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AUTH. NAME      AUTHOR AFFILIATION  
 SCHMIERBACH, M.      Tennessee Valley Authority  
 RECIP. NAME      RECIPIENT AFFILIATION  
 HORN, C.      Alabama, State of

SUBJECT: Requests mods to NPDES Permit AL0024635, allowing routing flow to either cooling tower basin or destiling pond.

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TENNESSEE VALLEY AUTHORITY

KNOXVILLE, TENNESSEE 37902

FEB 08 1989

Mr. Charles Horn, Chief  
Water Division  
Alabama Department of Environmental  
Management  
1751 Federal Drive  
Montgomery, Alabama 36130

Attention: Ms. Treena G. Piznar and Mr. James M. Moore III

Dear Mr. Horn:

BELLEFONTE NUCLEAR PLANT (BLN) - NATIONAL POLLUTANT DISCHARGE  
ELIMINATION SYSTEM (NPDES) PERMIT NO. AL0024635 - PROPOSED PERMIT  
MODIFICATIONS

The Tennessee Valley Authority (TVA) would like to request permit modifications to the BLN NPDES permit in addition to those requested in our September 7, 1988 letter. These additional permit modifications are outlined in Enclosure 1. (Please note that a revised self-reporting form is attached to Enclosure 1 to reflect the additional requested modifications) In our September 7, 1988 letter, we requested that we be allowed to use the desilting pond in place of the sump collection ponds during the deferred construction status. After further consideration, we would like to request that the permit allow TVA to route the flow to either the cooling tower basin or the desilting pond in lieu of the sump collection ponds until the later have been repaired. A comparison of the design basis for the cooling tower basin with the Alabama Department of Environmental Management's (ADEM) engineering requirements for impoundments is provided in Enclosure 2.

In response to your November 23, 1988 letter, enclosed are TVA's comments on the proposed modifications to the BLN NPDES permit page I-1i. There were no comments or revisions for pages I-1d, I-1n, I-1c, and I-1h.

Also enclosed, as requested in your November 21, 1988 letter, are revised 2C forms reflecting the additional sources of wastewater and including a revised flow diagram reflecting flow paths for these new sources. TVA has also identified an additional water source and associated alternate flow path that would be used during normal operation. However, during the deferred construction status, this system will be drained and placed in dry layup. The essential raw cooling water (ERCW) system is designed to be functional during all phases of operation to remove heat from essential and nonessential loads. The ERCW system is river water which is designed to be a

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PDR ADOCK 05000438  
A PDC

Cooling  
1/0

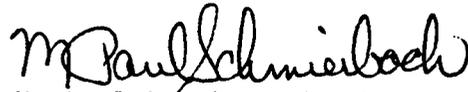
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Mr. Charles Horn

closed loop continually circulating heat removal system with no chemical additives other than chlorine, which is added when first filling the system. The ERCW system is not designed to be drained except during a loss of coolant accident, loss of offsite power, or during preoperational flow testing, in which case the ERCW system water would be discharged to the yard holding pond via two 42-inch lines. This source and flowpath was not previously identified in the NPDES permit application. This source and flowpath has been identified in the attached 2C forms and flow diagram.

If your staff has any questions regarding these proposed changes, please have them call Abraham H. Loudermilk, Jr., at (615) 632-6656 in Knoxville, Tennessee.

Sincerely,

  
M. Paul Schmierbach, Manager  
Environmental Quality

Enclosures

cc (Enclosures):

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FEB 08 1989

Mr. Charles Horn

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

ENCLOSURE 1

PROPOSED CHANGES TO THE  
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
PERMIT FOR BELLEFONTE NUCLEAR PLANT (BLN)

TVA has decided to defer construction of BLN indefinitely. In accordance with Part I B.7. of the NPDES permit, the following changes are proposed until construction resumes.

