Type
				Units	N.E.				CEL*	Units	N.E.		
00011 (ML-1) RF-A Temperature, F Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	DEG.F		1/month	Insitu
00011 (ML-7) RF-A Temperature, F Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	DEG.F		1/month	Insitu

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WRD 2A-82

STATE OF WEST VIRGINIA
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
DISCHARGE MONITORING REPORT

Permit Limits

FACILITY NAME: (London Hydroelectric Plant) APPALACHIAN POWER COMPANY
LOCATION OF FACILITY: HANDLEY; Kanawha County
PERMIT NO.: WV0078875 008
WASTELOAD FOR THE MONTH OF:

CERTIFIED LABORATORY NAME:
CERTIFIED LABORATORY ADDRESS:
INDIVIDUAL PERFORMING ANALYSIS:

Parameter		Quantity		Units	N.E.	Other Units			CEL*	Units	N.E.	Measurement Frequency	Sample Type
50050 (ML-1) RF-B Flow,in Conduit or thru plant Year Round	Reported								N/A	mgd		1/quarter	Estimated
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily					
00310 (ML-1) RF-B BOD, 5-Day 20 Deg.C Year Round	Reported			Lbs/Day					N/A	mg/l		1/quarter	Grab
	Permit Limits	Rpt Only Avg. Monthly	Rpt Only Max. Daily			N/A	30 Avg. Monthly	60 Max. Daily					
00530 (ML-1) RF-B Total Suspended Solids Year Round	Reported			Lbs/Day					N/A	mg/l		1/quarter	Grab
	Permit Limits	Rpt Only Avg. Monthly	Rpt Only Max. Daily			N/A	30 Avg. Monthly	60 Max. Daily					
74055 (ML-1) RF-B Coliform, Fecal Year Round	Reported								N/A	Cnts/100m		1/quarter	Grab
	Permit Limits	N/A	N/A			N/A	200 Mon. Geo. Mean	400 Max. Daily					
00400 (ML-1) RF-B pH Year Round	Reported								N/A	S.U.		1/quarter	Grab
	Permit Limits	N/A	N/A			6 Inst. Min.	N/A	9 Inst. Max.					
00610 (ML-1) RF-B Ammonia Nitrogen Year Round	Reported			Lbs/Day					N/A	mg/l		1/quarter	Grab
	Permit Limits	Rpt Only Avg. Monthly	Rpt Only Max. Daily			N/A	15 Avg. Monthly	30 Max. Daily					

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WRD 2A-82

STATE OF WEST VIRGINIA
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
DISCHARGE MONITORING REPORT

Permit Limits

FACILITY NAME: (London Hydroelectric Plant) APPALACHIAN POWER COMPANY
LOCATION OF FACILITY: HANDLEY; Kanawha County
PERMIT NO.: WV0078875 008
WASTELOAD FOR THE MONTH OF:

CERTIFIED LABORATORY NAME:
CERTIFIED LABORATORY ADDRESS:
INDIVIDUAL PERFORMING ANALYSIS:

Parameter		Quantity		Units	N.E.	Other Units			CEL*	Units	N.E.	Measurement Frequency	Sample Type
01119 (ML-1) RF-B Copper, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab
01114 (ML-1) RF-B Lead, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab
01094 (ML-1) RF-B Zinc, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab
00552 (ML-1) RF-B Oil and Grease, Hexane EXTR. Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab

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EMERGENCY RESPONSE SPILL ALERT SYSTEM
WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

REQUIREMENTS:

Title 47, Series 11, Section 2 of the West Virginia Legislative Rules, Environmental Protection, Water Resources - Waste Management, Effective July 1, 1994.

RESPONSIBILITY FOR REPORTING:

Each and every person who may cause or be responsible for any spill or accidental discharge of pollutants into the waters of the State shall give immediate notification to the Division of Water and Waste Management's Emergency Notification Number, 1-800-642-3074. Such notification shall set forth insofar as possible and as soon thereafter as practical the time and place of such spill or discharge, type or types and quantity or quantities of the material or materials therein, action or actions taken to stop such spill or discharge and to minimize the polluting effect thereof, the measure or measures taken or to be taken in order to prevent a recurrence of any such spill or discharge and such additional information as may be requested by the Division of Water and Waste Management. This also applies to spills to the waters of the State resulting from accidents to common carriers by highway, rail and water.

It shall be the responsibility of each industrial establishment or other entity discharging directly to a stream to have available the following information pertaining to those substances that are employed or handled in its operation in sufficiently large amounts as to constitute a hazard in case of an accidental spill or discharge into a public stream:

(1) Potential toxicity in water to man, animals and aquatic life;
(2) Details on analytical procedures for the quantitative estimation of such substances in water and
(3) Suggestions on safeguards or other precautionary measures to nullify the toxic effects of a substance once it has gotten into a stream.

Failure to furnish such information as required by Section 14, Article 11, Chapter 22, Code of West Virginia may be punishable under Section 24, Article 11, Chapter 22, and/or Section 22, Article 11, Chapter 22, Code of West Virginia.

It shall be the responsibility of any person who causes or contributes in any way to the spill or accidental discharge of any pollutant or pollutants into State waters to immediately take any and all measures necessary to contain such spill or discharge. It shall further be the responsibility of such person to take any and all measures necessary to clean-up, remove and otherwise render such spill or discharge harmless to the waters of the State.

When the Director determines it necessary for the effective containment and abatement of spills and accidental discharges, the Director may require the person or persons responsible for such spill or discharge to monitor affected waters in a manner prescribed by the Director until the possibility of any adverse effect on the waters of the State no longer exists.

VOLUNTARY REPORTING BY LAW OFFICERS, U. S. COAST GUARD, LOCK MASTERS AND OTHERS:

In cases involving river and highway accidents where the responsible party may or may not be available to report the incident, law officers, U. S. Coast Guard, Lock Masters and other interested person(s) should make the report.

WHO TO CONTACT:
Notify the following number: **1-800-642-3074**

INFORMATION NEEDED:
- Source of spill or discharge
- Location of incident
- Time of incident
- Material spilled or discharged
- Amount spilled or discharged
- Toxicity of material spilled or discharged
- Personnel at the scene
- Actions initiated
- Shipper/Manufacturer identification
- Railcar/Truck identification number
- Container type

NOTICE TO PERMITTEES

The 2025 regular session of the West Virginia legislature revised the Water Pollution Control Act, Chapter 22, Article 11, Section 10 of the Code of West Virginia relating to fees associated with permits. This section of the Code requires all holders of a State water pollution control permit or a national pollutant discharge elimination system permit to be assessed an annual permit fee, based upon rules promulgated by the Secretary of the Department of Environmental Protection. The Secretary has promulgated a final rule in accordance with the code revision to this effect and these rules were effective May 9, 2025. The rules establish an annual permit fee based upon the relative potential to degrade the waters of the State which, in most instances, relate to volume of discharge. However, for sewage facilities, the annual permit fee is based upon the number of customers served by the facility. You may contact the Secretary of State's Office, State Capitol Building, Charleston, WV 25305, to obtain a copy of the rules. The reference is Title 47, Legislative Rules, Department of Environmental Protection, Division of Water Resources, Series 26 Water Pollution Control Permit Fee Schedules.

Based upon the volume of discharge for which your facility is currently permitted, the number of customers served by your facility or for the category you fall within, pursuant to Section 7 of Title 47, Series 26, your annual permit fee is **$8500.00**. This fee is due no later than the anniversary date of permit issuance in each year of the term of the permit or in the case of coverage under a general permit, the fee is due no later than the anniversary date of your coverage under the general permit. **You will be invoiced by this agency at the appropriate time for the fee**. Failure to submit the annual fee within ninety(90) days of the due date will render your permit void upon the date you are mailed a certified written notice to that effect.

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER AND WASTE MANAGEMENT
BASIS FOR LIMITATIONS
AEP - London Hydroelectric Plant
WV0078875
August 2025

BACKGROUND INFORMATION

The AEP - London Plant is a hydroelectric power station consisting of three turbine generator units capable of producing a total of 14.4 megawatts of power. The plant is located on the Kanawha River at approximately mile point 82.8. This facility does not fall under any of the major manufacturing subcategories in the CFR.

The effluent consists of untreated non-contact cooling water from Outlets 001, 002, and 003; consisting of generator cooling and thrust bearing cooling water. The effluent from Outlets 005, 006, and 007 consists of guide bearing non-contact cooling water. Access to Outlets 005, 006, and 007 discharge points is not available because the turbine area is approximately 17 feet below the river's surface and is kept pressurized during operation; and therefore, it is not possible to obtain samples from any of the guide bearing discharges while the units are operational. The facility also has a peat moss biofilter treatment system to treat sanitary and sump wastewater via Outlet 008.

Discharge Information:
Outlet 001: NCCW from Unit 1 generator and thrust bearing cooler – LTA Flow 0.18 MGD
Outlet 002: NCCW from Unit 2 generator and thrust bearing cooler – LTA Flow 0.16 MGD
Outlet 003: NCCW from Unit 3 generator and thrust bearing cooler – LTA Flow 0.15 MGD
Outlet 005: NCCW from Unit 1 guide bearing cooler – LTA Flow 0.136 MGD
Outlet 006: NCCW from Unit 2 guide bearing cooler – LTA Flow 0.136 MGD
Outlet 007: NCCW from Unit 3 guide bearing cooler – LTA Flow 0.136 MGD
Outlet 008: Sanitary wastewater, floor drains, plant sump, misc. – No discharge reported.

The Kanawha River (Upper) is not included on the approved 2016 303(d) list of impairments. A Total Maximum Daily Load (TMDL) was completed for select tributaries of the Upper Kanawha River watershed in 2015, but did not include allocations for the mainstem Kanawha River.

OUTLET 001 WQBELs

The permittee monitored the discharge from Outlet 001 for copper during the previous permit cycle. A reasonable potential analysis was performed utilizing the effluent data collected during the previous permit cycle from Discharge Monitoring Reports (DMRs) and available background water quality data in conjunction with default mixing zone values of 3 (ZID), 10 (CMZ), and 30 (HHCMZ). There was reasonable potential to exceed the water quality criteria at the end of pipe and at the edge of the default mixing zone for copper. Therefore, effluent limitations are imposed for copper in Section A.001. A review of DMR data shows the permittee cannot consistently meet the proposed effluent limitations. Therefore, a 24-month compliance schedule has been granted for copper in Section B.

A reasonable potential assessment was conducted to determine if WQBELs were needed to protect the temperature water quality criteria. The reasonable potential assessment was conducted for the periods of May-November and December-April using the corresponding background temperature data collected by the permittee. Default mixing zone of 3 (ZID) and 10 (CMZ) were granted. There was no reasonable potential to exceed water quality criteria at the end of pipe for the December-April time period. There was reasonable potential to exceed the water quality criteria at the end of pipe, but not at the edge of the default mixing zone for the time period of May-November. Continued monitoring is imposed.

A reasonable potential assessment was conducted to protect the 5 degree temperature difference water quality criteria. A default mixing zone of 3 (ZID) and 10 (CMZ) was granted. As the water quality criteria is prescribed as a temperature difference, the background concentration is not used. There was reasonable potential to exceed the 5 degree temperature rise water quality criteria at end of pipe, but not at the edge of the default mixing zone. Continued monitoring is imposed.

Due to detections in the application testing, monitoring for aluminum, iron, and zinc is being imposed at Outlet 001.

OUTLET 002 WQBELs

A reasonable potential assessment was conducted to determine if WQBELs were needed to protect the temperature water quality criteria. The reasonable potential assessment was conducted for the periods of May-November and December-April using the corresponding background temperature data collected by the permittee. Default mixing zone of 3 (ZID) and 10 (CMZ) were granted. There was no reasonable potential to exceed water quality criteria at the end of pipe for the December-April time period. There was reasonable potential to exceed the water quality criteria at the end of pipe, but not at the edge of the default mixing zone for the time period of May-November. Continued monitoring is imposed.

A reasonable potential assessment was conducted to protect the 5 degree temperature difference water quality criteria. A default mixing zone of 3 (ZID) and 10 (CMZ) was granted. As the water quality criteria is prescribed as a temperature difference, the background concentration is not used. There was reasonable potential to exceed the 5 degree temperature rise water quality criteria at end of pipe, but not at the edge of the default mixing zone. Continued monitoring is imposed.

Due to detections in the application testing, monitoring for copper is being imposed at Outlet 002.

OUTLET 003 WQBELs

A reasonable potential assessment was conducted to determine if WQBELs were needed to protect the temperature water quality criteria. The reasonable potential assessment was conducted for the periods of May-November and December-April using the corresponding background temperature data collected by the permittee. Default mixing zone of 3 (ZID) and 10 (CMZ) were granted. There was reasonable potential to exceed the water quality criteria at the end of pipe, but not at the edge of the default mixing zone for the time periods of December-April and May-November. Continued monitoring is imposed.

A reasonable potential assessment was conducted to protect the 5 degree temperature difference water quality criteria. A default mixing zone of 3 (ZID) and 10 (CMZ) was granted. As the water quality criteria is prescribed as a temperature difference, the background concentration is not used. There was reasonable potential to exceed the 5 degree temperature rise water quality criteria at end of pipe, but not at the edge of the default mixing zone. Continued monitoring is imposed.

Due to detections in the application testing, monitoring for aluminum, copper, iron, and lead is being imposed at Outlet 003.

OUTLETS 005, 006, and 007

No monitoring is required as these outfalls cannot be sampled during normal operation.

OUTLET 008

The facility has a peat moss biofilter treatment system to treat sanitary wastewater and plant sump/floor drain/misc. wastewaters. Over the previous permit cycle, the permittee did not report any discharges from this outlet.

A reasonable potential assessment was performed for the evaluation of water quality based effluent limits for ammonia nitrogen. The technology based limits for ammonia nitrogen are more stringent than the necessary limits to protect water quality criteria, therefore the technology based limits are imposed. No effluent data is available to evaluate WQBELs for copper, lead, and zinc. Monitoring is imposed on a quarterly basis. Effluent limitations for BOD(5), TSS, and pH are imposed in accordance with secondary treatment standards.

COMPLIANCE ASSESMENT

A review of the eDMR's shows that the permittee has demonstrated general compliance with the permit limitations. Environmental Enforcement inspected this facility on April 6, 2023, and documented that outfalls 005, 006, 007 were unmarked, where they received a notice of violation and have since marked these outfalls.

OTHER REQUIREMENTS

A list of chemicals used at the facility was submitted with the permit application. The agency does not object to the use of these chemicals contingent upon continued use is as recommended by the manufacturer and application of each individual chemical shall not result in the exceedance of 1/10th (for non-bio-accumulative chemicals) or 1/100th (for bioaccumulated chemicals) of the lowest LC50 listed in each products Material Safety Data Sheet (MSDS) at any outlet.

316(b) REQUIREMENTS

This facility operates cooling water intake structures potentially subject to 316(b) of the Clean Water Act. The design flow of the intake based upon supplemental information contained in the permit application is equal to 1.56 MGD which is below the 2 MGD threshold in the 316(b) rules. Therefore, no requirements are imposed.

