COPY

DATE: 12/6/07

TO: Permit Section, WPC

FROM: Environmental Assistance Center- Knoxville, WPC

SUBJECT: Application* ✓ Draft to EAC-K_____ Draft to Applicant_____
Revised App._____ Revised Draft to EAC-K_____ Revised Draft to

Original in Mail cube drawer #1

NAME TVA - KINGSTON FOSSIL PLANT

COUNTY ROANE. TN

NPDES PERMIT NO. 0005452 STATE W.O. PERMIT NO._____

DATE RECEIVED 12/5/07 DATE DUE_____

THIS IS A RENEWAL, BUT NOTE CHANGES IN THE PROCESS.

WLS 12/7/07

*Is this application for a **new** discharge? Yes_____No_____
Is this application for **increased** existing discharge? Yes_____No_____
If "yes" to either question, attach a Watershed Evaluation and Anti-degradation Policy Checklist I.

Instructions to EAC-K staff: (1) Write legibly in ink; (2) Be specific--include rationale and supporting data; (3) Initial and date.

DEC 05 2007

Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402-2801

December 3, 2007

Ms. Natalie Harris
Knoxville Environmental Field Office
Tennessee Department of Environment and Conservation
3711 Middlebrook Pike
Knoxville, Tennessee 37921-5602

Dear Ms. Harris:

TENNESSEE VALLEY AUTHORITY (TVA) - KINGSTON FOSSIL PLANT (KIF) - NPDES PERMIT NO. TN0005452 – ADDITION OF FLUE GAS DESULFURIZATION (FGD) SYSTEM AND APPLICATION FOR RENEWAL

In accordance with Part II.B.1 of the subject permit, TVA is notifying you of planned changes affecting the NPDES permit as a result of the future operation of the KIF FGD system which is currently under construction. The FGD addition will employ wet limestone forced oxidation technology to reduce sulfur dioxide air emissions to meet requirements under the 1990 Clean Air Act Amendments. Commercial operation of the FGD system is currently scheduled to begin as early as October 2009 and pre-operational testing is scheduled to commence as early as October 2008. Since the NPDES permit renewal application is due in March 2008, TVA is also submitting the application for renewal at this time. Enclosed are an original and a double-sided copy of the packet consisting of EPA Form 1, a site map, Form 2C, Form 2D, a flow schematic, Form 2E, and a Permit Application Address form.

The information being provided is organized into two sections, I. FGD Operation, and II. NPDES Permit Renewal Information, below:

I. FGD Operation

The FGD system will consist of two pre-ground limestone silos and pneumatic transport system, two absorber modules, a gypsum disposal facility and detention basin, and potentially a gypsum dewatering/marketing facility. A limestone/water mixture or slurry is used to scrub the flue gas. Each absorber consists of a limestone slurry and flue gas contact area and mist eliminators. Flue gas will pass through slurry sprays, first co-current and then counter-current and then pass through mist eliminators before discharging through a wet stack. Air will be blown into the reacted slurry in the absorber, converting the dissolved calcium sulfite to calcium sulfate (gypsum). The gypsum will be extracted and pumped to either the gypsum rim ditch stacking area (for disposal) or the dewatering facility (for marketing the gypsum). While TVA intends to seek markets for gypsum whenever possible, the current wallboard market is not as robust as before due to the many scrubbers coming on line in the United States, and the volatility of the housing market.

The onsite gypsum disposal area encompasses approximately 135 acres on the Kingston peninsula and the marketing area (if developed) will encompass an estimated five acres. FGD wastes sent to the disposal facility will be treated by settling to allow particulate removal. The discharge from the disposal facility is numbered as an internal monitoring point (IMP) 009 on the application materials. The discharge from IMP 009 will be located where it will mix immediately with the flows from the condenser cooling water, upstream from the current monitoring location for DSN 002. Form 2D is provided for DSN 002 with the projected discharge concentrations for

multiple parameters once the FGD is in operation. While this is not a new type of discharge since other low volume wastes are discharged ultimately through DSN 002 and wet scrubber wastes are currently classified as low volume wastes, Form 2D is an expedient way to present the data that were evaluated for the addition of FGD wastes.

In addition to predicting metals and other parameter concentrations for the modified DSN 002 discharge, TVA conducted short-term chronic toxicity tests with fathead minnows (*Pimephales promelas*) and daphnids (*Ceriodaphnia dubia)* using scrubber pond effluent from TVA's Cumberland Fossil Plant (CUF) mixed with the KIF condenser cooling water (CCW) discharge. (The CUF effluent was chosen as a surrogate due to similarities of the proposed fuels and the scrubber configuration at the two facilities.) The estimated concentration of KIF's FGD wastewater as a percentage of its CCW discharge is <0.10%. The maximum allowable FGD effluent concentration with no impacts to toxicity limitations was found to be 6%, or 60 times the projected IMP 009 discharge flow rate portion, indicating this discharge would have no effect on effluent toxicity.

The existing cooling water intake structure will be utilized for FGD uses; the additional water usage for this purpose will be insignificant, compared to the CCW intake flows. TVA believes that operation of the KIF FGD system will not result in appreciably increased in-stream concentrations of metals, effluent toxicity, or exceedances of effluent limits. TVA is therefore requesting approval prior to our anticipated testing date of October 2008 to discharge FGD wastewater commingled with the existing CCW effluent.

TVA proposes that the monitoring location for federal effluent limitation guideline parameters found in 40 CFR Part 423 (i.e., total suspended solids, pH, and oil and grease) should be at the internal monitoring point, IMP 009. The effluent monitoring location for DSN 002 for pH and whole effluent toxicity monitoring is located at a barge cell along the left descending bank of the discharge channel. TVA requests that this monitoring location for DSN 002 be maintained.

II. NPDES Renewal Application

TVA requests consideration of the following in drafting the reissued NPDES permit.

Outfall 001

1. KIF has connected their sanitary wastewater system (previously routed to their own onsite sewage treatment wetlands) to the publicly owned sewage treatment works. TVA has consequently removed the emergency overflow from the sewage wetlands from the renewal application.

2. TVA requests inclusion of authorization in the reissued permit to recycle water from the ash pond stilling pond to spray on roads and other plant areas for dust suppression. KIF has had difficulties maintaining dusting controls on roads this year due to the extreme drought conditions and also because of coal train delivery schedules to the plant which restricts water trucks access to existing water sources. If water from the stilling pond were to be used for dusting control, small amounts of runoff with this water could possibly be discharged via several storm drains; however, the effect on receiving waters would be negligible as this water was slated to be discharged anyway from Internal Monitoring Point 001. Also, since the water is being sprayed for dusting control (implying dry conditions), little runoff should occur.

3. The operation of the FGD will likely require flue gas conditioning at KIF to address SO_3 air emissions. Flue gas conditioning would consist of lime injection into the ductwork upstream of the FGD or upstream of the precipitators. The current plans are to inject the lime upstream of the FGD, and any unreacted lime or gypsum will become part of the FGD gypsum. However, if the lime is injected upstream of the precipitators, some unreacted lime or gypsum would end up in the ash pond where it would be treated. Lime has been addressed in previous NPDES permit applications because it has been used in the past to raise the pH of the ash pond to meet lower pH discharge limitations. TVA does not expect any appreciable impact on water quality as either lime or gypsum should settle out in the ash pond complex prior to discharging.

Outfall 002

1. TVA requests continuation of the 316(a) thermal variance as found in the expiring permit. The enclosed report indicates that balanced, indigenous populations are being maintained in Watts Bar Reservoir with the thermal discharge variance in place.

2. TVA believes that the current toxicity testing requirements should be maintained. See the enclosed Reasonable Potential Determination.

3. TVA requests that a provision be included in the reissued permit that allows treatment of toxicity samples for *Pimephales promelas* (both effluent and intake samples) with UV radiation as allowed by letter from the Division of Water Pollution Control dated April 7, 2006. Enclosed is a copy of this authorization letter for your convenience. Suggested language is as follows:

   > The permittee is authorized to treat samples (both effluent and intake) for toxicity testing on *Pimephales promelas* with UV radiation in accordance with prior written approval granted by the division.

4. TVA is submitting this application for renewal prior to submitting the 316(b) biological monitoring data that have been collected. This information will be provided to you by January 8, 2008, consistent with the deadlines for the other major TVA facilities. Best professional judgment on best technology available to minimize adverse environmental impact has previously been made for KIF. No material changes are known to have occurred that would lead us to believe that this determination would change.

Internal Monitoring Point 004

A separate internal monitoring point is being identified for intake screen backwash discharges to eliminate confusion. The discharges from intake screen backwash were previously identified in Outfall 002. No monitoring occurred in this application for IMP 004 as this discharge is simply the return of water and debris to the discharge channel from the intake channel to which no pollutants have been added by the facility. TVA requests that IMP 004 be included in the reissued permit with no monitoring or reporting requirements.

Internal Monitoring Point 005

1. Historical data only from IMP 005 are included since all of the required parameters were monitored at Internal Monitoring Point 001 and IMP 005 is internal to IMP 001. Historical data from 9/1/06 through 8/31/07 are included on the IMP005 pages.

2. KIF's NPDES permit currently requires that all discharges from the metal cleaning waste pond be monitored for flow, total copper, and total iron. TVA requests that monitoring requirements not apply to discharges of accumulated rainwater to which no process waters have been introduced since the previous complying discharge. TVA suggests the following wording which is consistent with the NPDES permit for Watts Bar Fossil Plant (TN0005461):

   The permittee will be required to monitor discharges through IMP 005 only when metal cleaning operations or other processes generating wastewater occur.

IMP 006, 007, and 008

1. TVA requests that the current permit conditions be maintained for these three internal monitoring points. These IMPs discharge to the plant intake channel where they mix with an average plant intake flow of 1296 million gallons per day (MGD) through the plant.

2. TVA did not sample IMP 008 since predictable flow normally occurs only in response to a rainfall event. Historically, the drainage area of IMP 008 has received ash sluice water from occasional ruptured sluice lines. TVA believes that the effluent quality data from Outfall 001 would be conservatively representative of water discharge quality from IMP 008. In addition, this flow is normally pumped to the ash pond.

TVA appreciates your consideration of these items and your expeditious processing of this permit as testing for the FGD system begins in October 2008. If you have any questions or need additional information, please contact Lindy Printz Johnson at (423) 751-3361 in Chattanooga, or you may email her at lpjohnson@tva.gov.

Sincerely,

Cynthia M. Anderson
for

Gordon G. Park
Manager of Environmental Compliance
5D Lookout Place

Enclosures
cc (Enclosures):
Mr. Vojin Janjic
Permit Section
Division of Water Pollution Control
Tennessee Department of Environment and Conservation
6th Floor, L&C Annex
401 Church Street
Nashville, Tennessee 37243

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

DEC 05 2007

Form Approved. OMB No. 2040-0086. Approval expires 5-31-92.

FORM 1 GENERAL

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

S F | T N 8 6 4 0 0 0 6 6 8 2 | T/A | C D

1 2 13 14 15

LABEL ITEMS

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete *Items I, III, V, and VI (except VI-B which must be completed regardless).* Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold-faced terms.**

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge to waters of the U.S.**? (FORM 2A)		X		B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge to waters of the U.S.**? (FORM 2B)		X	
	16	17	18		19	20	21
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)	X		X	D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)	X		X
	22	23	24		25	26	27
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)		X		F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
	28	29	30		31	32	33
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
	34	35	36		37	38	39
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X		J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X	
	40	41	42		43	44	45

III. NAME OF FACILITY

1 SKIP | U S T V A K I N G S T O N F O S S I L P L A N T

15 16-29 30 69

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*

2 | B E C K H A M, M I C H A E L T. Plant Manager

15 16 45

B. PHONE *(area code & no.)*

8 6 5 | 7 1 7 | 2 5 0 0

46 - 48 | 49 - 51 | 52 - 55

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 | 7 1 4 S W A N P O N D R D

15 16 45

B. CITY OR TOWN

4 | H A R R I M A N

15 16 40

C. STATE

T N

41 42

D. ZIP CODE

3 7 7 4 6

47 - 51

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5 | 7 1 4 S W A N P O N D R D

15 16 45

B. COUNTY NAME

R O A N E

46 70

C. CITY OR TOWN

6 | H A R R I M A N

15 16 40

D. STATE

T N

41 42

E. ZIP CODE

3 7 7 4 6

47 - 51

F. COUNTY CODE *(if known)*

52 - 54

CONTINUE ON PAGE 2

CONTINUED FROM PAGE 1

VII. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
4911 Electric Services	

C. THIRD	D. FOURTH

VIII. OPERATOR INFORMATION

A. NAME: TENNESSEE VALLEY AUTHORITY

B. Is the name listed as Item VIII-A also the owner? [X] YES [ ] NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL; S = STATE; P = PRIVATE; M = PUBLIC (other than federal or state); O = OTHER (specify)

F (specify)

D. PHONE (area code & no.): A 865 717 2500

E. STREET OR P.O. BOX: 714 SWAN POND RD

F. CITY OR TOWN: HARRIMAN

G. STATE: TN

H. ZIP CODE: 37746

IX. INDIAN LAND
Is the facility located on Indian lands? [ ] YES [X] NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)	D. PSD (Air Emissions from Proposed Sources)
N TN0005451 2	P

See attachment for additional permits

B. UIC (Underground Injection of Fluids)	E. OTHER (specify)
U	TNR051787 (specify: TMSP)

C. RCRA (Hazardous Wastes)	E. OTHER (specify)
R	548401 (specify: Title V)

XI. MAP

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 springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

Kingston Stream Plant is a fossil fueled, steam electric generating plant located near Kingston, Tennessee on Watts Bar Reservoir at approximate Clinch River mile 2.5. The plant has nine coal fired units with a combined rated generating capacity of 1,700 megawatts.

XIII. CERTIFICATION (see instructions)

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

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
Michael T. Beckham, Plant Manager TVA Kingston Fossil Plant	Michael T. Beckham	11/30/07

COMMENTS FOR OFFICIAL USE ONLY

EPA Form 3510-1 (8-90)

Attachment to Form 1 for Kingston Fossil Plant - Item X.E. (Other Permits)

Solid Waste Permit

Permit Numbers are:

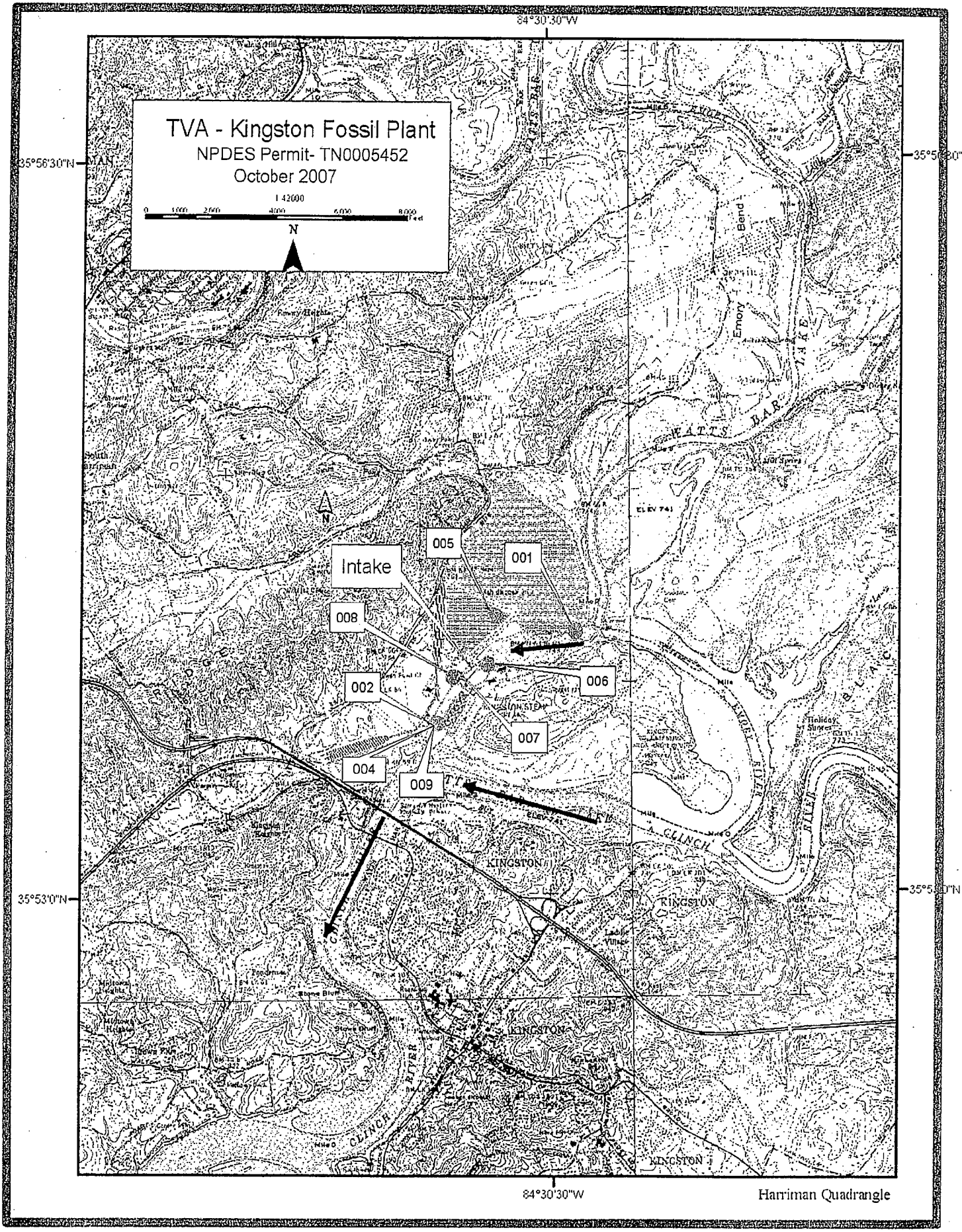
1. IDL 73-0094

Construction Storm Water Permit (TNR100000) for FGD Project

NOC number: TNR190588

Construction Storm Water Permit (TNR100000) for Ash Dredge Cell Restoration

NOC number: TNR190526


TVA - Kingston Fossil Plant
NPDES Permit- TN0005452
October 2007
1:42000
0 1000 2000 4000 6000 8000 Feet
N
84°30'30"W
35°56'30"N
35°53'0"N
Intake
005
001
008
002
006
007
004
009
KINGSTON
Harriman Quadrangle