(See Exhibit for the proposed reporting page to be used to reduce paper work which includes the following modifications requested:)

1. Discharge Serial Number (DSN) 002, Construction Holding Pond--The influent water that makes up this discharge is rainfall and clean water used to test fire pumps. Therefore, we request that the permit page for this discharge should be kept and modified to eliminate effluent limitations and monitoring requirements during construction deferral. (Please note the change from our September 7, 1988 letter.)
2. DSN 003C, Cooling Tower Desilting Pond--It is proposed to use either the cooling tower basin or this pond in lieu of the sump collection ponds during construction deferral. If this interim alternative is permitted, then the effluent limitations and monitoring requirements for the sump collection ponds shall be applicable to the desilting pond and/or the cooling tower basin and be reported on DSN 003C discharge monitoring report page. (Please note the change from our September 7, 1988 letter)
3. DSN 003G, Sump Collection Ponds--A commitment was made in an April 19, 1988 letter to the Alabama Department of Environmental Management (ADEM) to upgrade the sump collection ponds by installing a liner. TVA has requested a temporary permitting of the cooling tower basin and the desilting pond in lieu of repairing the sump collection ponds at this time. If this is permitted, then the permit page for DSN 003G should be kept and a report of system out of service; no discharge made using Exhibit. An engineering report for upgrading the sump collection ponds to meet ADEM requirements will be submitted when construction at BLN resumes. (Please note the change from our September 7, 1988 letter.)
4. DSN 004, East Culvert Impoundment--There will not be any active construction which will contribute sediment to this pond. Therefore, we request that the permit page for this discharge be kept and modified to eliminate effluent limitations and monitoring requirements during construction deferral. (Please note the change from our September 7, 1988 letter).
5. DSN 006, Plant Intake--We would like to request that a footnote be added to the permit page to clarify confusion on when monitoring requirements are applicable. The NPDES permit application and subsequent issued permit for this discharge intended that monitoring requirements be applicable only during operation of the essential raw cooling water (ERCW) system. Therefore, we request that the following footnote be added to the permit page for DSN 006:

- o Monitoring of flow is only applicable during operation of the ERCW system.
- o The attached 2C forms have also been modified to include this statement.

6. Groundwater Monitoring Wells, B1a, B2, and Land Application Wells (Nos. 9, 10, 11)--The last land application activity was October 1986. The ponds were emptied and have not been used since October 1986. There have not been any chemical cleaning activities since then, and there will not be any chemical cleaning activities while construction is deferred. Therefore, we request that the permit page for this discharge be kept and modified to eliminate effluent limitations and monitoring requirements during construction deferral.

ENCLOSURE 1  
EXHIBIT

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
DISCHARGE MONITORING REPORT  
Tennessee Valley Authority  
BELLEFONTE NUCLEAR PLANT  
Hollywood, Alabama 35752

Month \_\_\_\_\_ Year \_\_\_\_\_

NPDES #AL0024635

DSN 001	Construction Sewage Treatment Plant	System was out of service; no discharge during the month.
DSN 001A	Phosphate Waste Treatment Pond	System was out of service; no discharge during the month.
DSN 002	Construction Holding Pond	Effluent limitations and monitoring requirements not applicable.
DSN 003A	Makeup Demineralizer Regeneration Wastes	System was out of service; no discharge during the month.
DSN 003E	Liquid Rad Waste	System was out of service; no discharge during the month.
DSN 003F	Condensate Demineralizer Regeneration Wastes	System was out of service; no discharge during the month.
DSN 003G	Sump Collection Ponds	System was out of service; no discharge during the month.
DSN 004	East Culvert Impoundment	Effluent limitations and monitoring requirements not applicable.
DSN 005	Plant Intake Sluice to the Tennessee River	System was out of service; no discharge during the month.
DSN 006	Plant Intake	System was out of service; no discharge during the month.
Groundwater Wells and Land Application Wells		Effluent limitations and monitoring requirements not applicable.

