



May 13, 2009  
NND-09-0130

U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555-0001

ATTN: Document Control Desk

Subject: V. C. Summer Nuclear Station Units 2 and 3  
Docket Numbers 52-027 and 52-028  
Combined License Application – Environmental Report Audit  
Information Needs: HP-5, SE-7, SW-3 (Part 2)

Reference: 1. Letter from S.A. Byrne to Document Control Desk, Submittal of  
a Combined License Application for V. C. Summer Nuclear  
Station Units 2 and 3, dated March 27, 2008.  
2. Letter from Ronald B. Clary to Document Control Desk,  
Submittal of Revision 1 to Part 3 (Environmental Report) of the  
Combined License Application for the V. C. Summer Nuclear  
Station Units 2 and 3, dated February 13, 2009.

By letter dated March 27, 2008, South Carolina Electric & Gas Company (SCE&G) submitted a combined license application (COLA) for two Westinghouse AP1000 units, designated V.C. Summer Nuclear Station (VCSNS) Units 2 and 3, to be located at the existing VCSNS site in Fairfield County, South Carolina. Subsequently the Environmental Report (ER), Part 3 of the application, was revised and submitted to the NRC (reference 2).

During the week of March 9, 2009, the NRC conducted an Environmental Audit to gather information to assist in the review of the ER. The purpose of this letter is to submit a portion of the ER Information Needs identified by the NRC including: HP-5, SE-7, SW-3 (Part 2).

Please address any questions to Mr. Alfred M. Paglia, Manager, Nuclear Licensing, New Nuclear Deployment, P. O. Box 88, Jenkinsville, S.C. 29065; by telephone at 803-345-4191; or by email at [apaglia@scana.com](mailto:apaglia@scana.com).

DD83  
NKO

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 13<sup>th</sup> day of May 2009



Ronald B. Clary  
General Manager  
New Nuclear Deployment

ARR/RBC/ar

Enclosures

c (with Enclosures):

Patricia Vokoun  
Carl Berkowitz  
April Rice  
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John Zeiler  
Stephen A. Byrne  
Ronald B. Clary  
Bill McCall  
Kenneth J. Browne  
Randolph R. Mahan  
Kathryn M. Sutton  
Rich Louie  
John J. DeBlasio

## VCSNS UNITS 2 and 3

### Response to NRC Information Needs

Information Item Number: HP-5 Revision: 0

#### Statement of the Information Needs Item:

Information Needs Item HP-5:

Provide an expert who can discuss exposure pathways and calculating doses to the public and biota from normal plant operations. Also, provide information on the presence or lack thereof of any unusual plants, animals, agricultural practices, or unusual food processing operations that can contribute 10% or more to offsite doses.

Requested Action:

Applicant to document/describe any unusual animal, plants, species, food processing exist that should be considered or why they were not considered. Add statement to report stating that these were considered and none apply.

#### Response:

Based upon VCSNS Unit 1 operating experience, as documented in the Annual Radiological Environmental Operating Reports, and a search of available literature (e.g., SCDHEC reports and surveys), there were no unusual animals, plants, agricultural practices, game harvests, or food processing operations identified that would have the potential to contribute 10% or more to offsite doses. ER Section 5.4.1 will be revised to reflect this.

#### COLA Revisions:

In a future ER revision, the following paragraph will be inserted at the end of Section 5.4.1:

There are no known unusual animals, plants, agricultural practices, game harvests, or food processing operations within 50 miles of the VCSNS site that have the potential to contribute 10% or more to offsite doses.

## VCSNS UNITS 2 and 3

### Response to NRC Information Needs Item

Information Item Number: SE-7 Revision: 0

#### Statement of the Information Item:

Information Item SE-7:

Provide an expert to discuss the following:

- Expected impacts to visual resources
- Artist renderings and viewshed analysis
- Cooling plume visibility

#### SCE&G Follow Up Action:

Provide artist's rendering of cooling plume. Comment: base rendering on mean values from plume rise model (SACTI).

