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July 22, 2010

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

Subject: Duke Energy Carolinas, LLC
William States Lee III Nuclear Station - Docket Nos. 52-018 and 52-019
AP1000 Combined License Application for the
William States Lee III Nuclear Station Units 1 and 2
Response to Request for Additional Information
Ltr# WLG2010.07-08

Reference: Letter from Sarah Lopas (NRC) to Bryan Dolan (Duke Energy), Request for Additional Information Regarding the Supplement to the Environmental Report for the William States Lee III Nuclear Station, Units 1 and 2, Combined License Application, dated June 22, 2010 (ML101370398)

This letter provides the Duke Energy responses to the specific requests for additional information (RAIs) listed below, as requested by the Nuclear Regulatory Commission in the referenced letter.

RAI 120, Accidents
RAI 121, Accidents
RAI 122, Accidents
RAI 123, Alternatives
RAI 124, Alternatives
RAI 125, Alternatives
RAI 130, Alternatives
RAI 142, Ecology - Aquatic
RAI 148, Ecology - Aquatic
RAI 183, Ecology - Terrestrial
RAI 186, Hydrology - Ground Water
RAI 187, Hydrology - Ground Water
RAI 190, Site Layout and Plant Description
RAI 191, Site Layout and Plant Description
RAI 193, Site Layout and Plant Description
RAI 204, Benefit Cost
RAI 205, Transportation

The responses to the NRC information requests described in the referenced letter are addressed in separate enclosures, which also identify associated changes to the Combined License Application for the Lee Nuclear Station, when appropriate.

Additional information is currently being obtained in order for Duke Energy to address RAIs 127, 128, 131 and 133. Duke Energy expects to submit responses to these RAIs on or before October 1, 2010.

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NRO

If you have any questions or need any additional information, please contact Peter S. Hastings, Nuclear Plant Development Licensing Manager, at 980-373-7820.

Bryan J. Dolan
Vice President
Nuclear Plant Development

Enclosures:

1. RAI 120, Accidents
2. RAI 121, Accidents
3. RAI 122, Accidents
4. RAI 123, Alternatives
5. RAI 124, Alternatives
6. RAI 125, Alternatives
7. RAI 130, Alternatives
8. RAI 142, Ecology - Aquatic
9. RAI 148, Ecology - Aquatic
10. RAI 183, Ecology - Terrestrial
11. RAI 186, Hydrology - Ground Water
12. RAI 187, Hydrology - Ground Water
13. RAI 190, Site Layout and Plant Description
14. RAI 191, Site Layout and Plant Description
15. RAI 193, Site Layout and Plant Description
16. RAI 204, Benefit Cost
17. RAI 205, Transportation

AFFIDAVIT OF BRYAN J. DOLAN

Bryan J. Dolan, being duly sworn, states that he is Vice President, Nuclear Plant Development, Duke Energy Carolinas, LLC, that he is authorized on the part of said Company to sign and file with the U. S. Nuclear Regulatory Commission this supplement to the combined license application for the William States Lee III Nuclear Station and that all the matter and facts set forth herein are true and correct to the best of his knowledge.

Bryan J. Dolan

Subscribed and sworn to me on July 22 2010

Vickie M Prenatt
Notary Public

My commission expires: May 11, 2011

SEAL

VICKIE M PRENATT
NOTARY PUBLIC
Mecklenburg County
North Carolina
My Commission Expires May 11, 2011

xc (w/o enclosures):

Loren Plisco, Deputy Regional Administrator, Region II
Jeffrey Cruz, Branch Chief, DNRL
Robert Schaaf, Branch Chief, DSER

xc (w/ enclosures):

Sarah Lopas, Project Manager, DSER
Brian Hughes, Senior Project Manager, DNRL
Mickie Chamness, PNNL

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 2010

Reference NRC RAI Number(s): ER RAI 120, Accidents

NRC RAI:

Provide information on which revision to the AP1000 design control document (DCD) is being used in Section 7.1 of the environmental report (ER) to analyze design basis accidents (DBAs). Update any text or tables that may be inconsistent with the referenced DCD.

Duke Energy Response:

ER Subsection 7.1.1, Revision 1, states: "The DBA considered in this section come from Chapter 15 of the AP1000 design control document (DCD), Revision 16." While derived from AP1000 DCD Revision 16, the listing of design basis accidents (DBAs) in ER Table 7.1-1 is also consistent with AP1000 DCD Revision 17.

Changes associated with AP1000 DCD Revision 17 related to accident offsite doses include the removal of credit for the containment leakage pathway impaction model. This change results in re-calculating the χ/Q values used for the AP1000 DCD loss-of-coolant accident (LOCA) dose analysis to reflect elimination of this removal credit. As stated in the note to ER Table 7.1-11, Revision 1, the χ/Q values used for the various postulated AP1000 DCD non-LOCA accident dose analyses are provided in Revision 16 of the AP1000 DCD.

Note 1 to AP1000 DCD Table 15A-5, Revision 17, states that "the LOCA dose analysis models the bounding atmospheric dispersion factors listed above. Other analyses model more conservative values." These more conservative values (i.e., the χ/Q values used in the dose assessments for other non-LOCA accidents) are given in AP1000 DCD Revision 16, Table 15A-5 and are not changed in AP1000 DCD Revision 17, as demonstrated by the unchanged dose results. Therefore, the χ/Q values given in ER Table 7.1-11 are consistent with AP1000 DCD Revision 17 by referencing the LOCA χ/Q values from AP1000 DCD Revision 17 and the unchanged non-LOCA χ/Q values from AP1000 DCD Revision 16. All of the other AP1000 DCD data used in ER Section 7.1 analyses are consistent with AP1000 DCD Revision 17.

ER Subsection 7.1.1 will be revised to clarify that the DBAs considered in the ER Section 7.1 analyses are consistent with AP1000 DCD Revision 17. In addition, the note to ER Table 7.1-11 will be revised to be consistent with ER Subsection 7.1.1, which specifies that the χ/Q values used in the ER dose analyses are the 50th percentile site-specific χ/Q values.

Associated Revisions to the Lee Nuclear Station Combined License Application:

ER Subsection 7.1.1

ER Table 7.1-11

Associated Attachments:

Attachment 120-01 Mark-up of ER Subsection 7.1.1

Attachment 120-02 Mark-up of ER Table 7.1-11

Attachment 120-01

Mark-up of ER Subsection 7.1.1

COLA Part 3, ER, Chapter 7, Subsection 7.1.1, first paragraph is revised as follows:

The DBA considered in this section come from Chapter 15 of the AP1000 design control document (DCD), Revision ~~16~~17. Table 7.1-1 lists the NUREG-1555 DBA that have the potential to release radioactivity to the environment and shows the NUREG-0800 "Standard Review Plan (SRP) for the Review of Safety Analysis Reports for Nuclear Power Plants" section numbers and accident descriptions, as well as the corresponding accidents as defined in the DCD. The DBA cover a spectrum of events, including those of relatively greater probability of occurrence and those that are less probable but have greater severity. The radiological consequences of the accidents listed in Table 7.1-1 are assessed to demonstrate that new units can be sited and operated at the Lee Nuclear Site without undue risk to the health and safety of the public.

Attachment 120-02

Mark-up of ER Table 7.1-11

COLA Part 3, ER, Chapter 7, Table 7.1-11, is revised as follows:

TABLE 7.1-11
ATMOSPHERIC DISPERSION FACTORS

Accident	Location	Time (hr.)	DCD χ/Q[1] (s/m^3)	Site χ/Q[2] (s/m^3)	χ/Q Ratio (Site/DCD)
All Accidents (except LOCA)	EAB	0 – 2	1.00E-03	6.64E-05	6.64E-02
	LPZ	0 – 8	5.00E-04	8.60E-06	1.72E-02
		8 – 24	3.00E-04	7.29E-06	2.43E-02
		24 – 96	1.50E-04	5.10E-06	3.40E-02
		96 – 720	8.00E-05	3.05E-06	3.81E-02
LOCA	EAB	0 – 2	5.10E-04	6.64E-05	1.30E-01
	LPZ	0 – 8	2.20E-04	8.60E-06	3.91E-02
		8 – 24	1.60E-04	7.29E-06	4.56E-02
		24 – 96	1.00E-04	5.10E-06	5.10E-02
		96 – 720	8.00E-05	3.05E-06	3.81E-02

~~Note~~NOTES:

1. The χ/Q values used for the various postulated non-LOCA accident dose analyses were provided in Revision 16 of the AP1000 DCD. In DCD Revision 17, the χ/Q values used for the LOCA dose analyses were re-calculated to reflect removal of the containment leakage pathway impaction model credit. The χ/Q values used for the LOCA dose analyses are consistent with DCD Revision 17, Table 15A-5.
2. It is seen that the 50th percentile site χ/Q values, as obtained from Table 2.7-79 of Subsection 2.7.3, are bounded by the DCD χ/Q values for all time intervals. ~~The site χ/Q values were obtained from Table 2.7-79 of Subsection 2.7.3.~~

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 2010

Reference NRC RAI Number(s): ER RAI 121, Accidents

NRC RAI:

Provide the basis for the changes in ER Rev. 1, Table 7.1-9 (Activity Releases for Loss-of-Coolant Accident Resulting from a Spectrum of Postulated Piping Breaks within the Reactor Coolant Pressure Boundary), and include the two-hour period isotopic activities yielding the maximum dose.

Duke Energy Response:

ER Subsection 7.1.3, Revision 1, Source Terms, states that the time-dependent isotopic activities released to the environment from each of the evaluated accidents are provided in ER Tables 7.1-2 through 7.1-10. The loss-of-coolant accident (LOCA) radionuclide releases in AP1000 DCD Revision 16 are based on an aerosol removal efficiency of 80 percent due to impaction in the containment leakage path(s). The LOCA radionuclide releases based on AP1000 DCD Revision 16 are presented in ER Table 7.1-9, Revision 0.

Revision 17 of the AP1000 DCD did not take credit for this impaction removal model. ER Table 7.1-9, Revision 1, incorporates the changed LOCA radionuclide releases based on AP1000 DCD Revision 17. Removal of credit for the containment leakage pathway impaction model results in an increase in the radionuclide releases. The increased releases are accommodated in the AP1000 DCD Revision 17 LOCA dose analysis by reducing the generic site X/Q values. These reduced values (presented in AP1000 DCD Table 15A-5, Revision 17) are compared with site-specific values in ER Table 7.1-11, and are used in the site-specific LOCA dose analysis.

In accordance with the guidance provided in Regulatory Guide 1.183, Revision 0, the site-specific exclusion area boundary (EAB) doses are based on the worst two-hour time period, which is from 1.4 to 3.4 hours. ER Table 7.1-9 will be revised to account for releases for this time period consistent with AP1000 DCD Revision 17 and the site-specific LOCA dose analysis. Also included in revised ER Table 7.1-9 are changes to the 0-8 hr and 8-24 hr releases for I-130 and Sr-89, and the 24-96 hr release for I-131, based on the latest Westinghouse analysis. These changes have no impact on the LOCA EAB or low population zone (LPZ) doses provided in Revision 17 of the AP1000 DCD.

Associated Revision to the Lee Nuclear Station Combined License Application:

ER Table 7.1-9

Associated Attachment:

Attachment 121-01 Mark-up of ER Table 7.1-9

Attachment 121-01

Mark-up of ER Table 7.1-9

COLA Part 3, ER, Chapter 7, Table 7.1-9, is revised as follows:

TABLE 7.1-9 (Sheet 1 of 3)
ACTIVITY RELEASES FOR LOSS-OF-COOLANT ACCIDENT RESULTING FROM A SPECTRUM OF POSTULATED PIPING BREAKS WITHIN THE REACTOR COOLANT PRESSURE BOUNDARY

Activity Release (Ci)

Isotope	1.4-3.4 hr	0-8 hr	8-24 hr	24-96 hr	96-720 hr	Total
I-130	5.64E+01	~~1.11~~1.12E+02	~~6.21~~5.24E+00	6.28E-01	6.00E-03	1.18E+02
I-131	1.68E+03	3.49E+03	2.56E+02	~~1.91~~1.92E+02	5.79E+02	4.52E+03
I-132	1.23E+03	2.14E+03	1.62E+01	6.00E-03	0.00E+00	2.16E+03
I-133	3.23E+03	6.54E+03	3.71E+02	8.40E+01	7.80E+00	7.00E+03
I-134	6.60E+02	1.14E+03	3.07E-02	0.00E+00	0.00E+00	1.14E+03
I-135	2.56E+03	4.90E+03	1.56E+02	4.80E+00	0.00E+00	5.06E+03
Kr-85m	1.42E+03	3.77E+03	1.87E+03	8.60E+01	0.00E+00	5.73E+03
Kr-85	8.31E+01	2.97E+02	7.06E+02	1.59E+03	1.36E+04	1.62E+04
Kr-87	1.10E+03	1.95E+03	5.00E+01	0.00E+00	0.00E+00	2.00E+03
Kr-88	3.11E+03	7.26E+03	1.70E+03	1.70E+01	0.00E+00	8.98E+03
Xe-131m	8.26E+01	2.94E+02	6.79E+02	1.37E+03	5.57E+03	7.92E+03
Xe-133m	4.43E+02	1.54E+03	3.15E+03	4.11E+03	2.58E+03	1.14E+04
Xe-133	1.47E+04	5.19E+04	1.16E+05	2.06E+05	4.07E+05	7.81E+05
Xe-135m	1.06E+01	3.59E+01	0.00E+00	0.00E+00	0.00E+00	3.59E+01
Xe-135	3.15E+03	9.64E+03	1.01E+04	2.10E+03	1.00E+01	2.19E+04
Xe-138	3.11E+01	1.21E+02	0.00E+00	0.00E+00	0.00E+00	1.21E+02
Rb-86	3.04E+00	6.32E+00	2.80E-01	1.00E-03	8.00E-03	6.61E+00
Cs-134	2.58E+02	5.38E+02	2.40E+01	1.00E-01	1.20E+00	5.63E+02
Cs-136	7.33E+01	1.52E+02	6.70E+00	0.00E+00	2.00E-01	1.59E+02
Cs-137	1.51E+02	3.13E+02	1.41E+01	0.00E+00	7.00E-01	3.28E+02
Cs-138	1.50E+02	3.30E+02	0.00E+00	0.00E+00	0.00E+00	3.30E+02
Sb-127	2.42E+01	4.81E+01	2.14E+00	1.00E-02	1.00E-02	5.03E+01
Sb-129	5.10E+01	8.94E+01	1.48E+00	0.00E+00	0.00E+00	9.09E+01
Te-127m	3.15E+00	6.30E+00	2.95E-01	2.00E-03	1.30E-02	6.61E+00

TABLE 7.1-9 (Sheet 2 of 3)
ACTIVITY RELEASES FOR LOSS-OF-COOLANT ACCIDENT RESULTING FROM A SPECTRUM OF POSTULATED PIPING BREAKS WITHIN THE REACTOR COOLANT PRESSURE BOUNDARY

Activity Release (Ci)

Isotope	1.4-3.4 hr	0-8 hr	8-24 hr	24-96 hr	96-720 hr	Total
Te-127	2.05E+01	3.83E+01	1.11E+00	0.00E+00	0.00E+00	3.94E+01
Te-129m	1.07E+01	2.14E+01	1.00E+00	1.00E-02	3.00E-02	2.25E+01
Te-129	1.88E+01	2.84E+01	3.00E-02	0.00E+00	0.00E+00	2.84E+01
Te-131m	3.17E+01	6.20E+01	2.51E+00	0.00E+00	1.00E-02	6.45E+01
Te-132	3.23E+02	6.41E+02	2.84E+01	1.00E-01	1.00E-01	6.70E+02
Sr-89	9.23E+01	~~1.88~~1.85E+02	~~5.40~~8.60E+00	1.00E-01	3.00E-01	1.94E+02
Sr-90	7.95E+00	1.59E+01	7.50E-01	0.00E+00	4.00E-02	1.67E+01
Sr-91	9.68E+01	1.81E+02	5.30E+00	0.00E+00	0.00E+00	1.86E+02
Sr-92	6.83E+01	1.13E+02	1.00E+00	0.00E+00	0.00E+00	1.14E+02
Ba-139	5.44E+01	8.30E+01	1.50E-01	0.00E+00	0.00E+00	8.32E+01
Ba-140	1.63E+02	3.25E+02	1.51E+01	0.00E+00	4.00E-01	3.41E+02
Mo-99	2.15E+01	4.25E+01	1.86E+00	1.00E-02	0.00E+00	4.44E+01
Tc-99m	1.47E+01	2.66E+01	5.90E-01	0.00E+00	0.00E+00	2.72E+01
Ru-103	1.73E+01	3.46E+01	1.62E+00	1.00E-02	6.00E-02	3.63E+01
Ru-105	8.18E+00	1.43E+01	2.40E-01	0.00E+00	0.00E+00	1.46E+01
Ru-106	5.70E+00	1.14E+01	5.40E-01	0.00E+00	3.00E-02	1.20E+01
Rh-105	1.03E+01	2.02E+01	8.30E-01	0.00E+00	0.00E+00	2.10E+01
Ce-141	3.89E+00	7.78E+00	3.64E-01	2.00E-03	1.20E-02	8.16E+00
Ce-143	3.46E+00	6.78E+00	2.78E-01	1.00E-03	0.00E+00	7.06E+00
Ce-144	2.94E+00	5.88E+00	2.76E-01	2.00E-03	1.30E-02	6.17E+00
Pu-238	9.16E-03	1.84E-02	8.60E-04	0.00E+00	4.00E-05	1.93E-02
Pu-239	8.06E-04	1.62E-03	7.60E-05	1.00E-06	3.00E-06	1.70E-03
Pu-240	1.18E-03	2.36E-03	1.11E-04	1.00E-06	5.00E-06	2.48E-03
Pu-241	2.65E-01	5.32E-01	2.50E-02	1.00E-04	1.20E-03	5.58E-01

TABLE 7.1-9 (Sheet 3 of 3)
ACTIVITY RELEASES FOR LOSS-OF-COOLANT ACCIDENT RESULTING FROM A SPECTRUM OF POSTULATED PIPING BREAKS WITHIN THE REACTOR COOLANT PRESSURE BOUNDARY

Activity Release (Ci)

Isotope	1.4-3.4 hr	0-8 hr	8-24 hr	24-96 hr	96-720 hr	Total
Np-239	4.48E+01	8.87E+01	3.84E+00	2.00E-02	1.00E-02	9.26E+01
Y-90	8.08E-02	1.60E-01	7.00E-03	0.00E+00	0.00E+00	1.67E-01
Y-91	1.19E+00	2.37E+00	1.11E-01	1.00E-03	4.00E-03	2.49E+00
Y-92	7.89E-01	1.35E+00	1.80E-02	0.00E+00	0.00E+00	1.37E+00
Y-93	1.21E+00	2.28E+00	6.80E-02	0.00E+00	0.00E+00	2.35E+00
Nb-95	1.59E+00	3.19E+00	1.49E-01	1.00E-03	5.00E-03	3.34E+00
Zr-95	1.59E+00	3.17E+00	1.49E-01	0.00E+00	6.00E-03	3.33E+00
Zr-97	1.43E+00	2.74E+00	9.80E-02	0.00E+00	0.00E+00	2.84E+00
La-140	1.67E+00	3.29E+00	1.39E-01	0.00E+00	0.00E+00	3.43E+00
La-141	1.03E+00	1.78E+00	2.70E-02	0.00E+00	0.00E+00	1.81E+00
La-142	5.38E-01	8.31E-01	2.00E-03	0.00E+00	0.00E+00	8.33E-01
Nd-147	6.16E-01	1.23E+00	5.70E-02	0.00E+00	1.00E-03	1.29E+00
Pr-143	1.39E+00	2.78E+00	1.28E-01	1.00E-03	3.00E-03	2.91E+00
Am-241	1.20E-04	2.40E-04	1.13E-05	0.00E+00	6.00E-07	2.52E-04
Cm-242	2.82E-02	5.65E-02	2.65E-03	2.00E-05	1.20E-04	5.93E-02
Cm-244	3.46E-03	6.94E-03	3.26E-04	1.00E-06	1.60E-05	7.28E-03
Total	3.53E+04	9.86E+04	1.35E+05	2.15E+05	4.29E+05	8.78E+05

Note: The 1.4-3.4 hour timeframe is the worst 2-hr duration sliding window for radiological releases. These releases are used with the EAB 0-2 hr χ/Q to calculate the 0-2 hr EAB dose.

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 2010

Reference NRC RAI Number(s): ER RAI 122, Accidents

NRC RAI:

Provide justification for the application of the NRC staff conclusions for DCD Rev. 15 presented in NUREG-1793 to the DCD referenced in the ER.

Duke Energy Response:

In NUREG-1793, Subsection 19.4.7, the NRC presented its Finding of No Significant Impact relating to the certification of the AP1000 design, based on Revision 14 of the AP1000 DCD, as follows:

> "The staff concurs with the applicant's conclusion that none of the potential design modifications evaluated are justified on the basis of cost-benefit considerations. It further concluded that it is unlikely that any other design changes would be justified on the basis of person-rem exposure considerations because the estimated [core damage frequencies] CDFs would remain very low on an absolute scale."

