

V.C. Summer Nuclear Station  
Bradham Blvd & Hwy 215, Jenkinsville, SC 29065  
Mailing Address:  
P.O. Box 88, Jenkinsville, SC 29065  
DominionEnergy.com



September 14, 2022

Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Serial No.: 22-292  
VCS-LIC/TS R0  
Docket No. 50-395  
License No. NPF-12

**DOMINION ENERGY SOUTH CAROLINA (DESC)**  
**VIRGIL C. SUMMER NUCLEAR STATION (VCSNS) UNIT 1**  
**NPDES PERMIT SC0030856**

As a requirement of the Operating License NPF-12, Appendix B, for the Virgil C. Summer Nuclear Station, Dominion Energy South Carolina, Inc. submits a copy of renewed National Pollutant Discharge Elimination System Permit No. SC0030856.

This permit was reissued on August 9, 2022, with an effective date of September 1, 2022. This permit ensures that all discharges from the plant to Monticello Reservoir and Broad River/Parr Reservoir meet the Federal and State guidelines.

Should you have any questions, please call Mr. Michael Moore at (803) 345-4752.

Sincerely,

A handwritten signature in black ink, appearing to read "George A. Lippard".

George A. Lippard  
Site Vice President  
V.C. Summer Nuclear Station

Enclosure: Dominion Energy South Carolina Inc/V C Summer Nuclear Station  
NPDES Permit # SC0030856

Commitments contained in this letter: None

cc: G. J. Lindamood – Santee Cooper  
L. Dudes – NRC Region II  
G. Miller – NRC Project Mgr.  
NRC Resident Inspector



August 9, 2022

Tracey Stewart  
Dominion Energy South Carolina, Inc  
V.C. Summer Nuclear Station  
PO BOX 88, MC 830  
JENKINSVILLE, SC 29065

Re: Department Decision  
DOMINION ENERGY SOUTH CAROLINA INC/V C SUMMER NUCLEAR STATION  
NPDES Permit # SC0030856  
Fairfield County

Dear Tracey Stewart:

Enclosed is the National Pollutant Discharge Elimination system (NPDES) Permit for the above referenced facility.

In order that you understand your responsibilities included in the provisions of this permit, particular attention should be given to the following sections:

1. PART II.E: This section contains responsibilities for the proper operation and maintenance of your facility.
2. PART II.L.3: This section describes the specific requirements for the permit to be transferred to another party.
3. PART II.L.4: This section contains your responsibilities for reporting monitoring results. Preprinted Discharge Monitoring Report (DMR) forms will be provided at a later date by DHEC for reporting monitoring results.
4. PART III: This section contains all listings of effluent characteristics, discharge limitations, and groundwater, soil and sludge monitoring.
5. PART V: This section contains all the special requirements relative to your permit. Such items in this section include the certified operator required to operate your wastewater treatment plant, the day of the week on which monitoring shall occur, sludge disposal requirements, and whole effluent toxicity requirements.

Please note the effective date on the permit and see the enclosed South Carolina Board of Health and Environmental Control Guide to Board Review.

If you have any questions about the technical aspects of this permit, please contact Melanie K Townley at 803-898-4223. Information pertaining to adjudicatory matters may be obtained by contacting the Legal Office, SCDHEC, 2600 Bull Street, Columbia, SC 29201, or by calling them at (803) 898-3350.

Sincerely,



Crystal Rippey, Manager  
Industrial Wastewater Permitting Section

---

Enclosures

email w/encl: EPA

Jacob Oblander, Compliance Manager, BOW/WPC Enforcement

Veronica Barringer, Midlands EA Columbia

Melanie K Townley, BOW

Carolyn T Moores, BOW, Groundwater Protection & Agricultural Permitting

# National Pollutant Discharge Elimination System Permit

(for Discharge to Surface Waters)

This NPDES Permit Authorizes  
***Dominion Energy South Carolina, Inc.***  
***Virgil C. Summer Nuclear Station***

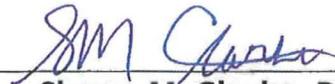
to discharge from a facility located at

***Highway 215  
Jenkinsville, SC  
Fairfield County***

to receiving waters named

***Outfall 001 and 014: Monticello Reservoir  
Outfall 003: Broad River/Parr Reservoir***

in accordance with limitations, monitoring requirements and other conditions set forth herein. This permit is issued in accordance with the provisions of the Pollution Control Act of South Carolina (S.C. Code Sections 48-1-10 *et seq.*, 1976), Regulation 61-9 and with the provisions of the Federal Clean Water Act (PL 92-500), as amended, 33 U.S.C. 1251 *et seq.*, the "Act."



**Shawn M. Clarke, P.E., Director  
Water Facilities Permitting Division**

***Issue Date:*** August 9, 2022  
***Effective Date:*** September 1, 2022

***Expiration Date<sup>1</sup>:*** August 31, 2027  
***Permit No.:*** SC0030856

<sup>1</sup> This permit will continue to be in effect beyond the expiration date if a complete timely re-application is received pursuant to Regulation 61-9.122.6 and signed per Regulation 61-9.122.22.



S.C. Department of Health and  
Environmental Control

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## **PART I. Definitions**

Any term not defined in this Part has the definition stated in the Pollution Control Act or in "Water Pollution Control Permits", R.61-9 or its normal meaning.

- A. The "Act", or CWA, shall refer to the Clean Water Act (Formerly referred to as the Federal Water Pollution Control Act) Public Law 92-500, as amended.
- B. The "average" or "arithmetic mean" of any set of values is the summation of the individual values divided by the number of individual values.
- C. "Basin" (or "Lagoon") means any in-ground or earthen structure designed to receive, treat, store, temporarily retain and/or allow for the infiltration/evaporation of wastewater.
- D. "Blowdown" means the minimum discharge of recirculating water for the purpose of discharging materials contained in the water, the further buildup of which would cause concentration in amounts exceeding limits established by best engineering practices.
- E. "Bottom ash" means the ash that drops out of the furnace gas stream in the furnace and in the economizer sections. Economizer ash is included when it is collected with bottom ash (40 CFR 423.11(f)).
- F. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.
- G. "Chemical metal cleaning waste" means any wastewater resulting from the cleaning of any metal process equipment with chemical compounds, including, but not limited to, boiler tube cleaning (40 CFR 423.11(c)).
- H. "Coal pile runoff" means the rainfall runoff from or through any coal storage pile (40 CFR 423.11(m)).
- I. A "composite sample" shall be defined as one of the following four types:
  - 1. An influent or effluent portion collected continuously over a specified period of time at a rate proportional to the flow.
  - 2. A combination of not less than 8 influent or effluent grab samples collected at regular (equal) intervals over a specified period of time and composited by increasing the volume of each aliquot in proportion to flow. If continuous flow measurement is not used to composite in proportion to flow, the following method will be used: An instantaneous flow measurement should be taken each time a grab sample is collected. At the end of the sampling period, the instantaneous flow measurements should be summed to obtain a total flow. The instantaneous flow measurement can then be divided by the total flow to determine the percentage of each grab sample to be combined. These combined samples form the composite sample.
  - 3. A combination of not less than 8 influent or effluent grab samples of equal volume but at variable time intervals that are inversely proportional to the volume of the flow. In other words, the time interval between aliquots is reduced as the volume of flow increases.

4. If the effluent flow varies by less than 15 percent, a combination of not less than 8 influent or effluent grab samples of constant (equal) volume collected at regular (equal) time intervals over a specified period of time.

All samples shall be properly preserved in accordance with Part II.J.4. Continuous flow or the sum of instantaneous flows measured and averaged for the specified compositing time period shall be used with composite results to calculate mass.

- J. "Daily discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the day.
- K. "Daily maximum" is the highest average value recorded of samples collected on any single day during the calendar month.
- L. "Daily minimum" is the lowest average value recorded of samples collected on any single day during the calendar month.
- M. The "Department" or "DHEC" shall refer to the South Carolina Department of Health and Environmental Control.
- N. "Fly ash" means the ash that is carried out of the furnace by the gas stream and collected by mechanical precipitators, electrostatic precipitators, and/or fabric filters. Economizer ash is included when it is collected with fly ash (40 CFR 423.11(e)).
- O. The "geometric mean" of any set of values is the Nth root of the product of the individual values where N is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For purposes of calculating the geometric mean, values of zero (0) shall be considered to be one (1).
- P. A "grab sample" is an individual, discrete or single influent or effluent portion of at least 100 milliliters collected at a time representative of the discharge and over a period not exceeding 15 minutes and retained separately for analysis.
- Q. "Groundwater" means the water below the land surface found in fractured rock or various soil strata.
- R. "Low volume waste sources" include, but are not limited to: wastewaters from wet scrubber air pollution control systems, ion exchange water treatment systems, water treatment evaporator blowdown, laboratory and sampling streams, boiler blowdown, floor drains, cooling tower basin cleaning wastes, and recirculating house service water systems. Sanitary and air conditioning wastes are not included (40 CFR 423.11(b)).
- S. The "maximum or minimum" is the highest or lowest value, respectively, recorded of all samples collected during the calendar month. These terms may also be known as the instantaneous maximum or minimum.

- T. "Metal cleaning waste" means any wastewater resulting from cleaning [with or without chemical cleaning compounds] any metal process equipment including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air preheater cleaning (40 CFR 423.11(d)).
- U. "Monitoring well" means any well used to sample groundwater for water quality analysis or to measure groundwater levels.
- V. The "monthly average", other than for fecal coliform, E. Coli and enterococci, is the arithmetic mean of all samples collected in a calendar month period. The monthly average for fecal coliform, E. Coli and enterococci bacteria is the geometric mean of all samples collected in a calendar month period. The monthly average loading is the arithmetic average of all daily discharges made during the month.
- W. "Once through cooling water" means water passed through the main cooling condensers in one or two passes for the purpose of removing waste heat (40 CFR 423.11(g)).
- X. The "PCA" shall refer to the Pollution Control Act (Chapter 1, Title 48, Code of Laws of South Carolina).
- Y. The "practical quantitation limit" (PQL) is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. It is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method-specific sample weights, volumes, and processing steps have been followed. It is also referred to as the reporting limit.
- Z. "Quarter" is defined as the first three calendar months beginning with the month that this permit becomes effective and each group of three calendar months thereafter.
- AA. "Quarterly average" is the arithmetic mean of all samples collected in a quarter.
- BB. "Recirculated cooling water" means water which is passed through the main condensers for the purpose of removing waste heat, passed through a cooling device for the purpose of removing such heat from the water then passed again, except for blowdown, through the main condenser (40 CFR 423.11(h)).
- CC. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
- DD. "Sludge" means industrial sludge. Industrial sludge is a solid, semi-solid, or liquid residue generated during the treatment of industrial wastewater in a treatment works. Industrial sludge includes, but is not limited to, industrial septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from industrial sludge. Industrial sludge does not include ash generated during the firing of industrial sludge in an industrial sludge incinerator or grit and screenings generated during preliminary treatment of industrial wastewater in a treatment works. Industrial sludge by definition does not include sludge covered under 40 CFR Part 503 or R.61-9.503.

- EE. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- FF. "Wastewater" means industrial wastewater. Industrial wastewater is wastewater generated from a federal facility, commercial or industrial process, including waste and wastewater from humans when generated at an industrial facility.

## **PART II. Standard Conditions**

### **A. Duty to comply**

The permittee must comply with all conditions of the permit. Any permit noncompliance constitutes a violation of the Clean Water Act and the Pollution Control Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. The Department's approval of wastewater facility plans and specifications does not relieve the permittee of responsibility to meet permit limits.

1. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
2. Failure to comply with permit conditions or the provisions of this permit may subject the permittee to civil penalties under S.C. Code Section 48-1-330 or criminal sanctions under S.C. Code Section 48-1-320. Sanctions for violations of the Federal Clean Water Act may be imposed in accordance with the provisions of 40 CFR Part 122.41(a)(2) and (3).
3. A person who violates any provision of this permit, a term, condition or schedule of compliance contained within this NPDES permit, or the State law is subject to the actions defined in the State law.

### **B. Duty to reapply**

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. A permittee with a currently effective permit shall submit a new application 180 days before the existing permit expires, unless permission for a later date has been granted by the Department. The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.

### **C. Need to halt or reduce activity not a defense**

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

### **D. Duty to mitigate**

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

### **E. Proper operation and maintenance**

1. The permittee shall at all times properly operate and maintain in good working order and operate as efficiently as possible all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes effective performance based on design facility removals, adequate funding, adequate operator staffing and training and also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
2. Power Failures. In order to maintain compliance with effluent limitations and prohibitions of this permit, the permittee shall either:
  - a. provide an alternative power source sufficient to operate the wastewater control facilities;
  - b. or have a plan of operation which will halt, reduce, or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.
3. The permittee shall develop and maintain at the facility a complete Operations and Maintenance Manual for the waste treatment facilities. The manual shall be made available for on-site review during normal working hours. The manual shall contain operation and maintenance instructions for all equipment and appurtenances associated with the waste treatment facilities and land application system, if applicable. The manual shall contain a general description of the treatment process(es), the operational procedures to meet the requirements of E.1 above, and the corrective action to be taken should operating difficulties be encountered.
4. The permittee shall provide for the performance of daily treatment facility inspections by a certified operator of the appropriate grade as defined in Part V.E of this permit. The Department may make exceptions to the daily operator requirement in accordance with R.61-9.122.41(e)(3)(ii). The inspections shall include, but should not necessarily be limited to, areas which require visual observation to determine efficient operation and for which immediate corrective measures can be taken using the O & M manual as a guide. All inspections shall be recorded and shall include the date, time, and name of the person making the inspection, corrective measures taken, and routine equipment maintenance, repair, or replacement performed. The permittee shall maintain all records of inspections at the permitted facility as required by the permit, and the records shall be made available for on-site review during normal working hours.
5. A roster of operators associated with the facility's operation and their certification grades shall be maintained onsite and be made available to the Department upon request.
6. Wastewater Sewer Systems
  - a. Purpose. This section establishes rules for governing the operation and maintenance of wastewater sewer systems, including gravity or pressure interceptor sewers. It is the purpose of this section to establish standards for the management of sewer systems to prevent and/or minimize system failures that would lead to public health or environmental impacts.

- b. **Applicability.** This section applies to all sewer systems that have been or would be subject to a DHEC construction permit under Regulation 61-67 and whose owner owns or operates the wastewater treatment system to which the sewer discharges.
  
- c. **General requirements.** The permittee must:
  - (1) Properly manage, operate, and maintain at all times all parts of its sewer system(s), to include maintaining contractual operation agreements to provide services, if appropriate;
  - (2) Provide adequate capacity to convey base flows and peak flows for all parts of the sewer system or, if capital improvements are necessary to meet this standard, develop a schedule of short and long term improvements;
  - (3) Take all reasonable steps to stop and mitigate the impact of releases of wastewater to the environment; and
  - (4) Notify the Department within 30 days of a proposed change in ownership of a sewer system.

F. **Permit actions**

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

G. **Property rights**

This permit does not convey any property rights of any sort, or any exclusive privilege nor does it authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

H. **Duty to provide information**

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

I. **Inspection and entry**

The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:

- 1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act and Pollution Control Act, any substances or parameters at any location.

J. Monitoring and records

1. a. (1) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.  
  
(2) Samples shall be reasonably distributed in time, while maintaining representative sampling.  
  
(3) No analysis, which is otherwise valid, shall be terminated for the purpose of preventing the analysis from showing a permit or water quality violation.

b. Flow Measurements.

- (1) Where primary flow meters are required, appropriate flow measurement devices and methods consistent with accepted scientific practices shall be present and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to ensure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10% from the true discharge rates throughout the range of expected discharge volumes. The primary flow device, where required, must be accessible to the use of a continuous flow recorder.
  - (2) Where permits require an estimate of flow, the permittee shall maintain at the permitted facility a record of the method(s) used in estimating the discharge flow (e.g., pump curves, production charts, water use records) for the outfall(s) designated on limits pages to monitor flow by an estimate.
  - (3) Records of any necessary calibrations must be kept.
2. Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by R.61-9.503 or R.61-9.504), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

3. Records of monitoring information shall include:
  - a. The date, exact place, and time of sampling or measurements;
  - b. The individual(s) who performed the sampling or measurements;
  - c. The date(s) analyses were performed;
  - d. The individual(s) who performed the analyses;
  - e. The analytical techniques or methods used; and
  - f. The results of such analyses.
4. a. Analyses for required monitoring must be conducted according to test procedures approved under 40 CFR Part 136, equivalent test procedures approved by the Department or other test procedures that have been specified in the permit.

In the case of sludge use or disposal, analysis for required monitoring must be conducted according to test procedures approved under 40 CFR Part 136, test procedures specified in R.61-9.503 or R.61-9.504, equivalent test procedures approved by the Department or other test procedures that have been specified in the permit.

- b. Unless addressed elsewhere in this permit, the permittee shall use a sufficiently sensitive analytical method that achieves a value below the derived permit limit stated in Part III. For the purposes of reporting analytical data on the Discharge Monitoring Report (DMR):
  - (1) Analytical results below the PQL conducted using a method in accordance with Part II.J.4.a above shall be reported as zero (0). Zero (0) shall also be used to average results which are below the PQL. When zero (0) is reported or used to average results, the permittee shall report, in the "General Report Comments Section" of the DMR, the analytical method used, the PQL achieved, and the number of times results below the PQL were reported as zero (0).
  - (2) Analytical results above the PQL conducted using a method in accordance with Part II.J.4.a shall be reported as the value achieved. When averaging results using a value containing a "less than," the average shall be calculated using the value and reported as "less than" the average of all results collected.
  - (3)(a) The mass value for a pollutant collected using a grab sample shall be calculated using the 24-hour totalized flow for the day the sample was collected (if available) or the instantaneous flow at the time of the sample and either the concentration value actually achieved or the value as determined from the procedures in (1) or (2) above, as appropriate. Grab samples should be collected at a time representative of the discharge.
  - (b) The mass value for a pollutant collected using a composite sample shall be calculated using the 24-hour totalized flow measured for the day the sample was collected and either the

concentration value actually achieved or the value as determined from the procedures in (1) or (2) above, as appropriate.

5. The PCA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$25,000 or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment provided by the Clean Water Act is also by imprisonment of not more than 4 years.

K. Signatory requirement.

1. All applications, reports, or information submitted to the Department shall be signed and certified.

- a. Applications. All permit applications shall be signed as follows:

- (1) For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

- (a) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or

- (b) The manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

- (2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

- (3) For a municipality, State, Federal, or other public agency or public facility: By either a principal executive officer, mayor, or other duly authorized employee or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

- (a) The chief executive officer of the agency, or

- (b) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator, Region 4, EPA).

- b. All reports required by permits, and other information requested by the Department, shall be signed by a person described in Part II.K.1.a of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

- (1) The authorization is made in writing by a person described in Part II.K.1.a of this section;
- (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) and,

(3) The written authorization is submitted to the Department.

- c. Changes to authorization. If an authorization under Part II.K.1.b of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part II.K.1.b of this section must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.
- d. Certification. Any person signing a document under Part II.K.1.a or b of this section shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

2. The PCA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$25,000 per violation, or by imprisonment for not more than two years per violation, or by both.

#### L. Reporting requirements

##### 1. Planned changes.

The permittee shall give written notice to DHEC/Bureau of Water/Water Facilities Permitting Division as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

- a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in R 61-9.122.29(b); or
- b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under Part II.L.8 of this section.

- c. The alteration or addition results in a significant change in the permittee's sewage sludge or industrial sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan (included in the NPDES permit directly or by reference);

2. Anticipated noncompliance.

The permittee shall give advance notice to the DHEC/Bureau of Water/Water Pollution Control Division of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers.

This permit is not transferable to any person except after written notice to the DHEC/Bureau of Water/NPDES Administration. The Department may require modification or revocation and reissuance of the permit to change the name of permittee and incorporate such other requirements as may be necessary under the Pollution Control Act and the Clean Water Act.

- a. Transfers by modification. Except as provided in paragraph b of this section, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued (under R.61-9.122.62(e)(2)), or a minor modification made (under R.61-9.122.63(d)), to identify the new permittee and incorporate such other requirements as may be necessary under CWA.

- b. Other transfers. As an alternative to transfers under paragraph a of this section, any NPDES permit may be transferred to a new permittee if:

- (1) The current permittee notifies the Department at least 30 days in advance of the proposed transfer date in Part II.L.3.b(2) of this section;

- (2) The notice includes U.S. EPA NPDES Application Form 1 and a written agreement between the existing and new permittee containing a specific date for transfer of permit responsibility, coverage, and liability between them; and

- (3) Permits are non-transferable except with prior consent of the Department. A modification under this section is a minor modification which does not require public notice.

4. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit. Monitoring periods are calculated beginning with the permit effective date unless otherwise stated elsewhere in this permit. If the permit is modified, monitoring periods are calculated beginning with the modification effective date for those items that are part of the modification unless otherwise stated elsewhere in this permit.

- a. Monitoring results must be reported online via an electronic Discharge Monitoring Report (DMR) or schedule specified by the Department for reporting results of monitoring of groundwater or sludge use or disposal practices including the following:

- (1) Effluent Monitoring: Effluent monitoring results obtained at the required frequency shall be reported on a Discharge Monitoring Report Form. The completed DMR must be submitted via ePermitting no later than 11:59 PM on the 28th day of the month following the end of the monitoring period.

The permittee shall use the electronic DMR system via ePermitting. If the permittee encounters technical difficulties using the electronic DMR system, contact DHEC for technical assistance at [epermittinghelp@dhec.sc.gov](mailto:epermittinghelp@dhec.sc.gov). Please contact the Compliance Manager for your permit to obtain approval to submit paper DMRs until the technical issue is resolved.

- (2) Groundwater Monitoring: Groundwater monitoring results obtained at the required frequency shall be reported on a Groundwater Monitoring Report (GMR). The GMR must be submitted via ePermitting no later than 11:59 PM on the 28th day of the month following the end of the monitoring period.

The permittee shall use the electronic GMR schedule via ePermitting. If the permittee encounters technical difficulties using the electronic GMR schedule, contact DHEC for technical assistance at [epermittinghelp@dhec.sc.gov](mailto:epermittinghelp@dhec.sc.gov). Please contact [gmrsubmissions@dhec.sc.gov](mailto:gmrsubmissions@dhec.sc.gov) to obtain approval to submit paper GMRs until the technical issue is resolved.

- (3) Sludge, Biosolids and/or Soil Monitoring: Sludge, biosolids and/or soil monitoring results obtained at the required frequency shall be reported in a laboratory format on a schedule submitted via ePermitting no later than 11:59 PM on the 28th day of the month following the end of the monitoring period

The permittee shall use the electronic reports via ePermitting. If the permittee encounters technical difficulties using the electronic report schedule, contact DHEC for technical assistance at [epermittinghelp@dhec.sc.gov](mailto:epermittinghelp@dhec.sc.gov). Please contact the Compliance Manager for your permit to obtain approval to submit paper DMRs until the technical issue is resolved.

- (4) All other reports and submissions required by this permit shall be submitted via ePermitting no later than 11:59 PM on the 28th day of the month following the end of the monitoring period unless otherwise specified in this permit.

The permittee shall use the electronic reports via ePermitting. If the permittee encounters technical difficulties using the electronic report schedule, contact DHEC for technical assistance at [epermittinghelp@dhec.sc.gov](mailto:epermittinghelp@dhec.sc.gov). Please contact the Compliance Manager for your permit to obtain approval to submit paper DMRs until the technical issue is resolved.

- b. If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in R.61-9.503 or R.61-9.504, or as specified in the permit, all

valid results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Department. The permittee has sole responsibility for scheduling analyses, other than for the sample date specified in Part V, so as to ensure there is sufficient opportunity to complete and report the required number of valid results for each monitoring period.

- c. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Department in the permit.

5. Twenty-four hour reporting

- a. The permittee/system owner (or applicable representative) (hereafter permittee/system owner) shall report any non-compliance that meets the criteria in Part II.L.5.b. Any information shall be provided orally or electronically to the local DHEC office as soon as possible but no later than 24 hours from the time the permittee/system owner becomes aware of the circumstances. During normal working hours (8:30 AM - 5:00 PM Eastern Standard Time) call the appropriate regional office in the table below.

County	DHEC Region	Phone No.
Fairfield, Lexington, Newberry, Richland	Midlands Region BEHS Columbia	803-896-0620

\* After hour reporting should be made to the 24-hour Emergency Response telephone number 1-888-481-0125.

A follow-up report shall also be provided to DHEC within 5 days of the time the permittee/system owner becomes aware of the circumstances. For sanitary sewer overflows (SSOs), the 'WW Sewer System Overflow or Pump Station Failure Reporting' schedule (in ePermitting) should be used. For all other non-compliance meeting the criteria of II.L.5.b, the '5-Day Reporting' schedule (in ePermitting) should be used. If the permittee encounters technical difficulties using the electronic report schedule in ePermitting, a written submission using DHEC Form 3685 (or submission with equivalent information) should be submitted to the address below. For ePermitting technical assistance, contact DHEC at [epermittinghelp@dhec.sc.gov](mailto:epermittinghelp@dhec.sc.gov). The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

S.C. Department of Health and Environmental Control  
Bureau of Water/Water Pollution Control Division  
Data and Records Management Section  
2600 Bull Street  
Columbia, South Carolina 29201

- b. The following shall be included as information which must be reported within 24 hours under this paragraph.
  - (1) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See R.61-9.122.44(g)).

- (2) Any upset which exceeds any effluent limitation in the permit.
- (3) Violation of a maximum daily discharge limitation for any of the pollutants listed below (See R 61-9.122.44(g)):  
Total Copper
- (4) Any non-compliance with the conditions of this permit which may endanger human health or the environment.
- (5) Any spill or release of untreated wastewater that reaches the surface waters of the State.

[Note: When investigating a potential release due to a problem with a pump station, the investigation should include an evaluation of upstream manholes.]

- c. The Department may waive the written report on a case-by-case basis for reports under Part II.L.5.b of this section if the oral report has been received within 24 hours.

6. Other noncompliance.

The permittee shall report all instances of noncompliance not reported under Part II.L.4 and 5 of this section and Part IV at the time monitoring reports are submitted. The reports shall contain the information listed in Part II.L.5 of this section.

7. Other information.

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information to the Water Facilities Permitting Division. This information may result in permit modification, revocation and reissuance, or termination in accordance with Regulation 61-9.

8. Existing manufacturing, commercial, mining, and silvicultural dischargers.

In addition to the reporting requirements under Part II.L.1-7 of this section, all existing manufacturing, commercial, mining, and silvicultural dischargers must notify the DHEC/Bureau of Water/Water Pollution Control Division of the Department as soon as they know or have reason to believe:

- a. That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

- (1) One hundred micrograms per liter (100 µg/l);
- (2) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

- (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application; or
  - (4) The level established by the Department in accordance with section R.61-9.122.44(f).
- b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed in the highest of the following "notification levels":
- (1) Five hundred micrograms per liter (500 µg/l);
  - (2) One milligram per liter (1 mg/l) for antimony;
  - (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with R.61-9.122.21(g)(7).
  - (4) The level established by the Department in accordance with section R.61-9.122.44(f).

#### M. Bypass

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Part II.M.2 and 3 of this section.
2. Notice.
  - a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible, at least ten days before the date of the bypass to the DHEC/Bureau of Water/ Water Facilities Permitting Division.
  - b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Part II.L.5 of this section.
3. Prohibition of bypass
  - a. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
    - (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
    - (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(3) The permittee submitted notices as required under Part II.M.2 of this section.

- b. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three conditions listed above in Part II.M.3.a of this section.

#### N. Upset

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Part II.N.2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
  - a. An upset occurred and that the permittee can identify the cause(s) of the upset;
  - b. The permitted facility was at the time being properly operated; and
  - c. The permittee submitted notice of the upset as required in Part II.L.5.b(2) of this section.
  - d. The permittee complied with any remedial measures required under Part II.D of this section.
3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

#### O. Misrepresentation of Information

1. Any person making application for a NPDES discharge permit or filing any record, report, or other document pursuant to a regulation of the Department, shall certify that all information contained in such document is true. All application facts certified to by the applicant shall be considered valid conditions of the permit issued pursuant to the application.
2. Any person who knowingly makes any false statement, representation, or certification in any application, record, report, or other documents filed with the Department pursuant to the State law, and the rules and regulations pursuant to that law, shall be deemed to have violated a permit condition and shall be subject to the penalties provided for pursuant to 48-1-320 or 48-1-330.

**Part III. Limitations and Monitoring Requirements**

**A. Effluent Limitations and Monitoring Requirements**

1. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from final outfall serial number 001: once through non-contact cooling water and low volume waste regulated at internal outfalls 004 and 007. Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Sampling Frequency	Sample Type
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	Continuous	Continuous <sup>2</sup>
pH	-	-	Min 6.0 su, Max 8.5 su <sup>3</sup>		1/Month	Grab
Discharge Temperature <sup>4</sup>	-	-	MR <sup>1</sup> °F	113°F	Continuous	Continuous
Intake Temperature <sup>5</sup>	-	-	MR <sup>1</sup> °F	MR <sup>1</sup> °F	Continuous	Continuous

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

<sup>3</sup>See Part I.5

<sup>4</sup>Discharge samples shall be collected in accordance with "a" below.

<sup>5</sup>Intake samples shall be monitored on the inlet side of the main condenser.

- a. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): after the combination of all waste streams but prior to mixing with the receiving stream.
- b. There shall be no addition of chlorine to the main condenser cooling system or to the other cooling services.

2. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from internal outfall serial number 004: low volume waste. Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Sampling Frequency	Sample Type
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	1/Month	Calculation <sup>2</sup>
Total Suspended Solids	-	-	30 mg/l	100 mg/l	1/Month	Grab
Oil and Grease	-	-	15 mg/l	20 mg/l	1/Month	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>004 Flow shall be the sum of the flows from each continuously monitored steam generator blowdown line.

- a. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): after the discharge of steam generator blowdown treatment but prior to mixing with other waste streams or the receiving stream.
  - b. Internal Outfall 004 regularly discharges to final outfall 001 however as alternate pathways this discharge may be routed through final outfall 003 or through internal outfall 06A to final outfall 014.
3. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from internal outfall serial number 007: low volume waste. Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Sampling Frequency	Sample Type
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	1/Month	Instantaneous <sup>2</sup>
Total Suspended Solids	-	-	30 mg/l	100 mg/l	1/Month	Grab
Oil and Grease	-	-	15 mg/l	20 mg/l	1/Month	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

- a. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): after the discharge from the neutralization basin but prior to mixing with other waste streams or the receiving stream.
- b. Internal Outfall 007 discharges to final outfall 001.

4. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from final outfall serial number 003: low volume waste and non-chemical metal cleaning waste. Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Sampling Frequency	Sample Type
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	1/Month	Estimate <sup>2</sup>
pH	-	-	Min 6.0 su, Max 9.0 su <sup>3</sup>		1/Month	Grab
Total Suspended Solids	-	-	30 mg/l	100 mg/l	1/Month	Grab
Oil and Grease	-	-	15 mg/l	20 mg/l	1/Month	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

<sup>3</sup>See Part I.S

- a. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): after final treatment but prior to mixing with the receiving stream.
5. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from final outfall serial number 014: the combination of internal outfalls 005, 06A, 06B and 008. Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Sampling Frequency	Sample Type
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	Continuous	Continuous <sup>2</sup>
pH	-	-	Min 6.0 su, Max 8.5 su <sup>3</sup>		1/Month	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

<sup>3</sup>See Part I.S

- a. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): after the combination of internal outfalls 005, 06A, 06B and 008 but prior to mixing with the receiving stream.

6. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from final outfall serial number 005: sanitary wastewater. Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Sampling Frequency	Sample Type
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	1/Month	Instantaneous <sup>2</sup>
Biochemical Oxygen Demand (BOD <sub>5</sub> )	-	-	30 mg/l	45 mg/l	1/Month	24 Hr. Comp.
Total Suspended Solids (TSS)	-	-	30 mg/l	45 mg/l	1/Month	24 Hr. Comp.
E.Coli	-	-	126/100 ml	349/100 ml	1/Month	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

- a. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): after discharge from the dechlorination tank but prior to mixing with other waste streams or the receiving stream.
- b. Internal Outfall 005 discharges to final outfall 014.
7. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from final outfall serial number 06A: low volume waste. Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Sampling Frequency	Sample Type
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	1/Month	Instantaneous <sup>2</sup>
Total Suspended Solids (TSS)	-	-	30 mg/l	100 mg/l	1/Month	Grab
Oil and Grease	-	-	15 mg/l	20 mg/l	1/Month	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

- a. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): after discharge from the alum sludge basin but prior to mixing with other waste streams or the receiving stream.
- c. Internal Outfall 06A discharges to final outfall 014.

8. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from final outfall serial number 06B: low volume waste. Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Sampling Frequency	Sample Type
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	1/Month	Instantaneous <sup>2</sup>
Total Suspended Solids (TSS)	-	-	30 mg/l	98 mg/l	1/Month	Grab
Oil and Grease	-	-	15 mg/l	19 mg/l	1/Month	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

- a. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): after discharge from the plant waste surge basin but prior to mixing with other waste streams or the receiving stream.
- b. Internal Outfall 06B discharges to final outfall 014.

9. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from final outfall serial number 008: low volume waste, non-chemical metal cleaning waste and chemical metal cleaning wastes. Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Sampling Frequency	Sample Type
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	1/Month	Instantaneous <sup>2</sup>
Total Suspended Solids (TSS)	-	-	30 mg/l	100 mg/l	1/Month	Grab
Oil and Grease	-	-	15 mg/l	20 mg/l	1/Month	Grab
Total Copper <sup>3</sup>	-	-	1.0 mg/l	1.0 mg/l	1/Month	Grab
Iron <sup>3</sup>	-	-	1.0 mg/l	1.0 mg/l	1/Month	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

<sup>3</sup>Sampling is required only when chemical metal cleaning wastes are discharged. Report "Conditional Monitoring" on the discharge monitoring report form when chemical metal cleaning waste are not discharged during the monitoring period.

- a. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): after discharge from the plant startup waste holding basin but prior to mixing with other waste streams or the receiving stream.
- b. Internal Outfall 008 discharges to final outfall 014.

B. Whole Effluent Toxicity and Other Biological Limitations and Monitoring Requirements

1. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from outfall 014: the combination of internal outfalls 005, 06A, 06B and 008. Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS	
	Daily Minimum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
<i>Ceriodaphnia dubia</i> Chronic Whole Effluent Toxicity @ CTC= 100%	-	MR <sup>1</sup> %	MR <sup>1</sup> %	Once/5 Years	Grab
<i>Ceriodaphnia dubia</i> LC50 – 48-hour Acute <sup>2</sup>	MR <sup>1</sup>	-	-	Once/5 Years	Calculated
<i>Ceriodaphnia dubia</i> IC25 – 7-day Chronic	MR <sup>1</sup>	-	-	Once/5 Years	Calculated

See Part V.B. for additional toxicity reporting requirements.

<sup>1</sup>MR = Monitor and Report.

<sup>2</sup>The permittee shall report the LC50 at 48-hours from the chronic WET test.

The following notes apply only to valid tests. For invalid tests see Part V.B.

Note 1: The overall % effect is defined as the larger of the % survival effect or the % reproduction effect.

Note 2: If only one test is conducted during a month, the monthly average and daily maximum are each equal to the overall % effect.

Note 3: If more than one test is conducted during a month, the monthly average is the arithmetic mean of the overall % effect values of all tests conducted during the month.

Note 4: The monthly average to be reported on the DMR is the highest monthly average for any month during the monitoring period. There is no averaging of data from tests from one month to another.

Note 5: The daily maximum to be reported on the DMR is the highest of the % survival effect or % reproduction effect of all tests conducted during the monitoring period.

Note 6: The daily minimum to be reported on the DMR is the minimum IC25 and LC50 of all tests conducted during the monitoring period.

Note 7: When a sample is collected in one month and the test is completed in the next month, the overall % effect applies to the month in which the sample was collected.

Note 8: Tests must be separated by at least 7 days (from the time the first sample is collected to start one test until the time the first sample is collected to start a different test). There is no restriction on when a new test may begin following a failed or invalid test.

Note 9: For any split sample:

- a. Determine the % survival effect and % reproduction effect values separately for each test.
- b. Determine the arithmetic mean of the % survival effects and of the % reproduction effects for all tests.
- c. The monthly average and daily maximum shall be the higher of the % effect values from (b) above.
- d. For the IC25 and the LC50, the daily minimum is the lowest average value recorded of samples collected on any single day during the calendar month.
- e. For the purposes of reporting, split samples are reported as an individual sample regardless of the number of times it is split. All laboratories used shall be identified on the DMR and each test shall be reported individually on the DMR Attachment for Whole Effluent Toxicity Results (in ePermitting).

- a. Samples used to demonstrate compliance with the discharge limitations and monitoring requirements specified above shall be taken at or near the final point-of-discharge but prior to mixing with the receiving waters or other waste streams.

C. Groundwater Monitoring Requirements

- 1. Each of the six (6) groundwater monitoring wells (GW 08A, 9, 12, 13A, 15A and 17) shall be sampled by the permittee as specified below:

Parameter	Measurement Frequency	Sample Method
Water Table Elevation, MSL	Semi-annually	Tape (to the nearest 0.01')
Ammonia	Semi-annually	Pump or Bailer Method
Field pH	Semi-annually	Pump or Bailer Method
Field Specific Conductance	Semi-annually	Pump or Bailer Method
Total Iron	Semi-annually	Pump or Bailer Method
Total Lead	Semi-annually	Pump or Bailer Method
Nitrate	Semi-annually	Pump or Bailer Method
Sulfate	Semi-annually	Pump or Bailer Method
Total Dissolved Solids	Semi-annually	Pump or Bailer Method
Acrolein	Annually	Pump or Bailer Method
Acrylonitrile	Annually	Pump or Bailer Method
Benzene	Annually	Pump or Bailer Method
Bis (Chloromethyl) Ether	Annually	Pump or Bailer Method
Bromoform	Annually	Pump or Bailer Method
Carbon Tetrachloride	Annually	Pump or Bailer Method
Chlorobenzene	Annually	Pump or Bailer Method
Chlorodibromomethane	Annually	Pump or Bailer Method
Chloroethane	Annually	Pump or Bailer Method
2-Chloroethyl vinyl ether	Annually	Pump or Bailer Method
Chloroform	Annually	Pump or Bailer Method
Dichlorobromomethane	Annually	Pump or Bailer Method
Dichlorodifluoromethane	Annually	Pump or Bailer Method
1,1-Dichloroethane	Annually	Pump or Bailer Method
1,2-Dichloroethane	Annually	Pump or Bailer Method
1,1-Dichloroethene	Annually	Pump or Bailer Method

1,2-Dichloropropane	Annually	Pump or Bailer Method
1,3-Dichloropropylene	Annually	Pump or Bailer Method
Ethylbenzene	Annually	Pump or Bailer Method
Methyl bromide	Annually	Pump or Bailer Method
Methyl chloride	Annually	Pump or Bailer Method
Methylene chloride	Annually	Pump or Bailer Method
1,1,2,2-Tetrachloroethane	Annually	Pump or Bailer Method
Tetrachloroethylene	Annually	Pump or Bailer Method
Toluene	Annually	Pump or Bailer Method
1,2-Trans-dichloroethylene	Annually	Pump or Bailer Method
1,1,1-Trichloroethane	Annually	Pump or Bailer Method
1,1,2-Trichloroethane	Annually	Pump or Bailer Method
Trichloroethylene	Annually	Pump or Bailer Method
Trichlorofluoromethane	Annually	Pump or Bailer Method
Vinyl chloride	Annually	Pump or Bailer Method

2. The permittee shall follow the Groundwater Monitoring Sampling Period and Reporting Deadline in the table below for the coordinating Measurement Frequency indicated in the table (in paragraph a.) above:

Measurement Frequency	Sampling Period	Reporting Deadline
Quarterly (Samples must be taken at least 60 days apart.)	January 1 <sup>st</sup> – March 31 <sup>st</sup>	April 28 <sup>th</sup>
	April 1 <sup>st</sup> – June 30 <sup>th</sup>	July 28 <sup>th</sup>
	July 1 <sup>st</sup> – September 30 <sup>th</sup>	October 28 <sup>th</sup>
	October 1 <sup>st</sup> – December 31 <sup>st</sup>	January 28 <sup>th</sup>
Semi-Annually	January 1 <sup>st</sup> – March 31 <sup>st</sup>	April 28 <sup>th</sup>
	July 1 <sup>st</sup> – September 30 <sup>th</sup>	October 28 <sup>th</sup>
Annually	October 1 <sup>st</sup> – December 31 <sup>st</sup>	January 28 <sup>th</sup>

- c. For new in-ground wastewater treatment units or new land application activities, background groundwater quality data must be submitted prior to final approval to place into operation.
- d. Sample collection methods shall be in accordance with the EPA Region 4 Groundwater Sampling Operation Procedure, EPA publication SESDPROC 301-R3, effective March 6, 2013 or most recent version of the EPA Region 4 Groundwater Sampling Operation Procedure. Analytical methods must be EPA-approved, appropriate for the media being analyzed, and must be able to achieve a practical quantitation limit (i.e. reporting limit) below the standard for Class GB groundwater as established in South Carolina Water Classifications and Standards R.61-68 if applicable to the parameter being analyzed.
- e. All groundwater monitoring wells must be properly maintained at all times and are to yield a representative sample of the aquifer. If the groundwater elevation drops to a level that prevents the collection of a sample for two consecutive sampling periods, then this well shall be considered as “rendered unusable.” In accordance with Regulation 61-71, any monitoring well which is destroyed, rendered unusable, or abandoned, shall be reported to the Department, and shall be properly abandoned, revitalized, or replaced. The permittee shall revitalize or replace the dry well within six months after recording the second dry sampling period.