## ENCLOSURE 2

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (ADEM)  
ENGINEERING REQUIREMENTS FOR IMPOUNDMENTS  
BELLEFONTE NUCLEAR PLANT (BLN)  
COOLING TOWER BASIN

A commitment was made to upgrade the sump collection ponds by installing a liner. Both ponds have in the past developed leaks which resulted in a discharge to groundwater. Currently the south pond is out of service and is not to be returned to service until it is upgraded. Since construction of BLN has been deferred, funding for the modifications to the ponds is currently not identified in the budget for fiscal year 1989. TVA is requesting that the wastewater generated during the time that construction is deferred be permitted to go to the cooling tower basin or the desilting pond instead of the sump collection pond. If this alternate flowpath is allowed, the use of the north sump collection pond would be discontinued and the engineering report for the modifications would not be submitted until construction resumes. The desilting pond was described in an engineering report submitted to ADEM January 22, 1988, and the comparison of the pond's design with ADEM's engineering requirements for impoundments was submitted in the September 7, 1988 letter. The following is a comparison of the design of the cooling tower basin with ADEM's engineering requirements for impoundments.

REQUIREMENT - Crest Elevation above 100 year flood elevation.

PROVIDED - 100 year flood elevation is 601, the desilting pond top of the dike elevation is 633.

REQUIREMENT - Areas prone to sinkhole development should be avoided.

PROVIDED - The basin is located in an area onsite that should not be prone to sinkhole development. The cooling tower basin is all reinforced concrete.

REQUIREMENT - Three feet freeboard should be provided.

PROVIDED - Three feet of freeboard can be provided.

REQUIREMENT - Dike width should be engineered to be compatible with side slopes, height, and soil type.

PROVIDED - The walls are engineered for with reinforced concrete.

REQUIREMENT - Riprap should be provided for protection of compacted clay liner.

PROVIDED - The entire cooling water basin is constructed of reinforced concrete.

- REQUIREMENT - Measures to prevent cracking and loss of integrity of earthen liners should be provided.
- PROVIDED - Reinforcing will minimize cracking of the concrete. Approximately one foot of water is maintained in the bottom of the basin at all times.
- REQUIREMENT - Dike slopes should be no steeper than 3:1.
- PROVIDED - The cooling tower basin walls are designed to restrain any forces as per codes.
- REQUIREMENT - Impoundment bottom should be above the high high groundwater level.
- PROVIDED - The high high groundwater level in the area of the cooling tower is at elevation 610. The bottom of the basin is elevation 624.
- REQUIREMENT - Runoff should be excluded from the pond unless runoff volume is specifically considered in the pond's design.
- PROVIDED - Surface runoff cannot enter cooling tower basin.
- REQUIREMENT - Influent flow should be controlled and measurable.
- PROVIDED - Influent to the cooling tower basin will be that normally routed to the sump collection pond. Influent will consist of low volume wastes from various sumps and building floor drains. These influents are controlled through operation of pumps and manual flushing operations. Some leakage from the fire protection system may also go to the cooling tower basin.
- REQUIREMENT - Where leak detection, collection and removal systems are required, underdrain systems are recommended in lieu of wells.
- PROVIDED - Leak detection, collection, or removal systems are not provided due to the relatively inert material handled.
- REQUIREMENT - Synthetic liner guidelines for installation.
- PROVIDED - A synthetic liner is not utilized for the cooling tower basin.
- REQUIREMENT - Hazardous waste regulations should be considered in design and construction of ponds.
- PROVIDED - The cooling tower basin is not intended for the collection or storage of hazardous wastes.
- REQUIREMENT - Ponds in noncontrolled access areas should be fenced.
- PROVIDED - The cooling tower basin is located on the BLN site which is a controlled access area.

## A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) (outfalls(s)), described more fully in the permittee's application: DSN003C - Effluent from the cooling tower desilting ~~basin~~ Pond

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

Effluent Characteristic	Discharge Limitations*			Monitoring Requirements**	
	Daily Minimum	Daily Average	Daily Maximum	Measurement Frequency	Sample Type
Flow (MGD)	-	-	-	1/week	Instantaneous 1/
Total Suspended Solids	-	30 mg/l	100 mg/l	1/week	Grab
Oil and Grease	-	15 mg/l	20 mg/l	1/week	Grab
Hydrazine	-	0.01 mg/l	0.01 mg/l	1/discharge	Grab
Total Residual Chlorine	-	0.1 mg/l	0.1 mg/l	1/discharge	Grab

1/ Pump logs are acceptable for flow measurement. and discharge limitations for this parameter

2/ ~~Monitoring requirements~~ shall apply only when treated lay-by water is being discharged through DSN003C. Monitoring for these parameters will be required once per discharge of the ~~cooling tower pond~~ when treated lay-by water is discharged.   
 desilting pond or the cooling tower basin

3/ Total Residual chlorine discharge limitations and monitoring requirements do not apply when this parameter is monitored at DSN003.