Comparison of the CDF values given in AP1000 DCD Revision 14, Table 19.59-1, with the CDF values from the same table in AP1000 DCD Revision 17, shows that the CDF for all initiating event categories are unchanged and the total CDF for all initiating events (2.41E-07 events per reactor-year) is unchanged. The release frequency of each release category used in the site-specific severe accident evaluation is obtained from AP1000 DCD, Table 1B-1, which is also unchanged from AP1000 DCD Revision 14 to Revision 17. As indicated in NUREG-1793 (based on AP1000 DCD Revision 14), the source term is documented in the AP1000 Probabilistic Risk Assessment (PRA), Revision 8. While the AP1000 DCD does not cite the reference for the source term explicitly, the changes from the AP1000 DCD Revision 14 to Revision 17 are too small to affect the dose consequences reported between the DCD revisions.

Consequently, the NRC Staff conclusion that "it is unlikely that any other design changes would be justified in the future on the basis of person-rem exposure because the estimated CDFs are very low on an absolute scale" remains valid, and is applicable to AP1000 DCD Revision 17 and the current revision of the Lee Nuclear Station Environmental Report.

Associated Revision to the Lee Nuclear Station Combined License Application:

None

Associated Attachment:

None

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 1010

Reference NRC RAI Number: ER RAI 123, Alternatives

NRC RAI:
Provide additional details for the Alternative Energy analysis at the Lee Nuclear Station regarding consumptive make-up water requirements for a combined cycle natural gas-fired power plant. Specifically, provide analysis to describe whether Pond C would be required for this alternative.

Duke Energy Response:

The water balance model developed to evaluate supplemental water needs is also used to evaluate this information request. The only modification made to the water balance model is to replace the monthly average consumptive water use associated with the two proposed AP1000 nuclear reactor units with projected monthly average consumptive water use associated with a combined cycle natural gas-fired power plant with the same total energy output.

The methodology used to determine monthly average consumptive water requirements for the combined cycle unit is based on scaling up the projected monthly average consumptive water use for Duke Energy's 620 MW combined cycle unit at Buck Steam Station (currently under construction) to 2234 MW.

Table 1 provides a comparison of the monthly average consumptive water use of these technologies both rated at 2234 MW.

Table 1. Comparison of Monthly Average Consumptive Water Use (cfs) for a 2234 MW Facility

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lee Nuclear Station	50.9	52.1	55.2	58.2	60.1	61.9	63.0	62.3	60.4	57.4	54.6	51.9
Combined Cycle	21.8	22.3	23.7	24.9	25.8	26.5	27.0	26.7	25.9	24.6	23.4	22.2

The results of the water balance model run using the monthly average consumptive water use for a similar-sized combined cycle unit(s) are provided graphically in Figures 1 through 4. Figure 1 shows drawdowns in Make-Up Pond B and Make-Up Pond C for the simulated 83-year period of record. Figures 2, 3, and 4 show periods of significant drawdown from 1954 through 1956, 1999 through 2002, and 2007 through 2008, respectively.

The results of this evaluation demonstrate that Make-Up Pond C would be needed to provide make-up water for a combined cycle natural gas-fired power plant located on the site of the proposed Lee Nuclear Station. The use of Make-Up Pond C would have been needed for 37 days in 2002 and 9 days in 2008.

Associated Revision to the Lee Nuclear Station Combined License Application:

None

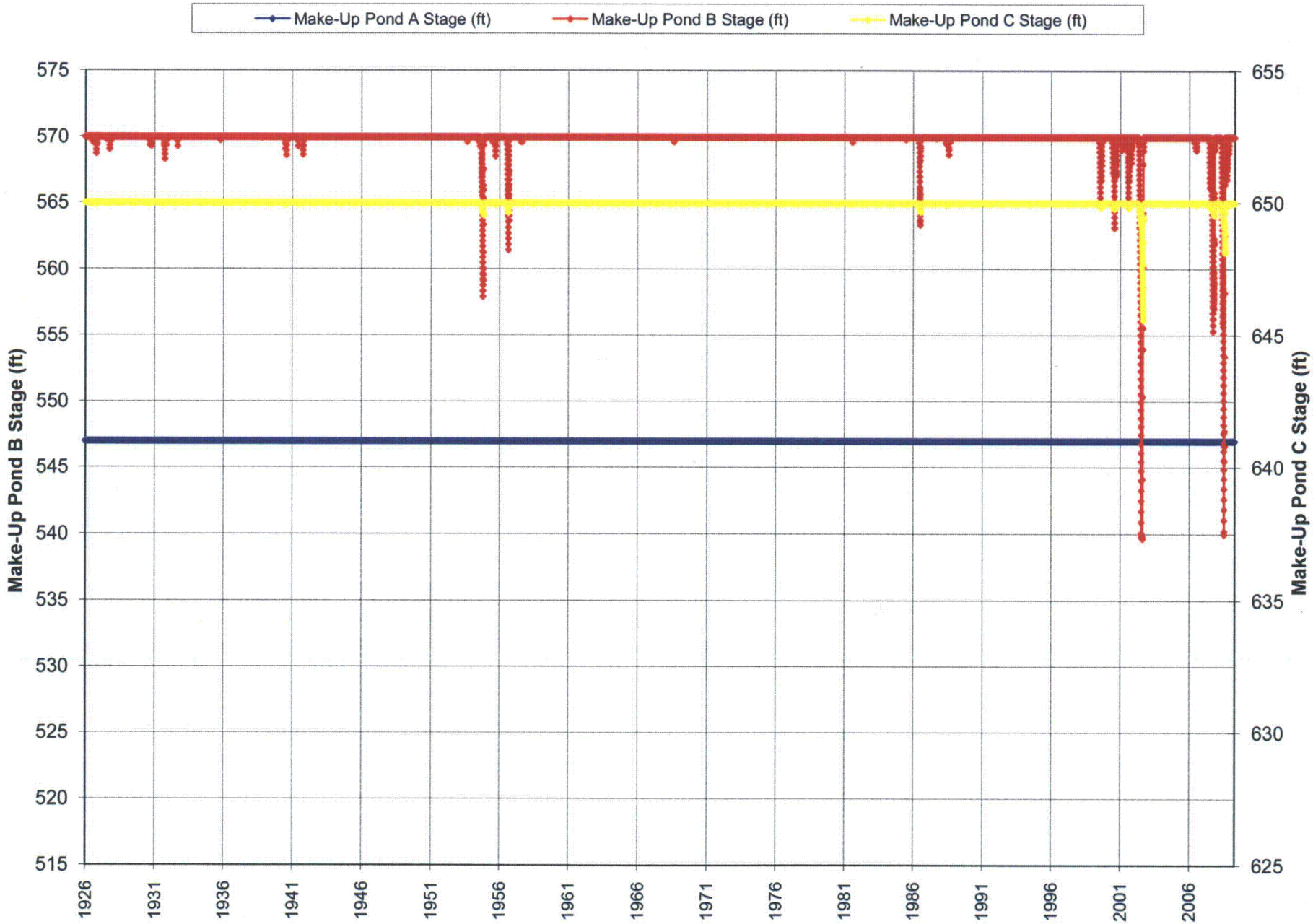
Attachment:

Attachment 123-1	Figure 1. 2243 MW Combined Cycle Plant Water Usage Impact on Water Surface Elevations of Make-Up Ponds with Refill From the Broad River (83-year record) with Future Water Demands
Attachment 123-2	Figure 2. 2243 MW Combined Cycle Plant Water Usage Impact on Water Surface Elevations of Make-Up Ponds with Refill From the Broad River (1954 – 1956 drought) with Future Water Demands
Attachment 123-3	Figure 3. 2243 MW Combined Cycle Plant Water Usage Impact on Water Surface Elevations of Make-Up Ponds with Refill From the Broad River (1999 – 2002 drought) with Future Water Demands
Attachment 123-4	Figure 4. 2243 MW Combined Cycle Plant Water Usage Impact on Water Surface Elevations of Make-Up Ponds with Refill From the Broad River (2007 - 2009) with Future Water Demands

Attachment 123-1

Figure 1
2234 MW Combined Cycle Plant Water Usage Impact on
Water Surface Elevations of Make-Up Ponds with Refill From the Broad River
(83-year record) with Future Water Demands

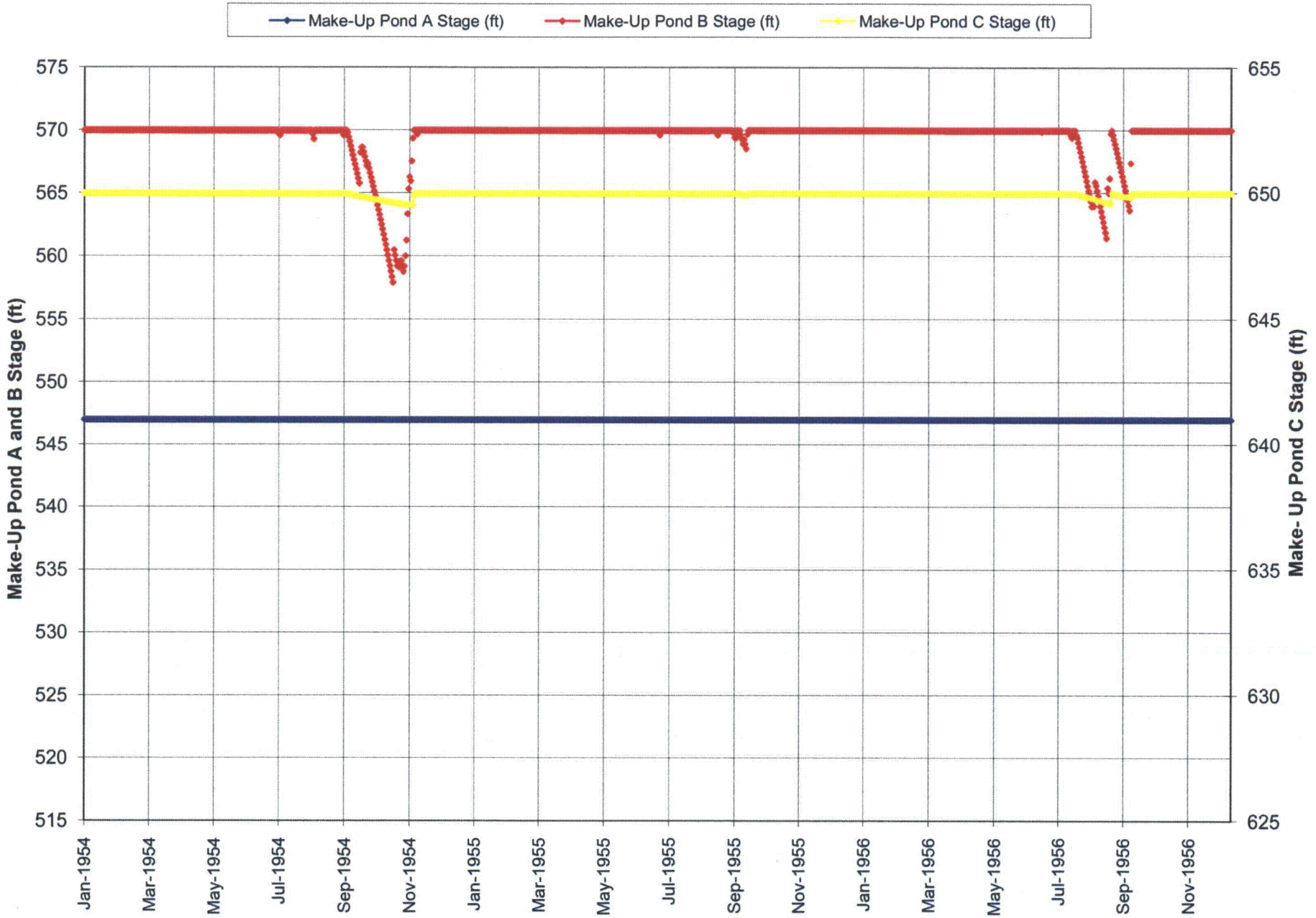
Figure 1. 2234 MW Combined Cycle Plant Water Usage Impact on Water Surface Elevations of Make Up Ponds with Refill from the Broad River (83-year record) and Future Water Demands



Attachment 123-2

Figure 2
2234 MW Combined Cycle Plant Water Usage Impact on
Water Surface Elevations of Make-Up Ponds with Refill From the Broad River
(1954 – 1956 drought) with Future Water Demands

Figure 2. 2234 MW Combined Cycle Plant Water Usage Impact on Water Surface Elevations of Make Up Ponds with Refill from the Broad River (1954 - 1956 drought) and Future Water Demands



Attachment 123-3

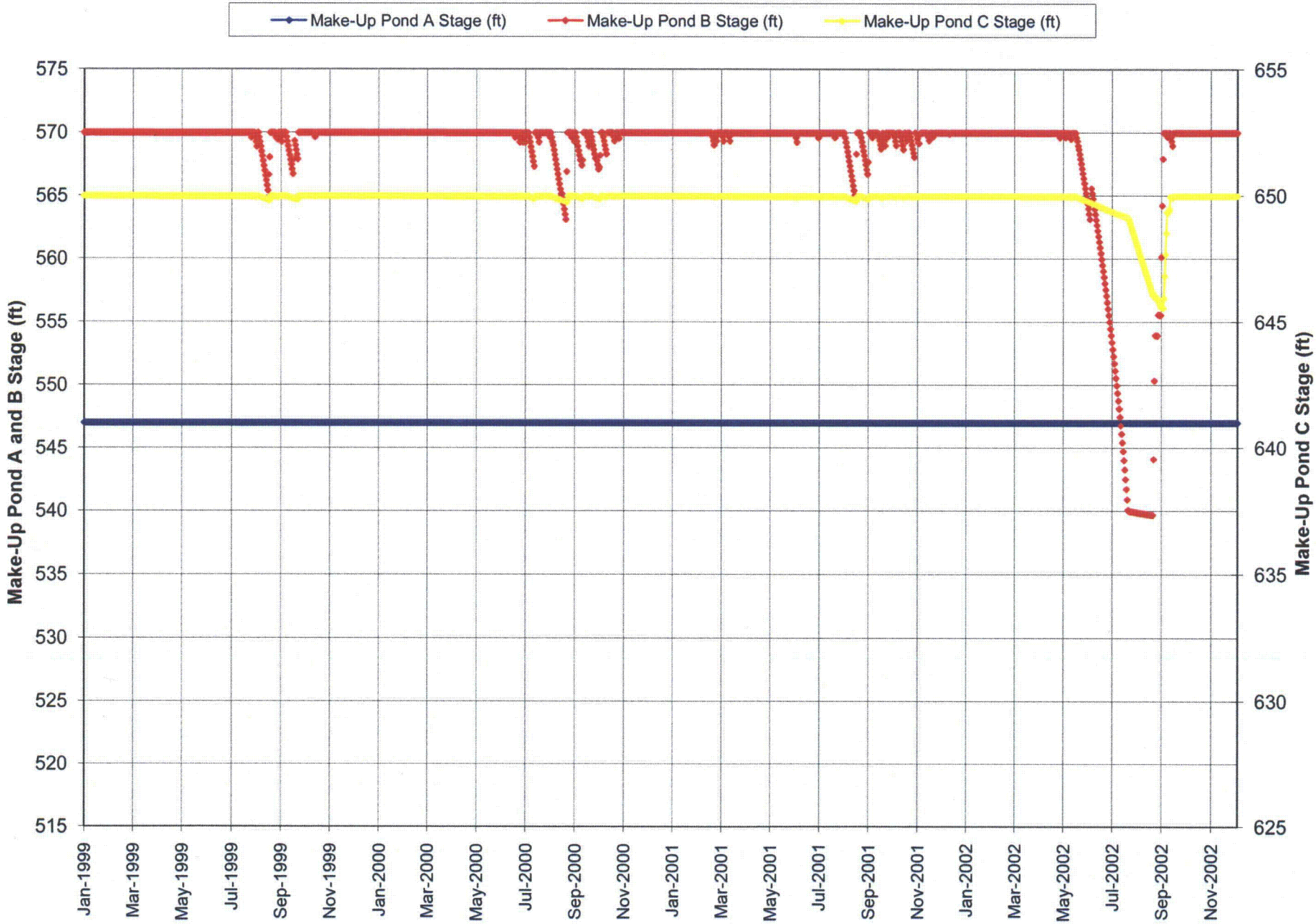
Figure 3

2234 MW Combined Cycle Plant Water Usage Impact on

Water Surface Elevations of Make-Up Ponds with Refill From the Broad River

(1999 – 2002 drought) with Future Water Demands

Figure 3. 2234 MW Combined Cycle Plant Water Usage Impact on Water Surface Elevations of Make Up Ponds with Refill from the Broad River (1999 - 2002 drought) and Future Water Demands



Attachment 123-4

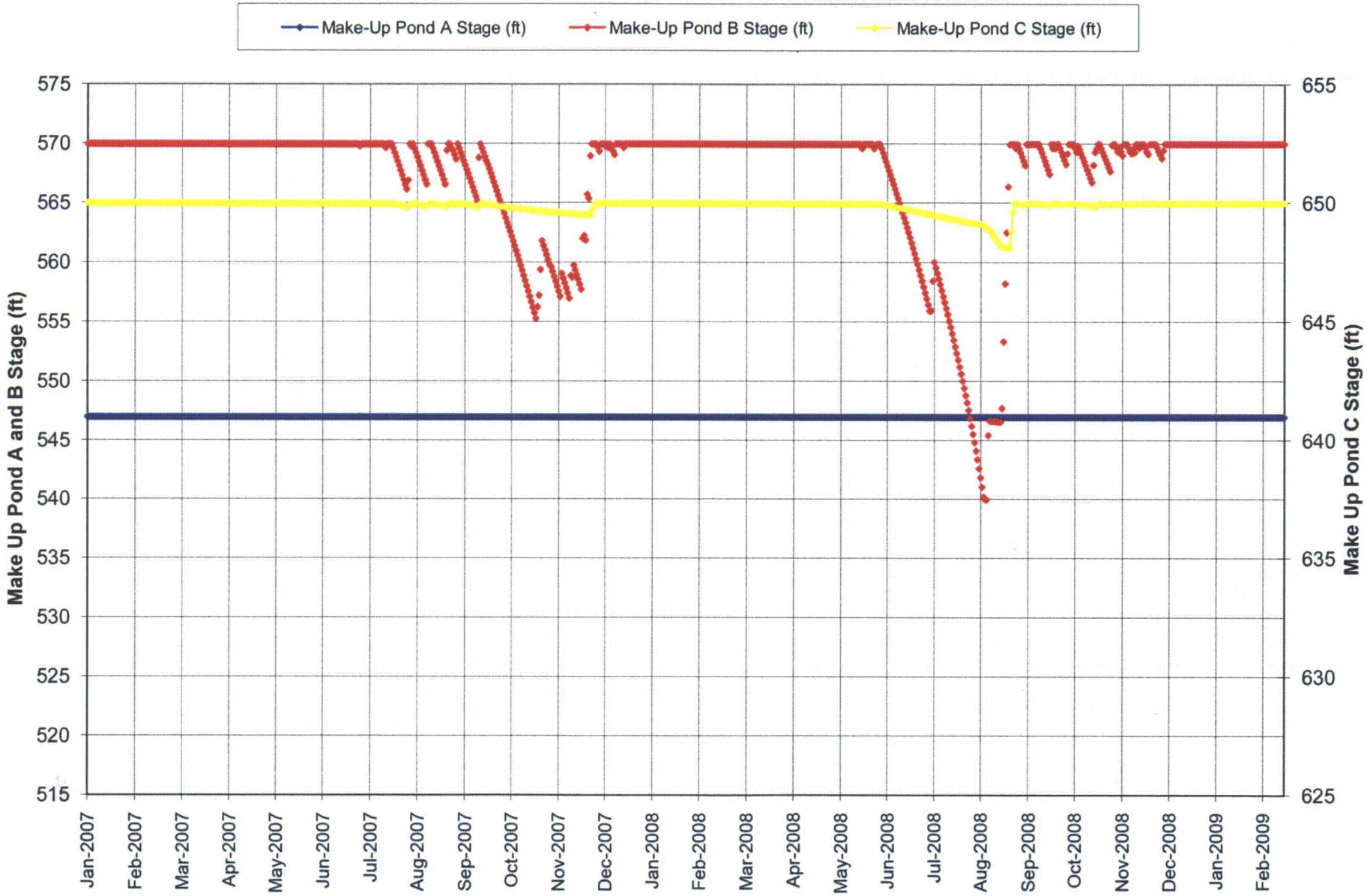
Figure 4

2234 MW Combined Cycle Plant Water Usage Impact on

Water Surface Elevations of Make-Up Ponds with Refill From the Broad River

(2007 - 2009) with Future Water Demands

Figure 4. 2234 MW Combined Cycle Plant Water Usage Impact on Water Surface Elevations of Make Up Ponds with Refill from the Broad River (2007 - 2009) and Future Water Demands



Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 2010

Reference NRC RAI Number: ER RAI 124, Alternatives

NRC RAI:

Section 9.3.2.2 describes the volumes of the supplemental water reservoirs that would be required at each alternative site and the proposed site. Describe how these volumes were calculated. Clarify whether associated construction that would attend the filling and use of such reservoirs (pipelines, transmission lines, dams, borrow and spoil areas, etc.) are included in the reservoir size estimates.

Also, provide clarification on the total storage capacity at the Lee site given as 11,000 ac-ft in Section 9.3.2.2 of the Supplement to the ER, and 22,000 ac-ft in Section 2.3.1.2.3.1.