- f. In accordance with R.61-9.505.5(d), "If a deleterious impact to the groundwaters of the State from the permitted use or disposal practices is documented through groundwater monitoring levels exceeding the standards set forth in R.61-68 or a significant adverse trend occurs, then it will be the obligation of the permittee as directed by the Department to conduct an investigation to determine the vertical and horizontal extent of groundwater impact. The Department may require remediation of the groundwater to within acceptable levels for groundwater as set forth in R.61-68."

D. Sludge Monitoring Requirements

Not applicable to this permit.

E. Soil Monitoring Requirements

Not applicable to this permit.

**Part IV. Schedule of Compliance**

A. Schedule(s)

Not applicable to this permit.

- B. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each scheduled date.

## Part V. Other Requirements

### A. Effluent Requirements

1. There shall be no discharge of floating solids or visible foam in other than trace amounts, nor shall the effluent cause a visible sheen on the receiving waters.
2. There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.
3. Unless authorized elsewhere in this permit, the permittee must meet the following requirements concerning maintenance chemicals for the following waste streams: once-through noncontact cooling water, cooling tower blowdown or recirculated cooling water and boiler blowdown. Maintenance chemicals shall be defined as any man-induced additives that may be added to the referenced waste streams.
  - a. Detectable amounts of any of the one hundred and twenty-six priority pollutants is prohibited in the discharge, if the pollutants are present due to the use of maintenance chemicals.
  - b. Slimicides, algicides and biocides are to be used in accordance with registration requirements of the Federal Insecticides, Fungicide and Rodenticide Act.
  - c. The use of maintenance chemicals containing bis(tributyltin) oxide is prohibited.
  - d. Any maintenance chemicals added must degrade rapidly, either due to hydrolytic decomposition or biodegradation.
  - e. Discharges of maintenance chemicals added to waste streams must be limited to concentrations which protect indigenous aquatic populations in the receiving stream.
  - f. The permittee must keep the following documentation on-site for each maintenance chemical used. The information shall be made available for on-site review by Department personnel during normal working hours.
    - (1) Safety Data Sheets (SDS) including name, general composition, and aquatic toxicity information (i.e., NOEC or LC50) for each chemical used;
    - (2) Quantity of each chemical used,
    - (3) Frequency and location of use (including outfall to which it flows), and
    - (4) Information, samples and/or calculations which demonstrate compliance with items (a) – (e) above.
  - g. The permittee shall submit the information in (f) above with each permit renewal application.
  - h. The Department may request submittal of the information in (f) above at any time to determine permit compliance and may modify this permit to include additional monitoring and/or limitations as necessary to protect water quality.

B. Whole Effluent Toxicity and Other Biological Requirements

1. Acute Toxicity

Not applicable to this permit.

2. Chronic Toxicity (For the requirements identified in Part III.B):

a. A *Ceriodaphnia dubia* three brood chronic toxicity test shall be conducted at the frequency stated in Part III.B, Effluent Toxicity Limitations and Monitoring Requirements, using the chronic test concentration (CTC) of 100% and the following test concentrations: 0% (control), 50%, 60%, 71%, 84% and 100% effluent. The permittee may add additional test concentrations without prior authorization from the Department provided that the test begins with at least 10 replicates in each concentration and all data is used to determine permit compliance.

b. The test shall be conducted using EPA Method 1002.0 in accordance with "Short-Term Methods for Estimating Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms," EPA/821/R-02/013 (October 2002).

c. The permittee shall use the linear interpolation method described in "Short-Term Methods for Estimating Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms," EPA/821/R-02/013 (October 2002), Appendix M to estimate the percent effect at the CTC according to the equations in d below.

d. The linear interpolation estimate of percent effect is  $\left(1 - \frac{M_{CTC}}{M_1}\right) * 100$  if the CTC is a tested

concentration. Otherwise, it is 
$$\left(1 - \frac{M_J - \frac{M_{J+1} - M_J}{C_{J+1} - C_J} * C_J + \frac{M_{J+1} - M_J}{C_{J+1} - C_J} * CTC}{M_1}\right) * 100.$$

e. A test shall be invalidated if any part of Method 1002.0 is not followed or if the laboratory is not certified at the time the test is conducted.

f. All valid toxicity test results shall be submitted via the DMR Attachment for Whole Effluent Toxicity Results (in ePermitting) in accordance with Part II.L.4. In addition, results from all invalid tests must be included with this DMR Attachment, including lab control data. The permittee has sole responsibility for scheduling toxicity tests so as to ensure there is sufficient opportunity to complete and report the required number of valid test results for each monitoring period.

g. The permittee is responsible for reporting a valid test during each monitoring period. However, the Department acknowledges that invalid tests may occur. All of the following conditions must be satisfied for the permittee to be in compliance with Whole Effluent Toxicity (WET) testing requirements for a particular monitoring period when a valid test was not obtained.

- (1) A minimum of three (3) tests have been conducted which were invalid in accordance with Part V.B.1.e above;
- (2) The data and results of all invalid tests are to be submitted via the DMR Attachment for Whole Effluent Toxicity Results (in ePermitting);
- (3) At least one additional State-certified laboratory was used after two (2) consecutive invalid tests were determined by the first laboratory. The laboratory ID number(s) of the additional lab(s) shall be reported via the DMR Attachment for Whole Effluent Toxicity Results (in ePermitting); and
- (4) A valid test was reported during each of the previous three reporting periods.

If these conditions are satisfied, the permittee may enter “\*3” in the appropriate boxes on the toxicity DMR and add the statement to the ‘General Reports Comments’ Section of the DMR that “\*3 indicates invalid tests.”

- h. This permit may be modified based on new information that supports a modification in accordance with Regulation 61-9.122.62 and Regulation 61-68.D.

### 3. Instream Macroinvertebrate Assessment

Not applicable to this permit.

### C. Groundwater Requirements

1. Within 120 days of the effective date of this permit, the permittee shall submit to the Department:
  - a. Current site map(s) with labeling that illustrate the components of the wastewater treatment plant (such as basins, tanks, piping, sludge treatment, etc.), groundwater monitoring wells, streams and other waterbodies, property boundaries, and any on-site production wells.
  - b. The ground level elevation and the top of the casing elevation of each groundwater monitoring well measured to within 0.01 feet above mean sea level, unless another measurement accuracy is approved by the Department.

### D. Sludge Requirements

1. The permittee shall apply in writing to the DHEC/Bureau of Water requesting written approval for sludge disposal. A letter of acceptance from the facility that will accept the sludge for disposal or reuse shall be included with the request.
2. This permit does not allow for the land application of alum sludge. The permittee must apply for and receive a permit modification prior to the land application of alum sludge.

### 3. Odor Requirements

- a. The permittee shall not cause, allow, or permit emission into the ambient air of any substance or combinations of substances in quantities that an undesirable level of odor is determined to result unless preventative measures of the type set out below are taken to abate or control the emission to the satisfaction of the Department. Should an odor problem come to the attention of the Department through field surveillance or specific complaints, the Department may determine, in accordance with section 48-1-120 of the Pollution Control Act, if the odor is at an undesirable level by considering the character and degree of injury or interference to:
  - (1) The health or welfare of the people;
  - (2) Plant, animal, freshwater aquatic, or marine life;
  - (3) Property; or
  - (4) Enjoyment of life or use of affected property.
- b. Should the Department determine that an undesirable level of odor exists, the Department may require:
  - (1) The permittee to submit a corrective action plan to address the odor problem,
  - (2) Remediation of the undesirable level of odor within a reasonable timeframe, and
  - (3) In an order, specific methods to address the problem.

E. Other Conditions

1. The permittee shall maintain an all weather access road to the wastewater treatment plant and appurtenances at all times.
2. The wastewater treatment plant is assigned a classification of Group II-Biological. This classification corresponds to an operator with a Grade C-Biological wastewater operator's license.
3. The permittee shall monitor all parameters consistent with conditions established by this permit as follows during every calendar month unless otherwise approved by the Department:

Outfall 001: Sample on the first (1<sup>st</sup>) Thursday of the month

Outfall 003: Sample tank prior to discharge (only one of the two tanks discharges at a time)

Outfall 004: Sample when blowdown is released

Outfall 005: Sample on the first (1<sup>st</sup>) Wednesday of the month

Outfall 06A: Sample on the first (1<sup>st</sup>) Monday of the month

Outfall 06B: Sample on the first (1<sup>st</sup>) Monday of the month

Outfall 007: Sample the first (1<sup>st</sup>) discharge of each month

Outfall 008: Sample once per discharge occurrence but need not be more than once per month

Outfall 014: Sample on the first (1<sup>st</sup>) Thursday of each month (except whole effluent toxicity)

If this day falls on a holiday, sampling shall be conducted on the next business day. If no discharge occurs on this day, the permittee shall collect an effluent sample during the monitoring period on a day when there is a discharge. If there is no discharge during the entire monitoring period, report "no discharge" for all parameters. Additional monitoring as necessary to meet the frequency requirements of this permit shall be performed by the permittee.

4. The permittee shall maintain a Best Management Practices (BMP) plan to identify and control the discharge of significant amounts of oils and the hazardous and toxic substances listed in 40 CFR Part 117 and Tables II and III of Appendix D to 40 CFR Part 122. The plan shall include a listing of all potential sources of spills or leaks of these materials, a method for containment, a description of training, inspection and security procedures, and emergency response measures to be taken in the event of a discharge to surface waters or plans and/or procedures which constitute an equivalent BMP. Sources of such discharges may include materials storage areas; in-plant transfer, process and material handling areas; loading and unloading operations; plant site runoff; and sludge and waste disposal areas. The BMP plan shall be developed in accordance with good engineering practices, shall be documented in narrative form, and shall include any necessary plot plans, drawings, or maps. The BMP plan shall be maintained at the plant site and shall be available for inspection by EPA and Department personnel.
5. The permittee shall not store coal, soil nor other similar erodible materials in a manner in which runoff is uncontrolled, nor conduct construction activities in a manner which produces uncontrolled runoff unless such uncontrolled runoff has been specifically approved by SCDHEC. "Uncontrolled" shall mean without sedimentation basin or other controls approved by SCDHEC.
6. The permittee shall notify the affected downstream water treatment plant(s) of any emergency condition, plant upset, bypass or other system failure which has the potential to affect the quality of water withdrawn for drinking water purposes. This notification should be made as soon as possible and in anticipation of such event, if feasible, without taking away from any response time necessary to attempt to alleviate the situation.
7. The discharge of any waste resulting from the combustion of chemical metal cleaning wastes, toxic wastes, or hazardous wastes to any waste stream which ultimately discharges to waters of the State is prohibited.
8. Nothing in this permit authorizes take for the purposes of a facility's compliance with the Endangered Species Act. For the purposes of this condition, "take" is defined in the Endangered Species Act to mean "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."
9. The facility meets the best technology available (BTA) standard for impingement mortality by employing a closed-cycle recirculating cooling system per 40 CFR 125.94(c)(1).
10. The Department has determined that the facility meets BTA for entrainment by employing a closed-cycle recirculating cooling system per 40 CFR 125.92(c)(2).
11. At all times, the permittee shall maintain and operate the cooling water intake structure and associated equipment as described in the NPDES permit application.

12. The permittee shall monitor intake flow no less often than daily pursuant to 40 CFR 125.94(c)(1).
13. Pursuant to 40 CFR 125.96(e), the permittee shall conduct weekly visual inspections of the cooling water intake structure or employ remote monitoring devices to ensure that the technology is performing as designed.
14. Pursuant to 40 CFR 125.97(c), an annual certification statement signed by the authorized representative as defined in Reg. 61-9.122.22(1) with the following information shall be submitted to the Department, no later than January 31<sup>st</sup> for the previous year.
  - a. Certification that water intake structure technologies have been maintained and operated as set forth in this permit, or a justification to allow a modification of the practices. Also, include a summary of the required visual or remote inspections (see Part V.E.10).
  - b. If the information contained in the previous year's annual certification is still pertinent, the permittee may simply state as such in a letter to the Department and the letter, along with any applicable data submission requirements shall constitute the annual certification.
  - c. If there are substantial modifications to the operation of any unit that impacts the cooling water withdrawals or operation of the water intake structure, the permittee must provide a summary of those changes in the report.
15. Pursuant to 40 CFR 125.97(c), records of all submissions that are part of the permit reporting requirements including compliance monitoring and supplement data collection must be retained until the subsequent permit is issued.
16. The permittee must submit the information required at 40 CFR 122.21(r) and 40 CFR 125.95(f) in subsequent permit applications. Based on 40 CFR 125.95(c), the permittee may request to reduce the information required in the subsequent application if conditions at the facility and in the water body remain substantially unchanged since the previous application and the relevant previously submitted information remains representative of current source water, intake structure, cooling water system, and operating conditions. This request should be submitted to the Department at least two years and six months prior to the expiration of this permit.

**FACT SHEET  
AND  
PERMIT RATIONALE**



Dominion Energy South Carolina, Inc.  
Virgil C. Summer Nuclear Station  
NPDES Permit No. SC0012345

Permitting Engineer: Melanie Townley

August 9, 2022

Facility Rating:  Major  Minor  
 Issuance (New)  Reissuance  Modification  Minor Modification

Site Address: Highway 215, Jenkinsville, SC 29065  
County: Fairfield  
Watershed: Basin 05 (Broad River Basin)

Facility Description (include SIC/NAICS code/descriptions): This facility is a single unit nuclear-fueled electric power generating facility.

SIC Code: 4911-Electric Services

NAICS Code: 221113-Nuclear Electric Power Generation

Receiving Waters and Classification by final outfall: 001-Monticello Reservoir (Freshwater); 003-Broad River via Penstocks of Fairfield Hydro; 014- Monticello Reservoir (Freshwater)

Is any discharge to Impaired Waters? Yes (see State 303(d) list for impaired waters)

If Yes, list the monitoring station number(s) and parameter(s) causing impairment: The following stations in the Monticello Reservoir are impaired for pH: B-327, RL-04370, RL-04374, RL-13089 and RL-15009; Station B-236, downstream on the Broad River is impaired for total copper and the following upstream Broad River stations are impaired for total phosphorus: B-236, RL-12049 and RL-16047. Note that Base Station B-345 is between the final outfalls and B-236. Metals are monitored quarterly and it is not impaired for total copper.

Is any discharge to a waterbody or for a parameter listed in an approved TMDL? Yes

If Yes, list the parameter(s) for which the TMDL is written and the waterbody segments impacted: Fecal coliform on Twelve Mile Creek

Does any discharge have the potential to affect a threatened or endangered species? Yes, the Bald Eagle

Outfalls are discussed in Section I of this rationale with a general description of the discharge, treatment system, stream flows and other pertinent information about each outfall.

**EPA review of the draft permit is required if any box below is checked (Mark all that apply)**

- Permits with discharges which may affect the waters of another State (Coordination with the other State is also required) - List State and name of waterbody(ies) that reach affected state: none
- Major permits
- Permits with any discharge subject to any of the primary industrial categories (see R.61-9.122, Appendix A)
- Permits with any discharge of process wastewater with an average flow exceeding 0.5 MGD
- Permits which incorporate pollutant trading

- Priority permits  
 Modification(s) to any permit listed above or a mod that changes a permit to put it into one of the above categories (where it previously was not)

List of Attachments to this Rationale:

Attachment 1	Permit Application
Attachment 2	Water Quality Spreadsheets
Attachment 3	Location Maps
Attachment 4	Wasteload Allocation and Source Water

I. PERMIT LIMITATIONS AND MONITORING REQUIREMENTS

**Outfalls**

Description of outfall, receiving water and wastewater treatment system: An overview of the final outfalls covered in this NPDES permit is as follows. Note, this nuclear generating facility is subject to 40 CFR Part 423.

1. **Final Outfall 001 to Monticello Reservoir:** once-through noncontact cooling water, internal outfall 004 (low volume waste consisting of steam generator blowdown) and internal outfall 007 (low volume waste from the neutralization waste tank). Note that as an alternate pathway, internal outfall 004 may be routed through outfall 003 or internal outfall 06A to final outfall 014.
2. **Final Outfall 003 to Broad River via Penstocks of Fairfield Hydro:** low volume waste (radioactive waste) and non-chemical metal cleaning waste (from nuclear steam generator cleaning).
3. **Final Outfall 014 to Monticello Reservoir:** consists of the following internal outfalls: 005 (sanitary wastewater), 06A (low volume waste from the alum sludge basin), 06B (low volume waste and stormwater from the transformer and fuel oil storage/handling areas all discharging from the plant waste surge/retention basin), 008 (metal cleaning waste and low volume waste from the plant startup waste holding basin, oil collection sump and clarifier blowdown sump).

Operator requirements: Based on the treatment system described below for each outfall (if any) and the Pollution Control Act (PCA), the treatment system is classified as Group II-Biological. The Environmental Certification Board Rules require that a Grade C-Biological operator be assigned to operate this facility. Inspections of the facility will be required on a daily basis per Regulation 61-9.122.41(e).

Information for this outfall is based on NPDES Permit Application: 2C dated 3/18/19

Data from Discharge Monitoring Reports (DMRs) and NPDES permit application (including all subsequent data presented) from 7/16 to 7/21 has been used to evaluate permit limitations.

This outfall is within a state-approved source water protection area (SWPA) for a surface water drinking water intake and has the potential to affect the intake. The affected intake(s) (Intake #S20103) is/are owned by SCE&G VC Summer Nuclear Station. The 7Q10 and AAF to be used for permitting MCL and water/organism criteria are given on the spreadsheet. Additional information on source water protection is provided in sections III.B and G of this rationale.

Previous permit limits are based on the permit modification effective date of 5/21/19.

All waterbody data is provided on the attached Water Quality Spreadsheets. This data includes 7Q10, annual average flow, dilution factors, hardness, TSS and other information as explained in this rationale. Additional information as necessary to explain the values used will be provided below.

**FINAL OUTFALL 001:** Outfall 001 consists of the combination of once-through noncontact cooling water, internal Outfall 004 (low volume waste - steam generator blowdown) and internal outfall 007 (low volume waste from the ion exchange regeneration, chemical feed equipment drain sump, caustic tank area sump and the "D" battery room sump). Outfall 007 consists of a 100,000-gallon neutralization basin tank where sodium-hydroxide is used to adjust the pH. Note that due to the nature of the discharge (mostly once-through noncontact cooling water) and the fact that it is not feasible to install a composite sampler, grab samples will be allowed.

### **Flow**

1. Previous permit limits:
  - Monthly average: MR MGD
  - Daily Maximum: MR MGD
  - Sampling Frequency: Continuous
  - Sample Type: Continuous
2. NPDES Application: (# of analyses: 12)
  - Maximum Daily Value: 738.7 MGD
  - Long Term Avg Value: 647.65 MGD
3. DMR Data: The highest flow was reported in 9/21 as 738.72 MGD
4. Actual long term average flow (from DMR): 669 MGD
5. Conclusion: The permittee shall continue to monitor and report flow.
  - Monthly average: MR MGD
  - Daily Maximum: MR MGD
  - Sampling Frequency: Continuous
  - Sample Type: Continuous

### **pH**

1. Previous Permit Limits: 6.0-8.5 standard units.
  - Sampling Frequency: 1/Month
  - Sample type: Grab
2. NPDES Application: (# of analyses: 12)
  - Maximum Daily Value: Min: 6.18 su, Max: 7.27 su
3. DMR Data: The highest and lowest pH was reported as 7.8 standard units in 5/20 and 6.2 standard units in 12/18.
4. Water Quality Data: Water quality standards for pH are established in Reg. 61-68.G. For freshwater, this is 6.0-8.5 standard units.
5. Effluent limitation guidelines: 40 CFR Part 423.12: the pH of all discharges, except once-through cooling water shall be within the range of 6.0-9.0 standard units.
6. Other information: None
7. PQL: Not applicable
8. Conclusion: pH should be between 6.0 and 8.5 standard units.
  - Sampling Frequency: 1/Month
  - Sample type: Grab

## Temperature

1. Previous Permit Limits:
  - Discharge: Monthly Average: MR°F
  - Daily Maximum: 113°F
  - Intake: Monthly Average: MR°F
  - Daily Maximum: MR°F
  - Sampling Frequency: Continuous
  - Sample Type: Continuous
2. NPDES Application: (No. of analyses: 4 in winter and 8 in summer)
  - Summer: Average: 28.32°C
  - Maximum: 30.14°C
  - Winter: Average: 39.79°C
  - Maximum: 44.14°C
3. DMR Data: The highest temperature was reported in 9/21 as 112.55 °F
4. Water Quality Data: Per Reg. 61-68.E.12.a, The water temperature of all Freshwaters which are free flowing shall not be increased more than 5°F (2.8°C) above natural temperature conditions and shall not exceed a maximum of 90°F (32.2°C) as a result of the discharge of heated liquids unless a different temperature standard as provided for in C.12 has been established, a mixing zone as provided in C.10 has been established, or a Section 316(a) determination under the Federal Clean Water Act has been completed.
5. Effluent limitation guidelines: not applicable
6. Other information: The permittee submitted a second addendum to the previous mixing zone support a continued daily maximum discharge temperature limit of 113°F. This request supports previous modeling submitted to show that an instream temperature of 90°F and a temperature increase of less than 5°F can be met at the edge of the mixing zone in the Monticello Reservoir (6800 acres).