ANTIDEGRADATION

The outlets identified in this permit, Outlet Nos. 001, 002, 003, 005, 006, 007 and 008 are existing outlets. There is no proposed increase in the volume of discharge or the quantity of pollutants to be discharged. The receiving stream is designated for all water use categories as defined in 47 CSR 2, Section 6. Tier 1 protection is provided for the uses specified in Title 47, Series 2, Section 6. The permit writer believes the terms and conditions in the permit will maintain and protect the designated water uses and necessary water quality to protect said water uses.

FINAL EFFLUENT LIMITATIONS SUMMARY

Outlet 001 – Discharges to the Kanawha River

Parameter	Mass Limits		Concentration Limits (mg/l)		Frequency	Rationale
	Average Monthly	Max Daily	Average Monthly	Max Daily		
Flow	--	--	Monitor	Monitor	1/Month	BPJ
Copper, Total Recoverable	--	--	0.009	0.027	1/Month	WQS
Aluminum, Total Recoverable	--	--	Monitor	Monitor	1/Quarter	BPJ
Iron, Total Recoverable	--	--	Monitor	Monitor	1/Quarter	BPJ
Zinc, Total Recoverable	--	--	Monitor	Monitor	1/Quarter	BPJ
Temperature Effluent	--	--	Monitor	Monitor	1/Month	BPJ
Temperature Intake	--	--	Monitor	Monitor	1/Month	BPJ
Temperature Difference	--	--	Monitor	Monitor	1/Month	BPJ

Outlet 002 – Discharges to the Kanawha River

Parameter	Mass Limits		Concentration Limits (mg/l)		Frequency	Rationale
	Average Monthly	Max Daily	Average Monthly	Max Daily		
Flow	--	--	Monitor	Monitor	1/Month	BPJ
Copper, Total Recoverable	--	--	Monitor	Monitor	1/Quarter	BPJ
Temperature Effluent	--	--	Monitor	Monitor	1/Month	BPJ
Temperature Intake	--	--	Monitor	Monitor	1/Month	BPJ
Temperature Difference	--	--	Monitor	Monitor	1/Month	BPJ

Outlet 003 - Discharges to the Kanawha River

Parameter	Mass Limits		Concentration Limits (mg/l)		Frequency	Rationale
	Average Monthly	Max Daily	Average Monthly	Max Daily		
Flow	--	--	Monitor	Monitor	1/Month	BPJ
Copper, Total Recoverable	--	--	Monitor	Monitor	1/Quarter	BPJ
Aluminum, Total Recoverable	--	--	Monitor	Monitor	1/Quarter	BPJ
Iron, Total Recoverable	--	--	Monitor	Monitor	1/Quarter	BPJ
Lead, Total Recoverable	--	--	Monitor	Monitor	1/Quarter	BPJ
Temperature Effluent	--	--	Monitor	Monitor	1/Month	BPJ
Temperature Intake	--	--	Monitor	Monitor	1/Month	BPJ
Temperature Difference	--	--	Monitor	Monitor	1/Month	BPJ

Outlet 008 - Discharges to the Kanawha River

Parameter	Mass Limits		Concentration Limits		Frequency	Rationale
	Average Monthly	Max Daily	Average Monthly	Max Daily		
Flow (MGD)	--	--	Monitor	Monitor	1/Quarter	BPJ
pH (Standard Units)	--	--	6.0 min – 9.0 max		1/Quarter	WQC/STS
BOD, 5-Day	--	--	30 mg/l	60 mg/l	1/Quarter	STS
Total Suspended Solids	--	--	30 mg/l	60 mg/l	1/Quarter	STS
Fecal Coliform (Cnts/100ml)	--	--	200	400	1/Quarter	WQC/Tech
Ammonia Nitrogen	--	--	15 mg/l	30 mg/l	1/Quarter	Tech
Copper, Total Recoverable	--	--	Monitor	Monitor	1/Quarter	BPJ
Lead, Total Recoverable	--	--	Monitor	Monitor	1/Quarter	BPJ
Zinc, Total Recoverable	--	--	Monitor	Monitor	1/Quarter	BPJ
Oil and Grease	--	--	Monitor	Monitor	1/Quarter	BPJ

WATER QUALITY BASED EFFLUENT LIMITATIONS
AEP London Hydro WV0078875

Outlet: 001 — version 4.5

Stream: Kanawha River

Stream 1Q10 (CFS):	NA	**Instream Waste %:**	0.02
Stream 7Q10 (CFS):	1896	**ZID:**	3.0
Effluent Flow (MGD):	0.3	**CMZ:**	10.0

PARAMETER	Stream Background (F)	End of Pipe WQC RP	RWC WQC RP	Ave Mon (F)	Max Daily (F)
Year Round (Temp Rise)	NA	Yes	No	Monitor	Monitor
May - Nov (Temp Max)	70.0	Yes	No	Monitor	Monitor
Dec - Apr (Temp Max)	47.7	No	No	Monitor	Monitor

Outfall discharges to Ohio River:	No
Outfall discharges to Kanawha River:	No
Outfall discharges to KNB, KN-60, KNE, KN, KG, or KNG:	No
Outfall discharges to a Trout Stream:	No

WRD 2A-82

STATE OF WEST VIRGINIA
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
DISCHARGE MONITORING REPORT

Permit Limits

FACILITY NAME: (London Hydroelectric Plant) APPALACHIAN POWER COMPANY
LOCATION OF FACILITY: HANDLEY; Kanawha County
PERMIT NO.: WV0078875 002
WASTELOAD FOR THE MONTH OF:

CERTIFIED LABORATORY NAME:
CERTIFIED LABORATORY ADDRESS:
INDIVIDUAL PERFORMING ANALYSIS:

Parameter		Quantity		Units	N.E.	Other Units			CEL*	Units	N.E.	Measurement Frequency	Sample Type
50050 (ML-1) RF-A Flow,in Conduit or thru plant Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mgd		1/month	Estimated
01119 (ML-1) RF-B Copper, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab
00018 (ML-2) RF-A Temp. Diff. Discharge/Upstream Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	DEG.F		1/month	Calculated
00011 (ML-1) RF-A Temperature, F Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	DEG.F		1/month	Insitu
00011 (ML-7) RF-A Temperature, F Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	DEG.F		1/month	Insitu

* CEL = Compliance Evaluation Level

Name of Principal Executive Officer	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 a fine and imprisonment for knowing violations.	Date Completed
		Signature of Principal Executive Officer or Authorized Agent
Title of Officer		

WRD 2A-82

STATE OF WEST VIRGINIA
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
DISCHARGE MONITORING REPORT

Permit Limits

FACILITY NAME: (London Hydroelectric Plant) APPALACHIAN POWER COMPANY
LOCATION OF FACILITY: HANDLEY; Kanawha County
PERMIT NO.: WV0078875 003
WASTELOAD FOR THE MONTH OF: ______

CERTIFIED LABORATORY NAME: ______
CERTIFIED LABORATORY ADDRESS: ______
INDIVIDUAL PERFORMING ANALYSIS: ______

Parameter		Quantity		Units	N.E.	Other Units			CEL*	Units	N.E.	Measurement Frequency	Sample Type
50050 (ML-1) RF-A Flow,in Conduit or thru plant Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mgd		1/month	Estimated
01119 (ML-1) RF-B Copper, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab
01114 (ML-1) RF-B Lead, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab
01104 (ML-1) RF-B Aluminum, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab
00980 (ML-1) RF-B Iron, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab
00018 (ML-2) RF-A Temp. Diff. Discharge/Upstream Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	DEG.F		1/month	Calculated

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WRD 2A-82

STATE OF WEST VIRGINIA
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
DISCHARGE MONITORING REPORT

Permit Limits

FACILITY NAME: (London Hydroelectric Plant) APPALACHIAN POWER COMPANY
LOCATION OF FACILITY: HANDLEY; Kanawha County
PERMIT NO.: WV0078875 003
WASTELOAD FOR THE MONTH OF:

CERTIFIED LABORATORY NAME:
CERTIFIED LABORATORY ADDRESS:
INDIVIDUAL PERFORMING ANALYSIS:

Parameter		Quantity		Units	N.E.	Other Units			CEL*	Units	N.E.	Measurement Frequency	Sample Type
00011 (ML-1) RF-A Temperature, F Year Round	Reported								N/A	DEG.F		1/month	Insitu
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily					
00011 (ML-7) RF-A Temperature, F Year Round	Reported								N/A	DEG.F		1/month	Insitu
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily					

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WRD 2A-82

STATE OF WEST VIRGINIA
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
DISCHARGE MONITORING REPORT

Permit Limits

FACILITY NAME: (London Hydroelectric Plant) APPALACHIAN POWER COMPANY
LOCATION OF FACILITY: HANDLEY; Kanawha County
PERMIT NO.: WV0078875 008
WASTELOAD FOR THE MONTH OF:

CERTIFIED LABORATORY NAME:
CERTIFIED LABORATORY ADDRESS:
INDIVIDUAL PERFORMING ANALYSIS:

Parameter		Quantity		Units	N.E.	Other Units			CEL*	Units	N.E.	Measurement Frequency	Sample Type
50050 (ML-1) RF-B Flow,in Conduit or thru plant Year Round	Reported								N/A	mgd		1/quarter	Estimated
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily					
00310 (ML-1) RF-B BOD, 5-Day 20 Deg.C Year Round	Reported			Lbs/Day					N/A	mg/l		1/quarter	Grab
	Permit Limits	Rpt Only Avg. Monthly	Rpt Only Max. Daily			N/A	30 Avg. Monthly	60 Max. Daily					
00530 (ML-1) RF-B Total Suspended Solids Year Round	Reported			Lbs/Day					N/A	mg/l		1/quarter	Grab
	Permit Limits	Rpt Only Avg. Monthly	Rpt Only Max. Daily			N/A	30 Avg. Monthly	60 Max. Daily					
74055 (ML-1) RF-B Coliform, Fecal Year Round	Reported								N/A	Cnts/100m		1/quarter	Grab
	Permit Limits	N/A	N/A			N/A	200 Mon. Geo. Mean	400 Max. Daily					
00400 (ML-1) RF-B pH Year Round	Reported								N/A	S.U.		1/quarter	Grab
	Permit Limits	N/A	N/A			6 Inst. Min.	N/A	9 Inst. Max.					
00610 (ML-1) RF-B Ammonia Nitrogen Year Round	Reported			Lbs/Day					N/A	mg/l		1/quarter	Grab
	Permit Limits	Rpt Only Avg. Monthly	Rpt Only Max. Daily			N/A	15 Avg. Monthly	30 Max. Daily					

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STATE OF WEST VIRGINIA
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
DISCHARGE MONITORING REPORT

Permit Limits

FACILITY NAME: (London Hydroelectric Plant) APPALACHIAN POWER COMPANY
LOCATION OF FACILITY: HANDLEY; Kanawha County
PERMIT NO.: WV0078875 008
WASTELOAD FOR THE MONTH OF:

CERTIFIED LABORATORY NAME:
CERTIFIED LABORATORY ADDRESS:
INDIVIDUAL PERFORMING ANALYSIS:

Parameter		Quantity		Units	N.E.	Other Units			CEL*	Units	N.E.	Measurement Frequency	Sample Type
01119 (ML-1) RF-B Copper, Total Recoverable Year Round	Reported								N/A	mg/l		1/quarter	Grab
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily					
01114 (ML-1) RF-B Lead, Total Recoverable Year Round	Reported								N/A	mg/l		1/quarter	Grab
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily					
01094 (ML-1) RF-B Zinc, Total Recoverable Year Round	Reported								N/A	mg/l		1/quarter	Grab
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily					
00552 (ML-1) RF-B Oil and Grease, Hexane EXTR. Year Round	Reported								N/A	mg/l		1/quarter	Grab
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily					

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Title of Officer		Signature of Principal Executive Officer or Authorized Agent

EMERGENCY RESPONSE SPILL ALERT SYSTEM
WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

REQUIREMENTS:

Title 47, Series 11, Section 2 of the West Virginia Legislative Rules, Environmental Protection, Water Resources - Waste Management, Effective July 1, 1994.

RESPONSIBILITY FOR REPORTING:

Each and every person who may cause or be responsible for any spill or accidental discharge of pollutants into the waters of the State shall give immediate notification to the Division of Water and Waste Management's Emergency Notification Number, 1-800-642-3074. Such notification shall set forth insofar as possible and as soon thereafter as practical the time and place of such spill or discharge, type or types and quantity or quantities of the material or materials therein, action or actions taken to stop such spill or discharge and to minimize the polluting effect thereof, the measure or measures taken or to be taken in order to prevent a recurrence of any such spill or discharge and such additional information as may be requested by the Division of Water and Waste Management. This also applies to spills to the waters of the State resulting from accidents to common carriers by highway, rail and water.

It shall be the responsibility of each industrial establishment or other entity discharging directly to a stream to have available the following information pertaining to those substances that are employed or handled in its operation in sufficiently large amounts as to constitute a hazard in case of an accidental spill or discharge into a public stream:

(1) Potential toxicity in water to man, animals and aquatic life;
(2) Details on analytical procedures for the quantitative estimation of such substances in water and
(3) Suggestions on safeguards or other precautionary measures to nullify the toxic effects of a substance once it has gotten into a stream.

Failure to furnish such information as required by Section 14, Article 11, Chapter 22, Code of West Virginia may be punishable under Section 24, Article 11, Chapter 22, and/or Section 22, Article 11, Chapter 22, Code of West Virginia.

It shall be the responsibility of any person who causes or contributes in any way to the spill or accidental discharge of any pollutant or pollutants into State waters to immediately take any and all measures necessary to contain such spill or discharge. It shall further be the responsibility of such person to take any and all measures necessary to clean-up, remove and otherwise render such spill or discharge harmless to the waters of the State.

When the Director determines it necessary for the effective containment and abatement of spills and accidental discharges, the Director may require the person or persons responsible for such spill or discharge to monitor affected waters in a manner prescribed by the Director until the possibility of any adverse effect on the waters of the State no longer exists.

VOLUNTARY REPORTING BY LAW OFFICERS, U. S. COAST GUARD, LOCK MASTERS AND OTHERS:

In cases involving river and highway accidents where the responsible party may or may not be available to report the incident, law officers, U. S. Coast Guard, Lock Masters and other interested person(s) should make the report.

WHO TO CONTACT:
Notify the following number: **1-800-642-3074**

INFORMATION NEEDED:
- Source of spill or discharge
- Location of incident
- Time of incident
- Material spilled or discharged
- Amount spilled or discharged
- Toxicity of material spilled or discharged
- Personnel at the scene
- Actions initiated
- Shipper/Manufacturer identification
- Railcar/Truck identification number
- Container type

NOTICE TO PERMITTEES

The 2025 regular session of the West Virginia legislature revised the Water Pollution Control Act, Chapter 22, Article 11, Section 10 of the Code of West Virginia relating to fees associated with permits. This section of the Code requires all holders of a State water pollution control permit or a national pollutant discharge elimination system permit to be assessed an annual permit fee, based upon rules promulgated by the Secretary of the Department of Environmental Protection. The Secretary has promulgated a final rule in accordance with the code revision to this effect and these rules were effective May 9, 2025. The rules establish an annual permit fee based upon the relative potential to degrade the waters of the State which, in most instances, relate to volume of discharge. However, for sewage facilities, the annual permit fee is based upon the number of customers served by the facility. You may contact the Secretary of State's Office, State Capitol Building, Charleston, WV 25305, to obtain a copy of the rules. The reference is Title 47, Legislative Rules, Department of Environmental Protection, Division of Water Resources, Series 26 Water Pollution Control Permit Fee Schedules.