Duke Energy Response:

For the ER Supplement, Duke Energy re-evaluated the three alternative sites for construction of the William States Lee III Nuclear Station (Keowee, Middleton Shoals, and Perkins) to determine if the 2007 through 2008 drought conditions resulted in the need for additional water storage to support full station operations. The parameters used to determine volumes needed for each site included: 1) the longest consecutive period requiring additional water for station operations, 2) a consumptive water estimate of 63 cfs (although the average is 55 cfs, the maximum consumptive use of 63 cfs is used to calculate volumes needed), 3) a future basin water demand of 60 cfs, 4) a 25% increase to account for a safety margin due to the uncertainty of the length/severity of a future drought, and 5) availability/limitations of cooling water supply onsite. According to the Environmental Protection Agency's Clean Water Act 316(b) requirements (40 CFR 125.84 (b)(3)(ii)), for cooling water intake structures located in a lake or reservoir (average hydraulic retention time of more than 7 days), the intake flow must not disrupt the natural thermal stratification or turnover pattern (where present) of the source water except in cases where the disruption is determined to be beneficial to the management of fisheries by any fishery management agency. Therefore, in addition to the volume of water needed for each supplemental reservoir, additional storage capacity is proposed to maintain a zone of refuge for fish and comply with cooling water intake regulations. Total storage volumes depend on the topography at each site to provide the volume of water needed. The volumes (total and needed) of the supplemental water reservoirs at the proposed site and each alternative site are explained below.

Lee Site

As described in detail in Section 5.2.1 of the ER Supplement, the Ninety-Nine Islands FERC license minimum release is 483 cfs. During low-flow conditions in the Broad River, supplemental cooling water is needed to maintain station operations. There are two existing make-up ponds on site at Lee Nuclear Station, Make-Up Pond A and Make-Up Pond B. The volume in Make-Up Pond A is maintained to support normal shutdown needs (not operational

needs); therefore currently only Make-Up Pond B is available for supplemental cooling water for operations. Make-Up Pond B has a usable storage volume of 3,156 ac-ft (assuming 30-ft drawdown to maintain refuge for aquatic organisms). Modeling of the Broad River flows for the 83-year period of record indicates the overall longest consecutive period where cooling water would not have been available for station operations was 69 days. Using the parameters described above to determine volume (69 days requiring additional water, 63 cfs consumptive use, 60 cfs future water demand, and 25% margin of safety), it was determined that approximately 11,000 ac-ft of storage is needed at the Lee site. Based on the topography at the site, in order to provide the needed 11,000 ac-ft (discussed in Section 9.3.2.2 in ER Supplement) while maintaining a refuge for aquatic organisms, the total storage capacity of Make-Up Pond C would be approximately 22,000 ac-ft (discussed in Section 2.3.1.2.3.1 in ER Supplement).

Keowee Site

The Keowee site is located south of Duke Energy's existing Oconee Nuclear Station (ONS) in Oconee County, S.C. As discussed in Section 9.3.2.2 of the ER Supplement, this site is adjacent to Lake Keowee and would use make-up water withdrawn from this reservoir to support station operations. The full pond elevation at Lake Keowee is 800 ft mean sea level (msl). Potential future water withdrawal from Lake Keowee is limited by an existing agreement between the U.S. Army Corps of Engineers (USACE) and Duke Energy and operating limits at ONS due to existing operating procedures. Lake Keowee cannot be drawn down more than 5.4 ft (794.6 ft msl) without negatively affecting operations at ONS. The analysis assumed that the proposed Keowee site cannot negatively impact operations at ONS, and also assumed that the 1968 Operating Agreement (MOA) between Duke Energy, the USACE, and the Southeastern Power Administration (SEPA) is in effect and unchanged.

If Lake Keowee is at or below 794.6 ft msl, make-up cooling water for the proposed nuclear plant site would need to be drawn from a drought contingency pond. As a result, the evaluation of the Keowee site focused on determining the volume of water required to support the full operation of the proposed nuclear plant based on the number of days no MOA releases were made from Lake Keowee during 2007 and 2008 (most severe drought experienced in the river basin since construction of the reservoir). The longest consecutive period requiring additional water for station operations was 169 days. Using the parameters described above to determine volume (169 days requiring additional water, 63 cfs consumptive use, 60 cfs future water demand, and 25% margin of safety), it was determined that approximately 52,000 ac-ft of usable storage is needed at the Keowee site. Based on the topography at the site, in order to provide the needed 52,000 ac-ft of while maintaining a refuge for aquatic organisms, the total storage capacity of the supplemental water reservoir would be approximately 80,000 ac-ft.

Perkins Site

As discussed in Section 9.3.2.2 of the ER Supplement, the Perkins site is located on the Yadkin River. During normal hydrologic periods, the Perkins site would withdraw water from the Yadkin River to support make-up water needs. During extended drought periods, a drought contingency pond would be needed to support station operations. For evaluation purposes, the criteria used to limit withdrawal from the Yadkin River was a minimum bypass flow of 20 percent of the mean annual daily flow (MADF). The historic flow data was obtained from the

USGS website (USGS 2009) at Gage No. 02116500 Yadkin River at Yadkin College, North Carolina. For the period of record (full calendar years 1929 through 2008), the MADF was calculated to be approximately 2,950 cfs. The volume of water required to support normal station operations through the drought was calculated based on the number of days when flows in the Yadkin River were below 20 percent of the MADF plus the volume of water needed to support station operations (63 cfs) and future water demands (60 cfs). A water balance model was created to determine the necessary drought contingency volume. The pond volume was adjusted to include the 25% margin of safety, and the result was that approximately 10,000 ac-ft of storage is needed at the Perkins site.

Three potential locations have been identified for drought contingency ponds at the Perkins site. These sites contain a combined useable volume of approximately 11,000 ac-ft. Based on the topography at the site, in order to provide the needed 10,000 ac-ft while maintaining a refuge for aquatic organisms, the total storage capacity of these three sites would be approximately 33,000 ac-ft.

Middleton Shoals

As discussed in Section 9.3.2.2 of the ER Supplement, Middleton Shoals is located on the Savannah River/Russell Reservoir, just downstream of Hartwell Dam. The Russell Reservoir is managed by USACE. Supplemental water would be required when USACE has declared a drought stage of three (3) or worse. The drought stage is based on either Lake Hartwell or Thurmond Lake water surface dropping below a designated trigger elevation (Trigger Level 3 is 646 ft msl for Lake Hartwell, and 316 ft msl for Thurmond Lake). When recovering from a drought period, the drought stage changes to the next less severe category (i.e., from stage 3 to stage 2) when both reservoirs are 2 ft above the elevation of the lower trigger elevation. However, for purposes of this reservoir-sizing analysis, the number of days that required supplemental water was determined based on a Level 3 drought stage ending once the water surface reached 646 ft msl in Lake Hartwell and 316 ft msl in Thurmond Lake (not exceeding by 2 ft as is in the current USACE drought protocol).

The longest consecutive period that Lake Hartwell and Thurmond Lake were in a Stage 3 drought was for 158 days. Using the parameters described above to determine volume (158 days requiring additional water, 63 cfs consumptive use, 60 cfs future water demand, and 25% margin of safety), it was determined that approximately 48,000 ac-ft is needed at the Middleton Shoals site. Based on the topography at the site, in order to provide the needed 48,000 ac-ft while maintaining a refuge for aquatic organisms, the total storage capacity of the supplemental water reservoir would be approximately 115,000 ac-ft.

Text revisions to the ER Supplement clarifying the needed and total volumes of supplemental water storage reservoirs are provided in Attachment 124-01. The reservoir size estimates included in the ER Supplement are only for the reservoirs (does not include associated construction).

Associated Revision to the Lee Nuclear Station Combined License Application:

Environmental Report Supplement Subsections 9.3.2.1 and 9.3.2.2

Attachment:

Attachment 124-01, Mark-Up of Environmental Report Supplement Subsections 9.3.2.1 and 9.3.2.2

Attachment 124-01

Mark-Up of Environmental Report Supplement Subsections 9.3.2.1 and 9.3.2.2

Subsection 9.3.2.1, Land Use Impacts, page 9-2, 2nd and 3rd paragraphs:

Perkins Site

Duke Energy currently owns the Perkins Site that was originally characterized for the Perkins Nuclear Station in the 1970s. The site remains a wooded greenfield site and is managed as a wildlife management area by the NC Fish and Wildlife Service under an agreement with Duke Energy. The site would require extensive rough grading. There is no residential development on the site but the surrounding area is undergoing a moderate amount of residential development particularly in the area proposed for three supplemental water reservoirs totaling approximately 1,500 ~~1,450~~ ac (Subsection 9.3.2.2). A 5.6-mile rail spur would be constructed to the site to transport materials and equipment to the site. Land use impacts would be LARGE.

Middleton Shoals Site

This site is currently owned by Duke Energy. The site is a wooded greenfield site requiring extensive rough grading that would include the construction of an approximately 3,700 ~~2,200~~ ac supplemental water reservoir (Subsection 9.3.2.2). There is no residential development on the site and sparse residential development in the vicinity of the site. A 14-mile rail spur would be constructed to the site to transport materials and equipment to the site. Land use impacts would be LARGE.

Subsection 9.3.2.2, Hydrology and Water Quality Impacts, page 9-3:

Lee Nuclear Site

The Lee Nuclear Site is located on the Broad River. All the water needed to support plant needs at the Lee Nuclear Site during normal operations would be withdrawn from the Broad River. The closest USGS gauging station is at Gaffney, just above the Lee Nuclear Site, but this gauge ceased operation in 1991. Consequently, other gauges in North and South Carolina along the Broad River were used to augment the data after 1991. The average flow is calculated to be approximately 2,500 cfs (1926-2008), and the FERC regulatory low-flow release at the Ninety-Nine Islands Hydroelectric Station is required to be 483 cfs. The Broad River has adequate flow under average flow conditions to support the requirements of a closed cycle cooling water system. Low-flow conditions (e.g., drought) could require supplemental water storage or curtailment of operations. Supplemental water needed during ~~storage for~~ low-flow periods is estimated to be 11,000 ac-ft (22,000 ac-ft total storage to maintain refuge for aquatic organisms) in addition to the capacity of existing ponds on the site. This would require a 620-ac supplemental water reservoir. A withdrawal of 55 cfs for average consumptive water use under normal flow conditions would be SMALL since this represents 2 percent of the Broad River mean flow. Under low-flow conditions, the impact to the Broad River should still be SMALL since consumptive withdrawal from the Broad River would be curtailed.

Keowee Site

All the water needed to support plant needs at the Keowee Site will be withdrawn from Lake Keowee. The Lake Keowee-Lake Jocassee storage would be sufficient to supply the additional cooling requirements of a second nuclear station near Oconee Nuclear Station if agreements

could be reached with the U.S. Army Corps of Engineers (USACE) to reduce the amount of water that is required to be released from Lake Keowee during low flow events. However, successful negotiation of such an agreement is not guaranteed. Therefore, a supplemental water storage reservoir for low-flow periods with an estimated volume of 52,000 ac-ft (80,000 ac-ft total storage to maintain refuge for aquatic organisms) is assumed for comparison. This will require a 1,300 ac supplemental water reservoir. A withdrawal of 55 cfs for average consumptive water use under normal flow conditions will be SMALL. Under low flow conditions, the impact to Lake Keowee should still be SMALL since consumptive withdrawal from Lake Keowee would be curtailed.

Perkins Site

The Perkins Site is located on the Yadkin River. All the water required to support plant needs at the Perkins Site will be withdrawn from the Yadkin River. The closest USGS gauging station is at Yadkin College, 3 miles upstream of the Perkins Site. Flow data for the Yadkin River at this station shows an average flow of approximately 2,950 cfs for the period of August 1928–April 2009. The Yadkin River has adequate flow under average flow conditions to support the requirements of a closed cycle cooling water system. Low flow conditions (e.g., drought) could require supplemental water storage or curtailment of operations. A supplemental reservoir, if used for low-flow periods, is estimated to be 10,000 ac-ft (33,000 ~~34,000~~ ac-ft total storage to maintain refuge for aquatic organisms). This will require three supplemental water reservoirs totaling approximately 1,500 ~~1,450~~ ac. A withdrawal of 55 cfs for average consumptive water use under normal flow conditions will be SMALL since this represents <2 percent of the average mean flow. Under low flow conditions, the impact to the Yadkin River should still be SMALL since consumptive withdrawal from the Yadkin River would be curtailed.

Middleton Shoals Site

The Middleton Shoals Site is located on the Savannah River/Russell Reservoir, just downstream of Hartwell Dam. All the water needed to support plant needs at the Middleton Shoals site will be withdrawn from Russell Reservoir. The USACE controls the water supply and flow in the Russell Reservoir at Middleton Shoals. Russell Reservoir should have an adequate supply, although an agreement would be needed with the USACE to allow continued use of the reservoir under low flow conditions. However, successful negotiation of such an agreement is not guaranteed. Therefore, supplemental water needed during low-flow periods is estimated to be 48,000 ~~57,000~~ ac-ft (115,000 ac-ft total storage to maintain refuge for aquatic organisms) ~~a ac-ft supplemental reservoir would be constructed for low flow events~~. This reservoir would cover approximately 3,700 ac ~~2,200 ac~~. A withdrawal of 55 cfs average for consumptive water use under normal flow conditions will be SMALL. Under low flow conditions, the impact to the Savannah River/Russell Reservoir should still be SMALL since consumptive withdrawal from the Savannah River/Russell Reservoir would be curtailed.

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 2010

Reference NRC RAI Number: ER RAI 125 - Alternatives

NRC RAI 125:

Provide an analysis, which includes reconnaissance-level data, to describe the impacts to each resource area from building a reservoir at the alternative sites. For example, elaborate on the existing aquatic habitat types that would be impounded at each site, and what important aquatic species are likely to be found at each site that would be affected by the impoundment.

Provide justification for any revisions to impact levels for the alternative site, and describe how the analysis and conclusions for each resource area at the alternative sites are altered by the need for additional water resources. Describe the new impacts that contributed to the revised impact level. Provide an analysis and discussion of the weightings and rankings for assigning the revised impacts.

Duke Energy Response:

Building a reservoir at alternative sites would increase impacts to Land Use, Terrestrial Ecology Resources, and Aquatic Ecology Resources. For the purpose of the alternatives analysis, the Lee Site reservoir added approximately 620 additional acres of site impacts, the Keowee Site reservoir added approximately 1,300 acres, the Perkins Site reservoirs added approximately 1,500 acres, and the Middleton Shoals Site reservoir added approximately 3,700 acres. A discussion of impacts and justification for the increased levels are provided for each environmental impact area below. Please note that weightings and rankings were used for the selection of candidate and alternative sites (as discussed in Section 9.3.1 of the ER). Impacts (including revisions) generally correspond to the increase in acreage or linear feet of impacts and were based on the following definitions of SMALL, MODERATE, and LARGE provided in NUREG-1555:

SMALL — Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

MODERATE — Environmental effects are sufficient to alter noticeably, but not to destabilize any important attribute of the resource.

LARGE — Environmental effects are clearly noticeable and are sufficient to destabilize any important attributes of the resource.

Land Use

The evaluation of potential environmental impacts to Land Use is based on compatibility of a new nuclear station with existing land uses particularly focusing on the current land uses, potential zoning concerns, and the extent of residential development and evidence of recent/ongoing/future development (i.e., development intensity) in the immediate site vicinity.

Existing and recent/planned residential development is a key differentiator between sites. All of the sites, with the exception of Lee, face potential zoning challenges given the existing rural conditions at Middleton Shoals or, at Keowee and Perkins, their location in a generally rural area but having a higher level of development in the potentially affected area. A significantly larger area requiring land use changes due to the addition of supplemental water reservoirs increases the impact levels from SMALL to MODERATE at the Lee Site and MODERATE to LARGE at the alternative sites.

Terrestrial Ecology Resources

The evaluation of environmental impacts to terrestrial ecology was based on the acreage of higher quality land cover types (described in Section 9.3.2.3 of the ER), total wetland acreage, and the number of rare terrestrial species occurrences documented in the project vicinity. The supplemental reservoirs impact roughly 430 ac of high-quality habitat at the Lee Site, 1,000 ac at the Keowee Site, 1,000 ac at the Perkins Site, and 1,800 ac at the Middleton Shoals Site. Revisions to the text of the ER and ER Supplement concerning impacts to high-quality habitat are provided as Attachments 125-01 and 125-02. Existing records of rare, threatened, and endangered (RTE) terrestrial species were also reviewed for each alternative supplemental water reservoir site. Since the submission of the ER Supplement, Duke Energy has reviewed the South Carolina and North Carolina Natural Heritage Program databases for new records of RTE species within the vicinity of the alternative sites and supplemental water reservoirs. Updates to terrestrial RTE species recorded in the vicinity of the sites are provided as revisions to the ER Supplement text in Attachment 125-02. Wetland impacts also increased for all alternatives with the addition of the supplemental water reservoirs, as discussed in Section 9.3.2.3 of the ER Supplement. A qualitative evaluation of the increases of the acreage of impacts to wetlands and high-quality habitats, as well as RTE species led to the increase in impact levels presented in Table 9.3-3 in the ER Supplement. All impacts were evaluated using the definitions of SMALL, MODERATE, and LARGE provided in NUREG-1555.

Aquatic Ecology Resources

The evaluation of potential environmental impacts to aquatic ecology was based on the total linear feet of estimated stream and the number of protected aquatic species occurrences documented in the project vicinity within each alternative site and associated supplemental water reservoir. Duke Energy has reevaluated impacts to streams within the supplemental water reservoir sites using the Geographic Information System (GIS) tool ArcHydro. This methodology approximates headwater streams that are not typically shown on U.S. Geological Survey quadrangles. This methodology is further discussed in the response to RAI 126. Revisions to Table 9.3-4 and the ER Supplement text concerning the amount of stream impact are provided as Attachments 125-03 and 125-04.

Supplemental cooling reservoirs for the alternative sites encompass streams ranging from 1st to 4th order streams. Both intermittent and perennial streams are likely present within each alternative supplemental reservoir site. Based on 2009 National Agriculture Imagery Program (NAIP) aerial imagery, most streams appear to have vegetated buffers within the reservoir sites. Streams likely vary in stability from stable to incised streams. Onsite streams likely have typical Piedmont stream geomorphology and contain alternating riffles and pools, providing habitat for aquatic invertebrates and fish. Such habitat would likely include riffles with cobbles, pools, root

masses, leaf packs, woody debris, and sand and silt substrate. Fish communities likely include cyprinids (minnows), centrarchids (sunfish and bass), and ictalaurids (catfish). No rare aquatic species have been documented within the vicinity of the Lee Site, Perkins Site, or Middleton Shoals Site. Two state rare insects with aquatic life stages have been documented within the footprint of the Keowee supplemental water reservoir.

A qualitative evaluation of the impacts to streams and potential effects to aquatic rare species was done in accordance with NUREG-1555. The increase of impacts to streams elevated the level of impacts to aquatic ecology for all alternative sites as provided in Table 9.3-3 in the ER Supplement.

Associated Revisions to the Lee Nuclear Station Combined License Application:

1. Revisions to COLA, ER, Chapter 9.3.2.3
2. Revisions to COLA, ER Supplement, Chapter 9.3.2.3
3. Revisions to COLA, ER Supplement, Chapter 9, Table 9.3-4 (Sheet 2 of 2)
4. Revisions to COLA, ER Supplement, Chapter 9.3.2.4

Attachments:

Attachment 125-01	Revisions to COLA, ER, Chapter 9.3.2.3
Attachment 125-02	Revisions to COLA, ER Supplement, Chapter 9.3.2.3
Attachment 125-03	Revisions to COLA, ER Supplement, Chapter 9, Table 9.3-4 (Sheet 2 of 2)
Attachment 125-04	Revisions to COLA, ER Supplement, Chapter 9.3.2.4

Attachment 125-01

Revisions to COLA, ER, Chapter 9.3.2.3

1. Subsection 9.3.2.3, Terrestrial Ecology Resources, page 9.3-12, 1st Full Paragraph:

Sixty-four percent, 66 percent, and 59 percent of the cover in the core area at the Perkins, Keowee, and Middleton Shoals sites, respectively, consist of high-quality deciduous and mixed forest habitat (**Table** 9.3-4). This compares to only 14 percent at the Lee Nuclear Site. In contrast, the lower quality Pine, USC, and OFM habitat types comprise 36 percent, 30 percent, and 39 percent, respectively, at the Perkins, Keowee, and Middleton Shoals sites but almost 70 percent of the habitat at the Lee Nuclear Site. These data reflect the relative lack of previous disturbance at the Perkins, Keowee, and Middleton Shoals sites and the high degree of disturbance at the Lee Nuclear Site. The core area of the Lee Nuclear Site was extensively cleared and graded for the Cherokee Project but was cancelled in the 1980s.

Sixty-six percent, 82 percent, and 50 percent of the cover in the supplemental cooling reservoir footprint of the Perkins, Keowee, and Middleton Shoals sites, respectively, consist of high-quality deciduous and mixed forest habitat. This compares to 70 percent at the supplemental reservoir for the Lee Nuclear Site; however, the supplemental reservoirs for the alternative sites are between two (Keowee) to six (Middleton Shoals) times larger than the supplemental reservoir for the Lee Nuclear Site, corresponding to greater impacts to high-quality forested habitat from the alternative site reservoirs.

