



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

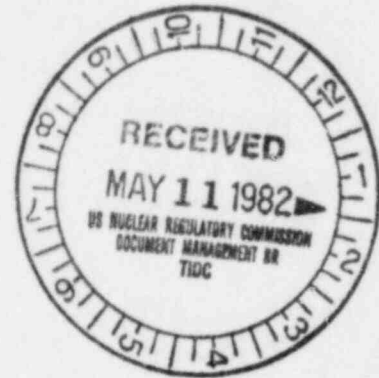
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

MAY 25 1982

REF: 4WM-WP

Mr. D. Elmo Lunn, Director
Division of Water Quality Control
Tennessee Department of Public Health
621 Cordell Hull Building
Nashville, Tennessee 37219

Re: Clinch River Breeder Reactor Plant
NPDES TN0028801



Dear Mr. Lunn:

Enclosed is a copy of the referenced NPDES Application with supporting Engineering Report. Upon receipt of the Erosion and Sediment Control Plan, we will be prepared to proceed with finalization of the NPDES Permit for the project.

By copy of this letter, we are forwarding a copy of the U. S. Nuclear Regulatory Commission for use or docketing as they desire.

Sincerely yours,

Charles H. Kaplan

Charles H. Kaplan
Environmental Engineer
Water Permits Branch
Water Management Division

Enclosures: 2

cc: Mr. Paul Leech, U.S. NRC, Project Manager w/Enclosures ✓
Mr. Earl Lemming, Regional Engineer w/ Enclosures
Mr. Percy Brewington, Jr., Acting Director, CRERP Project

D002
5/11

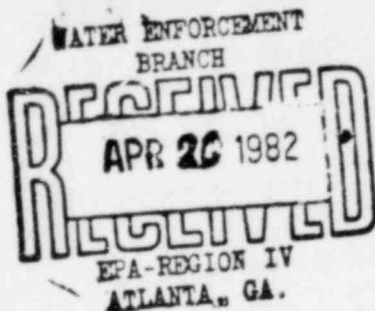
DESIGNATED ORIGINAL

Certified By

M.R. Chatterworth
LA/CRERP/NER



Department of Energy
Oak Ridge Operations
P.O. Box U
Oak Ridge, Tennessee 37830



Jo Kaplan
4/20/82
CSZ
TN 0028801

April 14, 1982

Mr. Charles Jeter
Regional Administrator
U.S. Environmental Protection Agency, Region IV
345 Courtland Street
Atlanta, Georgia 30365

Dear Mr. Jeter:

TRANSMITTAL OF THE CRBRP NPDES PERMIT APPLICATION

The United States Department of Energy (DOE), through its Clinch River Breeder Reactor Plant (CRBRP) Project Office, hereby submits to the Environmental Protection Agency (EPA), the attached completed application for a National Pollution Discharge Elimination System (NPDES) Permit and the supporting Engineering Report to allow discharge of waste water into the Clinch River near Oak Ridge, Tennessee. As indicated by the application and supporting data, the permit requested would cover all activities associated with construction and operation of the CRBRP. Accordingly, your office is requested to issue the subject permit pursuant to Section 402 (a) (1) of the Clean Water Act.

Your cooperation is sincerely appreciated. If you have any questions or require additional information, please contact Henry Piper of the Public Safety Division, (6-6095).

Sincerely,

for *Percy D. Wagoner*
Percy Brewington, Jr.
Acting Director
CRBRP Project

PS:82:145

Enclosures:
As stated

**WATER ENFORCEMENT
BRANCH**
APR 20 1982
RECEIVED
EPA-REGION 4
ATLANTA, GA.

ATTACHMENT 1

FOR AGENCY USE
(WFO 288P)

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER**

STANDARD FOR CATEGORY 3 - MANUFACTURING AND COMMERCIAL

SECTION I. APPLICANT AND FACILITY DESCRIPTION

Unless otherwise specified on this form all items are to be completed. If an item is not applicable indicate "NA."

ADDITIONAL INSTRUCTIONS FOR SELECTED ITEMS APPEAR IN SEPARATE INSTRUCTION BOOKLET AS INDICATED. REFER TO BOOKLET BEFORE FILLING OUT THESE ITEMS.

Please Print or Type

1. Legal Name of Applicant
(see instructions)

101

U. S. Department of Energy

2. Mailing Address of Applicant
(see instructions)
Number & Street

102a

Clinch River Breeder Reactor Plant
Project Office P. O. Box U

City

102b

Oak Ridge

State

102c

Tennessee

Zip Code

102d

37830

3. Applicant's Authorized Agent
(see instructions)
Name and Title

103a

Henry Piper, Branch Chief, Licensing

Number & Street Address

103b

Clinch River Breeder Reactor Plant Project Office

City

103c

Oak Ridge

State

103d

Tennessee

Zip Code

103e

37830

Telephone

103f

615 576-6095
Area Code Number

4. Previous Application
If a previous application for a
National or Federal discharge per-
mit has been made, give the date
of application. Use numeric
designation for date.

104

75 11 07 Revised: 76 09 03
YR MO DAY

I certify that I am familiar with the information contained in this application and that to the best of my knowledge and belief such information is true, complete, and accurate.

for Percy Brewington, Jr.
Printed Name of Person Signing

102e

Acting Director, CRBRP Project
Title

4 14 82
YR MO DAY

John D. Wagoner
Signature of Applicant or Authorized Agent

102f

Date Application Signed

18 U.S.C. Section 1001 provides that:

Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals or covers up by any trick, scheme, or device a material fact, or makes any false, fictitious or fraudulent statement or representation, or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than \$10,000 or imprisoned not more than five years, or both.

FOR AGENCY USE

OFFICE: EPA Region Number

Received
YR MO DAY

5. Facility/Activity (see instructions)
Give the name, ownership, and physical location of the plant or other operating facility, where discharge(s) does or will occur.

Name

Ownership (Public, Private, or Both Public and Private)

Check block if Federal Facility and give GSA Inventory Control Number

Location
Street & Number

City

County

State

6. Nature of Business. State the nature of the business conducted at the plant or operating facility.

7. Facility Intake Water (see instructions). Indicate water intake volume per day by sources. Estimate average volume per day, in thousand gallons per day.

Municipal or private water system

Surface water

Groundwater

Other*

Total item 7

*If there is intake water from "other," specify the source.

8. Facility Water Use. Estimate average volume per day, in thousand gallons per day, for the following types of water usage at the facility (see instructions).

Noncontact cooling water

Boiler feed water

Process water (including contact cooling water)

Sanitary water

Other*

Total item 8

*If there are discharges to "other," specify.

If there is "Sanitary" water use, give the number of people served.

FOR AGENCY USE

Clinch River Breeder Reactor Plant

☒ PUB ☐ PRV ☐ EPP

☒ FED

Located on a peninsula formed by the Clinch River between Clinch River Mile 14.5 and 18.5

Oak Ridge

Roane

Tennessee

Demonstrate commercial feasibility of Liquid Metal Fast Breeder Reactor

AGENCY USE

NOTE: The following flows are for the operation period. Construction period flows are given on Page 1-3e.

37

thousand gallons per day

8797

thousand gallons per day

0

thousand gallons per day

38

thousand gallons per day

8872

thousand gallons per day

Cooling coil condensation (maximum seasonal)

NOTE: The following flows are for the operation period. Construction period flows are given on Page 1-3e.

8690

thousand gallons per day

30

thousand gallons per day

77

thousand gallons per day

37

thousand gallons per day

8834⁺

thousand gallons per day

⁺ Total does not include 38 TGD since this volume is atmospheric water which is discharged without use.

200

people served, plus process uses.

2450

people served during construction. Refer to page 11-9 of OSH 002 for additional information.

FOR AGENCY USE

9. All Facility Discharges and other Losses; Number and Discharge (see instructions); Volume. Specify the number of discharge points and the volume of water discharged or lost from the facility according to the categories below. Estimate average volume per day in thousand gallons per day.

The following information is for the operation period. Construction period discharges are described on Page I-3e.

	Number of Discharge Points	Total Volume Used or Discharged, Thousand Gal./Day
Surface Water	109a1 <u>1</u>	109a2 <u>3502</u>
Sanitary wastewater transport system	109b1 <u>5</u>	109b2 <u>15,999</u>
Storm water transport system	109c1	109c2
Combined sanitary and storm water transport system	109d1	109d2
Surface impoundment with no effluent	109e1	109e2
Underground percolation	109f1	109f2
Well injection	109g1	109g2
Waste acceptance firm	109h1 <u>3</u>	109h2 <u>less than 1</u>
Evaporation	109i1 <u>2</u>	109i2 <u>5,370</u>
Consumption	109j1	109j2
Other*	109k1	109k2
Facility discharges and volume Total item 9:	109l1 <u>11</u>	109l2 <u>24,871</u>
* If there are discharges to "other," specify.	109m1	

10. Permits, Licenses and Applications
List all existing, pending or denied permits, licenses and applications related to discharges from this facility (see instructions).

Issuing Agency	For Agency Use	Type of Permit or License	ID Number	Date Filed YR/MO/DA	Date Issued YR/MO/DA	Date Denied YR/MO/DA	Expiration Date YR/MO/DA
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
110 See Page							
1 I-3a							
2							
3							

11. Maps and Drawings
Attach all required maps and drawings to the back of this application. (see instructions)

12. Additional Information

Item Number	Information
112 See Pages	Schematic of Water Flow - Operating Period
I-3d and	Schematic of Water Flow - Construction Period
I-3d-1	

Item 10. Permits, Licenses and Applications

List all existing, pending or denied permits, licenses and applications related to discharges from this facility (see instructions).

Issuing Agency	For Agency Use	Type of Permit or License	ID Number	Date Filed YR/MO/DA	Date Issued YR/MO/DA	Date Denied YR/MO/DA
1. Nuclear Regulatory Commission		Limited Work Authorization	Docket No. 50-537	74/10/11		
2. Nuclear Regulatory Commission		Construction Permit and Operating License	Docket No. 50-537	75/4/7		
3. Army Corps of Engineers		Corps Permit	42,362	76/2/13	(a) 77/5/6	
4. Tennessee Valley Authority		Section 26a Permit	--	76/2/13	(b) 77/4/19	

(a) permit was extended on 81/1/29;

(b) permit was extended on 81/6/10;

Expiration Date
YR/MO/DA

84/5/6

82/6/10

Location of Runoff Treatment
Pond "E" Discharge,
pt. 007

Location of Runoff Treatment
Pond "C" Discharge,
pt. 005

Location of Runoff Treatment
Pond "B" Discharge,
pt. 004

Location of Common
Plant Discharge,
pt. 001

Location of Sewage
Treatment of
Plant Discharge,
pt. 002

Location of Rad-
waste Treatment System
Discharge, pt. 010

Location of Runoff Treatment
Pond "A" Discharge,
pt. 003

CLINCH RIVER SITE
CONTROLLED AREA

CLINCH RIVER
BREEDER REACTOR
PLANT SITE
(PROTECTED AREA)

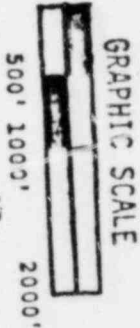
Location of Runoff
Treatment Pond
"D" Discharge,
pt. 006

Location of plant
Intake, pt. 013

Location of Cooling Tower
Blowdown Discharge, pt. 011

Approximate location of Waste Water
Disposal System Discharge, pt. 009

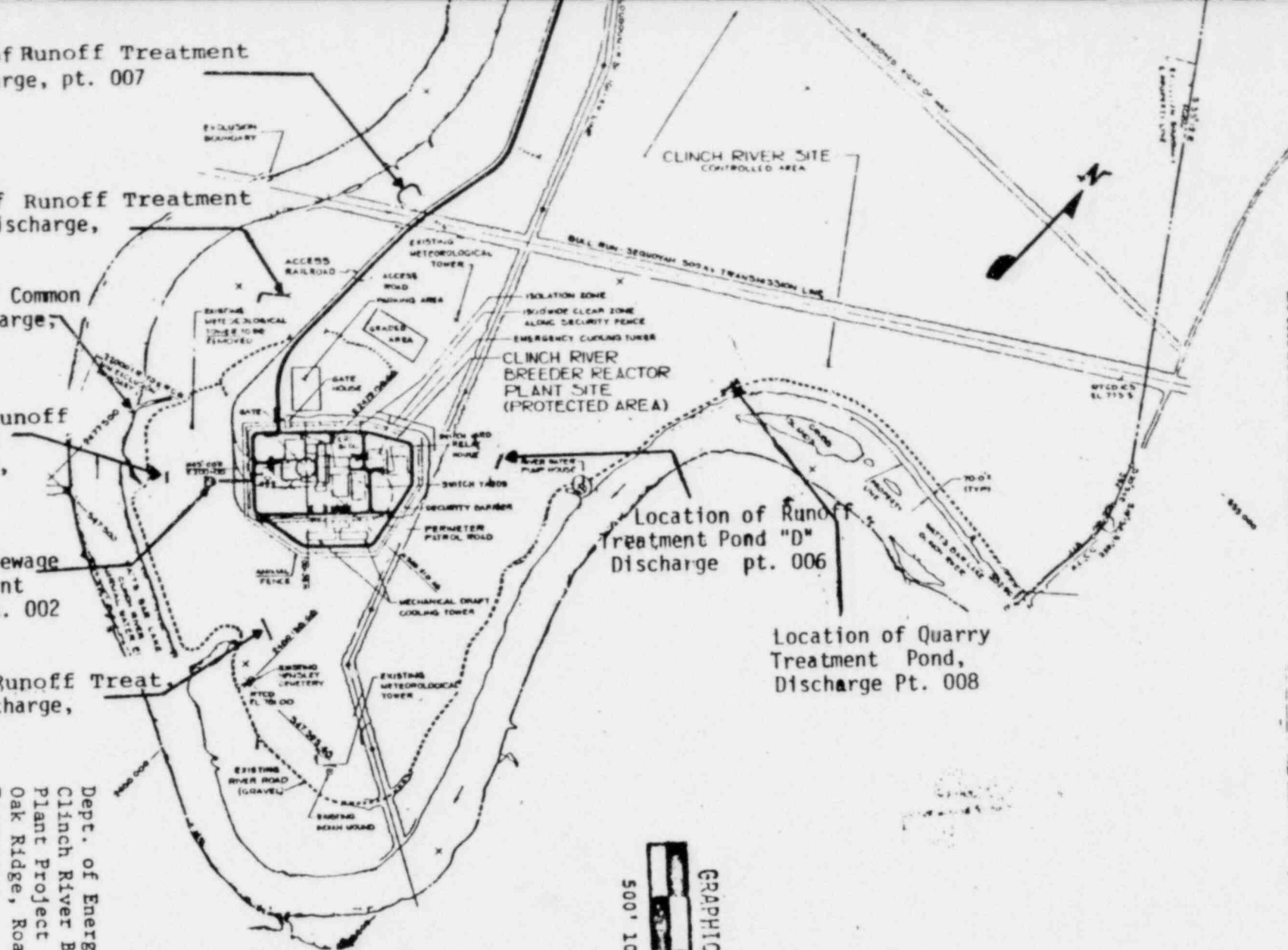
Approximate Location of
Chemical Cleaning Waste
Discharge (preoperational)
pt. 012



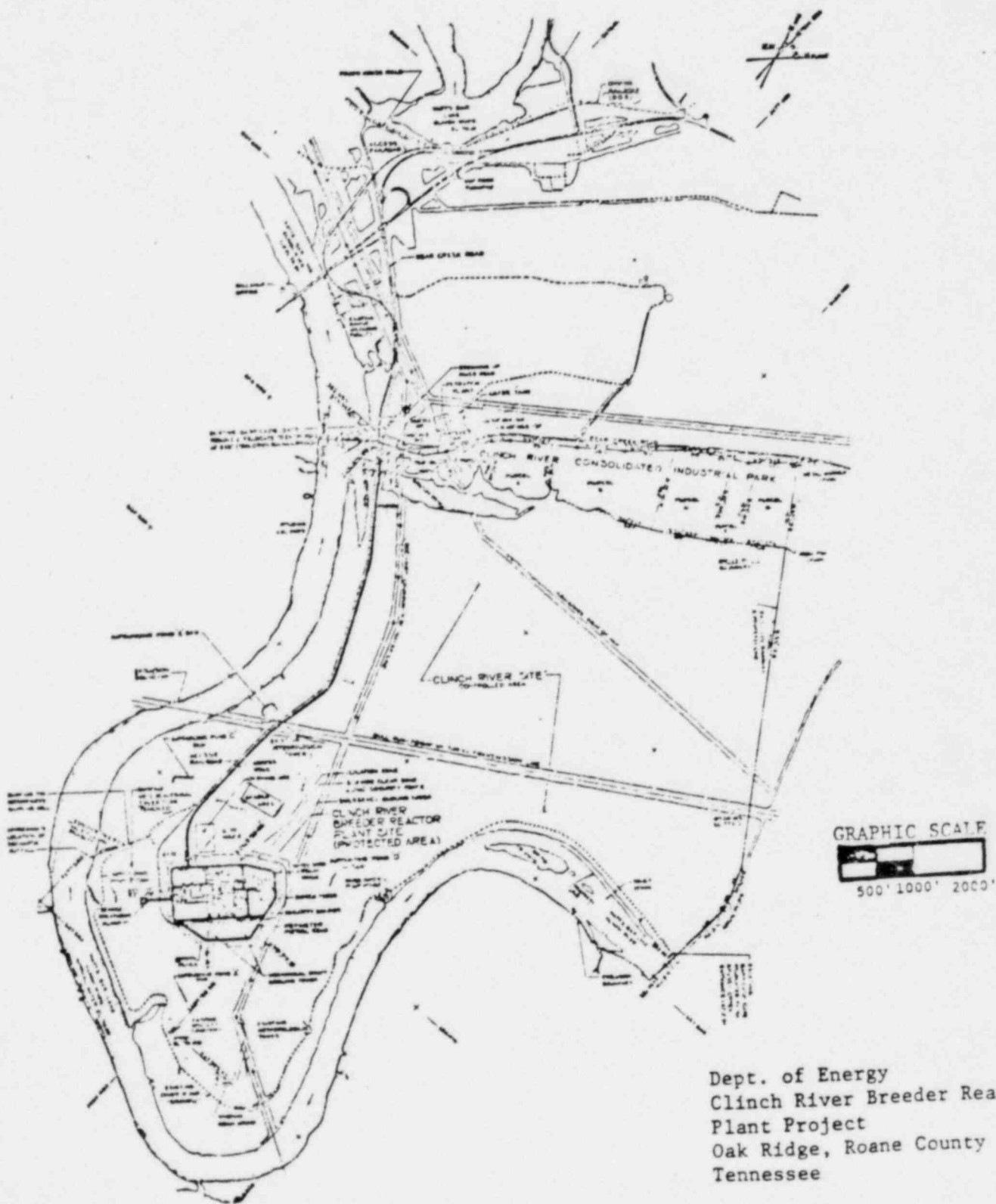
LOCATION OF DISCHARGE POINTS - OPERATING PERIOD

Dept. of Energy
Clinch River Breeder Reactor
Plant Project
Oak Ridge, Roane County
Tennessee