Based upon the volume of discharge for which your facility is currently permitted, the number of customers served by your facility or for the category you fall within, pursuant to Section 7 of Title 47, Series 26, your annual permit fee is **$8500.00**. This fee is due no later than the anniversary date of permit issuance in each year of the term of the permit or in the case of coverage under a general permit, the fee is due no later than the anniversary date of your coverage under the general permit. **You will be invoiced by this agency at the appropriate time for the fee**. Failure to submit the annual fee within ninety(90) days of the due date will render your permit void upon the date you are mailed a certified written notice to that effect.

RIGHT OF APPEAL

Notice is hereby given of your right to appeal the terms and conditions of this permit which you are aggrieved by to the Environmental Quality Board by filing a NOTICE OF APPEAL on the form prescribed by such Board for this purpose, with the Board, in accordance with the provisions of Section 21, Article 11, Chapter 22 of the Code of West Virginia within thirty (30) days after the date of receipt of the above permit.

WRD 2A-82

STATE OF WEST VIRGINIA
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
DISCHARGE MONITORING REPORT

Permit Limits

FACILITY NAME: (London Hydroelectric Plant) APPALACHIAN POWER COMPANY
LOCATION OF FACILITY: HANDLEY; Kanawha County
PERMIT NO.: WV0078875 001
WASTELOAD FOR THE MONTH OF:

CERTIFIED LABORATORY NAME:
CERTIFIED LABORATORY ADDRESS:
INDIVIDUAL PERFORMING ANALYSIS:

Parameter		Quantity		Units	N.E.	Other Units			CEL*	Units	N.E.	Measurement Frequency	Sample Type
00018 (ML-2) RF-A Temp. Diff. Discharge/Upstream Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	DEG.F		1/month	Calculated
00011 (ML-1) RF-A Temperature, F Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	DEG.F		1/month	Insitu
00011 (ML-7) RF-A Temperature, F Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	DEG.F		1/month	Insitu

* CEL = Compliance Evaluation Level

Name of Principal Executive Officer	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 a fine and imprisonment for knowing violations.	Date Completed
Title of Officer		Signature of Principal Executive Officer or Authorized Agent

WATER QUALITY BASED EFFLUENT LIMITATIONS

v 10.4

AEP London Hydro WV0078875

Outlet: 001

Stream: Kanawha River

Hardness (mg/l):	66	**Instream Waste %:**	0.02
Temperature (°C):	27	**ZID:**	3.0
pH:	7.59	**CMZ:**	10.0
Stream 1Q10 (CFS):	NA	**HH CMZ:**	30.0
Stream 7Q10 (CFS):	1896	**HHA 1/2 Mile Rule CMZ:**	30.0
Effluent Flow (MGD):	0.3		

PARAMETER	Baseline Water Quality (mg/l)	Stream Background (mg/l)	End of Pipe WQC RP	RWC WQC RP	Average Monthly Limit (mg/l)	Maximum Daily Limit (mg/l)	Tier Protection Level
Copper	NA	0.0009	Yes	Yes	0.0086	0.0266	Tier 1

Outfall discharges to Ohio River and is subject to ORSANCO Pollution Control Standards:	No
Outfall discharges to a Trout Stream:	No
Outfall discharges to a stream exempt from Human Health A Criteria:	No
Outfall discharges to a stream exempt from all Human Health Criteria:	No
Outfall discharges within 1/2 mile upstream of a public drinking water intake:	No
Outfall has limitations for at least one metal using a site specific translator:	No
Outfall has Tier 2.0 antidegradation limitations for at least one pollutant:	No

WATER QUALITY BASED EFFLUENT LIMITATIONS
AEP London Hydro WV0078875
Outlet: 002

version 4.5

Stream: Kanawha River

Stream 1Q10 (CFS):	NA	**Instream Waste %:**	0.02
Stream 7Q10 (CFS):	1896	**ZID:**	3.0
Effluent Flow (MGD):	0.21	**CMZ:**	10.0

PARAMETER	Stream Background (F)	End of Pipe WQC RP	RWC WQC RP	Ave Mon (F)	Max Daily (F)
Year Round (Temp Rise)	NA	Yes	No	Monitor	Monitor
May - Nov (Temp Max)	70.9	Yes	No	Monitor	Monitor
Dec - Apr (Temp Max)	49.2	No	No	Monitor	Monitor

Outfall discharges to Ohio River:	No
Outfall discharges to Kanawha River:	No
Outfall discharges to KNB, KN-60, KNE, KN, KG, or KNG:	No
Outfall discharges to a Trout Stream:	No

WATER QUALITY BASED EFFLUENT LIMITATIONS
AEP London Hydro WV0078875

Outlet: 003 version 4.5

Stream: Kanawha River

Stream 1Q10 (CFS):	NA	**Instream Waste %:**	0.02
Stream 7Q10 (CFS):	1896	**ZID:**	3.0
Effluent Flow (MGD):	0.22	**CMZ:**	10.0

PARAMETER	Stream Background (F)	End of Pipe WQC RP	RWC WQC RP	Ave Mon (F)	Max Daily (F)
Year Round (Temp Rise)	NA	Yes	No	Monitor	Monitor
May - Nov (Temp Max)	68.5	Yes	No	Monitor	Monitor
Dec - Apr (Temp Max)	48.8	Yes	No	Monitor	Monitor

Outfall discharges to Ohio River:	No
Outfall discharges to Kanawha River:	No
Outfall discharges to KNB, KN-60, KNE, KN, KG, or KNG:	No
Outfall discharges to a Trout Stream:	No

WATER QUALITY BASED EFFLUENT LIMITATIONS

v 10.4

AEP London Hydro WV0078875

Outlet: 008

Stream: Kanawha River

Hardness (mg/l):	66	**Instream Waste %:**	0.00
Temperature (°C):	27	**ZID:**	3.0
pH:	7.59	**CMZ:**	10.0
Stream 1Q10 (CFS):	NA	**HH CMZ:**	30.0
Stream 7Q10 (CFS):	1896	**HHA 1/2 Mile Rule CMZ:**	30.0
Effluent Flow (MGD):	0.0012		

PARAMETER	Baseline Water Quality (mg/l)	Stream Background (mg/l)	End of Pipe WQC RP	RWC WQC RP	Average Monthly Limit (mg/l)	Maximum Daily Limit (mg/l)	Tier Protection Level
Ammonia	NA	0.0480	No Data	No Data	25.8319	51.8237	Tier 1

Outfall discharges to Ohio River and is subject to ORSANCO Pollution Control Standards:	No
Outfall discharges to a Trout Stream:	No
Outfall discharges to a stream exempt from Human Health A Criteria:	No
Outfall discharges to a stream exempt from all Human Health Criteria:	No
Outfall discharges within 1/2 mile upstream of a public drinking water intake:	No
Outfall has limitations for at least one metal using a site specific translator:	No
Outfall has Tier 2.0 antidegradation limitations for at least one pollutant:	No

[ ] Regular Addition
[ ] Discretionary Addition
[X] Score change, but no status change
[ ] Deletion

NPDES Permit Rating Work Sheet

NPDES No.: W V 0 0 7 8 8 7 5

Facility Name:

A E P L O N D O N H Y D R O E L E C T R I C P L A N T

City: H A N D L E Y

Receiving Water: K A N A W H A R I V E R

Reach Number: 0 5 0 5 0 0 0 6

Is this facility a steam electric power plant (SIC=4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rate

[ ] Yes; score is 600 (stop here) [X] No (Continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

[ ] Yes; score is 700 (stop here)
[X] No

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: 4 9 1 1 Primary SIC Code: 4 9 1 1

Other SIC Codes:

Industrial SubCategory Code: 0 0 0 (Code 000 if no category)

Determine the Toxicity potential from Appendix A. Be sure to use the Total toxicity potential column and check one

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
[X] No process wastestreams	0	0	[ ] 3.	3	15	[ ] 7.	7	35
[ ] 1.	1	5	[ ] 4.	4	20	[ ] 8.	8	40
[ ] 2.	2	10	[ ] 5.	5	25	[ ] 9.	9	45
			[ ] 6.	6	30	[ ] 10.	10	50

Code Number Checked: 0 0

Total Points Factor 1: 0 0

FACTOR 2: Flow/Stream Flow Volume (complete either Section A or Section B; check only one)

Section A - Wastewater Flow Only Considered

Wastewater Type (See Instructions)			Code	Points
Type I:	Flow < 5 MGD	[X]	11	0
	Flow 5 to 10 MGD	[ ]	12	10
	Flow >10 to 50 MGD	[ ]	13	20
	Flow >50 MGD	[ ]	14	30
Type II:	Flow < 1 MGD	[ ]	21	10
	Flow 1 to 5 MGD	[ ]	22	20
	Flow >5 to 10 MGD	[ ]	23	30
	Flow >10 MGD	[ ]	24	50
Type III:	Flow < 1 MGD	[ ]	31	0
	Flow 1 to 5 MGD	[ ]	32	10
	Flow >5 to 10 MGD	[ ]	33	20
	Flow >10 MGD	[ ]	34	30

Wastewater Type (See Instructions)	Percent of Instream Wastewater Concentration at Receiving Stream Low Flow		Code	Points
Type I/III:	< 10 %	[ ]	41	0
	>= 10 % to <= 50 %	[ ]	42	10
	>= 50 %	[ ]	43	20
Type II:	< 10 %	[ ]	51	0
	>= 10 % to <= 50 %	[ ]	52	20
	>= 50 %	[ ]	53	30

Code Number Checked: 1 1

Total Points Factor 2: 0 0

NPDES Permit Rating Work Sheet

NPDES No.: W V 0 0 7 8 8 7 5

FACTOR 3: Conventional Pollutants
(only when limited by the permit)

A. Oxygen Demanding Pollutant (check one): [X] BOD [ ] COD [ ] Other: ____________

Permit Limits (check one)

		Code	Points
X	< 100 lbds/day	1	0
	100 to 1000 lbs/day	2	5
	> 1000 to 3000 lbs/day	3	15
	> 3000 lbs/day	4	25

Code Number Checked: 0 1

Points Scored: 0 0

B. Total Suspended Solids (check one):

Permit Limits (check one)

		Code	Points
X	< 100 lbds/day	1	0
	100 to 1000 lbs/day	2	5
	> 1000 to 5000 lbs/day	3	15
	> 5000 lbs/day	4	20

Code Number Checked: 0 1

Points Scored: 0 0

C. Nitrogen Pollutants (check one): [X] Ammonia [ ] Other: ____________

Permit Limits (check one)

		Code	Points
X	< 300 lbds/day	1	0
	300 to 1000 lbs/day	2	5
	> 1000 to 3000 lbs/day	3	15
	> 3000 lbs/day	4	25

Code Number Checked: 0 1

Points Scored: 0 0

Total Points Factor 3: 0 0

FACTOR 4: Public Health Impact
Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this includes any body of water to which the receiving stream is a tributary)? A public water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above referenced supply.

[X] Yes (If yes, check toxicity potential number below)
[ ] No (If no, go to Factor 5)

Determine the human health toxicity potential from Appendix A. Use the same SIC code and subcategory references as in Factor 1. (Be sure to use the human health toxicity group column - check one below)

	Toxicity Group	Code	Points
X	No process wastestreams	0	0
	1.	1	0
	2.	2	0
	3.	3	0
	4.	4	0
	5.	5	5
	6.	6	10
	7.	7	15
	8.	8	20
	9.	9	25
	10.	10	30

Code Number Checked: 0 0

Total Points Factor 4: 0 0

NPDES Permit Rating Work Sheet

FACTOR 5: Water Quality Factors

NPDES No.: | W | V | 0 | 0 | 7 | 8 | 8 | 7 | 5 |

A. Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-based federal guidelines, or technology-based state effluent guidelines); or has a wasteload allocation been assigned to the discharge?

		Code	Points
X	Yes	1	10
	No	2	0

B. Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?

		Code	Points
X	Yes	1	0
	No	2	5

C. Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?

		Code	Points
	Yes	1	10
X	No	2	0

Code Number Checked: A: 2 B: 1 C: 2

Total Points Factor 5: A: 1 0 B: 0 0 C: 0 0 = 1 0 Total

FACTOR 6: Proximity to Coastal Waters

A. Base Score: Enter Flow Code Here (from Factor 2): 1 1

Check appropriate facility HPRI Code (from PCS): 0 4

Enter the multiplication factor that corresponds to the flow code: 0 0 0

	HPRI #	Code	HPRI Score
	1	1	20
	2	2	0
	3	3	30
X	4	4	0
	5	5	20

HPRI code checked: 4

Flow Code	Multiplication Factor
11,31, or 41	0.00
12,32, or 42	0.05
13,33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

Base Score: (HPRI Score) 0 0 x (Multiplication Factor) 0. 0 0 = 0 (Total Points)

B. Addiitonal Points - NEP Program
For a facility that has an HPRI Code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

		Code	Points
	Yes	1	10
X	No	2	0

C. Addiitonal Points - Great Lakes Area of Concern
For a facility that has an HPRI Code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 areas of concern (see instructions)?

		Code	Points
	Yes	1	10
X	No	2	0

Code Number Checked: A: 4 B: 2 C: 2

Total Points Factor 6: A: 0 0 B: 0 0 C: 0 0 = 0 0 Total

NPDES Permit Rating Work Sheet

SCORE SUMMARY

NPDES No.: | W | V | 0 | 0 | 7 | 8 | 8 | 7 | 5 |

Factor	Description	Total Points
1	Toxic Pollutant Potential	0 0
2	Flow/Stream Flow Volume	0 0
3	Conventional Pollutants	0 0
4	Publlic Health Impacts	0 0
5	Water Quality Factors	1 0
6	Proximity to Near Coastal Waters	0 0
	TOTAL (Factors 1 through 6)	0 1 0

S1. Is the total score equal to or greater than 80? ☐ Yes (facility is a major) ☒ No

S2. If the answer to the above question is no, would you like this facility to be a discretionary major?

☒ No
☐ Yes (Add 500 points to the above score and provide reason below):

Reason: ______________________________

NEW SCORE: 0 1 0

OLD SCORE: 0 4 0

Brittany Ballengee
Permit Reviewer's Name

304-926-0495
Phone Number

9/3/25
Date

Devereux, Lori K <lori.k.devereux@wv.gov>

RE: [EXTERNAL] WV0078875-Appalachian Power Co-Draft Permit

1 message

Jonathan M Magalski <jmmagalski@aep.com> Tue, Sep 9, 2025 at 3:51 PM
To: "Devereux, Lori K" <lori.k.devereux@wv.gov>
Cc: Ryan T Harbison <ryan.t.harbison@wv.gov>

Received.