Attachment 125-02

Revisions to COLA, ER Supplement, Chapter 9.3.2.3

1. Subsection 9.3.2.3, Terrestrial Ecology Resources, page 9-5, 1st Paragraph:

Lee Nuclear Site

The South Carolina Natural Heritage Program database documents a record of *Menispermum canadense* (Canada moonseed), a state species of concern, in the vicinity of the Lee Nuclear Site and supplemental cooling reservoir. NWI maps, USGS hydrologic data, soils data, and aerial photographs identified about 18 ~~11~~ ac of wetlands and 28 ac of open water on the site and approximately 3 ac of wetlands and approximately 5 ac of open water on the associated reservoir area (Table 9.3-4). The Lee Nuclear site is already partially cleared. Using 450 ac in the core area of the site for the plant facilities would require removal of 65 ac of high quality wooded habitat (Table 9.3-4). The 620 ac supplemental cooling reservoir would impact approximately 430 ac of high quality wooded habitat. It was determined that impacting 21 ~~14~~ ac of wetlands (for comparison purposes, a conservative assumption that all acres of wetlands would be impacted was made) and ~~60,000~~ 62,000 linear feet (LF) of streams (Table 9.3-4) for plant facilities would have MODERATE impacts on terrestrial ecosystems. Information presented in this section reflects desktop analysis conducted for all alternative sites; and may differ from information presented in other sections of this Environmental Report that reflect more detailed surveys of the preferred alternative.

2. Subsection 9.3.2.3, Terrestrial Ecology Resources, page 9-5, 4th Paragraph:

Keowee Site

There are no documented rare, threatened, or endangered species on the Keowee site; however, four state species of concern have been documented within the footprint of the supplemental cooling reservoir: *Eupatorium fistulosum* (hollow joe-pye weed), *Nestronia umbellula* (Indian olive), Margaret's river cruiser (*Macromia margarita*), and Carlson's polycentropus caddisfly (*Polycentropus carlsoni*). The federally listed endangered peregrine falcon (*Falco peregrinus*) has been occasionally sighted near the Oconee Nuclear Station (which is located next to the Keowee site). There are ~~four~~ five state-listed plant species (species of concern) and one state-listed bird species (species of concern) in the vicinity of Lake Keowee: *Nestronia umbellula* (Indian Olive), *Viola tripartita* (three-parted violet), *Carex laxiflora* (loose-flowered sedge), ~~and~~ *Carex prasina* (drooping sedge), *Pachysandra procumbens* (Allegheny-spurge), and barn owl (*Tyto alba*). The NWI maps, USGS hydrologic data, soils data, and aerial photograph interpretation revealed 3.5 ac of wetlands and 10 ac of open water on the Keowee site and 19 ac of wetlands and approximately 2 ac of open water associated with the supplemental water reservoir. Construction at the Keowee site and reservoir would affect ~~147,000~~ 144,000 LF ~~feet~~ of streams. The site is mostly wooded. Using 450 ac in the core area of the site for the plant facilities would require removal of 297 ac of high quality wooded habitat (Table 9.3-4). The 1,300 ac supplemental cooling reservoir would impact approximately 1,000 ac of high quality wooded habitat.

3. Subsection 9.3.2.3, Terrestrial Ecology Resources, page 9-6, 1st Paragraph:

Perkins Site

Corallorhiza wisteriana (spring coral-root), a state species of concern, has been documented within the Perkins Site. There are no documented rare, threatened, or endangered species at the Perkins supplemental cooling reservoir sites. *Dicanthelium annulum* (a witch grass), a state species of concern,

has been documented within the vicinity of the Perkins Site and supplemental water reservoirs. ~~There are no documented occurrences of RTE species in the vicinity of the site.~~ NWI maps, USGS hydrologic data, soils data, and aerial photo interpretation revealed 0.5 ac of wetlands and 0.0 ac of open water on the Perkins site and 92 ac of wetlands and approximately 2 ac of open water associated with supplemental water reservoirs. Construction at the Perkins site and reservoirs would affect ~~124,000~~ 207,000 LF of streams. The site is mostly wooded. Using 450 ac for the plant facilities in the core area of the site would require removal of 288 ac of high quality wooded habitat (Table 9.3-4). The 1,500 ac of supplemental cooling reservoirs would impact approximately 1,000 ac of high quality wooded habitat.

4. Subsection 9.3.2.3, Terrestrial Ecology Resources, page 9-6, 4th Paragraph:

Middleton Shoals Site

There are no documented rare, threatened, or endangered species on the Middleton Shoals site or its supplemental cooling reservoir. There are no documented occurrences of rare, threatened, or endangered species in the vicinity of the site or supplemental cooling reservoir. NWI maps, USGS hydrologic maps, soil maps, and aerial photograph interpretation revealed 1.2 ac of wetlands and 7 ac of open water on the Middleton Shoals site and 174 ~~117~~ ac of wetlands and ~~20~~ 30 ac of open water associated with the supplemental reservoir. Construction at the Middleton Shoals site and reservoir would affect ~~212,000~~ 378,000 LF of streams. The site is mostly wooded. Using 450 ac in the core area of the site for the plant facilities would require removal of 265 ac of high quality wooded habitat (Table 9.3-4). The 3,700 ac supplemental cooling reservoir would impact approximately 1,800 ac of high quality wooded habitat.

Attachment 125-03

Revised Table 9.3-4 (Sheet 2 of 2)

TABLE 9.3-4 (Sheet 2 of 2)
COVER (HABITAT) TYPES PRESENT ON THE PERKINS, KEOWEE, MIDDLETON SHOALS, AND LEE NUCLEAR CANDIDATE SITES

	Name of Candidate Site							
	Perkins		Keowee		Middleton Shoals		Lee Nuclear Site	
	Site	Reservoirs[b]	Site	Reservoirs[b]	Site	Reservoirs[b]	Site	Reservoirs[b]
Wetlands (ac)	0.5	92	3.5	19	1.2	~~117~~ 174	~~11~~ 18	~~3.2~~ 3.1
Stream Length (LF)	20,000	~~104,000~~ 187,000	17,000	~~130,000~~ 127,000	16,000	~~196,000~~ 362,000	3,000	~~57,000~~ 59,000
Open Water (ac)	0	~~1.9~~ 2.4	10	2.3	7.0	~~20~~ 30	28	5.3
Land (ac)	450	~~1,450~~ 1,500	450	1,300	450	~~2,200~~ 3,700	450	620

(b) Acreage and location of proposed reservoirs were estimated based on supplemental water needs and USGS topographic maps.

Attachment 125-04

Revisions to COLA, ER Supplement, Chapter 9.3.2.4

1. Subsection 9.3.2.4, Aquatic Ecology Resources, page 9-7, insert new text before 1st Full Paragraph:

Supplemental cooling reservoirs for the alternative sites encompass streams ranging from 1st to 4th order streams. Both intermittent and perennial streams are likely present within each alternative supplemental reservoir site. Based on 2009 National Agriculture Imagery Program (NAIP) aerial imagery, most streams appear to have vegetated buffers within the reservoir sites. Streams likely vary in stability from stable in areas with riparian buffers to incised streams for reaches with less established buffers. Onsite streams likely have typical Piedmont stream geomorphology and contain alternating riffles and pools, providing habitat for aquatic invertebrates and fish. Such habitat would likely include riffles with cobbles, pools, root masses, leaf packs, woody debris, and sand and silt substrate. Fish communities likely include cyprinids (minnows), centrarchids (sunfish and bass), and ictalaurids (catfish).

Lee Nuclear Site

There are no documented occurrences of aquatic rare, threatened, or endangered species in the vicinity of the Lee Site or its supplemental cooling reservoir. The construction of the plant and supplemental cooling reservoir will impact up to 62,000 LF of stream (for comparison purposes, a conservative assumption was made that all linear feet of streams would be impacted). This includes conversion of ~~convert 60,000~~ 59,000 LF of stream from a lotic to lentic ecosystem from the supplemental cooling reservoir. Lotic organisms will be replaced by lentic organisms. The Lee Site is located on a river which would likely provide sufficient heat rejection capacity for the proposed plant, using a closed cooling water system, without having significant thermal impacts to aquatic ecology. No information was discovered during the evaluation which revealed any concerns with significant thermal impacts at the site.

2. Subsection 9.3.2.4, Aquatic Ecology Resources, page 9-7, 4th Full Paragraph:

Keowee Site

There are no documented occurrences of aquatic rare, threatened, or endangered species ~~in the vicinity of~~ within the Keowee Site; however, two state-listed insect species (species of concern) with aquatic life stages have been documented within the footprint of the supplemental cooling reservoir: Margaret's river cruiser and Carlson's polycentropus caddisfly. The construction of the plant and supplemental cooling reservoir will impact up to 144,000 LF of stream, which includes conversion of ~~convert 147,000~~ 127,000 LF of stream from a lotic to lentic ecosystem from the supplemental cooling reservoir. Lotic organisms will be replaced by lentic organisms. The Keowee Site is located on a reservoir which would likely provide sufficient heat rejection capacity for the proposed plant, using a closed cooling water system, without having significant thermal impacts to aquatic ecology. No information was discovered during the evaluation which revealed any concerns with significant thermal impacts at the site.

3. Subsection 9.3.2.4, Aquatic Ecology Resources, page 9-8, 2nd Full Paragraph:

Perkins Site

There are no documented occurrences of aquatic rare, threatened, or endangered species in the vicinity of the Perkins Site or its supplemental cooling reservoirs. The construction of the plant and supplemental cooling reservoir will impact up to 207,000 LF of stream, which includes conversion of ~~convert 124,000~~ 187,000 LF of stream from a lotic to lentic ecosystem from the supplemental cooling reservoir. Lotic organisms will vanish and be replaced by lentic organisms. The Perkins Site is located on a river which would likely provide sufficient heat rejection capacity for the proposed plant, using a closed cooling water system, without having significant thermal impacts to aquatic ecology. No information was discovered during the evaluation which revealed any concerns with significant thermal impacts at the site.

4. Subsection 9.3.2.4, Aquatic Ecology Resources, page 9-8, 5th Full Paragraph:

Middleton Shoals Site

There are no documented occurrences of aquatic rare, threatened, or endangered species in the vicinity of the Middleton Shoals Site or its supplemental cooling reservoir. The construction of the plant and supplemental cooling reservoir will impact up to 378,000 LF of stream, which includes conversion of ~~convert 212,000~~ 362,000 LF of stream from a lotic to lentic ecosystem from the supplemental cooling reservoir. Lotic organisms will be replaced by lentic organisms. The Middleton Shoals Site is located on a reservoir which would likely provide sufficient heat rejection capacity for the proposed plant, using a closed cooling water system, without having significant thermal impacts to aquatic ecology. No information was discovered during the evaluation which revealed any concerns with significant thermal impacts at the site.

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 2010

Reference NRC RAI Number: ER RAI 130, Alternatives

NRC RAI:
The U.S Army Corps of Engineers (USACE) evaluation of any project alternative must include the published public interest factors of: conservation, economics, aesthetics, general environmental concerns, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people. Please include discussion of each of these factors for each reasonable/practicable alternative.

Duke Energy Response:
The Corps' decision whether to issue a permit is based on an evaluation of the probable impacts of the proposed project on the public interest [33 C.F.R. § 320.4(a)(1)]. This public interest evaluation is based upon a careful weighing and balancing of the benefits that reasonably may be expected to accrue from the project and its reasonably foreseeable detriments. In undertaking this balancing, the Corps considers the factors listed below as they may be relevant in each particular case. If a permit complies with the 404(b)(1) guidelines and other applicable guidelines and criteria, it will be granted unless the Corps determines that it would be contrary to the public interest. Based upon the information provided below, the proposed nuclear project is in the public interest. As discussed during the conference call held June 15, 2010 with NRC and USACE to clarify RAI questions, this response addresses the public interest factors for the Lee Nuclear Site.

1. Conservation: Impacts to terrestrial communities from construction are discussed in Section 4.3.1 of the ER and ER Supplement. On the Lee Site, impacts to terrestrial communities will be SMALL. Most of the development is confined to areas previously disturbed during the Cherokee Nuclear Station construction. Approximately 93% of forested communities within the Lee Nuclear Site will not be impacted by construction. As discussed in the response to RAI 166, impacts to terrestrial communities within the Make-Up Pond C study area are considered SMALL on a site and vicinity scale, although LARGE on the London Creek watershed scale. Approximately 52% of forested communities within the Make-Up Pond C study area will not be impacted by construction. As discussed in Section 4.3.1.2 of the ER, impacts to terrestrial communities from the railroad spur and the offsite transmission lines will be SMALL.

Impacts to aquatic communities from construction are discussed in Section 4.3.2 of the ER and ER Supplement. The impacts to aquatic communities are SMALL within the Lee Site. As discussed in Section 4.3.2.2.3 of the ER Supplement, the impacts to aquatic communities within the Make-Up Pond C study area are LARGE at the London Creek watershed scale and MODERATE at the site and vicinity scale. Section 4.3.2.2 of the ER and Sections 4.3.2.2.1 and

4.3.2.2.2 of the ER Supplement, document that impacts to aquatic communities within the railroad spur and the offsite transmission lines will be SMALL. Impacts to aquatic communities will require compensatory mitigation subject to the Section 401 and 404 permits. Therefore, the interests of conservation will not be significantly negatively affected by the Lee Nuclear Station.

2. Economics: As set forth in 33 C.F.R. § 320.4(q), the project will "contribute to needed improvements in the local economic base, affecting such factors as employment, tax revenues, community cohesion, community services, and property values." The Lee Nuclear Station will have a positive effect on economics within the Duke Energy franchise service area as well as the vicinity of the project. The project will contribute to meeting the need of projected increased energy demand within the Duke Energy franchise service area over a 20-year planning horizon as described in the Integrated Resource Plan (IRP). Section 9.1.4 of the ER discusses regional electric supply consequences should no action be taken. If additional baseload generation, such as the Lee Nuclear Station, was not created and Duke Energy failed to meet energy demand from existing generation, Duke Energy would need to purchase additional power from other suppliers, leading to higher rates for Duke Energy customers. Economics and the cost of power to utility rate payers was also a primary consideration when determining the source of the energy generation to meet the projected energy need. Energy generation that may be technologically feasible but cannot produce baseload generation at affordable and competitive rates cannot be implemented on a wide scale to meet energy needs. Duke Energy also seeks to maintain a diverse portfolio of baseload generation to buffer against spikes in the cost of fuel, such as coal and natural gas. As discussed in Section 9.2.2, page 9.2-7 of the ER, nuclear generation has a higher capital cost than coal or natural gas generation; however, this energy source is affected by fuel increases to a much smaller degree. Therefore, nuclear generation is part of Duke Energy's ability to fulfill its responsibility imposed by the North Carolina Utilities Commission (NCUC) and Public Service Commission of South Carolina (PSCSC) to provide energy to its customers at affordable rates.

The Lee Nuclear Station will also have positive impacts on the local economies in Cherokee and York Counties. The economic effect of the construction of the Lee Nuclear Station is discussed specifically in Section 4.4.2.2 of the ER. During peak construction, there will be approximately 5,100 people employed at the Lee Nuclear Site, while the construction of Make-Up Pond C will employ another 185 workers. Expenditures and benefits include the creation of jobs, employee purchasing, and increased tax revenues. The impacts from the increased employment during plant construction are considered a MODERATE to LARGE beneficial impact in the vicinity and a SMALL beneficial impact to the region. As discussed in Section 4.4.2.2.1 of the ER, several types of taxes will be generated by construction activities, purchases, and site workforce expenditures. These would include taxes on corporate profits, wages, and salaries; sales and use taxes on corporate and employee purchases; and personal property taxes associated with employees. The benefit of increased tax revenue to the region is considered SMALL, but LARGE for Cherokee County. The impacts of increased population from the construction workforce to infrastructure and community services, housing, and education are discussed in Sections 4.4.2.3, 4.4.2.4, and 4.4.2.5 of the ER and ER Supplement. Increased costs to the communities to provide services to the increased population should be offset by the increase in tax revenue generated by the plant. The ability of the localities to respond to increased demand for housing will be market driven and will likely result in increased property values.

The effect on economics due to the operation of the Lee Nuclear Station is discussed in Section 5.8.2 of the ER. Approximately 960 people will be employed at the Lee Nuclear Station during operation. Another roughly 590 jobs are expected to be created indirectly by the operations of the plant. These indirect jobs are typically service related and would be filled by local residents. Because of the job creation, the impact of the operation of the Lee Nuclear Station is considered LARGE beneficial in the vicinity, but SMALL beneficial in the region. Duke Energy and Cherokee County have negotiated an in-lieu fee payment for property taxes for the site. The 30-year fee payment agreement is described further in Section 5.8.2.2.1 of the ER. Additionally, the increase in employment from operational workers will generate sales taxes, as well as payroll taxes. The impact revenue generated from the plant operation has a LARGE beneficial impact on Cherokee County and SMALL beneficial impact on the region. The impacts of increased population from the operational workforce to infrastructure and community services, housing, and education are discussed in Sections 5.8.2.3.1, 5.8.2.3.2, and 5.8.2.3.3 of the ER. Increased costs to the communities to provide services to the increased population should be offset by the increase in tax revenue generated by the plant. The ability of the localities to respond to increased demand for housing will be market driven and will likely result in increased property values.

3. Aesthetics: Impacts to aesthetics from the Lee Nuclear Station are discussed in Sections 4.4.1.4 and 5.8.1.4 of the ER and ER Supplement. Aesthetics impacts include effects during construction, which are temporary, and visual effects from the plant once constructed. The tallest structures on-site during the construction period are expected to be the meteorological tower and cranes used for construction of the facilities. As these structures primarily consist of iron framework, they carry a lower visual weight than the containment building domes, which will be the most visible structures on-site as the Lee Nuclear Station nears completion.

As described in Section 4.4.1.4 of the ER, the Lee Nuclear Station uses short and compact mechanical-draft cooling towers that are expected to have minimal effects on local viewsheds. Towards the end of construction, the most visible structures on the site are the containment building domes at 180.5 ft above ground level, which is set in place towards the end of the construction period. The containment building domes at the Lee Nuclear Station are most visible from local parks in Gaffney, South Carolina, King's Mountain State Park (7.8 mi. northeast), Cowpens National Battlefield (located in Chesnee, South Carolina), and Croft State Park (located in Spartanburg, South Carolina). Because the visual effects are inversely proportional to distance, the effects of the containment building domes on the remaining regional parks are minimal. Section 5.8.1.4 of the ER discuses how the plumes from the cooling towers, while visible in the local area, are expected to have negligible visual effect. The plumes resemble cumulus clouds when seen from a distance.

Section 4.4.1.4 of the ER Supplement describes the construction of Make-Up Pond C, which involves clearing of forested land. Such clearing activities have a negative effect on aesthetics. This impact is limited to travelers on SC 329 and residents in the vicinity of the Make-Up Pond C study area on the west side of SC 329. The impact from the clearing of land for the construction of Make-Up Pond C and its associated facilities is expected to be SMALL to MODERATE and temporary in nature, and requires no mitigation efforts. The impact from the

inundation has positive impacts to area aesthetics, as water features are generally viewed as pleasant geographical features.

Section 5.8.1.4 of the ER states that the offsite transmission lines are expected to be visible from the road and may be visible to some residences; however, the land use is predominately rural farmland and consequently the transmission lines will not affect any scenic areas. The South Carolina State Historic Preservation Office (SHPO) stated that the transmission lines will have no visual affect on three properties eligible for listing on the National Register of Historic Places (NRHP) (see also response to RAI 138).

4. General environmental concerns: Table 1.2-1 in the ER Supplement provides a list of Federal, State, and local authorizations, including environmental permits, that are required for the construction and operation of the Lee Nuclear Station. The ER and the ER Supplement provide a comprehensive discussion on the effects of the Lee Nuclear Station on the environment.

5. Fish and wildlife values: Descriptions of fish communities and aquatic habitat within the Lee Nuclear Station project area are provided in Section 2.4.2 of the ER and ER Supplement. Fish communities within the project area are typical for the South Carolina Piedmont. No rare, threatened, or endangered fish species will be affected by the proposed project. The effect of the construction of the Lee Nuclear Site on fishery resources is provided in Section 4.3.2 of the ER and is considered SMALL. The effect of the construction of Make-Up Pond C on fishery resources is provided in Section 4.3.2.2.3 of the ER Supplement. Impacts to fish communities within London Creek are considered LARGE at the watershed scale and MODERATE at the site and vicinity scale. There is no impact to a recreational fishery as a result of Make-up Pond C construction. No aquatic federal or state-listed threatened, endangered, or species of concern are known or thought to potentially occur within the Make-Up Pond C study area. London Creek and its associated tributaries do not support rare and commercially or recreationally valuable aquatic species. Therefore, adverse effects from Make-Up Pond C construction are considered SMALL to aquatic species and habitats of special interest.

The effects of the operation of the river intake system and the discharge system at the Lee Nuclear Station on fisheries are discussed in Sections 5.3.1.2 and 5.3.2.2 of the ER and ER Supplement. Both these systems have a SMALL effect to fisheries. The impact to fisheries from the operation of Make-Up Pond B and Make-Up Pond C is discussed in Section 5.3.1.2 of the ER Supplement. The effects of drawdown events of Make-Up Pond B and Make-Up Pond C are considered MODERATE in the short-term and SMALL over the long-term.