March, 1982
I-3b

LOCATION OF DISCHARGE POINTS - CONSTRUCTION PERIOD

SITE LOCATION MAP

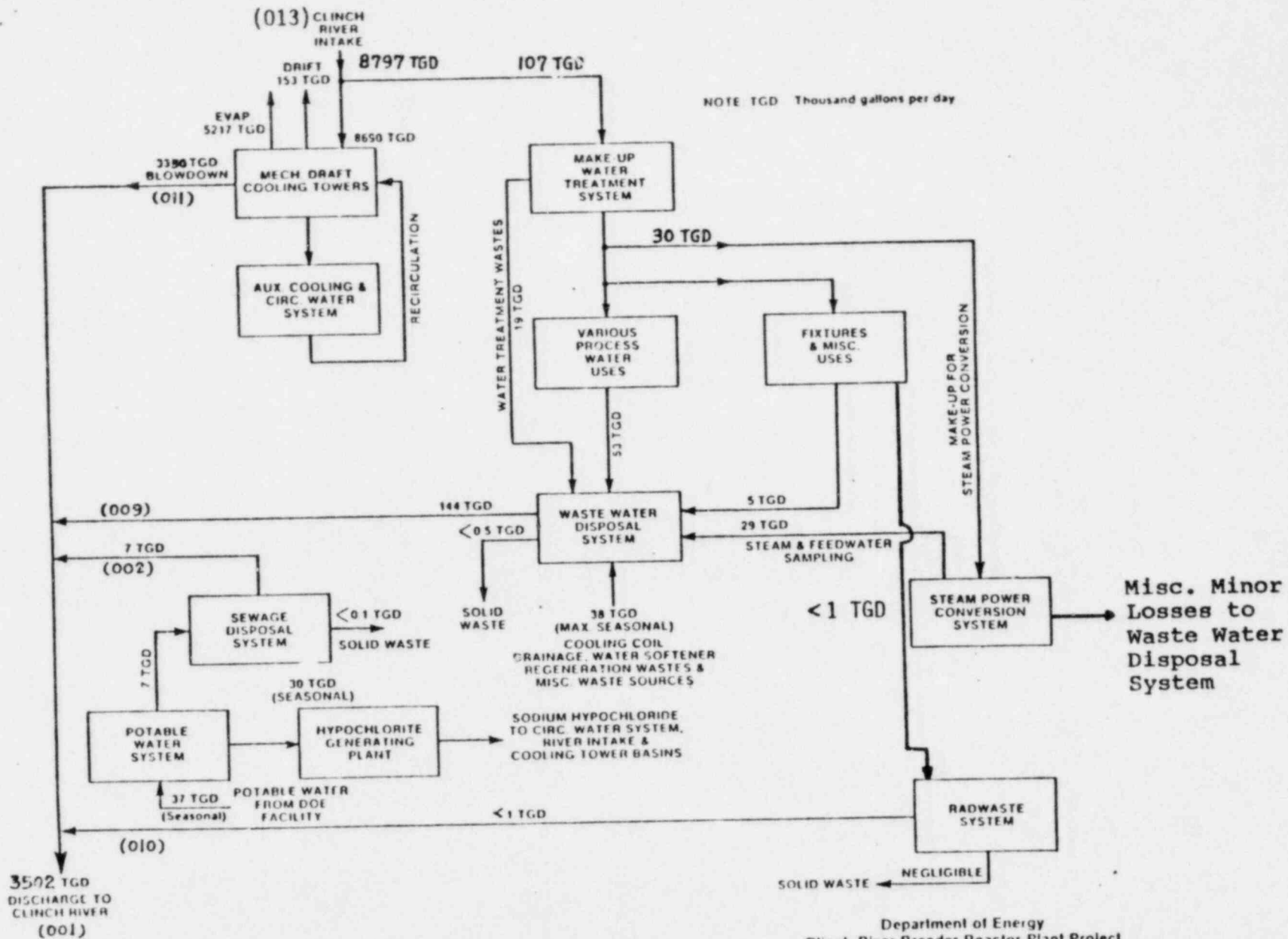


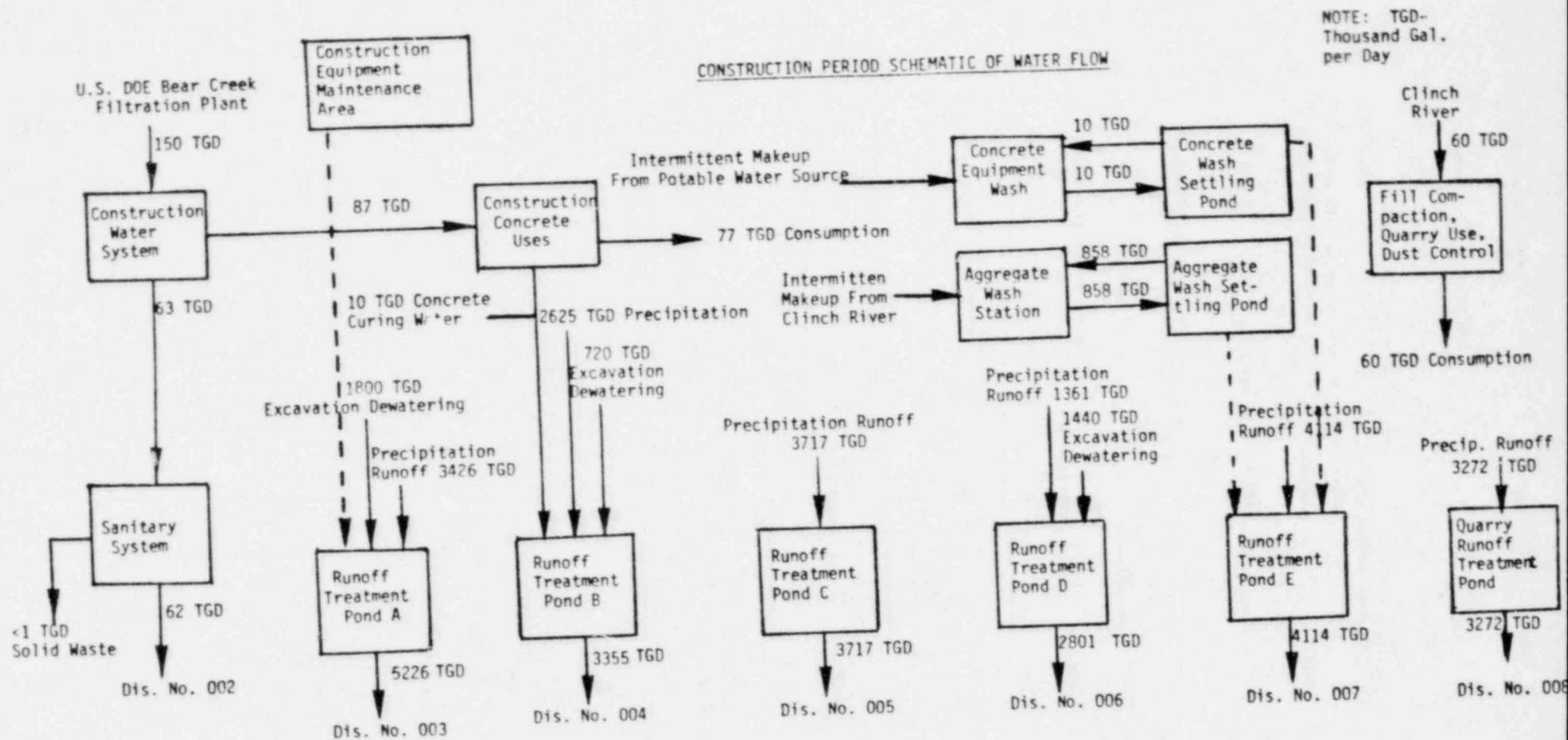
Dept. of Energy
Clinch River Breeder Reactor
Plant Project
Oak Ridge, Roane County
Tennessee

March, 1982

I-3c

SCHEMATIC OF WATER FLOW — OPERATING PERIOD





I-3d-1

DEPARTMENT OF ENERGY
CLINCH RIVER BREEDER REACTOR PROJECT
OAK RIDGE, ROANE COUNTY, TENNESSEE

March 1982

Additional Information for Construction Period

7. Facility Water Intake:

Municipal or Private	
Water System	150 TGD
Surface Water	60 TGD
Ground Water	3200 TGD
TOTAL ITEM 7	3410 TGD

8. Facility Water Use:

Sanitary Water	63 TGD
Other*	147 TGD
TOTAL ITEM 8	210 TGD

*Water used for concrete production, fill compaction, quarry use and dust control.

9. Facility Discharges:

Surface Water	1	discharge pt.	62	TGD
Sanitary System	1	discharge pt.	52	TGD
Stormwater System	6	discharge pt.	22485	TGD
Surface impoundment		discharge pt.	0	TGD
with no effluent	2	discharge pt.	1	TGD
Waste acceptance firm	1	discharge pt.	137	TGD
Consumption	4			
TOTAL ITEM 9	13		22685	TGD

STANDARD FORM C - MANUFACTURING AND COMMERCIAL

FOR AGENCY USE									

SECTION II. BASIC DISCHARGE DESCRIPTION

Complete this section for each discharge indicated in Section I, Item 9, that is to surface waters. This includes discharges to municipal sewerage systems in which the wastewater does not go through a treatment works prior to being discharged to surface waters. Discharges to wells must be described where there are also discharges to surface waters from this facility. SEPARATE DESCRIPTIONS OF EACH DISCHARGE ARE REQUIRED EVEN IF SEVERAL DISCHARGES ORIGINATE IN THE SAME FACILITY. All values for an existing discharge should be representative of the twelve previous months of operation. If this is a proposed discharge, values should reflect best engineering estimates.

ADDITIONAL INSTRUCTIONS FOR SELECTED ITEMS APPEAR IN SEPARATE INSTRUCTION BOOKLET AS INDICATED. REFER TO BOOKLET BEFORE FILLING OUT THESE ITEMS.

1. Discharge Serial No. and Name

a. Discharge Serial No.
(see instructions)

201a

001

b. Discharge Name
Give name of discharge, if any.
(see instructions)

201b

Common Plant Discharge

c. Previous Discharge Serial No.
If previous permit application
was made for this discharge (see
Item 4, Section I), provide previous
discharge serial number.

201c

001

2. Discharge Operating Dates

a. Discharge Began Date. If the
discharge described below is in
operation, give the date (within
best estimate) the discharge
began.

202a

N. A.
YR MO

b. Discharge to Begin Date. If the
discharge has never occurred but
is planned for some future date,
give the date (within best estimate)
the discharge will begin.

202b

83 8
YR MO

c. Discharge to End Date. If discharge
is scheduled to be discontinued
within the next 5 years,
give the date (within best estimate)
the discharge will end.

202c

N. A.
YR MO

3. Engineering Report Available
Check if an engineering report is
available to reviewing agency upon
request. (see instructions)

203

☒

4. Discharge Location. Name the
political boundaries within which
the point of discharge is located.

State

204a

Tennessee

County

204b

Roane

(if applicable) City or Town

204c

Oak Ridge

Agency Use

204d

204e

204f

5. Discharge Point Description
Discharge is into (check one):
(see instructions)

Stream (includes ditches, arroyos,
and other intermittent watercourses)

205a

☒ STR

Lake

☐ LKE

Ocean

☐ OCEMunicipal Sanitary Wastewater
Transport System☐ MTSMunicipal Combined Sanitary and
Storm Transport System☐ MCS

DISCHARGE SERIAL NUMBER
001

FOR AGENCY USE					

Municipal Storm Water Transport System

Well (Injection)

Other

☐ STS

☐ WEL

☐ OTH

If 'other' is checked, specify

6. Discharge Point — Lat/Long Give the precise location of the point of discharge to the nearest second.

Latitude

Longitude

7. Discharge Receiving Water Name Name the waterway at the point of discharge (see instructions)

If the discharge is through an outfall that extends beyond the shoreline or is below the mean low water line, complete item 8.

8. Offshore Discharge

a. Discharge Distance from Shore

b. Discharge Depth Below Water Surface

9. Discharge Type and Occurrence

a. Type of Discharge Check whether the discharge is continuous or intermittent. (see instructions)

b. Discharge Occurrence Days per Week Enter the average number of days per week (during periods of discharge) this discharge occurs.

c. Discharge Occurrence —Months If this discharge normally operates (either intermittently, or continuously) on less than a year-around basis (excluding shutdowns for routine maintenance), check the months during the year when the discharge is operating. (see instructions)

Complete items 10 and 11 if "intermittent" is checked in item 9.a. Otherwise, proceed to item 12.

10. Intermittent Discharge Quantity State the average volume per discharge occurrence in thousands of gallons.

11. Intermittent Discharge Duration and Frequency

a. Intermittent Discharge Duration Per Day State the average number of hours per day the discharge is operating.

b. Intermittent Discharge Frequency State the average number of discharge occurrences per day during days when discharging.

12. Maximum Flow Period Give the time period in which the maximum flow of this discharge occurs.

205b

206a

206b

207a

207b

208a

208b

209a

209b

209c

210

211a

211b

212

Clinch River

For Agency Use		
Major	Minor	Sub

207c

For Agency Use	
303e	

25 feet

4

(at minimum low water)

☒ (con) Continuous

☐ (int) Intermittent

7 days per week

☐ JAN ☐ FEB ☐ MAR ☐ APR

☐ MAY ☐ JUN ☐ JUL ☐ AUG

☐ SEP ☐ OCT ☐ NOV ☐ DEC

NA

thousand gallons per discharge occurrence.

NA hours per day

NA discharge occurrences per day

From 06 to 09
month month

001

FOR AGENCY USE

13. Activity Description. Give a narrative description of activity producing this discharge. (see instructions)

213a

Discharge 001 "Common Plant Discharge" conveys effluents to the Clinch River from the following point sources: (011) Cooling Tower Blowdown; (002) Construction and Operating Period Sewage Treatment Systems; (009) Waste Water Treatment System; (010) Liquid Rad-waste System. These effluents are the result of activities required for the production of electric power by the Clinch River Breeder Reactor Plant.

Activity descriptions are provided under their respective Basic Discharge Descriptions.

14. Activity Causing Discharge. For each SIC Code which describes the activity causing this discharge, supply the type and maximum amount of either the raw material consumed (Item 14a) or the product produced (Item 14b) in the units specified in Table I of the Instruction Booklet. For SIC Codes not listed in Table I, use raw material or production units normally used for measuring production. (see instructions)

a. Raw Materials

SIC Code	Name	Maximum Amount/Day	Unit (See Table I)	Shared Discharges (Serial Number)
(1)	(2)	(3)	(4)	(5)
214a				

b. Products

SIC Code	Name	Maximum Amount/Day	Unit (See Table I)	Shared Discharges (Serial Number)
(1)	(2)	(3)	(4)	(5)
214b				
4911	Electric Power	0.375	Z-1	None

001

FOR AGENCY USE

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5. Waste Abatement

- a. Waste Abatement Practices
Describe the waste abatement practices used on this discharge with a brief narrative. (see instructions)

215a

Narrative: Discharge 001 is a combined discharge for several plant effluents, the abatement processes are described under their respective Basic Discharge Descriptions.

- b. Waste Abatement Codes
Using the codes listed in Table II of the Instruction Booklet, describe the waste abatement processes for this discharge in the order in which they occur if possible.

215b

- | | | |
|------------|------------|------------|
| (1) _____ | (2) _____ | (3) _____ |
| (4) _____ | (5) _____ | (6) _____ |
| (7) _____ | (8) _____ | (9) _____ |
| (10) _____ | (11) _____ | (12) _____ |
| (13) _____ | (14) _____ | (15) _____ |
| (16) _____ | (17) _____ | (18) _____ |
| (19) _____ | (20) _____ | (21) _____ |
| (22) _____ | (23) _____ | (24) _____ |
| (25) _____ | | |

FOR AGENCY USE

16. Wastewater Characteristics

Check the box beside each constituent which is present in the effluent (discharge water). This determination is to be based on actual analysis or best estimate. (see instructions)

Parameter 216	Present	Parameter 216	Present
Color 00080		Copper 01042	X
Ammonia 00610	X	Iron 01045	X
Organic nitrogen 00605	X	Lead 01051	
Nitrate 00620	X	Magnesium 00927	X
Nitrite 00615		Manganese 01055	X
Phosphorus 00665	X	Mercury 71900	
Sulfate 00945	X	Molybdenum 01062	
Sulfide 00745		Nickel 01067	X
Sulfite 00740		Selenium 01147	
Bromide 71870		Silver 01077	
Chloride 00940	X	Potassium 00937	X
Cyanide 00720		Sodium 00929	X
Fluoride 00951		Thallium 01059	
Aluminum 01105		Titanium 01152	
Antimony 01097		Tin 01102	
Arsenic 01002		Zinc 01092	X
Beryllium 01012		Algicides* 74051	
Barium 01007		Chlorinated organic compounds* 74052	
Boron 01022		Pesticides* 74053	
Cadmium 01027		Oil and grease 00550	X
Calcium 00916	X	Phenols 32730	
Cobalt 01037		Surfactants 38260	
Chromium 01034		Chlorine 50060	X
Fecal coliform bacteria 74055	X	Radioactivity* 74050	X

*Specify substances, compounds and/or elements in Item 26.

Pesticides (insecticides, fungicides, and rodenticides) must be reported in terms of the acceptable common names specified in *Acceptable Common Names and Chemical Names for the Ingredient Statement on Pesticide Labels*, 2nd Edition, Environmental Protection Agency, Washington, D.C. 20250, June 1972, as required by Subsection 162.7(b) of the Regulations for the Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act.

DISCHARGE SERIAL NUMBER

001

FOR AGENCY USE

17. Description of Intake and Discharge

For each of the parameters listed below, enter in the appropriate box the value or code letter answer called for. (see instructions)

In addition, enter the parameter name and code and all required values for any of the following parameters if they were checked in Item 16: ammonia, cyanide, aluminum, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc, phenols, oil and grease, and chlorine (residual).

Parameter and Code 217a	Influent		Effluent					
	Untreated Intake Water (Daily Average) (1)	In-Plant Treated Intake Water (Daily Average) (2)	Daily Average (3)	Minimum Value Observed or Expected During Discharge Activity (4)	Maximum Value Observed or Expected During Discharge Activity (5)	Frequency of Analysis # (6)	Number of Analyses (7)	Sample Type (8)
Flow* MGD 50050	8.80	0.04	3.50	0.34	4.83	Cont.	NA	NA
pH Units 00400	7.6	7.2	X	6.5	8.5	Cont.	NA	NA
Temperature (winter) ° F 74028	37	37	68	61	72	Cont.	NA	NA
Temperature (summer) ° F 74027	70	70	85	73	91	Cont.	NA	NA
Biochemical Oxygen Demand (BOD 5-day) mg/l 00310	LT 1.0	NA	LT 2.5	LT 2.5	3.3	NA	NA	NA
Chemical Oxygen Demand (COD) mg/l 00340	LT 4.0	NA	LT 10.0	LT 2.5	30	NA	NA	NA
Total Suspended (nonfilterable) Solids mg/l 00530	7.0	NA	17.5	2.5	100	NA	NA	NA
Specific Conductance micromhos/cm at 25° C 00095	200	200	X	250	675	Cont.	NA	NA
Settleable Matter (residue) ml/l 00545	Not Available	NA	Not Available	Not Avail.	Not Avail.	NA	NA	NA

*Other discharges sharing intake flow (serial numbers). (see instructions)

Indicates expected frequency of analysis

DISCHARGE SERIAL NUMBER
001

FOR AGENCY USE							

17. (Cont'd.)

Parameter and Code 217a	Influent		Effluent					
	Untreated Intake Water (Daily Average) (1)	In Plant Treated Intake Water (Daily Average) (2)	Daily Average (3)	Minimum Value Observed or Expected During Discharge Activity (4)	Maximum Value Observed or Expected During Discharge Activity (5)	Frequency of Analysis (6)	Number of Analyses (7)	Sample Type (8)
Ammonia 00610	0.04		0.1	LT 0.03	0.58	2/30	NA	G
Copper 01042	0.04		0.1	LT 0.03	0.43	1/30	NA	G
Nickel 01067	LT 0.5		LT 0.13	LT 0.13	0.15	1/30	NA	G
Zinc 01092	0.04		0.1	LT 0.03	1.43	NA	NA	NA
Oil & Grease 00550	Not Available		LT 5	LT 5	LT 5	1/07	NA	G
Chlorine Residual 50060	Not Available		0.2	0	0.5	1/07	NA	G

18. Plant Controls. Check if the following plant controls are available for this discharge.

Alternate power source for major pumping facility.