The permittee previously modeled summer months for the 90°F and winter months for the temperature increase of less than 5°F.

January 2012: The permittee initially modeled summer months for the 90°F and winter months for the temperature increase of less than 5°F. The modeling was completed using a 113°F discharge temperature and a 86.4°F ambient temperature in the summer months (when discharge and ambient temperature are assumed to be highest) and a 98.7°F discharge temperature and a 66.6°F ambient temperature during winter months (when the differential between the discharge and ambient temperature is assumed to be highest). The discharge flow rate was set to 766 MGD (the flow rate through the Unit 1 intake with all three pumps operational). Note that they looked at the following 4 scenarios for both meeting the 90°F and a temperature increase of less than 5°F. The pump-back ambient flow is 41,800 cfs and the ambient generating flow is 50,400 cfs.

1. Monticello Reservoir at high water slack conditions - no flow through Fairfield Pumped Storage Facility (FPSF)
2. Monticello Reservoir at low water slack conditions - no flow through FPSF
3. Monticello Reservoir at low water rising conditions – when FPSF is in pump-back mode
4. Monticello Reservoir at high water falling conditions - when FPSF is in generating mode

February 2014 Addendum: Revised modeling was completed using a 113°F discharge temperature and a

87.9°F ambient temperature in the summer months (highest intake temperature representative of reservoir temperature) and a 113°F discharge temperature and a 46.4°F ambient temperature during winter months (lowest intake temperature representative of reservoir temperature). Note that they looked at the following 4 scenarios below during the winter and scenario 4 below during the summer it was assumed that the small change in ambient temperature in the summer would still result in the worst case being scenario 4. All other inputs remained the same.

1. Monticello Reservoir at high water slack conditions - no flow through Fairfield Pumped Storage Facility (FPSF)
2. Monticello Reservoir at low water slack conditions - no flow through FPSF
3. Monticello Reservoir at low water rising conditions - when FPSF is in pump-back mode
4. Monticello Reservoir at high water falling conditions - when FPSF is in generating mode

The revised modeling resulted in the largest mixing zone area (scenario 2 in winter) being less than 6% of the Reservoir's surface area. The Department believes the mixing zone has been minimized.

November 2018 Addendum 2: Due to little change in ambient temperature and operating conditions, additional modeling was not completed. Considering data from 2013 through 2018, the highest daily maximum Lake Monticello temperature was 87.2°F, lower than the previous 87.9°F. The updated data range shows a minimum monthly average instream temperature of 44.7°F. Although this is lower than the previous 46.4°F, the difference between the discharge and instream temperature only increased 2.6%. Also, the previous winter temperature plume was a factor of 3.2 smaller than the summer and therefore even with this small change, the winter plume would remain smaller than the summer plume. The Department believes the mixing zone continues to be minimized.

7. PQL: Not applicable
8. Conclusion: The temperature requirements remain as in the previous permit.  
Discharge: Monthly Average: MR°F  
Daily Maximum: 113°F  
Intake: Monthly Average: MR°F  
Daily Maximum: MR°F  
Sampling Frequency: Continuous  
Sample Type: Continuous

#### **Biochemical Oxygen Demand (BOD<sub>5</sub>)**

1. Previous permit limits: None
2. NPDES Application: (# of analyses: 1)  
Maximum Daily Value: <2.00 mg/l (<13806 lb/d)
3. DMR Data: No DMR data
4. Effluent limitations guidelines: Not applicable to this parameter
5. PQL: 2.0 mg/l
6. Other information: None
7. Conclusion: Monitoring/limitations are not necessary at this time as the permittee has again reported less than detect for BOD<sub>5</sub> at the outfall.

#### **Free Available Chlorine & Total Residual Chlorine (Total Residual Oxidants)**

1. Previous permit limits: None

2. NPDES Application: (# of analyses: 0)
3. DMR Data: No DMR data
4. Water Quality Data: Not applicable
5. Effluent limitation guidelines:
  - Free Available Chlorine**
  - 40 CFR Part 423.12.b(6) for once through cooling water:
    - Monthly average: 0.2 mg/l
    - Daily maximum: 0.5 mg/l
  - 40 CFR Part 423.12.b(8): Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or State, if the State has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.
  - Total Residual Chlorine (Total Residual Oxidants)**
  - 40 CFR Part 423.13(b)(1) for once through cooling water: Instantaneous Maximum: 0.2 mg/l
  - 40 CFR Part 423.13(b)(2): Total residual chlorine may not be discharged from any single generating unit for more than two (2) hours per day unless the discharger demonstrates to the Department that the discharge for more than two hours is required for macroinvertebrate control.
6. Other information: Per 40 CFR Part 423.11 once through cooling water means water passed through the main cooling condensers in one or two passes for the purpose of removing waste heat.
7. Conclusion: This permit includes a restriction that there shall be no addition of chlorine to the main condenser cooling water or to other cooling services. Also note that the permittee adds Spectrus OX1200 (a form of bromide) to the turbine building closed cycle cooling tower, however this is not the main condenser. No additional limitations are necessary at this time.

### **Bromide**

1. Previous permit limits:
  - Monthly average: MR mg/l
  - Daily maximum: MR mg/l
  - Sampling Frequency: 1/Month
  - Sample type: Grab
2. NPDES Application: (# of analyses: 12)
  - Maximum Daily Value: <0.5 mg/l (<3082 lb/d)
  - Long Term Avg Value: <0.5 mg/l (<2702 lb/d)
3. DMR Data: The highest DMR data point was reported as 0.11 mg/l in November 2021.
4. Water Quality Data: see spreadsheet
5. Other Information: The permittee has sampled for bromide since the last permit reissuance. All data has been reported as less than detect with the exception of one data point at 0.11 mg/l.
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
7. Effluent limitations guidelines (ELGs) and professional judgment-based limits: Not applicable to this parameter.
8. PQL: 2.0 mg/l
9. Conclusion: Monitoring and/or limitations are not needed at this time.

### **Whole Effluent Toxicity (WET)**

1. Previous permit requirements: None

2. Mixing Zone and Zone of Initial Dilution (ZID) Information: A mixing zone was not requested by the permittee.
3. Other information: The permit effective 2/1/03 included chronic WET limits with a CTC = 100%. All data during that permit was reported as 0% effect.
4. Conclusion: Monitoring/limitations are not necessary as this discharge is approximately 90% once-through noncontact cooling water. Note also that the previous WET test results mentioned above were all reported as zero percent effect.

**Internal Outfall 004:** This internal outfall consists of low volume waste (steam generator blowdown) and discharges to final Outfall 001. However, as an alternative, the steam generator blowdown may discharge through internal Outfall 06A (ultimately through 014) or after demineralization through final Outfall 003.

#### **Flow**

1. Previous permit limits:
  - Monthly average: MR MGD
  - Daily Maximum: MR MGD
  - Sampling Frequency: 1/Month
  - Sample Type: Calculation
2. NPDES Application: (# of analyses: 4)
  - Maximum Daily Value: 1300707 MGD
  - Long Term Avg Value: 6.15992 MGD
3. DMR Data: The highest flow was reported in 5/20 as 0.247824 MGD.
4. Actual long term average flow (from DMR): 0.085 MGD
5. Conclusion: The permittee shall continue to monitor and report flow for this outfall.
  - Monthly average: MR MGD
  - Daily Maximum: MR MGD
  - Sampling Frequency: 1/Month
  - Sample Type: Calculation

#### **Total Suspended Solids (TSS)**

1. Previous permit limits:
  - Monthly average: 30 mg/l
  - Daily Maximum: 100 mg/l
  - Sampling frequency: 1/Month
  - Sample Type: Grab
2. NPDES Application: (# of analyses: 5)
  - Maximum Daily Value: <1.00 mg/l (<109.7 lb/d)
  - Long Term Avg Value: <1.00 mg/l (< 51.4lb/d)
3. DMR Data: The highest TSS was reported in 11/21 as 4.6 mg/l.
4. Water Quality Data: NA
5. Effluent Limitation Guidelines: 40 CFR Part 423.12 for low volume waste
  - Monthly average: 30 mg/l
  - Daily Maximum: 100 mg/l
6. Other information: None
7. PQL: 1000 µg/l
8. Conclusion: The TSS limits remain in accordance with 40 CFR Part 423.12.

Monthly average: 30 mg/l  
Daily Maximum: 100 mg/l  
Sampling frequency: 1/Month  
Sample Type: Grab

### **Oil and grease**

1. Previous Permit Limits:  
Monthly average: 15 mg/l  
Daily Maximum: 20 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab
2. NPDES Application: (No. of analyses: 5)  
Maximum Daily Value: <5.00 mg/l (<545.37 lb/d)  
Long Term Avg Value: < 5.00 mg/l (< 257.02 lb/d)
3. DMR Data: All DMR data was reported as 0 mg/l.
4. Water Quality Data: Narrative water quality criteria for oil and grease is covered by Reg.61-68.E.5.
5. Effluent limitation guidelines: 40 CFR Part 423.12 for low volume waste:  
Monthly average: 15 mg/l  
Daily Maximum: 20 mg/l
6. Other information: None
7. PQL: 5 mg/l
8. Conclusion: The oil and grease limits remain in accordance with 40 CFR Part 423.12.  
Monthly average: 15 mg/l  
Daily Maximum: 20 mg/l  
Sampling frequency: 1/Month  
Sample Type: Grab

### **pH**

1. Previous Permit Limits: None
2. NPDES Application: (# of analyses: 1): 8.91 standard units
3. DMR Data: No DMR data
4. Water Quality Data: Water quality limits are addressed at the final 001 outfall.
5. Effluent limitation guidelines: 40 CFR Part 423.12: the pH of all discharges, except once-through cooling water shall be within the range of 6.0-9.0 standard units.
6. Other information: This discharge consists of blowdown (defined as low volume waste per 40 CFR Part 423). In accordance with the USEPA Memorandum dated March 21, 1986, the pH limitation in 40 CFR Part 423.12 for low volume waste which commingles with once through cooling water may be met after combination with the once through cooling water. Note that the regular discharge path is through Outfall 001 (low volume waste combined with once through cooling water), however when discharged through 003 or 014, the pH limits on the final are at least as stringent as or more stringent than the effluent guidelines.
7. PQL: Not applicable
8. Conclusion: pH is not limited at this internal outfall, as limitations have been set at the final outfalls.

**Internal Outfall 007:** This internal outfall consists of low volume waste from the neutralization waste tank. Treatment consists of 100,000-gallon neutralization basin tank where sodium-hydroxide is used to adjust the pH before the effluent is discharged to Outfall 001.

**Flow**

1. Previous permit limits:
  - Monthly average: MR MGD
  - Daily Maximum: MR MGD
  - Sampling Frequency: 1/Month
  - Sample Type: Instantaneous
2. NPDES Application: (# of analyses: 40)
  - Maximum Daily Value: 0.218100 MGD
  - Long Term Avg Value: 0.105900 MGD
3. DMR Data: The highest flow was reported in 6/17 as 0.325 MGD
4. Actual long term average flow (from DMR and/or application): 0.089 MGD
5. Conclusion: The permittee shall continue to monitor and report flow.
  - Monthly average: MR MGD
  - Daily Maximum: MR MGD
  - Sampling Frequency: 1/Month
  - Sample Type: Instantaneous

**Total Suspended Solids (TSS)**

1. Previous permit limits:
  - Monthly average: 30 mg/l
  - Daily Maximum: 100 mg/l
  - Sampling frequency: 1/Month
  - Sample Type: Grab
2. NPDES Application: (# of analyses: 12)
  - Maximum Daily Value: 21.2 mg/l (38.58 lb/d)
  - Long Term Avg Value: 7.87 mg/l (6.95 lb/d)
3. DMR Data: The highest TSS was reported in 8/16 as 89 mg/l
4. Water Quality Data: NA
5. Effluent Limitation Guidelines: 40 CFR Part 423.12 for low volume waste
  - Monthly average: 30 mg/l
  - Daily Maximum: 100 mg/l
6. Other information: None
7. PQL: 1000 µg/l
8. Conclusion: The TSS limits remain in accordance with 40 CFR Part 423.12.
  - Monthly average: 30 mg/l
  - Daily Maximum: 100 mg/l
  - Sampling frequency: 1/Month
  - Sample Type: Grab

**Oil and grease**

1. Previous Permit Limits:
  - Monthly average: 15 mg/l

Daily Maximum: 20 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab

2. NPDES Application: (No. of analyses: 12)  
Maximum Daily Value: <5.00 mg/l (< 9.10 lb/d)  
Long Term Avg Value: <5.00 mg/l (< 4.42lb/d)
3. DMR Data: All data was reported as 0 mg/l.
4. Water Quality Data: Narrative water quality criteria for oil and grease is covered by Reg.61-68.E.5.
5. Effluent limitation guidelines: 40 CFR Part 423.12 for low volume waste  
Monthly average: 15 mg/l  
Daily Maximum: 20 mg/l
6. Other information: None
7. PQL: 5 mg/l
8. Conclusion: The oil and grease limits remain in accordance with 40 CFR Part 423.12.  
Monthly average: 15 mg/l  
Daily Maximum: 20 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab

#### **pH**

1. Previous Permit Limits: None
2. NPDES Application: (# of analyses: 40)  
Maximum Daily Value: Min: 6.01 su, Max: 8.85 su
3. DMR Data: No DMR data.
4. Water Quality Data: Water quality limits are addressed at the final 001 outfall.
5. Effluent limitation guidelines: 40 CFR Part 423.12: the pH of all discharges, except once-through cooling water shall be within the range of 6.0-9.0 standard units.
6. Other information: This discharge consists of blowdown (defined as low volume waste per 40 CFR Part 423). In accordance with the USEPA Memorandum dated March 21, 1986, the pH limitation in 40 CFR Part 423.12 for low volume waste which commingles with once through cooling water may be met after combination with the once through cooling water.
7. PQL: Not applicable
8. Conclusion: pH is not limited at this internal outfall, as limitations have been set at the final outfall.

**FINAL OUTFALL 003:** Outfall 003 discharges to the Broad River via Penstocks of Fairfield Hydro. This discharge consists of low volume waste (radioactive waste) and non-chemical metal cleaning waste (from nuclear steam generator cleaning). Treatment consists of evaporation and demineralization. The wastewater is then held in Waste Monitor Tanks designated as Tank "A" and "B" for monitoring to check that the wastewater is within NPDES & NRC limits prior to discharging. Note that this outfall is an alternative discharge point for internal outfall 004 (also low volume waste) as well. Note that although this is a batch discharge, it is a consistent discharge. One of the two waste monitor tanks is filled, recirculated for a minimum of 15 minutes, and then sampled prior to discharge. As such, grab samples continue to be sufficient for this outfall. Note that limits for the non-chemical metal cleaning waste in this outfall have been set equal to BPT limits for low volume waste.

**Flow**

1. Previous permit limits:
  - Monthly average: MR MGD
  - Daily Maximum: MR MGD
  - Sampling Frequency: 1/Month
  - Sample Type: Estimate
2. NPDES Application: (# of analyses: 242)
  - Maximum Daily Value: 0.004700 MGD
  - Long Term Avg Value: 0.004196 MGD
3. DMR Data: The highest flow was reported in 8/21 as 0.043 MGD
4. Actual long term average flow (from DMR and/or application): 0.0043 MGD
5. Conclusion: The permittee shall continue to monitor and report flow.
  - Monthly average: MR MGD
  - Daily Maximum: MR MGD
  - Sampling Frequency: 1/Month
  - Sample Type: Estimate

**Total Suspended Solids (TSS)**

1. Previous permit limits:
  - Monthly average: 30 mg/l
  - Daily Maximum: 100 mg/l
  - Sampling frequency: 1/Month
  - Sample Type: Grab
2. NPDES Application: (# of analyses: 25)
  - Maximum Daily Value: 8.2 mg/l (0.32 lb/d)
  - Long Term Avg Value: 1.79 mg/l (0.063 lb/d)
3. DMR Data: The highest TSS was reported in 9/16 as 14.1 mg/l.
4. Water Quality Data: NA
5. Effluent Limitation Guidelines: 40 CFR Part 423.12 for low volume waste
  - Monthly average: 30 mg/l
  - Daily Maximum: 100 mg/l
6. Other information: None
7. PQL: 1000 µg/l
8. Conclusion: The TSS limits remain in accordance with 40 CFR Part 423.12.
  - Monthly average: 30 mg/l
  - Daily Maximum: 100 mg/l
  - Sampling frequency: 1/Month
  - Sample Type: Grab

**Oil and grease**

1. Previous Permit Limits:
  - Monthly average: 15 mg/l
  - Daily Maximum: 20 mg/l
  - Sampling Frequency: 1/Month
  - Sample type: Grab
2. NPDES Application: (No. of analyses: 24)

Maximum Daily Value: <5.00 mg/l (<0.196 lb/d)

Long Term Avg Value: <5.00 mg/l (<0.175 lb/d)

3. DMR Data: The highest oil and grease value was reported in 9/21 as 2.28 mg/l.
4. Water Quality Data: Narrative water quality criteria for oil and grease is covered by Reg.61-68.E.5.
5. Effluent Limitation Guidelines: 40 CFR Part 423.12 for low volume waste  
Monthly average: 15 mg/l  
Daily Maximum: 20 mg/l
6. Other information: None
7. PQL: 5 mg/l
8. Conclusion: The oil and grease limits remain in accordance with 40 CFR Part 423.12.  
Monthly average: 15 mg/l  
Daily Maximum: 20 mg/l  
Sampling frequency: 1/Month  
Sample Type: Grab

#### **pH**

1. Previous Permit Limits: 6.0-9.0 standard units.  
Sampling Frequency: 1/Month  
Sample type: Grab
2. NPDES Application: (# of analyses: 244)  
Maximum Daily Value: Min: 6.08 su, Max: 8.49 su
3. DMR Data: The highest and lowest pH was reported in 8/20 as 8.8 standard units and in 4/18 as 8.1 standard units.
4. Water Quality Data: Water quality standards for pH are established in Reg. 61-68.G.
5. Effluent limitation guidelines: 40 CFR Part 423.12: the pH of all discharges, except once-through cooling water shall be within the range of 6.0-9.0 standard units.
6. Other information: This discharge consists of low volume waste.
7. PQL: Not applicable
8. Conclusion: Due to the large stream dilution in comparison to the discharge, a maximum pH of 9.0 standard units shall be granted. This small change should not have any adverse impact on the receiving stream. This pH limits are as follows: 6.0-9.0 standard units.  
Sampling frequency: 1/Month  
Sample Type: Grab

**FINAL OUTFALL 014:** Outfall 014 discharges to the Monticello Reservoir. This discharge is the combination of the following internal outfalls: 005 (sanitary wastewater), 06A (low volume waste from the alum sludge basin), 06B (low volume waste and stormwater from the transformer and fuel oil storage/handling areas all discharging from the plant waste surge/retention basin), 008 (metal cleaning waste and low volume waste from the plant startup waste holding basin, oil collection sump and clarifier blowdown sump).