Descriptions of wildlife and terrestrial habitat within the Lee Nuclear Station project area are provided in Section 2.4.1 of the ER and ER Supplement. Mammalian, avian, and herptofaunal communities within the project area are typical for the South Carolina Piedmont. No federally listed threatened or endangered wildlife species have been observed within the project area. The U.S. Fish and Wildlife Service has concurred that the project will have no adverse effect on federally threatened and endangered species. One federally protected bald eagle was observed traversing the site; however, no nests or communal roosts are located in the vicinity of the project area. Federal and state wildlife species of concern observed within the project area are listed in Table 2.4-5 in the ER Supplement. There are no designated wildlife sanctuaries, wildlife

refuges, or wildlife preserves on or in the vicinity of the project area. There are no terrestrial habitats identified by state or federal agencies as unique, rare, or of priority for protection. There are no land areas identified as critical habitat for species listed as threatened or endangered by the U.S. Fish and Wildlife Service. The project area does not represent a significant or important regional wildlife travel corridor. The effect of the construction of the Lee Nuclear Site on wildlife is SMALL and discussed in Sections 4.3.1.1.3 and 4.3.1.1.4 of the ER. The effect of the construction and inundation of Make-Up Pond C on wildlife is generally considered SMALL and is discussed in Section 4.3.1.2.3.3 of the ER Supplement. The effect of the construction of the railroad and offsite transmission lines on wildlife is considered SMALL and described in Section 4.3.1.2. The primary impacts to wildlife from the Lee Nuclear Site and Make-Up Pond C occur during construction and only minor impacts to wildlife would be expected during operation. Impacts to wildlife from the operation of the transmission lines associated with the Lee Nuclear Station are described in Section 5.6.1 of the ER. Transmission line operation and maintenance will have SMALL impacts to wildlife, including avian populations.

6. Flood hazards: Majorities of the Lee Nuclear Site and the Make-Up Pond C Site are in Zone C, areas outside the 100-year floodplain. Zone A areas, 100-year floodplain areas where base flood elevations have not been determined, are associated with the Broad River. All non-water dependent infrastructure associated with the Lee Nuclear Station are located outside of the Zone A areas. The only construction activities proposed within the Zone A areas located within the Lee Nuclear Site are the river intake and blowdown diffuser. These activities do not require coordination with FEMA or increased flood hazards. The main dam for Make-Up Pond C and the railroad culvert replacements on London Creek are also located within Zone A. These activities do not require FEMA approval as long as no insurable structures are impacted within the Zone A area. The main dam for Make-Up Pond C is classified as a Significant Hazard (Class II) according to DHEC Dams and Reservoirs Safety Act Regulation 72-2, Part C. The dam and spillway design criteria are based on *Section 72-3, Part D. Permit Application Requirements, Table I* for a large, Class II Impoundment. With the exception of the railroad spur, there is no infrastructure that would be affected by floodwaters, should a breach of the Make-Up Pond C dam occur. Therefore the proposed project has only a SMALL effect on increasing flood hazards.

7. Floodplain values: The river intake structure and blowdown diffuser will not affect floodplain values of the Broad River. The construction of Make-Up Pond C will affect values of floodplains, including floodplains not mapped or regulated by FEMA, along London Creek. The narrow floodplain along London Creek will be impacted by placement of fill during construction of the main dam and the inundation of Make-Up Pond C. There are no private structures located within or near the London Creek floodplain. The construction of Make-Up Pond C would have a MODERATE effect on floodplain values at the local London Creek watershed scale, but a SMALL effect on floodplain values at the site and vicinity and regional scales.

8. Land use: As stated in Section 2.2.1.1, Page 2.2-1 of the ER, Duke Energy currently owns the entire Lee Nuclear Site, which had already been prepared for industrial use during the development of the Cherokee Nuclear Station. Impacts to land use within the Lee

Nuclear Site are discussed in Section 4.1.1.1 of the ER. Land use impacts within the Lee Nuclear Site are considered SMALL.

Duke Energy has also nearly completed the acquisition of property within the Make-Up Pond C study area. Existing land use within the Make-Up Pond C study area is described in Section 2.2.2 in the ER Supplement. Impacts to land use within the Make-Up Pond C study area are described in Section 4.1.2.2 of the ER Supplement. Impacts to land use within the Make-Up Pond C study area are considered MODERATE within the study area and on a site and vicinity scale.

SMALL effects on land use are also expected from the rehabilitation of the railroad spur and the addition of new 230-kV and 525-kV transmission lines. With the exception of the 1,300-foot realignment around the Reddy Ice Plant, the railroad will be reconstructed in the previous location, minimizing land use impacts. During the transmission line siting process, land use criteria were evaluated to avoid and minimize impacts. Additionally, although Duke Transmission Management BMPs would typically limit the use of the transmission right-of-way for silviculture, Duke Energy does not restrict the use of land under the transmission lines except for the construction of permanent structures or planting vegetation that might interfere with the transmission line. This would not affect most crop or pasture land under the transmission lines. Land use impacts from the railroad spur and the offsite transmission lines are further described in Sections 4.1.1.2 and 4.1.2 of the ER and ER supplement.

9. Navigation: As described in Section 2.3.2.1.2 of the ER, the Broad River is used for canoeing, kayaking, and boating; however this river and its major tributaries are shallow, and there are numerous dams without locks. Therefore, these waters are not used as navigational waterways. The construction of the river intake structure and the blowdown discharge structure will not affect navigation. Additionally, as described in Section 5.2.2.2.1 of the ER, consumptive water use for the Lee Nuclear Station will not impact downstream navigation. London Creek is not classified as a navigable waterway or used for navigation. The construction of Make-Up Pond C would not affect navigation.

10. Shore erosion and accretion: The effect of the river intake on shoreline erosion and accretion is discussed in Section 4.2.2.1 of the ER. During the construction of the river intake, the temporary cofferdam will decrease the width of the Broad River, which may result in increased velocity. This may increase the energy for bottom scour and bank erosion. Any scour or bank erosion would be local and likely SMALL. Following cofferdam removal, flow velocities are expected to return to preconstruction conditions. The river bank will be restored after construction to stabilize the banks. As described in Section 5.3.1.1.2 of the ER, the intake will be constructed flush with the bank and the intake flow direction will be perpendicular to the river flow. The intake withdrawals are expected to be less than 5 percent of the average annual river flow with relatively low intake velocities. Because of these design features, the operation of the intake system is not expected to cause significant changes in shoreline erosion, bottom scouring, induced turbidity, or silt buildup.

The construction and operation of Make-Up Pond C is not expected to result in shoreline erosion or accretion. The replacement of the existing railroad culverts on London Creek will increase the discharge capacity and reduce erosive velocities downstream of this existing culvert. Streambank

erosion at transmission line crossings will be minimized by adherence to practices outlined in the Duke Energy Best Management Practices for Stormwater Management and Erosion Control Policy and Procedures Manual (1999). Such practices include construction sequencing, maintaining vegetated buffers, and stabilization measures (Reference 1).

11. Recreation: Section 4.4.2.6 of the ER discusses the effect of the Lee Nuclear Station on Recreation. The construction of the Lee Nuclear Station will have only a SMALL effect on recreation. Since Duke Energy prohibits recreation such as hunting, fishing, and hiking on its property, there are currently no recreational activities occurring on the Lee Nuclear Site. As described in Section 4.3.2.1.4, page 4.3-20 of the ER, construction activities, including the river intake and blowdown diffuser, will have a SMALL impact on recreational activities on the Broad River/Ninety-Nine Islands Reservoir. Best Management Practices will minimize stormwater impacts that could impact recreational fishing within the Broad River/Ninety-Nine Islands Reservoir.

As discussed in Section 5.8.2.3.4 of the ER, the operation of the Lee Nuclear Station will also have a SMALL effect on recreation. As described in Section 5.2.2.1.1, page 5-9 of the ER Supplement, river-level reduction associated with consumptive water losses from plant operations is not expected to affect recreational canoeing and fishing in summer, when river use is at its highest even during low-flow conditions. Maximum water consumption of 63 cfs from the Broad River only reduces the water elevation by 0.01 ft, or less than 0.2 in. Plant consumption will therefore not reduce the depth of water for boat or fishing upstream of the dam as the impoundment elevation is controlled by the FERC license for hydroelectric development. Plant consumptive use and blowdown discharges will have only a SMALL effect on recreational fisheries.

Recreational activities such as hunting and fishing may have occurred on private lands within the Make-Up C Study Area prior to property acquisition by Duke Energy. Section 4.3.1.2.3.4, page 4-27 of the ER Supplement documents the effect to recreation from the construction of Make-Up Pond C. Since Duke Energy prohibits such recreation on its property, these activities will cease after the remaining parcels are vacated; however, the Make-Up Pond C study area is not essential to maintaining recreational hunting and fishing opportunities on adjacent properties under private control. As described in Section 4.3.2.2.3, no recreational fishing currently occurs in London Creek. The construction of Make-Up Pond C will not affect recreational opportunities at Lake Cherokee. Therefore, the construction of the Lee Nuclear Station and Make-Up Pond C will have only a SMALL impact to recreation.

The construction of the railroad spur and transmission lines will have only a SMALL effect on recreational opportunities within private property.

12. Water supply and conservation: Duke Energy has extensively evaluated existing and future water supply needs in the Broad River to ensure that the Lee Nuclear Station has sufficient water supply during operation and will not affect the water supply of downstream users. Existing surface water use in the vicinity of the Lee Nuclear Station is described in ER Section 2.3.2.1.1 and associated ER Supplement updates, while future surface water use is

described in ER Section 2.3.2.1.4. Groundwater use is described in Section 2.3.2.2 of the ER and associated updates in the ER Supplement.

Section 4.2.3.2 of the ER describes negligible impacts to surface water use, including water supply during the Lee Nuclear Site construction. Groundwater impacts from the Lee Nuclear Site construction are discussed in Section 4.2.3.3 and are not anticipated to affect any private water supply wells since the dewatering impacts will be limited to the immediate area around the excavation. Impacts to surface water supply of the Broad River resulting from the construction of Make-Up Pond C, including inundation, will be SMALL and are described in Section 4.2.3.2 of the ER Supplement. Impacts to localized groundwater supply resulting from the construction of Make-Up Pond C are discussed in Section 4.2.3.3 of the ER Supplement. Potable water wells located north of Whites Road near Grace Road and along Old McKowns Farm Road and Fawn Trail may experience an increase in water levels during the inundation of Make-Up Pond C. These wells may also experience some temporary increase in turbidity, but conditions should quickly dissipate after equilibrium is reached. The effect to groundwater supply in the vicinity of Make-Up Pond C is therefore anticipated to be SMALL.

Impacts to water supply resulting from the operation of the Lee Nuclear Station are discussed in Sections 5.2.1.7 and 5.2.2 of the ER and ER Supplement. As stated in Section 5.2.2.2.1, page 5-11 of the ER Supplement, the Lee Nuclear Station uses Make-Up Ponds B and C to supply make-up water once the river flows drop below 538 cfs (sum of 483 cfs FERC minimum release and 55 cfs Lee Nuclear Station average consumption); therefore the impact of Lee Nuclear Station operations during low-flow conditions on downstream future water availability is considered SMALL. As described in Section 5.2.1.7, Page 5-8 of the ER Supplement, potable water wells that experienced an increase in water level during pond inundation will experience a decrease in water level during Make-Up Pond C drawdown events. These drawdown events are expected to be rare, and water levels will not decrease to a level lower than pre-construction conditions.

13. Water quality: Existing surface water quality is discussed in Section 2.3.3.1 of the ER and ER Supplement. Neither the Broad River immediately upstream or downstream of the Lee Nuclear Site nor London Creek are listed on the EPA 303(d) list of impaired waterbodies (Reference 2). Baseline water quality within the Broad River, the backwater areas of Ninety-Nine Islands Reservoir, and the on-site impoundments is specifically discussed in Section 2.3.3.1.2 of the ER. Water quality parameters were generally within SCDHEC threshold criteria for freshwater aquatic life. In 2008 SCDHEC revised its Water Quality Standards (WQS) (Reference 3). In this revision Iron was removed from these WQS. A corresponding revision to the ER is included as Attachment 130-01.

Baseline water quality of London Creek is discussed in Section 2.3.3.1.2.2 of the ER Supplement. All measurements of in-situ water quality parameters were in compliance with drinking water, water classification, and standards criteria for the protection of aquatic life and human health. Baseline water quality data from Lake Cherokee are also discussed in Section 2.3.3.1.2.2 of the ER Supplement and provided in Table 2.3-35.

Existing groundwater quality is described in Section 2.3.3.2 of the ER and ER Supplement. Baseline groundwater quality on the Lee Nuclear Site is characteristically similar to waters of the on-site impoundments: calcium carbonate-type and consistent with typical Piedmont province groundwaters. Groundwater data within the Make-Up Pond C study area are consistent with local groundwater conditions.

Existing factors that may be cumulatively affecting or have the ability to affect water quality at the Lee Nuclear Site are described in Section 2.3.3.3 of the ER and associated updates in the ER Supplement. Such factors include wastewater discharges, power plants, pipelines, bulk petroleum storage facilities, agricultural and farm runoff, underground storage tanks, industrial or manufacturing facilities, and dams and reservoirs.

Potential water quality impacts due to construction of the Lee Nuclear Station, including Make-Up Pond C, are discussed in Section 4.2.4 of the ER and ER Supplement. Impacts to surface water during construction are expected to be SMALL. Best Management Practices (BMPs) for stormwater control described in the Stormwater Pollution Prevention Plan (SWPPP) to be developed for the site will be used to prevent sediment from entering the Broad River. All stormwater discharges will be monitored in accordance with applicable NPDES requirements. As stated in Section 4.2.4.4 of the ER Supplement, all construction area runoff on the Lee Nuclear Site will be directed through Make-Up Pond A, Make-Up Pond B, Hold-Up Pond A, or permitted temporary construction outfalls. Each discharge outfall will be equipped with an oil recovery boom in the event of an unanticipated discharge of oil or grease. Some temporary turbidity will occur within the Broad River during installation of the cofferdam for the river intake and dredging in the vicinity of the blowdown diffuser.

Potential water quality impacts resulting from the operation of the Lee Nuclear Station are described in Section 5.2.3 of the ER and ER Supplement. Thermal impacts from plant operation are described in Section 5.2.3.1 of the ER and ER Supplement and updated with the response to NRC RAI 63. Thermal impacts from the discharge of blowdown and operation of Make-Up Ponds B and C are SMALL. Impacts to water chemistry from the discharge of blowdown are also considered SMALL and are discussed in detail in Section 5.2.3.2 of the ER and subsequent updates in the ER Supplement. Radioactive process water discharges are discussed in Section 5.2.3.3 of the ER and the impacts are considered SMALL. Radioactive wastewater meeting the NRC release limits is discharged to the circulating water blowdown through a radiation detector that stops the discharge if a large release of radiation is detected. Radioactive process water discharges will be maintained within the limits of 10 CFR Part 20 and 10 CFR Part 50, Appendix I, for pertinent thresholds. Chemical discharges related to the plant water treatment systems are discussed in Section 5.2.3.4 of the ER. This wastewater is treated in the wastewater retention basins prior to discharge in the vicinity of the turbines of the Ninety-Nine Islands Reservoir Hydroelectric Facility. Impacts of residual chemicals on river water quality are expected to be SMALL.

Potential impacts to groundwater quality are discussed in ER Section 5.2.3.5. To minimize the potential for contact of radioactive material with groundwater, the Lee Nuclear Site is equipped with a water barrier around the building foundation up to 1 ft. above grade. The water barrier is installed to prevent water from seeping into the auxiliary building that holds the liquid

radioactive waste (LRW) tanks. In addition, groundwater sampling is anticipated to be conducted at the Lee Nuclear Site. The groundwater program will follow applicable and appropriate groundwater monitoring program recommendations in NEI 07-07. The program will include a network of wells for early detection (near-field wells) and for verification of no off-site migration (far-field wells). Wells will be installed in proximity to plant systems that may be a source of radiological releases, and/or in nearby projected down-gradient flow direction from such sources. Both shallow and deep wells will be utilized as needed to monitor the location closest to the potential release area. To prevent non-radioactive contamination of groundwater, the Duke Energy will develop, implement, and maintain a SWPPP that addresses (1) spill management and control for operations, (2) storage and management of chemicals, and (3) oil storage and management. Based upon the implementation of best management practices and low permeability soils, impact from Lee Nuclear Station operations on groundwater are considered SMALL.

14. Energy needs: The proposed Lee Nuclear Station is part of comprehensive plan to meet long-range energy needs within the Duke Energy franchise service area. Chapter 8 of the ER documents the need for power as assessed in the Integrated Resource Plan (IRP) filed with the North Carolina Utilities Commission and the South Carolina Public Service Commission. Duke Energy has determined that a combination of additional baseload, intermediate, and peaking energy generation; renewable resources; and demand-supply management programs are required over the next 20 years. A combination of energy sources is necessary to provide reliable and economical baseload generation. Nuclear energy is an integral component of this diversity of sources. Page 58 of the 2009 IRP illustrates the annual energy projection through 2029 by generation type (Reference 4). As stated in Section 8.4.3 of the ER, the two Westinghouse AP 1000 units at the Lee Nuclear Station will provide 2,200 MW of electric power as part of a comprehensive plan to meet a need for additional capacity. The Energy Information Administration (EIA) 2007 Annual Energy Outlook for the SERC region also shows a cumulative unplanned nuclear capacity need of 9000 MW in 2019. The Lee Nuclear Station will also be part of the solution to fill this need for nuclear capacity.

15. Safety: The Lee Nuclear Station has been sited and designed to protect public safety to the maximum practical extent. The final safety analysis report (FSAR) Rev 2 and Chapter 7 of the ER discuss potential risk to the public, measures taken to reduce the risk, and effects of postulated impacts. The dam for Make-Up Pond C has been designed in accordance with criteria set forth in the South Carolina Dams and Reservoirs Safety Act. There are no structures or public infrastructure such as roads downstream of the Make-Up Pond C that would be in jeopardy if a dam breach occurred.

16. Food and fiber production: No food or fiber products are currently being produced on the Lee Nuclear Site. Section 4.1.1.1, page 4.1-2 of the ER documents that there are 2 ac of prime farmland in the southeast corner of the Lee Nuclear Site that have not been previously disturbed. Section 4.1.2.2 of the ER Supplement states that there are approximately 260 ac of prime farmland and farmlands of statewide importance within the Make-Up Pond C study area. Prime farmland soils within the Lee Nuclear Site and the Make-Up Pond C study area will no longer be available for farm use; however, there are roughly 118,000 ac of prime farmland located in Cherokee and York Counties, as described in Section 2.2.1.2, page 2.2-4 of

the ER. Since the construction of Make-Up Pond C affects approximately 0.2% of prime farmland in the region, the impact is SMALL. The rehabilitated railroad spur will be constructed on previous alignment and will not affect any farmland. As described in Section 4.1.2, page 4.1-4 of the ER, impacts to agricultural land under the offsite transmission lines are confined to the immediate area around the transmission towers. Duke Energy does not restrict the use of the land under the transmission lines except for the construction of permanent structures or planting vegetation that might interfere with the transmission line. This does not affect most crop or pasture agricultural land under the transmission lines. As described in Section 5.3.3.2.1 of the ER, the effect to agricultural crops from cooling tower drift during plant operation is also considered to be SMALL.

17. Mineral needs: As stated in Section 4.1.1.1 of the ER, there are no mineral resources, including oil and natural gas, within or adjacent to the Lee Nuclear Station that are being exploited or that are of any known value. The project will neither positively nor negatively affect mineral needs.

18. Considerations of property ownership: Duke Energy owns all property within the Lee Nuclear Site and has almost completed the acquisition of remaining parcels within the Make-Up Pond C Study Area. Right-of-way acquisition for the railroad spur is also nearly complete. A transmission siting analysis was conducted to determine transmission routes that avoid impacts to resources, including property. No structures will be impacted by the transmission lines. Duke Energy will obtain easements for the right-of-way and the owner will retain ownership of the property. As discussed previously, Duke Energy does not restrict the use of the land under the transmission lines except for the construction of permanent structures or planting vegetation that might interfere with the transmission lines.

19. The needs and welfare of the people: This project will provide energy, jobs, and a substantial increase in tax revenues, providing for the needs and welfare of the people in the region.

Considering the foregoing, the project will provide extensive public benefit and is in the public interest.

References:

1. Duke Energy, 1999, Best Management Practices for Stormwater Management and Erosion Control - Policy and Procedures Manual. February 1999.
2. South Carolina Department of Health and Environmental Control, Broad Watershed Sites Assessed for 2008 303(d). March 2009.
3. South Carolina Department of Health and Environmental Control, R.61-68, Water Classifications and Standards. April 25, 2008.
4. Duke Energy, 2009, Duke Energy Carolinas Integrated Resource Plan (Annual Report). September 1, 2009.

Associated Revision to the Lee Nuclear Station Combined License Application:

1. Revisions to COLA ER Rev 1, Chapter 2.3.3.1.2, pages 2.3-34 and 2.3-35

Attachment:

Attachment 130-01 Revisions to COLA, ER Rev 1, Chapter 2.3.3.1.2

Attachment 130-01

Revisions to COLA, ER Rev 1, Chapter 2.3.3.1.2, Pages 2.3-34 and 2.3-35

Revise COLA, Part 3, ER Rev 1, Chapter 2.3.3.1.2, Page 2.3-34 and 2.3-35, beginning with the 6th complete paragraph as follows:

~~Iron~~

~~The CMC for iron for the Broad River is 1 mg/L. Surface water samples had iron concentrations between 0.04 mg/L and 1.67 mg/L, excluding samples collected from the bottom of the deeper impoundments. The mean iron concentration in the main channel of the Broad River was 0.85 mg/L, and the mean iron concentration in backwater areas of the Broad River was 1.22 mg/L. Four of 23 samples (17 percent) collected from the main channel of the Broad River exceeded the 1 mg/L threshold, although the maximum iron concentration of these was 1.11 mg/L. The Make-Up Pond A (Station 108) bottom sample had a maximum iron concentration of 28.5 mg/L, and the Make-Up Pond B (Station 110) bottom sample had a maximum iron concentration of 20.2 mg/L, while shallow samples did not exceed the CMC. The high iron concentrations in the samples collected from deeper waters of the impoundments may be due to reducing conditions present at the bottom of a stratified impoundment.~~

~~The Cherokee study reported a maximum iron concentration of 9.6 mg/L (October 1973) with an average of 0.51 mg/L (Reference 5). The water quality study conducted as part of the Ninety-Nine Islands Dam licensing process documented a maximum iron concentration of 10.6 mg/L with an average of 2.7 mg/L, also exceeding the CMC. Although exceeding CMC levels, high iron is characteristic of Piedmont waters deriving from soil minerals.~~

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 2010

Reference NRC RAI Number: ER RAI 142, Ecology-Aquatic

NRC RAI:

Provide an estimate of the proposed schedule, timing, and duration of the activities associated with the rail line, transmission lines, and Pond C (including realigning SR329). If specific measures would be taken to reduce impacts to ecological communities (e.g., timing activities to avoid spawning seasons), describe those measures.