Alarm or emergency procedure for power or equipment failure

Complete item 19 if discharge is from cooling and/or steam water generation and water treatment additives are used.

19. Water Treatment Additives. If the discharge is treated with any conditioner, inhibitor, or algicide, answer the following:

a. Name of Material(s)

b. Name and address of manufacturer

c. Quantity (pounds added per million gallons of water treated).

218

☐ APS☒ ALM

219a

Sodium Hypochlorite will be used to control growth of slimes, algae and fresh water clams in the circulating water system (closed loop).

219b

Sodium Hypochlorite will be generated onsite as a 0.8% solution.

219c

To be determined during actual operation.

--	--	--	--	--	--	--	--	--	--

NaOCl as 0.8% solution

- d. Chemical composition of these additives (see instructions).

219d

Complete items 20-25 if there is a thermal discharge (e.g., associated with a steam and/or power generation plant, steel mill, petroleum refinery, or any other manufacturing process) and the total discharge flow is 10 million gallons per day or more. (see instructions)

NA since discharge is less than 10 MGD.

The following is provided for informational purposes.

20. Thermal Discharge Source: Check the appropriate item(s) indicating the source of the discharge. (see instructions)

220

Boiler Blowdown

Boiler Chemical Cleaning

Ash Pond Overflow

Boiler Water Treatment — Evaporator Blowdown

Oil or Coal Fired Plants — Effluent from Air Pollution Control Devices

Condense Cooling Water

Cooling Tower Blowdown

Manufacturing Process

Other

☐ BLBD☐ BCCL☐ APOF☐ EPBD☐ OCFP☐ COND☒ CTBD☐ MFPR☐ OTHR

21. Discharge/Receiving Water Temperature Difference

Give the maximum temperature difference between the discharge and receiving waters for summer and winter operating conditions. (see instructions)

Summer

221a

29 °F.

Winter

221b

33 °F.

22. Discharge Temperature, Rate of Change Per Hour

222

5 °F./hour

Give the maximum possible rate of temperature change per hour of discharge under operating conditions. (see instructions)

23. Water Temperature, Percentile Report (Frequency of Occurrence)
-
- In the table below, enter the temperature which is exceeded 10% of the year, 5% of the year, 1% of the year and not at all (maximum yearly temperature). (see instructions)
-
- Frequency of occurrence

223a

a. Intake Water Temperature (Subject to natural changes)

223b

b. Discharge Water Temperature

10%	5%	1%	Maximum
60 °F	65 °F	67 °F	68 °F
85 °F	86 °F	88 °F	91 °F

24. Water Intake Velocity (see instructions)

224

LT 0.2 feet/sec

25. Retention Time: Give the length of time, in minutes, from start of water temperature rise to discharge of cooling water. (see instructions)

225

990 minutes

Based on circulating water system inventory of 2.28×10^6 gallons and avg. blowdown flowrate of 2300 gpm.

DISCHARGE SERIAL NUMBER

001

FOR AGENCY USE

26. Additional Information

226

Item

Information

203

Additional information concerning the common plant discharge may be found in the Engineering Report and in the CRBRP Environmental Report Sections 3.3 through 3.7 and 10.3 through 10.6. Information may also be found in the following documents:

Overall Plant Design
Description (OPDD-10)

Specification 3066-76-1
"Waste Water Treatment Equipment"
Specification 3066-76-2
"Sanitary Waste Treatment
Equipment"

216

Radioactivity 74050: Detailed description of radionuclides is contained in the Basic Discharge Description for discharge 010.

217a

In-plant treated water volume is approximately 37,000 gpd (rounded to 0.04 MGD). Approximately 30,000 gallons of this water is softened for use by the hypochlorite generating plant during the chlorination season (summer months). 7,000 gallons is allocated for potable water uses. Source of this water is the DOE Bear Creek Road Filtration Plant.

Untreated intake water volume that is allocated for process water uses comprises approximately 1% of the total intake water volume. Prior to use, it is treated by clarification, filtration and ion exchange.

STANDARD FORM C - MANUFACTURING AND COMMERCIAL

FOR AGENCY USE									

SECTION II. BASIC DISCHARGE DESCRIPTION

Complete this section for each discharge indicated in Section I, Item 9, that is to surface waters. This includes discharges to municipal sewerage systems in which the wastewater does not go through a treatment works prior to being discharged to surface waters. Discharges to wells must be described where there are also discharges to surface waters from this facility. SEPARATE DESCRIPTIONS OF EACH DISCHARGE ARE REQUIRED EVEN IF SEVERAL DISCHARGES ORIGINATE IN THE SAME FACILITY. All values for an existing discharge should be representative of the twelve previous months of operation. If this is a proposed discharge, values should reflect best engineering estimates.

ADDITIONAL INSTRUCTIONS FOR SELECTED ITEMS APPEAR IN SEPARATE INSTRUCTION BOOKLET AS INDICATED. REFER TO BOOKLET BEFORE FILLING OUT THESE ITEMS.

1. Discharge Serial No. and Name

a. Discharge Serial No.
(see instructions)

201a

002

b. Discharge Name
Give name of discharge, if any.
(see instructions)

201b

Sewage Treatment Effluent (Construction and Operation Periods)

c. Previous Discharge Serial No.
If previous permit application
was made for this discharge (see
Item 4, Section I), provide previ-
ous discharge serial number.

201c

002

2. Discharge Operating Dates

a. Discharge Began Date. If the
discharge described below is in
operation, give the date (within
best estimate) the discharge
began.

202a

N.A.
YR MOb. Discharge to Begin Date. If the
discharge has never occurred but
is planned for some future date,
give the date (within best esti-
mate) the discharge will begin.

202b

YR MO

see item 26

c. Discharge to End Date. If dis-
charge is scheduled to be discon-
tinued within the next 5 years,
give the date (within best esti-
mate) the discharge will end.

202c

see item 26
YR MO3. Engineering Report Available
Check if an engineering report is
available to reviewing agency upon
request. (see instructions)

203

☒4. Discharge Location. Name the
political boundaries within which
the point of discharge is located.

State

204a

Tennessee

204d

County

204b

Roane

204e

(if applicable) City or Town

204c

Oak Ridge

204f

5. Discharge Point Description
Discharge is into (check one):
(see instructions)Stream (includes ditches, arroyos,
and other intermittent watercourses)

205a

☒ STR

Lake

☐ LKE

Ocean

☐ OCEMunicipal Sanitary Wastewater
Transport System☐ MTSMunicipal Combined Sanitary and
Storm Transport System☐ MCS

Agency Use

002

FOR AGENCY USE

Municipal Storm Water Transport System

Well (injection)

Other

If "other" is checked, specify

6. Discharge Point — Lat/Long. Give the precise location of the point of discharge to the nearest second.

Latitude

Longitude

7. Discharge Receiving Water Name. Name the waterway at the point of discharge (see instructions).

If the discharge is through an outfall that extends beyond the shoreline or is below the mean low water line, complete Item 8.

8. Offshore Discharge

- a. Discharge Distance from Shore
- b. Discharge Depth Below Water Surface

9. Discharge Type and Occurrence

- a. Type of Discharge. Check whether the discharge is continuous or intermittent. (see instructions)
- b. Discharge Occurrence Days per Week. Enter the average number of days per week (during periods of discharge) this discharge occurs.
- c. Discharge Occurrence — Months. If this discharge normally operates (either intermittently, or continuously) on less than a year-around basis (excluding shutdowns for routine maintenance), check the months during the year when the discharge is operating. (see instructions)

Complete Items 10 and 11 if "intermittent" is checked in Item 9.a. Otherwise, proceed to Item 12.

10. Intermittent Discharge Quantity. State the average volume per discharge occurrence in thousands of gallons.

11. Intermittent Discharge Duration and Frequency

- a. Intermittent Discharge Duration Per Day. State the average number of hours per day the discharge is operating.
- b. Intermittent Discharge Frequency. State the average number of discharge occurrences per day during days when discharging.

12. Maximum Flow Period. Give the time period in which the maximum flow of this discharge occurs.

☐ STS☐ WEL☐ OTH

205b

Construction and Operation Periods

206a

35 DEG 53 MIN 17 SEC

206b

84 DEG 23 MIN 03 SEC

207a

Clinch River

207b

For Agency Use

Major	Minor	Sub

207c

For Agency Use

Sub

208a

NA feet

208b

NA feet

Discharged through QSN 001

209a

☒ (con) Continuous☐ (int) Intermittent

209b

— days per week

209c

☐ JAN ☐ FEB ☐ MAR ☐ APR

☐ MAY ☐ JUN ☐ JUL ☐ AUG

☐ SEP ☐ OCT ☐ NOV ☐ DEC

210

N.A. thousand gallons per discharge occurrence.

211a

N.A. hours per day

211b

N.A. discharge occurrences per day

212

From 01 to 12
month month

002

DATE: 11-1-80

FOR AGENCY USE

13. Activity Description: Give a narrative description of activity producing the discharge (see instructions)

213a

Discharge 002 "Sewage Treatment Effluent" is from the sanitary treatment facilities serving the CRBRP during Construction and Operation periods.

14. Activity Causing Discharge: For each S.C. Code which identifies the activity causing this discharge, supply the type and maximum amount of either the raw material consumed (item 14a) or the product produced (item 14b) in the unit specified in Table 1 of the instructions. For S.C. Codes not listed in Table 1, use the material or product or unit normally used for measuring production (see instructions).

a. Raw Materials

214a	S.C. Code	Name	Maximum Amount/Day (3)	Unit (See Table 1) (4)	Discharge Code (5)	Remarks (6)
	(1)	(2)	(3)	(4)	(5)	(6)
	4952	Domestic Waste	*	people	001	See Item 26

*200 people served during operation of facility
2450 people served during construction of facility; Refer to page 11-9 of OSN 002 for additional information.

b. Products

214b	S.C. Code	Name	Maximum Amount/Day (3)	Unit (See Table 1) (4)	Discharge Code (5)	Remarks (6)
	(1)	(2)	(3)	(4)	(5)	(6)

002

FOR AGENCY USE									

15. Waste Abatement

a. Waste Abatement Practices
Describe the waste abatement practices used on this discharge with a brief narrative. (see instructions)

215a

Narrative: Pollution abatement for domestic sanitary wastes is provided by two package treatment plants: a 13,000 gpd plant intended for use during the construction and operating periods and a "temporary" plant rated at 52,000 gpd, solely for the construction period. The plants utilize the extended aeration mode of the activated sludge process and include equalization, coarse screening, comminution of solids, aeration, clarification, and disinfection. Waste solids from the process are held in aerated sludge holding tanks for disposal offsite by scavenger contractor.

b. Waste Abatement Codes
Using the codes listed in Table II of the Instruction Booklet, describe the waste abatement processes for this discharge in the order in which they occur if possible.

215b

(1) PEQUAL	(2) PSCREE	(3) BACTIV	} Liquids
(4) PSKIMC	(5) MPOSTA	(6) CCLDIS	
(7) SAEROB	(8) SOTHER	(9)	} Solids
(10)	(11)	(12)	
(13)	(14)	(15)	
(16)	(17)	(18)	
(19)	(20)	(21)	
(22)	(23)	(24)	
(25)			

FOR AGENCY USE

16. Wastewater Characteristics

Check the box beside each constituent which is present in the effluent (discharge water). This determination is to be based on actual analysis or best estimate. (see instructions)

Parameter 216	Present	Parameter 216	Present
Color 00080		Copper 01042	
Ammonia 00610	X	Iron 01045	
Organic nitrogen 00605	X	Lead 01051	
Nitrate 00620	X	Magnesium 00927	
Nitrite 00615	X	Manganese 01055	
Phosphorus 00665	X	Mercury 71900	
Sulfate 00945		Molybdenum 01062	
Sulfide 00745		Nickel 01067	
Sulfite 00740		Selenium 01147	
Bromide 71870		Silver 01077	
Chloride 00940		Potassium 00937	
Cyanide 00720		Sodium 00929	
Fluoride 00951		Thallium 01059	
Aluminum 01105		Titanium 01152	
Antimony 01097		Tin 01102	
Arsenic 01002		Zinc 01092	
Beryllium 01012		Algicides* 74051	
Barium 01007		Chlorinated organic compounds* 74052	
Boron 01022		Pesticides* 74053	
Cadmium 01027		Oil and grease 00550	X
Calcium 00916		Phenols 32730	
Cobalt 01037		Surfactants 38260	X
Chromium 01034		Chlorine 50060	X
Fecal coliform bacteria 74055	X	Radioactivity* 74050	

*Specify substances, compounds and/or elements in Item 26.

Pesticides (insecticides, fungicides, and rodenticides) must be reported in terms of the acceptable common names specified in *Acceptable Common Names and Chemical Names for the Ingredient Statement on Pesticide Labels*, 2nd Edition, Environmental Protection Agency, Washington, D.C. 20250, June 1972, as required by Subsection 162.7(b) of the Regulations for the Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act.

17. Description of Intake and Discharge

For each of the parameters listed below, enter in the appropriate box the value or code letter answer called for. (see instructions)

In addition, enter the parameter name and code and all required values for any of the following parameters if they were checked in item 16: ammonia, cyanide, aluminum, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc, phenols, oil and grease, and chlorine (residual).

Parameter and Code 217a	Influent		Effluent					
	Untreated Intake Water (Daily Average) (1)	In-Plant Treated Intake Water (Daily Average) * (2)	Daily Average (3)	Minimum Value Observed or Expected During Discharge Activity (4)	Maximum Value Observed or Expected During Discharge Activity (5)	Frequency of Analysis # (6)	Number of Analyses (7)	Sample Type (8)
Flow* Gallons per day 00056		+	+	0	+	Cont.	NA	NA
pH Units 00400		7.2	X	6	9	3/7	NA	G
Temperature (winter) * F 74026		37		Not Avail.	Not Avail.	NA	NA	NA
Temperature (summer) * F 74027		70		Not Avail.	Not Avail.	NA	NA	NA
Biochemical Oxygen Demand (BOD 5-day) mg/l 00310		NA	30	LT 30	60	3/7	NA	G
Chemical Oxygen Demand (COD) mg/l 00340		NA		Not Available		NA	NA	NA
Total Suspended (nonfilterable) Solids mg/l 00530		NA	30	LT 30	60	3/7	NA	G
Specific Conductance micromhos/cm at 25° C 00095		200	X	Not Available		NA	NA	NA
Settleable Matter (residue) ml/l 00545		NA	LT 1	LT 1	LT 1	5/7	NA	G

*Other discharges sharing intake flow (serial numbers). (see instructions)

*Source of intake water is DOE Bear Creek Road Filtration Plant.

+Flow for construction period is 63,000.
Flow for operation period is 7,000.

Indicates expected frequency of analysis

DISCHARGE SERIAL NUMBER
002

FOR AGENCY USE									

17. (Cont'd.)

Parameter and Code 27a	Influent		Effluent					
	Unfiltered Intake Water (Daily Average) (1)	In Plant Treated Intake Water (Daily Average) (2)	Daily Average (3)	Minimum Value Observed or Expected During Discharge Activity (4)	Maximum Value Observed or Expected During Discharge Activity (5)	Frequency of Analysis (6)	Number of Analyses (7)	Sample Type (8)
Ammonia 00610		A	5	LT 5	8	1/7	NA	G
Oil and Grease 00550		A	Not Avail	Not Avail	LT 15	NA	NA	NA
Chlorine Residual 50060		LT 0.1*	LT 2.0	.6	2.0	5/7	NA	G

*estimated

18. Plant Controls Check if the following plant controls are available for this discharge.

Alternate power source for major pumping facility.

Alarm or emergency procedure for power or equipment failure

Complete item 19 if discharge is from boiling and/or steam water generation and water treatment additives are used.

19. Water Treatment Additives If the discharge is treated with any conditioner, inhibitor, or algicide, answer the following:

a. Name of Material(s)

b. Name and address of manufacturer

c. Quantity (pounds added per million gallons of water treated).

218

☐ APS

☒ ALM

219a

Calcium hypochlorite or sodium hypochlorite will be added to treat effluent by disinfection.

219b

NA

219c

42, based on estimated dosage of 5 ppm.

DISCHARGE SERIAL NUMBER
002

FOR AGENCY USE									

d. Chemical composition of these additives (see instructions).

219d

NA

Complete items 20-25 if there is a thermal discharge (e.g., associated with a steam and/or power generation plant, steel mill, petroleum refinery, or any other manufacturing process) and the total discharge flow is 10 million gallons per day or more. (see instructions)

NA

20. Thermal Discharge Source Check the appropriate item(s) indicating the source of the discharge. (see instructions)

220

- Boiler Blowdown
- Boiler Chemical Cleaning
- Ash Pond Overflow
- Boiler Water Treatment — Evaporator Blowdown
- Oil or Coal Fired Plants — Effluent from Air Pollution Control Devices
- Condense Cooling Water
- Cooling Tower Blowdown
- Manufacturing Process
- Other

- ☐ BLBD
- ☐ BCCL
- ☐ APOF
- ☐ EPBD
- ☐ OCFP
- ☐ COND
- ☐ CTBD
- ☐ MFPR
- ☐ CTHR

21. Discharge/Receiving Water Temperature Difference

Give the maximum temperature difference between the discharge and receiving waters for summer and winter operating conditions. (see instructions)

Summer

221a

°F.

Winter

221b

°F.

22. Discharge Temperature, Rate of Change Per Hour

222

°F./hour

Give the maximum possible rate of temperature change per hour of discharge under operating conditions. (see instructions)

23. Water Temperature, Percentile Report (Frequency of Occurrence)

In the table below, enter the temperature which is exceeded 10% of the year, 5% of the year, 1% of the year and not at all (maximum yearly temperature). (see instructions)

Frequency of occurrence

a. Intake Water Temperature (Subject to natural changes)

223a

b. Discharge Water Temperature

223b

10%	5%	1%	Maximum
°F	°F	°F	°F
°F	°F	°F	°F

24. Water Intake Velocity (see instructions)

224

feet/sec.

25. Retention Time Give the length of time, in minutes, from start of water temperature rise to discharge of cooling water. (see instructions)

225

minutes

DISCHARGE SERIAL NUMBER

002

FOR AGENCY USE									

26. Additional Information

226

Item	Information
203	Additional information concerning the Sewage Treatment Plant may be found in Engineering Report and in the CRBRP Environmental Report Sections 4.1.1.5 and 3.7.1. Information may also be found in the following document: Specification 3066-76-2, "Sanitary Waste Treatment Equipment"
202b, c	The construction period sewage treatment plants will be placed into operation approximately 13 months after commencement of site preparation activities. The construction period discharge will end approximately 5 years later, at which time the operating period sewage treatment facility will process CRBRP sanitary wastes.
214a	Discharge 002 is the only discharge contributing to discharge 001 during construction.
NOTE:	The treatment plants during the construction period are designed to accommodate a projected work force of 2,450. The actual peak construction work force and the served population may be higher than the design population of the plant for a relatively short period of time during the peak construction period. Construction scheduling and manpower requirements are not finalized at this time, however, the plant design population and capacities identified herein are sufficient to serve the construction work force for most of the time during the construction period. Increases in served population will be evaluated to determine their impact on the sewage treatment plants: changes in population may necessitate modification of the biological treatment process to accommodate additional loading, or may require the addition of temporary treatment units. Any changes to treatment processes or the number of treatment units at the CRBRP site will be reported

(over)

Con'd. (NOTE:)

in advance to the appropriate permit issuing agencies.

STANDARD FORM C - MANUFACTURING AND COMMERCIAL

FOR AGENCY USE									

SECTION II. BASIC DISCHARGE DESCRIPTION

Complete this section for each discharge indicated in Section I, item 9, that is to surface waters. This includes discharges to municipal sewerage systems in which the wastewater does not go through a treatment works prior to being discharged to surface waters. Discharges to waters must be described where there are also discharges to surface waters from this facility. **SEPARATE DESCRIPTIONS OF EACH DISCHARGE ARE REQUIRED EVEN IF SEVERAL DISCHARGES ORIGINATE IN THE SAME FACILITY.** All values for an existing discharge should be representative of the twelve previous months of operation. If this is a proposed discharge, values should reflect best engineering estimates.