EPA I.D. NUMBER (copy from Item 1 of Form 1)
TN8640006682

Form Approved
OMB No. 2040-0086
Approval expires 5/31/92

Please print or type in the unshaded areas only

FORM 2C NPDES

EPA

U. S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS
Consolidated Permits Program

I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER (list)	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER (name)
	1. DEG.	2. MIN	3. SEC.	1. DEG.	2. MIN.	3. SEC.	
IMP 001	35	54	15	84	30	15	Plant Intake (to Watts Bar Reservoir) via DSN 002
DSN 002	35	53	45	84	31	15	Watts Bar Reservoir
IMP 004	35	53	45	84	31	15	Watts Bar Reservoir via DSN 002
IMP 005	35	54	15	84	31	0	Plant Intake (Watts Bar Res.) via IMP 001
IMP 007	35	54	0	84	31	0	Plant Intake (Watts Bar Resevoir) via DSN 002
IMP 008	35	54	0	84	31	0	Plant Intake (Watts Bar Resevoir) via DSN 002
IMP 009	35	53	45	84	31	15	Watts Bar Reservoir via DSN 002

II. FLOWS, SOURCES, OF POLLUTION, AND TREATMENT TECHNOLOGIES

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

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO (list)	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION (list)	b. AVERAGE FLOW (include units)	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
IMP 001	Ash Pond	40.512 MGD	Treatment occurs in a 118 acre		
			settling pond. Ash and other		
			solids settle out in the pond		
			and are physically removed		
			periodically.		
			Treatment for 001 includes:		
			(1) Settling	1	U
			(2) Neutralization	2	K
			(3) pH Adjustment	X	X
	IMP 001 receives flow from the		(4) Discharge to surface	4	A
	following sources:		water via Plant Intake		
			Channel via DSN 002.		
	(1) Fly ash sluice water	25.178 MGD	(5) Reuse of treated effluent	4	C
			for cooling water		
	(2) Coal yard runoff which includes:	0.145 MGD	(6) Reuse of stilling pond	4	C
	(a) Coal storage area drainage	(0.110 MGD)	water for dust suppression		
	(b) Utility building area drainage	(0.035 MGD)	(roads, dikes, etc.)		
	(c) Fire protection flushes	(0.000064 MGD)			
	(3) Redwater wetlands	0.171 MGD	Treatment occurs in a 4-acre		
	(a) Seepage	(0.170 MGD)	constructed wetlands system;		
	(b) Precipitation	(0.010 MGD)	effluent is pumped to ash pond.		
	(c) Evaporation	-(0.009 MGD)			
	(4) Less seepage from the ash pond	-0.170 MGD			

OFFICIAL USE ONLY *(effluent guidelines sub-categories)*

Continue on Page 2

Please print or type in the unshaded areas only

EPA I.D. NUMBER (*copy from Item 1 of Form 1*)
TN8640006682

Form Approved
OMB No. 2040-0086
Approval expires 5/31/92

FORM 2C NPDES

EPA

U. S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS
Consolidated Permits Program

I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER (*list*)	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER (*name*)
	1. DEG.	2. MIN	3. SEC.	1. DEG.	2. MIN.	3. SEC.	

II. FLOWS, SOURCES, OF POLLUTION, AND TREATMENT TECHNOLOGIES

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

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO (*list*)	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION (*list*)	b. AVERAGE FLOW (*include units*)	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
IMP 001 (Con't.)	(5) Metal cleaning wastes (via IMP 005)	0.007 MGD	Treatment for 005 includes:		
	which include:		(1) Settling	1	U
	(a) Copper treatment pond discharge		(2) Neutralization	2	K
	(i) Chemical metal cleaning	(0.001 MGD)	(3) pH Adjustment	X	X
	and air preheater wastes		(4) Chemical Precipitation	2	C
	(ii) Precipitation	(0.002 MGD)			
	(iii) Less evaporation	(-0.001 MGD)			
	(b) Iron treatment pond discharge				
	(i) Chemical metal cleaning	0			
	(ii) Non-chemical metal cleaning	(0.002 MGD)			
	(iii) Precipitation	(0.011 MGD)			
	(iv) Less evaporation	(-0.008 MGD)			
	(6) Direct discharges of nonchemical	negligible	(air preheater washes will		
	metal cleaning wastes		more commonly be sent to the		
	(7) Ammonia storage area runoff	0.002 MGD	chemical treatment ponds)		
	(8) Bottom ash sluicing	6.814 MGD			
	(9) Ground water	varies			
	(10) Water treatment plant wastes via	0.267 MGD			
	NLDF Sump, which includes:				
	(a) RO System Reject	(0.239 MGD)			
	(b) RO System Backwash	(0.028 MGD)			
	(11) Drainage from sluice line trench	0.018 MGD			
	includes: sluice line ruptures, precipitator				
	area drainage & fire protection flushes				

OFFICIAL USE ONLY (*effluent guidelines sub-categories*)

TN8640006682

OMB No. 2040-0086
Approval expires 5/31/92

Please print or type in the unshaded areas only

FORM 2C NPDES

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS
Consolidated Permits Program

I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER *(list)*	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER *(name)*
	1. DEG.	2. MIN	3. SEC.	1. DEG.	2. MIN.	3. SEC.	

II. FLOWS, SOURCES, OF POLLUTION, AND TREATMENT TECHNOLOGIES

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

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO *(list)*	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION *(list)*	b. AVERAGE FLOW *(include units)*	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
IMP 001 (Con't.)	(12) Station sump discharge which	7.712 MGD			
	includes:				
	(a) Ash system leakage and boiler	(4.155 MGD)			
	bottom overflow and Units 5-9 ID fan				
	bearing cooling water				
	(b) Miscellaneous equipment cooling	(3.438 MGD)			
	and lubricating water				
	(c) Fire protection flushes	(0.000034 MGD)			
	(d) Floor Washing and other low	(0.025 MGD)			
	volume wastes				
	(e) Roof drains and precipitator	(0.018 MGD)			
	washdown				
	(f) Boiler water leakage	(0.061 MGD)			
	(g) Analytical process wastewater	(0.005 MGD)			
	(h) Basement boiler blowdown tank	0			
	(start up only)				
	(i) Lab sample stations (powerhouse	(0.010 MGD)			
	and lab)				
	(13) Storm water runoff from FGD area	0.020 MGD			
	sump				
	(14) Less water from stilling pond for	negligible			
	dust suppression				

OFFICIAL USE ONLY *(effluent guidelines sub-categories)*

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*
TN8640006682

Form Approved
OMB No. 2040-0086
Approval expires 5/31/92

Please print or type in the unshaded areas only

FORM 2C NPDES

EPA

U. S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS
Consolidated Permits Program

I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER *(list)*	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER *(name)*
	1. DEG.	2. MIN	3. SEC.	1. DEG.	2. MIN.	3. SEC.	

II. FLOWS, SOURCES, OF POLLUTION, AND TREATMENT TECHNOLOGIES

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

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO. *(list)*	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION *(list)*	b. AVERAGE FLOW *(include units)*	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
IMP 001 (Con't.)	(15) AAF area sump, including	0.012 MGD			
	precipitator wash and raw water				
	leakage				
	(16) Precipitation	0.574 MGD			
	(17) Less evaporation	-0.238 MGD			

OFFICIAL USE ONLY *(effluent guidelines sub-categories)*

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items ☐ YES (complete the following table) ☒ NO (go to Section III)

1. OUTFALL NUMBER (list)	2. OPERATION(s) CONTRIBUTING FLOW (list)	3. FREQUENCY a. DAYS PER WEEK (specify average)	3. FREQUENCY b. MONTHS PER YEAR (specify average)	4. FLOW a. FLOW RATE (in mgd) 1. LONG TERM AVERAGE	4. FLOW a. FLOW RATE (in mgd) 2. MAXIMUM DAILY	4. FLOW b. TOTAL VOLUME (specify with units) 1. LONG TERM AVERAGE	4. FLOW b. TOTAL VOLUME (specify with units) 2. MAXIMUM DAILY	4. FLOW c. DURATION (in days)
		(Previously IMP 005 was listed in this section; however, this is not a discharge to waters of the U.S., but rather an internal monitoring point.)						

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?
☒ YES (complete Item III-B) ☐ NO (go to Section IV)

B. Are the limitations in the applicable effluent guideline expressed in terms of production (or other measure of operation)?
☐ YES (complete Item III-C) ☒ NO (go to Section IV)

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

1. AVERAGE DAILY PRODUCTION a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. (specify)	2. AFFECTED OUTFALLS (list outfall numbers)

IV. 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 IV-B)

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS a. NO.	2. AFFECTED OUTFALLS b. SOURCE OF DISCHARGE	3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE a. REQUIRED	4. FINAL COMPLIANCE DATE b. PROJECTED

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.
☐ MARK 'X' IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*
TN8640006682

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding - Complete one set of tables for each outfall - Annotate the outfall number in the space provided.
NOTE: Tables V-A, V-B, and V-C are included on separate sheets numbered V-1 through V-9.

D. Use the space below to list any of the pollutants listed in Table 2C-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
Vanadium pentoxide	Selective catalytic reduction (SCR) for NOx air emissions control uses this material as a catalyst.		

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ YES *(list all such pollutants below)* ☒ NO *(go to Item VI-B)*

VII. 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?

[X] YES *(identify the test(s) and describe their purposes below)* [ ] NO *(go to Section VIII)*

The current permit requires chronic toxicity biomonitoring once every six months for Outfall 002. Results have been submitted to the State as required by the permit.

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

[X] YES *(list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)* [ ] NO *(go to Section IX)*

A. NAME	B. ADDRESS	C. TELEPHONE *(area code & no.)*	D. POLLUTANTS ANALYZED *(list)*
Environmental Science Corporation	12065 Lebanon Road Mt. Juliet, TN 37122	(615) 758-5858	All parameters except pH, total residual chlorine, temperature and flow.

IX. CERTIFICATION

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

A. NAME & OFFICIAL TITLE *(type or print)*	B. PHONE NO. *(area code & no.)*
Michael T. Beckham, Plant Manager	(865) 717-2500
C. SIGNATURE Michael T. Beckham	D. DATE SIGNED 11/30/07

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: TN8640006682

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

OUTFALL NO. 001

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

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	c. LONG TERM AVRG. VALUE *(if available)* (2) MASS	d. NO. OF ANALYSES	3. UNITS *(specify if blank)* a. CONCENTRATION	3. UNITS b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	4. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS	4. INTAKE b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	< 5.0						1	mg/L		< 5.0		1
b. Chemical Oxygen Demand *(COD)*	< 20.0						1	mg/L		< 20.		1
c. Total Organic Carbon *(TOC)*	3.0						1	mg/L		3.4		1
d. Total Suspended Solids *(TSS)*	29				12.7		13	mg/L		10		1
e. Ammonia *(as N)*	<0.10				< 0.06		23	mg/L		0.32		1
f. Flow	VALUE 51.1		VALUE		VALUE 42.7		56	MGD		VALUE 1394.4		1
g. Temperature *(winter)*	VALUE N/A		VALUE		VALUE			°C		VALUE N/A		
h. Temperature *(summer)*	VALUE 30.6		VALUE		VALUE		1	°C		VALUE 24.7		1
i. pH	MINIMUM 6.8	MAXIMUM 8.8	MINIMUM	MAXIMUM			62	STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	c. LONG TERM AVRG. VALUE *(if available)* (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE b. NO. OF ANALYSES
a. Bromide (24959-67-9)		X												
b. Chlorine, Total Residual			< 0.05						1	mg/L		< 0.05		2
c. Color			3.0						1	PC Units		2.0		1
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)			0.18						1	mg/L		< 0.10		1
f. Nitrate-Nitrite *(as N)*		X	< 0.10						1	mg/L		0.13		1

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)	X		8.6						1	mg/L		<0.50		1
h. Oil and Grease	X		<5.6				< 5.1		12	mg/L		<5.15		1
i. Phosphorus (as P), Total (7723-14-0)	X		<0.10						1	mg/L		<0.10		1
j. Radioactivity														
(1) Alpha, Total		X												
(2) Beta, Total		X												
(3) Radium, Total		X												
(4) Radium 226, Total		X												
k. Sulfate (as SO_4) (14808-79-8)	X		86						1	mg/L		26		1
l. Sulfide (as S)	X		< 0.050						1	mg/L		<0.050		1
m. Sulfite (as SO_3) (14265-45-3)	X		< 2.0						1	mg/L		<2.0		1
n. Surfactants	X		< 0.10						1	mg/L		< 0.10		1
o. Aluminum, Total (7429-90-5)	X		0.8						1	mg/L		0.50		1
p. Barium, Total (7440-39-3)	X		0.38						1	mg/L		0.041		1
q. Boron, Total (7440-42-8)	X		0.45						1	mg/L		<0.20		1
r. Cobalt, Total (7440-48-4)	X		<0.010						1	mg/L		<0.010		1
s. Iron, Total (7439-89-6)	X		0.12						1	mg/L		0.30		1
t. Magnesium, Total (7439-95-4)	X		13						1	mg/L		11		1
u. Molybdenum, Total (7439-98-7)	X		0.043						1	mg/L		0.0060		1
v. Manganese, Total (7439-96-5)	X		0.016						1	mg/L		0.049		1
w. Tin, Total (7440-31-5)	X		0.042						1	mg/L		0.036		1
x. Titanium, Total (7440-32-6)	X		0.018						1	mg/L		<0.010		1

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
TN8640006682	001

CONTINUED FROM PAGE 3 OF FORM 2-C

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table (*all 7 pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT						4. UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	c. LONG TERM AVRG. VALUE *(if available)* (2) MASS	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
METALS, CYANIDE, AND TOTAL PHENOLS														
1M. Antimony, Total (7440-36-0)	X			0.0022						1	mg/L		< 0.0010		1
2M. Arsenic, Total (7440-38-2)	X			0.022						1	mg/L		< 0.0010		1
3M. Beryllium, Total (7440-41-7)	X			<0.0010						1	mg/L		< 0.0010		1
4M. Cadmium, Total (7440-43-9)	X			<0.00050						1	mg/L		< 0.00050		1
5M. Chromium, Total (7440-47-3)	X			0.012						1	mg/L		< 0.0010		1
6M. Copper, Total (7440-50-8)	X			0.0026						1	mg/L		0.0013		1
7M. Lead, Total (7439-92-1)	X			<0.0010						1	mg/L		< 0.0010		1
8M. Mercury, Total (7439-97-6)	X			< 0.00020						1	mg/L		< 0.00020		1
9M. Nickel, Total (7440-02-0)	X			0.0053						1	mg/L		< 0.0020		1
10M. Selenium, Total (7782-49-2)	X			0.0084						1	mg/L		< 0.0010		1
11M. Silver, Total (7440-22-4)	X			<0.00050						1	mg/L		< 0.00050		1
12M. Thallium, Total (7440-28-0)	X			< 0.0010						1	mg/L		< 0.0010		1
13M. Zinc, Total (7440-66-6)	X			0.018						1	mg/L		< 0.010		1
14M. Cyanide, Total (57-12-5)	X			<0.0050						1	mg/L		< 0.0050		1
15M. Phenols, Total	X			< 0.040						1	mg/L		< 0.040		1
DIOXIN														
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764-01-6)			X	DESCRIBE RESULTS										

CONTINUED FROM PAGE V-3

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	X			< 0.050						1	mg/L		< 0.050		1
2V. Acrylonitrile (107-13-1)	X			< 0.010						1	mg/L		< 0.010		1
3V. Benzene (71-43-2)	X			<0.0010						1	mg/L		< 0.0010		1
4V. Bis (Chloromethyl) Ether (542-88-1)			X												
5V. Bromoform (75-25-2)	X			< 0.0010						1	mg/L		< 0.0010		1
6V. Carbon Tetrachloride (56-23-5)	X			< 0.0010						1	mg/L		< 0.0010		1
7V. Chlorobenzene (108-90-7)	X			< 0.0010						1	mg/L		< 0.0010		1
8V. Chlorodibromomethane (124-48-1)	X			< 0.0010						1	mg/L		< 0.0010		1
9V. Chloroethane (75-00-3)	X			< 0.0050						1	mg/L		< 0.0050		1
10V. 2-Chloroethylvinyl Ether (110-75-8)	X			< 0.050						1	mg/L		< 0.050		1
11V. Chloroform (67-66-3)	X			< 0.0050						1	mg/L		< 0.0050		1
12V. Dichlorobromomethane (75-27-4)	X			< 0.0010						1	mg/L		< 0.0010		1
13V. Dichlorodifluoromethane (75-71-8)	X			< 0.0050						1	mg/L		< 0.0050		1
14V. 1,1-Dichloroethane (75-34-3)	X			< 0.0010						1	mg/L		< 0.0010		1
15V. 1,2-Dichloroethane (107-06-2)	X			< 0.0010						1	mg/L		< 0.0010		1
16V. 1,1-Dichloroethylene (75-35-4)	X			< 0.0010						1	mg/L		< 0.0010		1
17V. 1,2-Dichloropropane (78-87-5)	X			< 0.0010						1	mg/L		< 0.0010		1
18V. 1,3-Dichloropropylene (542-75-6)	X			< 0.0020						1	mg/L		< 0.0020		1
19V. Ethylbenzene (100-41-4)	X			< 0.0010						1	mg/L		< 0.0010		1
20V. Methyl Bromide (74-83-9)	X			< 0.0050						1	mg/L		< 0.0050		1
21V. Methyl Chloride (74-87-3)	X			< 0.0010						1	mg/L		< 0.0010		1