Duke Energy Response:

Primary site preparation and construction activities associated with the rail line, transmission line to Make-Up Pond C pumps, and Make-Up Pond C construction (including realigning SC 329) are preliminarily scheduled as follows:

Activity	Start	Finish
Railroad Construction *(includes re-route at Reddy Ice Plant)*	April 2013	January 2015
Railroad Culvert Improvements at London Creek	January 2013	February 2014
Transmission Line to Make-Up Pond C Pumps	September 2017	February 2018
Make-Up Pond C Dams & Dikes	July 2016	July 2018
Make-Up Pond C Intake Structure	January 2018	July 2018
Highway SC 329 Reroute	May 2015	June 2016

Inasmuch as the overall project schedule will allow, the building of the cofferdams is expected to be scheduled outside of spawning season. As described in Duke Energy's response to RAI 171, efforts will be made to plan land clearing operations outside the avian breeding season. However, if construction activities are deemed necessary during the spring, all appropriate depredation permits will be obtained from SCDNR and the USFWS.

Construction of the re-routed 44 KV transmission line will not be scheduled until/unless a need is identified for the line. The existing line is not currently in use, and current plans call for the right of way to be relocated but not cleared.

Reference:

None

Associated Revision to the Lee Nuclear Station Combined License Application:

None

Attachment:

None

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 2010

Reference NRC RAI Number: ER RAI 148, Ecology-Aquatic

NRC RAI:

Provide the rationale for selecting the screen-type (i.e. fixed or traveling) at the intakes for Ponds A, B and C. Describe schedule and methods that would be utilized to keep the screens free of debris. Describe other aspects of the pond intake/discharge designs that would reduce the impacts to fish.

Duke Energy Response:

Make-Up Pond A:
The intake on Make-Up Pond A will be a dual flow type traveling screen with fish return equipment. A dual flow type screen has a larger surface area than a traditional through flow type screen and thus there is more margin in meeting the 0.5 fps maximum velocity requirement. Therefore a dual flow type screen will allow the screen to handle worst case water quality.

The dual flow traveling screen design will satisfy the requirements of Section 316(b) of the Clean Water Act and minimize adverse environmental impacts on aquatic life. Since the traveling screen is a dual flow type that uses two screen faces rather than a standard single face traveling screen, the width of the intake can be reduced.

The traveling screen is typically cleaned continuously during operation by use of a standard package spray wash system. A major advantage of this type of screen is the lack of debris carryover into the clean water side. Any material not removed by the spray system returns to the unscreened waterway on the descending screen. With a dual-flow inlet, debris not collected by the mesh, not lifted by the elevator bars, or not carried over past the debris discharge point collects in the screening channel and does not affect the dual-flow screen operation. The dual-flow screen has a lower inlet velocity that provides the best conditions for efficient screening.

Make-Up Pond B and Make-Up Pond C:
Intakes on Make-Up Pond B and Make-Up Pond C will be operated intermittently. A screening system which can be placed in a standby condition and can be manually cleaned is desirable. A passive wedge wire cylindrical drum intake screening system will be used for Make-Up Pond B and Make-Up Pond C. This screen is preferred, when not using a traveling screen, because it can be removed, inspected, periodically cleaned and repaired with relative ease.

The wedge wire cylindrical drum screen design will satisfy the requirements of Section 316(b) of the Clean Water Act such as maintaining less than a 0.5 fps maximum through-screen velocity and will minimize adverse environmental impacts on aquatic life.

Associated Revision to the Lee Nuclear Station Combined License Application:

None

Attachment:

None

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 2010

Reference NRC RAI Number: ER RAI 183, Ecology - Terrestrial

NRC RAI:

Provide Federal (e.g., US Fish and Wildlife Service) consultation letters that pertain to terrestrial ecology that were received by Duke Energy for the alternative sites, and State (e.g., Natural Heritage Program; Rare, Threatened, and Endangered Species Inventory, etc.) consultation letters that were received for the transmission line corridor, Pond C, railroad spur, and alternative sites.

Duke Energy Response:

Correspondence with the U.S. Fish and Wildlife Service and S.C. Department of Natural Resources concerning the transmission lines, Make-Up Pond C and the railroad corridor is attached.

Lists and locations of recorded observations of rare, threatened or endangered species for alternative sites were obtained from the National Heritage Program, NC Natural Heritage Program and SC Natural Heritage Program web sites. Copies of these lists were provided in the response to ER RAI 66 (WLG2008.10-04, Withheld from public disclosure). There was no correspondence with the U.S. Fish and Wildlife or the S.C. Department of Natural Resources on alternative sites since consultation is not required for alternative sites.

Associated Revision to the Lee Nuclear Station Combined License Application:

None

Attachments:

Attachment 183-1 United States Department of the Interior US Fish and Wildlife Service Correspondence

Attachment 183-2 South Carolina Department of Natural Resources Correspondence

Attachment 183-1

United States Department of the Interior US Fish and Wildlife Service Correspondence

Duke Energy

526 S. Church Street
Charlotte, NC 28202

Mailing Address:
EC05R / P.O. Box 1006
Charlotte, NC 28201-1006

704382-5917

April 3, 2006

Chief, Endangered Species
U.S. Fish and Wildlife Service
1875 Century Blvd., Suite 200
Atlanta, GA 30345

Subject: Duke Energy, Cherokee Project
Request for Information on Rare, Threatened, and Endangered Species

Dear Sir of Madam,

Duke Energy plans to obtain a license from the U.S. Nuclear Regulatory Commission to construct and operate a nuclear power generation facility in Cherokee County, South Carolina. The project property is east of Gaffney, SC along the southern shore of the Broad River just upstream of the Ninety-nine Islands Hydroelectric Station. Enclosure 1 shows the location of the property boundaries on the U.S. Geological Survey Blacksburg South quadrangle map. Enclosure 2 is a recent aerial photograph of the property showing the current state of the property.

The property was designated as a site for a nuclear power generation facility in the early 1970's and granted a construction permit from the U.S. Nuclear Regulatory Commission in 1975. There was extensive development of the site until 1983 when it was abandoned. Approximately 750 acres of the 2200 acre site was developed for the nuclear power generation facility. The property was sold to other commercial interests who continued various industrial and commercial activities on the property.

In accordance with the U.S. Nuclear Regulatory Commission regulations for submitting a license application, Duke Energy is currently preparing an Environmental Report. Among other key issues, the Environmental Report will assess the impact of the construction and operation of the nuclear power generation facility on "important species" including those that are federally listed (or proposed for listing) as threatened or endangered species.

According to our preliminary research on this subject, the Dwarf-flowered heartleaf (*Hexastylis naniflora*) is the only federally listed threatened species believed to occur in the Cherokee County area. There are no species listed as endangered. Additionally, the Georgia aster (*Aster georgianus*) is the only federal candidate species that possibly occurs there.

Please advise if we should consider any other species under your legal jurisdiction in our analysis. Additionally, please provide us with any information in your possession showing known occurrences of these species in the project area.

Thank you very much for your support and assistance. Please call me if you have any questions.

Sincerely,

Theodore Bowling
Environmental Report Project Manager

Enclosures: 1) Topographic Map
2) Aerial Photograph

United States Department of the Interior

FISH AND WILDLIFE SERVICE
176 Croghan Spur Road, Suite 200
Charleston, South Carolina 29407

May 23, 2006

Mr. Theodore Bowling
Duke Power
P.O. Box 1006
Charlotte, NC 28201-1006

Re: Duke Energy, Cherokee Project
Cherokee, South Carolina
FWS Log No: 2006-I-0530

Dear Mr. Bowling:

The U.S. Fish and Wildlife Service (Service) has reviewed your letter requesting information on threatened and endangered species. The proposed project would involve construction and operation of a nuclear power generation facility in Cherokee County, South Carolina. The following comments are provided in accordance with the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e), and section 7 of the Endangered Species Act (Act), as amended (16 U.S.C. 1531-1543).

We are providing a list of federally protected species and species of concern which have the potential to occur in Cherokee County to aid you in determining the impacts your project may have on protected species. This list includes known occurrences and areas where the species has a high possibility of occurring. Records are updated continually and may be different from the following. This list should be used only as a guideline, not as the final authority.

Dwarf-flowered heartleaf	Hexastylis naniflora	T
Georgia aster	Aster georgianus	C
Prairie birdsfoot-trefoil	Lotus purshianus var. helleri	SC
Biltmore green briar	Smilax biltmoreana	SC
American kestrel	Falco sparverius	SC
Loggerhead shrike	Lanius ludovicianus	SC
Southeastern myotis	Myotis austroriparius	SC

T- Federally Threatened, E- Federally Endangered, SC- Species of Concern

In addition to the species listed above, an extant population of robust redhorse, a fish of special concern, is found in the Broad River downstream of your proposed project area and have the potential to migrate upstream to Ninety-nine Islands. Ensuring good water quality, fish passage and precautions against impingement mortality at water intake structures is essential to the persistence of this and other aquatic fauna. Although candidate species are not afforded full protection under the Endangered Species Act, we request your assistance in conserving this rare species, thus preventing the need for future listing.

Your interest in ensuring the protection of endangered species is appreciated. If you have further questions or require additional information, please contact Lora Zimmerman of this office at (843) 727-4707 ext. 226. In future correspondence concerning this project, please reference FWS Log No. 2006-I-0530.

Sincerely,

Timothy N. Hall
Field Supervisor

TNH/LLZ

Duke Energy

526 S. Church Street
Charlotte, NC 28202

Mailing Address:
EC09D / P.O. Box 1006
Charlotte, NC 28201-1006

704382-5917

July 16, 2007

Ms. Lora Zimmerman
U.S. Fish and Wildlife Service
176 Croghan Spur Road
Suite 200
Charleston, SC 29407

Subject: Duke Energy, Lee Nuclear Station
Rare, Threatened, and Endangered Species Survey
FWS Log No. 2006-I-0530

Dear Ms. Zimmerman,

On April 3, 2006 I contacted your office to inform you of the proposed Lee Nuclear Station (formerly termed the Cherokee Project) that Duke Energy plans to construct in Cherokee County, SC along the Broad River. At that time Mr. Timothy Hall responded to my letter indicating several species listed as threatened or species of concern reported in Cherokee County.

Since that time, Duke Energy has completed one year of terrestrial and aquatic sampling in the vicinity of the proposed Lee Nuclear Station. Reconnaissance visits to the site were made in March, April, June, and October 2006. These visits included terrestrial and aquatic reconnaissance. Aquatic reconnaissance included both fish and macroinvertebrate collections.

I am including as enclosures to this letter the following excerpts from our draft Environmental Report:

1. Draft Table 2.4-5, Endangered, Threatened and Other Noteworthy Species Potentially Occurring in the Vicinity of the Lee Nuclear Site. [Please note that the draft table lists the bald eagle (*Haliaeetus leucocephalus*) as an endangered species. This will be revised to reflect the recent removal from the list.]
2. Draft Figure 2.1-201, Site Plot Plan
3. Draft Figure 2.4-1, Ecological Type Map of the Lee Nuclear Site, Cherokee County , SC
4. Draft Figure 2.4-2, Approximate Location of Fish Collection Stations on the Broad River in Proximity to the Proposed Lee Nuclear Site

As indicated in draft Table 2.4-5, we did not observe any Federal rare, threatened or endangered species or Federal species of concern during any of our quarterly surveys.

We did observe a population of about 25 plants of Southern adder's tongue fern (*Ophioglossum vulgatum*) located in a wooded ravine above an old, man-made stock pond on the southwestern portion of the Lee Nuclear site (see draft Figure 2.4-1). This is a South Carolina species of concern. Not previously recorded for Cherokee or York Counties, this observation represents a range extension or expansion for the species. This population is well outside the area that will be impacted by construction or operation of the Lee Nuclear Station.

Also indicated in draft Table 2.4-5, we did collect the Fantail darter (*Etheostoma flabellare*), a South Carolina species of concern, upstream of the proposed Lee Nuclear Site.

We plan to submit our Environmental Report to the U.S. Nuclear Regulatory Commission in the fourth quarter of 2007 as part of our application for a license to construct and operate the Lee Nuclear Station. At that time, we will also provide the U.S. Fish and Wildlife Service with a copy of the entire Environmental Report for your information.

I would appreciate you concurrence with our conclusion that there are no Federal rare, threatened or endangered species that would be impacted by the construction or operation of the Lee Nuclear Station.

Thank you very much for your support and assistance. Please call me if you have any questions.

Sincerely,

Theodore Bowling
Nuclear Plant Development
Environmental Report Project Manager

1. Enclosures: 1) Draft Table 2.4-5, Endangered, Threatened and Other Noteworthy Species Potentially Occurring in the Vicinity of the Lee Nuclear Site.
2. Draft Figure 2.1-201, Site Plot Plan
3. Draft Figure 2.4-1, Ecological Type Map of the Lee Nuclear Site, Cherokee County , SC
4. Draft Figure 2.4-2, Approximate Location of Fish Collection Stations on the Broad River in Proximity to the Proposed Lee Nuclear Site

cc. File 4000.35-05

TABLE 2.4-5 (Sheet 1 of 5)
ENDANGERED, THREATENED, AND OTHER NOTEWORTHY SPECIES
POTENTIALLY OCCURRING IN THE VICINITY OF THE LEE NUCLEAR SITE

Common Name	Reference	Federal Status[a]	State Status[b]	Habitat at the Site?	Present on the Site?
Plants					
Dwarf-flowered heartleaf	USFWS	FT	ST	Yes	Unlikely Based on Targeted Field Searches
Pool sprite	YORK	FT	ST	No	No
Prairie birdsfoot-trefoil	USFWS	FSC	NL	No	No
Schweinitz's sunflower	YORK	FE	SE	No	No
Georgia aster	CHEROKEE, YORK	FC	SC	Yes	Unlikely Based on Targeted Field Search
Ashy hydrangea	CHEROKEE		SC	Yes	No
Biltmore greenbrier	USFWS	FSC	SC	No	No
Blue grass	YORK		SC	No	No
Canada lily	YORK		SC	No	No
Common or Creeping spikerush	YORK		SC	Yes	No
Creel's azalea	YORK		SC	Yes	No
Culver's-root	YORK		SC	No	No
Dwarf bulrush	YORK		SC	No	No
Dwarf skullcap	YORK		SC	No	No
Ear-leaved foxglove	YORK		SC	No	No

TABLE 2.4-5 (Sheet 2 of 5)
ENDANGERED, THREATENED, AND OTHER NOTEWORTHY SPECIES
POTENTIALLY OCCURRING IN THE VICINITY OF THE LEE NUCLEAR SITE

Common Name	Reference	Federal Status[a]	State Status[b]	Habitat at the Site?	Present on the Site?
Early buttercup	YORK		SC	No	No
Georgia rush	YORK		SC	No	No
Granite-loving flatsedge	YORK		SC	No	No
Gravel elimia	YORK		SC	No	No
Gray-headed prairie coneflower	YORK		SC	No	No
Heart-leaved foamflower	YORK		SC	No	No
Mullein foxglove	YORK		SC	No	No
Narrow-leaved vervain	YORK		SC	No	No
Nodding onion	CHEROKEE		SC	Yes	No
One-flowered stichwort	YORK		SC	No	No
Pale manna grass	YORK		SC	No	No
Piedmont quillwort	YORK		SC	No	No
Prairie goldenrod	YORK		SC	No	No
Prairie rosinweed	YORK		SC	No	No
Rigid prairie goldenrod	YORK		SC	No	No
Riverbank wild-rye	YORK		SC	No	No

TABLE 2.4-5 (Sheet 3 of 5)
ENDANGERED, THREATENED, AND OTHER NOTEWORTHY SPECIES
POTENTIALLY OCCURRING IN THE VICINITY OF THE LEE NUCLEAR SITE

Common Name	Reference	Federal Status[a]	State Status[b]	Habitat at the Site?	Present on the Site?
Rough sedge	CHEROKEE		SC	No	No
Slender naiad	YORK		SC	No	No
Smooth blue aster	YORK		SC	Yes	No
Smooth sunflower	CHEROKEE, YORK		SC	Yes	No
Soft grooveburr	YORK		SC	No	No
Soft-haired thermopsis	CHEROKEE		SC	No	No
Southern adder's tongue fern	Previously Unknown From Either County		SC	Yes	Yes-Observed During Field Reconnaissance
Southern nodding trillium	YORK		SC	No	No
Swamp white oak	YORK		SC	No	No
Turkey-beard	CHEROKEE		SC	No	No
Vasey's dogfennel	CHEROKEE		SC	No	No
Virginia bunchflower	YORK		SC	Yes	No
White walnut	YORK		SC	No	No
American ginseng	YORK		RC	Yes	No
Wild hyacinth	YORK		RC	No	No
Shoals spider-lily	YORK		NC	No	No

TABLE 2.4-5 (Sheet 4 of 5)
ENDANGERED, THREATENED, AND OTHER NOTEWORTHY SPECIES
POTENTIALLY OCCURRING IN THE VICINITY OF THE LEE NUCLEAR SITE

Common Name	Reference	Federal Status[a]	State Status[b]	Habitat at the Site?	Present on the Site?
Sun-facing coneflower	YORK		NC	No	No
Canada moonseed	CHEROKEE			Yes	Possible – But Unobserved During Field Reconnaissance
Mammals					
Southeastern myotis bat	USFWS	FSC	SC	Yes	Possible – But Unobserved During Field Reconnaissance
Birds					
Bald eagle	YORK	FT	SE	No	No
Loggerhead shrike	USFWS	FSC	SC	Yes	Probable – But Unobserved During Field Reconnaissance
American kestrel (Sparrow hawk)	USFWS	FSC	NL	Yes	Probable – But Unobserved During Field Reconnaissance
Frogs					
Northern cricket frog	YORK		SC	Yes	Possible – But Unobserved During Field Reconnaissance
Pickerel frog	YORK		SC	No	No

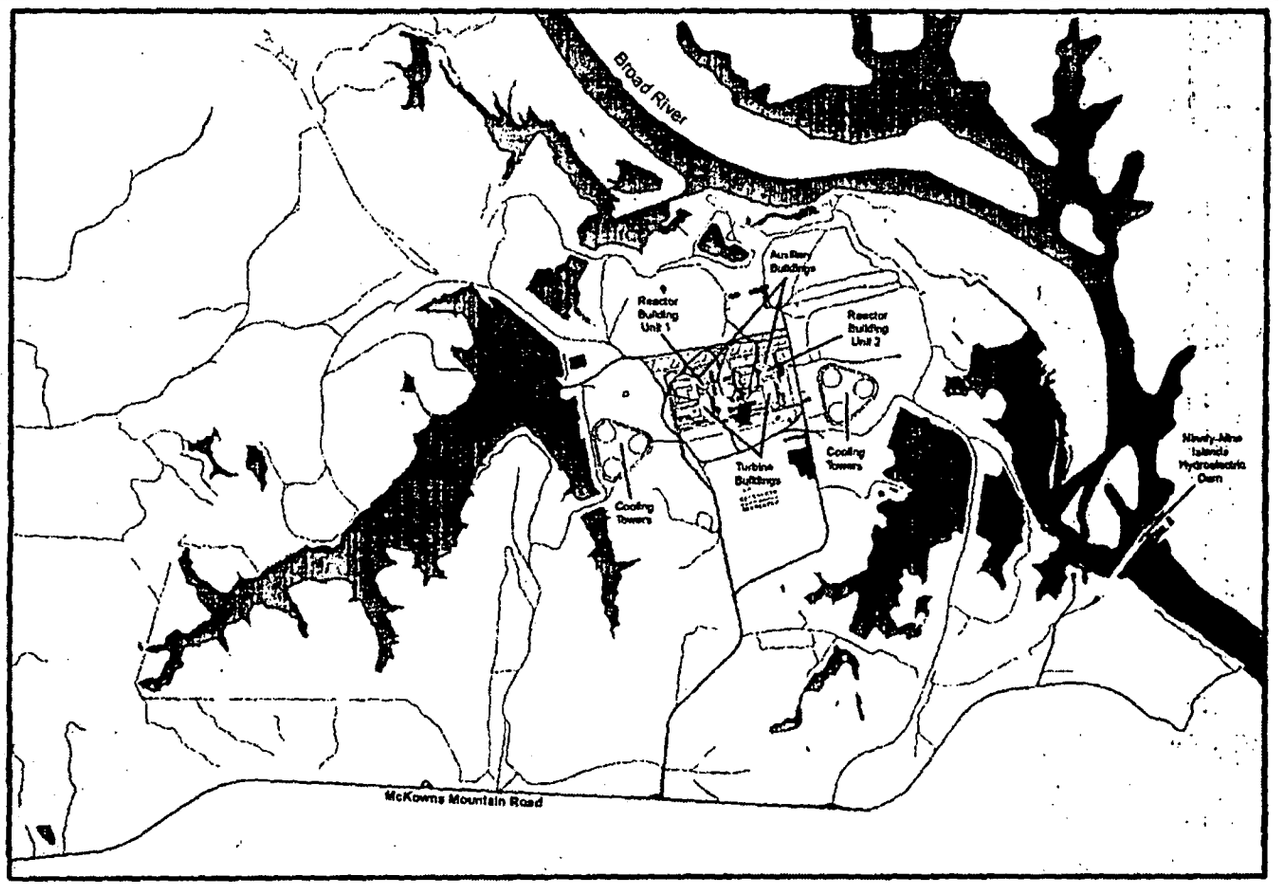
TABLE 2.4-5 (Sheet 5 of 5)
ENDANGERED, THREATENED, AND OTHER NOTEWORTHY SPECIES
POTENTIALLY OCCURRING IN THE VICINITY OF THE LEE NUCLEAR SITE

Common Name	Reference	Federal Status[a]	State Status[b]	Habitat at the Site?	Present on the Site?
Fish					
Robust redhorse	USFWS	FSC		Yes	Possible – But Highly Unlikely Due to Downstream Dams
Carolina darter	YORK		SC	No	No
Fantail darter	STATE		SC	Yes	Yes
Highfin carpsucker			SC	Yes	Possible – But Rarely Collected
V-lip redhorse	STATE		SC	Yes	Possible Due to Recent Range Extension

Sources: CHEROKEE County List = Reference 20; YORK County List = Reference 21; USFWS = Reference 17; STATE = Reference 19)

a) **Federal Status:** FT-federally listed as threatened; FC-federal candidate, not yet listed; FSC-federal species of concern.

b) **State Status:** ST-state listed as threatened; NC-state listed as of national concern; RC-state listed as of regional concern; SC-state listed as of state concern; NL-not listed.