#### Response:

A photo from Monticello Reservoir at the Exclusion Area Boundary in the direction of the Units 2 and 3 cooling towers was used and a plume with the height of the average annual plume (from Section 5.3.3.1 of the ER) was superimposed at the proper location on the horizon to produce the artist's rendering that is attached.

#### COLA Revisions:

No COLA revision is required as a result of the response to this Information Needs item.



Figure SE-7-1

## VCSNS UNITS 2 and 3

### Response to NRC Information Needs Item

Information Item Number: SW-3 Revision: 0

#### Statement of the Information Item:

Information Item SW-3:

Provide an expert to discuss water quality including monitoring in the rivers and reservoirs and any impairment listings including and after the 2004 and 2006 surveys, SCDNR and SCDHEC standards for surface waters in this specific region, the Monticello Reservoir water quality assessment, radiological monitoring, thermal discharges as it relates to thermophilic and etiologic organisms.

SCE&G Follow Up Action:

1. Provide figure or figures of water quality sampling locations, including DHEC stations.
2. Provide comparison table of water quality data with regulatory limits.

#### Response:

##### Number 2

SCDHEC regulation R.61-69 indicates that the main stem of the Broad River, which includes the reach of the river at VCSNS, is classified as Freshwater. The corresponding water quality standards can be found in SCDHEC regulation R.61-68.G.10.

Tables 2.3-30, 2.3-31, and 2.3-32 will be modified to include a column identifying the state Freshwater quality standard, where applicable, for each parameter included in the surface water quality measurements in Monticello Reservoir.

#### COLA Revisions:

See revised tables. The updated tables will be included in Section 2.3 in a future ER revision.

Note that an error in the dissolved oxygen levels measured at Sample Location B-346 was corrected in Table 2.3-30. The lowest dissolved oxygen reading at that location in 2004 was 6.14 mg/L.

VCSNS UNITS 2 and 3

Response to NRC Information Needs Item

Table 2.3-30 (Sheet 1 of 2)  
Surface Water Quality Data 2004

Analyzed Parameters	Freshwater Standard <sup>a</sup>	Monticello Reservoir		Parr Reservoir	
		Sample Location	Sample Location	Sample Location	Sample Location
		B-327	B-328	B-345	B-346
Temperature (°C)/(°F)	<u>Note b</u>	9.3°-31.6°C 48.7°-88.9°F	8.9°-31.2°C 48°-88.2°F	8.0°-29.2° C 46.4°-84.6°F	7.0°-28° C 44.6°-82.4°F
Turbidity (NTU)	<u>Not to exceed 25 NTUs provided existing uses are maintained</u>	3.0-12.0	1.3-4.9	4.6-46	6.4-95
Dissolved Oxygen (mg/L)	<u>Daily average not less than 5.0 mg/L with a low of 4.0 mg/L</u>	6.38-12.72	6.99-13.25	4.95-11.50	<del>Less than QL</del> 6.14-11.90
BOD (mg/L)	<u>NE</u>	Less than QL-2.0	All less than QL	All less than QL	All less than QL
pH	<u>Between 6.0 and 8.5</u>	7.11-8.68	7.41-8.11	6.95-7.66	7.12-7.68
Alkalinity, Carbonate as CaCO <sub>3</sub> (mg/L)	<u>NE</u>	17-25	23-24	16-26	14-25
Total Nitrogen (NH <sub>3</sub> ) (mg/L)	<u>1.50 mg/L</u>	Less than QL-0.50	Less than QL-0.20	Less than QL-0.20	Less than QL-0.50
Total N (Kjeldahl) (mg/L)	<u>NE</u>	0.22-0.60	0.38-0.74	0.23-0.48	0.14-0.61
Total N (nitrite/nitrate) (mg/L)	<u>NE</u>	0.11-0.46	Less than QL-0.062	0.25-0.51	0.28-0.58
Total Phosphorous (mg/L)	<u>0.06 mg/L</u>	Less than QL-0.039	Less than QL-0.021	Less than QL-0.052	0.030-0.13
Total Fecal Coliform (# cells/100 mL)	<u>Note c</u>	Less than QL-7	Less than QL-32	2 - 140	Less than QL-240
Total Organic Carbon (mg/L)	<u>NE</u>	2.4-3.2	4.7-5.2	2.2-2.9	2.0-3.3
Cadmium, Total (µg/L)	<u>5 µg/L</u>	All less than QL	All less than QL	All less than QL	All less than QL
Chromium, Total (µg/L)	<u>Note d</u>	All less than QL	All less than QL	All less than QL	All less than QL
Copper, Total (µg/L)	<u>3.8 µg/L<sup>e</sup></u>	All less than QL	All less than QL	All less than QL	All less than QL
Iron, Total (µg/L)	<u>NE</u>	130-600	42-160	220-880	450-1100
Lead, Total (µg/L)	<u>14 µg/L<sup>e</sup></u>	All less than QL	All less than QL	Less than QL	All less than QL