Thanks....Jon

From: Devereux, Lori K <lori.k.devereux@wv.gov>
Sent: Friday, September 5, 2025 12:16 PM
To: Jonathan M Magalski <jmmagalski@aep.com>
Cc: Ryan T Harbison <ryan.t.harbison@wv.gov>
Subject: [EXTERNAL] WV0078875-Appalachian Power Co-Draft Permit

Mr. Magalski, Please find attached your certified draft copy of your permit. If you could please reply back to this email to verify receipt, I would appreciate it. Thanks

--

Environmental Resource Associate

WV Department of Environmental Protection

Division of Water and Waste MGMT

601 57th Street SE

Charleston, WV 25304

Email: lori.k.devereux@wv.gov

Telephone: 304-926-0499 ext. 43863

Ad Number 345336

Affidavit of Legal Publication and Posting

STATE OF WEST VIRGINIA

COUNTY OF Kanawha, TO-WIT

I Elisha Queen, Classified Advertising

Representative of the The Charleston Gazette-Mail, a newspaper

published in the county of Kanawha, West Virginia, hereby

certify that the annexed publication was inserted in said

newspaper **The Charleston Gazette-Mail.**

The cost of publishing said annexed advertisement

as aforesaid was $ 119.60

Commencing On: 09/10/2025

Ending On: 09/10/2025

Given under my hand this day 09/10/2025

Sworn to and subscribed before me 09/10/2025
at Charleston, Kanawha County, West Virginia

Notary Public of, in and for Kanawha County, West Virginia

MY COMMISSION EXPIRES: May 12 2027

Elisha Queen

Official Seal
Notary Public, State of West Virginia
Jaime Lynn Copley
HD Media Co.
5192 Bradley Rd
Huntington, WV 25705
My Commission Expires May 12, 2027

STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION DIVISION OF WATER AND WASTE MANAGEMENT

PUBLIC NOTICE

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S, PUBLIC INFORMATION OFFICE, 601 57TH STREET, CHARLESTON SE, WEST VIRGINIA 25304-2345 TELEPHONE: (304) 926-0440.

APPLICATION FOR A WEST VIRGINIA NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM WATER POLLUTION CONTROL PERMIT

Public Notice No.:
L82 25

Public Notice Date:
September 10, 2025

Paper:
Charleston Gazette Mail

The following has applied for a WV NPDES Water Pollution Control Permit for this facility or activity:

Appl. No.:
WV0078875

Applicant:
APPALACHIAN POWER COMPANY
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

Location:
HANDLEY,
KANAWHA COUNTY

Latitude: 38:11:29

Longitude: 81:22:14

Receiving Stream:
KANAWHA RIVER

Activity:
Operate and maintain disposal systems for the direct discharge of untreated industrial wastewater (non contact cooling water) from Outlet Nos. 001, 002, 003, 005, 006, and 007 into the Kanawha River at Mile Point 82.8. Also, to discharge treated sewage and industrial sump wastewater via Outlet No. 008 into the Kana

Acc.Id:	72463	
Name:	AEP: HYDRO PLANT	
Phone:	614-716-1233	
Address:	1 RIVERSIDE PLZ	
City:	COLUMBUS	
State:	OH	
Postcode:	43215	
Class:	9010	Legal Notices
Edition:	CGM	
Start:	09/10/2025	
Stop:	09/10/2025	
Issues:	1	
Units	180.0	
Order ID:	HC 345336	
TFN:	C	
TFN cycle:		
Rep:	EQUEEN	
Status:	CF	
Source:	EM	
Paytype:	BI	
Rate:	LG	
Cost EXC GST:	119.60	
Tax:	0.00	
Total Charge:	119.60	

Printed on: 09/05/2025 11:51:45
Printed by: EQUEEN

and River at Mile Point 82.8. An antidegradation review has been conducted. Tier 1 protection is provided for all water use categories as defined in 47 CSR 2, Section 6.

Business conducted:
Hydroelectric Power Station

Implementation:
N/A

On the basis of review of the application, the "Water Pollution Control Act (Chapter 22, Article 11 8(a))," and the "West Virginia Legislative Rules," the State of West Virginia will act on the above application.

Any interested person may submit written comments on the draft permit and may request a public hearing by addressing such to the Director of the Division of Water and Waste Management within 30 days of the date of the public notice. Such comments or requests should be addressed to:

Director, Division of Water and Waste Management, DEP
ATTN: Lori Devereux, Permitting Section
601 57th Street SE
Charleston, WV
25304 2345
lori.k.devereux@wv.gov

The public comment period begins **September 10, 2025** and ends **October 10, 2025**.

Comments received within this period will be considered prior to acting on the permit application. Correspondence should include the name, address and the telephone number of the writer and a concise statement of the nature of the issues raised. The Director shall hold a public hearing whenever a finding is made, on the basis of requests, that there is a significant degree of public interest on issues relevant to the Draft Permit(s). Interested persons may contact the public information office to obtain further information.

The application, draft permit and any required fact sheet may be inspected, by appointment, at the Division of Water and Waste Management Public Information Office, at 601 57th Street SE, Charleston, WV 25304 2345, between 8:00 a.m. and 4:00 p.m. on business days.

LC-345336
09-10;2025

Legal Notices

NOTICE OF TRUSTEE SALE OF VALUABLE REAL ESTATE

Pursuant to the authority vested in the undersigned by deed of trust dated the 7th day of February 2023, signed by Ben Powell, an unmarried man, also known as Benjamin C. Powell, Jr., to Robert H. Skeen Jr., Trustee, which said deed of trust is of record in the Office of the Clerk of the County Commission of Kanawha West Virginia, in Trust Deed Book 4629 at page 376 and Golden & Amos, PLLC, Trustee having been requested so to do by the Secured Creditor, and default having been made under the terms and conditions of said deed of trust, and the provisions in said deed of trust concerning acceleration having been complied with by the Secured Creditor and present holder of the note, said Trustee will sell at public auction at 11:15 o'clock a.m. on the

17th day of September, 2025

at the front doors of the Courthouse in Kanawha County in Charleston, West Virginia located at 409 Virginia Street, East, Charleston WV 25301, the following described real estate located in the City of Charleston, County of Kanawha, State of West Virginia as follows:

All those certain lots or parcels of land, together with the improvements thereon and the appurtenances thereunto belonging, situate in the City of Charleston, Kanawha County, West Virginia, to-wit:

All that certain lot or parcel of land, together with the improvements thereon and the appurtenances thereunto belonging, situate in the City of Charleston, Kanawha County, West Virginia, and fronting forty (40) feet on Greendale Drive, formerly Carr Street, in said City of Charleston, and being more particularly described as follows:

BEGINNING on Greendale Drive, formerly Can Street, forty (40) feet above the intersection of said Greendale Drive, formerly Can Street and Branch Street; thence with a line parallel with said Branch Street One hundred twenty (120) feet to a road leading up the hill in the rear of Slaughter House; thence with said last named road forty (40) feet to a stake in the same; thence across the bottom parallel with Branch Street one hundred and twenty (120) feet to said Greendale Drive, formerly Can Street; thence with said Greendale Drive, formerly Can Street, forty (40) feet to the place of beginning.

It is the intention of this notice to sell the secured property by proper description as was intended to be transferred and conveyed in the aforesaid deed of trust.

The above described real estate is reported to have a mailing address of:

842 Greendale Drive, Charleston WV 25302

TERMS OF SALE: Cash in hand on day of sale or within 30 days of date of sale upon terms to be agreed upon between Trustee and successful bidder, time being of the essence; payment for unpaid real estate taxes to be assumed by the purchaser. The Trustee does not warrant title or fitness to this property; it is being purchased as is; this is a buyer beware sale and any buyer is advised to retain counsel before the sale. If there is any part of the process of sale which is found to be objectionable, the Trustee reserves the right to cancel the sale. No purchaser should take possession or make improvements in the premises until the Trustee deed is delivered or recorded. A third party purchaser at sale will be required to pay the purchase price plus all recording and transfer fees.

Trustee at sale is under no duty to cause any existing tenant or person occupying the subject property to vacate said property.

FEDERAL TAX LIEN: In the event that there are Federal Tax Liens against the property, the United States would have the right to redeem the property within a period of 120 days from the date of such sale or the period allowable for redemption under local law, whichever is longer.

The party(ies) secured by the Deed of Trust reserve the right to purchase the property at such sale. If the purchaser at sale is unable to complete the terms of purchase within 30 days, the Trustee reserves the right to transfer the property to the next highest bidder.

Any sale hereunder may be adjourned from time to time without any notice other than oral proclamation at the time and place appointed for this sale or by posting of a notice of same. Should the Trustee not appear at the time appointed for the sale and there is no notice posted of a continuance please contact the office of the Trustee to make further inquiry. Any sale may be conducted or adjourned by the designated agent or attorney of the Trustee.

The undersigned is fully vested with the authority to sell said property as Trustee by instrument of record. Some Trustee sales may be conducted by a servicer required Auction Company. In that event, the auctioneer will be acting under an "Auction Services Agreement."

Should any party have any inquiries, objections to the sale or protests regarding the sale, or requests regarding the sale, please notify the trustee below by one of the means of communications set forth below.

GOLDEN & AMOS, PLLC, TRUSTEE
549 Fifth Street, P.O. Box 81
Parkersburg, WV 26102
Telephone (304) 485-3851
Fax (304) 485-0261
E-mail: tinamos@goldenamos.com

Our business hours are 8:30 AM- 5:00 PM On weekdays not including holidays

LC337566
08/27/09-03,10;2025

TRUSTEE'S SALE OF VALUABLE REAL ESTATE

The undersigned Substitute Trustee, by virtue of the authority vested in him by that certain Deed of Trust, dated April 26, 2016, and duly recorded in the Office of the Clerk of the County Commission of Kanawha County, West Virginia, in Book No. 4166, at Page 951 and modified by Loan Modification Agreement in Book No. 4401, at Page 191 and modified by Loan Modification Agreement in Book No. 4513, at Page 918, Ryan C Webb and Virginia N Webb did convey unto Dru A. Shope, Trustee(s), certain real property described in said Deed of Trust; and the beneficiary has allocated to appoint Seneca Trustees, Inc., as Substitute Trustee; and default having been made under the aforementioned Deed of Trust, and the undersigned Substitute Trustee having been instructed by PennyMac Loan Services, LLC to foreclose thereunder, will offer for sale at public auction at the front door of the Kanawha County Courthouse in Charleston, West Virginia, on

October 13, 2025 at 2:45 PM

the following described real estate, together with its improvements, easements and appurtenances thereunto belonging, situate in 27 - Nitro District, Kanawha County, West Virginia, and more particularly described as follows:

A certain parcel of real estate situate in the Nitro (Union) District, Kanawha County, West Virginia, together with easements, improvements, and appurtenances thereunto belonging, and being more particularly described as follows:

Parcel One: All of those Two (2) certain lots or parcels of land situate in Union District, Kanawha County, West Virginia, known and described as Lots Nos. Ten (10) and Eleven (11) of the Rhodes Addition to North St. Albans, as laid out and designated on a map of said Rhodes Addition, which said map is duly of record in the Office of the Clerk of the County Court of Kanawha County, West Virginia, in Photostatic Map Book 4, at Page 102.

Said Lot No. Ten (10) being subject to those covenants and restrictions contained in Deed Book 267, at Page 507.

Parcel Two: All that certain lot or parcel of real estate situate in Union District, Kanawha County, West Virginia, and being more particularly bounded and described as follows:

Lot No. Twelve (12) of the Rhodes Addition, as laid out and designated on a certain map of said Addition, of record and on file in the Office of the Clerk of the County Court of Kanawha County, West Virginia.

LSOT: Deed Book 2880, Page 317, dated June 4, 2014, Office of the Clerk of the County Commission of Kanawha County, West Virginia.

At the time of the execution of the Deed of Trust, this property was reported to have an address of: 101 Lee Ave, Nitro, WV 25143.

The referenced real estate will be conveyed with no covenants of warranty, and subject to all covenants, restrictions, easements, rights of way and reservations which may be a matter of record in the aforesaid Clerk's Office or visible upon the ground, all prior liens and encumbrances, including, without limitation, liens for real estate taxes, incinerator, sanitary and sewer charges. The purchasers at the sale shall be responsible for paying the recording costs and also the tax on the privilege of transferring real property (the cost of the tax stamp to be affixed to the deed). The purchasers shall be responsible for payment of all real estate taxes.

The subject property will be sold in "AS IS" condition. The Substitute Trustee shall be under no duty to cause any existing tenant or person occupying the subject property to vacate said property.

TERMS: $9000.00 in cash and/or certified funds as deposit at the time of sale with the balance due and payable within 30 days of the day of sale.

FEDERAL TAX LIEN: In the event that there are Federal Tax Liens against the property, the United States would have the right to redeem the property within a period of 120 days from the date of such sale or the period allowable for redemption under local law, whichever is longer.

Pursuant to the Deed of Trust, the Trustee may postpone the sale by public announcement at the time and place designated or by posting a notice of the same, and act by agent in the execution of the sale. The parties secured by the Deed of Trust reserve the right to purchase the property at such sale.

SENECA TRUSTEES, INC.
5000 Coombs Farm Drive, Suite 104
Morgantown, WV 26508
(304) 4130044
(304) 2922918
Toll free: (888) 5343132
Reference File No. 71963

LC-343509
09-10,17;2025

TRUSTEE'S SALE OF VALUABLE REAL ESTATE

The undersigned Trustee, by virtue of the authority vested in him by that certain Deed of Trust dated February 4, 2016, and duly recorded in the Office of the Clerk of the County Commission of Lincoln County, West Virginia, in Deed of Trust Book 254, at Page 561, Robert J. Lane did convey unto Richard A. Pill, Esq., Trustee, certain real property described in said Deed of Trust; and default having been made under the aforementioned Deed of Trust, and the undersigned Trustee having been instructed by the secured party to foreclose thereunder, will offer for sale at public auction at the front door of the Lincoln County Courthouse, in Hamlin, West Virginia, on

September 26, 2025 at 9:25 AM

The following described real estate, with its improvements, easements and appurtenances thereunto belonging, situate in the Washington District, Lincoln County, West Virginia, and more particularly described as follows:

A tract or parcel of land situate on Coal River, District of Washington, Lincoln County, West Virginia, and designated as Lot 20A Gilchrist Estates Phase II, and being more particularly bounded and described as follows:

Beginning at a point on the western right of way of Gilchrist Ave. corner to Lot 20B; thence S 45° 04' W 38.18 feet to a point; thence S 73° 06' W 45.22 feet to a point; thence S 42° 13' E 74.15 feet to a point from which a 1/2" rebar bears N 74° 13' E 17.52 feet; thence leaving said right of way, S 74° 13' W 341.30 feet to a point; thence S 83° 09' W 350.56 feet to a call of a Large Beech Stump; thence N 12° 58' W 165.70 feet to a point; thence N 44° 57' E 154.82 feet to a point; thence S 86° 03' E 489.54 feet to a 1 1/4" pipe set; thence S 86° 03' E passing a 1" rebar set at 106.84 feet, 138.53 feet in all to the place of beginning and containing 3.08 acre more or less.

Subject to those restrictive covenants contained in Deed Book 269, at page 440, Deed Book 291, at page 622, Deed Book 294, at page 763, and Deed Book 294, at page 766 and any and all other covenants, restrictions, easements, and reservations which may be a matter of record in the Clerk's office aforesaid and running with the land.

At the time of the execution of the Deed of Trust, this property was reported to have a mailing address of 177 Gilchrist Avenue, Ternado, WV 25202.