Legend

Proposed Roads — Existing Roads

Proposed Structures — Site Boundary

0 0.25 0.5 1

Miles

N

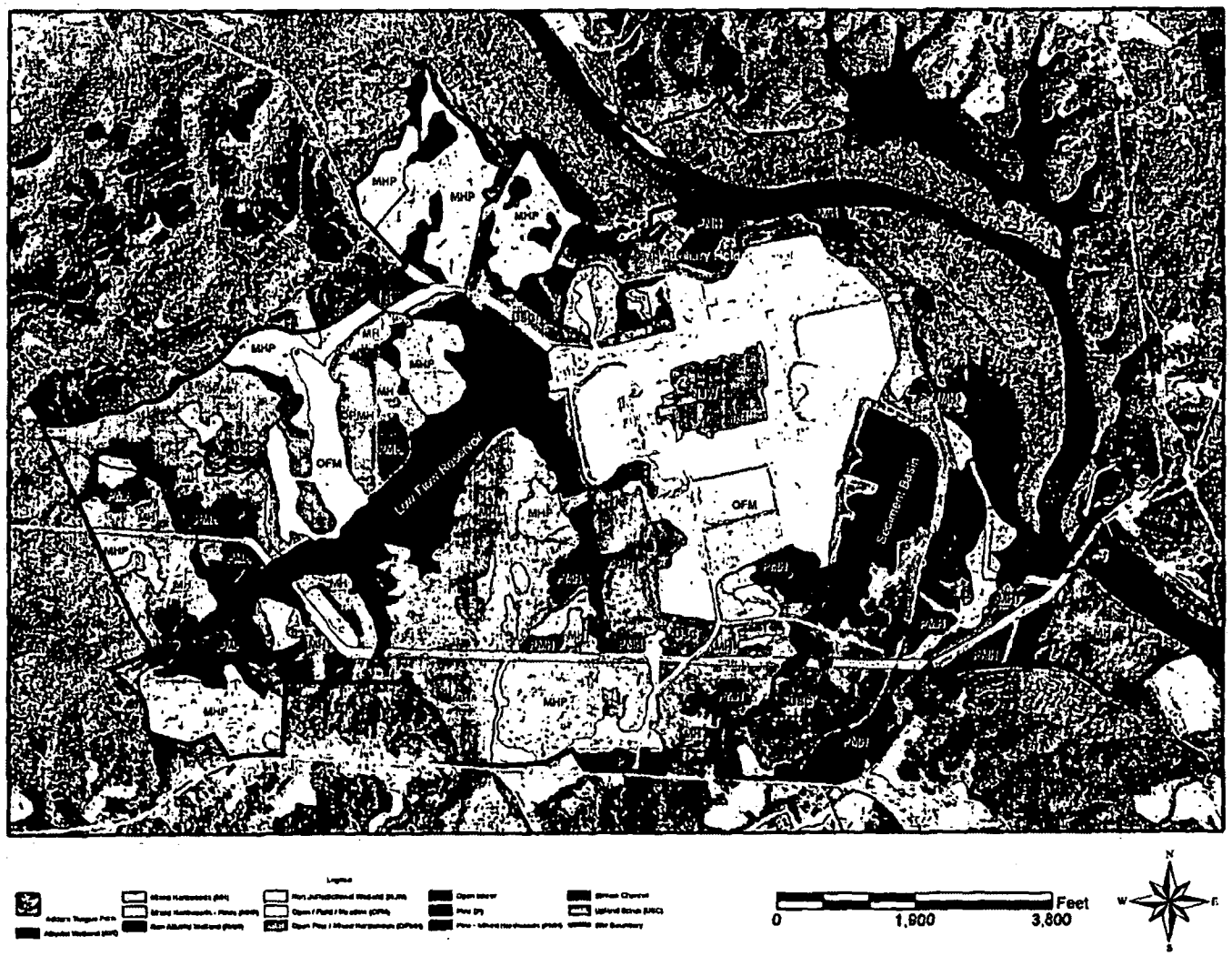
W E

S

WILLIAM STATES LEE III NUCLEAR STATION UNITS 1 &

Site Plot Plan

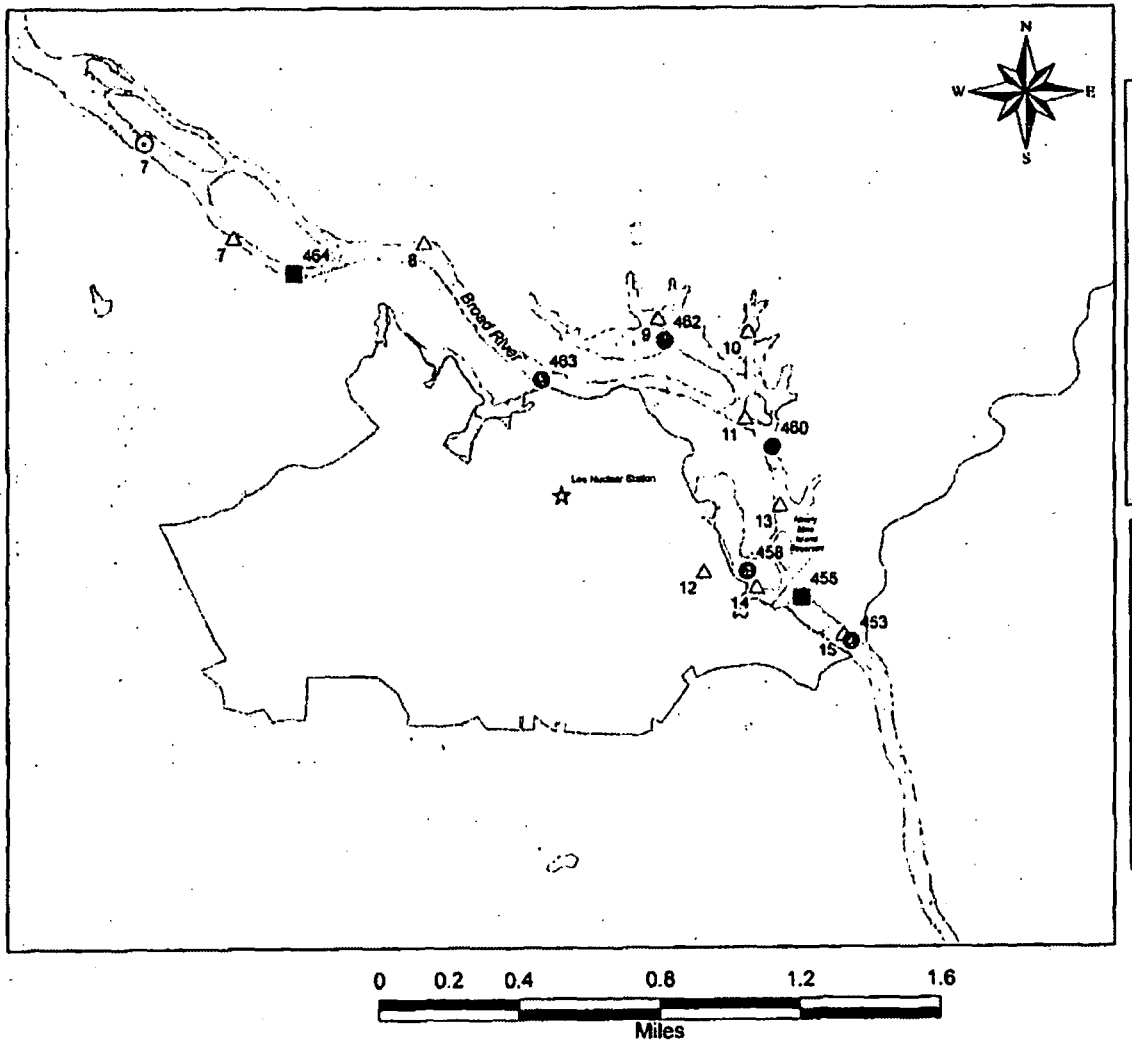
FIGURE 2.1-201 Re



WILLIAM STATES LEE III
NUCLEAR STATION UNITS 1 & 2

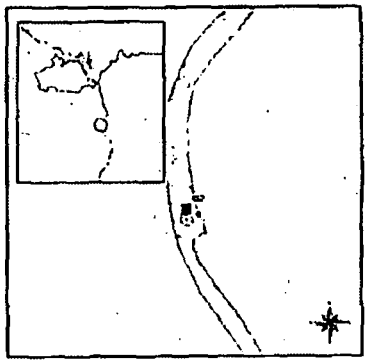
Ecological Type Map of the Lee Nuclear Site
Cherokee County, South Carolina

FIGURE 2.4-1 Rev A



Station Location and Data Sources

- DE (This Report)
- DPC (Reference 5)
- FERC (Reference 38)
- SCDNR (Reference 39)
- Reactor Center
- Proposed Site



Inset shows fish collection sites downstream of Proposed Lee Nuclear Site

0 0.2 0.4 0.8 1.2 1.6

Miles

WILLIAM STATES LEE III
NUCLEAR STATION UNITS 1 & 2

Approximate Locations of Fish Collection Stations on the Broad River in Proximity to the Proposed Lee Nuclear Site

FIGURE 2.4-2 Rev A

United States Department of the Interior

FISH AND WILDLIFE SERVICE
176 Croghan Spur Road, Suite 200
Charleston, South Carolina 29407

April 1, 2009

Mr. Theodore Bowling
Environmental Project Manager
Nuclear Plant Development
Duke Energy
EC09D/Post Office Box 1006
Charlotte, NC 28201-1006

Re: Endangered Species Review, W. S. Lee, III, Nuclear Station Rail Line, Cherokee County, SC, FWS Log No. 42410-2009-TA-0266

Dear Mr. Bowling:

The U.S. Fish and Wildlife Service (Service) has reviewed your survey results on potential impacts to threatened and endangered species (T&E) by the proposed rail line which will serve the W. S. Lee, III, Nuclear Station in Cherokee County, SC. The proposed rail line is located on an existing rail line corridor that was originally intended to serve the Cherokee Nuclear Station. The Cherokee Nuclear Station was never constructed and the rail line was abandoned. Duke Energy has re-acquired this rail line for use by the new proposed nuclear facility.

Duke Energy surveyed a 100 foot wide corridor centered along the abandoned rail line to characterize existing habitat as well as to search for Federal and state listed species. Approximately 1300 feet of the proposed rail line will be realigned to avoid an existing commercial facility; therefore, the new alignment was also surveyed. Only one T&E species, the dwarf flowered heartleaf, *Hexastylis naniflora*, is known to occur within Cherokee County. However, Duke Energy also surveyed for the Schweinitz's sunflower, *Helianthus schweinitzii*, as there is suitable habitat within the rail line corridor. The survey found no occurrence of the heartleaf or the sunflower within the 100 foot corridor. Based on these results, Duke Energy concludes that the proposed re-use of the abandoned rail line and construction of the new 1300 foot rail section would have no effect upon federally listed species.

Upon view of the information provided, the Service agrees that construction of the new rail line within the existing corridor, and the new alignment portion, will have no effect upon federally listed species. However, obligations under section 7 of the Endangered Species Act must be

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considered if: (1) new information reveals impacts of this identified action that may affect any listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner which was not considered in this assessment, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

The Service appreciates the opportunity to provide you with this information regarding this project. If you have any questions regarding the Service's comments, please do not hesitate to contact Mark Caldwell at (843) 727-4707 ext. 215.

Sincerely,

Craig Aloyer

for Timothy N. Hall
Field Supervisor

TNH/MAC/km

Duke Energy®

526 S. Church Street
Charlotte, NC 28202

Mailing Address:
EC09D / P.O. Box 1006
Charlotte, NC 28201-1006

704382-5917

August 20, 2009

Mr. Mark Caldwell
U.S. Fish and Wildlife Service
176 Croghan Spur Road
Suite 200
Charleston, SC 29407

Subject: Duke Energy, W.S. Lee III Nuclear Station
Rare, Threatened, and Endangered Species Survey
FWS Log No. 2006-I-0530

Dear Mr. Caldwell,

On April 3, 2006 I contacted your office to inform you of the proposed W.S. Lee III Nuclear Station (formerly termed the Cherokee Project) that Duke Energy plans to construct in Cherokee County, SC along the Broad River. At that time, Mr. Timothy Hall responded to my letter indicating several species listed as threatened or species of concern reported in Cherokee County.

Subsequent to that I have provided the following reports:

July 16, 2007 - Evaluation of rare, threatened and endangered species on the Lee Nuclear Site

March 10, 2009 - Evaluation of rare, threatened and endangered species along the Lee Nuclear Project rail corridor

Duke Energy has recently completed an ecological survey of the right-of-way for 230 kV and 525 kV electric transmission lines that will serve the Lee Nuclear Station. The survey evaluates the presence of jurisdictional waters and rare, threatened and endangered species along the proposed transmission lines. The enclosed compact disk contains our evaluation of jurisdictional waters and rare, threatened and endangered species along the transmission line corridors.

The evaluation concluded that based on species lists and known occurrence databases of the United States Fish and Wildlife Service and South Carolina Department of Natural Resources for Cherokee, Chester, Union, and York counties and a field inventory along the transmission line corridors, no Federal endangered, threatened, or otherwise noteworthy plant or animal species is known to occur within the transmission line corridors.

I would appreciate you concurrence with our conclusion that there are no Federal rare, threatened or endangered species that would be impacted by the construction or operation of the W.S. Lee III Nuclear Station transmission lines.

Thank you very much for your support and assistance. Please call me if you have any questions.

Sincerely,

Theodore Bowling
Nuclear Plant Development
Environmental Report Project Manager

1. Enclosure: Compact disk containing *250 kV and 525 kV Transmission Line Ecological Survey Report*

cc. File 4000.35-05

bcc (wo enclosure):

R. Veltri
S. Zengel (PBS&J)
M. Cusack (PBS&J)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
176 Croghan Spur Road, Suite 200
Charleston, South Carolina 29407

August 26, 2009

Mr. Theodore Bowling
Environmental Project Manager
Nuclear Plant Development
Duke Energy
EC09D/P.O. Box 1006
Charlotte, NC 28201-1006

Re: Endangered Species Survey, W. S. Lee, III, Nuclear Station Transmission Line, Cherokee County, SC, FWS Log No. 42410-2009-TA-0596

Dear Mr. Bowling:

The U.S. Fish and Wildlife Service (Service) has reviewed your survey results on potential impacts to threatened and endangered species (T&E) by the proposed transmission lines which will distribute power generated from the W. S. Lee, III, Nuclear Station in Cherokee County, SC. Two routes were surveyed for the presence of threatened and endangered species in addition to jurisdictional wetland areas.

As described in the submitted survey report; a new 525 kV line would extend from the Oconee-Newport 525 kV line to the Lee Nuclear Station switchyard (Switchyard) and a new 230 kV line would extend from the Pacolet Tie-Catawba 230 kV line to the Switchyard. The west 525 kV line would extend 17.42 miles to the Switchyard. The west 230 kV line would run parallel to the 525 kV line for 7.95 miles to the Switchyard. The east 525 kV line would extend 13.87 miles to the Switchyard. The east 230 kV line would run parallel to the 525 kV line for 7.09 miles to the Switchyard. The 525 kV line right of way (ROW) from the Oconee-Newport line to the Pacolet Tie-Catawba line would be 200 feet wide in both routes. The ROW from the Pacolet Tie-Catawba line to the Switchyard, where the lines parallel each other in a single corridor, would be 325 feet wide in both routes.

Habitat from four South Carolina counties, Cherokee, York, Union and Chester, will potentially be impacted through placement of the transmission lines. Therefore, Duke Energy surveyed for the federally threatened and endangered species known to occur in these counties, the dwarf flowered heartleaf, *Hexastylis naniflora,* the Schweinitz's sunflower, *Helianthus schweinitzii* and the Carolina heelsplitter, *Lasmigona decorata.* In addition, a number of state protected species were included in the survey efforts.

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The survey found no occurrence of the dwarf flowered heartleaf or the Schweinitz's sunflower within the proposed transmission line corridors. Further, the Carolina heelsplitter was not found within streams that will be crossed by the lines. Based on these results Duke Energy concludes that the proposed construction of the transmission lines would have no effect upon federally listed species.

Upon view of the information provided, the Service agrees that construction of the new 230kV and 525kV transmission lines will have no effect upon federally listed species. However, obligations under section 7 of the Endangered Species Act must be considered if (1) new information reveals impacts of this identified action that may affect any listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner which was not considered in this assessment, or (3) a new species is listed or critical habitat is designated that may be affected by the identified action.

We appreciate the opportunity to provide you with this information regarding this project. If you have any questions regarding the Service's comments, please do not hesitate to contact Mark Caldwell at (843) 727-4707 ext. 215.

Sincerely,

for Timothy N. Hall
Field Supervisor

TNH/MAC/km

United States Department of the Interior

FISH AND WILDLIFE SERVICE
176 Croghan Spur Road, Suite 200
Charleston, South Carolina 29407

October 28, 2009

Mr. Theodore Bowling
Environmental Project Manager
Nuclear Plant Development
Duke Energy
EC09D/P.O. Box 1006
Charlotte, NC 28201-1006

Re: Endangered Species Survey for Proposed Make-up Pond C, W. S. Lee, III, Cherokee County, SC, FWS Log No.42410-2010-TA-0029

Dear Mr. Bowling:

The U.S. Fish and Wildlife Service (Service) has reviewed your survey results on potential impacts to threatened and endangered species (T&E) by the proposed creation of Make-up Pond C which will serve as a water source for the proposed W. S. Lee, III, Nuclear Station in Cherokee County, SC.

☐ We concur with your determination that the proposed action will have no effect on resources under the jurisdiction of the USFWS that are currently protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)(Act). Therefore, no further action is required under Section 7(a)(2) of the Act.

☐ We concur with your determination that the proposed action is not likely to adversely affect resources under the jurisdiction of the USFWS that are currently protected by the Act. Therefore, no further action is required under Section 7(a)(2) of the Act.

☒ It is our opinion that the proposed action is not likely to have reasonably foreseeable adverse effects on resources under the jurisdiction of the USFWS that are currently protected by the Act. Therefore, no further action is required under Section 7(a)(2) of the Act.

Please note that obligations under section 7 of the Act must be reconsidered if (1) new information reveals impacts of this identified action may affect any listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a

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manner which was not considered in this assessment, or (3) a new species is listed or critical habitat is designated that may be affected by the identified action.

If the proposed project will impact wetlands, please contact the U.S. Army Corps of Engineers, Charleston District. If you have any questions regarding the Service's determination, please do not hesitate to contact Mark Caldwell at (843) 727-4707 ext 215.

Sincerely,

Joseph E. Caldwell

for Timothy N. Hall
Field Supervisor

TNH/MAC/km

Attachment 183-2

South Carolina Department of Natural Resources Correspondence

South Carolina Department of
Natural Resources

John E. Frampton
Director
Alfred H. Vang
Deputy Director for
Land, Water & Conservation Division

April 14, 2006

Mr. Theodore Bowling, Environmental Report Project Manager
Duke Energy
526 S. Church St.
Charlotte, NC 28202

RE: Duke Energy, Cherokee Project
Request for Information on Rare, Threatened, and Endangered Species

Dear Mr. Bowling,

Because our database does not represent a comprehensive biological inventory of the state, I can only verify the known occurrences in the vicinity of your project. There may be occurrences of species in the vicinity of your project area that have not been reported to us. Fieldwork remains the responsibility of the investigator.

I have checked our database, and there are no known occurrences of any federally or state listed species within a mile of the project site. As you indicated in your letter, the only federally or state listed species known to occur in Cherokee County is the federally threatened *Hexastylis naniflora* (Dwarf-flowered heartleaf). As a professional courtesy, we ask that you acknowledge S.C. Heritage Trust as a source of information whenever you use this data in reports.