VCSNS UNITS 2 and 3

Response to NRC Information Needs Item

Table 2.3-30 (Sheet 2 of 2)  
Surface Water Quality Data 2004

Analyzed Parameters	Freshwater Standard <sup>a</sup>	Monticello Reservoir		Parr Reservoir	
		Sample Location	Sample Location	Sample Location	Sample Location
		B-327	B-328	B-345	B-346
Manganese, Total (µg/L)	NE	Less than QL-18	Less than QL-44	20-40	33-50
Mercury, Total (µg/L)	2 µg/L	All less than QL	Less than QL-19	All less than QL	All less than QL
Nickel, Total (µg/L)	150 µg/L <sup>e</sup>	All less than QL	All less than QL	All less than QL	All less than QL
Zinc, Total (µg/L)	37 µg/L <sup>e</sup>	Less than QL-21	All less than QL	Less than QL-48	All less than QL

<sup>a</sup> Standards from SCDHEC Regulation R.61-68, Water Classifications & Standards, Section G.10. Human health standards (MCLs) are presented for toxic pollutants. Where no human health standard is provided, the Freshwater standard for protection of aquatic life is presented.

<sup>b</sup> The weekly average water temperature of all Freshwaters which are lakes shall not be increased more than 5°F (2.8°C) above natural conditions and shall not exceed 90°F (32.2°C) as a result of the discharge of heated liquids unless a different site-specific temperature standard or a mixing zone has been established or a Section 316(a) determination under the Federal Clean Water Act has been completed.

<sup>c</sup> Not to exceed a geometric mean of 200/100 mL, based on five consecutive samples during any 30 day period; nor shall more than 10% of the total samples during any 30 day period exceed 400/100 mL.

<sup>d</sup> The MCL for Chromium III and VI is 100µg/L.

<sup>e</sup> Indicates CMC for Freshwater aquatic life.

Source: U.S. EPA (2006)

Note: Sample depths 0.3 meters

QL = quantification limit

< = Less than

MCL =Maximum Contaminant Level

NE = Not Established

CMC = Criteria Maximum Concentration (estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly without resulting in an unacceptable effect).