ADDITIONAL INSTRUCTIONS FOR SELECTED ITEMS APPEAR IN SEPARATE INSTRUCTION BOOKLET AS INDICATED. REFER TO BOOKLET BEFORE FILLING OUT THESE ITEMS.

1. Discharge Serial No. and Name		201a	<u>003, 004, 005, 006, 007, 008</u>	
a. Discharge Serial No. (see instructions)		201b	<u>Runoff Treatment Ponds</u>	
b. Discharge Name (Give name of discharge, if any, (see instructions))		201c	<u>003, 004, 005, 006</u>	
c. Previous Discharge Serial No. If previous permit application was made for this discharge (see item 4, Section I), provide previous discharge serial number.				
2. Discharge Operating Dates				
a. Discharge Began Date. If the discharge described below is in operation, give the date (within best estimate) the discharge began.		202a	NA YR MO	
b. Discharge to Begin Date. If the discharge has never occurred but is planned for some future date, give the date (within best estimate) the discharge will begin.		202b	YR MO	
c. Discharge to End Date. If discharge is scheduled to be discontinued within the next 5 years, give the date (within best estimate) the discharge will end.		202c	YR MO	
3. Engineering Report Available. Check if an engineering report is available to reviewing agency upon request. (see instructions)		203	<input checked="" type="checkbox"/>	
4. Discharge Location. Name the political boundaries within which the point of discharge is located.				
State		204a	<u>Tennessee</u>	204d
County		204b	<u>Roane</u>	204e
(if applicable) City or Town		204c	<u>Oak Ridge</u>	204f
5. Discharge Point Description. Discharge is into (check one); (see instructions)				
Stream (includes ditches, arroyos, and other intermittent watercourses)		205a	<input checked="" type="checkbox"/> STR	
Lake			<input type="checkbox"/> LKE	
Ocean			<input type="checkbox"/> OCE	
Municipal Sanitary Wastewater Transport System			<input type="checkbox"/> MTS	
Municipal Combined Sanitary and Storm Transport System			<input type="checkbox"/> MCS	

Refer to item 26, "Additional Information"

Refer to item 26, "Additional Information"

003, 004, 005, 006, 007, 008

FOR AGENCY USE

Municipal Storm Water Transport System

Well (Injection)

Other

☐ STS☐ WEL☐ OTH

If "Other" is checked, specify

6. Discharge Point — Lat/Long. Give the precise location of the point of discharge to the nearest second.

Latitude

Longitude

7. Discharge Receiving Water Name. Name the waterway at the point of discharge (see instructions).

If the discharge is through an outfall that extends beyond the shoreline or is below the mean low water line, complete Item 8.

8. Offshore Discharge

a. Discharge Distance from Shore

b. Discharge Depth Below Water Surface

9. Discharge Type and Occurrence

a. Type of Discharge. Check whether the discharge is continuous or intermittent. (see instructions)

b. Discharge Occurrence Days per Week. Enter the average number of days per week (during periods of discharge) this discharge occurs.

c. Discharge Occurrence — Months. If this discharge normally operates (either intermittently, or continuously) on less than a year-around basis (excluding shutdowns for routine maintenance), check the months during the year when the discharge is operating. (see instructions)

Complete Items 10 and 11 if "Intermittent" is checked in Item 9.a. Otherwise, proceed to Item 12.

10. Intermittent Discharge Quantity. State the average volume per discharge occurrence in thousands of gallons.

11. Intermittent Discharge Duration and Frequency

a. Intermittent Discharge Duration Per Day. State the average number of hours per day the discharge is operating.

b. Intermittent Discharge Frequency. State the average number of discharge occurrences per day during days when discharging.

12. Maximum Flow Period. Give the time period in which the maximum flow of this discharge occurs.

205a

206a

206b

207a

207b

208a

208b

209a

209b

209c

210

211a

211b

212

Refer to Item 26,
"Additional Information"

Unnamed ditch to Clinch River

For Agency Use

Major	Minor	Sub

207c

For Agency Use

303e

NA feet

NA feet

☐ (con) Continuous☒ (int) Intermittent

— days per week

NA

☐ JAN ☐ FEB ☐ MAR ☐ APR☐ MAY ☐ JUN ☐ JUL ☐ AUG☐ SEP ☐ OCT ☐ NOV ☐ DEC

Unknown

thousand gallons per discharge occurrence

NA hours per day Refer to item 26, "Additional Information"

NA discharge occurrences per day

From 03 to 06
month month

DISCHARGE SERIAL NUMBER
003, 004, 005, 006, 007, 008

FORM APPROVED
OMB No. 155-N-107

FOR AGENCY USE									

13. Activity Description: Give a narrative description of activity producing this discharge (see instructions)

213a

Collection and treatment by sedimentation and sand filtration of storm water runoff from plant site during construction and operation.

During upset conditions runoff treatment pond "A" may receive small amounts of oil from the construction equipment maintenance area and treatment pond "E" may receive the overflows from the aggregate wash settling pond and the concrete wash settling pond.

14. Activity Causing Discharge: For each SIC Code which describes the activity causing this discharge, supply the type and maximum amount of either the raw material consumed (Item 14a) or the product produced (Item 14b) in the units specified in Table I of the Instruction Booklet. For SIC Codes not listed in Table I, use raw material or production units normally used for measuring production (see instructions)

a. Raw Materials

SIC Code	Name	Maximum Amount/Day	Unit (See Table I)	Shared Discharges (Serial Number)
(1)	(2)	(3)	(4)	(5)
214a				

b. Products

SIC Code	Name	Maximum Amount/Day	Unit (See Table I)	Shared Discharges (Serial Number)
(1)	(2)	(3)	(4)	(5)
214b				
4911	Electric Power	.375	Z-1	None

003, 004, 005, 006, 007, 008

FOR AGENCY USE									

15. Waste Abatement

- a. **Waste Abatement Practices**
Describe the waste abatement practices used on this discharge with a brief narrative. (See instructions)

215a

Narrative: Storm water runoff and precipitation will receive treatment by sedimentation, and sand filtration. Oil removal equipment will be available should an oil film be evident.

- b. **Waste Abatement Codes**
Using the codes listed in Table II of the Instruction Booklet, describe the waste abatement processes for this discharge in the order in which they occur, if possible.

215b

(1) <u>PSSEDIM</u>	(2) <u>PSANDE</u>	(3) <u>LOCALS</u>
(4) _____	(5) _____	(6) _____
(7) _____	(8) _____	(9) _____
(10) _____	(11) _____	(12) _____
(13) _____	(14) _____	(15) _____
(16) _____	(17) _____	(18) _____
(19) _____	(20) _____	(21) _____
(22) _____	(23) _____	(24) _____
(25) _____		

003, 004, 005, 006, 007, 008

FOR AGENCY USE									

16. Wastewater Characteristics

NA

Check the box beside each constituent which is present in the effluent (discharge water). This determination is to be based on actual analysis or best estimate. (see instructions)

Parameter 216	Present	Parameter 216	Present
Color 00080		Copper 01042	
Ammonia 00610		Iron 01045	
Organic nitrogen 00605		Lead 01051	
Nitrate 00620		Magnesium 00927	
Nitrite 00615		Manganese 01055	
Phosphorus 00665		Mercury 71900	
Sulfate 00945		Molybdenum 01062	
Sulfide 00745		Nickel 01067	
Sulfite 00740		Selenium 01147	
Bromide 71870		Silver 01077	
Chloride 00940		Potassium 00937	
Cyanide 00720		Sodium 00929	
Fluoride 00951		Thallium 01059	
Aluminum 01105		Titanium 01152	
Antimony 01097		Tin 01102	
Arsenic 01002		Zinc 01092	
Beryllium 01012		Alcides* 74051	
Barium 01007		Chlorinated organic compounds* 74052	
Boron 01022		Pesticides* 74053	
Cadmium 01027		Oil and grease 00550	
Calcium 00916		Phenols 32730	
Cobalt 01037		Surfactants 38260	
Chromium 01034		Chlorine 50060	
Fecal coliform bacteria 74055		Radioactivity* 74050	

*Specify substances, compounds and/or elements in Item 26.

Pesticides (insecticides, fungicides, and rodenticides) must be reported in terms of the acceptable common names specified in *Acceptable Common Names and Chemical Names for the Ingredient Statement on Pesticide Labels*, 2nd Edition, Environmental Protection Agency, Washington, D.C. 20250, June 1972, as required by Subsection 162.7(b) of the Regulations for the Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act.

DISCHARGE SERIAL NUMBER
003, 004, 005, 006, 007, 008

FOR AGENCY USE									

See item 26, "Additional Information"

17. Description of Intake and Discharge

For each of the parameters listed below, enter in the appropriate box the value or code letter answer called for. (see instructions)
In addition, enter the parameter name and code and all required values for any of the following parameters if they were checked in item 16:
ammonia, cyanide, aluminum, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc, phenols, oil and grease,
and chlorine (residual).

Parameter and Code 217a	Influent		Effluent						
	Untreated Intake Water (Daily Average)	In-Plant Treated Intake Water (Daily Average)	Daily Average	Minimum Value Observed or Expected During Discharge Activity	Maximum Value Observed or Expected During Discharge Activity	Frequency of Analysis	#	Number of Analyses	Sample Type
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Flow* Gallons per day 00056						1/7	NA	G	
pH Units 00400			X			3/7	NA	G	
Temperature (winter) ° F 74028									
Temperature (summer) ° F 74027									
Biochemical Oxygen Demand (BOD 5-day) mg/l 00310									
Chemical Oxygen Demand (COD) mg/l 00340									
Total Suspended (nonfilterable) Solids mg/l 00530						1/7	NA	G	
Specific Conductance micromhos/cm at 25° C 00095			X						
Settleable Matter (residue) ml/l 00545						3/7	NA	G	

*Other discharges sharing intake flow (serial numbers). (see instructions)

Indicates expected frequency of analysis

17. (Cont'd.)

[illegible]

18. **Plant Controls** Check if the following plant controls are available for this discharge.

Alternate power source for major pumping facility.

Alarm or emergency procedure for power or equipment failure

Complete item 19 if discharge is from cooling and/or steam water generation and water treatment additives are used.

19. **Water Treatment Additives** If the discharge is treated with any conditioner, inhibitor, or algicide, answer the following:

a. Name of Material(s)

b. Name and address of manufacturer

c. Quantity (pounds added per million gallons of water treated).

210

NA

☐ APS☐ ALM

219a

NA

219D

219c

DISCHARGE SERIAL NUMBER
003, 004, 005, 006, 007, 008

FOR AGENCY USE

--	--	--	--	--	--	--	--

d. Chemical composition of these additives (see instructions).

219d

Complete items 20-25 if there is a thermal discharge (e.g., associated with a steam and/or power generation plant, steel mill, petroleum refinery, or any other manufacturing process) and the total discharge flow is 10 million gallons per day or more. (see instructions)

NA

20. Thermal Discharge Source. Check the appropriate item(s) indicating the source of the discharge. (see instructions)

220

- Boiler Blowdown
- Boiler Chemical Cleaning
- Ash Pond Overflow
- Boiler Water Treatment — Evaporator Blowdown
- Oil or Coal Fired Plants — Effluent from Air Pollution Control Devices
- Condense Cooling Water
- Cooling Tower Blowdown
- Manufacturing Process
- Other

- ☐ BLBD
- ☐ BCCL
- ☐ APOF
- ☐ EPBD
- ☐ OCFR
- ☐ COND
- ☐ CTBD
- ☐ MFPR
- ☐ OTHER

21. Discharge/Receiving Water Temperature Difference

Give the maximum temperature difference between the discharge and receiving waters for summer and winter operating conditions. (see instructions)

Summer

221a

_____ °F.

Winter

221b

_____ °F.

22. Discharge Temperature, Rate of Change Per Hour

222

_____ °F./hour

Give the maximum possible rate of temperature change per hour of discharge under operating conditions. (see instructions)

23. Water Temperature, Percentile Report (Frequency of Occurrence)

In the table below, enter the temperature which is exceeded 10% of the year, 5% of the year, 1% of the year and not at all (maximum yearly temperature). (see instructions)

Frequency of occurrence

10%	5%	1%	Maximum
_____ °F.	_____ °F.	_____ °F.	_____ °F.
_____ °F.	_____ °F.	_____ °F.	_____ °F.

a. Intake Water Temperature (Subject to natural changes)

223a

b. Discharge Water Temperature

223b

24. Water Intake Velocity (see instructions)

224

_____ feet/sec.

25. Retention Time. Give the length of time, in minutes, from start of water temperature rise to discharge of cooling water. (see instructions)

225

_____ minutes

DISCHARGE SERIAL NUMBER

003,004,005,006,007,008

FOR AGENCY USE									

2E. Additional Information

225

Item	Information																		
202b	The treatment ponds will be constructed as expeditiously as possible prior to earthwork. Each treatment pond (003, 004, 005, 006, and 007) will be operational prior to starting earthwork in its respective watershed. The quarry treatment pond (008) will be operational prior to start of quarrying operations.																		
202c	Discharge from the quarry treatment pond will end after quarry operations cease. None of the remaining ponds are expected to cease operations, however, if the project determines that any ponds are to be removed following construction, the area will be redressed to an environmentally acceptable condition.																		
206	<table> <tr> <th>Pond A (003)</th><th>Pond B (004)</th></tr> <tr> <td>35 deg. 53 min. 08 sec.</td><td>35 deg. 53 min. 13 sec.</td></tr> <tr> <td>84 deg. 22 min. 49 sec.</td><td>84 deg. 23 min. 09 sec.</td></tr> </table> <table> <tr> <th>Pond C (005)</th><th>Pond D (006)</th></tr> <tr> <td>35 deg. 53 min. 33 sec.</td><td>35 deg. 53 min. 36 sec.</td></tr> <tr> <td>84 deg. 23 min. 11 sec.</td><td>84 deg. 22 min. 43 sec.</td></tr> </table> <table> <tr> <th>Pond E (007)</th><th>Quarry Pond (008)</th></tr> <tr> <td>35 deg. 53 min. 49 sec.</td><td>35 deg. 53 min. 57 sec.</td></tr> <tr> <td>84 deg. 23 min. 10 sec.</td><td>84 deg. 22 min. 27 sec.</td></tr> </table>	Pond A (003)	Pond B (004)	35 deg. 53 min. 08 sec.	35 deg. 53 min. 13 sec.	84 deg. 22 min. 49 sec.	84 deg. 23 min. 09 sec.	Pond C (005)	Pond D (006)	35 deg. 53 min. 33 sec.	35 deg. 53 min. 36 sec.	84 deg. 23 min. 11 sec.	84 deg. 22 min. 43 sec.	Pond E (007)	Quarry Pond (008)	35 deg. 53 min. 49 sec.	35 deg. 53 min. 57 sec.	84 deg. 23 min. 10 sec.	84 deg. 22 min. 27 sec.
Pond A (003)	Pond B (004)																		
35 deg. 53 min. 08 sec.	35 deg. 53 min. 13 sec.																		
84 deg. 22 min. 49 sec.	84 deg. 23 min. 09 sec.																		
Pond C (005)	Pond D (006)																		
35 deg. 53 min. 33 sec.	35 deg. 53 min. 36 sec.																		
84 deg. 23 min. 11 sec.	84 deg. 22 min. 43 sec.																		
Pond E (007)	Quarry Pond (008)																		
35 deg. 53 min. 49 sec.	35 deg. 53 min. 57 sec.																		
84 deg. 23 min. 10 sec.	84 deg. 22 min. 27 sec.																		
211 a&b	Discharge occurs following periods of precipitation and construction dewatering operations.																		
217a	<p>Storm water runoff is based on a 24 hour storm having a recurrence interval of 10 years. Estimated pond discharge for these points are:</p> <p>pond A, pt. 003 5226 TGD during construction 3426 TGD during operation</p>																		

217 (Con'd) Pond B, pt. 004 - 3355 TGD during construction
2625 TGD during operation

Pond C, pt. 005 - 3717 TGD during construction and operation

Pond D, pt. 006 - 2801 TGD during construction
2117 TGD during operation

Pond E, pt. 007 - 4114 TGD during construction and operation

Quarry Pond, pt. 008 - 3272 TGD during construction

Note:

Areas of the plant site not served by the construction period storm water system and treatment ponds include portions of the access road, railroad embankment and spoil deposit areas. The consequences of runoff from these areas during the early construction period are expected to be minor, and will be mitigated by the installation of silt trenches across drainage ways, erection of hay bale barricades, pumping to nearby runoff treatment ponds, or other appropriate measures.

STANDARD FORM C - MANUFACTURING AND COMMERCIAL

FOR AGENCY USE									

SECTION II. BASIC DISCHARGE DESCRIPTION

Complete this section for each discharge indicated in Section I, Item 9, that is to surface waters. This includes discharges to municipal sewerage systems in which the wastewater does not go through a treatment works prior to being discharged to surface waters. Discharges to wells must be described where there are also discharges to surface waters from this facility. SEPARATE DESCRIPTIONS OF EACH DISCHARGE ARE REQUIRED EVEN IF SEVERAL DISCHARGES ORIGINATE IN THE SAME FACILITY. All values for an existing discharge should be representative of the twelve previous months of operation. If this is a proposed discharge, values should reflect best engineering estimates.

ADDITIONAL INSTRUCTIONS FOR SELECTED ITEMS APPEAR IN SEPARATE INSTRUCTION BOOKLET AS INDICATED. REFER TO BOOKLET BEFORE FILLING OUT THESE ITEMS.

1. Discharge Serial No. and Name

a. Discharge Serial No.
(see instructions)

201a

009

b. Discharge Name
Give name of discharge, if any.
(see instructions)

201b

Waste Water Treatment System Effluent

c. Previous Discharge Serial No.
If previous permit application
was made for this discharge (see
Item 4, Section I), provide previ-
ous discharge serial number.

201c

007, 008

2. Discharge Operating Dates

a. Discharge Began Date. If the
discharge described below is in
operation, give the date (within
best estimate) the discharge
began.

202a

NA
YR MO

b. Discharge to Begin Date. If the
discharge has never occurred but
is planned for some future date,
give the date (within best esti-
mate) the discharge will begin.

202b

88 09
YR MO

c. Discharge to End Date. If dis-
charge is scheduled to be discon-
tinued within the next 5 years,
give the date (within best esti-
mate) the discharge will end.

202c

N.A.
YR MO

3. Engineering Report Available
Check if an engineering report is
available to reviewing agency upon
request. (see instructions)

203

☒

4. Discharge Location. Name the
political boundaries within which
the point of discharge is located.

State

204a

Tennessee

County

204b

Roane

(if applicable) City or Town

204c

Oak Ridge

Agency Use

204d

204e

204f

5. Discharge Point Description
Discharge is into (check one):
(see instructions)

Stream (includes ditches, arroyos,
and other intermittent watercourses)

205a

☒ STR

Lake

☐ LKE

Ocean

☐ OCE

Municipal Sanitary Wastewater
Transport System

☐ MTS

Municipal Combined Sanitary and
Storm Transport System

☐ MCS

DISCHARGE SERIAL NUMBER

009

FOR AGENCY USE

Municipal Storm Water Transport
System

Well (Injection)

Other

If 'other' is checked, specify

- ☐ STS
☐ WEL
☐ OTH

6. Discharge Point — Lat/Long. Give the precise location of the point of discharge to the nearest second.

Latitude

Longitude

205b

206a

206b

35 DEG 53 MIN 22 SEC
84 DEG 22 MIN 53 SEC

7. Discharge Receiving Water Name
 Name the waterway at the point of discharge (see instructions)

207a

Clinch River

If the discharge is through an outfall that extends beyond the shoreline or is below the mean low water line, complete item 8.