CONTINUED FROM PAGE V-4

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT						4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS (continued)															
22V. Methylene Chloride (75-09-2)	X			< 0.0050						1	mg/L		< 0.0050		1
23V. 1,1,2,2-Tetrachloroethane (79-34-5)	X			< 0.0010						1	mg/L		< 0.0010		1
24V. Tetrachloroethylene (127-18-4)	X			< 0.0010						1	mg/L		< 0.0010		1
25V. Toluene (108-88-3)	X			< 0.0050						1	mg/L		< 0.0050		1
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X			< 0.0010						1	mg/L		< 0.0010		1
27V. 1,1,1-Trichloroethane (71-55-6)	X			< 0.0010						1	mg/L		< 0.0010		1
28V. 1,1,2-Trichloroethane (79-00-5)	X			< 0.0010						1	mg/L		< 0.0010		1
29V. Trichloroethylene (79-01-6)	X			< 0.0010						1	mg/L		< 0.0010		1
30V. Trichlorofluoromethane (75-69-4)	X			< 0.0050						1	mg/L		< 0.0050		1
31V. Vinyl Chloride (75-01-4)	X			< 0.0010						1	mg/L		< 0.0010		1
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	X			< 0.010						1	mg/L		< 0.010		1
2A. 2,4-Dichlorophenol (120-83-2)	X			< 0.010						1	mg/L		< 0.010		1
3A. 2,4-Dimethylphenol (105-67-9)	X			< 0.010						1	mg/L		< 0.010		1
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X			< 0.010						1	mg/L		< 0.010		1
5A. 2,4-Dinitrophenol (51-28-5)	X			< 0.010						1	mg/L		< 0.010		1
6A. 2-Nitrophenol (88-75-5)	X			< 0.010						1	mg/L		< 0.010		1
7A. 4-Nitrophenol (100-02-7)	X			< 0.010						1	mg/L		< 0.010		1
8A. P-Chloro-M-Cresol (59-50-7)	X			< 0.010						1	mg/L		< 0.010		1
9A. Pentachlorophenol (87-86-5)	X			< 0.010						1	mg/L		< 0.010		1
10A. Phenol (108-95-2)	X			< 0.010						1	mg/L		< 0.010		1
11A. 2,4,6-Trichlorophenol (88-06-2)	X			< 0.010						1	mg/L		< 0.010		1

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	X			< 0.0010						1	mg/L		< 0.0010		1
2B. Acenaphtylene (208-96-8)	X			< 0.0010						1	mg/L		< 0.0010		1
3B. Anthracene (120-12-7)	X			< 0.0010						1	mg/L		< 0.0010		1
4B. Benzidine (92-87-5)	X			< 0.050						1	mg/L		< 0.050		1
5B. Benzo *(a)* Anthracene (56-55-3)	X			< 0.0010						1	mg/L		< 0.0010		1
6B. Benzo *(a)* Pyrene (50-32-8)	X			< 0.0010						1	mg/L		< 0.0010		1
7B. 3,4-Benzo fluoranthene (205-99-2)	X			< 0.0010						1	mg/L		< 0.0010		1
8B. Benzo *(ghi)* Perylene (191-24-2)	X			< 0.0010						1	mg/L		< 0.0010		1
9B. Benzo *(k)* Fluoranthene (207-08-9)	X			< 0.0010						1	mg/L		< 0.0010		1
10B. Bis *(2-Chloro-ethoxy)* Methane (111-91-1)	X			< 0.010						1	mg/L		< 0.010		1
11B. Bis *(2-Chloro-ethyl)* Ether (111-44-4)	X			< 0.010						1	mg/L		< 0.010		1
12B. Bis *(2-Chloro-isopropyl)* Ether (102-60-1)	X			< 0.010						1	mg/L		< 0.010		1
13B. Bis *(2-Ethyl-hexyl)* Phthalate (117-81-7)	X			< 0.0010						1	mg/L		< 0.0010		1
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	X			< 0.010						1	mg/L		< 0.010		1
15B. Butyl Benzyl Phthalate (85-68-7)	X			< 0.0010						1	mg/L		< 0.0010		1
16B. 2-Chloro-naphthalene (91-58-7)	X			< 0.010						1	mg/L		< 0.010		1
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	X			< 0.010						1	mg/L		< 0.010		1
18B. Chrysene (218-01-9)	X			< 0.0010						1	mg/L		< 0.0010		1
19B. Dibenzo *(a,h)* Anthracene (53-70-3)	X			< 0.0010						1	mg/L		< 0.0010		1
20B. 1,2-Dichloro-benzene (95-50-1)	X			< 0.0010						1	mg/L		< 0.0010		1
21B. 1,3-Dichloro-benzene (541-73-1)	X			< 0.0010						1	mg/L		< 0.0010		1

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)	x			< 0.0010						1	mg/L		< 0.0010		1
23B. 3,3'-Dichlorobenzidine (91-94-1)	x			< 0.010						1	mg/L		< 0.010		1
24B. Diethyl Phthalate (84-66-2)	x			< 0.0010						1	mg/L		< 0.0010		1
25B. Dimethyl Phthalate (131-11-3)	x			< 0.0010						1	mg/L		< 0.0010		1
26B. Di-N-Butyl Phthalate (84-74-2)	x			< 0.0010						1	mg/L		< 0.0010		1
27B. 2,4-Dinitrotoluene (121-14-2)	x			< 0.010						1	mg/L		< 0.010		1
28B. 2,6-Dinitrotoluene (606-20-2)	x			< 0.010						1	mg/L		< 0.010		1
29B. Di-N-Octyl Phthalate (117-84-0)	x			< 0.0010						1	mg/L		< 0.0010		1
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7)	X			< 0.010						1	mg/L		< 0.010		1
31B. Fluoranthene (206-44-0)	x			< 0.0010						1	mg/L		< 0.0010		1
32B. Fluorene (86-73-7)	x			< 0.0010						1	mg/L		< 0.0010		1
33B. Hexachlorobenzene (118-74-1)	x			< 0.010						1	mg/L		< 0.010		1
34B. Hexachlorobutadiene (87-68-3)	x			< 0.010						1	mg/L		< 0.010		1
35B. Hexachlorocyclopentadiene (77-47-4)	x			< 0.010						1	mg/L		< 0.010		1
36B. Hexachloroethane (67-72-1)	x			< 0.010						1	mg/L		< 0.010		1
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)	x			< 0.0010						1	mg/L		< 0.0010		1
38B. Isophorone (78-59-1)	x			< 0.010						1	mg/L		< 0.010		1
39B. Naphthalene (91-20-3)	x			< 0.0010						1	mg/L		< 0.0010		1
40B. Nitrobenzene (98-95-3)	x			< 0.010						1	mg/L		< 0.010		1
41B. N-Nitrosodimethylamine (62-75-9)	X			< 0.050						1	mg/L		< 0.050		1
42B. N-Nitrosodi-Propylamine (621-64-7)	x			< 0.010						1	mg/L		< 0.010		1

CONTINUE ON PAGE V-8

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)															
43B. N-Nitrosodiphenylamine (86-30-6)	x			< 0.010						1	mg/L		< 0.010		1
44B. Phenanthrene (85-01-8)	x			< 0.0010						1	mg/L		< 0.0010		1
45B. Pyrene (129-00-0)	x			< 0.0010						1	mg/L		< 0.0010		1
46B. 1,2,4-Trichlorobenzene (120-82-1)	x			< 0.010						1	mg/L		< 0.010		1
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)			X												
2P. α-BHC (319-84-6)			X												
3P. β-BHC (319-85-7)			X												
4P. γ-BHC (58-89-9)			X												
5P. δ-BHC (319-86-8)			X												
6P. Chlordane (57-74-9)			X												
7P. 4,4'-DDT (50-29-3)			X												
8P. 4,4'-DDE (72-55-9)			X												
9P. 4,4'-DDD (72-54-8)			X												
10P. Dieldrin (60-57-1)			X												
11P. α-Endosulfan (115-29-7)			X												
12P. β-Endosulfan (115-29-7)			X												
13P. Endosulfan Sulfate (1031-07-8)			X												
14P. Endrin (72-20-8)			X												
15P. Endrin Aldehyde (7421-93-4)			X												
16P. Heptachlor (76-44-8)			X												

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
TN8640006682	001

CONTINUED FROM PAGE V-8

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	a. TEST-ING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. LONG TERM AVERAGE VALUE		a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		a. CONCENTRATION	b. MASS	(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - PESTICIDES *(continued)*															
17B. Heptachlor Epoxide (1024-57-3)			X												
18P. PCB-1242 (53469-21-9)			X												
19P. PCB-1254 (11097-69-1)			X												
20P. PCB-1221 (11104-28-2)			X												
21P. PCB-1232 (11141-16-5)			X												
22P. PCB-1248 (12672-29-6)			X												
23P. PCB-1260 (11096-82-5)			X												
24P. PCB-1016 (12674-11-2)			X												
25P. Toxaphene (8001-35-2)			X												

Please print or type in the unshaded areas only

TN8640006682

OMB No. 2040-0086
Approval expires 5/31/92

FORM 2C NPDES

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS
Consolidated Permits Program

I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER (list)	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER (name)
	1. DEG.	2. MIN	3. SEC.	1. DEG.	2. MIN.	3. SEC.	

II. FLOWS, SOURCES, OF POLLUTION, AND TREATMENT TECHNOLOGIES

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

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO (list)	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION (list)	b. AVERAGE FLOW (include units)	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
DSN 002	Condenser cooling water discharge	**1297.864 MGD**	Discharge to surface water	4	A
	channel. DSN 002 receives flow from:				
	(1) Once-through condenser cooling	1,296.627 MGD			
	water, including flows from IMP 001.				
	(2) 3rd Floor Boiler blowdown	0.014 MGD			
	(3) Discharge from underflow ponds,	0.010 MGD			
	including fire protection flushes,				
	raw water leakage, and runoff				
	from the south transformer and				
	switchyard.				
	(4) Intake screen backwash from	0.252 MGD			
	IMP 004 and FGD strainers				
	(5) FGD storm water pond (IMP 009)	0.961 MGD	Treatment will occur in a 6.87		
	(Future - Also See Form 2D)		acre storm water pond, providing:		
			Settling	1	U
			Neutralization	2	K
			Discharge to Surface water	4	A

OFFICIAL USE ONLY *(effluent guidelines sub-categories)*

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: TN8640006682

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

OUTFALL NO. 002

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

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	c. LONG TERM AVRG. VALUE *(if available)* (2) MASS	d. NO. OF ANALYSES	3. UNITS *(specify if blank)* a. CONCENTRATION	3. UNITS b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	<5.0						1	mg/L				
b. Chemical Oxygen Demand *(COD)*	<20						1	mg/L				
c. Total Organic Carbon *(TOC)*	3.4						1	mg/L				
d. Total Suspended Solids *(TSS)*	9.8						1	mg/L				
e. Ammonia *(as N)*	<0.10						1	mg/L				
f. Flow	VALUE 1395		VALUE		VALUE 1359		365	MGD		VALUE		
g. Temperature *(winter)*	VALUE 29.2		VALUE		VALUE 18		182	°C		VALUE		
h. Temperature *(summer)*	VALUE 32.1		VALUE		VALUE 28.4		183	°C		VALUE		
i. pH	MINIMUM 6.7	MAXIMUM 8.2	MINIMUM	MAXIMUM			62	STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	c. LONG TERM AVRG. VALUE *(if available)* (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
a. Bromide (24959-67-9)		X												
b. Chlorine, Total Residual		X	< 0.05						1	mg/L				
c. Color		X	3						1	PC Unit				
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)		X	< 0.10						1	mg/L				
f. Nitrate-Nitrite *(as N)*	X		0.19						1	mg/L				

CONTINUE ON PAGE V-2

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)		X	<0.50						1	mg/L				
h. Oil and Grease		X	< 5.5						1	mg/L				
i. Phosphorus (as P), Total (7723-14-0)		X	<0.10						1	mg/L				
j. Radioactivity														
(1) Alpha, Total		X												
(2) Beta, Total		X												
(3) Radium, Total		X												
(4) Radium 226, Total		X												
k. Sulfate (as SO_4) (14808-79-8)		X	28						1	mg/L				
l. Sulfide (as S)	X								1	mg/L				
m. Sulfite (as SO_3) (14265-45-3)		X	<2.0						1	mg/L				
n. Surfactants		X	< 0.1						1	mg/L				
o. Aluminum, Total (7429-90-5)	X		0.55						1	mg/L				
p. Barium, Total (7440-39-3)	X		0.051						1	mg/L				
q. Boron, Total (7440-42-8)		X	<0.20						1	mg/L				
r. Cobalt, Total (7440-48-4)		X	<0.010						1	mg/L				
s. Iron, Total (7439-89-6)	X		0.36						1	mg/L				
t. Magnesium, Total (7439-95-4)	X		11.0						1	mg/L				
u. Molybdenum, Total (7439-98-7)	X		0.0075						1	mg/L				
v. Manganese, Total (7439-96-5)	X		0.052						1	mg/L				
w. Tin, Total (7440-31-5)	X		0.037						1	mg/L				
x. Titanium, Total (7440-32-6)		X	<0.010						1	mg/L				

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
TN8640006682	002

CONTINUED FROM PAGE 3 OF FORM 2-C

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part, please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT						d. NO. OF ANALYSES	4. UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*			a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)	X			<0.0010						1	mg/L				
2M. Arsenic, Total (7440-38-2)	X			0.0013						1	mg/L				
3M. Beryllium, Total, (7440-41-7)	X			<0.0010						1	mg/L				
4M. Cadmium, Total (7440-43-9)	X			<0.00050						1	mg/L				
5M. Chromium, Total (7440-47-3)	X			<0.0010						1	mg/L				
6M. Copper, Total (7440-50-8)	X			0.0071						1	mg/L				
7M. Lead, Total (7439-92-1)	X			<0.0010						1	mg/L				
8M. Mercury, Total (7439-97-6)	X			<0.0020						1	mg/L				
9M. Nickel, Total (7440-02-0)	X			0.0022						1	mg/L				
10M. Selenium, Total (7782-49-2)	X			<0.0010						1	mg/L				
11M. Silver, Total (7440-22-4)	X			<0.0050						1	mg/L				
12M. Thallium, Total (7440-28-0)	X			<0.0010						1	mg/L				
13M. Zinc, Total (7440-66-6)	X			<0.010						1	mg/L				
14M. Cyanide, Total (57-12-5)	X			<0.0050						1	mg/L				
15M. Phenols, Total	X			<0.040						1	mg/L				
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P Dioxin (1764-01-6)			X	DESCRIBE RESULTS											

CONTINUED FROM PAGE V-3

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	x			< 0.050						1	mg/L				
2V. Acrylonitrile (107-13-1)	x			< 0.010						1	mg/L				
3V. Benzene (71-43-2)	x			<0.0010						1	mg/L				
4V. Bis (Chloromethyl) Ether (542-88-1)			X												
5V. Bromoform (75-25-2)	x			< 0.0010						1	mg/L				
6V. Carbon Tetrachloride (56-23-5)	x			< 0.0010						1	mg/L				
7V. Chlorobenzene (108-90-7)	x			< 0.0010						1	mg/L				
8V. Chlorodibromomethane (124-48-1)	x			< 0.0010						1	mg/L				
9V. Chloroethane (75-00-3)	x			< 0.0050						1	mg/L				
10V. 2-Chloroethylvinyl Ether (110-75-8)	x			< 0.050						1	mg/L				
11V. Chloroform (67-66-3)	x			< 0.0050						1	mg/L				
12V. Dichlorobromomethane (75-27-4)	x			< 0.0010						1	mg/L				
13V. Dichlorodifluoromethane (75-71-8)	X			< 0.0050						1	mg/L				
14V. 1,1-Dichloroethane (75-34-3)	x			< 0.0010						1	mg/L				
15V. 1,2-Dichloroethane (107-06-2)	x			< 0.0010						1	mg/L				
16V. 1,1-Dichloroethylene (75-35-4)	x			< 0.0010						1	mg/L				
17V. 1,2-Dichloropropane (78-87-5)	x			< 0.0010						1	mg/L				
18V. 1,3-Dichloropropylene (542-75-6)	x			< 0.0020						1	mg/L				
19V. Ethylbenzene (100-41-4)	x			< 0.0010						1	mg/L				
20V. Methyl Bromide (74-83-9)	x			< 0.0050						1	mg/L				
21V. Methyl Chloride (74-87-3)	x			< 0.0010						1	mg/L				

EPA I.D. NUMBER (copy from Item 1 of Form 1): TN8640006682 | OUTFALL NUMBER: 002

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X" a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION - VOLATILE COMPOUNDS (continued)															
22V. Methylene Chloride (75-09-2)	X			< 0.0050						1	mg/L				
23V. 1,1,2,2-Tetrachloroethane (79-34-5)	X			< 0.0010						1	mg/L				
24V. Tetrachloroethylene (127-18-4)	X			< 0.0010						1	mg/L				
25V. Toluene (108-88-3)	X			< 0.0050						1	mg/L				
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X			< 0.0010						1	mg/L				
27V. 1,1,1-Trichloroethane (71-55-6)	X			< 0.0010						1	mg/L				
28V. 1,1,2-Trichloroethane (79-00-5)	X			< 0.0010						1	mg/L				
29V. Trichloroethylene (79-01-6)	X			< 0.0010						1	mg/L				
30V. Trichlorofluoromethane (75-69-4)	X			< 0.0050						1	mg/L				
31V. Vinyl Chloride (75-01-4)	X			< 0.0010						1	mg/L				
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	X			< 0.010						1	mg/L				
2A. 2,4-Dichlorophenol (120-83-2)	X			< 0.010						1	mg/L				
3A. 2,4-Dimethylphenol (105-67-9)	X			< 0.010						1	mg/L				
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X			< 0.010						1	mg/L				
5A. 2,4-Dinitrophenol (51-28-5)	X			< 0.010						1	mg/L				
6A. 2-Nitrophenol (88-75-5)	X			< 0.010						1	mg/L				
7A. 4-Nitrophenol (100-02-7)	X			< 0.010						1	mg/L				
8A. P-Chloro-M-Cresol (59-50-7)	X			< 0.010						1	mg/L				
9A. Pentachlorophenol (87-86-5)	X			< 0.010						1	mg/L				
10A. Phenol (108-95-2)	X			< 0.010						1	mg/L				
11A. 2,4,6-Trichlorophenol (88-06-2)	X			< 0.010						1	mg/L				