## VCSNS UNITS 2 and 3

### Response to NRC Information Needs Item

**Table 2.3-31  
Surface Water Quality Data 2005**

Analyzed Parameter	Freshwater Standard <sup>a</sup>	Monticello Reservoir	Parr Reservoir
		Sample Location B-327 Result	Sample Location B-345 Result
Temperature (°C)/(°F)	Note b	11.4°-32°C 52.5°F-89.6°F	10.6°C-29.3°C 51.1°F-84.7°F
Turbidity (NTU)	Note c	2.5-12	6.5-47
Dissolved Oxygen (mg/L)	Daily average not less than 5.0 mg/L with a low of 4.0 mg/L	5.15-10.92	4.32-10.52
BOD (mg/L)	NE	All less than QL	All less than QL
pH (SU)	Between 6.0 and 8.5	6.9-8.5	6.7-7.88
Total Nitrogen (NH3) (mg/L)	1.50 mg/L	<QL-0.2	<QL-0.25
Total N (Kjeldahl) (mg/L)	NE	0.21-0.53	0.24-0.56
Total N (nitrite/nitrate) (mg/L)	NE	0.14-0.59	0.27- 0.62
Total Phosphorous (mg/L)	0.06 mg/L	<QL-0.038	0.027-0.083
Hardness, Ca & Mg-Total (mg/L)	NE	14	15
Alkalinity, Carbonate as CaCO <sub>3</sub> , Total (mg/L)	NE	17-24	17-24
Cadmium, Total (µg/L)	5 µg/L	All less than QL	All less than QL
Total Organic Carbon (mg/L)	NE	<QL-3.2	3.0-3.9
Chromium, Total (µg/L)	Note d	All less than QL	<QL-25
Copper, Total (µg/L)	3.8 µg/L <sup>e</sup>	All less than QL	All less than QL
Iron, Total (µg/L)	NE	150-350	330-1800
Lead, Total (µg/L)	14 µg/L <sup>e</sup>	All less than QL	All less than QL
Nickel, Total (µg/L)	150 µg/L <sup>e</sup>	All less than QL	All less than QL
Zinc, Total (µg/L)	37 µg/L <sup>e</sup>	<QL-10	All less than QL
Total Fecal Coliform (# cells/100mL)	Note f	<QL-100	2-480
Enterococcus Group Bacteria, Total (# cells/100 mL)	NE	<QL-12	<QL-310

<sup>a</sup> Standards from SCDHEC Regulation R.61-68, Water Classifications & Standards, Section G.10. Human health standards (MCLs) are presented for toxic pollutants. Where no human health standard is provided, the Freshwater standard for protection of aquatic life is presented.

<sup>b</sup> The weekly average water temperature of all Freshwaters which are lakes shall not be increased more than 5°F (2.8°C) above natural conditions and shall not exceed 90°F (32.2°C) as a result of the discharge of heated liquids unless a different site-specific temperature standard or a mixing zone has been established or a Section 316(a) determination under the Federal Clean Water Act has been completed.

<sup>c</sup> Not to exceed 25 NTUs provided existing uses are maintained

<sup>d</sup> The MCL for Chromium III and VI is 100µg/L.

<sup>e</sup> Indicates CMC for Freshwater aquatic life.

<sup>f</sup> Not to exceed a geometric mean of 200/100 mL, based on five consecutive samples during any 30 day period; nor shall more than 10% of the total samples during any 30 day period exceed 400/100 mL

Source: U.S. EPA (2006)

QL = quantification limit

< = Less than

MCL =Maximum Contaminant Level

NE = Not Established

CMC = Criteria Maximum Concentration (estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly without resulting in an unacceptable effect).