8. Offshore Discharge

- a. Discharge Distance from Shore
 b. Discharge Depth Below Water Surface

207b

For Agency Use		
Major	Minor	Sub

207c

For Agency Use	
302a	

208a

NA feet

208b

NA feetDischarged
through OSN 001

9. Discharge Type and Occurrence

- a. Type of Discharge. Check whether the discharge is continuous or intermittent. (see instructions)
 b. Discharge Occurrence Days per Week. Enter the average number of days per week (during periods of discharge) this discharge occurs.
 c. Discharge Occurrence —Months. If this discharge normally operates (either intermittently, or continuously) on less than a year-around basis (excluding shutdowns for routine maintenance), check the months during the year when the discharge is operating. (see instructions)

209a

- ☒ (con) Continuous
☐ (int) Intermittent

209b

2 days per week

209c

- ☐ JAN ☐ FEB ☐ MAR ☐ APR
☐ MAY ☐ JUN ☐ JUL ☐ AUG
☐ SEP ☐ OCT ☐ NOV ☐ DEC

Complete items 10 and 11 if "intermittent" is checked in item 9.a. Otherwise, proceed to item 12.

10. Intermittent Discharge Quantity
 State the average volume per discharge occurrence in thousands of gallons.

210

NA thousand gallons per discharge occurrence.

11. Intermittent Discharge Duration and Frequency

- a. Intermittent Discharge Duration Per Day. State the average number of hours per day the discharge is operating.
 b. Intermittent Discharge Frequency. State the average number of discharge occurrences per day during days when discharging.

211a

NA hours per day

211b

NA discharge occurrences per day

12. Maximum Flow Period. Give the time period in which the maximum flow of this discharge occurs.

212

From 06 to 09
 month month

009

FOR AGENCY USE

13. Activity Description. Give a narrative description of activity producing this discharge. (see instructions)

213a

Discharge 009 "Waste Water Treatment System Effluent" results from the treatment of process water treatment wastes (makeup water treatment/demineralization, condensate polishing, water softening) and from non-radioactive plant floor drains and sumps.

These wastes include clarifier sludges, filter backwashes, ion exchange regenerants and rinses, laboratory wastes, and continuous sample discharges.

14. Activity Causing Discharge. For each SIC Code which describes the activity causing this discharge, supply the type and maximum amount of either the raw material consumed (item 14a) or the product produced (item 14b) in the units specified in Table I of the instruction Booklet. For SIC Codes not listed in Table I, use raw material or production units normally used for measuring production. (see instructions)

a. Raw Materials

	SIC Code	Name	Maximum Amount/Day	Unit (See Table I)	Shared Discharges (Serial Number)
214a	(1)	(2)	(3)	(4)	(5)
	4952	Waste Water Disp.	324,000	GPD	001

b. Products

	SIC Code	Name	Maximum Amount/Day	Unit (See Table I)	Shared Discharges (Serial Number)
214b	(1)	(2)	(3)	(4)	(5)

DISCHARGE SERIAL NUMBER

009

FOR AGENCY USE

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15. Waste Abatement

A. Waste Abatement Practices
Describe the waste abatement practices used on this discharge with a brief narrative. (see instructions)

215a

Narrative: Pollution abatement practices are as follows: floor drain wastes are processed through an oil/water separator and discharged to equalization basins; process water wastes are neutralized and discharged to equalization basins. The equalized wastes are processed through a pH trim tank, solids contact clarifier and gravity filters. Treated effluent is recycled to the cooling tower basins or discharged through outfall 001. Solids resulting from the treatment process are lagooned (Cont'd below)

B. Waste Abatement Codes
Using the codes listed in Table II of the Instruction Booklet, describe the waste abatement processes for this discharge in the order in which they occur if possible.

215b

(1) PSEPAR	(2) CNEUTR	(3) PEQUAL	Liquid portions
(4) CPHADJ	(5) CCOAG	(6) CFLOCC	
(7) PSSEDIM	(8) PSANDE	(9) RECYCL	
(10) SLAGOO	(11) SOTHER	(12)	
(13)	(14)	(15)	
(16)	(17)	(18)	
(19)	(20)	(21)	
(22)	(23)	(24)	
(25)			

(Cont'd.)

and disposed of by scavenger contractor. Waste oils are collected for disposal by scavenger contractor.

FOR AGENCY USE

16. Wastewater Characteristics

Check the box beside each constituent which is present in the effluent (discharge water). This determination is to be based on actual analysis or best estimate. (see instructions)

Parameter 216	Present	Parameter 216	Present
Color 00080		Copper 01042	X
Ammonia 00610		Iron 01045	X
Organic nitrogen 00605		Lead 01051	
Nitrate 00620	X	Magnesium 00927	X
Nitrite 00615		Manganese 01055	X
Phosphorus 00665		Mercury 71900	
Sulfate 00945	X	Molybdenum 01062	
Sulfide 00745		Nickel 01067	X
Sulfite 00740		Selenium 01147	
Bromide 71870		Silver 01077	
Chloride 00940	X	Potassium 00937	X
Cyanide 00720		Sodium 00929	X
Fluoride 00951		Thallium 01059	
Aluminum 01105		Titanium 01152	
Antimony 01097		Tin 01102	
Arsenic 01002		Zinc 01092	
Beryllium 01012		Algalicides* 74051	
Barium 01007		Chlorinated organic compounds* 74052	
Boron 01022		Pesticides* 74053	
Cadmium 01027		Oil and grease 00550	X
Calcium 00916	X	Phenols 32730	
Cobalt 01037		Surfactants 38260	
Chromium 01034		Chlorine 50060	
Fecal coliform bacteria 74055		Radioactivity* 74050	

*Specify substances, compounds and/or elements in Item 26.

Pesticides (insecticides, fungicides, and rodenticides) must be reported in terms of the acceptable common names specified in *Acceptable Common Names and Chemical Names for the Ingredient Statement on Pesticide Labels*, 2nd Edition, Environmental Protection Agency, Washington, D.C. 20250, June 1972, as required by Subsection 162.7(b) of the Regulations for the Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act.

DISCHARGE SERIAL NUMBER

009

FOR AGENCY USE

17. Description of Intake and Discharge

For each of the parameters listed below, enter in the appropriate box the value or code letter answer called for. (see instructions)

In addition, enter the parameter name and code and all required values for any of the following parameters if they were checked in Item 16: ammonia, cyanide, aluminum, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc, phenols, oil and grease, and chlorine (residual).

Parameter and Code 217a	Influent		Effluent					
	Untreated Intake Water (Daily Average) (1)	In Plant Treated Intake Water (Daily Average) (2)	Daily Average (3)	Minimum Value Observed or Expected During Discharge Activity (4)	Maximum Value Observed or Expected During Discharge Activity (5)	Frequency of Analysis # (6)	Number of Analyses (7)	Sample Type (8)
Flow* Gallons per day 00356	See a) below		144,000	110,000	324,000	Cont.	NA	NA
pH Units 00400			X	6.5	8.5	Cont.	NA	NA
Temperature (winter) ° F 74028			42	37	55	NA	NA	NA
Temperature (summer) ° F 74027			66	60	70	NA	NA	NA
Biochemical Oxygen Demand (BOD 5-day) mg/l 00310			A	A	A	NA	NA	NA
Chemical Oxygen Demand (COD) mg/l 00340			A	A	A	NA	NA	NA
Total Suspended (nonfilterable) Solids mg/l 00530			LT 15	LT 15	20	1/7	NA	G
Specific Conductance micromhos/cm at 25° C 00095			X	See b) below		NA	NA	NA
Settleable Matter (residue) ml/l 00545			A	A	A	NA	NA	NA

*Other discharges sharing intake flow (serial numbers). (see instructions)

- a) Influent flows to the Waste Water Treatment System come from diverse sources and are intermittent in nature, with variable characteristics. Consequently, the Waste Water Treatment System provides basins for equalization of chemical characteristics, temperature, and to provide continuous flow for process units.
- b) Based on total volume of ion exchange regenerant wastes and rinses, the TDS of the Waste Water Treatment System effluent is expected to be in the range of 1350 mg/l.

Indicates expected frequency of analysis

DISCHARGE SERIAL NUMBER
009

FOR AGENCY USE									

17. (Cont'd.)

Parameter and Code 217a	Influent		Effluent					
	Untreated Intake Water (Daily Average) (1)	In-Plant Treated Intake Water (Daily Average) (2)	Daily Average (3)	Minimum Value Observed or Expected During Discharge Activity (4)	Maximum Value Observed or Expected During Discharge Activity (5)	Frequency of Analysis (6)	Number of Analyses (7)	Sample Type (8)
Copper 01042			LT 1	LT 1	LT 1	NA	NA	NA
Nickel 01067			LT 1	LT 1	LT 1	NA	NA	NA
Oil & Grease 00550			15	LT 15	20	1/7	NA	IG

18. Plant Controls: Check if the following plant controls are available for this discharge.

Alternate power source for major pumping facility.

Alarm or emergency procedure for power or equipment failure.

Complete item 19 if discharge is from cooling and/or steam water generation and water treatment additives are used.

19. Water Treatment Additives: If the discharge is treated with any conditioner, inhibitor, or algicide, answer the following:

a. Name of Material(s)

b. Name and address of manufacturer

c. Quantity (pounds added per million gallons of water treated).

218

☐ APS

☒ ALM

None

219a

NA

219b

NA

219c

NA

DISCHARGE SERIAL NUMBER

009

FOR AGENCY USE

d. Chemical composition of these additives (see instructions).

219d

NA

Complete items 20-25 if there is a thermal discharge (e.g., associated with a steam and/or power generation plant, steel mill, petroleum refinery, or any other manufacturing process) and the total discharge flow is 10 million gallons per day or more. (see instructions)

Not Applicable

20. Thermal Discharge Source. Check the appropriate item(s) indicating the source of the discharge. (see instructions)

Boiler Blowdown

Boiler Chemical Cleaning

Ash Pond Overflow

Boiler Water Treatment — Evaporator Blowdown

Oil or Coal Fired Plants — Effluent from Air Pollution Control Devices

Condense Cooling Water

Cooling Tower Blowdown

Manufacturing Process

Other

☐ BLSD☐ BCCL☐ APOF☐ EPBD☐ OCFF☐ COND☐ CTBD☐ MPFR☐ OTHR

21. Discharge/Receiving Water Temperature Difference

Give the maximum temperature difference between the discharge and receiving waters for summer and winter operating conditions. (see instructions)

Summer

221a _____ °F.

Winter

221b _____ °F.

22. Discharge Temperature, Rate of Change Per Hour

Give the maximum possible rate of temperature change per hour of discharge under operating conditions. (see instructions)

222 _____ °F./hour

23. Water Temperature, Percentile Report (Frequency of Occurrence): In the table below, enter the temperature which is exceeded 10% of the year, 5% of the year, 1% of the year and not at all (maximum yearly temperature). (see instructions)

Frequency of occurrence

a. Intake Water Temperature (Subject to natural changes)

b. Discharge Water Temperature

223a

223b

10%	5%	1%	Maximum
_____ °F.	_____ °F.	_____ °F.	_____ °F.
_____ °F.	_____ °F.	_____ °F.	_____ °F.

24. Water Intake Velocity (see instructions)

224 _____ feet/sec.

25. Retention Time. Give the length of time, in minutes, from start of water temperature rise to discharge of cooling water. (see instructions)

225 _____ minutes

DISCHARGE SERIAL NUMBER

009

FOR AGENCY USE

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26. Additional Information

226

Item

Information

Additional information concerning the Waste Water Treatment System
may be found in Engineering Report and in the CRBRP Environmental
Report Section 3.6.3.

SECTION II. BASIC DISCHARGE DESCRIPTION

ADDITIONAL INSTRUCTIONS FOR SELECTED ITEMS APPEAR IN SEPARATE INSTRUCTION BOOKLET AS INDICATED. REFER TO BOOKLET BEFORE FILLING OUT THESE ITEMS.

4. Discharge Serial No.
(see instructions)

201a | 010
Liquid Radwaste Effluent

b. Discharge Name
Give name of discharge, if any
(see instructions)

c. Previous Discharge Serial No.
If previous permit application
was made for this discharge (see
item 4, Section i), provide previ-
ous discharge serial number.

g. Discharge Began Date: If the discharge described below is in operation, give the date (within best estimate) the discharge began.

202a	NA	
	YR	MO

5. **Discharge to Begin Date** If the discharge has never occurred but is planned for some future date, give the date (within best estimate) the discharge will begin.

202b 88 09
YR MO

c. Discharge to End Date If discharge is scheduled to be discontinued within the next 5 years, give the date (within best estimate) the discharge will end.

202c N.A.
YR MO

Check if an engineering report is available to reviewing agency upon request. (see instructions)

203 ☒

State

Tennessee

County

3245	Roane
------	-------

(if applicable) City or Town

304c	Oak Ridge
------	-----------

Discharge is into (check one):
(see instructions)

Stream (includes ditches, arroyos,
and other intermittent watercourses)

205a ☒ STR

494

☐ LIKE

Ocean

☐ OCEMunicipal Sanitary Wastewater
Transport System☐ MTS

Municipal Combined Sanitary and Storm Transport System

☐ MCS

Agency Use

DISCHARGE SERIAL NUMBER

010

FOR AGENCY USE

Municipal Storm Water Transport System

Well (Injection)

Other

If "Other" is checked, specify

6. Discharge Point — Lat/Long. Give the precise location of the point of discharge to the nearest second.

Latitude

Longitude

7. Discharge Receiving Water Name. Name the waterway at the point of discharge (see instructions).

If the discharge is through an outfall that extends beyond the shoreline or is below the mean low water line, complete item 8.

8. Offshore Discharge

- a. Discharge Distance from Shore
- b. Discharge Depth Below Water Surface

9. Discharge Type and Occurrence

- a. Type of Discharge. Check whether the discharge is continuous or intermittent. (see instructions)
- b. Discharge Occurrence Days per Week. Enter the average number of days per week (during periods of discharge) this discharge occurs.
- c. Discharge Occurrence — Months. If this discharge normally operates (either intermittently, or continuously) on less than a year-around basis (excluding shutdowns for routine maintenance), check the months during the year when the discharge is operating. (see instructions)

Complete items 10 and 11 if "intermittent" is checked in item 9.a. Otherwise, proceed to item 12.

10. Intermittent Discharge Quantity. State the average volume per discharge occurrence in thousands of gallons.

11. Intermittent Discharge Duration and Frequency

- a. Intermittent Discharge Duration Per Day. State the average number of hours per day the discharge is operating.
- b. Intermittent Discharge Frequency. State the average number of discharge occurrences per day during days when discharging.

12. Maximum Flow Period. Give the time period in which the maximum flow of this discharge occurs.

☐ STS☐ WEL☐ OTH

205b

206a

206b

207a

207b

208a

208b

209a

209b

209c

210

211a

211b

212

Clinch River

For Agency Use

Major	Minor	Sub

207c

For Agency Use

303a

NA feet

NA

feet

Discharged through OSN 001

☐ (con) Continuous☒ (int) Intermittent

2 days per week

☐ JAN ☐ FEB ☐ MAR ☐ APR ☐ MAY ☐ JUN ☐ JUL ☐ AUG ☐ SEP ☐ OCT ☐ NOV ☐ DEC

NA

5

thousand gallons per discharge occurrence.

4 hours per day

1 discharge occurrences per day

From 01 month to 12 month

FOR AGENCY USE

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13. Activity Description. Give a narrative description of activity producing this discharge (see instructions).

213a

The source of this discharge is processed low activity radwaste system liquids. Various lab, floor, and equipment drains which are potentially radioactive are collected in this system and processed to meet the appropriate discharge requirements.

14. Activity Causing Discharge. For each SIC Code which describes the activity causing this discharge, supply the type and maximum amount of either the raw material consumed (Item 14a) or the product produced (Item 14b) in the units specified in Table I of the Instruction Booklet. For SIC Codes not listed in Table I, use raw material or production units normally used for measuring production (see instructions).

A. Raw Materials

	SIC Code	Name	Maximum Amount/Day	Unit (See Table I)	Shared Discharges (Serial Number)
	(1)	(2)	(3)	(4)	(5)
214a	4953	Liquid Radwaste	5000	GPD	001

B. Products

	SIC Code	Name	Maximum Amount/Day	Unit (See Table I)	Shared Discharges (Serial Number)
	(1)	(2)	(3)	(4)	(5)
214b					

010

FOR AGENCY USE

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15. Waste Abatement

- A. Waste Abatement Practices
Describe the waste abatement practices used on this discharge with a brief narrative. (see instructions)

215a

Narrative: Waste abatement is achieved via the radioactive waste system process train which includes pH adjustment, filtration, evaporation and demineralization. Manual fluid samples are analyzed prior to discharge. A radiation monitor is provided in the discharge path which will automatically stop the discharge on detection of activity. Concentrated liquids, resins and filters used in the system process are encapsulated in concrete drums and shipped for burial.

215b

- B. Waste Abatement Codes
Using the codes listed in Table II of the Instruction Booklet, describe the waste abatement processes for this discharge in the order in which they occur if possible.

(1) <u>CPHADJ</u>	(2) <u>POTHER</u>	(3) <u>TEVAPO</u>
(4) <u>MINDOX</u>	(5) <u>OMONIT</u>	(6) _____
(7) _____	(8) _____	(9) _____
(10) _____	(11) _____	(12) _____
(13) _____	(14) _____	(15) _____
(16) _____	(17) _____	(18) _____
(19) _____	(20) _____	(21) _____
(22) _____	(23) _____	(24) _____
(25) _____		

010

FOR AGENCY USE							

16. Wastewater Characteristics

Check the box beside each constituent which is present in the effluent (discharge water). This determination is to be based on actual analysis or best estimate. (see instructions)

Parameter 216	Present	Parameter 216	Present
Color 00080		Copper 01042	
Ammonia 00610		Iron 01045	
Organic nitrogen 00605		Lead 01051	
Nitrate 00620		Magnesium 00927	
Nitrite 00615		Manganese 01055	
Phosphorus 00665		Mercury 71900	
Sulfate 00945		Molybdenum 01062	
Sulfide 00745		Nickel 01067	
Sulfite 00740		Selenium 01147	
Bromide 71870		Silver 01077	
Chloride 00940		Potassium 00937	
Cyanide 00720		Sodium 00929	
Fluoride 00951		Thallium 01059	
Aluminum 01105		Titanium 01152	
Antimony 01097		Tin 01102	
Arsenic 01002		Zinc 01092	
Beryllium 01012		Algicides* 74051	
Barium 01007		Chlorinated organic compounds* 74052	
Boron 01022		Pesticides* 74053	
Cadmium 01027		Oil and grease 00550	
Calcium 00916		Phenols 32730	
Cobalt 01037		Surfactants 38260	
Chromium 01034		Chlorine 50060	
Fecal coliform bacteria 74055		Radioactivity* 74050	X

*Specify substances, compounds and/or elements in Item 26.

Pesticides (insecticides, fungicides, and rodenticides) must be reported in terms of the acceptable common names specified in *Acceptable Common Names and Chemical Names for the Ingredient Statement on Pesticide Labels*, 2nd Edition, Environmental Protection Agency, Washington, D.C. 20250, June 1972, as required by Subsection 162.7(b) of the Regulations for the Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act.

DISCHARGE SERIAL NUMBER

010

FOR AGENCY USE

17. Description of Intake and Discharge

For each of the parameters listed below, enter in the appropriate box the value or code letter answer called for. (see instructions)

In addition, enter the parameter name and code and all required values for any of the following parameters if they were checked in item 16: ammonia, cyanide, aluminum, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc, phenols, oil and grease, and chlorine (residual).