AND BEING the same real estate which was conveyed to Robert J. Lane, by deed dated May 13, 2013, from Anthony S. Watson and Jodi M. Watson, and recorded in the Office of the Clerk of the County Commission of Lincoln County, West Virginia, in Deed Book 366, at Page 252, and further being the same real estate conveyed to Robert J. Lane, by deed dated February 4, 2016, from Kaitlynn Marie Cottrill f/k/a Kaitlynn Marie Lane, and recorded in the Office of the Clerk of the County Commission of Lincoln County, West Virginia, in Deed Book 381, at Page 500.

The above described property will be sold subject to any covenants, restrictions, easements, leases and conditions of record, and subject to any unpaid real estate taxes.

The subject property will be sold in "AS IS" condition. The Trustee shall be under no duty to cause any existing tenant or person occupying the subject property to vacate said property.

TERMS: Ten percent (10%) of the purchase price as a cash deposit with the balance due and payable within 30 days of the day of sale.

Pill & Pill, PLLC,
Substitute Trustee

Richard A. Pill,
Member
P. O. Box 440,
85 Aikens Center,
Martinsburg, WV 25404
Phone 304-263-4971
Fax 304-267-5840
email: foreclosures@pillaw.com

LC-337707
09-03,10,17;2025

STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION DIVISION OF WATER AND WASTE MANAGEMENT

PUBLIC NOTICE

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S PUBLIC INFORMATION OFFICE, 601 57TH STREET, CHARLESTON SE, WEST VIRGINIA 25304-2345 TELEPHONE: (304) 926-0440.

APPLICATION FOR A WEST VIRGINIA NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM WATER POLLUTION CONTROL PERMIT

Public Notice No.: L-82-25

Public Notice Date: September 10, 2025

Paper: Charleston Gazette Mail

The following has applied for a WV NPDES Water Pollution Control Permit for this facility or activity:

Appl. No.: WV0078375

Applicant: APPALACHIAN POWER COMPANY 1 RIVERSIDE PLAZA COLUMBUS, OH 43215

Location: HANDLEY, KANAWHA COUNTY

Latitude: 38:11:29

Longitude: 81:22:14

Receiving Stream: KANAWHA RIVER

Activity: Operate and maintain disposal systems for the direct discharge of untreated industrial wastewater (non-contact cooling water) from Outlet Nos. 001, 002, 003, 005, 006, and 007 into the Kanawha River at Mile Point 82.8. Also, to discharge treated sewage and industrial wastewater via Outlet No. 008 into the Kanawha River at Mile Point 82.8. An antidegradation review has been conducted. Tier 1 protection is provided for all water use categories as defined in 47 CSR 2, Section 6.

Business conducted: Hydroelectric Power Station

Implementation: N/A

On the basis of review of the application, the "Water Pollution Control Act (Chapter 22, Article 11-8(a))," and the "West Virginia Legislative Rules," the State of West Virginia will act on the above application.

Any interested person may submit written comments on the draft permit and may request a public hearing by addressing such to the Director of the Division of Water and Waste Management within 30 days of the date of the public notice. Such comments or requests should be addressed to:

Director, Division of Water and Waste Management, DEP
ATTN: Lori Devereux, Permitting Section
601 57th Street SE
Charleston, WV 25304-2345
lori.k.devereux@wv.gov

The public comment period begins September 10, 2025 and ends October 10, 2025.

Comments received within this period will be considered prior to acting on the permit application. Correspondence should include the name, address and the telephone number of the writer and a concise statement of the nature of the issues raised. The Director shall hold a public hearing whenever a finding is made, on the basis of requests, that there is a significant degree of public interest on issues relevant to the Draft Permit(s). Interested persons may contact the public information office to obtain further information.

The application, draft permit and any required fact sheet may be inspected, by appointment, at the Division of Water and Waste Management Public Information Office, at 601 57th Street SE, Charleston, WV 25304-2345, between 8:00 a.m. and 4:00 p.m. on business days.

LC-345386
09-10;2025

Legal Notices

NOTICE TO REDEEM

**CERT NO. 2024-C-001242
KANAWHA COUNTY
WVTB LLC**

To: H & W HOLDINGS LLC, H & W HOLDINGS LLC, IRS, ATTN: ADVISORY CONSOLIDATED RECEIPTS, WV STATE TAX DEPARTMENT, or heirs at law, devisees, creditors, representatives, successors, assigns, all known heirs, guardians, conservators, fiduciaries, administrators, lienholders, co-owners, other parties having an undivided interest in the delinquent property, and other parties that may have any interest in the subject property.

**DISTRICT ST. ALBANS CORP
MAP 8
PARCEL 0007 0000 0000**

You will take notice that WVTB LLC, the purchaser of the following real estate, Certification No. 2024-C-001242, LOCATED IN ST. ALBANS CORP DISTRICT, LT 21 PT LT 20 BK B SYNDICATE PARK ADN which was returned delinquent or nonentered in the name of SMITH CHARLES E SR, and was sold by the deputy commissioner of delinquent and nonentered lands of Kanawha County at the sale for the delinquent taxes on APRIL 22, 2025. WVTB LLC requests that you be notified a deed for such real estate will be made on or after FEBRUARY 1, 2026, as provided by law, unless before that day you redeem such real estate. The amount needed to redeem on or before JANUARY 31, 2026 will be as follows:

Amount equal to the taxes and charges due on the date of the certification, with interest, for tax year ticket number 2023-83141 $1215.40

Back tax tickets, with interest, and charges due on the date of the certification for ticket number $0.00

Subsequent of taxes paid on the property, with interest to for tax year 2024-80764 $1040.26

Additional taxes with interest $0.00

Auditor's Certification, Publication, and Redemption fees plus interest $210.80

Amount paid for Title Examination, notice to redeem, publication, personal service, Secretary of State with interest $970.42

Additional Statutory Fees with interest $0.00

Total amount due and payable to WV State Auditor- cashier check, money order, certified or personal check $3436.88

You may redeem at any time before JANUARY 31, 2026 by paying the above total less any unearned interest.

If the above real estate is your primary residence, you may petition the Auditor to redeem the real estate in not more than three incremental payments that equal the total amount required to redeem the real estate prior to the issuance of the deed described above.

Given under my hand AUGUST 21, 2025
Christal G. Perry

Christal G. Perry, Deputy Commissioner of Delinquent and Nonentered Lands of KANAWHA County, State of West Virginia

Please return this letter and payment to the West Virginia State Auditor's Office, County Collections Division 1900 Kanawha Boulevard East Building 1, Room W-114 Charleston, West Virginia 25305

Questions please call 1-888-509-6568

LC-341289
09-03,10,17;2025

Legal Notices

NOTICE TO REDEEM

**CERT NO. 2023-C-000834
KANAWHA COUNTY
EQUITY HOLDINGS LIMITED LIA**

To: ROBINSON RENTAL PROPERTIES LLC ROBINSON RENTAL PROPERTIES LLC, RUBY SAUNDERS, JEREMY K. SAUNDERS, or heirs at law, devisees, creditors, representatives, successors, assigns, all known heirs, guardians, conservators, fiduciaries, administrators, lienholders, co-owners, other parties having an undivided interest in the delinquent property, and other parties that may have any interest in the subject property.

**DISTRICT WEST CORP
MAP 22
PARCEL 0370 0000 0000**

You will take notice that EQUITY HOLDINGS LIMITED LIABIL, the purchaser of the following real estate, Certification No. 2023-C-000834, LOCATED IN CHARLESTON WEST CORP DISTRICT, PT LT 6 BK 22 45x134 J B WALKER ADN which was returned delinquent or nonentered in the name of SAUNDERS RONALD K JR, and was sold by the deputy commissioner of delinquent and nonentered lands of Kanawha County at the sale for the delinquent taxes on APRIL 25, 2024. EQUITY HOLDINGS LIMITED LIABILITY COMPANY requests that you be notified a deed for such real estate will be made on or after NOVEMBER 1, 2025, as provided by law, unless before that day you redeem such real estate. The amount needed to redeem on or before OCTOBER 31, 2025 will be as follows:

Amount equal to the taxes and charges due on the date of the certification, with interest, for tax year ticket number 2022-42128 $940.35

Back tax tickets, with interest, and charges due on the date of the certification for ticket number 0.00

Subsequent of taxes paid on the property, with interest to for tax year 2023-41689 $816.90

Additional taxes with interest $0.00

Auditor's Certification, Publication, and Redemption fees plus interest $215.45

Amount paid for Title Examination, notice to redeem, publication, personal service, Secretary of State with interest $682.29

Additional Statutory Fees with interest $959.08

Total amount due and payable to WV State Auditor- cashier check, money order, certified or personal check $3614.07

You may redeem at any time before OCTOBER 31, 2025 by paying the above total less any unearned interest.

If the above real estate is your primary residence, you may petition the Auditor to redeem the real estate in not more than three incremental payments that equal the total amount required to redeem the real estate prior to the issuance of the deed described above.

Given under my hand AUGUST 22, 2025
Christal G. Perry

Christal G. Perry, Deputy Commissioner of Delinquent and Nonentered Lands of KANAWHA County, State of West Virginia

Please return this letter and payment to the West Virginia State Auditor's Office, County Collections Division 1900 Kanawha Boulevard East Building 1, Room W-114 Charleston, West Virginia 25305

Questions please call 1-888-509-6568

LC-339455
08-27/09-03,10;2025

Legal Notices

NOTICE TO REDEEM

**CERT NO. 2024-C-000922
KANAWHA COUNTY
WVTB LLC**

To: DARWISH GADIER, IRS, ATTN: ADVISORY CONSOLIDATED RECEIPTS, WV STATE TAX DEPARTMENT, or heirs at law, devisees, creditors, representatives, successors, assigns, all known heirs, guardians, conservators, fiduciaries, administrators, lienholders, co-owners, other parties having an undivided interest in the delinquent property, and other parties that may have any interest in the subject property.

**DISTRICT KANAWHA CITY CORP
MAP 21
PARCEL 0011 0030 0008**

You will take notice that WVTB LLC, the purchaser of the following real estate, Certification No. 2024-C-000922, LOCATED IN KANAWHA CITY CORP DISTRICT, UNIT 404 IMPERIAL TOWERS CONDO 575 SQ FT .733% C/E which was returned delinquent or nonentered in the name of DARWISH GADIER, and was sold by the deputy commissioner of delinquent and nonentered lands of Kanawha County at the sale for the delinquent taxes on APRIL 22, 2025. WVTB LLC requests that you be notified a deed for such real estate will be made on or after FEBRUARY 1, 2026, as provided by law, unless before that day you redeem such real estate. The amount needed to redeem on or before JANUARY 31, 2026 will be as follows:

Amount equal to the taxes and charges due on the date of the certification, with interest, for tax year ticket number 2023-45862 $1370.51

Back tax tickets, with interest, and charges due on the date of the certification for ticket number $0.00

Subsequent of taxes paid on the property, with interest to for tax year 2024-46060 $2245.46

Additional taxes with interest $0.00

Auditor's Certification, Publication, and Redemption fees plus interest $210.80

Amount paid for Title Examination, notice to redeem, publication, personal service, Secretary of State with interest $922.41

Additional Statutory Fees with interest $0.00

Total amount due and payable to WV State Auditor- cashier check, money order, certified or personal check $4749.18

You may redeem at any time before JANUARY 31, 2026 by paying the above total less any unearned interest.

If the above real estate is your primary residence, you may petition the Auditor to redeem the real estate in not more than three incremental payments that equal the total amount required to redeem the real estate prior to the issuance of the deed described above.

Given under my hand AUGUST 21, 2025
Christal G. Perry

Christal G. Perry, Deputy Commissioner of Delinquent and Nonentered Lands of KANAWHA County, State of West Virginia

Please return this letter and payment to the West Virginia State Auditor's Office, County Collections Division 1900 Kanawha Boulevard East Building 1, Room W-114 Charleston, West Virginia 25305

Questions please call 1-888-509-6568

LC-341823
09-03,10,17;2025

Legal Notices

NOTICE TO REDEEM

**CERT NO. 2024-C-001172
KANAWHA COUNTY
WVTB LLC**

To: JUNE NICHOLAS, OCCUPANT, IRS, ATTN: ADVISORY CONSOLIDATED RECEIPTS, WV STATE TAX DEPARTMENT, or heirs at law, devisees, creditors, representatives, successors, assigns, all known heirs, guardians, conservators, fiduciaries, administrators, lienholders, co-owners, other parties having an undivided interest in the delinquent property, and other parties that may have any interest in the subject property.

**DISTRICT JEFFERSON
MAP 7E
PARCEL 0061 0000 0000**

You will take notice that WVTB LLC, the purchaser of the following real estate, Certification No. 2024-C-001172, LOCATED IN JEFFERSON DISTRICT, LT 11 PT LT 10 & PAR BACK OF LT 11 SEC1 GREEN VAL which was returned delinquent or nonentered in the name of NICHOLAS JUNE H, and was sold by the deputy commissioner of delinquent and nonentered lands of Kanawha County at the sale for the delinquent taxes on APRIL 22, 2025. WVTB LLC requests that you be notified a deed for such real estate will be made on or after FEBRUARY 1, 2026, as provided by law, unless before that day you redeem such real estate. The amount needed to redeem on or before JANUARY 31, 2026 will be as follows:

Amount equal to the taxes and charges due on the date of the certification, with interest, for tax year ticket number 2023-74010 $129.32

Back tax tickets, with interest, and charges due on the date of the certification for ticket number $0.00

Subsequent of taxes paid on the property, with interest to for tax year 2024-74103 $64.95

Additional taxes with interest $0.00

Auditor's Certification, Publication, and Redemption fees plus interest $110.35

Amount paid for Title Examination, notice to redeem, publication, personal service, Secretary of State with interest $927.34

Additional Statutory Fees with interest $0.00

Total amount due and payable to WV State Auditor- cashier check, money order, certified or personal check $1231.96

You may redeem at any time before JANUARY 31, 2026 by paying the above total less any unearned interest.

If the above real estate is your primary residence, you may petition the Auditor to redeem the real estate in not more than three incremental payments that equal the total amount required to redeem the real estate prior to the issuance of the deed described above.