## VCSNS UNITS 2 and 3

### Response to NRC Information Needs Item

**Table 2.3-32 (Sheet 1 of 2)  
Monticello Reservoir Water Quality 2006**

Analyzed Parameter	Freshwater Standard <sup>a</sup>	Result
Antimony (µg/L)	6 µg/L	<QL
Arsenic (µg/L)	10 µg/L	<QL
Barium (µg/L)	2000 µg/L	17.7
Beryllium (µg/L)	4 µg/L	<QL
Cadmium (µg/L)	5 µg/L	<QL
Calcium (µg/L)	NE	3,425
Chromium (µg/L)	Note b	<QL
Copper (µg/L)	3.8 µg/L <sup>c</sup>	<QL
Iron (µg/L)	NE	101
Lead (µg/L)	14 µg/L <sup>c</sup>	<QL
Magnesium (µg/L)	NE	1,856
Manganese (µg/L)	NE	<QL
Mercury (liquid) (µg/L)	2 µg/L	<QL
Ammonia- N (mg/L)	Note d	0.21
Chlorophyll a (mg/L)	40 µg/L	0.00690
Ortho-phosphorous (mg/L)	NE	0.034
Phosphorous (mg/L)	0.06 mg/L	0.021
BOD 5-day (mg/L)	NE	<QL
Fecal Coliform-MF (# cells/100 mL)	Note e	<QL
Nickel (µg/L)	150 µg/L <sup>c</sup>	<QL
Potassium (µg/L)	NE	2,206
Selenium (µg/L)	50 µg/L	<QL
Silver (µg/L)	0.37 µg/L <sup>c</sup>	<QL
Sodium (µg/L)	NE	10,280
Thallium (µg/L)	2 µg/L	<QL
Zinc (µg/L)	37 µg/L <sup>c</sup>	<QL
Silica (µg/L)	NE	8,025
Sulfate (mg/L)	NE	4.3
Total Dissolved Solids (mg/L)	NE	63
Total Hardness (Calcium) (mg/L)	NE	16.2
Total Suspended Solids (mg/L)	NE	3
Turbidity (nephelometric turbidity units)	Not to exceed 25 NTUs provided existing uses are maintained	2.3
Platinum-Cobalt (SU)	NE	15
Total Organic Carbon (mg/L)	NE	1.7
Strontium (mg/L)	NE	0.038

## VCSNS UNITS 2 and 3

### Response to NRC Information Needs Item

**Table 2.3-32 (Sheet 2 of 2)  
Monticello Reservoir Water Quality 2006**

Analyzed Parameter	Freshwater Standard <sup>a</sup>	Result
Chemical Oxygen Demand (mg/L)	NE	<QL
Cyanide (mg/L)	0.2 mg/L	<QL

<sup>a</sup> Standards from SCDHEC Regulation R.61-68, Water Classifications & Standards, Section G.10. Human health standards (MCLs) are presented for toxic pollutants. Where no human health standard is provided, the Freshwater standard for protection of aquatic life is presented.

<sup>b</sup> The MCL for Chromium III and VI is 100µg/L.

<sup>c</sup> Indicates CMC for Freshwater aquatic life.

<sup>d</sup> The one-hour average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CMC calculated using the following equation:  $CMC = [0.275/(1+10^{7.204-pH})]+[39.0/(1+10^{pH-7.204})]$ . In situations where salmonids are absent, the CMC may be calculated using the following equation:  $CMC = [0.411/(1+10^{7.204-pH})]+[58.4/(1+10^{pH-7.204})]$ .

<sup>e</sup> Not to exceed a geometric mean of 200/100 mL, based on five consecutive samples during any 30 day period; nor shall more than 10% of the total samples during any 30 day period exceed 400/100 mL

QL = quantification limit

Water Sample also analyzed for Volatile Organics (Method 624), Semi-volatile Organics (Method 625), and for Pesticides/PCBs (Method 608). All Parameter results were below laboratory quantitative levels.

QL = quantification limit

< = Less than

MCL = Maximum Contaminant Level

NE = Not Established

CMC = Criteria Maximum Concentration (estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly without resulting in an unacceptable effect).

## VCSNS UNITS 2 and 3

### Response to NRC Information Needs Item

#### References:

1. South Carolina Department of Health and Environmental Control, R.61-69, *Classified Water*, effective June 23, 2006, available at <http://www.scdhec.com/environment/water/regs/r61-69.pdf>.
2. South Carolina Department of Health and Environmental Control, R.61-68, *Water Classifications and Standards*, effective April 25, 2008, available at <http://www.scdhec.com/environment/water/regs/r61-68.pdf>.