Parameter and Code 217a	Influent		Effluent				
	Unfiltered Intake Water (Daily Average) (1)	In-Plant Treated Intake Water (Daily Average) (2)	Daily Average (3)	Minimum Value Observed or Expected During Discharge Activity (4)	Maximum Value Observed or Expected During Discharge Activity (5)	Frequency of Analysis # (6)	Number of Analyses (7) (8)
Flow* Gallons per day 00056	See below		2500 ⁺	0	5000	once per batch	NA G
pH Units 00400			X	6	9	once per batch	NA G
Temperature (winter) * F 74028			70	50	90	NA	NA NA
Temperature (summer) * F 74027			70	50	90	NA	NA NA
Biochemical Oxygen Demand (BOD 5-day) mg/l 00310			A	A	A	NA	NA NA
Chemical Oxygen Demand (COD) mg/l 00340			A	A	A	NA	NA NA
Total Suspended (nonfilterable) Solids mg/l 00530			A	A	A	NA	NA NA
Specific Conductance micromhos/cm at 25° C 00095			X	LT 1	20	once per batch	NA G
Settleable Matter (residue) mL/l 00545			A	A	A	NA	NA NA

*Other discharges sharing intake flow (serial numbers). (see instructions)

Influent flows entering the Liquid Radwaste System come from diverse sources: these wastes are a result of cleaning and flushing operations and laboratory discharges throughout the CRBRP facility. The flows are intermittent in nature and vary in characteristics.

⁺Discharge of 2500 gallons occurs approximately once every three days.

indicates expected frequency of analysis

DISCHARGE SERIAL NUMBER
010

FOR AGENCY USE									

17. (Cont'd.)

Parameter and Code 217a	Influent		Effluent					
	Untreated Intake Water (Daily Average)	In Plant Treated Intake Water (Daily Average)	Daily Average	Minimum Value Observed or Expected During Discharge Activity	Maximum Value Observed or Expected During Discharge Activity	Frequency of Analysis	Number of Analyses	Sample Type
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

18. Plant Controls. Check if the following plant controls are available for this discharge.

Alternate power source for major pumping facility.

Alarm or emergency procedure for power or equipment failure.

Complete item 19 if discharge is from cooling and/or steam water generation and water treatment additives are used.

19. Water Treatment Additives. If the discharge is treated with any conditioner, inhibitor, or algicide, answer the following:

a. Name of Material(s)

b. Name and address of manufacturer

c. Quantity (pounds added per million gallons of water treated).

218

☐ APS

☒ ALM

219a

NA

219b

NA

219c

NA

DISCHARGE SERIAL NUMBER

010

FOR AGENCY USE

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d. Chemical composition of these additives (see instructions).

Z19d

NA

Complete items 20-25 if there is a thermal discharge (e.g., associated with a steam and/or power generation plant, steel mill, petroleum refinery, or any other manufacturing process) and the total discharge flow is 10 million gallons per day or more. (see instructions)

NA

20. Thermal Discharge Source Check the appropriate item(s) indicating the source of the discharge. (see instructions)

Boiler Blowdown

Boiler Chemical Cleaning

Ash Pond Overflow

Boiler Water Treatment — Evaporator Blowdown

Oil or Coal Fired Plants — Effluent from Air Pollution Control Devices

Condense Cooling Water

Cooling Tower Blowdown

Manufacturing Process

Other

☐ BLBD☐ BCCL☐ APOF☐ EPBD☐ OCFB☐ COND☐ CTBD☐ MFPR☐ OTHR

21. Discharge/Receiving Water Temperature Difference

Give the maximum temperature difference between the discharge and receiving waters for summer and winter operating conditions. (see instructions)

Summer

Winter

221a

_____ °F.

221b

_____ °F.

22. Discharge Temperature, Rate of Change Per Hour

Give the maximum possible rate of temperature change per hour of discharge under operating conditions. (see instructions)

222

_____ °F./hour

23. Water Temperature, Percentile Report (Frequency of Occurrence)

In the table below, enter the temperature which is exceeded 10% of the year, 5% of the year, 1% of the year and not at all (maximum yearly temperature). (see instructions)

Frequency of occurrence

a. Intake Water Temperature (Subject to natural changes)

b. Discharge Water Temperature

223a

223b

10%	5%	1%	Maximum
_____ °F.	_____ °F.	_____ °F.	_____ °F.
_____ °F.	_____ °F.	_____ °F.	_____ °F.

24. Water Intake Velocity (see instructions)

224

_____ feet/sec.

25. Retention Time Give the length of time, in minutes, from start of water temperature rise to discharge of cooling water. (see instructions)

225

_____ minutes

DISCHARGE SERIAL NUMBER

010

FOR AGENCY USE

26. Additional Information

226

Item

Information

216

Radioactivity 74050 will be comprised of the following isotopes:
H-3, Na-22, Na-24, Cr-51, Mn-54, Co-58, Fe-59, Co-60, Sr-89, Sr-90,
Y-90, Y-91, Zr-95, Nb-95, Mo-99, Ru-103, Ru-106, Rh-106, Ag-111,
Sb-125, Te-129m, Te-129, I-131, Te-132, I-132, Cs-134, Cs-136,
Cs-137, Ba-140, La-140, Ce-141, Pr-143, Ce-144, Pr-144, Nd-147,
Pm-147, Eu-155, Ta-182, Pu-239, Pu-240, Pu-241, Pu-242, Te-127m,
Te-127, Ce-143, Pu-238, Np-238, Np-239, Am-241, Am-242m, Am-242,
Am-243, Cm-242, Cm-243, Cm-244

Anticipated concentrations for the isotopes identified above may be
found in the CRBRP Environmental Report Table 3.5-2.

Additional information concerning the Liquid Radwaste System may be
found in the Engineering Report and in the CRBRP Environmental
Report, Section 3.5.

STANDARD FORM C - MANUFACTURING AND COMMERCIAL

FOR AGENCY USE									

SECTION II. BASIC DISCHARGE DESCRIPTION

Complete this section for each discharge indicated in Section I, Item 9, that is to surface waters. This includes discharges to municipal sewerage systems in which the wastewater does not go through a treatment works prior to being discharged to surface waters. Discharges to wells must be described where there are also discharges to surface waters from this facility. SEPARATE DESCRIPTIONS OF EACH DISCHARGE ARE REQUIRED EVEN IF SEVERAL DISCHARGES ORIGINATE IN THE SAME FACILITY. All values for an existing discharge should be representative of the twelve previous months of operation. If this is a proposed discharge, values should reflect best engineering estimates.

ADDITIONAL INSTRUCTIONS FOR SELECTED ITEMS APPEAR IN SEPARATE INSTRUCTION BOOKLET AS INDICATED. REFER TO BOOKLET BEFORE FILLING OUT THESE ITEMS.

1. Discharge Serial No. and Name

a. Discharge Serial No.
(see instructions)

201a

011

b. Discharge Name
Give name of discharge, if any.
(see instructions)

201b

Cooling Tower Blowdown

c. Previous Discharge Serial No.
If previous permit application
was made for this discharge (see
Item 4, Section I), provide previ-
ous discharge serial number.

201c

None: part of 001

2. Discharge Operating Dates

a. Discharge Began Date. If the
discharge described below is in
operation, give the date (within
best estimate) the discharge
began.

202a

N.A.

YR MO

b. Discharge to Begin Date. If the
discharge has never occurred but
is planned for some future date,
give the date (within best esti-
mate) the discharge will begin.

202b

88 09

YR MO

c. Discharge to End Date. If dis-
charge is scheduled to be discon-
tinued within the next 5 years,
give the date (within best esti-
mate) the discharge will end.

202c

N.A.

YR MO

3. Engineering Report Available

Check if an engineering report is
available to reviewing agency upon
request. (see instructions)

203

☒

4. Discharge Location. Name the political boundaries within which the point of discharge is located.

State

204a

Tennessee

County

204b

Roane

(if applicable) City or Town

204c

Oak Ridge

Agency Use

5. Discharge Point Description

Discharge is into (check one):
(see instructions)

Stream (includes ditches, arroyos,
and other intermittent watercourses)

205a

☒ STR

Lake

☐ LKE

Ocean

☐ OCE

Municipal Sanitary Wastewater
Transport System

☐ MTS

Municipal Combined Sanitary and
Storm Transport System

☐ MCS

DISCHARGE SERIAL NUMBER
011

FOR AGENCY USE

Municipal Storm Water Transport
System

Well (Injection)

Other

If 'other' is checked, specify

☐ STS☐ WEL☐ OTH

6. Discharge Point — Lat/Long Give the precise location of the point of discharge to the nearest second.

Latitude

Longitude

7. Discharge Receiving Water Name Name the waterway at the point of discharge (see instructions)

If the discharge is through an outfall that extends beyond the shoreline or is below the mean low water line, complete Item 8.

8. Offshore Discharge

- a. Discharge Distance from Shore
- b. Discharge Depth Below Water Surface

9. Discharge Type and Occurrence

- a. Type of Discharge Check whether the discharge is continuous or intermittent. (see instructions)
- b. Discharge Occurrence Days per Week Enter the average number of days per week (during periods of discharge) this discharge occurs.
- c. Discharge Occurrence —Months If this discharge normally operates (either intermittently, or continuously) on less than a year-around basis (excluding shutdowns for routine maintenance), check the months during the year when the discharge is operating. (see instructions)

Complete items 10 and 11 if "intermittent" is checked in Item 9.a. Otherwise, proceed to Item 12.

10. Intermittent Discharge Quantity State the average volume per discharge occurrence in thousands of gallons.

11. Intermittent Discharge Duration and Frequency

- a. Intermittent Discharge Duration Per Day State the average number of hours per day the discharge is operating.
- b. Intermittent Discharge Frequency State the average number of discharge occurrences per day during days when discharging.

12. Maximum Flow Period Give the time period in which the maximum flow of this discharge occurs.

209b

209a

209b

207a

207b

208a

208b

209a

209b

209c

210

211a

211b

212

35 DEG 53 MIN 22 SEC

84 DEG 22 MIN 50 SEC

Clinch River

For Agency Use

Major	Minor	Sub

207c

For Agency Use

303e

NA feet

NA feet

Discharged
through OSN 001☒ (con) Continuous☐ (int) Intermittent

7 days per week

☐ JAN ☐ FEB ☐ MAR ☐ APR
☐ MAY ☐ JUN ☐ JUL ☐ AUG
☐ SEP ☐ OCT ☐ NOV ☐ DEC

N.A. thousand gallons per discharge occurrence.

N.A. hours per day

N.A. discharge occurrences per day

From 06 to 09
month month

011

FOR AGENCY USE

13. Activity Description Give a narrative description of activity producing this discharge. (see instructions)

213a

Discharge 011 "Cooling Tower Blowdown" is a result of non-contact cooling performed by various circulating water systems required for power plant operation. The blowdown is required to maintain the closed loop circulating water in a non-scaling condition.

14. Activity Causing Discharge For each SIC Code which describes the activity causing this discharge, supply the type and maximum amount of either the raw material consumed (Item 14a) or the product produced (Item 14b) in the units specified in Table I of the Instruction Booklet. For SIC Codes not listed in Table I, use raw material or production units normally used for measuring production. (see instructions)

a. Raw Materials

	SIC Code	Name	Maximum Amount/Day	Unit (See Table I)	Shared Discharges (Serial Number)
	(1)	(2)	(3)	(4)	(5)
214a					

b. Products

	SIC Code	Name	Maximum Amount/Day	Unit (See Table I)	Shared Discharges (Serial Number)
	(1)	(2)	(3)	(4)	(5)
214b					
	4 930	Cooling Water	4.5	MGD	001

011

FOR AGENCY USE

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15. Waste Abatement

- a. Waste Abatement Practices
Describe the waste abatement practices used on this discharge with a brief narrative. (see instructions)

215a

Narrative: Cooling Tower Blowdown receives the same treatment as circulating water: cooling by mechanical draft cooling towers; pH adjustment; and chlorination during the summer season to control slimes, algae and freshwater clams. Recycle and reuse of various plant waters is maximized to reduce the quantity of blowdown discharged to the river.

- b. Waste Abatement Codes
Using the codes listed in Table II of the Instruction Booklet, describe the waste abatement processes for this discharge in the order in which they occur if possible.

215b

(1) RECYCL	(2) PTEMPE	(3) CPHADJ
(4) CCLDIS	(5)	(6)
(7)	(8)	(9)
(10)	(11)	(12)
(13)	(14)	(15)
(16)	(17)	(18)
(19)	(20)	(21)
(22)	(23)	(24)
(25)		

FOR AGENCY USE

16. Wastewater Characteristics

Check the box beside each constituent which is present in the effluent (discharge water). This determination is to be based on actual analysis or best estimate. (see instructions)

Parameter 216	Present	Parameter 216	Present
Color 00080		Copper 01042	X
Ammonia 00610	X	Iron 01045	X
Organic nitrogen 00605	X	Lead 01051	
Nitrate 00620	X	Magnesium 00927	X
Nitrite 00615		Manganese 01055	X
Phosphorus 00665	X	Mercury 71900	
Sulfate 00945	X	Molybdenum 01062	
Sulfide 00745		Nickel 01067	X
Sulfite 00740		Selenium 01147	
Bromide 71870		Silver 01077	
Chloride 00940	X	Potassium 00937	X
Cyanide 00720		Sodium 00929	X
Fluoride 00951		Thallium 01059	
Aluminum 01105		Titanium 01152	
Antimony 01097		Tin 01102	
Arsenic 01002		Zinc 01092	X
Beryllium 01012		Algalicides* 74051	
Barium 01007		Chlorinated organic compounds* 74052	
Boron 01022		Pesticides* 74053	
Cadmium 01027		Oil and grease 00550	
Calcium 00916	X	Phenols 32730	
Cobalt 01037		Surfactants 38260	
Chromium 01034		Chlorine 50060	X
Fecal coliform bacteria 74055		Radioactivity* 74050	

*Specify substances, compounds and/or elements in Item 26.

Pesticides (insecticides, fungicides, and rodenticides) must be reported in terms of the acceptable common names specified in *Acceptable Common Names and Chemical Names for the Ingredient Statement on Pesticide Labels*, 2nd Edition, Environmental Protection Agency, Washington, D.C. 20250, June 1972, as required by Subsection 162.7(b) of the Regulations for the Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act.

17. Description of Intake and Discharge

For each of the parameters listed below, enter in the appropriate box the value or code letter answer called for. (see instructions)

In addition, enter the parameter name and code and all required values for any of the following parameters if they were checked in Item 16: ammonia, cyanide, aluminum, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc, phenols, oil and grease, and chlorine (residual).

Parameter and Code 217a	Influent		Effluent					
	Untreated Intake Water (Daily Average) (1)	In-Plant Treated Intake Water (Daily Average) + (2)	Daily Average (3)	Minimum Value Observed or Expected During Discharge Activity (4)	Maximum Value Observed or Expected During Discharge Activity (5)	Frequency of Analysis # (6)	Number of Analyses (7)	Sample Type (8)
Flow* Gallons per day MGD 00056 50050	8.69	0.03	3.35	0.33	4.5	Cont.	NA	NA
pH Units 00400	7.6	7.2		6.5	8.5	Cont.	NA	NA
Temperature (winter) ° F 74028	37	37	68	61	72	Cont.	NA	NA
Temperature (summer) ° F 74027	70	70	85	73	91	Cont.	NA	NA
Biochemical Oxygen Demand (BOD 5-day) mg/l 00310	LT 1.0	NA	LT 2.5	LT 2.5	3.3	NA	NA	NA
Chemical Oxygen Demand (COD) mg/l 00340	LT 4.0	NA	LT 10.0	LT 2.5	30	NA	NA	NA
Total Suspended (nonfilterable) Solids mg/l 00530	7.0	NA	17.5	2.5	100	NA	NA	NA
Specific Conductance micromhos/cm at 25° C 00095	200	200		250	675	Cont.	NA	NA
Settleable Matter (residue) ml/l 00545	Not Available	NA	Not Available	Not Available	Not Available	NA	NA	NA

*Other discharges sharing intake flow (serial numbers). (see instructions)

+Water used for chlorination: source is DOE Bear Creek Road Filtration Plant.

Indicates expected frequency of analysis

DISCHARGE SERIAL NUMBER
011

FOR AGENCY USE							

17. (Cont'd.)

Parameter and Code 227a	Influent		Effluent					
	Untreated Intake Water (Daily Average) (1)	In Plant Treated Intake Water (Daily Average) (2)	Daily Average (3)	Minimum Value Observed or Expected During Discharge Activity (4)	Maximum Value Observed or Expected During Discharge Activity (5)	Frequency of Analysis (6)	Number of Analyses (7)	Sample Type (8)
Ammonia 00610	0.04		0.1	LT 0.03	0.58	2/30	NA	G
Copper 01042	0.04		0.1	LT 0.03	0.43	1/30	NA	G
Nickel 01067	LT 0.05		LT 0.13	LT 0.13	0.15	1/30	NA	G
Zinc 01092	0.04		0.1	LT 0.03	1.43	NA	NA	NA
Chlorine Residual 50060	LT 0.05		LT 0.14	0	0.14	1/07	NA	G

* Normally, chemical additions will not be required to control scaling conditions. However, provisions for sulfuric acid addition are provided, if needed to reduce circulating water alkalinity. The feed rate in this application will be determined on an as needed basis during actual plant operation.

18. Plant Controls Check if the following plant controls are available for this discharge.

Alternate power source for major pumping facility.

Alarm or emergency procedure for power or equipment failure

Complete item 19 if discharge is from cooling and/or steam water generation and water treatment additives are used.

19. Water Treatment Additives If the discharge is treated with any conditioner, inhibitor, or algicide, answer the following:

a. Name of Material(s)

b. Name and address of manufacturer

c. Quantity (pounds added per million gallons of water treated).

218

☐ APS

☒ ALM

Provisions for sulfuric acid addition are provided, see * above.

Sodium Hypochlorite will be used to curtail growth of slimes, algae, and fresh water clams in the closed loop circulating water systems.

219a

219b

Sodium Hypochlorite will be generated onsite as a 0.8% solution.

219c

To be determined during actual operation.

011

FOR AGENCY USE

d. Chemical composition of these additives (see instructions).

219d

NaOCl as 0.8% solution

Complete Items 20-25 if there is a thermal discharge (e.g., associated with a steam and/or power generation plant, steel mill, petroleum refinery, or any other manufacturing process) and the total discharge flow is 10 million gallons per day or more. (see instructions)

NA since discharge is less than 10 MGD.

The following is provided for information purposes.

20. Thermal Discharge Source Check the appropriate item(s) indicating the source of the discharge. (see instructions)

Boiler Blowdown

Boiler Chemical Cleaning

Ash Pond Overflow

Boiler Water Treatment — Evaporator Blowdown

Oil or Coal Fired Plants — Effluent from Air Pollution Control Devices

Condense Cooling Water

Cooling Tower Blowdown

Manufacturing Process

Other

220

☐ BLBD☐ BCCL☐ APOF☐ EPBD☐ OCFP☐ COND☒ CTBD☐ MFPR☐ OTHR

21. Discharge/Receiving Water Temperature Difference

Give the maximum temperature difference between the discharge and receiving waters for summer and winter operating conditions. (see instructions)

Summer

221a

29.1 °F

Winter

221b

33 °F

22. Discharge Temperature, Rate of Change Per Hour

Give the maximum possible rate of temperature change per hour of discharge under operating conditions. (see instructions)

222

5 °F./hour

23. Water Temperature, Percentile Report (Frequency of Occurrence)

In the table below, enter the temperature which is exceeded 10% of the year, 5% of the year, 1% of the year and not at all (maximum yearly temperature). (see instructions)

Frequency of occurrence

10%	5%	1%	Maximum
60 °F	65 °F	67 °F	68 °F
85 °F	86 °F	88 °F	91 °F

a. Intake Water Temperature (Subject to natural changes)

223a

b. Discharge Water Temperature

223b

24. Water Intake Velocity (see instructions)

224

0.2 feet/sec.

25. Retention Time Give the length of time, in minutes, from start of water temperature rise to discharge of cooling water. (see instructions)

225

990 minutes

Based on circulating water system inventory of 2.28×10^6 gallons and avg. blowdown flowrate.