Given under my hand AUGUST 21, 2025
Christal G. Perry

Christal G. Perry, Deputy Commissioner of Delinquent and Nonentered Lands of KANAWHA County, State of West Virginia

Please return this letter and payment to the West Virginia State Auditor's Office, County Collections Division 1900 Kanawha Boulevard East Building 1, Room W-114 Charleston, West Virginia 25305

Questions please call 1-888-509-6568

LC-341331
09-03,10,17;2025

AMERICAN ELECTRIC POWER
BOUNDLESS ENERGY

1 Riverside Plaza
Columbus, OH 43215
aep.com

Director
Division of Water and Waste Management, DEP
ATTN: Lori Devereux, Permitting Section
601 57th Street, SE
Charleston, WV 25304-2345

October 10, 2025

Re: Appalachian Power Company – London Hydroelectric Plant
WV/NPDES Permit Application No. WV0078875 - Kanawha County
Draft WV/NPDES Permit Comments

Dear Ms. Devereux:

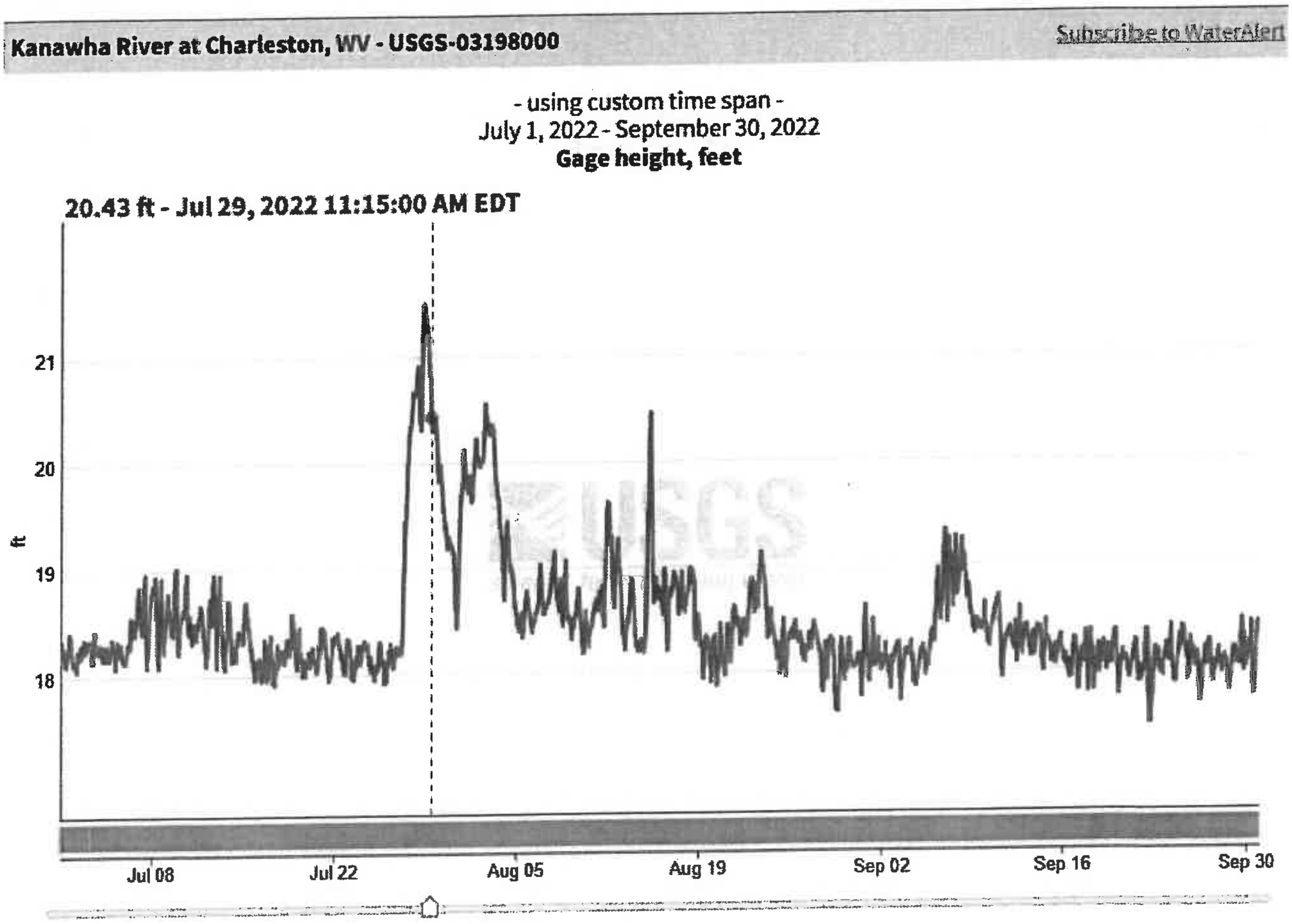
On behalf of Appalachian Power Company (APCo), American Electric Power Service Corporation hereby submits comments regarding the referenced Draft WV/NPDES Permit and Public Notice for London Hydroelectric Plant (London). We appreciate the opportunity to provide these comments to the West Virginia Department of Environmental Protection (DEP) and trust they will be taken into serious consideration.

1. Section A.001., A.002. and A.003 (Pages 3, 5 and 7 of 14):

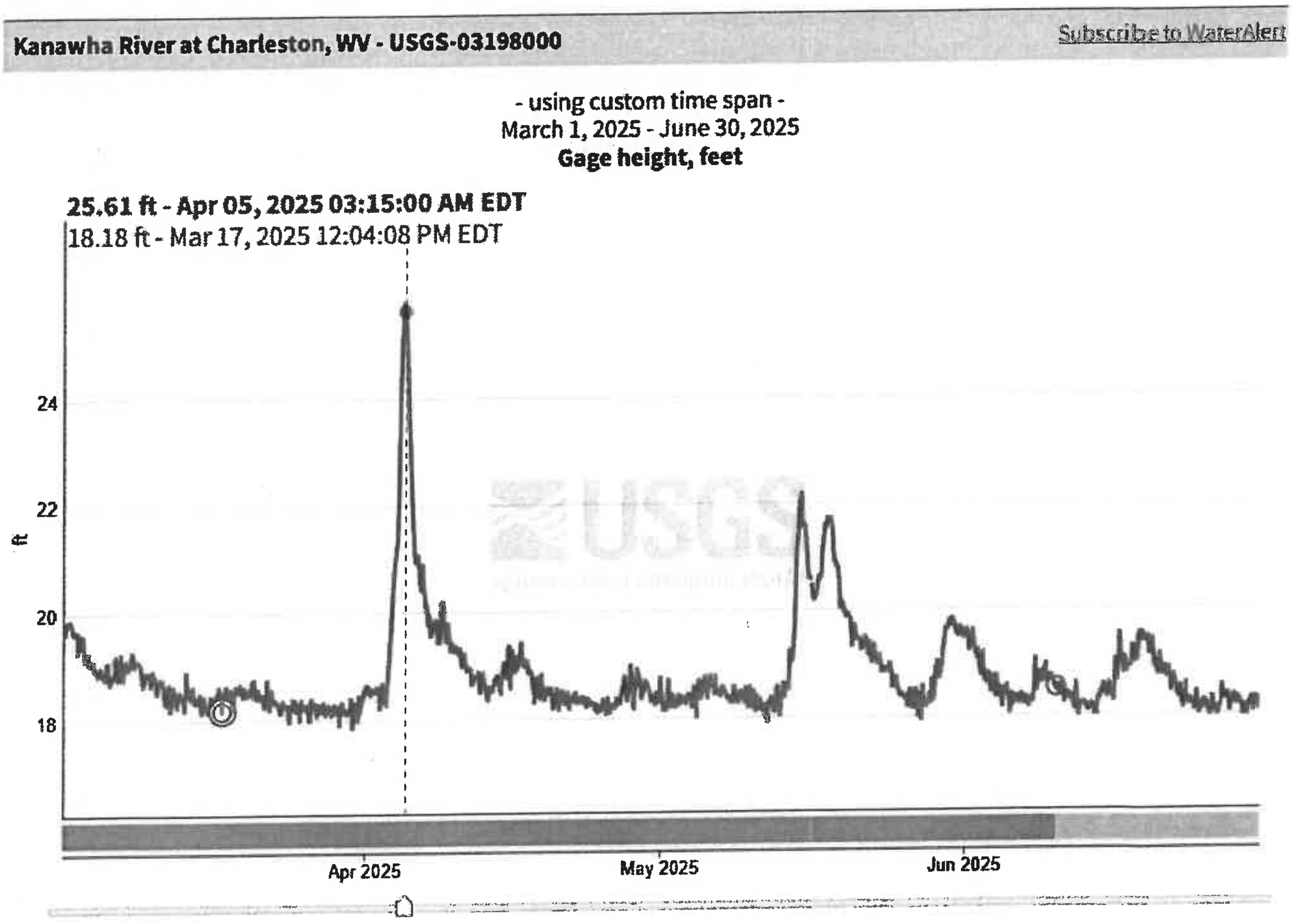
Given that the DEP considers London a minor discharge facility, it is unclear how the agency arrived at imposing effluent limitations for copper at Outlet 001, 1/quarter monitoring for copper at Outlet 002, and 1/quarter monitoring for copper, lead, aluminum and iron at Outlet 003. Based on our analysis utilizing the DEP's own methodology (without any mixing zone) for calculating a reasonable potential to exceed water quality standards for these metals, effluent limitations for copper at Outlet 001 is not justified or warranted. Please note that a mixing zone study was completed in 2012 and later verified in 2019, and has been previously submitted and approved by the DEP.

Outlets 001, 002 and 003 consist of once-through, non-contact cooling water with no chemical additions or additives. While copper, lead, aluminum and iron may inherently leach from the metal cooling water piping, this is the same process that occurs anywhere uncoated metal is exposed to water (i.e. exposed structural steel, drinking water piping, etc.). Although there are no effluent limitation guidelines for hydroelectric facilities, 40 CFR 423.12-15 does recognize the potential for detection of metals and other pollutants in once-through cooling water, but only regulates discharges for three parameters (polychlorinated biphenyls, free available chlorine and total residual chlorine).

Furthermore, the effluents from Outlets 001, 002 and 003 are filtered river water, so there is no reason to believe effluent quality would change drastically, unless river concentrations for these metals are elevated. As an example, the result for copper at Outlet 001 as reported on the September 2022 DMR was substantially elevated compared to monitoring results submitted under the current permit. We believe the result reported on the September 2022 DMR is an outlier due to the Kanawha River experiencing a large flood event during the monitoring period as shown below at the Kanawha River USGS gage station at Charleston (USGS 03198000).



Similarly, any elevated concentrations reported from the renewal sampling should be considered outliers and attributed to the Kanawha River experiencing a large flood event during the monitoring period as shown below at the Kanawha River USGS gage station at Charleston (USGS 03198000). Additionally, one sample under high flow conditions should not further justify an effluent limitation or additional monitoring for other parameters.



APCo requests removal of the effluent limitations for copper Outlet 001, 1/quarter monitoring for copper at Outlet 002, and 1/quarter monitoring for copper, lead, aluminum and iron at Outlet 003 as proposed in the Draft Permit. Again, it is unclear what basis and justification the DEP used to impose the draft effluent limitations and the 1/quarter monitoring as stated in the Draft Permit and discussed above. It is also unclear if the DEP applied the previously conducted and approved mixing zone study and verification study completed in 2012 and 2019, respectively. As such, we believe they are unjustified and unwarranted and any limitations and additional monitoring as proposed should be removed from the final permit.

We appreciate the opportunity to review the draft permit and provide the comments contained herein. If you have any questions or would like to further discuss any of the provided comments, please contact me at (614) 716-2240 or at jmmagalski@aep.com. Thank you for your attention to this matter.

Sincerely,

Jonathan M. Magalski
Environmental Manager, AEP Service Corporation

west virginia department of environmental protection

Division of Water and Waste Management
601 57th Street SE
Charleston, West Virginia 25304-2345
Phone: 304-926-0495/Fax: 304-926-0463

Harold D. Ward, Cabinet Secretary
https://dep.wv.gov

October 23, 2025

JONATHAN M. MAGALSKI
APPALACHIAN POWER COMPANY
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

CERTIFIED RETURN RECEIPT REQUESTED

Dear Permittee:

Enclosed please find WV/NPDES Permit Number WV0078875 dated October 23, 2025.

The Permittee's comments were received by letter dated October 10, 2025. The agency is providing the following responses to those comments.

Comment No. 1 : Copper Limits at Outlet 001

The copper limitations at Outlet 001 are water quality-based effluent limits and not technology-based based effluent limits. Whether a permit is considered a minor facility or a major facility is not relevant to the applicability of water quality standards. The agency already considered the value reported for copper on the September 2022 DMR as an outlier and did not include it in its assessment of reasonable potential for copper in the draft permit. The agency's reasonable potential assessment indicated that there was reasonable potential to exceed copper water quality criteria at the end of pipe as well as at the edge of the default mixing zone that was granted. Please note that this permit does not have a site-specific mixing zone. The 2012 mixing zone verification study conducted by Appalachian Power was conducted under lab conditions and not in the field. As a result, the agency did not accept the 2012 mixing zone verification study at that time. The follow up mixing zone verification study conducted by Appalachian Power in 2019 was for Outlet 004 only at the Winfield and Marmet facilities. As such, no site-specific mixing zone has been granted in prior permits issued to the London facility, nor in this permit. However, a default mixing zone was granted and considered in the determination of reasonable potential and water quality-based effluent limitations for copper at Outlet 001 and a compliance schedule was granted.

Comment No. 2 : Metals Monitoring at Outlets 001-003

The permittee supplied permit application data for several metals at Outlets 001-003. No other data exists for these metals and the data cannot just be ignored by the agency. The agency believes that the additional monitoring for aluminum, iron, and zinc at Outlet 001; copper at Outlet 002; and copper, lead, aluminum, and iron at Outlet 003 is warranted in the permit due to the levels reported in the permit application.

Please note that a Discharge Monitoring Report (DMR) is to be completed and submitted to this Division each month.

Finally note that copies of all future correspondence regarding the permit must be forwarded to the Field Inspector and Field Supervisor at the following address:

Department of Environmental Protection
Environmental Enforcement
601 57th Street
Charleston, WV 25304

Also, please note the attachment to this permit which describes the annual permit fee requirement. Reissuance of your permit does not change the annual fee billing cycle.

If you have any questions, please contact Brittany Ballengee of this Division at (304) 926-0499 at extension 43820, or by email at brittany.r.ballengee@wv.gov.

Sincerely,

Jeremy W. Bandy

Jeremy W. Bandy
Director

JWB:bb

Enclosures

Permit Number: WV0078875

Permittee: APPALACHIAN POWER COMPANY

cc: Env. Insp. Supv.
Env. Insp.

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER AND WASTE MANAGEMENT
601 57TH STREET SE
CHARLESTON, WV 25304-2345

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
WATER POLLUTION CONTROL PERMIT

NPDES PERMIT NO.: WV0078875
SUBJECT: Industrial Waste

ISSUE DATE: October 23, 2025
EFFECTIVE DATE : December 01, 2025
EXPIRATION DATE: October 22, 2030
SUPERSEDES: Permit No. WV0078875 dated February 08, 2021

LOCATION: HANDLEY **(City)** Kanawha **(County)** Upper Kanawha River **(Drainage Basin)**

See the next page for a list of Outlets.

TO WHOM IT MAY CONCERN:

This is to certify that: APPALACHIAN POWER COMPANY
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

is hereby granted a West Virginia NPDES Water Pollution Control Permit to:
operate and maintain disposal systems for the direct discharge of untreated industrial wastewater (non-contact cooling water) from Outlet Nos. 001, 002, 003, 005, 006 and 007 into the Kanawha River at Mile Point 82.8. Also, to operate and maintain disposal systems for the direct discharge of treated sewage and industrial sump wastewater via Outlet No. 008 into the Kanawha River at Mile Point 82.8.

This permit is subject to the following terms and conditions :
The information submitted on and with Permit Application No. WV0078875 dated the 7th day of July 2025 is all hereby made terms and conditions of this Permit with like effect as if all such permit application information were set forth herein and with other conditions set forth in Sections A, B, C and Appendix A.

The validity of this permit is contingent upon the payment of the applicable annual permit fee, as required by Chapter 22, Article 11, Section 10 of the Code of West Virginia.