CONTINUE ON PAGE V-6

CONTINUED FROM PAGE V-5

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	X			< 0.0010						1	mg/L				
2B. Acenaphtylene (208-96-8)	X			< 0.0010						1	mg/L				
3B. Anthracene (120-12-7)	X			< 0.0010						1	mg/L				
4B. Benzidine (92-87-5)	X			< 0.050						1	mg/L				
5B. Benzo *(a)* Anthracene (56-55-3)	X			< 0.0010						1	mg/L				
6B. Benzo *(a)* Pyrene (50-32-8)	X			< 0.0010						1	mg/L				
7B. 3,4-Benzo-fluoranthene (205-99-2)	X			< 0.0010						1	mg/L				
8B. Benzo *(ghi)* Perylene (191-24-2)	X			< 0.0010						1	mg/L				
9B. Benzo *(k)* Fluoranthene (207-08-9)	X			< 0.0010						1	mg/L				
10B. Bis *(2-Chloro-ethoxy)* Methane (111-91-1)	X			< 0.010						1	mg/L				
11B. Bis *(2-Chloro-ethyl)* Ether (111-44-4)	X			< 0.010						1	mg/L				
12B. Bis *(2-Chloro-isopropyl)* Ether (102-60-1)	X			< 0.010						1	mg/L				
13B. Bis *(2-Ethyl-hexyl)* Phthalate (117-81-7)	X			< 0.0010						1	mg/L				
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	X			< 0.010						1	mg/L				
15B. Butyl Benzyl Phthalate (85-68-7)	X			< 0.0010						1	mg/L				
16B. 2-Chloro-naphthalene (91-58-7)	X			< 0.010						1	mg/L				
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	X			< 0.010						1	mg/L				
18B. Chrysene (218-01-9)	X			< 0.0010						1	mg/L				
19B. Dibenzo *(a,h)* Anthracene (53-70-3)	X			< 0.0010						1	mg/L				
20B. 1,2 Dichloro-benzene (95-50-1)	X			< 0.0010						1	mg/L				
21B. 1,3-Dichloro-benzene (541-73-1)	X			< 0.0010						1	mg/L				

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X" a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)															
22B. 1,4-Dichlorobenzene (106-46-7)	X			< 0.0010						1	mg/L				
23B. 3,3'-Dichlorobenzidine (91-94-1)	X			< 0.010						1	mg/L				
24B. Diethyl Phthalate (84-66-2)	X			< 0.0010						1	mg/L				
25B. Dimethyl Phthalate (131-11-3)	X			< 0.0010						1	mg/L				
26B. Di-N-Butyl Phthalate (84-74-2)	X			< 0.0010						1	mg/L				
27B. 2,4-Dinitrotoluene (121-14-2)	X			< 0.010						1	mg/L				
28B. 2,6-Dinitrotoluene (606-20-2)	X			< 0.010						1	mg/L				
29B. Di-N-Octyl Phthalate (117-84-0)	X			< 0.0010						1	mg/L				
30B. 1,2-Diphenylhydrazine (as Azobenzene) (122-66-7)	X			< 0.010						1	mg/L				
31B. Fluoranthene (206-44-0)	X			< 0.0010						1	mg/L				
32B. Fluorene (86-73-7)	X			< 0.0010						1	mg/L				
33B. Hexachlorobenzene (118-74-1)	X			< 0.010						1	mg/L				
34B. Hexachlorobutadiene (87-68-3)	X			< 0.010						1	mg/L				
35B. Hexachlorocyclopentadiene (77-47-4)	X			< 0.010						1	mg/L				
36B. Hexachloroethane (67-72-1)	X			< 0.010						1	mg/L				
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)	X			< 0.0010						1	mg/L				
38B. Isophorone (78-59-1)	X			< 0.010						1	mg/L				
39B. Naphthalene (91-20-3)	X			< 0.0010						1	mg/L				
40B. Nitrobenzene (98-95-3)	X			< 0.010						1	mg/L				
41B. N-Nitrosodimethylamine (62-75-9)	X			< 0.050						1	mg/L				
42B. N-Nitrosodi-Propylamine (621-64-7)	X			< 0.010						1	mg/L				

CONTINUED FROM PAGE V-7

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
43B. N-Nitrosodiphenylamine (86-30-6)	x			< 0.010						1	mg/L				
44B. Phenanthrene (85-01-8)	x			< 0.0010						1	mg/L				
45B. Pyrene (129-00-0)	x			< 0.0010						1	mg/L				
46B. 1,2,4-Trichlorobenzene (120-82-1)	x			< 0.010						1	mg/L				
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)			X												
2P. α-BHC (319-84-6)			X												
3P. β-BHC (319-85-7)			X												
4P. γ-BHC (58-89-9)			X												
5P. δ-BHC (319-86-8)			X												
6P. Chlordane (57-74-9)			X												
7P. 4,4'-DDT (50-29-3)			X												
8P. 4,4'-DDE (72-55-9)			X												
9P. 4,4'-DDD (72-54-8)			X												
10P. Dieldrin (60-57-1)			X												
11P. α-Endosulfan (115-29-7)			X												
12P. β-Endosulfan (115-29-7)			X												
13P. Endosulfan Sulfate (1031-07-8)			X												
14P. Endrin (72-20-8)			X												
15P. Endrin Aldehyde (7421-93-4)			X												
16P. Heptachlor (76-44-8)			X												

CONTINUED FROM PAGE V-8

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	a. TEST-ING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANAL-YSES	a. LONG TERM AVERAGE VALUE		a. LONG TERM AVERAGE VALUE		b. NO. OF ANAL-YSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		a. CONCEN-TRATION	b. MASS	(1) CONCEN-TRATION	(2) MASS	
GC/MS FRACTION - PESTICIDES *(continued)*															
17B. Heptachlor Epoxide (1024-57-3)			X												
18P. PCB-1242 (53469-21-9)			X												
19P. PCB-1254 (11097-69-1)			X												
20P. PCB-1221 (11104-28-2)			X												
21P. PCB-1232 (11141-16-5)			X												
22P. PCB-1248 (12672-29-6)			X												
23P. PCB-1260 (11096-82-5)			X												
24P. PCB-1016 (12674-11-2)			X												
25P. Toxaphene (8001-35-2)			X												

Please print or type in the unshaded areas only

TN8640006682

OMB No. 2040-0086
Approval expires 5/31/92

FORM 2C NPDES

EPA

U. S. ENVIRONMENTAL PROTECTION AGENCY

APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER

EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS

Consolidated Permits Program

I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER *(list)*	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER *(name)*
	1. DEG.	2. MIN	3. SEC.	1. DEG.	2. MIN.	3. SEC.	

II. FLOWS, SOURCES, OF POLLUTION, AND TREATMENT TECHNOLOGIES

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

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO *(list)*	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION *(list)*	b. AVERAGE FLOW *(include units)*	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
IMP 005	Metal cleaning wastewater from iron	0.007 MGD	Chemical metal cleaning		
	and copper treatment ponds. Waste		and non-chemical (water only)		
	water treated by batch and discharged		metal cleaning wastes are		
	to surface water via ash pond IMP 001.		treated in 2.4 and 22 acre-feet		
			ponds. Treatment includes:		
			1. pH adjustment	X	X
			2. Mixing	1	0
			3. Aeration	X	X
			4. Chemical precipitation	2	C
			5. Settling	1	U
			6. Neutralization in ash pond	2	K
			7. Discharge to surface water	4	A
			via IMP 001		

OFFICIAL USE ONLY *(effluent guidelines sub-categories)*

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: TN8640006682

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

OUTFALL NO.: IMP 005

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

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	c. LONG TERM AVRG. VALUE *(if available)* (2) MASS	d. NO. OF ANALYSES	3. UNITS *(specify if blank)* a. CONCENTRATION	3. UNITS b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*												
b. Chemical Oxygen Demand *(COD)*												
c. Total Organic Carbon *(TOC)*												
d. Total Suspended Solids *(TSS)*												
e. Ammonia *(as N)*												
f. Flow	3.75				2.41			MGD				
g. Temperature *(winter)*												
h. Temperature *(summer)*												
i. pH	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM				STANDARD UNITS				

See IMP 001 for required parameters.

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	c. LONG TERM AVRG. VALUE *(if available)* (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
a. Bromide (24959-67-9)														
b. Chlorine, Total Residual														
c. Color														
d. Fecal Coliform														
e. Fluoride (16984-48-8)														
f. Nitrate-Nitrite *(as N)*														

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	3. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (2) MASS	3. EFFLUENT d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)														
h. Oil and Grease														
i. Phosphorus (as P), Total (7723-14-0)														
j. Radioactivity														
(1) Alpha, Total														
(2) Beta, Total														
(3) Radium, Total														
(4) Radium 226, Total														
k. Sulfate (as SO_4) (14808-79-8)														
l. Sulfide (as S)														
m. Sulfite (as SO_3) (14265-45-3)														
n. Surfactants														
o. Aluminum, Total (7429-90-5)														
p. Barium, Total (7440-39-3)														
q. Boron, Total (7440-42-8)														
r. Cobalt, Total (7440-48-4)														
s. Iron, Total (7439-89-6)			2.1				1.02		3	mg/L				
t. Magnesium, Total (7439-95-4)														
u. Molybdenum, Total (7439-98-7)														
v. Manganese, Total (7439-96-5)														
w. Tin, Total (7440-31-5)														
x. Titanium, Total (7440-32-6)														

See IMP 001 for required paremeters

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
TN8640006682	IMP 005

CONTINUED FROM PAGE 3 OF FORM 2-C

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	c. LONG TERM AVRG. VALUE *(if available)* (2) MASS	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)															
2M. Arsenic, Total (7440-38-2)															
3M. Beryllium, Total (7440-41-7)															
4M. Cadmium, Total (7440-43-9)															
5M. Chromium, Total (7440-47-3)															
6M. Copper, Total (7440-50-8)				0.215				0.107		3	mg/L				
7M. Lead, Total (7439-92-1)															
8M. Mercury, Total (7439-97-6)															
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-Tetrachlorodibenzo-P Dioxin (1764-01-6)				DESCRIBE RESULTS											

See IMP 001 for required paremeters

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TEST-ING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANAL-YSES	a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANAL-YSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCEN-TRATION	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)															
2V. Acrylonitrile (107-13-1)															
3V. Benzene (71-43-2)															
4V. Bis (*Chloro-methyl*) Ether (542-88-1)															
5V. Bromoform (75-25-2)															
6V. Carbon Tetrachloride (56-23-5)															
7V. Chlorobenzene (108-90-7)															
8V. Chlorodi-bromomethane (124-48-1)															
9V. Chloroethane (75-00-3)															
10V. 2-Chloro-ethylvinyl Ether (110-75-8)															
11V. Chloroform (67-66-3)															
12V. Dichloro-bromomethane (75-27-4)															
13V. Dichloro-difluoromethane (75-71-8)															
14V. 1,1-Dichloro-ethane (75-34-3)															
15V. 1,2-Dichloro-ethane (107-06-2)															
16V. 1,1-Dichloro-ethylene (75-35-4)															
17V. 1,2-Dichloro-propane (78-87-5)															
18V. 1,3-Dichloro-propylene (542-75-6)															
19V. Ethylbenzene (100-41-4)															
20V. Methyl Bromide (74-83-9)															
21V. Methyl Chloride (74-87-3)															

CONTINUED FROM PAGE V-4

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS (continued)															
22V. Methylene Chloride (75-09-2)															
23V. 1,1,2,2-Tetrachloroethane (79-34-5)															
24V. Tetrachloroethylene (127-18-4)															
25V. Toluene (108-88-3)															
26V. 1,2-Trans-Dichloroethylene (156-60-5)															
27V. 1,1,1-Trichloroethane (71-55-6)															
28V. 1,1,2-Trichloroethane (79-00-5)															
29V. Trichloroethylene (79-01-6)															
30V. Trichlorofluoromethane (75-69-4)															
31V. Vinyl Chloride (75-01-4)															
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)															
2A. 2,4-Dichlorophenol (120-83-2)															
3A. 2,4-Dimethylphenol (105-67-9)															
4A. 4,6-Dinitro-O-Cresol (534-52-1)															
5A. 2,4-Dinitrophenol (51-28-5)															
6A. 2-Nitrophenol (88-75-5)															
7A. 4-Nitrophenol (100-02-7)															
8A. P-Chloro-M-Cresol (59-50-7)															
9A. Pentachlorophenol (87-86-5)															
10A. Phenol (108-95-2)															
11A. 2,4,6-Trichlorophenol (88-06-2)															

CONTINUED FROM PAGE V-5

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT						4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)															
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 (102-60-1)															
13B. Bis *(2-Ethyl-hexyl)* Phthalate (117-81-7)															
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)															
15B. Butyl Benzyl Phthalate (85-68-7)															
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)															

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT						4. UNITS		5. INTAKE (optional)		
	a. TEST-ING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)														
22B. 1,4-Dichlorobenzene (106-46-7)														
23B. 3,3'-Dichlorobenzidine (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-Dinitrotoluene (121-14-2)														
28B. 2,6-Dinitrotoluene (606-20-2)														
29B. Di-N-Octyl Phthalate (117-84-0)														
30B. 1,2-Diphenylhydrazine (as Azobenzene) (122-66-7)														
31B. Fluoranthene (206-44-0)														
32B. Fluorene (86-73-7)														
33B. Hexachlorobenzene (118-74-1)														
34B. Hexachlorobutadiene (87-68-3)														
35B. Hexachlorocyclopentadiene (77-47-4)														
36B. Hexachloroethane (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-Nitrosodimethylamine (62-75-9)														
42B. N-Nitrosodi-Propylamine (621-64-7)														

CONTINUED FROM PAGE V-7

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)															
43B. N-Nitrosodiphenylamine (86-30-6)															
44B. Phenanthrene (85-01-8)															
45B. Pyrene (129-00-0)															
46B. 1,2,4-Trichlorobenzene (120-82-1)															
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)															
2P. α-BHC (319-84-6)															
3P. β-BHC (319-85-7)															
4P. γ-BHC (58-89-9)															
5P. δ-BHC (319-86-8)															
6P. Chlordane (57-74-9)															
7P. 4,4'-DDT (50-29-3)															
8P. 4,4'-DDE (72-55-9)															
9P. 4,4'-DDD (72-54-8)															
10P. Dieldrin (60-57-1)															
11P. α-Endosulfan (115-29-7)															
12P. β-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)															

CONTINUED FROM PAGE V-8

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TEST-ING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	a. LONG TERM AVERAGE VALUE a. CONCENTRATION	a. LONG TERM AVERAGE VALUE b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION – PESTICIDES (continued)															
17B. 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)															

FORM 2C NPDES

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER

EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS

Consolidated Permits Program

I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER (list)	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER (name)
	1. DEG.	2. MIN	3. SEC.	1. DEG.	2. MIN.	3. SEC.	

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

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

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUT-FALL NO (list)	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION (list)	b. AVERAGE FLOW (include units)	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
IMP 007	North Parking Area Drainage and	**0.052 MGD**	Discharge to surface water	4	A
	Abandoned Ash Pond Area Seepage				

OFFICIAL USE ONLY *(effluent guidelines sub-categories)*

 Continue on Page 2

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: TN8640006682

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

OUTFALL NO. IMP 007

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

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	c. LONG TERM AVRG. VALUE *(if available)* (2) MASS	d. NO. OF ANALYSES	3. UNITS *(specify if blank)* a. CONCENTRATION	3. UNITS b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	<5						1	mg/L				
b. Chemical Oxygen Demand *(COD)*	<20						1	mg/L				
c. Total Organic Carbon *(TOC)*	1.9						1	mg/L				
d. Total Suspended Solids *(TSS)*	28						1	mg/L				
e. Ammonia *(as N)*	0.23						1	mg/L				
f. Flow	VALUE 3.75		VALUE		VALUE		1	MGD		VALUE		
g. Temperature *(winter)*	VALUE N/A		VALUE		VALUE			°C		VALUE		
h. Temperature *(summer)*	VALUE 26.7		VALUE		VALUE		1	°C		VALUE		
i. pH	MINIMUM 7.0	MAXIMUM 7.1	MINIMUM	MAXIMUM			4	STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	c. LONG TERM AVRG. VALUE *(if available)* (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
a. Bromide (24959-67-9)		X												
b. Chlorine, Total Residual		X	< 0.05						1	mg/L				
c. Color	X		2.0						1	PC Units				
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)	X		0.26						1	mg/L				
f. Nitrate-Nitrite *(as N)*	X		< 0.10						1	mg/L				

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: TN8640006682

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

OUTFALL NO. IMP 007

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

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	c. LONG TERM AVRG. VALUE *(if available)* (2) MASS	d. NO. OF ANALYSES	3. UNITS *(specify if blank)* a. CONCENTRATION	3. UNITS b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	4. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS	4. INTAKE b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	<5						1	mg/L				
b. Chemical Oxygen Demand *(COD)*	<20						1	mg/L				
c. Total Organic Carbon *(TOC)*	1.9						1	mg/L				
d. Total Suspended Solids *(TSS)*	28						1	mg/L				
e. Ammonia *(as N)*	0.23						1	mg/L				
f. Flow	VALUE 3.75		VALUE		VALUE		1	MGD		VALUE		
g. Temperature *(winter)*	VALUE N/A		VALUE		VALUE			°C		VALUE		
h. Temperature *(summer)*	VALUE 26.7		VALUE		VALUE		1	°C		VALUE		
i. pH	MINIMUM 7.0	MAXIMUM 7.1	MINIMUM	MAXIMUM			4	STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	c. LONG TERM AVRG. VALUE *(if available)* (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE b. NO. OF ANALYSES
a. Bromide (24959-67-9)		X												
b. Chlorine, Total Residual		X	< 0.05						1	mg/L				
c. Color	X		2.0						1	PC Units				
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)	X		0.26						1	mg/L				
f. Nitrate-Nitrite *(as N)*	X		< 0.10						1	mg/L				