DISCHARGE SERIAL NUMBER

011

FOR AGENCY USE

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26 Additional Information

226

Item

Information

203

Additional information concerning the Cooling Tower Blowdown may be found in Engineering Report and in the CRBRP Environmental Report Sections 3.3.2, 3.4.1, 3.4.3, 3.6.2 and 5.1.

STANDARD FORM C - MANUFACTURING AND COMMERCIAL

FOR AGENCY USE									

SECTION II. BASIC DISCHARGE DESCRIPTION

Complete this section for each discharge indicated in Section I, Item 9, that is to surface waters. This includes discharges to municipal sewerage systems in which the wastewater does not go through a treatment works prior to being discharged to surface waters. Discharges to wells must be described where there are also discharges to surface waters from this facility. SEPARATE DESCRIPTIONS OF EACH DISCHARGE ARE REQUIRED EVEN IF SEVERAL DISCHARGES ORIGINATE IN THE SAME FACILITY. All values for an existing discharge should be representative of the twelve previous months of operation. If this is a proposed discharge, values should reflect best engineering estimates.

ADDITIONAL INSTRUCTIONS FOR SELECTED ITEMS APPEAR IN SEPARATE INSTRUCTION BOOKLET AS INDICATED. REFER TO BOOKLET BEFORE FILLING OUT THESE ITEMS.

1. Discharge Serial No. and Name		201a	<u>012</u>		
a. Discharge Serial No. (see instructions)					
b. Discharge Name Give name of discharge, if any. (see instructions)	201b	<u>Chemical Cleaning Wastes (Pre-Operational)</u>			
c. Previous Discharge Serial No. If previous permit application was made for this discharge (see Item 4, Section I), provide previ- ous discharge serial number.	201c	<u>NA</u>			
2. Discharge Operating Dates					
a. Discharge Began Date. If the discharge described below is in operation, give the date (within best estimate) the discharge began.	202a	<u>NA</u> YR MO			
b. Discharge to Begin Date. If the discharge has never occurred but is planned for some future date, give the date (within best esti- mate) the discharge will begin.	202b	<u>88 09</u> YR MO			
c. Discharge to End Date. If dis- charge is scheduled to be discon- tinued within the next 5 years give the date (within best esti- mate) the discharge will end.	202c	<u>NA</u> YR MO			
3. Engineering Report Available Check if an engineering report is available to reviewing agency upon request. (see instructions)	203	<input checked="" type="checkbox"/>			
4. Discharge Location. Name the political boundaries within which the point of discharge is located.				Agency Use	
State	204a	<u>Tennessee</u>		204d	
County	204b	<u>Roane</u>		204e	
(If applicable) City or Town	204c	<u>Oak Ridge</u>		204f	
5. Discharge Point Description Discharge is into (check one): (see instructions)					
Stream (includes ditches, arroyos, and other intermittent watercourses)	205a	<input checked="" type="checkbox"/> STR			
Lake		<input type="checkbox"/> LKE			
Ocean		<input type="checkbox"/> OCE			
Municipal Sanitary Wastewater Transport System		<input type="checkbox"/> MTS			
Municipal Combined Sanitary and Storm Transport System		<input type="checkbox"/> MCS			

DISCHARGE SERIAL NUMBER

012

FOR AGENCY USE

Municipal Storm Water Transport System

Well (Injection)

Other

☐ STS☐ WEL☐ OTH

If 'other' is checked, specify

6. Discharge Point — Lat/Long Give the precise location of the point of discharge to the nearest second.

Latitude

Longitude

7. Discharge Receiving Water Name Name the waterway at the point of discharge (see instructions)

If the discharge is through an outfall that extends beyond the shoreline or is below the mean low water line, complete Item 8.

8. Offshore Discharge

a. Discharge Distance from Shore

b. Discharge Depth Below Water Surface

9. Discharge Type and Occurrence

a. Type of Discharge Check whether the discharge is continuous or intermittent. (see instructions)

b. Discharge Occurrence Days per Week Enter the average number of days per week (during periods of discharge) this discharge occurs.

c. Discharge Occurrence —Months If this discharge normally operates (either intermittently, or continuously) on less than a year-around basis (excluding shutdowns for routine maintenance), check the months during the year when the discharge is operating. (see instructions)

Complete Items 10 and 11 if "Intermittent" is checked in Item 9.a. Otherwise, proceed to Item 12.

10. Intermittent Discharge Quantity State the average volume per discharge occurrence in thousands of gallons.

11. Intermittent Discharge Duration and Frequency

a. Intermittent Discharge Duration Per Day State the average number of hours per day the discharge is operating.

b. Intermittent Discharge Frequency State the average number of discharge occurrences per day during days when discharging.

12. Maximum Flow Period Give the time period in which the maximum flow of this discharge occurs.

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205b

206a

206b

207a

207b

208a

208b

209a

209b

209c

210

211a

211b

212

35 DEG 53 MIN 08 SEC *

84 DEG 22 MIN 49 SEC

*To be identified in the future. If Metal Cleaning Wastes are to be discharged, OSN003 will be utilized.

Unnamed Ditch to
Clinch River

For Agency Use

Major	Minor	Sub

For Agency Use

303e

207c

NA feet

NA feet

☐ (con) Continuous☒ (int) Intermittent

Infrequent discharge, if it occurs, will occur prior to plant startup and may or may not recur during plant life.

— days per week

☐ JAN ☐ FEB ☐ MAR ☐ APR☐ MAY ☐ JUN ☐ JUL ☐ AUG☐ SEP ☐ OCT ☐ NOV ☐ DEC

NA

1,500 thousand gallons per discharge occurrence.

Estimated total treated concentrated waste water & rinse water volume.

— hours per day Not available at this time.

— discharge occurrences per day Not available at this time.

From — to — NA
month month

DISCHARGE SERIAL NUMBER

012FORM APPROVED
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FOR AGENCY USE									

13. Activity Description Give a narrative description of activity producing this discharge (see instructions)

213a

Discharge 012 is from preoperational chemical cleaning of the Condensate, Feedwater, and Main Steam Systems. The cleaning will be done to remove oil, grease, mill scale, and rust from the piping and equipment.

14. Activity Causing Discharge For each SIC Code which describes the activity causing this discharge, supply the type and maximum amount of either the raw material consumed (Item 14a) or the product produced (Item 14b) in the units specified in Table I of the Instruction Booklet. For SIC Codes not listed in Table I, use raw material or production units normally used for measuring production (see instructions)

a. Raw Materials

	SIC Code	Name	Maximum Amount/Day	Unit (See Table I)	Shared Discharges (Serial Number)
214a	(1)	(2)	(3)	(4)	(5)
	3471	Treated Metal Cleaning Wastes	1.5	MG	003

b. Products

	SIC Code	Name	Maximum Amount/Day	Unit (See Table I)	Shared Discharges (Serial Number)
214b	(1)	(2)	(3)	(4)	(5)

012

FOR AGENCY USE							

15. Waste Abatement

- a. Waste Abatement Practices
Describe the waste abatement practices used on this discharge with a brief narrative. (see instructions)

215a

Narrative: Present design plans for pre-operational cleaning call for treatment and disposal offsite by a cleaning contractor. Should present plans change, the permittee will provide facilities for treatment disposal of these wastes onsite. Treatment processes may include, but not be limited to, physical/chemical treatment, biological treatment, incineration and evaporation. Treatment processes to be used will be determined on the basis of the type and volume of cleaning wastes. Treatment facilities and appurtenant structures may include: waste (Cont'd. below)

- b. Waste Abatement Codes
Using the codes listed in Table II of the Instruction Booklet, describe the waste abatement processes for this discharge in the order in which they occur if possible.

215b

(1) <u>CPHADI</u>	(2) <u>COTHER</u>	(3) <u>BOTHER</u>
(4) <u>PSEDIM</u>	(5) <u>SAEROE</u>	(6) _____
(7) _____	(8) _____	(9) _____
(10) _____	(11) _____	(12) _____
(13) _____	(14) _____	(15) _____
(16) _____	(17) _____	(18) _____
(19) _____	(20) _____	(21) _____
(22) _____	(23) _____	(24) _____
(25) _____		

(Cont'd.)

holding ponds of impervious construction, chemical addition provisions, mixing provisions and other structures as required to suit the treatment process selected.

012

FOR AGENCY USE

16. Wastewater Characteristics

Check the box beside each constituent which is present in the effluent (discharge water). This determination is to be based on actual analysis or best estimate. (see instructions)

Parameter 216	Present	Parameter 216	Present
Color 00080		Copper 01042	X
Ammonia 00610		Iron 01045	X
Organic nitrogen 00605		Lead 01051	
Nitrate 00620		Magnesium 00927	
Nitrite 00615		Manganese 01055	
Phosphorus 00665	X	Mercury 71900	
Sulfate 00945		Molybdenum 01062	
Sulfide 00745		Nickel 01067	
Sulfite 00740		Selenium 01147	
Bromide 71870		Silver 01077	
Chloride 00940		Potassium 00937	
Cyanide 00720		Sodium 00929	
Fluoride 00951		Thallium 01059	
Aluminum 01105		Titanium 01152	
Antimony 01097		Tin 01102	
Arsenic 01002		Zinc 01092	
Beryllium 01012		Algicides* 74051	
Barium 01007		Chlorinated organic compounds* 74052	
Boron 01022		Pesticides* 74053	
Cadmium 01027		Oil and grease 00550	X
Calcium 00916		Phenols 32730	
Cobalt 01037		Surfactants 38260	
Chromium 01034		Chlorine 50060	
Fecal coliform bacteria 74055		Radioactivity* 74050	

*Specify substances, compounds and/or elements in Item 26.

Pesticides (insecticides, fungicides, and rodenticides) must be reported in terms of the acceptable common names specified in *Acceptable Common Names and Chemical Names for the Ingredient Statement on Pesticide Labels*, 2nd Edition, Environmental Protection Agency, Washington, D.C. 20250, June 1972, as required by Subsection 162.7(b) of the Regulations for the Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act.

012

FOR AGENCY USE

17. Description of Intake and Discharge

For each of the parameters listed below, enter in the appropriate box the value or code letter answer called for. (see instructions)

In addition, enter the parameter name and code and all required values for any of the following parameters if they were checked in Item 16: ammonia, cyanide, aluminum, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc, phenols, oil and grease, and chlorine (residual).

Parameter and Code 217a	Influent		Effluent					
	Untreated Intake Water (Daily Average) (1)	In-Plant Treated Intake Water (Daily Average) (2)	Daily Average (3)	Minimum Value Observed or Expected During Discharge Activity (4)	Maximum Value Observed or Expected During Discharge Activity (5)	Frequency of Analysis (6)	Number of Analyses (7)	Sample Type (8)
Flow* Gallons per day 00056								
pH Units 00400			X	6	9			
Temperature (winter) ° F 74028			42	37	55			
Temperature (summer) ° F 74027			66	60	70			
Biochemical Oxygen Demand (BOD 5-day) mg/l 00310			A	A	A			
Chemical Oxygen Demand (COD) mg/l 00340			LT 100 Mg/l	0 Mg/l	100 Mg/l			
Total Suspended (nonfilterable) Solids mg/l 00530			LT 30 Mg/l	LT 30 Mg/l	100 Mg/l			
Specific Conductance micromhos/cm at 25° C 00095			X	NA	NA			
Settleable Matter (residue) ml/l 00545			A	A	A			

*Other discharges sharing intake flow (serial numbers). (see instructions)

NOTE: Source of water for metal cleaning operation is the CRBRP Demineralized Water System. Demineralized Water is generated from Clinch River water obtained through the plant intake OSN 013.

DISCHARGE SERIAL NUMBER
012

FOR AGENCY USE									

17. (Cont'd.)

Parameter and Code 217a	Influent		Effluent mg/l					
	Untreated Intake Water (Daily Average) (1)	In-Plant Treated Intake Water (Daily Average) (2)	Daily Average mg/l (3)	Minimum Value Observed or Expected During Discharge mg/l Activity (4)	Maximum Value Observed or Expected During Discharge Activity (5)	Frequency of Analysis (6)	Number of Analyses (7)	Sample Type (8)
Copper 01042			LT 1	LT 1	1			
Oil & Grease 00550			LT 15	LT 15	20			

18. Plant Controls Check if the following plant controls are available for this discharge.

Alternate power source for major pumping facility.

Alarm or emergency procedure for power or equipment failure

Complete Item 19 if discharge is from cooling and/or steam water generation and water treatment additives are used.

19. Water Treatment Additives If the discharge is treated with any conditioner, inhibitor, or algicide, answer the following:

a. Name of Material(s)

b. Name and address of manufacturer

c. Quantity (pounds added per million gallons of water treated).

218

☐ APS NA

☐ ALM

219a

NA

219b

NA

219c

NA

012

FOR AGENCY USE

--	--	--	--	--	--	--	--	--	--

d. Chemical composition of these additives (see instructions).

219d

NA

Complete Items 20-25 if there is a thermal discharge (e.g., associated with a steam and/or power generation plant, steel mill, petroleum refinery, or any other manufacturing process) and the total discharge flow is 10 million gallons per day or more. (see instructions)

NA

20. Thermal Discharge Source. Check the appropriate item(s) indicating the source of the discharge. (see instructions)

Boiler Blowdown

Boiler Chemical Cleaning

Ash Pond Overflow

Boiler Water Treatment — Evaporator Blowdown

Oil or Coal Fired Plants — Effluent from Air Pollution Control Devices

Condense Cooling Water

Cooling Tower Blowdown

Manufacturing Process

Other

☐ BLBD☐ BCCL☐ APOF☐ EPBD☐ OCFP☐ COND☐ CTBD☐ MFPR☐ OTHR

21. Discharge/Receiving Water Temperature Difference

Give the maximum temperature difference between the discharge and receiving waters for summer and winter operating conditions. (see instructions)

Summer

221a _____ °F.

Winter

221b _____ °F.

22. Discharge Temperature, Rate of Change Per Hour

Give the maximum possible rate of temperature change per hour of discharge under operating conditions. (see instructions)

222 _____ °F./hour

23. Water Temperature, Percentile Report (Frequency of Occurrence)

In the table below, enter the temperature which is exceeded 10% of the year, 5% of the year, 1% of the year and not at all (maximum yearly temperature). (see instructions)

Frequency of occurrence

10%	5%	1%	Maximum
°F	°F	°F	°F
°F	°F	°F	°F

a. Intake Water Temperature (Subject to natural changes)

223a

b. Discharge Water Temperature

223b

24. Water Intake Velocity (see instructions)

224 _____ feet/sec.

25. Retention Time. Give the length of time, in minutes, from start of water temperature rise to discharge of cooling water. (see instructions)

225 _____ minutes

DISCHARGE SERIAL NUMBER

012

FOR AGENCY USE

--	--	--	--	--	--	--	--	--	--

26. Additional Information

226

Item

Information

Chemical cleaning wastes have been identified as a discrete point source in the event that the permittee is required to treat these wastes onsite. Present plans require that the cleaning contractor treat and dispose of these wastes offsite. In the event that the permittee treats wastes onsite, the types of cleaning agents to be used, waste treatment processes to be used, and the details of facilities to be constructed will be identified to the permitting agencies at least 90 days prior to start of cleaning activities.

STANDARD FORM C - MANUFACTURING AND COMMERCIAL

FOR AGENCY USE									

SECTION II. BASIC DISCHARGE DESCRIPTION

Complete this section for each discharge indicated in Section I, Item 9, that is to surface waters. This includes discharges to municipal sewerage systems in which the wastewater does not go through a treatment works prior to being discharged to surface waters. Discharges to wells must be described where there are also discharges to surface waters from this facility. SEPARATE DESCRIPTIONS OF EACH DISCHARGE ARE REQUIRED EVEN IF SEVERAL DISCHARGES ORIGINATE IN THE SAME FACILITY. All values for an existing discharge should be representative of the twelve previous months of operation. If this is a proposed discharge, values should reflect best engineering estimates.

ADDITIONAL INSTRUCTIONS FOR SELECTED ITEMS APPEAR IN SEPARATE INSTRUCTION BOOKLET AS INDICATED. REFER TO BOOKLET BEFORE FILLING OUT THESE ITEMS.

1. Discharge Serial No. and Name

a. Discharge Serial No.
(see instructions)

201a 013

b. Discharge Name
Give name of discharge, if any.
(see instructions)

201b Plant Intake

c. Previous Discharge Serial No.
If previous permit application
was made for this discharge (see
Item 4, Section I), provide previous
discharge serial number.

201c 011

2. Discharge Operating Dates

a. Discharge Began Date. If the
discharge described below is in
operation, give the date (within
best estimate) the discharge
began.

202a NA
YR MO

b. Discharge to Begin Date. If the
discharge has never occurred but
is planned for some future date,
give the date (within best estimate)
the discharge will begin.

202b 88 09
YR MO

c. Discharge to End Date. If discharge
is scheduled to be discontinued
within the next 5 years,
give the date (within best estimate)
the discharge will end.

202c N.A.
YR MO

3. Engineering Report Available
Check if an engineering report is
available to reviewing agency upon
request. (see instructions)

203 ☒

4. Discharge Location. Name the
political boundaries within which
the point of discharge is located.

State

204a Tennessee

County

204b Roane

(if applicable) City or Town

204c Oak Ridge

Agency Use

204d

204e

204f

5. Discharge Point Description
Discharge is into (check one):
(see instructions)

Stream (includes ditches, arroyos,
and other intermittent watercourses)

205a ☒ STR Intake

Lake

☐ LKE

Ocean

☐ OCE

Municipal Sanitary Wastewater
Transport System

☐ MTS

Municipal Combined Sanitary and
Storm Transport System

☐ MCS

DISCHARGE SERIAL NUMBER

013

FOR AGENCY USE

Municipal Storm Water Transport
System

Well (Injection)

Other

☐ STS☐ WEL☐ OTH

If "Other" is checked, specify

6. Discharge Point - Lat/Long Give the precise location of the point of discharge to the nearest second.

Latitude

Longitude

7. Discharge Receiving Water Name Name the waterway at the point of discharge (see instructions)

If the discharge is through an outfall that extends beyond the shoreline or is below the mean low water line, complete item 8.

8. Offshore Discharge

a. Discharge Distance from Shore

b. Discharge Depth Below Water Surface

9. Discharge Type and Occurrence

a. Type of Discharge Check whether the discharge is continuous or intermittent. (see instructions)

b. Discharge Occurrence Days per Week Enter the average number of days per week (during periods of discharge) this discharge occurs.

c. Discharge Occurrence - Months If this discharge normally operates (either intermittently or continuously) on less than a year-around basis (excluding shutdowns for routine maintenance), check the months during the year when the discharge is operating. (see instructions)

Complete items 10 and 11 if "intermittent" is checked in item 9.a. Otherwise, proceed to item 12.

10. Intermittent Discharge Quantity State the average volume per discharge occurrence in thousands of gallons.

11. Intermittent Discharge Duration and Frequency

a. Intermittent Discharge Duration Per Day State the average number of hours per day the discharge is operating.

b. Intermittent Discharge Frequency State the average number of discharge occurrences per day during days when discharging.

12. Maximum Flow Period Give the time period in which the maximum flow of this discharge occurs.

EPA 823-R-77-010

203a

204a

205b

207a

207b

208a

209b

209a

209b

209c

210

211a

211b

212

Clinch River

For Agency Use

Major	Minor	Sub

207c

For Agency Use

303e

26 feet based on El. 741 at shore

4 feet (at minimum low water)

☒ (con) Continuous☐ (int) Intermittent

7 days per week

☐ JAN ☐ FEB ☐ MAR ☐ APR☐ MAY ☐ JUN ☐ JUL ☐ AUG☐ SEP ☐ OCT ☐ NOV ☐ DEC

NA thousand gallons per discharge occurrence.