#### **Flow**

1. Previous permit limits:  
Monthly average: MR MGD  
Daily Maximum: MR MGD  
Sampling Frequency: Continuous  
Sample Type: Continuous

2. NPDES Application: (# of analyses: 12)  
Maximum Daily Value: 0.340967 MGD  
Long Term Avg Value: 0.070510 MGD
3. DMR Data: The highest flow was reported in 10/18 as 1.784203 MGD.
4. Actual long term average flow (from DMR and/or application): 0.064 MGD
5. Conclusion: The permittee shall continue to monitor and report flow.  
Monthly average: MR MGD  
Daily Maximum: MR MGD  
Sampling Frequency: Continuous  
Sample Type: Continuous

### **pH**

1. Previous Permit Limits: 6.0-9.0 standard units April-Oct and 6-8.5 standard units from Nov-March.  
Sampling Frequency: 1/Month  
Sample type: Grab
2. NPDES Application: (# of analyses:12)  
Maximum Daily Value: Min: 6.39 su, Max: 7.29 su
3. DMR Data: The highest and lowest pH was reported in 12/21 as 8.8 standard units and in 5/20 as 6.1 standard units.
4. Water Quality Data: Water quality standards for pH are established in Reg. 61-68.G.
5. Effluent limitation guidelines: 40 CFR Part 423.12: the pH of all discharges, except once-through cooling water shall be within the range of 6.0-9.0 standard units.
6. Other information: The Department previously approved the maximum limit of 9.0 standard units for April through October as the permittee indicated algae blooms cause high pH however there are impaired stations with the Reservoir for pH. After further data review of STORET, the Department considers Stations RL-17067 and RL-19170 to be impaired as well.
7. PQL: Not applicable
8. Conclusion: The pH limits are in accordance with Reg.61-68.G.  
Range: 6.0-8.5 standard units  
Sampling frequency: 1/Month  
Sample Type: Grab

### **Phosphorus**

1. Previous Permit Limits:  
Monthly average: MR mg/l  
Daily Maximum: MR mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab
2. NPDES Application: (No. of analyses: 12)  
Maximum Daily Value: 5.1 mg/l (14.51 lb/d)  
Long Term Avg Value: 1.74 mg/l (1.02 lb/d)
3. DMR Data: The highest value was reported in 8/16 as 7.3 mg/l.
4. Water Quality Data: See Section III.G.1.c of this rationale.
5. Effluent limitation guidelines: not applicable
6. Other information: Outfall 014 includes the discharge from internal outfall 005 which is sanitary wastewater.

7. PQL: 50 µg/l
8. Conclusion: Considering the high dilution available at the discharge, the long term average discharge of total phosphorus (TP), and the fact that the Monticello Reservoir and the Parr Reservoirs are not impaired for TP, continued monitoring is not needed at this time.

**Ammonia-Nitrogen, Total as N**

1. Previous permit limits: None
2. NPDES Application: (# of analyses: 1)  
Maximum Daily Value: 13.8 mg/l (39.27 lb/d)
3. DMR Data: No DMR data
4. Waste Load Allocation: Monthly Average: 2631 mg/l (the ammonia toxicity number)
5. Water Quality Criteria for Protection of Aquatic Life from Reg. 61-68, Appendix, Attachment 3: Freshwater:  
In situations where salmonids are absent, the CMC is calculated as:

$$CMC = \left\{ \frac{0.411}{1 + 10^{7.204 - pH}} + \frac{58.4}{1 + 10^{pH - 7.204}} \right\}$$

Establish the CCC when fish early life stages (ELS) are present:

$$CCC = \left\{ \frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}} \right\} \times \left\{ \min(2.85, 1.45 \times 10^{0.028 \times (25 - T)}) \right\}$$

Note: The Department always considers fish early life stages to be present unless data is presented which demonstrates their absence.

Where:

- Stream pH = 8.14 su
- Stream temp (critical) = 30°C
- Stream temp (seasonal) = 19°C
- Upstream flow: 396 cfs
- Upstream ammonia concentration = 0.11 mg/l

Critical months are March – October and November - February is seasonal.

- CCC (critical) = 0.727 mg/l                      CCC (seasonal) = 1.477 mg/l
- CMC (critical) = 6.433 mg/l                    CMC (seasonal) = 6.433 mg/l

With dilution:

- Monthly average (critical chronic): 2631 mg/l      Monthly average (seasonal chronic): 5831 mg/l
- Daily maximum (critical acute): 26978 mg/l      Daily maximum (seasonal acute): 26978

6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute? No
7. Other information: None
8. PQL: 100 µg/l
9. Conclusion: Limitations are not necessary at this time.

**Whole Effluent Toxicity (WET)**

1. Previous permit requirements:  
Chronic whole effluent toxicity testing using *Ceriodaphnia dubia* at a CTC = 100%

Dilution series 0%, 50%, 60%, 71%, 84% and 100%  
Monthly Average: MR% effect (total, reproduction, & mortality)  
Daily Maximum: MR% effect (total, reproduction, & mortality)  
Sampling Frequency: 1/Permit Term  
Sample Type: Grab

- DMR Data: 23% effect was reported on 8/14. The IC25 and 48-hour LC50 were both reported as >100%.
- Mixing Zone and Zone of Initial Dilution (ZID) Information: The permittee has not requested a mixing zone.
- Reasonable potential evaluation: Based on available data, the Department feels reasonable potential does not exist.
- Other information: 014 consists of sanitary wastewater, low volume waste, metal cleaning waste and stormwater.

6. Conclusion: Monitoring will continue to be included in the permit for this outfall to collect data for the future permit reissuance. Testing using multiple dilutions will be required. A geometric series is used to determine the dilution series as follows: To determine a geometric series of effluent concentrations given a low concentration  $L$ , a high concentration  $H$ , and  $n$  concentrations, the concentration factor is

$F = \left(\frac{H}{L}\right)^{\frac{1}{n-1}}$  and the  $i$ th concentration is  $C_i = L * F^{i-1}$ . Therefore, for  $n = 5$ ;  $L = 6.25$  and  $H = 100$  the

dilution series is as follows (minimum of 5 dilutions and a control): 0% (control), 6.25%, 12.5%, 25%, 50% and 100%. Chronic toxicity testing shall be performed for this outfall as described below:

Chronic whole effluent toxicity testing using *Ceriodaphnia dubia* at a CTC = 100%  
Dilution series 0%, 50%, 60%, 71%, 84% and 100%  
Monthly Average: MR% effect (total, reproduction, & mortality)  
Daily Maximum: MR% effect (total, reproduction, & mortality)  
Sampling Frequency: Once/5 Years  
Sample Type: Grab

**Internal Outfall 005:** This discharge consists of sanitary wastewater. Treatment consists of two dosing tanks, an aeration basin with 6 aerators, two sand filters, two chlorination basins and two dechlorination basins.

### **Flow**

- Previous permit limits:  
Monthly average: MR MGD  
Daily Maximum: MR MGD  
Sampling Frequency: 1/Month  
Sample Type: Instantaneous
- NPDES Application: (# of analyses: 12)  
Maximum Daily Value: 0.026000 MGD  
Long Term Avg Value: 0.007250 MGD
- DMR Data: The highest flow was reported in 7/16 as 0.0796 MGD.
- Actual long term average flow (from DMR and/or application): 0.0093 MGD
- Conclusion: The permittee shall continue to monitor and report flow.  
Monthly average: MR MGD  
Daily Maximum: MR MGD  
Sampling Frequency: 1/Month  
Sample Type: Instantaneous

### **Biochemical Oxygen Demand (BOD<sub>5</sub>)**

1. Previous permit limits:
  - Monthly average: 30 mg/l
  - Daily maximum: 45 mg/l
  - Sampling frequency: 1/Month
  - Sample type: 24 Hour Composite
2. NPDES Application: (# of analyses: 13)
  - Maximum Daily Value: 12 mg/l (2.6 lb/d)
  - Long Term Avg Value: 6.6 mg/l (0.40 lb/d)
3. DMR Data: The highest BOD<sub>5</sub> was reported in 12/19 22 mg/l.
4. Effluent limitations guidelines: Not applicable to this outfall.
5. PQL: 2.0 mg/l
6. Waste Load Allocation: Not applicable to this internal outfall.
7. Other information: Reg 61-9.133, Secondary Treatment Regulation gives a monthly average of 30 mg/l and a weekly average of 45 mg/l. The daily maximum is calculated as twice the monthly average limit (note R.61-68.122.45(d) for continuous discharges).
8. Conclusion: The limits shall remain in accordance with Reg 61-9.133
  - Monthly average: 30 mg/l
  - Daily maximum: 45 mg/l
  - Sampling frequency: 1/Month
  - Sample type: 24 Hour Composite

### **Total Suspended Solids (TSS)**

1. Previous permit limits:
  - Monthly average: 30 mg/l
  - Daily maximum: 45 mg/l
  - Sampling frequency: 1/Month
  - Sample type: 24 Hour Composite
2. NPDES Application: (# of analyses: 13)
  - Maximum Daily Value: 4.2 mg/l (0.91lb/d)
  - Long Term Avg Value: 2.8 mg/l (0.17 lb/d)
3. DMR Data: The highest TSS was reported in 10/2021 as 13 mg/l.
4. Water Quality Data: NA
5. Effluent limitations guidelines: Not applicable to this outfall.
6. Other information: Reg 61-9.133, Secondary Treatment Regulation gives a monthly average of 30 mg/l and a weekly average of 45 mg/l. The daily maximum is calculated as twice the monthly average limit (note R.61-68.122.45(d) for continuous discharges).
7. PQL: 1000 µg/l
8. Conclusion: The limits shall remain in accordance with Reg 61-9.133
  - Monthly average: 30 mg/l
  - Daily maximum: 45 mg/l
  - Sampling frequency: 1/Month
  - Sample type: 24 Hour Composite

### **E. coli**

1. Previous Permit Limits:

Monthly average: 126/100 ml  
Daily maximum: 349/100 ml  
Sampling Frequency: 1/Month  
Sample type: Grab

2. NPDES Application: not applicable
3. DMR Data: The highest value was reported in 11/17 as 86/100 ml
4. Water Quality Data: E. coli standards in Regulation 61-68.E.14.c(8): In order to protect recreational uses in freshwaters (including FW, and all types of Trout Waters) of the State, NPDES permit effluent limitations shall be specified as a monthly average of 126 MPN/100ml and a daily maximum of 349 MPN/100 ml. Provisions for meeting alternate daily maximum bacteria limits shall be in accordance with R.61-68.E.14.c(12).
5. Effluent limitation guidelines: not applicable
6. Other information: See water quality standards above for E. coli.
7. PQL: 1/100 ml
8. Conclusion: E. coli, per R.61-68.E.14(c)(8), will be limited to  
Monthly average: 126/100 ml  
Daily maximum: 349/100 ml  
Sampling Frequency:  
Sample type: Grab

#### **Total Residual Chlorine (TRC)**

1. Previous Permit Limits: None
2. NPDES Application: (No. of analyses: 1)  
Maximum Daily Value: 0.07 mg/l (0.015 lb/d)
3. DMR Data: No DMR data
4. Water Quality Criteria: Reasonable potential has been assessed at the final outfall.
5. Effluent limitation guidelines: Not applicable
6. Other information: None
7. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Reasonable potential has been assessed at Outfall 014, the final outfall.
8. PQL: 0.05 mg/l
9. Conclusion: Chlorine limits are not necessary as reasonable potential has been assessed at Outfall 014.

***Internal Outfall 06A:*** This discharge consists of low volume waste from the alum sludge basin.

#### **Flow**

1. Previous permit limits:  
Monthly average: MR MGD  
Daily Maximum: MR MGD  
Sampling Frequency: 1/Month  
Sample Type: Instantaneous
2. NPDES Application: (# of analyses: 10)  
Maximum Daily Value: 0.028900 MGD  
Long Term Avg Value: 0.00936 MGD
3. DMR Data: The highest flow was reported in 1/21 as 0.2075 MGD.
4. Actual long term average flow (from DMR and/or application): 0.032 MGD
5. Conclusion: The permittee shall continue to monitor and report flow.

Monthly average: MR MGD  
Daily Maximum: MR MGD  
Sampling Frequency: 1/Month  
Sample Type: Instantaneous

**Total Suspended Solids (TSS)**

1. Previous permit limits:  
Monthly average: 30 mg/l  
Daily Maximum: 100 mg/l  
Sampling frequency: 1/Month  
Sample Type: Grab
2. NPDES Application: (# of analyses: 10)  
Maximum Daily Value: 2.5 mg/l (0.6 lb/d)  
Long Term Avg Value: 1.67 mg/l (0.13 lb/d)
3. DMR Data: The highest TSS was reported in 9/17 as 6 mg/l
4. Water Quality Data: Not applicable
5. Effluent Limitation Guidelines: 40 CFR Part 423.12 for low volume waste  
Monthly average: 30 mg/l  
Daily Maximum: 100 mg/l
6. Other information: None
7. PQL: 1000 µg/l
8. Conclusion: The limits remain in accordance with 40 CFR Part 423.12  
Monthly average: 30 mg/l  
Daily Maximum: 100 mg/l  
Sampling frequency: 1/Month  
Sample Type: Grab

**Oil and grease**

1. Previous Permit Limits:  
Monthly average: 15 mg/l  
Daily Maximum: 20 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab
2. NPDES Application: (No. of analyses: 10)  
Maximum Daily Value: < 5.00 mg/l (< 1.21 lb/d)  
Long Term Avg Value: < 5.00 mg/l (< 0.391 lb/d)
3. DMR Data: All DMR data was reported as 0 mg/l.
4. Water Quality Data: Narrative water quality criteria for oil and grease is covered by Reg.61-68.E.5.
5. Effluent Limitation Guidelines: 40 CFR Part 423.12 for low volume waste  
Monthly average: 15 mg/l  
Daily Maximum: 20 mg/l
6. Other information: None
7. PQL: 5 mg/l
8. Conclusion: The oil and grease limits remain in accordance with 40 CFR Part 423.12.  
Monthly average: 15 mg/l  
Daily Maximum: 20 mg/l

Sampling frequency: 1/Month  
Sample Type: Grab

### **pH**

1. Previous Permit Limits: None
2. NPDES Application: (# of analyses: 1)  
Maximum Daily Value: Min: 8.5 su, Max: 8.5 su
3. DMR Data: No DMR data.
4. Water Quality Data: Water quality limits are addressed at the final outfalls.
5. Effluent limitation guidelines: 40 CFR Part 423.12: the pH of all discharges, except once-through cooling water shall be within the range of 6.0-9.0 standard units.
6. Other information: The pH limits on the final are at least as stringent as or more stringent than the effluent guidelines.
7. PQL: Not applicable
8. Conclusion: pH is not limited at this internal outfall, as limitations have been set at the final outfalls.

***Internal Outfall 06B:*** This discharge consists of low volume waste from the plant waste surge basin.

### **Flow**

1. Previous permit limits:  
Monthly average: MR MGD  
Daily Maximum: MR MGD  
Sampling Frequency: 1/Month  
Sample Type: Instantaneous
2. NPDES Application: (# of analyses: 12)  
Maximum Daily Value: 0.14000 MGD  
Long Term Avg Value: 0.048300 MGD
3. DMR Data: The highest flow was reported in 4/17 as 0.367 MGD.
4. Actual long term average flow (from DMR and/or application): 0.043 MGD
5. Conclusion: The permittee shall continue to monitor and report flow.  
Monthly average: MR MGD  
Daily Maximum: MR MGD  
Sampling Frequency: 1/Month  
Sample Type: Instantaneous

### **Total Suspended Solids (TSS)**

1. Previous permit limits:  
Monthly average: 30 mg/l  
Daily Maximum: 98 mg/l  
Sampling frequency: 1/Month  
Sample Type: Grab
2. NPDES Application: (# of analyses: 12)  
Maximum Daily Value: 10 mg/l (12.02 lb/d)  
Long Term Avg Value: 4.4 mg/l (1.77lb/d)
3. DMR Data: The highest TSS was reported in 8/16 as 17 mg/l.
4. Water Quality Data: NA

5. Effluent Limitation Guidelines: 40 CFR Part 423.12 for low volume waste  
Monthly average: 30 mg/l  
Daily Maximum: 100 mg/l
6. Other information: None
7. PQL: 1000 µg/l
8. Conclusion: The monthly average limit remains in accordance with 40 CFR Part 423.12. The daily maximum limit is set equal to the previous daily maximum limit, as it is more stringent than 40 CFR Part 423.12.  
Monthly average: 30 mg/l  
Daily Maximum: 98 mg/l  
Sampling frequency: 1/Month  
Sample Type: Grab

### **Oil and grease**

1. Previous Permit Limits:  
Monthly average: 15 mg/l  
Daily Maximum: 19 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab
2. NPDES Application: (No. of analyses: 12)  
Maximum Daily Value: <5.00 mg/l (< 6.01lb/d)  
Long Term Avg Value: < 5.00 mg/l (< 2.02 lb/d)
3. DMR Data: The highest data point was reported in 6/21 as 5.7 mg/l.
4. Water Quality Data: Narrative water quality criteria for oil and grease is covered by Reg.61-68.E.5.
5. Effluent Limitation Guidelines: 40 CFR Part 423.12 for low volume waste  
Monthly average: 15 mg/l  
Daily Maximum: 20 mg/l
6. Other information: None
7. PQL: 5 mg/l
8. Conclusion: The monthly average limit remains in accordance with 40 CFR Part 423.12. The daily maximum limit is set equal to the previous daily maximum limit, as it is more stringent than 40 CFR Part 423.12.  
Monthly average: 15 mg/l  
Daily Maximum: 19 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab

### **pH**

1. Previous Permit Limits: None
2. NPDES Application: (# of analyses: 1)  
Maximum Daily Value: Min: 7.23 su, Max: 7.23 su
3. DMR Data: No DMR data.
4. Water Quality Data: Water quality limits are addressed at the final outfalls.
5. Effluent limitation guidelines: 40 CFR Part 423.12: the pH of all discharges, except once-through cooling water shall be within the range of 6.0-9.0 standard units.
6. Other information: The pH limits on the final are at least as stringent as or more stringent than the effluent guidelines.
7. PQL: Not applicable

8. Conclusion: pH is not limited at this internal outfall, as limitations have been set at the final outfalls.

**Internal Outfall 008:** This discharge consists of chemical metal cleaning waste, non-chemical metal cleaning waste (from nuclear steam generator cleaning) and low volume waste from the plant startup waste holding basin. Note that limits for the non-chemical metal cleaning waste in this outfall have been set equal to BPT limits for low volume waste. A footnote has been added to the permit only requiring that iron and copper monitoring be completed when *chemical* metal cleaning waste is discharged.

#### **Flow**

1. Previous permit limits:
  - Monthly average: MR MGD
  - Daily Maximum: MR MGD
  - Sampling Frequency: 1/Month
  - Sample Type: Instantaneous
2. NPDES Application: (# of analyses: 0) no flow since October 2009
3. DMR Data: No reported discharge
4. Actual long term average flow (from DMR and/or application): No flow since October 2009 but the long term average last reissuance was 0.30 MGD.
5. Conclusion: The permittee shall continue to monitor and report flow.
  - Monthly average: MR MGD
  - Daily Maximum: MR MGD
  - Sampling Frequency: 1/Month
  - Sample Type: Instantaneous

#### **Total Suspended Solids (TSS)**

1. Previous permit limits:
  - Monthly average: 30 mg/l
  - Daily Maximum: 100 mg/l
  - Sampling frequency: 1/Month
  - Sample Type: Grab
2. NPDES Application: (# of analyses: 1)
  - Maximum Daily Value: <2.5 mg/l (0 lb/d)
3. DMR Data: No reported discharge
4. Water Quality Data: NA
5. Effluent Limitation Guidelines: 40 CFR Part 423.12 for low volume waste and metal cleaning waste
  - Monthly average: 30 mg/l
  - Daily Maximum: 100 mg/l
6. Other information: None
7. PQL: 1000 µg/l
8. Conclusion: The limits remains in accordance with 40 CFR Part 423.12.
  - Monthly average: 30 mg/l
  - Daily Maximum: 100 mg/l
  - Sampling frequency: 1/Month
  - Sample Type: Grab

### **Oil and grease**

1. Previous Permit Limits:  
Monthly average: 15 mg/l  
Daily Maximum: 20 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab
2. NPDES Application: (No. of analyses: 1)  
Maximum Daily Value: < 5.00 mg/l (0 lb/d)
3. DMR Data: No reported discharge
4. Water Quality Data: Narrative water quality criteria for oil and grease is covered by Reg.61-68.E.5.
5. Effluent Limitation Guidelines: 40 CFR Part 423.12 for low volume waste and metal cleaning waste  
Monthly average: 15 mg/l  
Daily Maximum: 20 mg/l
6. Other information: None
7. PQL: 5 mg/l
8. Conclusion: The limits remains in accordance with 40 CFR Part 423.12.  
Monthly average: 15 mg/l  
Daily Maximum: 20 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab

### **pH**

1. Previous Permit Limits: None
2. NPDES Application: (# of analyses: 1)  
Maximum Daily Value: Min: 8.30 su, Max: 8.30 su
3. DMR Data: No DMR data
4. Water Quality Data: Water quality limits are addressed at the final outfalls.
5. Effluent limitation guidelines: 40 CFR Part 423.12: the pH of all discharges, except once-through cooling water shall be within the range of 6.0-9.0 standard units.
6. Other information: The pH limits on the final are at least as stringent as or more stringent than the effluent guidelines.
7. PQL: Not applicable
8. Conclusion: pH is not limited at this internal outfall, as limitations have been set at the final outfalls.