\* See Part II., A., 4; Part II., A., 5; and Part II., B., 3.  
 \*\* Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Samples taken shall then be analyzed for each effluent characteristic in accordance with Part 1.B.2.

FORM  
2C  
NPDES



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.

I. 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
002	Construction Holding Pond		Sedimentation with oil	1 U
	New waste sources:		skimming	
	A. Surveillance Testing/ Operation of Diesel Fire Pumps	10,714 GPD	Aeration, mixing, and decay in the Yard Drainage Pond	1 0 1 U
	Testing is done weekly by taking pump suction from the cooling tower basin and discharging to the Yard Drainage Pond. Makeup to the basin is with Raw Service Water. RSW chlorinated when in- take river temperature is greater than 62°F.			
	B. Diesel Fuel Storage Spill Confinement Area (Accumulated precipitation)	115 GPD (Based on annual average precipitation)		1 X

OFFICIAL USE ONLY (effluent guidelines sub-categories)



FORM  
2C  
NPDES



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.

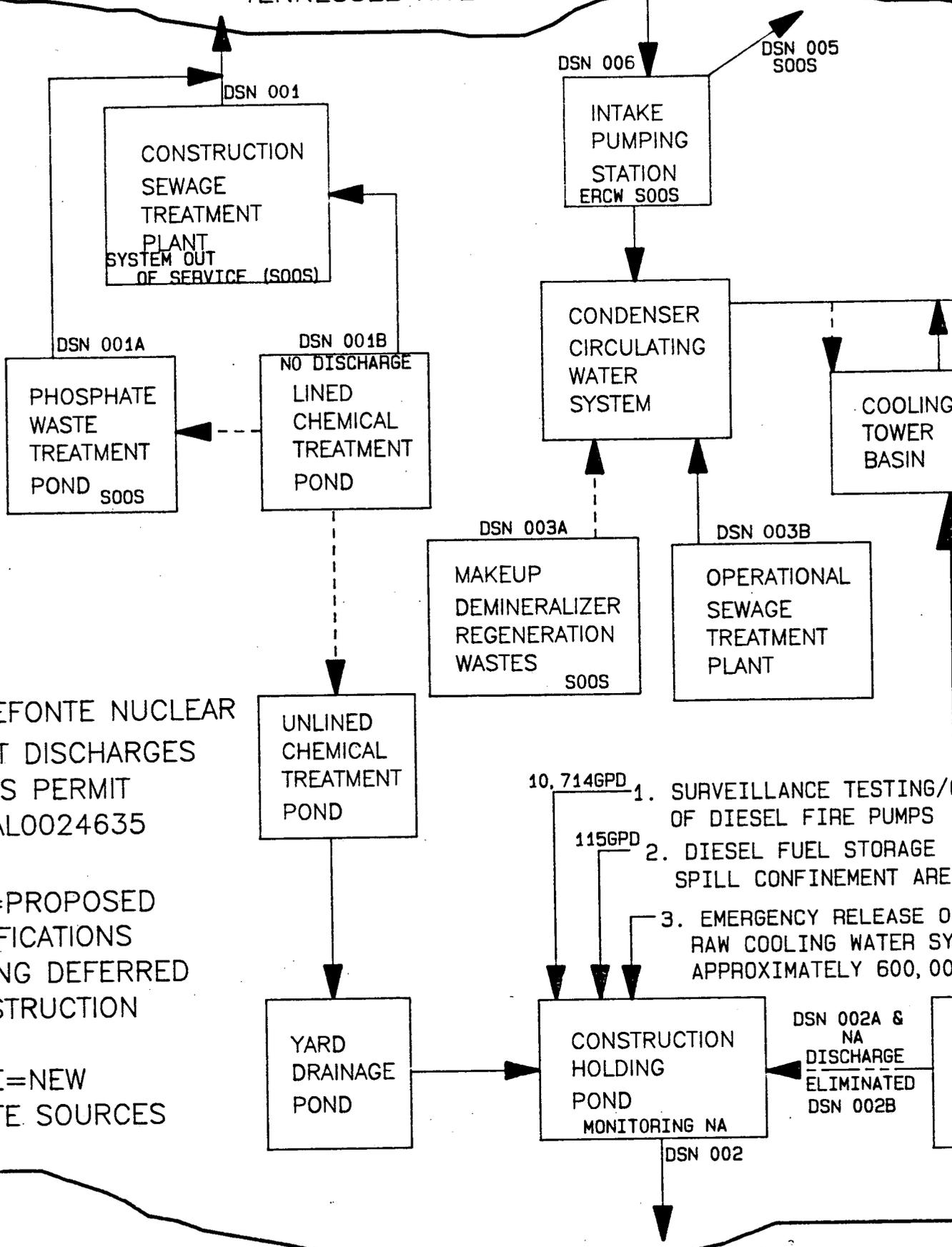
B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue 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
003G	Sump Collection Ponds <u>New</u>		Sedimentation with oil	1 U
	waste resources:		skimming	
	A. Paint Shop Spray Booth	≈ 10 GPD		
	Water Curtain Wastes (currently not in operation). If wastewater is hazardous, then it will be disposed of as such and will not be routed to 003G.			
003G	B. Washing Machine Waste	500 GPD (estimated)		
	Two washing machines operated twice per day using a nonphosphate detergent.			
	C. Building Cooling Tower Blowdown and Flush	7,233 GPD		