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'		3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic (as N)	X		< 0.50						1	mg/L				
h. Oil and Grease	X		< 5.8						1	mg/L				
i. Phosphorus (as P), Total (7723-14-0)	X		< 0.10						1	mg/L				
j. Radioactivity														
(1) Alpha, Total		X												
(2) Beta, Total		X												
(3) Radium, Total		X												
(4) Radium 226, Total		X												
k. Sulfate (as SO_4) (14808-79-8)	X		230						1	mg/L				
l. Sulfide (as S)	X		< 0.050						1	mg/L				
m. Sulfite (as SO_3) (14265-45-3)	X		< 2.0						1	mg/L				
n. Surfactants	X		< 0.10						1	mg/L				
o. Aluminum, Total (7429-90-5)	X		0.28						1	mg/l				
p. Barium, Total (7440-39-3)	X		0.076						1	mg/l				
q. Boron, Total (7440-42-8)	X		0.89						1	mg/l				
r. Cobalt, Total (7440-48-4)	X		< 0.010						1	mg/l				
s. Iron, Total (7439-89-6)	X		15						1	mg/l				
t. Magnesium, Total (7439-95-4)	X		19						1	mg/L				
u. Molybdenum, Total (7439-98-7)	X		0.082						1	mg/l				
v. Manganese, Total (7439-96-5)	X		1.1						1	mg/l				
w. Tin, Total (7440-31-5)	X		0.060						1	mg/l				
x. Titanium, Total (7440-32-6)	X		< 0.010						1	mg/l				

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT						4. UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	c. LONG TERM AVRG. VALUE *(if available)* (2) MASS	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
METALS, CYANIDE, AND TOTAL PHENOLS														
1M. Antimony, Total (7440-36-0)	X			< 0.0010						1	mg/l				
2M. Arsenic, Total (7440-38-2)	X			0.036						1	mg/l				
3M. Beryllium, Total (7440-41-7)	X			< 0.0010						1	mg/l				
4M. Cadmium, Total (7440-43-9)	X			< 0.00050						1	mg/l				
5M. Chromium, Total (7440-47-3)	X			< 0.0010						1	mg/l				
6M. Copper, Total (7440-50-8)	X			< 0.0010						1	mg/l				
7M. Lead, Total (7439-92-1)	X			< 0.0010						1	mg/l				
8M. Mercury, Total (7439-97-6)	X			< 0.00020						1	mg/l				
9M. Nickel, Total (7440-02-0)	X			0.0045						1	mg/l				
10M. Selenium, Total (7782-49-2)	X			< 0.0010						1	mg/l				
11M. Silver, Total (7440-22-4)	X			< 0.00050						1	mg/l				
12M. Thallium, Total (7440-28-0)	X			< 0.0010						1	mg/l				
13M. Zinc, Total (7440-66-6)	X			0.012						1	mg/l				
14M. Cyanide, Total (57-12-5)	X			< 0.0050						1	mg/l				
15M. Phenols, Total	X			< 0.040						1	mg/l				
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P Dioxin (1764-01-6)			X	DESCRIBE RESULTS											

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT						4. UNITS		5. INTAKE (optional)		
	a. TEST-ING REQUIRED	b. BE-LIEVED PRESENT	c. BE-LIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANAL-YSES	a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCEN-TRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANAL-YSES
GC/MS FRACTION - VOLATILE COMPOUNDS														
1V. Acrolein (107-02-8)	x			< 0.050						1	mg/l				
2V. Acrylonitrile (107-13-1)	x			< 0.010						1	mg/l				
3V. Benzene (71-43-2)	x			<0.0010						1	mg/l				
4V. Bis *(Chloro-methyl)* Ether (542-88-1)			X												
5V. Bromoform (75-25-2)	x			< 0.0010						1	mg/l				
6V. Carbon Tetrachloride (56-23-5)	x			< 0.0010						1	mg/l				
7V. Chlorobenzene (108-90-7)	x			< 0.0010						1	mg/l				
8V. Chlorodi-bromomethane (124-48-1)	x			< 0.0010						1	mg/l				
9V. Chloroethane (75-00-3)	x			< 0.0050						1	mg/l				
10V. 2-Chloro-ethylvinyl Ether (110-75-8)	x			< 0.050						1	mg/l				
11V. Chloroform (67-66-3)	x			< 0.0050						1	mg/l				
12V. Dichloro-bromomethane (75-27-4)	x			< 0.0010						1	mg/l				
13V. Dichloro-difluoromethane (75-71-8)	X			< 0.0050						1	mg/l				
14V. 1,1-Dichloro-ethane (75-34-3)	x			< 0.0010						1	mg/l				
15V. 1,2-Dichloro-ethane (107-06-2)	x			< 0.0010						1	mg/l				
16V. 1,1-Dichloro-ethylene (75-35-4)	x			< 0.0010						1	mg/l				
17V. 1,2-Dichloro-propane (78-87-5)	x			< 0.0010						1	mg/l				
18V. 1,3-Dichloro-propylene (542-75-6)	x			< 0.0020						1	mg/l				
19V. Ethylbenzene (100-41-4)	x			< 0.0010						1	mg/l				
20V. Methyl Bromide (74-83-9)	x			< 0.0050						1	mg/l				
21V. Methyl Chloride (74-87-3)	x			< 0.0010						1	mg/l				

CONTINUED FROM PAGE V-4

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	2. MARK 'X' b. BELIEVED PRESENT	2. MARK 'X' c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	3. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (2) MASS	3. EFFLUENT d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) b. NO. OF ANALYSES
GC/MS FRACTION - VOLATILE COMPOUNDS (continued)															
22V. Methylene Chloride (75-09-2)	x			< 0.0050						1	mg/l				
23V. 1,1,2,2-Tetrachloroethane (79-34-5)	x			< 0.0010						1	mg/l				
24V. Tetrachloroethylene (127-18-4)	x			< 0.0010						1	mg/l				
25V. Toluene (108-88-3)	x			< 0.0050						1	mg/l				
26V. 1,2-Trans-Dichloroethylene (156-60-5)	x			< 0.0010						1	mg/l				
27V. 1,1,1-Trichloroethane (71-55-6)	x			< 0.0010						1	mg/l				
28V. 1,1,2-Trichloroethane (79-00-5)	x			< 0.0010						1	mg/l				
29V. Trichloroethylene (79-01-6)	x			< 0.0010						1	mg/l				
30V. Trichlorofluoromethane (75-69-4)	x			< 0.0050						1	mg/l				
31V. Vinyl Chloride (75-01-4)	x			< 0.0010						1	mg/l				
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	x			< 0.010						1	mg/l				
2A. 2,4-Dichlorophenol (120-83-2)	x			< 0.010						1	mg/l				
3A. 2,4-Dimethylphenol (105-67-9)	x			< 0.010						1	mg/l				
4A. 4,6-Dinitro-O-Cresol (534-52-1)	x			< 0.010						1	mg/l				
5A. 2,4-Dinitrophenol (51-28-5)	x			< 0.010						1	mg/l				
6A. 2-Nitrophenol (88-75-5)	x			< 0.010						1	mg/l				
7A. 4-Nitrophenol (100-02-7)	x			< 0.010						1	mg/l				
8A. P-Chloro-M Cresol (59-50-7)	x			< 0.010						1	mg/l				
9A. Pentachlorophenol (87-86-5)	x			< 0.010						1	mg/l				
10A. Phenol (108-95-2)	x			< 0.010						1	mg/l				
11A. 2,4,6-Trichlorophenol (88-06-2)	x			< 0.010						1	mg/l				

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	x			< 0.0010						1	mg/l				
2B. Acenaphtylene (208-96-8)	x			< 0.0010						1	mg/l				
3B. Anthracene (120-12-7)	x			< 0.0010						1	mg/l				
4B. Benzidine (92-87-5)	x			< 0.050						1	mg/l				
5B. Benzo *(a)* Anthracene (56-55-3)	x			< 0.0010						1	mg/l				
6B. Benzo *(a)* Pyrene (50-32-8)	x			< 0.0010						1	mg/l				
7B. 3,4-Benzo-fluoranthene (205-99-2)	x			< 0.0010						1	mg/l				
8B. Benzo *(ghi)* Perylene (191-24-2)	x			< 0.0010						1	mg/l				
9B. Benzo *(k)* Fluoranthene (207-08-9)	x			< 0.0010						1	mg/l				
10B. Bis *(2-Chloro-ethoxy)* Methane (111-91-1)	x			< 0.010						1	mg/l				
11B. Bis *(2-Chloro-ethyl)* Ether (111-44-4)	x			< 0.010						1	mg/l				
12B. Bis *(2-Chloro-isopropyl)* Ether (102-60-1)	x			< 0.010						1	mg/l				
13B. Bis *(2-Ethyl-hexyl)* Phthalate (117-81-7)	x			< 0.0010						1	mg/l				
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	x			< 0.010						1	mg/l				
15B. Butyl Benzyl Phthalate (85-68-7)	x			< 0.0010						1	mg/l				
16B. 2-Chloro-naphthalene (91-58-7)	x			< 0.010						1	mg/l				
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	x			< 0.010						1	mg/l				
18B. Chrysene (218-01-9)	x			< 0.0010						1	mg/l				
19B. Dibenzo *(a,h)* Anthracene (53-70-3)	x			< 0.0010						1	mg/l				
20B. 1,2-Dichloro-benzene (95-50-1)	x			< 0.0010						1	mg/l				
21B. 1,3-Dichloro-benzene (541-73-1)	x			< 0.0010						1	mg/l				

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)															
22B. 1,4-Dichlorobenzene (106-46-7)	x			< 0.0010						1	mg/l				
23B. 3,3'-Dichlorobenzidine (91-94-1)	x			< 0.010						1	mg/l				
24B. Diethyl Phthalate (84-66-2)	x			< 0.0010						1	mg/l				
25B. Dimethyl Phthalate (131-11-3)	x			< 0.0010						1	mg/l				
26B. Di-N-Butyl Phthalate (84-74-2)	x			< 0.0010						1	mg/l				
27B. 2,4-Dinitrotoluene (121-14-2)	x			< 0.010						1	mg/l				
28B. 2,6-Dinitrotoluene (606-20-2)	x			< 0.010						1	mg/l				
29B. Di-N-Octyl Phthalate (117-84-0)	x			< 0.0010						1	mg/l				
30B. 1,2-Diphenylhydrazine (as Azobenzene) (122-66-7)	X			< 0.010						1	mg/l				
31B. Fluoranthene (206-44-0)	x			< 0.0010						1	mg/l				
32B. Fluorene (86-73-7)	x			< 0.0010						1	mg/l				
33B. Hexachlorobenzene (118-74-1)	x			< 0.010						1	mg/l				
34B. Hexachlorobutadiene (87-68-3)	x			< 0.010						1	mg/l				
35B. Hexachlorocyclopentadiene (77-47-4)	x			< 0.010						1	mg/l				
36B. Hexachloroethane (67-72-1)	x			< 0.010						1	mg/l				
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)	x			< 0.0010						1	mg/l				
38B. Isophorone (78-59-1)	x			< 0.010						1	mg/l				
39B. Naphthalene (91-20-3)	x			< 0.0010						1	mg/l				
40B. Nitrobenzene (98-95-3)	x			< 0.010						1	mg/l				
41B. N-Nitrosodimethylamine (62-75-9)	X			< 0.050						1	mg/l				
42B. N-Nitrosodi-Propylamine (621-64-7)	x			< 0.010						1	mg/l				

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)															
43B. N-Nitrosodiphenylamine (86-30-6)	X			< 0.010						1	mg/l				
44B. Phenanthrene (85-01-8)	X			< 0.0010						1	mg/l				
45B. Pyrene (129-00-0)	X			< 0.0010						1	mg/l				
46B. 1,2,4 - Trichlorobenzene (120-82-1)	X			< 0.010						1	mg/l				
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)			X												
2P. α-BHC (319-84-6)			X												
3P. β-BHC (319-85-7)			X												
4P. γ-BHC (58-89-9)			X												
5P. δ-BHC (319-86-8)			X												
6P. Chlordane (57-74-9)			X												
7P. 4,4'-DDT (50-29-3)			X												
8P. 4,4'-DDE (72-55-9)			X												
9P. 4,4'-DDD (72-54-8)			X												
10P. Dieldrin (60-57-1)			X												
11P. α-Endosulfan (115-29-7)			X												
12P. β-Endosulfan (115-29-7)			X												
13P. Endosulfan Sulfate (1031-07-8)			X												
14P. Endrin (72-20-8)			X												
15P. Endrin Aldehyde (7421-93-4)			X												
16P. Heptachlor (76-44-8)			X												

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: TN8640006682

OUTFALL NUMBER: IMP 007

CONTINUED FROM PAGE V-8

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	a. TEST-ING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	c. LONG TERM AVRG. VALUE *(if available)* (2) MASS	d. NO. OF ANALYSES	a. LONG TERM AVERAGE VALUE a. CONCENTRATION	a. LONG TERM AVERAGE VALUE b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION - PESTICIDES *(continued)*															
17B. Heptachlor Epoxide (1024-57-3)			X												
18P. PCB-1242 (53469-21-9)			X												
19P. PCB-1254 (11097-69-1)			X												
20P. PCB-1221 (11104-28-2)			X												
21P. PCB-1232 (11141-16-5)			X												
22P. PCB-1248 (12672-29-6)			X												
23P. PCB-1260 (11096-82-5)			X												
24P. PCB-1016 (12674-11-2)			X												
25P. Toxaphene (8001-35-2)			X												

Please type or print in the unshaded areas only

EPA ID Number *(copy from Item 1 of Form 1)*: TN 8640006682

Form Approved
OMB No. 2040-0086
Approval expires 7-31-88

Form **2D** NPDES

EPA

New Sources and New Dischargers
Application for Permit to Discharge Process Wastewater

I. Outfall Location

For each outfall, list the latitude and longitude and the name of the receiving water.

Outfall Number *(list)*	Latitude			Longitude			Receiving Water *(name)*
	Deg	Min	Sec	Deg	Min	Sec	
DSN 002	35	53	45	84	31	15	Watts Bar Reservoir

II. Discharge Date *(When do you expect to begin discharging?)*

The KIF FGD system is currently scheduled to begin operation as early as October 2009.

III. Flows, Sources of Pollution, and Treatment Technologies

A. For each outfall, provide a description of (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

Outfall Number	1. Operations Contributing Flow *(list)*	2. Average Flow *(include units)*	3. Treatment *(Description or List Codes from Table 2D-1)*
DSN 002	Condenser cooling water discharge	1297.864 MGD	Discharge to surface water (4-A)
	channel, which receives flow from:		
	(Current)		
	(1) Once through condenser cooling water,	*1296.627 MGD*	
	including flows from ash pond IMP 001.		
	(2) 3rd Floor Boiler blowdown	0.014 MGD	
	(3) Discharge from underflow ponds,	0.010 MGD	Settling (1-U)
	including fire protection flushes, raw water		
	leakage, and runoff from the south		
	transformer and switchyard.		
	(4) Intake screen backwash via IMP 004,	0.252 MGD	Discharge to surface water via DSN 002 (4-A)
	including FGD raw water strainer backwash.		
	(Future)		
IMP 009	FGD Storm water pond which receives	*0.961 MGD*	Treatment will occur in a 6.87 acre pond, providing:
	flow from:		Settling (1-U)
	FGD Disposal area (rim ditch)	*(0.945 MGD)*	Neutralization (2-K)
	FGD marketing area dewatering (future)	0	Discharge to Surface Watern via DSN 002 (4-A)
	Direct Precipitation	*(0.032 MGD)*	
	Less Evaporation	*(-0.016 MGD)*	

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

C. Except for storm runoff, leaks, or spills, will any of the discharges described in Item III-A be intermittent or seasonal?

[ ] Yes *(complete the following table)* [X] No *(go to item IV)*

Outfall Number	1. Frequency		2. Flow		
	a. Days Per Week *(specify average)*	b. Months Per Year *(specify average)*	a. Maximum Daily Flow Rate *(in mgd)*	b. Maximum Total Volume *(specify with units)*	c. Duration *(in days)*

IV. Production

If there is an applicable production-based effluent guideline or NSPS, for each outfall list the estimated level of production (projection of actual production level, not design), expressed in the terms and units used in the applicable effluent guideline or NSPS, for each of the first 3 years of operation. If production is likely to vary, you may also submit alternative estimates (attach a separate sheet).

Year	a. Quantity Per Day	b. Units of Measure	c. Operation, Product, Material, etc *(specify)*
N/A			

CONTINUED FROM THE FRONT	EPA ID Number *(copy from Item 1 of Form 1)*	Outfall Number
	TN 8640006682	002

V. Effluent Characteristics

A, and B. These items require you to report estimated amounts *(both concentration and mass)* of the pollutants to be discharged from each of your outfalls. Each part of this item addresses a different set of pollutants and should be completed in accordance with the specific instructions for that part. Data for each outfall should be on a separate page. Attach additional sheets of paper if necessary.

General Instructions *(See table 2D-2 for Pollutants)*

Each part of this item requests you to provide an estimated daily maximum and average for certain pollutants and the source of information. Data for all pollutants in Group A, for all outfalls, must be submitted unless waived by the permitting authority. For all outfalls, data for pollutants in Group B should be reported only for pollutants which you believe will be present or are limited directly by an effluent limitations guideline or NSPS or indirectly through limitations on an indicator pollutant.