### **Total Copper**

1. Previous permit limits:  
Monthly average: 1.0 mg/l  
Daily maximum: 1.0 mg/l  
Sampling frequency: 1/Month  
Sample type: Grab
2. NPDES Application: (# of analyses: 1)  
Maximum Daily Value: < 100.00 mg/l (0 lb/d)
3. DMR Data: No reported discharge
4. Water Quality Data: see spreadsheet
5. Other Information:
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Not applicable (this is an

internal outfall).

7. Effluent Limitations Guidelines: 40 CFR Part 423.12 for metal cleaning waste  
Monthly average: 1.0 mg/l  
Daily maximum: 1.0 mg/l
8. PQL: 0.010 mg/l
9. Conclusion: The limits are in accordance with 40 CFR Part 423.12. Monitoring is only required when *chemical* metal cleaning waste is discharged.  
Monthly average: 1.0 mg/l  
Daily maximum: 1.0 mg/l  
Sampling frequency: 1/Month  
Sample type: Grab

### **Iron**

1. Previous permit limits:  
Monthly average: 1.0 mg/l  
Daily maximum: 1.0 mg/l  
Sampling frequency: 1/Month  
Sample type: Grab
2. NPDES Application: (# of analyses: 1)  
Maximum Daily Value: 256 µg/l (0 lb/d)
3. DMR Data: No reported discharge
4. Water Quality Data: see spreadsheet
5. Other Information:
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Not applicable (this is an internal outfall).
7. Effluent Limitations Guidelines: 40 CFR Part 423.12 for metal cleaning waste  
Monthly average: 1.0 mg/l  
Daily maximum: 1.0 mg/l
8. PQL: 0.020 mg/l
9. Conclusion: The limits remains in accordance with 40 CFR Part 423.12. Monitoring is only required when *chemical* metal cleaning waste is discharged.  
Monthly average: 1.0 mg/l  
Daily maximum: 1.0 mg/l  
Sampling frequency: 1/Month  
Sample type: Grab

**Groundwater Monitoring Requirements** No changes have been made to the groundwater monitoring requirements in the permit with the exception of the additional groundwater well 17 that is existing. The six existing groundwater monitoring wells (GW-8, 9, 12, 13A, 15A and 17) shall continue to be monitored as specified in the permit.

**Threatened and Endangered Species Information** Bald Eagles, a South Carolina Threatened Species, have been spotted in the vicinity of this discharge. Based on known information, the Department feels this permit is protective of the threatened and endangered species identified that this discharge may have the potential to affect.

### **316(b) Requirements**

Section 316(b) of the CWA requires that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing environmental impact. On October 14, 2014, new regulations, called the Existing Facilities Rule, became effective for cooling water intake structures at existing NPDES facilities. The regulations were published in the Federal Register on Aug. 15, 2014 (79 FR 48424). The regulations are listed in 40 CFR 125.90-99 (Subpart J) and 122.21(r).

The V C Summer Station is an existing facility because construction commenced prior to January 17, 2002. Therefore, the cooling water intake structure there is subject to these new regulations.

The intake structure at the V C Summer Station, located in the Monticello Reservoir has a design intake capacity of 768 MGD with an actual intake flow higher than 125 MGD. Although the existing cooling water system operates as once-through, the Monticello Reservoir was constructed to function as the cooling water system. As such, the EPA and the Department have determined this system meets the definition of 'closed-cycle recirculating system' in 40 CFR 125.92(c)(2). In addition, 122.21(r)(1)(ii)(E) allows the Department to waive the application requirements of 122.21(r)(9) – (13) for closed-cycle cooling facilities that withdraw greater than 125 MGD, and the Department has granted this waiver.

The 93 feet wide intake structure consists of six intake bays about 13 feet wide each; parallel retainer walls; skimmer wall with trash racks (10-inch spacing); vertical traveling screens located 25 feet from the trash racks and with 3/8 inch mesh openings; three 395.94 cfs circulating pumps and two 225 gpm screen wash pumps. The intake velocity is 1.31 fps through the traveling screens.

*Impingement Mortality Best Technology Available (BTA):* The V C Summer cooling water system meets the definition of 'closed-system recirculating system', the first of the BTA Standards for Impingement Mortality in 40 CFR 125.94(c).

*Entrainment Best Technology Available:* 40 CFR 125.98(f)(1) and (2) require that the rationale include the information below regarding the Department's site-specific BTA determination for entrainment.

40 CFR 125.98(f)(1): "The Director must provide a written explanation of the proposed entrainment determination in the fact sheet or statement of basis for the proposed permit under 40 CFR 124.7 or 124.8. The written explanation must describe why the Director has rejected any entrainment control technologies or measures that perform better than the selected technologies or measures, and must reflect consideration of all reasonable attempts to mitigate any adverse impacts of otherwise available better performing entrainment technologies."

The EPA and the Department agree this facility operates as a 'closed-cycle recirculating system' as defined in 40 CFR 125.92(c)(2).

In the following statements from the August 15, 2014 Federal Register, the U.S. EPA state their conclusion that a closed-cycle recirculating system is the best performing entrainment reduction technology. Note that there are no better performing entrainment technologies than closed-cycle recirculating systems.

"In addition, there is a need to regulate even those facilities that adopt the most effective technology. Closed-cycle cooling is a technology that..." p. 48303

"EPA identified only one high performing technology as a potential BTA candidate for entrainment: closed-cycle recirculating systems as defined at 125.92(c)(1). While there are other technologies for entrainment that are available or demonstrated, they are not uniformly high performing technologies." p. 48330

"While EPA concluded that closed-cycle recirculating systems reduce entrainment (and impingement mortality) to the greatest extent and are the most effective performing technology..." p. 48340

"EPA also determined that there were no other "available" technologies for entrainment whose performance came close to that of closed-cycle recirculating systems." p. 48340

40 CFR 125.98(f)(2): The proposed determination in the fact sheet or statement of basis must be based on consideration of any additional information required by the Director at §125.98(i) and the following factors listed below. The weight given to each factor is within the Director's discretion based upon the circumstances of each facility.

(i) Numbers and types of organisms entrained, including, specifically, the numbers and species (or lowest taxonomic classification possible) of Federally-listed, threatened and endangered species, and designated critical habitat (e.g., prey base);

Entrainment studies were completed at VC Summer in 1983-1984 for the original 316(b) study, in 2008-2009 and again in March-August 2016. Planktonic fish larvae is the most susceptible life stage entrained at V C Summer. Threadfin shad, gizzard shad, and white perch are the most susceptible species entrained. These species are in abundance in the Monticello Reservoir and are very fertile. Note there are no aquatic threatened or endangered species or designated critical habitat in the Monticello Reservoir.

The EPA and the Department agree this facility operates as a closed-cycle cooling system, which EPA has determined is the most effective technology (p. 48303, August 15, 2014 Federal Register), reduces entrainment to the greatest extent (p. 48340), and that there were no other available technologies whose performance came close to that of closed-cycle recirculating systems (p. 48340). EPA considered selecting closed-cycle cooling as the best technology available standard for entrainment but did not do so (p. 48330) because the technology is not available nationally (p. 48338).

(ii) Impact of changes in particulate emissions or other pollutants associated with entrainment technologies;

This is not a factor in this BTA determination for because V C Summer utilizes the most effective entrainment reduction technology.

iii) Land availability in as much as it relates to the feasibility of entrainment technology;

This is not a factor in this BTA determination for because the V C Summer utilizes the most effective entrainment reduction technology.

iv) Remaining useful plant life; and

This is a factor only if investments for other technologies are justified. This is not a factor in this BTA

determination for because the V C Summer utilizes the most effective entrainment reduction technology.

(v) Quantified and qualitative social benefits and costs of available entrainment technologies when such information on both benefits and costs is of sufficient rigor to make a decision.

Information on quantified and qualitative social benefits and cost of available entrainment technologies is not of sufficient rigor to make a decision. VC Summer already employs the technology that EPA considers to be the best performing technology.

The Department has determined that the cooling water intake structure reflects the best technology available for entrainment and impingement mortality by operating a closed-cycle recirculating cooling system.

## II. GENERAL INFORMATION

- A. The effluent from this facility may be subject to the requirements of any of the following regulations: R.61-68, R.61-69, R.61-9.122, 124, 125, 129, 133, and 403; 40 CFR Part 136; Subchapter N (40 CFR Parts 400 through 402 and 404 through 471); and R.61-9.503, 504 and 505.
- B. Authority: This permit is written in accordance with applicable laws and regulations including, but not limited to, Regulation 61-9, Regulation 61-68, Pollution Control Act and Clean Water Act.
- C. Under R.61-9.124.8 (Fact Sheet), a fact sheet shall be prepared for every draft permit for a major NPDES facility or activity, for every Class I sludge management facility, for every NPDES draft permit that incorporates a variance or requires an explanation under section 124.56(b), and for every draft permit which the Department finds is the subject of wide-spread public interest or raises major issues.
- D. The conclusions noted in the Rationale establish proposed effluent limitations and permit requirements addressed in R.61-9.122.43 (Establishing Permit Conditions), R.61-9.122.44 (Establishing Limitations, Standards and other permit conditions) and other appropriate sections of R.61-9.

## III. BACKGROUND AND PROCEDURES FOR PERMIT LIMIT DEVELOPMENT

- A. The receiving waterbody 7Q10, annual average flow or other critical flow condition at the discharge point, and 7Q10, annual average flow, or other critical flow condition for source water protection are determined by the SCDHEC's Wasteload Allocation Section. The 7Q10, Annual Average Flow or other critical flow conditions are based on information published or verified by the USGS, an estimate extrapolation from published or verified USGS data or from data provided by the permittee. These flows may be adjusted by the Wasteload Allocation Section to account for existing water withdrawals that impact the flow. The 7Q10 (or 30Q5 if provided by the applicant), annual average flow at the discharge point, or other critical flow condition or 7Q10 (or 30Q5 if provided by the applicant), annual average flow or other critical flow condition for source water protection for a proposed or existing surface water drinking water intake will be used to determine dilution factors, as appropriate, in accordance with R.61-68.C.4.a & 4.b for aquatic life, human health, and organoleptic effects respectively.
- B. Water and organism consumption and drinking water MCL criteria will be evaluated for protection of human health when calculating dilution factors. "The Department may, after Notice of Intent included

in a notice of a proposed NPDES permit in accordance with Regulation 61-9.124.10, determine that drinking water MCLs or W/O shall not apply to discharges to those waterbodies where there is: no potential to affect an existing or proposed drinking water source and no state-approved source water protection area." For permitting purposes, "a proposed drinking water source is one for which a complete permit application, including plans and specifications for the intake, is on file with the Department at the time of consideration of an NPDES permit application for a discharge that will affect or has the potential to affect the drinking water source" (R.61-68.E.14.c(5)).

The Department will implement this protection in NPDES permits using the source water protection program already developed for the drinking water program. A source water protection program was developed originally in 1999 to define the source water protection areas for each drinking water intake. The program was designed to identify source water protection areas (SWPAs) to aid drinking water systems in identifying sources of potential contamination that could affect their intakes. In September 2009, this program was modified to redefine the SWPAs as smaller, more manageable areas. The revised document developed in September 2009 is entitled "South Carolina Drinking Water Source Assessment and Protection Program." For the purposes of NPDES permitting, the SWPA referred to in Regulation 61-68.E.14.c(5) is the Primary Protection Area defined in the revised assessment and protection document. More information regarding the use of these protection areas is provided later in this rationale with the discussion of the procedure for establishing permit limits in Section G.2.

- C. Application of numeric criteria to protect human health: If separate numeric criteria are given for organism consumption, water and organism consumption (W/O), and drinking water Maximum Contaminant Levels (MCLs), they shall be applied as appropriate. The most stringent of the criteria shall be applied to protect the existing and classified uses of the waters of the State (R.61-68.E.14.b(1)).
- D. Numeric criteria have been established in R.61-68 based on organoleptic data (prevention of undesirable taste and odor). For those substances which have aquatic life and/or human health numeric criteria and organoleptic numeric criteria, the most stringent of the three shall be used for derivation of permit effluent limitations. See R.61-68.E.13.
- E. Sampling Frequency: Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in the permit (R.61-9.122.41(j)(4)). Typically, requirements to report monitoring results shall be established on a case-by-case basis with a frequency dependent on the nature and effect of the discharge but in no case less than once a year (R.61-9.122.44(i)(2)).
- F. Compliance Schedules:
  - 1. A person issued an NPDES permit by the Department who is not in compliance with applicable effluent standards and limitations or other requirements contained therein at the time the permit is issued, shall be required to achieve compliance within a period of time as set forth by the Department, with effluent standards and limitations, with water quality standards, or with specific requirements or conditions set by the Department. The Department shall require compliance with terms and conditions of the permit in the shortest reasonable period of time as determined thereby or within a time schedule for compliance which shall be specified in the issued permit. (R.61-

9.122.47(c)(1))

2. If a time schedule for compliance specified in an NPDES permit which is established by the Department, exceeds nine (9) months, the time schedule shall provide for interim dates of achievement for compliance with certain applicable terms and conditions of the permit. (R.61-9.122.47(c)(2))

G. Procedure for establishing effluent limitations:

1. Effluent limits (mass and concentration) for Five day Biochemical Oxygen Demand (BOD<sub>5</sub>), Ultimate Oxygen Demand (UOD), Dissolved Oxygen (DO), Total Ammonia Nitrogen (as N), and Nutrients (e.g., nitrogen and phosphorus) are established by the Wasteload Allocation (WLA) Section, with consideration given to technology-based limitations.
  - a. Five day Biochemical Oxygen Demand BOD<sub>5</sub>, Ultimate Oxygen Demand (UOD), Dissolved Oxygen (DO):

Effluent limits for conventional oxygen demanding constituents (BOD<sub>5</sub>, UOD and DO) are established to protect in-stream water quality, while utilizing a portion of the assimilative capacity of the receiving water. The ability of a water body to assimilate oxygen-demanding substances is a function of its physical and chemical characteristics above and below the discharge point. Various mathematical techniques, called models, have been developed to estimate this capacity. The Department follows the procedures as outlined in the "State/EPA Region IV Agreement on the Development of Wasteload Allocations/Total Maximum Daily Loads and NPDES Permit Limitations" dated October 30, 1991 (as updated) for determining the assimilative capacity of a given water body. Mathematical models such as QUAL2E and QUAL2E-UNCAS are used in accordance with "Enhanced Stream Water Quality Models QUAL2E and QUAL2E-UNCAS: Documentation and Users Manual" (EPA/600/3-87/007; dated May 1987) as updated. BOD<sub>5</sub> and UOD values determined from modeling results will be used in permitting as monthly average derived limits ( $C_{wla}$ ). Daily maximum derived limits will typically be determined by multiplying the monthly average value by two.

For facilities subject to effluent guidelines limitations or other technology-based limitations, BOD<sub>5</sub> will also be evaluated in accordance with the applicable industrial categorical guidelines. These guidelines will be identified in Part I of this rationale when they are applicable to the permit.

- b. Total Ammonia Nitrogen (as N):

Ammonia limitations based on oxygen demand will be determined from modeling information as described above. These values will be used as monthly average derived limits and a daily maximum will typically be determined by multiplying the monthly average derived limit by two. These values will be compared with the ammonia water quality criteria for protection of aquatic life from Regulation 61-68, Attachment 3 and any categorical limitations. The more stringent of the limitations will be imposed. Calculations for aquatic life criteria and other wasteload recommendations are shown in Part I of this rationale when ammonia is a pollutant of concern.

c. Discharges of Nutrients:

In order to protect and maintain lakes and other waters of the State, consideration is given to the control of nutrients reaching the waters of the State. Therefore, in accordance with regulation R.61-68.E.11, the Department controls the nutrients as prescribed below. Nutrient limitations will be determined from the best available information and/or modeling performed by the Wasteload Allocation Section to meet these water quality standards.

- i. Discharges of nutrients from all sources, including point and nonpoint, to waters of the State shall be prohibited or limited if the discharge would result in or if the waters experience growths of microscopic or macroscopic vegetation such that the water quality standards would be violated or the existing or classified uses of the waters would be impaired. Loading of nutrients shall be addressed on an individual basis as necessary to ensure compliance with the narrative and numeric criteria.
- ii. Numeric nutrient criteria for lakes are based on an ecoregional approach which takes into account the geographic location of the lakes within the State and are listed below. These numeric criteria are applicable to lakes of 40 acres or more. Lakes of less than 40 acres will continue to be protected by the narrative criteria.
  1. For the Blue Ridge Mountains ecoregion of the State, total phosphorus shall not exceed 0.02 mg/l, chlorophyll *a* shall not exceed 10 ug/l, and total nitrogen shall not exceed 0.35 mg/l
  2. For the Piedmont and Southeastern Plains ecoregions of the State, total phosphorus shall not exceed 0.06 mg/l, chlorophyll *a* shall not exceed 40 ug/l, and total nitrogen shall not exceed 1.50 mg/l
  3. For the Middle Atlantic Coastal Plains ecoregion of the State, total phosphorus shall not exceed 0.09 mg/l, chlorophyll *a* shall not exceed 40 ug/l, and total nitrogen shall not exceed 1.50 mg/l.
- iii. In evaluating the effects of nutrients upon the quality of lakes and other waters of the State, the Department may consider, but not be limited to, such factors as the hydrology and morphometry of the waterbody, the existing and projected trophic state, characteristics of the loadings, and other control mechanisms in order to protect the existing and classified uses of the waters.
- iv. The Department shall take appropriate action, to include, but not limited to: establishing numeric effluent limitations in permits, establishing Total Maximum Daily Loads, establishing waste load allocations, and establishing load allocations for nutrients to ensure that the lakes attain and maintain the narrative and numeric criteria and other applicable water quality standards.
- v. The criteria specific to lakes shall be applicable to all portions of the lake. For this purpose,

the Department shall define the applicable area to be that area covered when measured at full pool elevation.

2. Effluent concentration limits ( $C_{efflim}$ ) for parameters other than the parameters listed in G.1.a-c (except ammonia toxicity calculations) above are established using the following procedures:

$Q_{7Q10}$	7Q10 or other critical flow condition of the receiving water at the discharge point in mgd. (may require adjustment for withdrawals)
$AAF_d$	Average Annual Flow (AAF) or other critical flow condition of the receiving water at the discharge point in mgd. (may require adjustment for withdrawals)
$Q_{7Q10i}$	7Q10 or other critical flow condition of the receiving water at either the SWP Area 15-river mile boundary or at the intake, as appropriate, in mgd.
$AAF_i$	Average Annual Flow (AAF) of the receiving water at either the SWP Area 15-river mile boundary or at the intake, as appropriate, in mgd.
$Q_d$	Long term average discharge flow in mgd.

- a. Determine dilution factors:

The following information is to be used (where applicable) for establishing effluent concentration limits:

$DF_1$ : This dilution factor is based on 7Q10 or other critical flow condition of the receiving water at the discharge point ( $Q_{7Q10}$ ). This dilution factor is used to determine the derived limits for protection of the following aquatic life and human health concerns for the reasons indicated:

- Aquatic Life (see R.61-68.C.4.a(1)). Protection of aquatic life on a short-term basis is needed at the point where aquatic organisms become exposed to the discharge.
- Human Health – Organism Consumption for parameters identified as non-carcinogens per R.61-68.C.4.b(1). Protection for human health on a short-term basis for consumption of aquatic organisms is needed at the point the aquatic organisms become exposed to the discharge.

$$DF_1 = \left( \frac{Q_{7Q10} + Q_d}{Q_d} \right)$$

$DF_2$ : This dilution factor is based on the Average Annual Flow or other critical flow of the receiving water at the discharge point ( $AAF_d$ ). This dilution factor is used to determine the derived limits for protection of the following human health and organoleptic concerns for the reasons indicated:

- Human Health – Organism Consumption for parameters identified as carcinogens per R.61-68.C.4.b(1). Protection for human health on a long-term basis to prevent cancer due to consumption of aquatic organisms is needed at the point the aquatic organisms become exposed to the discharge.