Inspectable Unit	Latitude	Longitude	Receiving Stream	Dist. to Stream Mouth (in Mile)	Milepost
001	38°11'29"	81°22'14"	KANAWHA RV	N/A	82.8
002	38°11'29"	81°22'14"	KANAWHA RV	N/A	82.8
003	38°11'29"	81°22'14"	KANAWHA RV	N/A	82.8
005	38°11'29"	81°22'14"	KANAWHA RV -- No Monitoring Required	N/A	82.8
006	38°11'29"	81°22'14"	KANAWHA RV -- No Monitoring Required	N/A	82.8
007	38°11'29"	81°22'14"	KANAWHA RV -- No Monitoring Required	N/A	82.8
008	38°11'29"	81°22'14"	KANAWHA RV	N/A	82.8

A.001 DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS:

Permit Limits

During the period beginning 12/1/2025 and lasting through midnight 10/22/2030 the permittee is authorized to discharge from Outlet Number(s) 001 (Noncontact Cooling Water)

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations: Quantity		Units		Other Units		Units	Monitoring Requirements: Measurement Frequency	Sample Type
50050 - (Flow,in Conduit or thru plant) (Year Round) (ML-1) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mgd	1/month	Estimated
01119 - (Copper, Total Recoverable) (Year Round) (ML-1) (RF-A) Interim: 12/1/2025 to 11/30/2027	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/month	Grab
01119 - (Copper, Total Recoverable) (Year Round) (ML-1) (RF-A) Final: 12/01/2027 to 10/22/2030	N/A	N/A	N/A	N/A	0.009 Avg. Monthly	0.027 Max. Daily	mg/l	1/month	Grab
01094 - (Zinc, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
01104 - (Aluminum, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
00980 - (Iron, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
00018 - (Temp. Diff. Discharge/Upstrea (Year Round) (ML-2) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Calculated
Temperature Difference between the Effluent and the Upstream/Intake. Refer to Section C.16.									
00011 - (Temperature, F) (Year Round) (ML-1) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Insitu
Effluent Temperature. Refer to Section C.16.									

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):
Outlet 001, at the sampling port on the effluent pipe prior to discharging to the Kanawha River. Outlet 001 sampling results shall be deemed representative of Outlet 005.

This discharge shall comply with Appendix A - I MANAGEMENT CONDITIONS I - 12.

A.001 DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS:

Permit Limits

During the period beginning 12/1/2025 and lasting through midnight 10/22/2030 the permittee is authorized to discharge from Outlet Number(s) 001 (Noncontact Cooling Water)

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations							Monitoring Requirements	
	Quantity		Units		Other Units		Units	Measurement Frequency	Sample Type
00011 - (Temperature, F) (Year Round) (ML-7) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Insitu

Upstream/Intake Temperature. Refer to Section C.16.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):
Outlet 001, at the sampling port on the effluent pipe prior to discharging to the Kanawha River. Outlet 001 sampling results shall be deemed representative of Outlet 005.

This discharge shall comply with Appendix A - I MANAGEMENT CONDITIONS I - 12.

A.002 DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS:

Permit Limits

During the period beginning 12/1/2025 and lasting through midnight 10/22/2030 the permittee is authorized to discharge from Outlet Number(s) 002 (Noncontact Cooling Water)

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations							Monitoring Requirements	
	Quantity		Units	Other Units			Units	Measurement Frequency	Sample Type
50050 - (Flow,in Conduit or thru plant) (Year Round) (ML-1) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mgd	1/month	Estimated
01119 - (Copper, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
00018 - (Temp. Diff. Discharge/Upstrea (Year Round) (ML-2) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Calculated
Temperature Difference between the Effluent and the Upstream/Intake. Refer to Section C.16.									
00011 - (Temperature, F) (Year Round) (ML-1) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Insitu
Effluent Temperature. Refer to Section C.16.									
00011 - (Temperature, F) (Year Round) (ML-7) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Insitu
Upstream/Intake Temperature. Refer to Section C.16.									

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):
Outlet 002, at the sampling port on the effluent pipe prior to discharging to the Kanawha River. Outlet 002 sampling results shall be deemed representative of Outlet 006.

This discharge shall comply with Appendix A - I MANAGEMENT CONDITIONS I - 12.

A.003 DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS:

Permit Limits

During the period beginning 12/1/2025 and lasting through midnight 10/22/2030 the permittee is authorized to discharge from Outlet Number(s) 003 (Noncontact Cooling Water)

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations: Quantity		Units	Other Units			Units	Monitoring Requirements: Measurement Frequency	Sample Type
50050 - (Flow,in Conduit or thru plant) (Year Round) (ML-1) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mgd	1/month	Estimated
01119 - (Copper, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
01114 - (Lead, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
01104 - (Aluminum, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
00980 - (Iron, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
00018 - (Temp. Diff. Discharge/Upstrea (Year Round) (ML-2) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Calculated
Temperature Difference between the Effluent and the Upstream/Intake. Refer to Section C.16.									
00011 - (Temperature, F) (Year Round) (ML-1) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Insitu
Effluent Temperature. Refer to Section C.16.									
00011 - (Temperature, F) (Year Round) (ML-7) (RF-A)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	DEG.F	1/month	Insitu
Upstream/Intake Temperature. Refer to Section C.16.									

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):
Outlet 003, at the sampling port on the effluent pipe prior to discharging to the Kanawha River. Outlet 003 sampling results shall be deemed representative of Outlet 007.

This discharge shall comply with Appendix A - I MANAGEMENT CONDITIONS I - 12.

A.008 DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS:

Permit Limits

During the period beginning 12/1/2025 and lasting through midnight 10/22/2030 the permittee is authorized to discharge from Outlet Number(s) 008 (Sanitary, Cooling Water, Storm Water Runoff, Other)

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations							Monitoring Requirements	
	Quantity		Units	Other Units			Units	Measurement Frequency	Sample Type
50050 - (Flow,in Conduit or thru plant) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mgd	1/quarter	Estimated
00310 - (BOD, 5-Day 20 Deg.C) (Year Round) (ML-1) (RF-B)	Rpt Only Avg. Monthly	Rpt Only Max. Daily	Lbs/Day	N/A	30 Avg. Monthly	60 Max. Daily	mg/l	1/quarter	Grab
00530 - (Total Suspended Solids) (Year Round) (ML-1) (RF-B)	Rpt Only Avg. Monthly	Rpt Only Max. Daily	Lbs/Day	N/A	30 Avg. Monthly	60 Max. Daily	mg/l	1/quarter	Grab
74055 - (Coliform, Fecal) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	200 Mon. Geo. Mean	400 Max. Daily	Cnts/100ml	1/quarter	Grab
00400 - (pH) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	6 Inst. Min.	N/A	9 Inst. Max.	S.U.	1/quarter	Grab
00610 - (Ammonia Nitrogen) (Year Round) (ML-1) (RF-B)	Rpt Only Avg. Monthly	Rpt Only Max. Daily	Lbs/Day	N/A	15 Avg. Monthly	30 Max. Daily	mg/l	1/quarter	Grab
01119 - (Copper, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
01114 - (Lead, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):
Outlet 008: Discharge from ultraviolet disinfection unit.

This discharge shall comply with Appendix A - I MANAGEMENT CONDITIONS I - 12.

A.008 DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS:

Permit Limits

During the period beginning 12/1/2025 and lasting through midnight 10/22/2030 the permittee is authorized to discharge from Outlet Number(s) 008 (Sanitary, Cooling Water, Storm Water Runoff, Other)

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations							Monitoring Requirements	
	Quantity		Units		Other Units		Units	Measurement Frequency	Sample Type
01094 - (Zinc, Total Recoverable) (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab
00552 - (Oil and Grease, Hexane EXTI (Year Round) (ML-1) (RF-B)	N/A	N/A	N/A	N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	mg/l	1/quarter	Grab

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):
Outlet 008: Discharge from ultraviolet disinfection unit.

This discharge shall comply with Appendix A - I MANAGEMENT CONDITIONS I - 12.

B. SCHEDULE OF COMPLIANCE

1. The permitee shall achieve compliance with the provisions for waste treatment and the monitoring requirements specified in the permit in accordance with the following schedule :

Mar 01, 2026:	The permittee shall submit a plan of action outlining measures to be taken to achieve compliance with the final effluent limitations for copper at Outlet 001.
Jun 01, 2026:	The permittee shall submit a quarterly progress report summarizing actions that have been taken to achieve compliance with the final effluent limitations for copper at Outlet 001.
Sep 01, 2026:	The permittee shall submit a quarterly progress report summarizing actions that have been taken to achieve compliance with the final effluent limitations for copper at Outlet 001.
Dec 01, 2026:	The permittee shall have completed any designs and/or studies necessary to comply with the final effluent limitations for copper at Outlet 001. The permittee shall submit a quarterly progress report summarizing actions that have been taken to achieve compliance with the final effluent limitations for copper at Outlet 001.
Mar 01, 2027:	The permittee shall submit a quarterly progress report summarizing actions that have been taken to achieve compliance with the final effluent limitations for copper at Outlet 001.
Jun 01, 2027:	The permittee shall begin any necessary construction of upgrades or system modifications to achieve compliance with the final effluent limitations for copper at Outlet 001. The permittee shall submit a quarterly progress report summarizing actions that have been taken to achieve compliance with the final effluent limitations for copper at Outlet 001.
Sep 01, 2027:	The permittee shall submit a quarterly progress report summarizing actions that have been taken to achieve compliance with the final effluent limitations for copper at Outlet 001.
Dec 01, 2027:	The permittee shall complete any necessary construction/upgrades and achieve compliance with the final effluent limitations for copper at Outlet 001.

2. Reports of compliance or non-compliance with, and progress reports on interim and final requirements contained in the above compliance schedule, if any, shall be postmarked no later than 14 days following each schedule date.

Section C - Other Requirements

01. The permittee shall practice good housekeeping including maintaining the facility grounds. There shall be no scattered parts, equipment, debris, etc. Any and all drums shall be either stored in a covered area or kept upon pallets and properly sealed.

02. The issuance of this permit shall not relieve the permittee of the obligation to comply with any other federal, state or local laws. Compliance with this permit does not relieve the permittee from the obligation of Section 311 of the Clean Water Act. This permit does not authorize spills of hazardous substances/wastes from any permitted outlet into waters of the State. Such incidents are to be reported in accordance with Sections IV.1 and IV.2 of Appendix A of this permit.

03. Upon review of information submitted under terms and conditions of this permit, the permit may be modified to require additional effluent limitations/monitoring requirements and/or improved best management practices.

04. The permittee shall notify the Division of Water and Waste Management immediately when it becomes aware of any migration of any pollutant from any unpermitted source (such as contaminated groundwater and/or storm water) into surface waters of the State.

05. All trash generated at the permittee's facility shall be properly disposed in accordance with solid waste regulations. Trash and debris removed from the rake/sluicing system shall not be returned to the waterway and shall be properly disposed of.

06. The permittee shall submit each month according to the enclosed format, a Discharge Monitoring Report (DMR) indicating in terms of concentration and/or quantities the values of the constituents listed in Section A analytically determined to be in the plant effluent(s). Additional information pertaining to effluent monitoring and reporting can be found in Section III of Appendix A.

07. The required DMRs shall be received by the agency no later than 25 days following the end of the reporting period in accordance with the following requirements. The agency is now requiring the permittee to utilize our electronic discharge monitoring report (eDMR) system which is now mandatory. The permittee is not required to submit hard copies of the DMRs to the addresses listed below when using eDMR. Special circumstances may result in the agency granting an exemption to eDMR and are considered on case by case basis. If the permittee was exempted by the agency from using the eDMR system, then the permittee is required to send hard copies to the addresses below. The permittee may contact the agency for more information about the eDMR system and potential exemptions from using it. Regardless, in accordance with Appendix A, Section III.6 of this permit, the permittee shall maintain copies of DMRs (either hard copies or electronic copies) at the plant site and the DMRs shall be made readily available upon request for DEP personnel.

Director
Division of Water and Waste Management
601 57th Street, SE
Charleston, West Virginia 25304
Attn: Permitting Branch

Department of Environmental Protection
Environmental Enforcement
601 57th Street, SE
Charleston, West Virginia 25304

08. Effluent monitoring for the following pollutants shall be conducted using the most sensitive methods and detection levels commercially available and economically feasible. The following methods are to be used unless the permittee desires to use an EPA Approved Test Method with a listed lower method detection level. Regardless, it is recognized that detection levels can vary from analysis to analysis and that non-detect results at a different MDL for the specified test method would not constitute a permit violation.

Parameter	EPA Method No.	Method Detection Level (ug/l)
Aluminum, Total Recoverable	200.8	1.0
Copper, Total Recoverable	200.8	0.5
Iron, Total Recoverable	200.7	3.0
Lead, Total Recoverable	200.8	0.6
Zinc, Total Recoverable	200.8	1.8

Section C - Other Requirements

09. The analytical test procedures, set forth in 40 CFR Part 136, prescribe colorimetric methods for certain parameters. The digestion process for the performance of total recoverable is not sufficient for the utilization of a colorimetric procedure. Therefore, colorimetric procedures shall not be acceptable for the analysis of parameters prescribed as total recoverable.

10. Any "not detected (ND)" results by the permittee must be "ND" at the method detection limit (MDL) for the test method used for that parameter and must be reported as less than the MDL used. The permittee may not report the result as zero, "ND", or report the result as less than a minimum level (ML), reporting limit (RL), or practical quantitation limit (PQL).

    When averaging values of analytical results for DMR reporting purposes for monthly averages, the permittee should use actual analytical results when these results are greater than or equal to the MDL and should use zero (0) when these results are less than the MDL. If all analytical results are non-detect at the MDL (<MDL), then the permittee should use the actual MDL in the calculation for averaging and report the result as less than the average calculation.

11. In incidences where a specific test method is not defined, the permittee shall utilize an EPA approved method with a method detection limit (MDL) sensitive enough to confirm compliance with the permit effluent limit for that parameter. If a MDL is not sensitive enough to confirm compliance, the most sensitive approved method must be used. If a more sensitive EPA approved method becomes available, that method shall be used. Should the current and/or new method not be sensitive enough to confirm compliance with the permitted effluent limit, analytical results reported as "not detected" at the MDL of the most sensitive method available will be deemed compliant for purposes of permit compliance. Results shall be reported on the Discharge Monitoring Reports as a numeric value less than the MDL.

12. The permittee shall not use alternate DMRs without prior approval from this Agency.

13. The Groundwater Protection Plan (GPP) shall be maintained at the plant site and shall be available for inspection by the Division of Water and Waste Management personnel.

14. The permittee shall utilize EPA Method No. 1664 A (gravimetric analysis using the hexane extractable method [HEM]) for the analysis of oil and grease.

15. If any portion of the Permittee's discharge that is identified as being subject to Federal Effluent Guideline(s) and the new or revised requirements of the Federal Effluent Guideline(s) are not currently in this permit, the Director may reopen or reissue this permit to incorporate additional, more stringent requirements or limitations.

16. Upstream/Intake temperature monitoring and discharge temperature monitoring required in Section A of this permit shall be collected concurrently. There shall be no more than thirty minutes between monitoring collected at the intake and the discharge.

17. Certain characteristics of sewage, industrial wastes, and other wastes cause pollution and are objectionable in all waters of the State. Certain conditions are not to be allowed in any of the waters of the State. Therefore, the effluent discharge, and specifically the discharge via Outlets 001, 002, 003, 005, 006, 007 and 008, from the permittee's treatment facility shall not cause violation of Appendix A, Section I.12.