NA hours per day

NA discharge occurrences per day

From 06 to 09 month month

013

FORM APPROVED
OHS No. 156-R0100

FOR AGENCY USE

12. Activity Description. Give a narrative description of activity producing this discharge. (see instructions)

213a

The Plant Intake (013) is directly related to the production of power of the CRBRP. 98% of the intake water is used as makeup to the cooling tower basins to replace closed loop circulating water system losses due to evaporation, drift, and blowdown. The balance of the water is utilized for the production of demineralized water for plant process uses. To maintain the intake system in an acceptable operating condition a backwash of the system will be performed periodically.

14. Activity Causing Discharge. For each SIC Code which describes the activity causing this discharge, supply the type and maximum amount of either the raw material consumed (Item 14a) or the product produced (Item 14b) in the units specified in Table I of the Instruction Booklet. For SIC Codes not listed in Table I, use raw material or production units normally used for measuring production. (see instructions)

A. Raw Materials

SIC Code	Name	Maximum Amount/Day	Unit (See Table I)	Shared Discharges (Serial Number)
214a (1)	(2)	(3)	(4)	(5)

B. Products

SIC Code	Name	Maximum Amount/Day	Unit (See Table I)	Shared Discharges (Serial Number)
214b (1)	(2)	(3)	(4)	(5)
4911	Electric Power	0.375	Z-1	None

013

FOR AGENCY USE									

15. Waste Abatement

A. Waste Abatement Practices
Describe the waste abatement practices used on this discharge with a brief narrative. (See instructions)

215a

Narrative: There are no waste abatement practices related to the intake. In order to protect pumps and downstream equipment, the intake water is screened and treated with chlorine to control slimes, algae and fresh water clams. Chlorination is anticipated to occur only during warm-weather months. These activities will not impact Clinch River water quality in the area of the intake.

B. Waste Abatement Codes
Using the codes listed in Table II of the Instruction Booklet, describe the waste abatement processes for this discharge in the order in which they occur if possible.

215b

- | | | |
|------------|------------|------------|
| (1) _____ | (2) _____ | (3) _____ |
| (4) _____ | (5) _____ | (6) _____ |
| (7) _____ | (8) _____ | (9) _____ |
| (10) _____ | (11) _____ | (12) _____ |
| (13) _____ | (14) _____ | (15) _____ |
| (16) _____ | (17) _____ | (18) _____ |
| (19) _____ | (20) _____ | (21) _____ |
| (22) _____ | (23) _____ | (24) _____ |
| (25) _____ | | |

013

FOR AGENCY USE

NOT APPLICABLE

16. Wastewater Characteristics

Check the box beside each constituent which is present in the effluent (discharge water). This determination is to be based on actual analysis or best estimate. (see instructions)

Parameter 216	Present	Parameter 216	Present
Color 00050		Copper 01042	
Ammonia 00610		Iron 01045	
Organic nitrogen 00605		Lead 01051	
Nitrate 00620		Magnesium 00927	
Nitrite 00615		Manganese 01055	
Phosphorus 00665		Mercury 71900	
Sulfate 00945		Molybdenum 01062	
Sulfide 00745		Nickel 01067	
Sulfite 00740		Selenium 01147	
Bromide 71870		Silver 01077	
Chloride 00940		Potassium 00937	
Cyanide 00720		Sodium 00929	
Fluoride 00951		Thallium 01059	
Aluminum 01105		Titanium 01152	
Antimony 01097		Tin 01102	
Arsenic 01002		Zinc 01092	
Beryllium 01012		Algicides* 74051	
Barium 01007		Chlorinated organic compounds* 74052	
Boron 01022		Pesticides* 74053	
Cadmium 01027		Oil and grease 00550	
Calcium 00916		Phenols 32730	
Cobalt 01037		Surfactants 38260	
Chromium 01034		Chlorine 50060	
Fecal coliform bacteria 74055		Radioactivity* 74050	

* Specify substances, compounds and/or elements in Item 26.

Pesticides (insecticides, fungicides, and rodenticides) must be reported in terms of the acceptable common names specified in *Acceptable Common Names and Chemical Names for the Ingredient Statement on Pesticide Labels*, 2nd Edition, Environmental Protection Agency, Washington, D.C. 20250, June 1972, as required by Subsection 162.7(b) of the Regulations for the Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act.

17. Description of Intake and Discharge

For each of the parameters listed below, enter in the appropriate box the value or code letter answer called for. (see instructions)

In addition, enter the parameter name and code and all required values for any of the following parameters if they were checked in Item 16: ammonia, cyanide, aluminum, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc, phenols, oil and grease, and chlorine (residual).

Parameter and Code 217a	Influent		Effluent					
	Untreated Intake Water (Daily Average) (1)	In-Plant Treated Intake Water (Daily Average) (2)	Daily Average (3)	Minimum Value Observed or Expected During Discharge Activity (4)	Maximum Value Observed or Expected During Discharge Activity (5)	Frequency of Analysis (6)	Number of Analyses (7)	Sample Type (8)
Flow* Gallons per day 00056 MGD 50050	8.8					Cont.	NA	NA
pH Units 00400	7.6		X			NA	NA	NA
Temperature (winter) * F 74028	37					Cont. +	NA	NA
Temperature (summer) * F 74027	70					Cont. +	NA	NA
Biochemical Oxygen Demand (BOD 5-day) mg/l 00310	LT 1.0					NA	NA	NA
Chemical Oxygen Demand (COD) mg/l 00340	LT 4.0					NA	NA	NA
Total Suspended (nonfilterable) Solids mg/l 00530	7.0					NA	NA	NA
Specific Conductance micromhos/cm at 25° C 00095	200		X			NA	NA	NA
Settleable Matter (residue) ml/l 00545	Not Avail.					NA	NA	NA

*Other discharges sharing intake flow (serial numbers). (see instructions)

+Ambient river water temperatures are monitored in the vicinity of (001).

DISCHARGE SERIAL NUMBER
013

FOR AGENCY USE									

17. (Cont'd.)

Parameter and Code 217a	Influent		Effluent					
	Untreated Intake Water (Daily Average) (1)	In Plant Treated Intake Water (Daily Average) (2)	Daily Average (3)	Minimum Value Observed or Expected During Discharge Activity (4)	Maximum Value Observed or Expected During Discharge Activity (5)	Frequency of Analysis (6)	Number of Analyses (7)	Sample Type (8)
Ammonia 00610	0.04					2/30	NA	G
Copper 01042	0.04					1/30	NA	G
Nickel 01067	LT 0.05					NA	NA	NA
Zinc 01092	0.04					NA	NA	NA
Oil & Grease 00550	Not Avail.					NA	NA	NA
Chlorine Residual 50060	Not Avail.					NA	NA	NA

18. Plant Controls: Check if the following plant controls are available for this discharge.

Alternate power source for major pumping facility.

Alarm or emergency procedure for power or equipment failure

Complete item 19 if discharge is from cooling and/or steam water generator and water treatment additives are used.

19. Water Treatment Additives: If the discharge is treated with any conditioner, inhibitor, or algicide, answer the following:

A. Name of Material(s)

D. Name and address of manufacturer

E. Quantity (pounds added per million gallons of water treated).

218

☐ APS

☒ ALM

NA

219a

219b

219c

d. Chemical composition of these additives (see instructions).

219a

NA

Complete items 20-25 if there is a thermal discharge (e.g., associated with a steam and/or power generation plant, steel mill, petroleum refinery, or any other manufacturing process) and the total discharge flow is 10 million gallons per day or more. (see instructions)

20. Thermal Discharge Source. Check the appropriate item(s) indicating the source of the discharge. (see instructions)

Boiler Blowdown

Boiler Chemical Cleaning

Ash Pond Overflow

Boiler Water Treatment — Evaporator Blowdown

Oil or Coal Fired Plants — Effluent from Air Pollution Control Devices

Condense Cooling Water

Cooling Tower Blowdown

Manufacturing Process

Other

220

☐ BLBD

☐ BCCL

☐ APOF

☐ EPBD

☐ OCFP

☐ COND

☐ CTBD

☐ MFPR

☐ CTHR

21. Discharge/Receiving Water Temperature Difference

Give the maximum temperature difference between the discharge and receiving waters for summer and winter operating conditions. (see instructions)

Summer

221a

°F.

Winter

221b

°F.

22. Discharge Temperature, Rate of Change Per Hour

222

°F./hour

Give the maximum possible rate of temperature change per hour of discharge under operating conditions. (see instructions)

23. Water Temperature, Percentile Report (Frequency of Occurrence)

In the table below, enter the temperature which is exceeded 10% of the year, 5% of the year, 1% of the year and not at all (maximum yearly temperature). (see instructions)

Frequency of occurrence

10%	5%	1%	Maximum
°F.	°F.	°F.	°F.
°F.	°F.	°F.	°F.

a. Intake Water Temperature (Subject to natural changes)

223a

b. Discharge Water Temperature

223b

24. Water Intake Velocity (see instructions)

224

feet/sec.

25. Retention Time. Give the length of time, in minutes, from start of water temperature rise to discharge of cooling water. (see instructions)

225

minutes

DISCHARGE SERIAL NUMBER

013

FOR AGENCY USE									

26. Additional Information

226

Item

Information

203

Additional information concerning the Plant Intake System may be found in Engineering Report and in the CRBRP Environmental Report Section 3.4.2.

FOR AGENCY USE									

STANDARD FORM C - MANUFACTURING AND COMMERCIAL

SECTION III. WASTE ABATEMENT REQUIREMENTS & IMPLEMENTATION (CONSTRUCTION) SCHEDULE

This section requires information on any uncompleted implementation schedule which may have been imposed for construction of waste abatement facilities. Such requirements and implementation schedules may have been established by local, State, or Federal agencies or by court action. In addition to completing the following items, a copy of an official implementation schedule should be attached to this application. IF YOU ARE SUBJECT TO SEVERAL DIFFERENT IMPLEMENTATION SCHEDULES, EITHER BECAUSE OF DIFFERENT LEVELS OF AUTHORITY IMPOSING DIFFERENT SCHEDULES (Item 1a.) AND/OR STAGED CONSTRUCTION OF SEPARATE OPERATION UNITS (Item 1c), SUBMIT A SEPARATE SECTION III FOR EACH ONE.

FOR AGENCY USE	
SCHED. NO.	

1. Improvements

a. Discharge Serial Number Affected List the discharge serial numbers, assigned in Section II, that are covered by this implementation schedule.

b. Authority Imposing Requirements Check the appropriate item indicating the authority for implementation schedule. If the identical implementation schedule has been ordered by more than one authority, check the appropriate items. (see instructions)

- Locally developed plan
- Areawide Plan
- Basic Plan
- State approved implementation schedule
- Federal approved water quality standards implementation plan.
- Federal enforcement procedure or action
- State court order
- Federal court order

c. Facility Requirement. Specify the 3-character code of those listed below that best describes in general terms the requirement of the implementation schedule and the applicable six-character abatement code(s) from Table II of the instruction booklet. If more than one schedule applies to the facility because of a staged construction schedule, state the stage of construction being described here with the appropriate general action code. Submit a separate Section III for each stage of construction planned.

300

301a

001 009 010

011 012 013

301b

☒ LOC

☐ ARE

☐ BAS

☐ SQS

☐ WQS

☐ ENF

☐ CRT

☐ FED

3-character (general)

301c

NEW

Common Plant Discharge, wastewater treatment facility, intake, cooling tower blowdown, liquid radwaste.

301d

6-character (specific) (see Table II)

RECYCL

PTEMPE

CPHADJ

CCLDIS

Treatment Process Code given is for cooling tower blowdown, which comprises approximately 96% of flow for discharge 001.

- New Facility
- Modification (no increase in capacity or treatment)
- Increase in Capacity
- Increase in Treatment Level
- Both Increase in Treatment Level and Capacity
- Process Change
- Elimination of Discharge

- NEW
- MOD
- INC
- INT
- ICT
- PRO
- ELI

FOR AGENCY USE									

2. Implementation Schedule and 3. Actual Completion Dates

Provide dates imposed by schedule and any actual dates of completion for implementation steps listed below. Indicate dates as accurately as possible. (see instructions)

Implementation Steps	2. Schedule (Yr./Mo./Day)		3. Actual Completion (Yr./Mo./Day)	
a. Preliminary plan complete	302a	___/___/___	303a	___/___/___
b. Final plan submission	302b	___/___/___	303b	___/___/___
c. Final plan complete	302c	___/___/___	303c	___/___/___
d. Financing complete & contract awarded	302d	___/___/___	303d	___/___/___
e. Site acquired	302e	___/___/___	303e	___/___/___
f. Begin action (e.g., construction)	302f	___/___/___	303f	___/___/___
g. End action (e.g., construction)	302g	___/___/___	303g	___/___/___
h. Discharge Began	302h	___/___/___	303h	___/___/___
i. Operational level attained	302i	___/___/___	303i	___/___/___

302f, g, h - Discharge scheduled to commence 9/88: detailed schedule to be submitted at later date.

FOR AGENCY USE									

STANDARD FORM C - MANUFACTURING AND COMMERCIAL

SECTION III. WASTE ABATEMENT REQUIREMENTS & IMPLEMENTATION (CONSTRUCTION) SCHEDULE

This section requires information on any uncompleted implementation schedule which may have been imposed for construction of waste abatement facilities. Such requirements and implementation schedules may have been established by local, State, or Federal agencies or by court action. In addition to completing the following items, a copy of an official implementation schedule should be attached to this application. IF YOU ARE SUBJECT TO SEVERAL DIFFERENT IMPLEMENTATION SCHEDULES, EITHER BECAUSE OF DIFFERENT LEVELS OF AUTHORITY IMPOSING DIFFERENT SCHEDULES (Item 1a.) AND/OR STAGED CONSTRUCTION OF SEPARATE OPERATION UNITS (Item 1c), SUBMIT A SEPARATE SECTION III FOR EACH ONE.

1. Improvements

a. Discharge Serial Number
Affected List the discharge serial numbers, assigned in Section II, that are covered by this implementation schedule.

b. Authority Imposing Requirements. Check the appropriate item indicating the authority for implementation schedule. If the identical implementation schedule has been ordered by more than one authority, check the appropriate items. (see instructions)

Locally developed plan

Areawide Plan

Basic Plan

State approved implementation schedule

Federal approved water quality standards implementation plan.

Federal enforcement procedure or action

State court order

Federal court order

c. Facility Requirement. Specify the 3-character code of those listed below that best describes in general terms the requirement of the implementation schedule and the applicable six-character abatement code(s) from Table II of the instruction booklet. If more than one schedule applies to the facility because of a staged construction schedule, state the stage of construction being described here with the appropriate general action code. Submit a separate Section III for each stage of construction planned.

300

301a

003 004 005

006 007 008

301b

☒ LOC

☐ ARE

☐ BAS

☐ SQS

☐ WQS

☐ ENF

☐ CRT

☐ FED

301c

3-character (general)

NEW

301d

6-character (specific) (see Table II)

PSEDIM

FOR AGENCY USE									
SCHED. NO. _____									

(Construction & Operating Period Facilities)

Storm water retention ponds

New Facility
Modification (no increase in capacity or treatment)
Increase in Capacity
Increase in Treatment Level
Both Increase in Treatment Level and Capacity
Process Change
Elimination of Discharge

NEW
MOD
INC
INT
ICT
PRO
ELI

FOR AGENCY USE									

2. Implementation Schedule and 3. Actual Completion Dates

Provide dates imposed by schedule and any actual dates of completion for implementation steps listed below. Indicate dates as accurately as possible. (see instructions)

Implementation Steps	2. Schedule (Yr./Mo./Day)		3. Actual Completion (Yr./Mo./Day)	
a. Preliminary plan complete	302a	____/____/____	302a	____/____/____
b. Final plan submission	302b	____/____/____	302b	____/____/____
c. Final plan complete	302c	____/____/____	302c	____/____/____
d. Financing complete & contract awarded	302d	____/____/____	302d	____/____/____
e. Site acquired	302e	____/____/____	302e	____/____/____
f. Begin action (e.g., construction)	302f	____/____/____	302f	____/____/____
g. End action (e.g., construction)	302g	____/____/____	302g	____/____/____
h. Discharge Began	302h	____/____/____	302h	____/____/____
i. Operational level attained	302i	____/____/____	302i	____/____/____

302f, g - Storm water retention ponds will be constructed approximately 3-4 months after commencement of site preparation activities.

FOR AGENCY USE									

STANDARD FORM C - MANUFACTURING AND COMMERCIAL

SECTION III. WASTE ABATEMENT REQUIREMENTS & IMPLEMENTATION (CONSTRUCTION) SCHEDULE

This section requires information on any uncompleted implementation schedule which may have been imposed for construction of waste abatement facilities. Such requirements and implementation schedules may have been established by local, State, or Federal agencies or by court action. In addition to completing the following items, a copy of an official implementation schedule should be attached to this application. IF YOU ARE SUBJECT TO SEVERAL DIFFERENT IMPLEMENTATION SCHEDULES, EITHER BECAUSE OF DIFFERENT LEVELS OF AUTHORITY IMPOSING DIFFERENT SCHEDULES (Item 1a.) AND/OR STAGED CONSTRUCTION OF SEPARATE OPERATION UNITS (Item 1c), SUBMIT A SEPARATE SECTION III FOR EACH ONE.

FOR AGENCY USE

SCHED. NO. _____

1. Improvements

- a. Discharge Serial Number. Affected List the discharge serial numbers, assigned in Section II, that are covered by this implementation schedule.

- b. Authority Imposing Requirements. Check the appropriate item indicating the authority for implementation schedule. If the identical implementation schedule has been ordered by more than one authority, check the appropriate items. (see Instructions)

Locally developed plan
Area-wide Plan
Basic Plan
State approved implementation schedule
Federal approved water quality standards implementation plan.
Federal enforcement procedure or action
State court order
Federal court order

- c. Facility Requirement. Specify the 3-character code of those listed below that best describes in general terms the requirement of the implementation schedule and the applicable six-character abatement code(s) from Table II of the instruction booklet. If more than one schedule applies to the facility because of a staged construction schedule, state the stage of construction being described here with the appropriate general action code. Submit a separate Section III for each stage of construction planned.

300

301a

002

(Construction and Operating Period Facilities)

301b

☒ LOC☐ ARE☐ BAS☐ SQS☐ WQS☐ ENF☐ CRT☐ FED

301c

3-character
(general)

NEW

301d

6-character
(specific)
(see Table II)

PEQUAL, PSCREE, BACTIV,
PSKIMC, MPOSTA, CCLDIS,
SAEROB, SOTHER

Construction period sewage treatment facility

New Facility
Modification (no increase in capacity or treatment)
Increase in Capacity
Increase in Treatment Level
Both Increase in Treatment Level and Capacity
Process Change
Elimination of Discharge

NEW
MOD
INC
INT
ICT
PRO
ELI

FOR AGENCY USE									

2. Implementation Schedule and 3. Actual Completion Dates

Provide dates imposed by schedule and any actual dates of completion for implementation steps listed below. Indicate dates as accurately as possible. (see instructions)

Implementation Steps

- a. Preliminary plan complete
- b. Final plan submission
- c. Final plan complete
- d. Financing complete & contract awarded
- e. Site acquired
- f. Begin action (e.g., construction)
- g. End action (e.g., construction)
- h. Discharge Began
- i. Operational level attained

2. Schedule (Yr./Mo./Day)

302a	___/___/___
302b	___/___/___
302c	___/___/___
302d	___/___/___
302e	___/___/___
302f	___/___/___
302g	___/___/___
302h	___/___/___
302i	___/___/___

3. Actual Completion (Yr./Mo./Day)

302a	___/___/___
302b	___/___/___
302c	___/___/___
302d	___/___/___
302e	___/___/___
302f	___/___/___
302g	___/___/___
302h	___/___/___
302i	___/___/___

302f, g - Installation of the two package sewage treatment plants serving the construction work force will be completed approximately 13 months after commencement of site preparation activities. Plant should be operational approximately 1 month thereafter.