- ii. Organoleptic effects per R.61-68.C.4.b(1). Protection for taste and odor issues related to the discharge is needed at the point where the discharge enters the receiving water.

$$DF_2 = \left( \frac{AAF_d + Q_d}{Q_d} \right)$$

*DF*<sub>3</sub>: This dilution factor is based on the 7Q10 or other critical flow condition (*Q*<sub>7Q10</sub>) for protection of a proposed or existing surface water drinking water intake that the discharge has the potential to affect. This dilution factor is used to determine the derived limits for protection of the following human health concerns for the reasons indicated:

- i. Human Health – Water and Organism (W/O) Consumption for parameters identified as non-carcinogens per R.61-68.C.4.b(1) and E.14.c(5) to protect for short-term health effects when the discharge has the potential to affect a surface water drinking water intake. Protection of human health relative to drinking the water from the waterbody and consuming aquatic organisms from the same waterbody is provided by this criterion, but drinking the water withdrawn from the waterbody may require a higher level of protection in terms of applicable dilution than consumption of organisms.
- ii. Human Health - Drinking Water Maximum Contaminant Level (MCL) for parameters identified as non-carcinogens per R.61-68.C.4.b(1) and E.14.c(5) to protect for short-term health effects when the discharge has the potential to affect a surface water drinking water intake. Protection of human health relative to drinking the water from the waterbody after conventional treatment per R.61-68.G is provided by this criterion.

$$DF_3 = \left( \frac{Q_{7Q10i} + Q_d}{Q_d} \right)$$

*DF*<sub>4</sub>: This dilution factor is based on the Average Annual Flow or other critical flow condition (*AAF*<sub>*i*</sub>) for protection of a proposed or existing surface water drinking water intake that the discharge has the potential to affect. This dilution factor is used to determine the derived limits for protection of the following human health concerns for the reasons indicated:

- i. Human Health–Water and Organism Consumption for parameters identified as carcinogens per R.61-68.C.4.b(1) and E.14.c(5) to protect for long-term health effects due to cancer when the discharge has the potential to affect a surface water drinking water intake. Protection of human health relative to drinking the water from the waterbody and consuming aquatic organisms from the same waterbody is

provided by this criterion, but drinking the water withdrawn from the waterbody may require a higher level of protection in terms of applicable dilution than consumption of organisms.

- ii. Human Health - Drinking Water Maximum Contaminant Level (MCL) for parameters identified as carcinogens per R.61-68.C.4.b(1) and E.14.c(5) to protect for long-term health effects due to cancer when the discharge has the potential to affect a surface water drinking water intake. Protection of human health relative to drinking the water from the waterbody after conventional treatment per R.61-68.G is provided by this criterion.

$$DF_4 = \left( \frac{AAF_i + Q_d}{Q_d} \right)$$

For both  $DF_3$  and  $DF_4$ , to satisfy the mixing zone requirements of R.61-68.C.10(a) for both W/O and MCL criteria, the Department will use the following flows to determine dilution:

1. The following applies to discharges and intakes in flowing rivers:
  - a. Where the discharge is within the SWPA (15 river miles) of the intake, the flow at the 15-river mile boundary of the tributary with the largest applicable critical flow will be used.
  - b. Where the discharge is outside the SWPA (15 river miles) of the intake, the applicable critical flow at the intake will be used.
2. When the discharge is either in the tributary to a lake or in a lake and the intake is in the same lake that does not behave as a run-of-river impoundment\*, the flow is determined using the sum of the applicable critical flows of all tributaries entering the lake.
3. The following applies when both the discharge and the intake are in a lake arm that behaves as a run-of-river impoundment\*:
  - a. Where the discharge is within the SWPA (15-mile buffer which may include both lake and river miles) of the intake, the flow at the 15-mile boundary of the tributary with the largest applicable critical flow will be used.
  - b. Where the discharge is outside the SWPA (15-mile buffer which may include both lake and river miles) of the intake, the applicable critical flow at the intake will be used.
4. Where the discharge is in the arm of a lake and the intake is in the upper reach of another arm of the lake, no protection of W/O or MCL criteria is needed because the discharge does not have the potential to affect the intake,
5. If the discharge has the potential to affect multiple intakes, the SWPA of the intake closest to the discharge will be protected. However, the permittee may be required to provide

notification to all potentially affected intakes.

\* Run-of-river impoundment is defined as a lake or reservoir (or arm of a lake or reservoir) that is narrow and/or shallow offering little dilution or delay in contaminant flow toward an intake.

b. Determine derived limits using the following procedures:

$WQS_{al}$  Freshwater Standard (based on an established criteria or other published data per R.61-68) for protection of Aquatic Life; may be a CCC or CMC as defined below

$WQS_{org}$  Standard (based on an established criteria or other published data per R.61-68) for protection of Human Health – Organism Consumption

$WQS_{wo}$  Standard (based on an established criteria or other published data per R.61-68) for protection of Human Health – Water & Organism Consumption.

$WQS_{mcl}$  Standard (based on an established criteria or other published data per R.61-68) for Drinking Water MCL (Maximum Contaminant Level).

$WQS_{od}$  Standard (based on an established criteria or other published data per R.61-68) based on Organoleptic Data.

$C_{aqlife}$  Concentration limit derived from aquatic life data

$C_{HH}$  Concentration limit derived from human health data as determined from organism ( $C_{org}$ ), water/organism ( $C_{wo}$ ) and MCL ( $C_{mcl}$ ) data

$C_{ol}$  Concentration limit derived from organoleptic data

$C_b$  The background concentration of the concerned parameter in mg/l is typically determined from ambient monitoring data or data provided by applicant. If the waterbody to which the discharge flows is not on the 303(d) list, the 90<sup>th</sup> percentile of ambient monitoring data for aquatic life protection for the parameters identified in the Appendix (Water Quality Numeric Criteria) to Regulation 61-68 from the last 3 years, or whatever is available if less than 3 years, will typically be used. If the waterbody to which the discharge flows is not on the 303(d) list, the median value of ambient monitoring data for human health protection for the parameters identified in the Appendix (Water Quality Numeric Criteria) to Regulation 61-68 from the last 3 years, or whatever is available if less than 3 years, will typically be used. The background concentration is assumed to be zero (0) in the absence of actual data based on Departmental guidance and EPA recommendation.

i. Determine the derived limits for protection of Aquatic Life ( $C_{aqlife}$ )

1. The following guidelines apply to determining aquatic life limits using this basic equation:

$$C_{aqlife} = (DF_1 \times WQS_{al}) - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\}$$

a. Typically, the Criterion Maximum Concentration (CMC) is applied as a daily maximum derived limit and the Criterion Continuous Concentration (CCC) is applied

as a monthly average derived limit, after consideration of dilution and background concentrations. The CMC and CCC for specific metals will be adjusted using the procedures in 60 FR 22229, "Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants; States' Compliance-Revision of Metals Criteria," May 4, 1995 and the "Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria," Oct. 1, 1993 and applied as a daily maximum and monthly average, respectively, after consideration of dilution and background concentrations. For specific metals, this calculation is explained in detail later in this rationale.

$$\begin{aligned}\text{monthly average} &= C_{aqlife} \text{ using CCC as } WQS_{al} \\ \text{daily maximum} &= C_{aqlife} \text{ using CMC as } WQS_{al}\end{aligned}$$

- b. If only a CMC exists for a particular parameter, the daily maximum derived permit limit will be set using that value, after consideration of dilution and background concentrations. If no other values (e.g., human health) exist for that parameter on which to base a monthly average limit and the discharge is continuous, the monthly average will be set equal to the daily maximum to satisfy Regulation 61-9.122.45(d). In no case shall the monthly average limit be set higher than the daily maximum limit. If only a CCC is given, it will be used as a monthly average derived limit and the daily maximum derived limit will be two (2) times the value obtained for the monthly average based on a simplified statistical procedure for determining permit limits recommended in Section 5.4.2 of the US EPA's "Technical Support Document for Water Quality-based Toxics Control", EPA/505/2-90-001, March 1991 (hereafter known as the TSD).

If a CCC exists and no CMC exists and no other acute or chronic data exists, the aquatic life limits are

$$\begin{aligned}\text{monthly average} &= C_{aqlife} \text{ using CCC as } WQS_{al} \\ \text{daily maximum} &= 2 \times C_{aqlife}\end{aligned}$$

If a CMC and no CCC exists, and no other acute or chronic data exists, the aquatic life limits are

$$\begin{aligned}\text{monthly average} &= C_{aqlife} \text{ using CMC as } WQS_{al} \\ \text{daily maximum} &= C_{aqlife} \text{ using CMC as } WQS_{al}\end{aligned}$$

- c. If only an acute toxicity effect concentration for a number of species for a particular pollutant is given as a  $LC_{50}$ , the lowest concentration should be divided by an acute-to-chronic ratio (ACR) of 10 and a sensitivity factor of 3.3, for an acceptable instream concentration in order to protect against chronic toxicity effects (R.61-68.E.16.a(1)). Other acute toxicity data will be handled similarly. The value obtained from this calculation will be used as a monthly average derived limit after consideration of dilution and background concentrations. The daily maximum will be two (2) times the value obtained for the monthly average based on a simplified statistical

procedure for determining permit limits recommended in Section 5.4.2 of the TSD.

$$\begin{aligned} \text{monthly average} &= C_{aq\text{life}} \text{ using other data as } WQS_{al} \\ \text{daily maximum} &= 2 \times C_{aq\text{life}} \end{aligned}$$

- d. If a chronic toxicity effect concentration for a number of species for a particular pollutant is given as a no observed effect concentration (NOEC), the lowest concentration should be divided by a sensitivity factor of 3.3 in order to protect against chronic toxicity to the most sensitive species (R.61-68.E.16.a(2)). Other chronic toxicity data will be handled similarly. The value obtained from this calculation will be used as a monthly average derived limit after consideration of dilution and background concentrations. The daily maximum will be two (2) times the value obtained for the monthly average based on a simplified statistical procedure for determining permit limits recommended in Section 5.4.2 of the TSD.

$$\begin{aligned} \text{monthly average} &= C_{aq\text{life}} \text{ using other data as } WQS_{al} \\ \text{daily maximum} &= 2 \times C_{aq\text{life}} \end{aligned}$$

- e. If both acute and chronic data are available for a particular pollutant, monthly average derived limit will be calculated as in c and d above for each acute and chronic, respectively. The more stringent of the monthly average derived limits will be the monthly average derived limit used after consideration of dilution and background concentrations. The daily maximum will be two (2) times the value obtained for the monthly average based on a simplified statistical procedure for determining permit limits recommended in Section 5.4.2 of the TSD.

$$\begin{aligned} \text{monthly average} &= C_{aq\text{life}} \text{ using other data as } WQS_{al} \\ \text{daily maximum} &= 2 \times C_{aq\text{life}} \end{aligned}$$

- f. Consider the background concentration ( $C_b$ ) of the parameter of concern. If the background concentration is equal to or greater than the applicable standard ( $WQS$ , as defined above) for the parameter of concern, then the derived concentration limit ( $C_{aq\text{life}}$ ) for that parameter is established equal to the standard ( $WQS$ ) so that no additional amount of that pollutant is added to the waterbody. An exception exists where the naturally occurring instream concentration for a substance is higher than the derived permit effluent limitation. In those situations, the Department may establish permit effluent limitations ( $C_{eff\text{lim}}$ ) at a level higher than the derived limit, but no higher than the natural background concentration (i.e. a "rise above background" limit). In such cases, the Department may require biological instream monitoring and/or whole effluent toxicity (WET) testing (R.61-68.E.14.c(2)).

If  $C_b$  is not based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then, generally,

$$C_{aq\text{life}} = WQS.$$

If  $C_b$  is based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then, generally,

$$C_{\text{aqlife}} < C_{\text{eff lim}} \leq C_b.$$

2. Metals: Regulation 61-9.122.45(c) requires that permit limits be expressed in terms of total recoverable metal (with limited exceptions). In order to translate from the water quality criterion to a total recoverable metal, Regulation R.61-68.E.14.c(4) provides for the use of the EPA Office of Water Policy and "Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria", October 1, 1993. A subsequent revision published in the Federal Register (60 FR 22229) on May 4, 1995 updated the data in the original report. See R.61-68 Appendix for CMC and CCC values and equations, Attachment 1 for "Conversion Factors for Dissolved Metals" and Attachment 2 "Parameters for Calculating Freshwater Dissolved Metals Criteria that are Hardness-Dependent".

Per R.61-68.E.14.a(3), the CMC and CCC are based on a hardness of 25 mg/l if the ambient or mixed stream hardness is equal to or less than 25 mg/l. Concentrations of hardness less than 400 mg/l may be based on the mixed stream hardness if it is greater than 25 mg/l and less than 400 mg/l and 400 mg/l if the ambient stream hardness is greater than 400 mg/l. The ambient stream hardness is assumed to be 25 mg/l in the absence of actual stream data. Mixed stream hardness may be determined using flow-weighted effluent hardness and stream hardness.

The following equations and constants will be used to calculate aquatic life metals limits based on these documents. The values of the terms referenced in this section and determined from the equations below are included in the Metals spreadsheet attached to this rationale. The following metals are subject to this section:

arsenic	lead
cadmium	mercury
chromium (III & VI)	nickel
copper	zinc

The equation for  $C_d$  below changes the total metal to dissolved metal. From Technical Guidance Manual for Performing Waste Load Allocations Book II, Rivers and Streams, EPA/440/484/022,

$$S = CCC \text{ or } CMC \text{ (adjusted for hardness)}$$

$$C_d = S \times CF$$

where  $C_d$  = Dissolved metal concentration ( $\mu\text{g/l}$ )

$S$  = a constant to represent the CCC or CMC ( $\mu\text{g/l}$ )

$CF$  = Conversion factor considered most relevant in fresh water for aquatic

life as defined by EPA for each metal

Once the dissolved metal concentration is known, determine  $C_p$  using the equation for  $C_d$  above and the following equations.

$$C_p = C_d \times \left\{ 1 + \left( K_{pb} \times TSS_b \times 10^{-6} \right) \right\}$$

$$K_{pb} = K_{po} \times (TSS_b)^a$$

where  $C_p$  = Particulate sorbed metal concentration ( $\mu\text{g/l}$ ). This value represents the revised water quality criterion for the metal to be used for ambient data comparison.

$K_{pb}$  = Linear partition coefficient using the stream TSS (liters/mg)

$K_{po}$  = Metal-specific equilibrium constant (liters/mg)

$a$  = Metal-specific constant

$TSS_b$  = Background or in-stream Total Suspended Solids (TSS) concentration (mg/l). The background TSS is assumed to be 1 mg/l in the absence of actual instream data based on the 5th percentile of ambient TSS data on South Carolina waterbodies from 1993-2000.

To determine the effluent limit ( $C_{aq\text{life}}$ ), use the following equations to translate the limits into a total recoverable metal concentration.

$$TSS_{avg} = \frac{(Q_d \times TSS_e) + (Q_{7Q10} \times TSS_b)}{Q_d + Q_{7Q10}}$$

where  $TSS_e$  = Effluent Total Suspended Solids (TSS) concentration (mg/l) determined from actual long-term average data or proposed permit limits if no data available.

$TSS_{avg}$  = Average in-stream (mixed) TSS concentration (mg/l)

$$C_t = C_d \times \left\{ 1 + \left( K_p \times TSS_{avg} \times 10^{-6} \right) \right\}$$

$$K_p = K_{po} \times (TSS_{avg})^a$$

where  $C_t$  = Total metal concentration ( $\mu\text{g/l}$ )

$K_p$  = Linear partition coefficient (liters/mg). This is the distribution of metal at equilibrium between the particulate and dissolved forms.

Once  $C_t$  has been calculated, it is multiplied by  $DF_1$  and background concentrations are accounted for to obtain the derived limit (max or avg) ( $C_{aq\text{life}}$ ):

$$C_{aqlife} = (C_t \times DF_1) - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\}$$

monthly average =  $C_{aqlife}$  based on CCC  
daily maximum =  $C_{aqlife}$  based on CMC

3. Where a Water Effects Ratio (WER) is used to adjust a criterion, derived limits for the adjusted aquatic life criterion ( $C_{aqlife-adj}$ ) are calculated as follows. The WER is a type of site-specific permit effluent limit (as allowed by R.61-68.E.14.c(7)) derived using a ratio determined from EPA methodology. Both DHEC and EPA must approve the WER prior to implementation. See EPA's 1994 "Interim Guidance on the Determination and Use of Water-Effect Ratios (WERs) for Metals." The approved WER will be shown in the water quality spreadsheets on the Data sheet. The revised aquatic life value will be shown with the WER, hardness and dissolved metals adjustments, as appropriate, in the aquatic life columns on the Pollutant spreadsheet.

- a. For metals identified in #2 above, revise the equation for S as follows:

$$S = [\text{CCC or CMC (adjusted for hardness)}] \times \text{WER}$$

Follow the remaining calculations in #2 above to get an adjusted  $C_{aqlife}$  value that will be used to determine derived limits:

monthly average =  $C_{aqlife-adj}$  based on CCC  
daily maximum =  $C_{aqlife-adj}$  based on CMC

- b. For other parameters, use the appropriate equation in #1 above to derive an adjusted  $C_{aqlife}$  value. The monthly average will be calculated as follows using the appropriate  $WQS_{al}$  and the daily maximum calculated using the appropriate equations in #1 above.

$$C_{aqlife-adj} = (DF_1 \times WQS_{al} \times \text{WER}) - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\}$$

4. Where the Recalculation Procedure is used to adjust a criterion, derived limits for the adjusted aquatic life criterion ( $C_{aqlife-adj}$ ) are calculated as follows. The Recalculation Procedure is intended to cause a site-specific criterion to appropriately differ from the State-adopted national aquatic life criterion if justified by demonstrated pertinent toxicological differences between the aquatic species that occur at the site and those that were used in the derivation of the criterion. It is important to note that the site (the portion of the waterbody or watershed being affected) must be clearly defined. This procedure is used to develop site-specific criteria in accordance with R.61-68.C.12. Both DHEC and EPA must approve the recalculated criterion prior to implementation. The recalculated criterion will require an update to the Water Classifications and Standards

Regulations, R.61-68 and 61-69.

The approved recalculated aquatic life criteria (SS-CCC and SS-CMC, as appropriate) will be shown adjusted for hardness on the Data spreadsheet. The additional dissolved metals adjustments, as appropriate, will be shown in the aquatic life columns on the Pollutant spreadsheet. If the parameter being adjusted is one of the metals in #2 above, SS will include all the appropriate metals adjustments.

$$C_{aqlife-adj} = (DF_1 \times SS - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\}$$

monthly average =  $C_{aqlife-adj}$  based on CCC

daily maximum =  $C_{aqlife-adj}$  based on CMC

5. Where a WER and recalculation procedure are combined to adjust a criterion, derived limits ( $C_{aqlife-adj}$ ) for aquatic life protection are calculated by combining the calculations in #3 and #4.

$$C_{aqlife-adj} = (DF_1 \times SS \times WER) - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\}$$

monthly average =  $C_{aqlife-adj}$  based on CCC

daily maximum =  $C_{aqlife-adj}$  based on CMC

6. Other scientifically defensible methods for developing site-specific aquatic life effluent limits or site-specific criterion may be used on a case-by-case basis.

ii. Determine derived limits for protection of Human Health

1. The following guidelines apply to determining human health limits:

- a. The human health criterion given by Regulation 61-68 will be applied as a monthly average derived limit after consideration of dilution and background concentrations ( $C_{HH-avg}$ ). Exceptions exist based on EPA criteria and are indicated for specific parameters. No limits on human health based on water and organism consumption or drinking water MCLs will be imposed if there is no potential to affect an existing or proposed surface water drinking water intake and no state-approved source water protection area in accordance with Regulation 61-68.E.14.c(5).
- b. The daily maximum permit limit will be determined from the monthly average value from (a) above and a multiplier ( $M$ ) determined using a statistical procedure recommended in Section 5.5 using average = 95<sup>th</sup> percentile from Table 5-3 in the TSD. The permitted or proposed number of samples per month ( $n$ ) is used with the coefficient of variation (CV) to determine  $M$ .

$$M = \frac{e^{(Z_m \sigma - 0.5 \sigma^2)}}{e^{(Z_n \sigma_n - 0.5 \sigma_n^2)}}$$

where:

$$\sigma_n^2 = \ln\left(\frac{CV^2}{n} + 1\right)$$

$$\sigma^2 = \ln(CV^2 + 1)$$

$CV$  = coefficient of variation of the effluent concentration. For a data set where  $n > 10$ , the  $CV$  is calculated as standard deviation divided by mean for the data set being evaluated. For data set where  $n < 10$ , the  $CV$  is estimated to equal 0.6. For less than 10 items of data, the uncertainty in the  $CV$  is too large to calculate a standard deviation or mean with sufficient confidence.