18. The permittee shall not use any treatment chemicals or additives that contain, or create as a by-product, total residual chlorine on any discharge. The permittee must first modify this permit for the use of any such chemicals.

19. Outlets 005, 006, and 007 are submerged outlets and no monitoring is currently required. However, the discharges from these outfalls shall not cause violation of Appendix A, Section I.12.

20. There shall be no net addition of pollutants to the river from operation of the filter backwash from service water pump house or from head cover leakage. Trash and debris removed from the rake/sluicing system shall not be returned to the waterway and shall be properly disposed of.

21. A list of chemicals used at the facility was submitted with the permit application. The agency does not object to the use of these chemicals contingent upon continued use is as recommended by the manufacturer and application of each individual chemical shall not result in the exceedance of 1/10th (for non-bio-accumulative chemicals) or 1/100th (for bioaccumulated chemicals) of the lowest LC50 listed in each products Material Safety Data Sheet (MSDS) at any Outlet.

Section C - Other Requirements

22. The permittee has provided information in the permit application that it does not intake more than 2 MGD on average and use more than 25% of the intake water for cooling purposes. If the permittee significantly alters its intake structure or increases the amount of cooling water used in its overall flow balance to exceed the above noted thresholds, the permittee shall update and resubmit the applicable information as required in 40 CFR 122.21(r)(2) - (r)(8) along with a major permit modification application.

The herein-described activity is to be extended, modified, added to, made, enlarged, acquired, constructed or installed, and operated, used and maintained strictly in accordance with the terms and conditions of this permit, with the plans and specifications submitted with Permit Application No. WV0078875; with the plan of maintenance and method of operation thereof submitted with such application(s); and with any applicable rules and regulations promulgated by the Environmental Quality Board and the Secretary of the Department of Environmental Protection.

Failure to comply with the terms and conditions of this permit, with the plans and specifications submitted with Permit Application No. WV0078875; and with the plan of maintenance and method of operation thereof submitted with such application(s) shall constitute grounds for the revocation or suspension of this permit and the invocation of all the enforcement procedures set forth in Chapter 22, Article 11, or 15 of the Code of West Virginia.

This permit is issued in accordance with the provisions of Chapter 22, Article 11 and 12 and/or 15 of the Code of West Virginia and is transferable under the terms of Section 11 of Article 11.

Jeremy W. Bandy

Jeremy W. Bandy, Director

Appendix A

I. MANAGEMENT CONDITIONS:

1. Duty to Comply

a) The permittee must comply with all conditions of this permit. Permit noncompliance constitutes a violation of the CWA and State Act and is grounds for enforcement action; for permit modification, revocation and reissuance, suspension or revocation; or for denial of a permit renewal application.

b) The permittee shall comply with all effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

2. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for a new permit at least 180 days prior to expiration of the permit.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit, which has a reasonable likelihood of adversely affecting human health or the environment.

4. Permit Actions

This permit may be modified, revoked and reissued, suspended, or revoked for cause. The filing of a request by the permittee for permit modification, revocation and reissuance, or revocation, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

5. Property Rights

This permit does not convey any property rights of any sort or any exclusive privilege.

6. Signatory Requirements

All applications, reports, or information submitted to the Director shall be signed and certified as required in Title 47, Series 10 , Section 4.6 of the West Virginia Legislative Rules.

7. Transfers

This permit is not transferrable to any person except after notice to the Director. The Director 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.

8. Duty to Provide Information

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

9. 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 Director, it shall promptly submit such facts or information.

10. Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

a) Enter upon the permittee's premises in which an effluent source or activity is located, or where records must be kept under the conditions of this 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 State Act, any substances or parameters at any location.

11. Permit Modification

This permit may be modified, suspended, or revoked in whole or in part during its term in accordance with the provisions of Chapter 22-11-12 of the Code of West Virginia.

12. Water Quality

This discharge shall not cause or materially contribute to: distinctly visible floating or settable solids, suspended solids, scum, foam or oily slicks; deposits or sludge bank on the bottom; odors in the vicinity of the waters; taste or odor that would adversely affect the designated uses of the affected waters; distinctly visible color which may impair or interfere with the designated uses of the affected waters; and shall not cause a fish or mussel kill. The limitations and conditions in this permit for the discharges identified in this permit are limitations and conditions that are necessary to meet applicable West Virginia water quality standards, Requirements Governing Water Quality Standards 47 CSR 2.

13. Outlet Markers

A permanent marker at the establishment shall be posted in accordance with Title 47, Series 11, Section 9 of the West Virginia Legislative Rules.

14. Liabilities

a) Any person who violates a permit condition implementing sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $25,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing sections 301, 302, 306, 307, 308 or 405 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

b) Any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 2 years, or by both.

c) 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 noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 2 years, or by both.

d) Nothing in I.14 a), b), and c) shall be construed to limit or prohibit any other authority the Director may have under the State Water Pollution Control Act, Chapter 22, Article 11.

II. OPERATION AND MAINTENANCE:

1. 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. Unless otherwise required by Federal or State law, this provision requires the operation of back-up auxiliary facilities or similar systems which are installed by the permittee only when the operation is necessary to achieve compliance with the conditions of the permit. For domestic waste treatment facilities, waste treatment operators as classified by the WV Bureau of Public Health Laws, W. Va. Code Chapter 16-1, will be required except that in circumstances where the domestic waste treatment facility is receiving any type of industrial waste, the Director may require a more highly skilled operator.

2. 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 the permit.

3. Bypass

a) Definitions
   (1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility; and
   (2) "Severe property damage" means 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.

b) 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 provision of II.3.c) and II.3.d) of this permit.

c) (1) If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass;
   (2) If the permittee does not know in advance of the need for bypass, notice shall be submitted as required in IV.2.b) of this permit.

d) Prohibition of bypass
   (1) Bypass is permitted only under the following conditions, and the Director may take enforcement action against a permittee for a bypass, unless;
      (A) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
      (B) 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 backup equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
      (C) The permittee submitted notices as required under II.3.c) of this permit.
   (2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed in II.3.d.(1) of this permit.

4. Upset

a) Definition. "Upset" means 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 preventative maintenance, or careless or improper operation.

b) Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitation if the requirements of II.4.c) 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.

c) 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:
   (1) An upset occurred and that the permittee can identify the cause(s) of the upset;
   (2) The permitted facility was at the time being properly operated;
   (3) The permittee submitted notice of the upset as required in IV.2.b) of this permit.
   (4) The permittee complied with any remedial measures required under I.3. of this permit.

d) Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

5. Removed Substances

Where removed substances are not otherwise covered by the terms and conditions of this permit or other existing permit by the Director, any solids, sludges, filter backwash or other pollutants (removed in the course of treatment or control of wastewaters) and which are intended for disposal within the State, shall be disposed of only in a manner and at a site subject to the approval by the Director. If such substances are intended for disposal outside the State or for reuse, i.e., as a material used for making another product, which in turn has another use, the permittee shall notify the Director in writing of the proposed disposal or use of such substances, the identity of the prospective disposer or users, and the intended place of disposal or use, as appropriate.

III. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. Reporting

a) Permittee shall submit, according to the enclosed format, a Discharge Monitoring Report (DMR) indicating in terms of concentration, and/or quantities, the values of the constituents listed in Part A analytically determined to be in the plant effluent(s). DMR submissions shall be made in accordance with the terms contained in Section C of this permit.

b) Enter reported average and maximum values under "Quantity" and "Concentration" in the units specified for each parameter, as appropriate.

c) Specify the number of analyzed samples that exceed the allowable permit conditions in the columns labeled "N.E." (i.e., number exceeding).

d) Specify frequency of analysis for each parameter as number of analyses/specified period (e.g.,3/month is equivalent to 3 analyses performed every calendar month). If continuous, enter "Cont.". The frequency listed on format is the minimum required.

3. Test Procedures

Samples shall be taken, preserved and analyzed in accordance with the latest edition of 40 CFR Part 136, unless other test procedures have been specified elsewhere in this permit.

4. Recording of Results

For each measurement or sample taken pursuant to the permit, the permittee shall record the following information.

a) The date, exact place, and time of sampling or measurement;

b) The date(s) analyses were performed;

c) The individual(s) who performed the sampling or measurement;

d) The individual(s) who performed the analyses; if a commercial laboratory is used, the name and address of the laboratory;

e) The analytical techniques or methods used, and

f) The results of such analyses. Information not required by the DMR form is not to be submitted to this agency, but is to be retained as required in III.6.

5. Additional Monitoring by Permittee

If the permittee monitors any pollutant at any monitoring point specified in this permit more frequently than required by this permit, using approved test procedures or others as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report Form. Such increased frequency shall also be indicated. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

6. Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original chart recordings for continuous monitoring instrumentation, copies of all reports required by this 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 Director at any time.

7. Definitions

a) "Daily discharge" means the discharge of a pollutant measured during a calendar day or within any specified period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the day.

b) "Average monthly discharge limitation" means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

c) "Maximum daily discharge limitation" means the highest allowable daily discharge.

d) "Composite Sample" is a combination of individual samples obtained at regular intervals over a time period. Either the volume of each individual sample is proportional to discharge flow rates or the sampling interval (for constant volume samples) is proportional to the flow rates over the time period used to produce the composite. The maximum time period between individual samples shall be two hours.

e) "Grab Sample" is an individual sample collected in less than 15 minutes.

f) "is" = immersion stabilization - a calibrated device is immersed in the effluent stream until the reading is stabilized.

g) The "daily average temperature" means the arithmetic average of temperature measurements made on an hourly basis, or the mean value plot of the record of a continuous automated temperature recording instrument, either during a calendar month, or during the operating month if flows are of shorter duration.

h) The "daily maximum temperature" means the highest arithmetic average of the temperatures observed for any two (2) consecutive hours during a 24 hour day, or during the operating day if flows are of shorter duration.

i) The "monthly average fecal coliform" bacteria is the geometric average of all samples collected during the month.

j) "Measured Flow" means any method of liquid volume measurement, the accuracy of which has been previously demonstrated in engineering practice, or which a relationship to absolute volume has been obtained.

k) "Estimate" means to be based on a technical evaluation of the sources contributing to the discharge including, but not limited to pump capabilities, water meters and batch discharge volumes.

l) "Non-contact cooling water" means the water that is contained in a leak-free system, i.e., no contact with any gas, liquid, or solid other than the container for transport; the water shall have no net poundage addition of any pollutant over intake water levels, exclusive of approved anti-fouling agents.

IV. OTHER REPORTING

1. Reporting Spills and Accidental Discharges

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities or penalties established pursuant to Title 47, Series 11, Section 2 of the West Virginia Legislative Rules promulgated pursuant to Chapter 22, Article 11. Attached is a copy of the West Virginia Spill Alert System for use in complying with Title 47, Series 11, Section 2 of the Legislative rules as they pertain to the reporting of spills and accidental discharges.

2. Immediate Reporting

a) The permittee shall report any noncompliance which may endanger health or the environment immediately after becoming aware of the circumstances by using the Agency's designated spill alert telephone number. A written submission shall be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

b) The following shall also be reported immediately:

(1) Any unanticipated bypass which exceeds any effluent limitation in the permit;

(2) Any upset which exceeds any effluent limitation in the permit; and

(3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit shall be reported immediately. This list shall include any toxic pollutant or hazardous substance, or any pollutant specifically identified as the method to control a toxic pollutant or hazardous substance.

c) The Director may waive the written report on a case-by-case basis if the oral report has been received in accordance with the above.

d) Compliance with the requirements of IV.2 of this section, shall not relieve a person of compliance with Title 47, Series 11, Section 2.

3. Reporting Requirements

a) Planned changes. The permittee shall give notice to the Director of any planned physical alterations or additions to the permitted facility which may affect the nature or quantity of the discharge. Notice is required when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in Section 13.7.b of Series 10, Title 47; or

(2) 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 IV.2 of this section.

b) Anticipated noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

c) In addition to the above reporting requirements, all existing manufacturing, commercial, and silvicultural discharges must notify the Director in writing as soon as they know or have reason to believe:

(1) That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, or any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(A) One hundred micrograms per liter (100 ug/l);

(B) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitro phenol; and for 2-methyl 4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

(C) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with Section 4.4.b.9 of Series10, Title 47.

(D) The level established by the Director in accordance with Section 6.3.g of Series 10, Title 47;

(2) That any activity has occurred or will occur which would result in any discharge (on a non-routine or infrequent basis) of a toxic which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(A) Five hundred micrograms per liter (500 ug/l);

(B) One milligram per liter (1 mg/l) for antimony;

(C) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with Section 4.4.b.7 of Series 10, Title 47;

(D) The level established by the Director in accordance with Section 6.3.g of Series 10, Title 47.

(3) That they have begun or expect to begin to use or manufacture as an intermediate or final product or by-product of any toxic pollutant which was not reported in the permit application under Section 4.4.b.9 of Series 10, Title 47 and which will result in the discharge on a routine or frequent basis of that toxic pollutant at levels which exceed five times the detection limit for that pollutant under approved analytical procedure.

(4) That they have begun or expect to begin to use or manufacture as an intermediate or final product or by-product of any toxic pollutant which was not reported in the permit application under Section 4.4.b.9 of Series 10, Title 47 and which will result in the discharge on a non-routine or infrequent basis of that toxic pollutant at levels which exceed ten times the detection limit for that pollutant under approved analytical procedure.

4. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under the above paragraphs at the time monitoring reports are submitted. The reports shall contain the information listed in IV.2.a). Should other applicable noncompliance reporting be required, these terms and conditions will be found in Section C of this permit.

WRD 2A-82

STATE OF WEST VIRGINIA
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
DISCHARGE MONITORING REPORT

Permit Limits

FACILITY NAME: (London Hydroelectric Plant) APPALACHIAN POWER COMPANY
LOCATION OF FACILITY: HANDLEY; Kanawha County
PERMIT NO.: WV0078875 001
WASTELOAD FOR THE MONTH OF:

CERTIFIED LABORATORY NAME:
CERTIFIED LABORATORY ADDRESS:
INDIVIDUAL PERFORMING ANALYSIS:

Parameter		Quantity		Units	N.E.	Other Units			CEL*	Units	N.E.	Measurement Frequency	Sample Type
50050 (ML-1) RF-A Flow,in Conduit or thru plant Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mgd		1/month	Estimated
01119 (ML-1) RF-A Copper, Total Recoverable Year Round Interim: 12/1/2025 to 11/30/2027	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/month	Grab
01119 (ML-1) RF-A Copper, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	0.009 Avg. Monthly	0.027 Max. Daily	N/A	mg/l		1/month	Grab
01094 (ML-1) RF-B Zinc, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab
01104 (ML-1) RF-B Aluminum, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab
00980 (ML-1) RF-B Iron, Total Recoverable Year Round	Reported												
	Permit Limits	N/A	N/A			N/A	Rpt Only Avg. Monthly	Rpt Only Max. Daily	N/A	mg/l		1/quarter	Grab

* CEL = Compliance Evaluation Level

Name of Principal Executive Officer	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 a fine and imprisonment for knowing violations.	Date Completed
		Signature of Principal Executive Officer or Authorized Agent
Title of Officer		