OFFICIAL USE ONLY (effluent guidelines sub-categories)



TENNESSEE RIVER



BELLEFONTE NUCLEAR  
PLANT DISCHARGES  
NPDES PERMIT  
NO. AL0024635

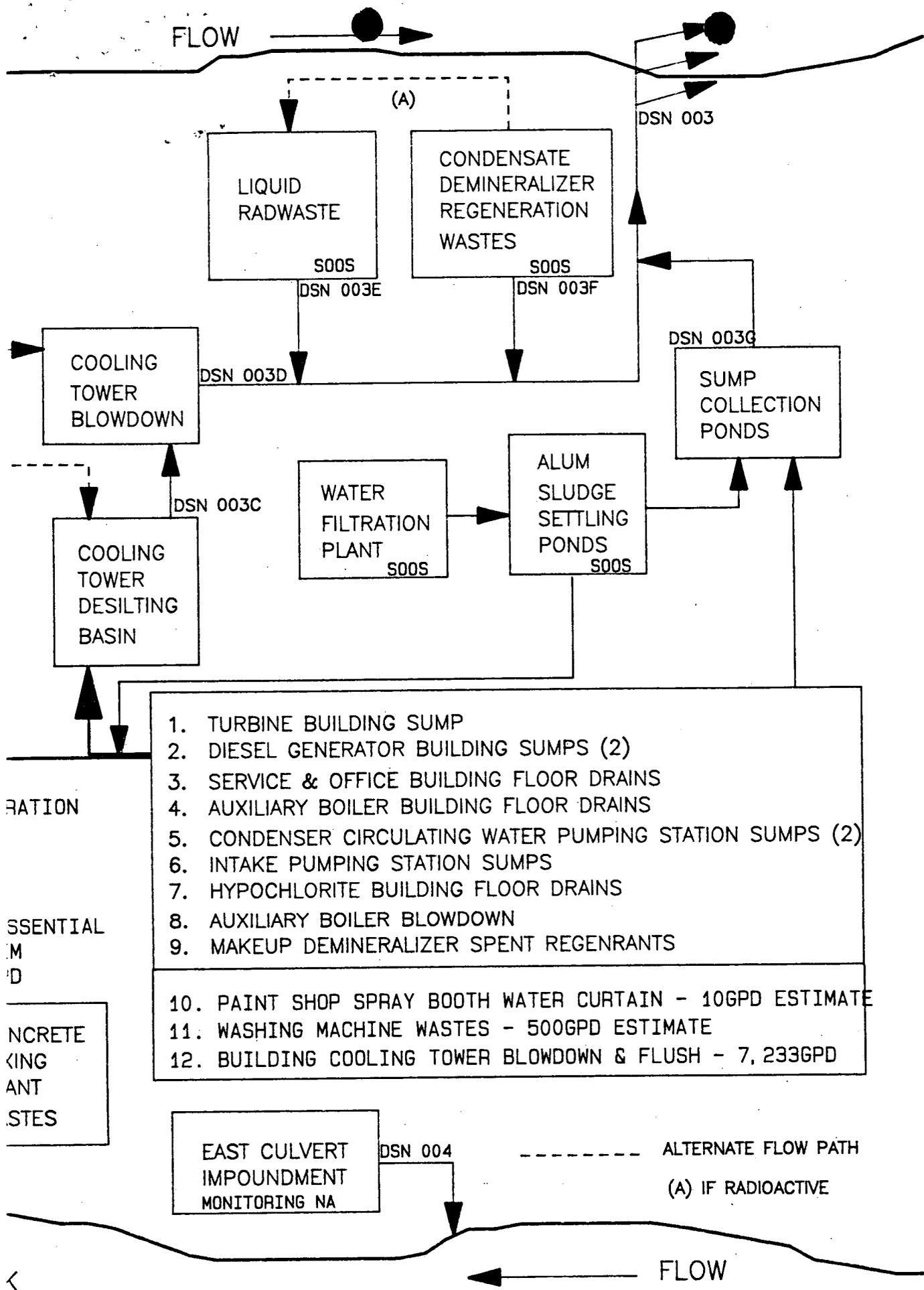
RED=PROPOSED  
MODIFICATIONS  
DURING DEFERRED  
CONSTRUCTION

BLUE=NEW  
WASTE SOURCES

- 10,714GPD 1. SURVEILLANCE TESTING/C OF DIESEL FIRE PUMPS
- 115GPD 2. DIESEL FUEL STORAGE SPILL CONFINEMENT AREA
- 3. EMERGENCY RELEASE OF RAW COOLING WATER SYS APPROXIMATELY 600,000

DSN 002A & NA  
DISCHARGE  
ELIMINATED  
DSN 002B

TOWN CREEK



FLOW

(A)

DSN 003

LIQUID  
RADWASTE

S00S

DSN 003E

CONDENSATE  
DEMINERALIZER  
REGENERATION  
WASTES

S00S

DSN 003F

COOLING  
TOWER  
BLOWDOWN

DSN 003D

SUMP  
COLLECTION  
PONDS

DSN 003G

COOLING  
TOWER  
DESILTING  
BASIN

DSN 003C

WATER  
FILTRATION  
PLANT

S00S

ALUM  
SLUDGE  
SETTLING  
PONDS

S00S

1. TURBINE BUILDING SUMP
  2. DIESEL GENERATOR BUILDING SUMPS (2)
  3. SERVICE & OFFICE BUILDING FLOOR DRAINS
  4. AUXILIARY BOILER BUILDING FLOOR DRAINS
  5. CONDENSER CIRCULATING WATER PUMPING STATION SUMPS (2)
  6. INTAKE PUMPING STATION SUMPS
  7. HYPOCHLORITE BUILDING FLOOR DRAINS
  8. AUXILIARY BOILER BLOWDOWN
  9. MAKEUP DEMINERALIZER SPENT REGENRANTS
- 
10. PAINT SHOP SPRAY BOOTH WATER CURTAIN - 10GPD ESTIMATE
  11. WASHING MACHINE WASTES - 500GPD ESTIMATE
  12. BUILDING COOLING TOWER BLOWDOWN & FLUSH - 7,233GPD

EAST CULVERT  
IMPOUNDMENT  
MONITORING NA

DSN 004

ALTERNATE FLOW PATH

(A) IF RADIOACTIVE

FLOW