1. Pollutant	2. Maximum Daily Value *(include units)*	3. Average Daily Value *(include units)*	4. Source (see instructions)
Biochemical oxygen demand	<5.0 mg/L	<5.0 mg/L	4 (Form 2C -KIF 002)
Chemical oxygen demand	<20 mg/L	<20 mg/L	4 (Form 2C -KIF 002)
Total organic carbon	3.4 mg/L	3.4 mg/L	4 (Form 2C -KIF 002)
Total suspended solids	9.8 mg/L	9.8 mg/L	4 (Form 2C -KIF 002)
Flow	1395 MGD	1297.864 MGD	4 (Form 2C and flow schematic - KIF 002)
Ammonia as nitrogen	<0.10 mg/L	< 0.10 mg/L	4 (Form 2C -KIF 002)
Temperature (winter)	29.2 degrees C	18 degrees C	4 (Form 2C - reflects historical data -KIF 002)
Temperature (summer)	32.1 degrees C	28.4 degrees C	4 (Form 2C - reflects historical data -KIF 002)
pH	range 6.7 - 8.2 s.u.	N/A	4 (Form 2C - reflects historical data -KIF 002)
Fluoride	2.4 mg/L	2.35 mg/L	3 (Monitoring data for Cumberland Fossil Plant(CUF))
Nitrate-Nitrite (as N)	0.19 mg/L	0.19 mg/L	4 (Form 2C -KIF 002)
Oil & Grease	<5.5 mg/L	< 5.5 mg/L	4 (Form 2C -KIF 002)
Phosphorus (as P), Total	<0.10 mg/L	<0.10 mg/L	4 (Form 2C -KIF 002)
Sulfate (as SO_4)	28 mg/L	28 mg/L	4 (Form 2C -KIF 002)
Sulfide (as S)	< 0.02 mg/L	< 0.02 mg/L	3 (Form 2C for CUF)
Iron, Total	0.30 mg/L	0.30 mg/L	4 (CUF rim ditch & KIF CCW data)
Nickel, Total	0.0023 mg/L	0.0023 mg/L	4 (CUF rim ditch & KIF CCW data)
Color	3 PC Units	3 PC Units	4 (Form 2C -KIF 002)
Aluminum, Total	0.55 mg/L	0.55 mg/L	4 (CUF rim ditch & KIF CCW data)
Barium, Total	0.051mg/L	0.051 mg/L	4 (Form 2C -KIF 002)
Boron, Total	<0.2 mg/L	<0.2 mg/L	4 (CUF rim ditch & KIF CCW data)
Magnesium, Total	11.5 mg/L	11.5 mg/L	4 (CUF rim ditch & KIF CCW data)
Molybdenum, Total	0.0075 mg/L	0.0075 mg/L	4 (Form 2C -KIF 002)
Manganese, Total	0.053 mg/L	0.053 mg/L	4 (CUF rim ditch & KIF CCW data)

CONTINUED FROM THE FRONT	EPA ID Number *(copy from Item 1 of Form 1)*	Outfall Number
	TN 8640006682	002

V. Effluent Characteristics

A, and B. These items require you to report estimated amounts *(both concentration and mass)* of the pollutants to be discharged from each of your outfalls. Each part of this item addresses a different set of pollutants and should be completed in accordance with the specific instructions for that part. Data for each outfall should be on a separate page. Attach additional sheets of paper if necessary.

General Instructions *(See table 2D-2 for Pollutants)*

Each part of this item requests you to provide an estimated daily maximum and average for certain pollutants and the source of information. Data for all pollutants in Group A, for all outfalls, must be submitted unless waived by the permitting authority. For all outfalls, data for pollutants in Group B should be reported only for pollutants which you believe will be present or are limited directly by an effluent limitations guideline or NSPS or indirectly through limitations on an indicator pollutant.

1. Pollutant	2. Maximum Daily Value *(include units)*	3. Average Daily Value *(include units)*	4. Source (see instructions)
Antimony, Total	<0.001 mg/L	<0.001 mg/L	4 (Form 2C -KIF 002)
Arsenic, Total	0.001 mg/L	0.001 mg/L	4 (CUF rim ditch & KIF CCW data)
Cadmium, Total	<0.0005 mg/L	<0.0005 mg/L	4 (CUF rim ditch & KIF CCW data)
Chromium, Total	0.007 mg/L	0.007 mg/L	4 (CUF rim ditch & KIF CCW data)
Mercury, Total	<0.00005 mg/L	< 0.00005 mg/L	4 (CUF rim ditch & KIF CCW data)
Lead, Total	<0.001 mg/L	<0.001 mg/L	4 (CUF rim ditch & KIF CCW data)
Selenium, Total	<0.0010 mg/L	<0.0010 mg/L	4 (CUF rim ditch & KIF CCW data)
Copper, Total	<0.001 mg/L	<0.001 mg/L	4 (CUF rim ditch & KIF CCW data)
Silver, Total	<0.0005 mg/L	<0.0005 mg/L	4 (CUF rim ditch & KIF CCW data)
Zinc, Total	<0.01 mg/L	<0.01 mg/L	4 (CUF rim ditch & KIF CCW data)

CONTINUED FROM THE FRONT	EPA ID Number *(copy from Item 1 of Form 1)* TN 8640006682	

C. Use the space below to list any of the pollutants listed in Table 2D-3 of the instructions which you know or have reason to believe will be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it will be present.

1. Pollutant	2. Reason for Discharge
Vanadium pentoxide	Present in catalyst used in the selective catalytic reduction (SCR) equipment used to control NOx air emissions.

VI. Engineering Report on Wastewater Treatment

A. If there is any technical evaluation concerning your wastewater treatment, including engineering reports or pilot plant studies, check the appropriate box below.

☐ Report Available ☒ No Report

B. Provide the name and location of any existing plant(s) which, to the best of your knowledge, resembles this production facility with respect to production processes, wastewater constituents, or wastewater treatments.

Name	Location
Cumberland Fossil Plant	*815 Cumberland City Road, Cumberland City, Tennessee*

VII. Other Information *(Optional)*

Use the space below to expand upon any of the above questions or to bring to the attention of the reviewer any other information you feel should be considered in establishing permit limitations for the proposed facility. Attach additional sheets if necessary.

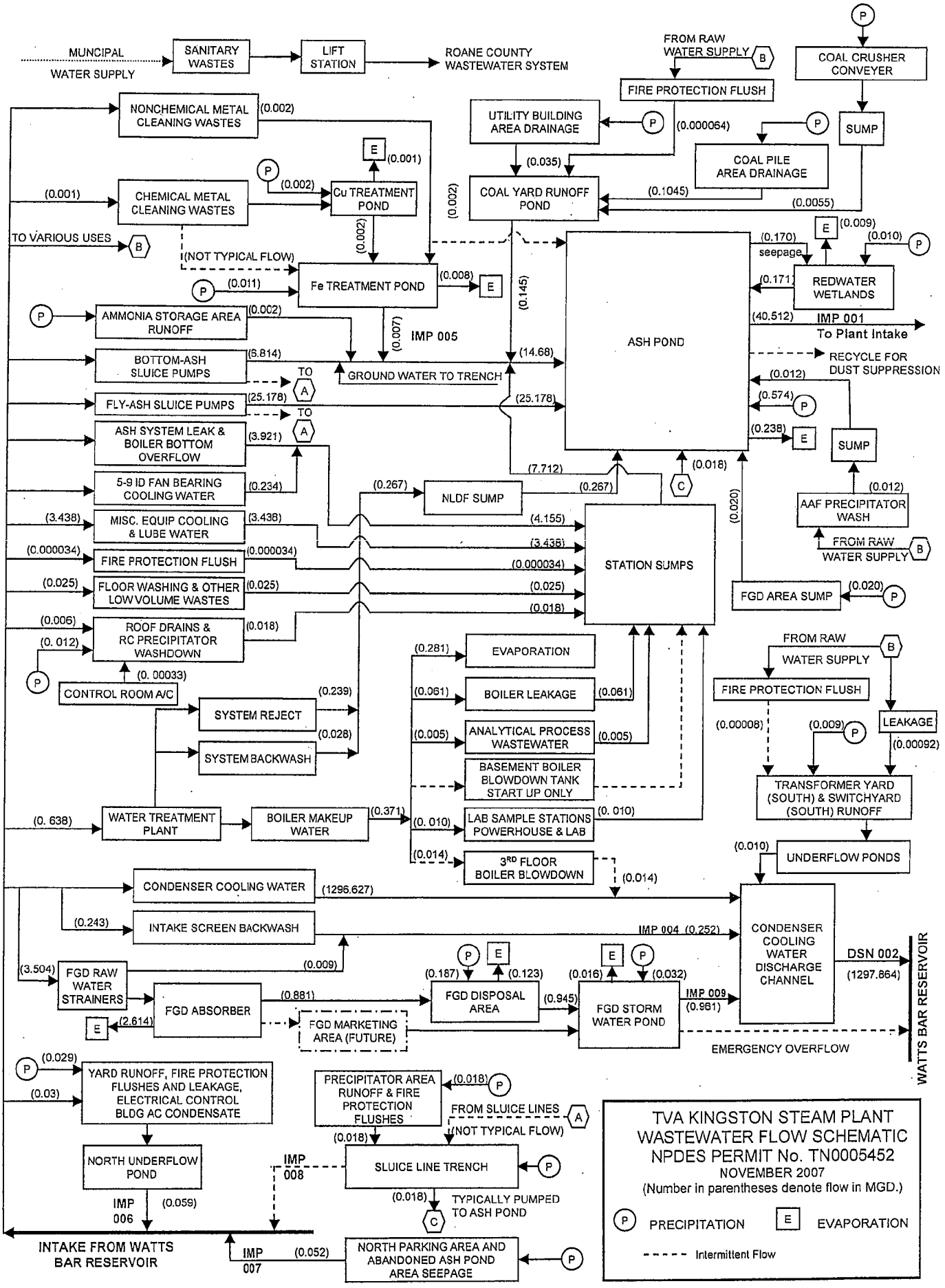
FGD wastewater is a low volume waste source per 40 CFR Part 423. Other low volume waste sources are currently treated in the ash pond (IMP 001) which is discharged via DSN 002.

KIF's FGD system is not expected to cause appreciable effluent toxicity, exceedances of current permit limitations, or significantly increase instream concentrations of metals.

VIII. Certification

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

A. Name and Official Title *(type or print)*	B. Phone No.
Michael T. Beckham, Plant Manager	(865) 717-2500
C. Signature	D. Date signed
Michael T. Beckham	11/30/07


MUNCIPAL WATER SUPPLY
SANITARY WASTES
LIFT STATION
ROANE COUNTY WASTEWATER SYSTEM
FROM RAW WATER SUPPLY
B
COAL CRUSHER CONVEYER
FIRE PROTECTION FLUSH
NONCHEMICAL METAL CLEANING WASTES
(0.002)
UTILITY BUILDING AREA DRAINAGE
(0.000064)
SUMP
(0.035)
COAL PILE AREA DRAINAGE
(0.001)
CHEMICAL METAL CLEANING WASTES
Cu TREATMENT POND
(0.001)
(0.002)
COAL YARD RUNOFF POND
(0.1045)
(0.0055)
TO VARIOUS USES
(NOT TYPICAL FLOW)
Fe TREATMENT POND
(0.008)
(0.011)
(0.145)
(0.170)
seepage
(0.009)
(0.010)
REDWATER WETLANDS
(0.171)
AMMONIA STORAGE AREA RUNOFF
(0.002)
IMP 005
(0.007)
ASH POND
(40.512)
IMP 001
To Plant Intake
BOTTOM-ASH SLUICE PUMPS
(5.814)
TO
A
GROUND WATER TO TRENCH
(14.68)
RECYCLE FOR DUST SUPPRESSION
(0.012)
FLY-ASH SLUICE PUMPS
(25.178)
(0.574)
ASH SYSTEM LEAK & BOILER BOTTOM OVERFLOW
(3.921)
(0.238)
SUMP
(7.712)
(0.018)
5-9 ID FAN BEARING COOLING WATER
(0.234)
(0.267)
NLDF SUMP
(0.020)
(0.012)
AAF PRECIPITATOR WASH
(3.438)
MISC. EQUIP COOLING & LUBE WATER
(4.155)
(0.000034)
FIRE PROTECTION FLUSH
(0.000034)
STATION SUMPS
(0.025)
FLOOR WASHING & OTHER LOW VOLUME WASTES
(0.025)
(0.018)
FGD AREA SUMP
(0.020)
(0.006)
(0. 012)
ROOF DRAINS & RC PRECIPITATOR WASHDOWN
(0.018)
(0. 00033)
CONTROL ROOM A/C
(0.281)
EVAPORATION
(0.061)
BOILER LEAKAGE
(0.239)
SYSTEM REJECT
(0.028)
(0.005)
ANALYTICAL PROCESS WASTEWATER
SYSTEM BACKWASH
BASEMENT BOILER BLOWDOWN TANK START UP ONLY
(0. 638)
WATER TREATMENT PLANT
BOILER MAKEUP WATER
(0.371)
(0. 010)
LAB SAMPLE STATIONS POWERHOUSE & LAB
(0.014)
3RD FLOOR BOILER BLOWDOWN
FROM RAW WATER SUPPLY
FIRE PROTECTION FLUSH
(0.00008)
(0.009)
LEAKAGE
(0.00092)
TRANSFORMER YARD (SOUTH) & SWITCHYARD (SOUTH) RUNOFF
(0.010)
UNDERFLOW PONDS
CONDENSER COOLING WATER
(1296.627)
(0.243)
INTAKE SCREEN BACKWASH
IMP 004 (0.252)
CONDENSER COOLING WATER DISCHARGE CHANNEL
DSN 002
(1297.864)
(3.504)
FGD RAW WATER STRAINERS
(0.009)
(0.187)
(0.123)
(0.016)
(0.032)
FGD ABSORBER
(0.881)
FGD DISPOSAL AREA
(0.945)
FGD STORM WATER POND
IMP 009
(0.961)
(2.614)
FGD MARKETING AREA (FUTURE)
EMERGENCY OVERFLOW
WATTS BAR RESERVOIR
(0.029)
(0.03)
YARD RUNOFF, FIRE PROTECTION FLUSHES AND LEAKAGE, ELECTRICAL CONTROL BLDG AC CONDENSATE
PRECIPITATOR AREA RUNOFF & FIRE PROTECTION FLUSHES
(0.018)
FROM SLUICE LINES
(NOT TYPICAL FLOW)
NORTH UNDERFLOW POND
IMP 008
SLUICE LINE TRENCH
IMP 006
(0.059)
TYPICALLY PUMPED TO ASH POND
INTAKE FROM WATTS BAR RESERVOIR
IMP 007
(0.052)
NORTH PARKING AREA AND ABANDONED ASH POND AREA SEEPAGE
TVA KINGSTON STEAM PLANT
WASTEWATER FLOW SCHEMATIC
NPDES PERMIT No. TN0005452
NOVEMBER 2007
(Number in parentheses denote flow in MGD.)
PRECIPITATION
EVAPORATION
Intermittent Flow

Please type or print in the unshaded areas only.

EPA ID Number (*copy from Item 1 of Form 1*)
TN8640006682

Form Approved
OMB No. 2040-0086
Approval expires 7-31-88

Form **2E** NPDES

EPA Facilities Which Do Not Discharge Process Wastewater

I. Receiving Waters

For this outfall, list the latitude and longitude, and name of the receiving water(s).

Outfall Number *(list)*	Latitude			Longitude			Receiving Water *(name)*
	Deg	Min	Sec	Deg	Min	Sec	
006	35	54	00	84	31	00	Plant intake canal (to Clinch River/Watts Bar Reservoir)

II. Discharge Date *(If a new discharger, the date you expect to begin discharging)*

III. Type of Waste

A. Check the box(es) indicating the general type of wastes discharged.

[ ] Sanitary Wastes [ ] Restaurant or Cafeteria Wastes [X] Noncontact Cooling Water A/C Cooling Water from Electrical Control Bldg [ ] Other Nonprocess Wastewater *(identify)*

B. If any cooling water additives are used, list them here. Briefly describe their composition if this information is available.

No additives are currently used.

IV. Effluent Characteristics

A. Existing Sources - Provide measurements for the parameters listed in the left-hand column below, unless waived by the permitting authority *(see instructions)*.

B. New Discharges - Provide estimates for the parameters listed in the left-hand column below, unless waived by the permitting authority. Instead of the number of measurements taken, provide the source of estimated values *(see instructions)*.

Pollutant or Parameter	(1) Maximum Daily Value *(include units)*		(2) Average Daily Value *(last year)* *(include units)*		(3) Number of Measurements Taken *(last year)*	(4) Source of Estimate *(if new discharger)*
	Mass	Concentration	Mass	Concentration		
Biochemical Oxygen Demand (BOD)		< 5.0 mg/L			1	
Total Suspended Solids (TSS)		3.2 mg/L			1	
Fecal Coliform *(if believed present or if sanitary waste is discharged)*		N/A				
Total Residual Chlorine *(if chlorine is used)*		< 0.05 mg/L Cl			1	
Oil and Grease		< 5.15 mg/L			1	
*Chemical oxygen demand (COD)		< 20 mg/L			1	
*Total organic carbon (TOC)		3.4 mg/L			1	
Ammonia *(as N)*		< 0.10 mg/L			1	
Discharge Flow	Value 0.26 MGD				1	
pH *(give range)*	Value 8.0 - 8.4				4	
Temperature *(Winter)*	N/A °C			°C		
Temperature *(Summer)*	30.1 °C			°C	1	

*If noncontact cooling water is discharged

V. Except for leaks or spills, will the discharge described in this form be intermittent or seasonal? If yes, briefly describe the frequency of flow and duration. [ ] Yes [X] No

VI. Treatment System *(Describe briefly any treatment system(s) used or to be used)*

NONE

VII. Other Information *(Optional)*

Use the space below to expand upon any of the above questions or to bring to the attention of the reviewer any other information you feel should be considered in establishing permit limitation. Attach additional sheets, if necessary.

VIII. Certification

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

A. Name & Official Title	B. Phone No. *(area code & no.)*
Michael T. Beckham, Plant Manager	865-717-2500
C. Signature	D. Date Signed
Michael T. Beckham	11/30/07

Tennessee Department of Environment and Conservation
Division of Water Pollution Control
401 Church Street, 6th Floor L & C Annex
Nashville, TN 37243-1534
Phone: (615)532-0625

PERMIT CONTACT INFORMATION

Please complete all sections. If one person serves multiple functions, please repeat this information in each section.