$n$  = the number of effluent samples per month (where frequency is less than 1/month,  $n = 1$ )

$z_m$  = the percentile exceedance probability for the daily maximum permit limit (=2.326 for 99<sup>th</sup> percentile basis)

$z_a$  = the percentile exceedance probability for the monthly average permit limit (=1.645 for 95<sup>th</sup> percentile basis)

$$C_{HH-max} = M * C_{HH-avg}$$

- c. Consider the background concentration ( $C_b$ ) of the parameter of concern. If the background concentration is equal to or greater than the applicable standard ( $WQS$ , as defined above) for the parameter of concern, then the derived concentration limit ( $C_{HHe}$ ) for that parameter and for the protection of that standard is established equal to the standard ( $WQS$ ). An exception exists where the naturally occurring instream concentration for a substance is higher than the derived permit effluent limitation. In those situations, the Department may establish permit effluent limitations ( $C_{efflim}$ ) at a level higher than the derived limit, but no higher than the natural background concentration (i.e. a "rise above background" limit). In such cases, the Department may require biological instream monitoring and/or whole effluent toxicity (WET) testing (See R.61-68.E.14.c(3)).

If  $C_b$  is not based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then, generally,

$$C_{HH} = WQS.$$

If  $C_b$  is based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then, generally,

$$C_{HH} < C_{efflim} \leq C_b.$$

2. Human Health – Organism Consumption ( $C_{org}$ ).

a. For Carcinogens

The Monthly Average is calculated as follows:

$$C_{org} = (DF_2 \times WQS_{org}) - \left\{ C_b \times \left( \frac{AAF_d}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{org-max} = M * C_{org}$$

b. For Non-carcinogens

The Monthly Average is calculated as follows:

$$C_{org} = (DF_1 \times WQS_{org}) - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{org-max} = M * C_{org}$$

3. Human Health – Water and Organism Consumption ( $C_{wo}$ )

a. For Carcinogens

The Monthly Average is calculated as follows:

$$C_{wo} = (DF_4 \times WQS_{wo}) - \left\{ C_b \times \left( \frac{AAF_i}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{wo-max} = M * C_{wo}$$

b. For Non-carcinogens

The Monthly Average is calculated as follows:

$$C_{wo} = (DF_3 \times WQS_{wo}) - \left\{ C_b \times \left( \frac{Q_{7Q10i}}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{wo-max} = M * C_{wo}$$

4. Human Health – Drinking Water Maximum Contaminant Level (MCL) ( $C_{mcl}$ ).

a. For Carcinogens

The Monthly Average is calculated as follows:

$$C_{mcl} = (DF_4 \times WQS_{mcl}) - \left\{ C_b \times \left( \frac{AAF_i}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{mcl-max} = M * C_{mcl}$$

b. For Non-carcinogens

The Monthly Average is calculated as follows:

$$C_{mcl} = (DF_3 \times WQS_{mcl}) - \left\{ C_b \times \left( \frac{Q_{7Q10i}}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{mcl-max} = M * C_{mcl}$$

5. Organoleptic criteria ( $C_{ol}$ ).

The Monthly Average is calculated as follows:

$$C_{ol} = (DF_2 \times WQS_{ol}) - \left\{ C_b \times \left( \frac{AAF_d}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{ol-max} = M * C_{ol}$$

iii. Parameters given in a wasteload allocation for oxygen-demanding pollutants and nutrients will be limited as

$$\text{monthly average} = C_{wla}$$

$$\text{daily maximum} = 2 \times C_{wla}$$

c. Determine the most stringent of applicable water quality data using the derived limits determined above:

*monthly average*  $C_{efflim}$  = minimum of derived monthly averages ( $C_{aqlife}$ ,  $C_{org}$ ,  $C_{wo}$ ,  $C_{mcl}$ ,  $C_{ol}$ ,  $C_{wla}$ )

*daily maximum*  $C_{efflim}$  = minimum of derived daily maximums ( $C_{aqlife}$ ,  $C_{org-max}$ ,  $C_{wo-max}$ ,  $C_{mcl-max}$ ,  $C_{ol-max}$ ,  $C_{wla-max}$ )

d. Determine whether the discharge causes, has the reasonable potential to cause or contributes

to a water quality violation.

Regulation 61-9.122.44(d)(1)(i) states: "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Department determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality."

When determining whether a discharge causes, has the reasonable potential to cause or contributes to an instream excursion, the Department will use procedures which account for controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and, where appropriate, the dilution of the effluent in the receiving water (R.61-9.122.44(d)(1)(ii)).

Based on the above statements, there are three scenarios when limitations are required, as follows:

- i. When data provided by the permit applicant indicates discharge values greater than the proposed limitation derived above, that discharge may cause an excursion above a narrative or numeric water quality criterion.
- ii. A discharge may be determined to contribute to an excursion of a water quality criterion when the waterbody is impaired (e.g., on the 303(d) list) for the parameter of concern and that parameter is also being discharged at levels above the water quality criterion.
- iii. Reasonable potential to cause a water quality violation is determined using the following information:

The Department will primarily use EPA's Technical Support Document (TSD) for determining reasonable potential using effluent data. Other methods may be used as well to evaluate data sets. All pollutants given in a wasteload allocation or an effluent limitation guideline will be limited in the permit.

When effluent data consists of non-quantifiable/non-detectable values or when no effluent data is available, other factors and information are considered to determine reasonable potential. In situations where a pollutant is known to be present in the wastestream (due to production data or other information), we know it is being discharged and has the potential to impact even though it may not be quantifiable. The fact that it is present will be enough information to say reasonable potential exists for that pollutant. Therefore, a reasonable potential decision is based on various data and information, and not just non-quantifiable/non-detectable data. Consideration is given to existing data, dilution in the waterbody, type of receiving water, designated use, type of industry/wastestream, ambient data, history of compliance, and history of toxic impact. If any source of information indicates reasonable potential to cause or contribute to an exceedance of the water quality standard, a water quality limit will be established.

Note: The result of the following calculations may indicate that reasonable potential does not exist. However, as stated above, other information may “override” this numerical determination to justify the need for a limit.

1. The procedure for determining reasonable potential from actual effluent data is explained in Box 3-2 on page 53 of the TSD. Multiplying factors are determined from Table 3-2 at a 95% confidence level and 95% probability in Section 3.3.2. The following describes the procedures used for determining reasonable potential for chemical-specific parameters and WET, under certain circumstances. More information on determining reasonable potential for WET is given in Item 2 below.

Step 1: Data Analysis: The statistical calculations involved in the “Reasonable Potential” analysis require discrete numerical data. The following describes how the effluent data will be used in determining reasonable potential.

Actual analytical results should be used whenever possible. Results less than detection and quantification should be used as follows:

- a. If the permittee reports results below the practical quantitation limit (PQL) (as defined by the permit), then the reported “less than PQL” value for a given sample is generally assumed to be zero.
- b. If the permittee uses a detection/quantification level that is **greater** than the PQL, then the reported “less than” value for a given sample is generally assumed to be a discrete value equal to the detection/quantification level used by the permittee.
- c. If the reported data consists of both discrete and non-discrete values and/or the data is reported using varying detection/quantification levels, then, generally, a combination of the above two approaches is used, or the data is evaluated in a manner that is most appropriate for that data set.

Note: For information on the acceptable analytical methods and PQLs please refer to NPDES permit application attachment titled “Practical Quantitation Limits (PQL) and Approved Test Methods.”

Step 2: Using data from the permit application, other data supplied by the applicant and/or Discharge Monitoring Report (DMR) data, determine the total number of observations ( $n$ ) for a particular set of effluent data and determine the highest value ( $C_{max}$ ) from that data set. For the monthly average comparison, the data set will include monthly average results and  $n$  will be the number of months in which they sampled in the time period being evaluated. For the daily maximum comparison, the data set will include daily maximum results and  $n$  will be the total number of samples in the time period being evaluated. Individual results may not necessarily be used in the calculation.

Step 3: Determine the coefficient of variation (CV) for the data set. For a data set where  $n > 10$ , the CV is calculated as standard deviation divided by mean for the data set being evaluated. For data set where  $n < 10$ , the CV is estimated to equal 0.6. For less than 10 items of data, the uncertainty in the CV is too large to calculate a standard deviation or mean with sufficient confidence.

$$CV = 0.6 \text{ for } n < 10$$

$$CV = \frac{\sigma}{\mu} \text{ for } n > 10$$

where:  $\sigma$  = Standard Deviation of the samples  
 $\mu$  = Mean of the samples

Step 4: Determine the appropriate multiplying factor (MF) from either Table 3-2 or using the formulae in Section 3.3.2 of the TSD.

- a. Determine the percentile represented by the highest concentration in the sample data.

$$p_n = (1 - \text{Confidence Level})^{1/n}$$

where:  $p_n$  = Percentile represented by the highest concentration in the data  
 $n$  = number of samples  
Confidence Level = 0.95 i.e. 95%

- b. Determine the multiplying factor (MF), which is the relationship between the percentile described above ( $C_p$ ) and the selected upper bound of the lognormal effluent distribution, which in this case will be the 95<sup>th</sup> percentile ( $C_{95}$ ).

$$MF = \frac{C_{95}}{C_p} = \frac{e^{(Z_{95}\sigma + 0.5\sigma^2)}}{e^{(Z_p\sigma + 0.5\sigma^2)}}$$

where:  $Z_{95}$  is the standardized Z-score for the 95<sup>th</sup> percentile of the standardized normal distribution = 1.645

$Z_p$  is the standardized Z-score for the  $p^{\text{th}}$  percentile of the standardized normal distribution.(determined in (b) above)

*Note: The values of Z-scores are listed in tables for the normal distribution. If using Microsoft® Excel, this can be calculated using the NORMSINV function.*

$$\sigma^2 = \ln(CV^2 + 1)$$

$$\sigma = \sqrt{\ln(CV^2 + 1)}$$

Step 5: Multiply the highest value from the data set ( $C_{max}$ ) by the multiplying factor ( $MF$ ) determined in Step 4 to obtain the maximum receiving water concentration ( $RWC$ ).

$$RWC = C_{max} \times MF$$

Step 6:  $RWC \leq$  Derived limit ( $C_{efflim}$ ) implies that reasonable potential does not exist.

$RWC >$  Derived limit ( $C_{efflim}$ ) implies that reasonable potential exists.

2. Reasonable potential for Whole Effluent Toxicity (WET) may be determined from numerical data using the following procedure:

a. When the effluent data is given in terms of percent effluent as an  $IC_{25}$ ,  $LC_{50}$  and/or NOEC values:

Step 1: Convert the given values to toxic units:  $TU_a$  for acute data and  $TU_c$  for chronic data, respectively, using the following formulae. Please note that an NOEC derived using the  $IC_{25}$  is approximately the analogue of an NOEC derived using hypothesis testing. The  $IC_{25}$  is the preferred statistical method for determining the NOEC (EPA TSD, March 1991, p.6).

$$TU_a = \frac{100}{LC_{50}}$$

$$TU_c = \frac{100}{NOEC} \text{ or } TU_c = \frac{100}{IC_{25}} \text{ if } IC_{25} \text{ available}$$

Step 2: Using DMR data or other data provided by the applicant, determine the total number of observations ( $n$ ) for a particular set of effluent data and determine the highest value ( $TU_{a, max}$  or  $TU_{c, max}$ ) from that data set.

Step 3: Determine the coefficient of variation ( $CV$ ) for the data set. For a data set where  $n > 10$ , the  $CV$  is calculated as standard deviation divided by mean. For data set where  $n < 10$ , the  $CV$  is estimated to equal 0.6. For less than 10 items of data, the uncertainty in the  $CV$  is too large to calculate a standard deviation or mean with sufficient confidence.

Step 4: Determine the appropriate multiplying factor ( $MF$ ) from either Table 3-2 or using the formulae in Section 3.3.2. (see iii.1, Step 4 above).

Step 5: Multiply the highest value of  $TU_{a, \max}$  or  $TU_{c, \max}$  from the data set by the multiplying factor ( $MF$ ) determined in Step 4 and the dilution at the edge of the mixing zone (the test concentration obtained from mixing zone modeling or demonstration) to obtain the maximum receiving water concentration ( $RWC$ )

$$RWC \text{ for Acute Toxicity} = [TU_{a, \max} * MF * \text{conc. at MZ boundary}]$$

$$RWC \text{ for Chronic Toxicity} = [TU_{c, \max} * MF * \text{conc. at MZ boundary}]$$

Step 6:  $RWC$  for Acute Toxicity  $\leq 0.3TU_a$  implies that a reasonable potential does not exist  
 $RWC$  for Acute Toxicity  $> 0.3TU_a$  implies that a reasonable potential exists

$RWC$  for Chronic Toxicity  $\leq 1.0TU_c$  implies that a reasonable potential does not exist

$RWC$  for Chronic Toxicity  $> 1.0TU_c$  implies that a reasonable potential exists

b. Other methods for determining reasonable potential may be used if appropriately justified.

e. Consider Effluent Limitations Guidelines (ELG or Categorical guidelines)

The more stringent of the effluent limitations guidelines average and maximum derived limits and water quality-derived average and maximum limits shall be used as permit limits, unless other information indicates more stringent limits are needed (e.g. previous permit limits due to backsliding). Categorical limitations based on mass may be converted to concentration using the long-term average flow of the discharge for comparison to the monthly average and daily maximum derived limits.

1. For effluent guidelines based on production, limits will be calculated as follows:

$$ELG \text{ lim} = \sum (ELG_{prod})(ELG) \text{ where}$$

$ELG_{lim}$ : the mass limit, in lbs/day, for an applicable pollutant based on the production

$ELG_{prod}$ : the production rate, in lbs, for the applicable guideline(s), usually based on long-term average data

$ELG$ : the effluent guideline limitation, given as a measure of production (e.g. lbs/1000 lbs), for an applicable pollutant

2. For effluent guidelines based on flow, limits will typically be calculated as follows:

$$ELG \text{ lim} = \sum (ELG_{flow})(ELG)(8.345)$$

$ELG_{lim}$ : the mass limit, in lbs/day, for the applicable pollutant based on the applicable flow

$ELG_{flow}$ : the long-term average process flow rate, in MGD, for the applicable guideline(s) (unless otherwise specified in the guideline)

$ELG$ : the concentration limitation, in mg/l, for the applicable pollutant from the applicable guideline(s)

#### H. Other considerations

1. When the derived permit effluent limitation based on aquatic life numeric criteria is below the practical quantitation limit for a substance, the derived permit effluent limitation shall include an accompanying statement in the permit that the practical quantitation limit using approved analytical methods shall be considered as being in compliance with the limit. Appropriate biological monitoring requirements shall be incorporated into the permit to determine compliance with appropriate water quality standards (R.61-68.E.14.c(2)).
2. When the derived permit effluent limitation based on human health numeric criteria is below the practical quantitation limit for a substance, the derived permit effluent limitation shall include an accompanying statement in the permit that the practical quantitation limit using approved analytical methods shall be considered as being in compliance with the limit (R.61-68.E.14.c(3)).
3. The effluent concentration limits determined above may not necessarily be the NPDES permit limit. NPDES Permit limits are determined after a reasonable potential analysis is conducted using these derived limits and also after evaluating other issues such as anti-backsliding and antidegradation.
4. When mass limits are calculated, the formula to be used is as follows.

$$\text{Mass (lb/day)} = \text{Flow (mgd)} * \text{Concentration (mg/l)} * 8.345$$

5. Per Regulation 61-9.122.45(d), for continuous discharges all permit effluent limitations, standards, and prohibitions, including those necessary to achieve water quality standards, shall unless impracticable be stated as maximum daily and average monthly discharge limitations for all dischargers other than publicly owned treatment works.
6. Antbacksliding: When a permit is reissued, the terms and conditions of the reissued permit must be at least as stringent as those final limits in the previous permit unless certain exceptions are met (see Regulation 61-9.122.44.l).

#### IV. PROCEDURES FOR REACHING A FINAL PERMIT DECISION

##### A. Comment Period (R.61-9.124.10 and 11)

The Department of Health and Environmental Control proposes to issue an NPDES permit to this applicant subject to the effluent limitations and special conditions outlined in this document. These determinations are tentative.

During the public comment period, any interested person may submit written comments on the draft permit to the following address:

SC Dept. of Health and Environmental Control  
Water Facilities Permitting Division  
Bureau of Water

2600 Bull Street  
Columbia, South Carolina 29201

For additional information, interested persons may contact Melinda Vickers at 803-898-4186.

All written comments received during the public comment period shall be considered in making the final decision and shall be responded to as prescribed below.

Per R.61-9.124.17, the Department is only required to issue a response to comments when a final permit is issued. This response shall:

1. Specify which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change; and
2. Briefly describe and respond to all significant comments on the draft permit raised during the public comment period, or during any hearing.

The response to comments shall be available to the public.

B. Public Hearings (R.61-9.124.11 and 12)

During the public comment period, any interested person may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

Determinations and Scheduling.

1. Within the thirty (30) day comment period or other applicable comment period provided after posting or publishing of a public notice, an applicant, any affected state or interstate agency, the Regional Administrator or any other interested person or agency may file a petition with the Department for a public hearing on an application for a permit. A petition for a public hearing shall indicate the specific reasons why a hearing is requested, the existing or proposed discharge identified therein and specifically indicate which portions of the application or other permit form or information constitutes necessity for a public hearing. If the Department determines that a petition constitutes significant cause or that there is sufficient public interest in an application for a public hearing, it may direct the scheduling of a hearing thereon.
2. A hearing shall be scheduled not less than four (4) nor more than eight (8) weeks after the Department determines the necessity of the hearing in the geographical location of the applicant or, at the discretion of the Department, at another appropriate location, and shall be noticed at least thirty (30) days before the hearing. The notice of public hearing shall be transmitted to the applicant and shall be published in at least one (1) newspaper of general circulation in the geographical area of the existing or proposed discharge identified on the permit application and shall be mailed to any person or group upon request thereof. Notice shall be mailed to all persons and governmental agencies which received a copy of the notice or the fact sheet for the permit application.

3. The Department may hold a single public hearing on related groups of permit applications.
4. The Department may also hold a public hearing at its discretion, whenever, for instance, such a hearing might clarify one or more issues involved in the permit decision;
5. Public notice of the hearing shall be given in accordance with R.61-9.124.10.

Any person may submit oral or written statements and data concerning the draft permit. Reasonable limits may be set upon the time allowed for oral statements, and the submission of statements in writing may be required. The public comment period under R.61-9.124.10 shall automatically be extended to the close of any public hearing under this section. The hearing officer may also extend the comment period by so stating at the hearing.

A tape recording or written transcript of the hearing shall be made available to the public.

C. Obligation to raise issues and provide information during the public comment period. (R.61-9.124.13)

All persons, including applicants, who believe any condition of a draft permit is inappropriate or that the Department's tentative decision to deny an application, terminate a permit, or prepare a draft permit is inappropriate, must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period (including any public hearing). No issue shall be raised during an appeal by any party that was not submitted to the administrative record as part of the preparation and comment on a draft permit, unless good cause is shown for the failure to submit it. Any supporting materials which are submitted shall be included in full and may not be incorporated by reference, unless they are already part of the administrative record in the same proceeding, or consist of State or Federal statutes and regulations, Department and EPA documents of general applicability, or other generally available reference materials. Commenters shall make supporting materials not already included in the administrative record available. (A comment period longer than 30 days may be necessary to give commenters a reasonable opportunity to comply with the requirements of this section. Additional time shall be granted under R.61-9.124.10 to the extent that a commenter who requests additional time demonstrates the need for such time).

D. Issuance and Effective Date of the Permit

1. After the close of the public comment period on a draft permit, the Department shall issue a final permit decision. The Department shall notify the applicant and each person who has submitted written comments or requested notice of the final permit decision. This notice shall include reference to the procedures for appealing a decision on a permit. For the purposes of this section, a final permit decision means a final decision to issue, deny, modify, revoke and reissue, or terminate a permit.
2. A final permit decision shall become effective 30 days after the service of notice of the decision unless:
  - (a) A later effective date is specified in the decision; or

(b) No comments requested a change in the draft permit, in which case the permit shall become effective on the effective date shown in the issued permit.

3. Issuance or Denial of Permits. An appeal to a final determination of the Department or to a condition of a permit issued or the denial of a permit pursuant to the State law and Regulation 61-9, shall be in accordance with and subject to 48-1-200 of the SC Code (see E below).

E. Adjudicatory Hearings

Please see the Department's Guide to Board Review:

<https://www.scdhec.gov/about-dhec/sc-board-health-and-environmental-control/guide-board-review>.