PERMIT NUMBER: TN0005452 **DATE:** November 2007

PERMITTED FACILITY: Tennessee Valley Authority--Kingston Fossil Plant **COUNTY:** Roane

OFFICIAL PERMIT CONTACT:

(The permit signatory authority, e.g. responsible corporate officer, principle executive officer or ranking elected official)

Official Contact:	Michael T. Beckham	**Title or Position:**	Plant Manager		
Mailing Address:	714 Swan Pond Road	**City:**	Harriman	**State:** TN	**Zip:** 37748
Phone number(s):	(865) 717-2500	**E-mail:**	mtbeckha@tva.gov		

PERMIT BILLING ADDRESS (where invoices should be sent):

Billing Contact:	Gordon G. Park	**Title or Position:**	Manager--Environmental Compliance		
Mailing Address:	1101 Market Street, LP 5D	**City:**	Chattanooga	**State:** TN	**Zip:** 37402
Phone number(s):	(423) 751-2806	**E-mail:**	ggpark@tva.gov		

FACILITY LOCATION (actual location of permit site and local contact for site activity):

Facility Location Contact:	Cynthia W McCowan	**Title or Position:**	Program Administrator (Environmental)		
Facility Location (physical street address):	714 Swan Pond Road	**City:**	Harriman	**State:** TN	**Zip:** 37748
Phone number(s):	(865) 717-2180	**E-mail:**	cowebb@tva.gov		

Alternate Contact (if desired):		**Title or Position:**		
Mailing Address:		**City:**	**State:**	**Zip:**
Phone number(s):		**E-mail:**		

FACILITY REPORTING (Discharge Monitoring Report (DMR) or other reporting):

Cognizant Official authorized for permit reporting:	Plant Manager (By Title)	**Title or Position:**	Plant Manager (currently Michael T. Beckham)		
Facility Location (physical street address):	714 Swan Pond Road	**City:**	Harriman	**State:** TN	**Zip:** 37748
Phone number(s):	(865) 717-2500	**E-mail:**	mtbeckha@tva.gov		
Fax number for reporting:	(865) 717-2505	**Does the facility have interest in starting electronic DMR reporting?***	☐ Yes ☒ No*		

*This facility provides an electronic and paper copy of the DMR.

Results of Biological Monitoring in the Vicinity of Kingston Fossil Plant During Autumn 2001, 2003, and 2005 in Support of a Continued 316(a) Thermal Variance

Introduction

Section 316(a) of the Clean Water Act allows point-source discharges of heated water to exceed State water quality thermal criteria based on demonstrating maintenance of "Balanced Indigenous Populations" (BIP) of aquatic life. Kingston Fossil Plant (KIF) is operating under a 316(a) thermal variance that has been administratively continued with each permit renewal based on studies conducted in the mid 1970s and additional monitoring results. The requirement for conducting 316(a) studies in Tennessee comes from EPA Region IV guidance to the States requiring future variance requests be granted on new data generated to show aquatic communities meet the BIP standard. In a letter from TVA Fossil Power Group to the Tennessee Department of Environment and Conservation (TDEC) dated May 9, 2001, TVA proposed reservoir fish assemblage index (RFAI) studies for continuance of thermal variances. Tennessee approved the RFAI studies on September 17, 2001. Based on that agreement RFAI samples are taken once every two years to demonstrate that KIF operation is not impacting BIP. The purpose of this document is to summarize results from monitoring conducted in 2001, 2003, and 2005.

TVA initiated a Valley-wide reservoir Vital Signs (VS) monitoring program in 1990 to evaluate ecological conditions in major reservoirs. At the core of this monitoring effort is a multi-metric approach to data evaluation. Five environmental indicators are used: dissolved oxygen, chlorophyll, sediment quality, benthic macroinvertebrate community, and the fish community. In the beginning, specific evaluation techniques had to be developed for each indicator. The outcome of this effort was development of multi-metric evaluation techniques for the fish assemblage (Reservoir Fish Assemblage Index - RFAI), as described below. These multi-metric evaluation techniques have proven successful in TVA's monitoring efforts as well as other Federal and State monitoring programs and form the basis of evaluating these monitoring results.

Methods

Sampling Locations

Two sample locations, one upstream and one downstream of the plant discharge, were selected in upper Watts Bar Reservoir. The KIF discharge enters the Watts Bar Reservoir at approximate Clinch River Mile (CRM) 2.5. For the fish community, the upstream sample site was centered at CRM 4.4, and the downstream site was centered at CRM 1.5.

TVA's VS program has four sample sites on Watts Bar Reservoir (Forebay TRM 531.0, Transition TRM 560.8, Tennessee River Inflow TRM 601, Clinch River Inflow CRM 22.0), one of which (Transition) is relatively close to KIF. The VS reservoir inflow sample site in the Tennessee River is near Fort Loudoun Dam, while the Clinch River inflow sample site is near Melton Hill Dam (MHD).

Fish Community

Fish samples for upstream and downstream locations in upper Watts Bar Reservoir consisted of fifteen 300-meter electrofishing runs (approximately 10 minutes duration) and ten experimental gill net sets (five 6.1 meter panels with mesh sizes of 2.5, 5.1, 7.6, 10.2, and 12.7 cm) per site. Attained values for each of the 12 metrics were compared to reference conditions for transition zones of lower mainstream Tennessee River reservoirs and assigned scores based upon three categories hypothesized to represent relative degrees of degradation: least degraded --5; intermediate --3; and most degraded --1. These categories are based on "expected" fish community characteristics in the absence of human-induced impacts other than impoundment. Individual metric scores for a site are summed to obtain the RFAI score. Comparison of the attained RFAI score from the potential impact zone to a predetermined criterion has been suggested as a method useful in identifying presence of normal community structure and function and hence existence of BIP. For multi-metric indices, two criteria have been suggested to ensure a conservative screening of BIP. First, if an RFAI score reaches 70% of the highest attainable score (adjusted upward to include sample variability), and second, if fewer than half of RFAI metrics potentially influenced by thermal discharge receive a low (1) or moderate (3) score, then normal community structure and function would be present indicating that BIP existed, and, hence, the heated discharge would meet screening criteria and no further evaluation would be needed. The range of RFAI scores possible is from 12 to 60. As discussed in detail below, the average variance for RFAI scores in TVA reservoirs is 6 ($\pm$ 3). Therefore, any location that attains an RFAI score of 45 (42 + our upward sample variance of 3) or higher would be considered to have BIP. It must be stressed that scores below this endpoint do not necessarily reflect an adversely impacted fish community. The endpoint is used to serve as a conservative screening level, i.e., any fish community that meets these criteria is obviously not adversely impacted. RFAI scores below this level would require a more in-depth look to determine if BIP exist. An inspection of individual RFAI metric results would be an initial step to help identify if KIF operation is a contributing factor. This approach is appropriate if a validated multi-metric index is being used and scoring criteria applicable to the zone of study are available.

Upstream/downstream stations can be used to identify if KIF operation is adversely impacting the downstream fish community. A similar or higher RFAI score at the downstream site compared

to the upstream (control) site is used as one basis for determining presence/absence of KIF operational impacts on the resident fish community. Definition of "similar" is integral to accepting the validity of these interpretations. The Quality Assurance (QA) component of VS monitoring deals with how well the RFAI scores can be repeated and is accomplished by collecting a second set of samples at 15-20% of the sites each year. Experience to date with the QA component of VS shows that comparison of RFAI index scores from 54 paired sample sets collected over the past seven years range from 0 to 18 points, the 75th percentile is 6, the 90th percentile is 12. The mean difference between these 54 paired scores is 4.6 points with 95% confidence limits of 3.4 and 5.8. Based on these results, a difference of 6 points or less is the value selected for defining "similar" scores between upstream and downstream fish communities. That is, if the downstream RFAI score is within 6 points of the upstream score, the communities will be considered similar and it will be concluded that KIF has had no effect. It is important to bear in mind that differences greater than 6 points can be expected simply due to method variation (25% of the QA paired sample sets exceeded that value). When such occurs, a metric by metric examination will be conducted to determine what caused the difference in scores and the potential for the difference to be thermally related.

This report incorporates recent (December 2002) modifications of RFAI metrics, following the collection of 2002 data. These refinements should make the index even more reflective of reservoir conditions. Current and historical RFAI values presented in this report are based on the refined metrics.

Results

Fish Community

RFAI 2001 results from the site downstream of KIF were close, but did not exceed the 70% BIP criteria, adjusted upward to include sample variability (i.e., RFAI score $\geq$45), indicating that the resident fish community below the KIF discharge was slightly below the screening level in autumn 2001. Table 1 provides individual metric scores and the overall RFAI score for upstream and downstream stations. These values (42 for downstream and 45 for upstream) were within the 6 point acceptable variation. Resident fish communities at these locations reached 70.0 and 75.0 percent of their potential, respectively. Therefore, it can be concluded that the KIF heated effluent is not adversely impacting the resident fish community in the Watts Bar Reservoir in the vicinity of the plant discharge. Electrofishing and gill netting catch rates for individual species from both sites in 2001 are listed in Table 4. No State or Federal protected fish species were collected or are known to occur in the vicinity of KIF.

As in 2001, RFAI results from both sampling sites near KIF were close, but failed to exceed the 70% BIP criteria in 2003. However, RFAI scores of 44 and 42 for downstream and upstream sites, respectively, indicated good fish communities at both sites (Table 2). Resident fish communities at these locations reached 73.3 and 70.0 percent of their potential, respectively. Since the RFAI scores were within the 6 point acceptable variation, it can be concluded that the KIF heated effluent is not adversely impacting the resident fish community in the Watts Bar Reservoir in the vicinity of the plant discharge. Electrofishing and gill netting catch rates for individual species from both sites in 2003 are listed in Table 5.

RFAI results in 2005, as in 2003, were close, but again failed to meet the 70% BIP criteria, showing the resident fish community in the vicinity of the KIF discharge was slightly below the screening level. However, RFAI scores of 43 and 44 for downstream and upstream samples, respectively, still indicated good fish communities at both sites (Table 3). Because RFAI scores were within the 6 point acceptable variation, it can be concluded that the KIF heated effluent is not adversely impacting the resident fish community in the Watts Bar Reservoir in the vicinity of the plant discharge. Resident fish communities at these locations reached 71.1 and 73.3 percent of their potential for downstream and upstream sites, respectively. Electrofishing and gill netting catch rates for individual species from both sites in 2005 are listed in Table 6.

RFAI scores obtained from VS monitoring sites located upstream and downstream of the KIF discharge, though not in the immediate vicinity, over the past several years revealed similar fish community results (Table 7). The nearer VS downstream site was approximately 10 river miles below the KIF discharge and the VS site on the Clinch River was 21 river miles upstream from KIF. Since 1993, the average RFAI score for the upstream site on the Clinch River was 41.7 and the upstream site on the Tennessee River was 45.1 (69.5 and 75.2% of the maximum score, respectively). Averages for two downstream sites were 45.4 and 42.6 (75.7 and 71.0 % of the maximum score, respectively). All the score averages for the Tennessee River stations indicate good fish communities, and the nearest downstream Watts Bar Reservoir average met the adjusted 70% criteria for designation as BIP. The Clinch River inflow station rated slightly (0.5%) below that criteria. These data indicate that the plant discharge is not adversely impacting the broader fish community of upper Watts Bar Reservoir.

Table 1. Individual metric scores and the overall Reservoir Fish Assemblage Index (RFAI) scores for upstream and downstream sites of Watts Bar Reservoir in the vicinity of the Kingston Fossil Plant discharge, fall, 2001.

		Downstream		Upstream	
		CRM 1.5		CRM 4.4	
Metric	Sample Gear	Obs	Score	Obs	Score
A. Species richness and composition					
1. Number of species		33	5.0	33	5.0
2. Number of centrarchid species		8	5.0	8	5.0
3. Number of benthic invertivores		3	1.0	5	3.0
4. Number of intolerant species		5	5.0	6	5.0
5. Percent tolerant individuals	Electrofishing	83.52	0.5	81.49	0.5
	Gill Netting	27.71	1.5	22.54	1.5
6. Percent dominance by 1 species	Electrofishing	44.92	0.5	51.95	0.5
	Gill Netting	16.88	1.5	16.90	1.5
7. Percent non-native species	Electrofishing	1.88	2.5	4.33	1.5
	Gill Netting	7.36	1.5	4.69	2.5
8. Number of top carnivore species		11	5.0	10	5.0
B. Trophic composition					
9. Percent top carnivores	Electrofishing	10.85	1.5	12.34	2.5
	Gill Netting	41.99	1.5	44.13	1.5
10. Percent omnivores	Electrofishing	25.11	1.5	15.15	2.5
	Gill Netting	45.02	1.5	45.07	1.5
C. Fish abundance and health					
11. Average number per run	Electrofishing	78.07	0.5	61.60	0.5
	Gill Netting	23.10	1.5	21.30	1.5
12. Percent anomalies	Electrofishing	1.02	2.5	1.41	2.5
	Gill Netting	1.73	2.5	2.35	1.5
RFAI		**42**		**45**	
		Good		**Good**	

Scored with transition criteria

Table 2. Individual metric scores and the overall Reservoir Fish Assemblage Index (RFAI) scores for upstream and downstream sites of Watts Bar Reservoir in the vicinity of the Kingston Fossil Plant discharge, fall, 2003.

		Downstream		Upstream	
		CRM 1.5		CRM 4.4	
Metric	Sample Gear	Obs	Score	Obs	Score
A. Species richness and composition					
1. Number of species		33	5	34	5
2. Number of centrarchid species		7	5	7	5
3. Number of benthic invertivores		4	3	5	3
4. Number of intolerant species		6	5	7	5
5. Percent tolerant individuals	Electrofishing	75.8	0.5	72.1	0.5
	Gill Netting	24.5	1.5	33.3	0.5
6. Percent dominance by 1 species	Electrofishing	43.8	0.5	32.8	1.5
	Gill Netting	14.7	1.5	26.4	1.5
7. Percent non-native species	Electrofishing	2.3	2.5	1.8	2.5
	Gill Netting	9.8	0.5	12.0	0.5
8. Number of top carnivore species		12	5	12	5
B. Trophic composition					
9. Percent top carnivores	Electrofishing	6.7	1.5	10.0	1.5
	Gill Netting	52.4	2.5	39.4	1.5
10. Percent omnivores	Electrofishing	27.3	1.5	30.4	1.5
	Gill Netting	37.1	1.5	51.9	0.5
C. Fish abundance and health					
11. Average number per run	Electrofishing	54.9	0.5	60.0	0.5
	Gill Netting	14.3	1.5	21.6	1.5
12. Percent anomalies	Electrofishing	0.1	2.5	0.2	2.5
	Gill Netting	0.0	2.5	0.0	2.5

RFAI	**44**		**42**
	Good		**Good**

Scored with transition criteria

Table 3. Individual metric scores and the overall Reservoir Fish Assemblage Index (RFAI) scores for upstream and downstream sites of Watts Bar Reservoir in the vicinity of Kingston Fossil Plant discharge, fall, 2005.

		Downstream		Upstream	
		CRM 1.5		CRM 4.4	
Metric	Sample Gear	Obs	Score	Obs	Score
A. Species richness and composition					
1. Number of species		32	5	32	5
2. Number of centrarchid species		6	5	6	5
3. Number of benthic invertivores		4	3	7	3
4. Number of intolerant species		7	5	7	5
5. Percent tolerant individuals	Electrofishing	74.7	0.5	77	0.5
	Gill Netting	25.7	1.5	22.9	1.5
6. Percent dominance by one species	Electrofishing	34	1.5	36.1	1.5
	Gill Netting	19.2	1.5	11	2.5
7. Number non-native species	Electrofishing	1.8	2.5	2	2.5
	Gill Netting	13.8	0.5	16.5	0.5
8. Number of top carnivore species		11	5	10	5
B. Trophic composition					
9. Percent top carnivores	Electrofishing	5.4	0.5	11.1	2.5
	Gill Netting	48.5	1.5	42.2	1.5
10. Percent omnivores	Electrofishing	32.2	1.5	39	1.5
	Gill Netting	35.3	1.5	33.9	1.5
C. Fish abundance and health					
11. Average number per run	Electrofishing	64.7	0.5	71	0.5
	Gill Netting	16.7	1.5	10.9	0.5
12. Percent anomalies	Electrofishing	0.3	2.5	1.2	2.5
	Gill Netting	1.8	2.5	2.8	1.5

RFAI	43		44
	Good		Good

Scored with transition criteria

Table 4. Species collected and catch per effort during autumn electrofishing (catch per 300-m run and per hour) and gill netting (catch per net-night) at the upstream and downstream stations of Kingston Fossil Plant, Watts Bar Reservoir, fall 2001.

	Downstream CRM 1.5			Upstream CRM 4.4		
	Electrofishing		Gill Netting	Electrofishing		Gill Netting
Common Name	Catch Per Run	Catch Per Hour	Catch Per Net Night	Catch Per Run	Catch Per Hour	Catch Per Net Night
Paddlefish	.	.	0.10	.	.	.
Spotted gar	0.13	0.67	.	.	.	.
Skipjack herring	.	.	2.10	.	.	2.00
Gizzard shad	16.87	85.19	3.90	5.80	27.27	3.50
Threadfin shad	0.07	0.34	0.20	0.13	0.63	.
Common carp	1.27	6.40	0.10	2.33	10.97	0.80
Golden shiner	0.60	3.03	.	0.07	0.31	.
Emerald shiner	2.93	14.81	.	0.73	3.45	.
Spotfin shiner	3.60	18.18	.	3.67	17.24	.
Bluntnose minnow	0.13	0.67	.	0.13	0.63	.
River carpsucker	0.07	0.34	.	.	.	.
Smallmouth buffalo	0.53	2.69	1.20	0.47	2.19	.
Black buffalo	.	.	0.30	0.07	0.31	0.20
Spotted sucker	0.73	3.70	0.30	0.53	2.51	0.90
Black redhorse	.	.	.	0.07	0.31	.
Golden redhorse	.	.	.	.	.	0.10
Blue catfish	.	.	3.20	.	.	3.50
Channel catfish	0.13	0.67	1.70	0.47	2.19	1.60
Flathead catfish	0.13	0.67	0.40	0.07	0.31	0.30
White bass	.	.	0.50	0.13	0.63	1.50
Yellow bass	.	.	1.90	0.13	0.63	3.60
Striped bass	.	.	1.40	.	.	0.20
hybrid striped bass	.	.	0.20	.	.	.
Warmouth	0.13	0.67	.	0.07	0.31	.
Green sunfish	0.73	3.70	.	0.27	1.25	.
Bluegill	35.07	177.10	1.40	32.00	150.47	0.30
Longear sunfish	0.73	3.70	0.10	0.93	4.39	.
Redbreast sunfish	0.33	1.68	.	0.20	0.94	.
Redear sunfish	3.73	18.86	0.30	4.53	21.32	0.50
hybrid sunfish	.	.	.	0.07	0.31	.
Smallmouth bass	0.40	2.02	.	0.40	1.88	.
Spotted bass	1.20	6.06	0.70	1.00	4.70	0.40
Largemouth bass	6.40	32.32	0.40	5.73	26.96	0.10
White crappie	0.13	0.67	0.60	.	.	0.10
Black crappie	0.07	0.34	1.10	0.13	0.63	0.30
Snubnose darter	.	.	.	0.07	0.31	.
Yellow perch	0.20	1.01	.	0.33	1.57	.
Logperch	0.33	1.68	.	0.07	0.31	.
Sauger	.	.	0.40	.	.	0.90
Freshwater drum	0.27	1.35	0.60	0.07	0.31	0.50
Brook silverside	1.13	5.72	.	0.93	4.39	.
Totals	**78.04**	**394.24**	**23.1**	**61.60**	**289.63**	**21.3**
Number Samples	**15**		**10**	**15**		**10**
Number Fish Collected	**1171**		**231**	**924**		**213**
Total Species Collected	**28**		**24**	**31**		**20**

Table 5. Species collected and catch per effort during autumn electrofishing (catch per 300-m run and per hour) and gill netting (catch per net-night) at the upstream and downstream stations of Kingston Fossil Plant, Watts Bar Reservoir, fall 2003.

	Downstream CRM 1.5			Upstream CRM 4.4		
	Electrofishing		Gill Netting	Electrofishing		Gill Netting
Common Name	Catch Per Run	Catch Per Hour	Catch Per Net Night	Catch Per Run	Catch Per Hour	Catch Per Net Night
Paddlefish	.	.	*	.	.	.
Spotted gar	.	.	0.10	0.33	1.97	.
Longnose gar	.	.	0.20	.	.	0.10
Skipjack herring	.	.	2.10	0.13	0.79	1.60
Gizzard shad	11.67	70.00	2.10	14.87	87.80	5.70
Threadfin shad	0.07	0.40	.	0.07	0.39	0.10
Mooneye	.	.	0.10	.	.	0.10
Common carp	1.07	6.40	0.50	0.93	5.51	0.80
Golden shiner	0.33	2.00	.	0.60	3.54	.
Emerald shiner	0.87	5.20	.	.	.	.
Spotfin shiner	1.47	8.80	.	2.73	16.14	.
Bluntnose minnow	0.33	2.00	.	0.13	0.79	.
Quillback	.	.	.	.	.	0.10
Smallmouth buffalo	0.73	4.40	0.50	1.20	7.09	1.10
Black buffalo	.	.	.	0.20	1.18	.
Spotted sucker	0.60	3.60	0.20	3.87	22.83	0.60
Black redhorse	.	.	.	.	.	0.10
Golden redhorse	0.07	0.40	.	0.13	0.79	.
Blue catfish	.	.	1.50	.	.	2.60
Channel catfish	0.87	5.20	0.70	0.33	1.97	0.90
Flathead catfish	0.47	2.80	0.80	0.07	0.39	0.10
White bass	0.07	0.40	0.50	.	.	0.60
Yellow bass	0.07	0.40	2.10	0.13	0.79	3.00
Striped bass	.	.	0.90	.	.	1.80
Warmouth	.	.	.	0.20	1.18	.
Redbreast sunfish	0.07	0.40	.	.	.	.
Green sunfish	0.27	1.60	.	0.20	1.18	.
Bluegill	24.07	144.40	0.40	19.67	116.14	0.30
Longear sunfish	1.07	6.40	.	1.67	9.84	.
Redear sunfish	3.33	20.00	0.10	3.20	18.90	0.20
Smallmouth bass	0.13	0.80	.	0.27	1.57	.
Spotted bass	0.47	2.80	0.10	0.80	4.72	0.60
Largemouth bass	2.27	13.60	0.30	4.13	24.41	0.20
White crappie	0.13	0.80	.	.	.	0.10
Black crappie	0.07	0.40	.	0.13	0.79	.
Yellow perch	0.20	1.20	.	0.13	0.79	.
Logperch	0.40	2.40	.	0.13	0.79	.
Sauger	.	.	0.40	.	.	0.40
Freshwater drum	1.53	9.20	0.70	0.80	4.72	0.50
Brook silverside	2.27	13.60	.	2.93	17.32	.
Totals	**54.97**	**329.60**	**14.3**	**59.98**	**354.32**	**21.6**
Number Samples	**15**		**10**	**15**		**10**
Number Fish Collected	**824**		**143**	**900**		**216**
Total Species Collected	**28**		**20**	**28**		**23**

*Young of year only collected

Table 6. Species collected and catch per effort during autumn electrofishing (catch per 300-m run and per hour) and gill netting (catch per net-night) at the upstream and downstream stations of Kingston Fossil Plant, Watts Bar Reservoir, fall 2005.

	Downstream CRM 1.5			Upstream CRM 4.4		
	Electrofishing		Gill Netting	Electrofishing		Gill Netting
Common Name	Catch Per Run	Catch Per Hour	Catch Per Net Night	Catch Per Run	Catch Per Hour	Catch Per Net Night
Spotted gar	0.20	1.01	0.10	.	.	.
Longnose gar	.	.	0.10	.	.	.
Skipjack herring	.	.	2.20	.	.	1.20
Gizzard shad	19.00	96.28	3.20	25.60	130.17	1.20
Threadfin shad	0.20	1.01	.	.	.	.
Mooneye	.	.	0.40	.	.	.
Common carp	1.13	5.74	0.50	1.33	6.78	0.70
Emerald shiner	.	.	.	0.60	3.05	.
Spotfin shiner	1.53	7.77	.	2.20	11.19	.
Steelcolor shiner	0.07	0.34	.	.	.	.
Bluntnose minnow	0.20	1.01	.	.	.	.
River carpsucker	.	.	.	.	.	0.10
Northern hog sucker	0.20	1.01	0.10	.	.	.
Smallmouth buffalo	.	.	0.30	0.20	1.02	0.60
Black buffalo	0.13	0.68	.	0.20	1.02	.
Spotted sucker	0.60	3.04	0.90	4.20	21.36	1.00
Silver redhorse	.	.	.	0.07	0.34	.
River redhorse	.	.	.	.	.	0.10
Black redhorse	.	.	.	0.13	0.68	.
Golden redhorse	.	.	.	0.07	0.34	0.40
Blue catfish	.	.	1.40	.	.	0.60
Channel catfish	0.33	1.69	0.50	0.33	1.69	0.50
Flathead catfish	0.20	1.01	0.40	0.07	0.34	0.10
White bass	.	.	0.60	.	.	0.20
Yellow bass	.	.	1.40	0.07	0.34	0.80
Striped bass	.	.	1.80	.	.	1.00
Hybrid striped x white bass	.	.	.	.	.	0.10
Redbreast sunfish	0.40	2.03	.	.	.	.
Green sunfish	2.40	12.16	.	0.93	4.75	.
Bluegill	22.00	111.49	.	19.20	97.63	.
Longear sunfish	3.47	17.57	.	0.87	4.41	.
Redear sunfish	2.40	12.16	0.40	4.27	21.69	0.30
Smallmouth bass	0.60	3.04	.	1.40	7.12	.
Spotted bass	0.80	4.05	0.20	0.73	3.73	0.10
Largemouth bass	1.67	8.45	0.30	5.27	26.78	0.40
White crappie	.	.	0.20	0.13	0.68	0.10
Black crappie	.	.	.	0.20	1.02	.
Yellow perch	.	.	.	0.07	0.34	.
Logperch	0.13	0.68	.	0.27	1.36	.
Sauger	.	.	0.80	.	.	0.60
Freshwater drum	.	.	0.90	0.27	1.36	0.80
Brook silverside	0.33	1.69	.	1.20	6.10	.
Inland silverside	6.67	33.78	.	0.67	3.39	.
Totals	**64.66**	**327.69**	**16.7**	**70.55**	**358.68**	**10.9**
Number Samples	**15**		**10**	**15**		**10**
Number Collected	**970.00**	**358.68**	**167**	**358.98**		**109**
Species Collected	**23**		**21**	**27**		**21**

Table 7. Recent (1993-2005) RFAI scores collected as part of the Vital Signs monitoring program upstream and downstream of Kingston Fossil Plant, Watts Bar Reservoir.

		Year										
Site	**Location**	**1993**	**1994**	**1996**	**1998**	**1999**	**2000**	**2001**	**2002**	**2004**	**2005**	**Ave.**
Upstream	CRM 22	38	46	46	36		44		42	40		**41.7**
	TRM 601	38	50	44	48		46		46	44		**45.1**
Downstream	TRM 560.8	50	49	44	44		46		39	46		**45.4**
	TRM 531	43	48	44	41	38	44	39	39	43	47	**42.6**

TENNESSEE VALLEY AUTHORITY (TVA) – KINGSTON FOSSIL PLANT (KIF) - NPDES PERMIT NO. TN0005452 - APPLICATION FOR RENEWAL

Current Whole Effluent Toxicity (WET) Requirements:

Outfall 002 -	7-day or 3-brood IC_{25} > 100% [IWC = 100% effluent (1.0 TUc)] Compliance for fathead minnows based on results from UV-treated samples. Monitoring Frequency = Annual (1 per year)

Proposed WET Requirements:

Outfall 002 -	Same as current

Outfall 002:

In accordance with EPA's recommendation (Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001), Outfall 002 should retain WET limits due to insufficient receiving stream flow for mixing with the discharge to meet the CMC and CCC criteria of 0.3 TUa and 1.0 TUc, respectively (See calculations page).

In a letter from Christopher Moran of TDEC dated April 7, 2006, TVA received approval to allow UV treatment of effluent samples from Outfall 002 for use in toxicity tests with fathead minnows (*Pimephales promelas*). Previous to this approval and dating back to February 2002, fathead minnow tests were conducted with and without UV-treated samples in parallel. Samples used in toxicity tests with *Ceriodaphnia dubia* have not been UV-treated. No toxicity has been observed with either species since 2001.

KIF Documentation

Summary of Outfall 002 WET Biomonitoring Results:

Test Date	Test Species	Acute Results (96-h Survival) % Survival in Undiluted Sample	Acute Results (96-h Survival) Study Toxicity Units (TUa)	Chronic Results Study Toxicity Units (TUc)
IC_{25}, NOEC				
1. Aug. 23-30, 1995	*Ceriodaphnia dubia*	100	< 1.0	< 1.0
	Pimephales promelas	100		
2. Mar. 19-26, 1996	*Ceriodaphnia dubia*	100	< 1.0	< 1.0
	Pimephales promelas	100		
3. Aug. 20-27, 1996	*Ceriodaphnia dubia*	100	< 1.0	< 1.0
	Pimephales promelas	100		
4. Jan. 28-Feb. 4, 1997	*Ceriodaphnia dubia*	100	< 1.0	< 1.0
	Pimephales promelas	100		
5. Jul. 29-Aug 4, 1997	*Ceriodaphnia dubia*	100	< 1.0	< 1.0
Aug. 7-14, 1997	*Pimephales promelas*	100		
6. Feb. 19-26, 1998	*Ceriodaphnia dubia*	100	< 1.0	< 1.0
	Pimephales promelas	100		
7. Sept. 15-22, 1998	*Ceriodaphnia dubia*	100	< 1.0	< 1.0
	Pimephales promelas	100		
8. Mar. 30-Apr. 6, 1999	*Ceriodaphnia dubia*	100	< 1.0	
	Pimephales promelas	88		1.3
9. Apr. 27-May 4, 1999	*Ceriodaphnia dubia*	*	*	*
	Pimephales promelas	100	< 1.0	< 1.0
10. October 14-21, 1999	*Ceriodaphnia dubia*	100		
	Pimephales promelas	100	< 1.0	< 1.0
11. April 13-20, 2000	*Ceriodaphnia dubia*	100	< 1.0	
	Pimephales promelas	92		2.4
12. May 2-9, 2000	*Ceriodaphnia dubia*	*	*	*
	Pimephales promelas	100	< 1.0	< 1.0
13. October 3-10, 2000	*Ceriodaphnia dubia*	100	< 1.0	< 1.0
	Pimephales promelas	100		
14. May 20-27, 2001	*Ceriodaphnia dubia*	90	< 1.0	
May 19-26, 2001	*Pimephales promelas*	68		6.0

Summary of Outfall 002 WET Biomonitoring Results, cont'd:

15. June 12-19, 2001	*Ceriodaphnia dubia*	*	*	*
	Pimephales promelas	100	< 1.0	< 1.0
16. Feb. 13-20, 2002	*Ceriodaphnia dubia*	100	< 1.0	< 1.0
	Pimephales promelas†	100		
17. Nov. 5-12, 2002	*Ceriodaphnia dubia*	100	< 1.0	< 1.0
	Pimephales promelas†	100		
18. August 12-19, 2003	*Ceriodaphnia dubia*	100	< 1.0	< 1.0
	Pimephales promelas†	100		
19. November 11-18, 2003	*Ceriodaphnia dubia*	100	< 1.0	< 1.0
	Pimephales promelas†	100		
20. October 12-19, 2004	*Ceriodaphnia dubia*	100	< 1.0	< 1.0
	Pimephales promelas†	100		
21. August 9-16, 2005	*Ceriodaphnia dubia*	100	< 1.0	< 1.0
	Pimephales promelas†	100		
22. June 6-13, 2006	*Ceriodaphnia dubia*	100	< 1.0	< 1.0
	Pimephales promelas†	100		
23. February 16-23, 2007	*Ceriodaphnia dubia*	100	< 1.0	< 1.0
	Pimephales promelas†	100		
n		43	23	23
Maximum		100	< 1.0	6.0
Minimum		68	< 1.0	< 1.0
Mean		98.6	< 1.0	1.3

* Single species re-test

† UV fathead minnow test conducted parallel with regular compliance test.

Shaded area includes data collected under the current permit.

Dilution and Instream Waste Concentration Calculations

Outfall 002:
Average Discharge = 1297.873 MGD (2007 permit renewal application flow schematic)

Clinch River Low Flow 1Q10 = 155.8 MGD (from Appendix 1, page R-16 of the current permit, effective October 1, 2003)

Dilution Factor (DF): $DF = \frac{Qs}{Qw} = \frac{155.8}{1297.873} = 0.12$

Instream Wastewater Concentration (IWC): $IWC = \frac{Qw}{Qs} = \frac{1297.873}{155.8} x100 = 100\%$

Insufficient dilution is available for demonstrating no reasonable potential for exceeding the acute instream WET criterion (CMC = 0.3 TUa). The dilution factor would need to be greater than 3.0 in order to conduct that demonstration for acute toxicity.

Insufficient dilution is available for demonstrating no reasonable potential for exceeding the chronic instream WET criterion (CCC = 1.0 TUc). The dilution factor would need to be greater than 1.0 in order to conduct that demonstration for chronic toxicity.

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER POLLUTION CONTROL
401 CHURCH STREET
L&C ANNEX 6th FLOOR
NASHVILLE, TN 37243-1534

April 7, 2006

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
RECEIPT # 7004 2510 0002 4678 0347

Gordon Park
Manager of Environmental Affairs
Tennessee Valley Authority
1101 Market Street, LP-5D
Chattanooga, Tennessee 37402

RE: TVA-Watts Bar Nuclear Plant, Cumberland Fossil, and Kingston Fossil Plants
NPDES Permit # TN0020168, TN0005789, and TN0005452
Rhea, Stewart, and Roane Counties, Tennessee

Dear Mr. Park:

This responds to the request made on behalf of TVA, dated February 7, 2006, for written division approval to allow effluent samples from outfall 112 at Watts Bar, outfall 002 at Cumberland, and outfall 002 at Kingston to be treated, for toxicity testing on *Pimephales promelas*, with UV radiation.

The division has reviewed the request and hereby approves the use of UV radiation at the above referenced facilities as proposed in your letter.

If you have any questions regarding this correspondence please feel free to contact me at 615-532-0672.

Sincerely,

Christopher S. Moran
Manager, Enforcement and Compliance Sectic

cc: OGC
WPC-Permits-PRM
WPC-EFO-CH-RDU, WMK
WPC-EFO-N-Joey Holland, DJE
WPC-EFO-K-Jeff Horton
Lindy Johnson-TVA

xc: S. E. Barnes, LP 5D-C
L. F. Campbell, KFP 1A-KST
T. J. Czubakowski, CUF 1A-CCT
M. T. Beckham, KFP 1A-KST
B. K. Ellis, MR 2T-C
L. P. Johnson, LP 5D-C
C. S. McCarty, CUF 1A-CCT
J. L. Phillips, MOB 1T-WBN
D. E. Pittman, BR 4T-C
C. Russell, CTR 2L-M
R. M. Sherrard, PSC 1X-C
M. B. Stiefel, LP 5D-C
B. B. Walton, ET 11A-K
W. B. Wells, LP 5D-C
J. R. Wright, Jr., WT 9B-K
EDM, WT CA-K