If you need additional assistance, please contact me by phone at 803/734-3917 or by e-mail at HollingJ@dnr.sc.gov.

Sincerely,

Julie Holling

Julie Holling, Data Manager
SC Department of Natural Resources
Heritage Trust Program

South Carolina Department of
Natural Resources

John E. Frampton
Director

Alfred H. Vang
Deputy Director for
Land, Water, and Conservation Division

August 22, 2007

Mr. Theodore Bowling, Environmental Report Project Manager
Duke Energy, Nuclear Plant Development
EC09D / PO Box 1006
Charlotte, NC 28201-1006

RE: Duke Energy, Lee Nuclear Station
Rare, Threatened, and Endangered Species Survey

Dear Mr. Bowling,

I apologize for the delay in getting this response to you.

Because I do not have any expertise with the plants and animals you identified in your report, I cannot agree or disagree with your finding of no impact on rare, threatened and endangered species at Lee Nuclear Station. I have provided you with all the information I have available, and it seems that you have done a thorough survey of the station.

If possible, I would appreciate it if you would complete Element Occurrence forms for the species you found on the property and in the waters near the station. I have attached a copy of it. If you would prefer an electronic copy of it, or if you have any questions about it, please let me know.

If you need additional assistance, please contact me by phone at 803-734-3917 or by e-mail at HollingJ@dnr.sc.gov.

Sincerely,

Julie Holling

Julie Holling, Data Manager
SC Department of Natural Resources
Heritage Trust Program

Encl.

ELEMENT OCCURRENCE RECORD

ELCODE _____ EL OCC NUM _____

*EL NAME _____ *PRECISION _____

*COUNTY NAME _____ COUNTY CODE _____

*MAP NAME _____ MAP NUM _____

LATITUDE _____ LONGITUDE _____

*SOURCE OF INFO _____

*DATE _____(YYYY-MM-DD) WATERSHED _____

LANDOWNER (TYPE) _____ - (AGENCY) _____ - (NAME) _____

SITECODE _____ SITENAME _____

*DESCRIPTION

_____

_____

_____

_____

_____

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*Required field

***** ON REVERSE, PLEASE COPY A TOPO MAP SHOWING LOCATION *****

South Carolina Department of
Natural Resources
DNR

John E. Frampton
Director

Ken Rentiers
Deputy Director for
Land, Water and Conservation Division

December 3, 2009

Mr. Theodore Bowling, Environmental Report Project Manager
Duke Energy
EC09D
P.O. Box 1006
Charlotte, NC 28201-1006

RE: Duke Energy, W.S. Lee III Nuclear Station
Rail Corridor and Make-up Pond C Study Areas
Rare, Threatened, and Endangered Species Surveys

Dear Mr. Bowling,

Because our database does not represent a comprehensive biological inventory of the state, I can only verify the known occurrences in the vicinity of this project. There may be occurrences of species in the vicinity of your project area that have not been reported to us.

Based on what I saw in the report, it appears that you have done an extensive survey of the property. You have reviewed the Cherokee and York county lists on the SCDNR's Rare, Threatened & Endangered Species Inventory web site, and have covered the threatened and endangered species indicated on that site and on the USFWS list. I have checked our database and there are no known occurrences of any federal or state listed threatened or endangered species on or within a mile of the study areas. I have included a current species list for Cherokee or York counties, for your information, although I don't believe much has changed.

As a professional courtesy, we ask that you acknowledge S.C. Heritage Trust as a source of information whenever you use this data in reports. If you need additional assistance, please contact me by phone at 803-734-3917 or by e-mail at HollingJ@dnr.sc.gov.

Sincerely,

Julie Holling, Data Manager
SC Department of Natural Resources
Heritage Trust Program

Rare, Threatened, and Endangered Species and Communities Known to Occur in Cherokee County
December 3, 2009

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
Vertebrate Animals					
Myotis austroriparius	Southeastern Bat			G3G4	S1
Vascular Plants					
Allium cernuum	Nodding Onion			G5	S2
Aster georgianus	Georgia Aster	C: Candidate		G2G3	SNR
Carex scabrata	Rough Sedge			G5	S2
Helianthus laevigatus	Smooth Sunflower			G4	S2
Hexastylis naniflora	Dwarf-flowered Heartleaf	LT: Listed threatened		G3	S3
Hydrangea cinerea	Ashy-hydrangea			G4	S1
Menispermum canadense	Canada Moonseed			G5	S2S3
Xerophyllum asphodeloides	Eastern Turkeybeard			G4	S2
Communities					
Basic forest				GNR	S2
Pine - oak heath				G5	S3
Ecological					
Monadnock				GNR	SNR

Rare, Threatened, and Endangered Species and Communities Known to Occur in Cherokee County
December 3, 2009

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
Vertebrate Animals					
Acris crepitans crepitans	Northern Cricket Frog			G5T5	S5
Etheostoma collis	Carolina Darter		ST - 1976	G3	SNR
Haliaeetus leucocephalus	Bald Eagle		SE-Endangered	G5	S2
Rana palustris	Pickerel Frog			G5	SNR
Invertebrate Animals					
Elimia catenaria	Gravel Elimia			G4	SNR
Animal Assemblage					
Waterbird Colony				GNR	SNR
Vascular Plants					
Agalinis auriculata	Earleaf Foxglove			G3	S1
Agrimonia pubescens	Soft Groovebur			G5	S1
Amphianthus pusillus	Pool Sprite	LT: Listed threatened		G2	S1
Asplenium bradleyi	Bradley's Spleenwort			G4	S1
Aster georgianus	Georgia Aster	C: Candidate		G2G3	SNR
Aster laevis	Smooth Blue Aster			G5	SNR
Camassia scilloides	Wild Hyacinth			G4G5	S2
Cyperus granitophilus	Granite-loving Flatsedge			G3G4Q	S1?
Dasistoma macrophylla	Mullein Foxglove			G4	S1
Eleocharis palustris	Spike-rush			G5	S1?
Elymus riparius	Wild-rye			G5	SNR
Eupatorium sessilifolium var. *vaseyi*	Thoroughwort			G5T3T5	SNR
Helianthus laevigatus	Smooth Sunflower			G4	S2
Helianthus schweinitzii	Schweinitz's Sunflower	LE: Listed endangered		G3	S3
Hymenocallis coronaria	Shoals Spider-lily			G2Q	S2
Isoetes piedmontana	Piedmont Quillwort			G3	S2
Juglans cinerea	Butternut			G4	S3
Juncus georgianus	Georgia Rush			G4	S2
Lilium canadense	Canada Lily			G5	S1
Lipocarpha micrantha	Dwarf Bulrush			G5	S2
Melanthium virginicum	Virginia Bunchflower			G5	S2
Menispermum canadense	Canada Moonseed			G5	S2S3

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
Minuartia uniflora	One-flower Stitchwort			G4	S3
Najas flexilis	Slender Naiad			G5	S1
Panax quinquefolius	American Ginseng			G3G4	S4
Poa alsodes	Blue-grass			G4G5	S1?
Quercus bicolor	Swamp White Oak			G5	S1
Quercus oglethorpensis	Oglethorpe's Oak			G3	S3
Ranunculus fascicularis	Early Buttercup			G5	S1
Ratibida pinnata	Gray-head Prairie Coneflower			G5	S1
Rhododendron eastmanii	May White			G2	S1
Rudbeckia heliopsidis	Sun-facing Coneflower			G2	S1S2
Scutellaria parvula	Small Skullcap			G4	S2S3
Silphium terebinthinaceum	Prairie Rosinweed			G4G5	S1
Solidago ptarmicoides	Prairie Goldenrod			G5	SNR
Solidago rigida	Prairie Goldenrod			G5	S1
Thermopsis mollis	Soft-haired Thermopsis			G4?	S1
Tiarella cordifolia var. *cordifolia*	Heart-leaved Foam Flower			G5T5	S2
Torreyochloa pallida	Pale Manna Grass			G5	S1
Trillium rugelii	Southern Nodding Trillium			G3	S2
Verbena simplex	Narrow-leaved Vervain			G5	S1
Veronicastrum virginicum	Culver's-root			G4	S1
Communities					
Basic forest				GNR	S2
Chestnut oak forest				G5	S4S5
Mesic mixed hardwood forest				G5	S4
Montmorillonite forest				G3G4	S2
Oak - hickory forest				G5	S5
Upland depression swamp forest				G3	S1S2
Ecological					
Granitic flatrock				G3	S2
Monadnock				GNR	SNR
Outcrop				GNR	SNR

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 2010

Reference NRC RAI Number: ER RAI 186, Hydrology – Ground Water

NRC RAI:

Provide an analysis of the surface and groundwater quality changes anticipated in and around Pond C during the initial filling of the pond, and the potential for the saturation of previously unsaturated sediment profiles in the new impoundment to cause elevated concentrations of metals and other constituents in the surface water. Describe the duration of such impacts relative to initial filling and operation of Pond C.

Duke Energy Response:

The initial filling of Make-Up Pond C is with water from the Broad River (Environmental Report Supplement Subsection 4.2.2). As such, water quality characteristics in Make-Up Pond C during filling will be generally consistent with the water quality of the Broad River.

Broad River surface water and groundwater at the Lee site and off-site Make-Up Pond C site are documented to be characteristically similar across temporal and spatial variations, and typical of Piedmont conditions (Environmental Report Subsections 2.3.3.1.2 and 2.3.3.2.2; Environmental Report Table 2.3-19, Table 2.3-20, Table 2.3-21; Environmental Report Supplement Table 2.3-37; Environmental Report Figure 2.3-23). Therefore, from the vantage point of mixing of surface water and groundwater during filling of Make-Up Pond C, no substantial changes to water quality are expected.

Geology at Make-Up Pond C is typical of Piedmont conditions – variable thickness topsoil underlain by residuum, saprolite, partially weathered rock, and rock (60± to 90± foot deep profile) (Environmental Report Supplement Subsection 2.3.1.5.3). With the exception of narrow bands of water-deposited alluvium along streams (References 1, 2) these soils are residual, not sedimentary, in character. Consistent with literature (References 1, 2), saprolite is the largest component of the geologic profile at most locations, and is weathered and commonly highly leached (Reference 2). Saturation of the residuum/saprolite by increasing groundwater levels from filling of Make-Up Pond C can be expected to result in some dissolution of minerals/metals (Reference 3). However, seldom do dissolved constituents in Piedmont aquifers, except for fluoride, iron, manganese, and occasionally, sulfate, exceed even drinking-water standards (Reference 1). This constituent characteristic is consistent with what is documented in the Lee site surface water impoundments, Lee site groundwater, and Make-Up Pond C site groundwater (Environmental Report Table 2.3-19, Table 2.3-20, Table 2.3-21; Environmental Report Supplement Table 2.3-37). Accordingly, no significant changes to Make-Up Pond C surface water or groundwater are expected from newly saturated soil/saprolite.

During the filling of Make-Up Pond C, elevated levels of suspended solids and turbidity are expected from pumping from the Broad River with erosion and suspension of surficial soils and materials. Suspended solids are expected to consist of dissolved and particulate organic matter and inorganic particles resulting in increased levels of minerals, metals, and nutrients

(phosphorus and nitrogen). The suspended solids and turbidity are expected to decrease as inorganic particles settle out and aerobic microbial activity breaks down dissolved and suspended organic matter. The amount of solids settling is not expected to be substantial. Very little to no accumulation of sediment was observed after the filling of Make-Up Pond A and Make-Up Pond B (Environmental Report Subsections 2.3.1.3.2.1 and 2.3.1.3.2.2).

The impact to groundwater quality from filling Make-Up Pond C is SMALL.

As discussed in Subsection 5.2.3, once filled Make-Up Pond C is expected to thermally stratify and develop an anoxic hypolimnion, as is observed within Make-Up Pond A and Make-Up Pond B (Environmental Report Subsection 2.3.3.1.2), and as is typical of Piedmont water bodies of similar scale and depth. Under reducing conditions, the deeper waters of Make-Up Pond C, consistent with Make-Up Pond A and Make-Up Pond B, can be expected to exhibit increased iron and manganese concentrations (Environmental Report Subsection 2.3.3.1.2). These concentrations are expected to be moderated by seasonal turnover normally observed in Piedmont water bodies.

References:

1. Miller, James A, U.S. Geologic Survey, Groundwater Atlas of the United States Alabama, Florida, Georgia, and South Carolina, HA 730-G, 1990, website http://pubs.usgs.gov/ha/ha730/ch_g/G-text8.html, accessed June 24, 2010.
2. Daniel, Charles C. III and Dahlen, Paul R., Preliminary Hydrogeologic Assessment and Study Plan for a Regional Ground-Water Resource Investigation of the Blue Ridge and Piedmont Provinces of North Carolina, U.S. Geological Survey Water-Resources Investigations Report 02-4105, 2002, p. 18, website http://nc.water.usgs.gov/reports/wri024105/, accessed June 24, 2010.
3. Winter, Thomas C., Harvey, Judson W., Franke, O. Lehn, Alley, William M., Ground Water and Surface Water A Single Resource, U.S. Geological Survey Circular 1139, 1998, Box D, website http://pubs.usgs.gov/circ/circ1139/htdocs/boxd.htm, accessed June 24, 2010.

Associated Revision to the Lee Nuclear Station Combined License Application:

1. Make-Up Pond C Supplement, Subsection 4.2.4.3, Impacts to Groundwater Quality

Attachment:

Attachment 186-01	Make-Up Pond C Supplement, Revised Subsection 4.2.4.3, Impacts to Groundwater Quality

ER RAI Attachment 186-01

Make-Up Pond C Supplement

Revised Subsection 4.2.4.3, Impacts to Groundwater Quality

Subsection 4.2.4.3, Impacts to Groundwater Quality, REVISED TEXT:

Impacts to groundwater quality from construction of the off-site Make-Up Pond C dams are limited to times when excavation occurs below the water table to construct the dams (e.g., routing of London Creek during dam construction, key trench installation, etc.). These impacts are relatively short-term and isolated. They are not expected to have significant influence on groundwater quality.

~~Impacts to groundwater during filling of Make-Up Pond C include leakage from the pond basin to groundwater within close proximity. Make-Up Pond C is filled with water pumped directly from the Broad River. In as much as Broad River surface water characteristics differ from groundwater characteristics in the proximity of Make-Up Pond C, these waters mix during the filling and operating periods. The impact of this mixing is SMALL.~~

The initial filling of Make-Up Pond C is with water from the Broad River (Subsection 4.2.2). As such, water quality characteristics in Make-Up Pond C during filling will be generally consistent with the water quality of the Broad River.

Broad River surface water and groundwater at the Lee site and off-site Make-Up Pond C site are documented to be characteristically similar across temporal and spatial variations, and typical of Piedmont conditions (Subsections 2.3.3.1.2 and 2.3.3.2.2; Table 2.3-19, Table 2.3-20, Table 2.3-21; Table 2.3-37; Figure 2.3-23). Therefore, from the vantage point of mixing of surface water and groundwater during filling of Make-Up Pond C, no substantial changes to water quality are expected.

Geology at Make-Up Pond C is typical of Piedmont conditions – variable thickness topsoil underlain by residuum, saprolite, partially weathered rock, and rock (60± to 90± foot deep profile) (Subsection 2.3.1.5.3). With the exception of narrow bands of water-deposited alluvium along streams (References 1, 2) these soils are residual, not sedimentary, in character. Consistent with literature (References 1, 2), saprolite is the largest component of the geologic profile at most locations, and is weathered and commonly highly leached (Reference 2). Saturation of the residuum/saprolite by increasing groundwater levels from filling of Make-Up Pond C can be expected to result in some dissolution of minerals/metals (Reference 3). However, seldom do dissolved constituents in Piedmont aquifers, except for fluoride, iron, manganese, and occasionally, sulfate, exceed even drinking-water standards (Reference 1). This constituent characteristic is consistent with what is documented in the Lee site surface water impoundments, Lee site groundwater, and Make-Up Pond C site groundwater (Table 2.3-19, Table 2.3-20, Table 2.3-21; 2.3-37). Accordingly, no significant changes to Make-Up Pond C surface water or groundwater are expected from newly saturated soil/saprolite.

During the filling of Make-Up Pond C, elevated levels of suspended solids and turbidity are expected from pumping from the Broad River with erosion and suspension of surficial soils and materials. Suspended solids are expected to consist of dissolved and particulate organic matter and inorganic particles resulting in increased levels of minerals, metals, and nutrients (phosphorus and nitrogen). The suspended solids and turbidity are expected to decrease as inorganic particles settle out and aerobic microbial activity breaks down dissolved and suspended

organic matter. The amount of solids settling is not expected to be substantial. Very little to no accumulation of sediment was observed after the filling of Make-Up Pond A and Make-Up Pond B (Subsections 2.3.1.3.2.1 and 2.3.1.3.2.2).

The impact to groundwater quality from filling Make-Up Pond C is SMALL.

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 2010

Reference NRC RAI Number: ER RAI 187, Hydrology – Ground Water

NRC RAI:

Similar to RAI 188, provide data and analysis on surface and groundwater quality changes that were observed during and after filling of previously constructed artificial impoundments in the region. Describe changes in potential flow pathways as a result of the newly saturated sediments.

Duke Energy Response:

No groundwater quality monitoring was conducted during filling of Make-Up Pond A and Make-Up Pond B. The South Carolina Department of Health and Environmental Control (SCDHEC) Surface Water Monitoring Program (Reference 1) and United States Environmental Protection Agency (USEPA) STORET Legacy Data Center (Reference 2) reveals historical monitoring of Lake Cherokee (upstream of Make-Up Pond C on London Creek) at South Carolina Water Quality Monitoring Station B-343 (Attachments 187-03 and 187-04, References 3, 4). Historical information (circa 1980-1995) from this sampling station is limited to the dates and water quality parameters listed in Attachment 187-05 (Reference 5).

Changes to groundwater levels from constructing Make-Up Pond C are discussed in Environmental Report Supplement Subsections 4.2.2 and 5.2.1.5. Groundwater levels in the vicinity surrounding Make-Up Pond C will rise to levels in continuity with the full-pond level of Make-Up Pond C. Groundwater levels further away from the Make-Up Pond C shoreline and closer to the perimeter of the pond's watershed will remain unaffected by the constructing, filling, and operating of Make-Up Pond C. In most surrounding areas of the Make-Up Pond C watershed, full-pond pool and groundwater level conditions will equilibrate to produce somewhat flatter gradients between the higher topographic recharge areas and new groundwater discharge areas (Make-Up Pond C perimeter). But the overall directions of groundwater flow will remain generally consistent with typical Piedmont groundwater conditions (from higher topographic recharge areas to lower topographic discharge areas) and pre-construction conditions.

The expected exception will be near the constructed dams, where phreatic surface(s) will develop through the dams/abutments, and potentially through nearby narrow topographic ridges. In these isolated locations, because of increased potentiometric head levels from the full-pond pool, water level divides and gradients are expected to shift and groundwater/phreatic water flow directions are expected to change from toward the pond to away from the pond. Thus, steady-state groundwater flow directions in the area of Make-Up Pond C will only be modified near the constructed dams. This represents a small proportion of the perimeter of the pond.

In the unusual drought situations in which Make-Up Pond C is drawn down, groundwater gradients in the majority of the watershed will steepen toward the pond during the drawn-down

condition but the direction of groundwater flow, in most areas, will remain toward the pond. Localized draw down effects on the phreatic surfaces through the dams/abutments will be transitory, and proportional to the amount and duration of draw-down. Phreatic surfaces will re-establish upon re-filling to continue to feed the stream below the dam (Environmental Report Subsection 4.2.2.).

References

1. South Carolina Department of Health and Environmental Control Surface Water Monitoring Program webpage http://www.scdhec.gov/environment/water/surface.htm, accessed June 28, 2010.
2. United States Environmental Protection Agency STORET Legacy Data Center website http://www.epa.gov/storpubl/legacy/gateway.htm, accessed June 28, 2010.
3. South Carolina Department of Health and Environmental Control Surface Water Monitoring Program, Monitoring Stations Location Map, webpage http://www.scdhec.gov/environment/water/images/wqms.pdf, accessed June 28, 1010.
4. South Carolina Department of Health and Environmental Control Bureau of Water – Watersheds, Broad River Basin, webpage http://www.scdhec.gov/environment/water/shed/docs/50105-05-08-09-16m.pdf, accessed July 12, 2010.
5. United States Environmental Protection Agency STORET Legacy Data Center website http://www.epa.gov/storpubl/legacy/query.htm, (Search Parameters South Carolina, Cherokee County, LK CHEROKEE 15 M W DAM (UNIMPROVED RD FR SC 105), accessed June 28, 2010.

Associated Revisions to the Lee Nuclear Station Combined License Application:

1. Make-Up Pond C Supplement, Subsection 4.2.2., Hydrologic Alterations, Make-Up Pond C Area.
2. Make-Up Pond C Supplement, Subsection 5.2.1.5, Hydrological Alterations Affecting Groundwater.

Attachments:

Attachment 187-01	Revised Subsection 4.2.2, Hydrologic Alterations, Make-Up Pond C Area
Attachment 187-02	Revised Subsection 5.2.1.5, Hydrological Alterations Affecting Groundwater
Attachment 187-03	South Carolina Department of Health and Environmental Control Water Quality Monitoring Stations
Attachment 187-04	Broad River/Kings Creek/Buffalo Creek Watersheds Showing Water Quality Monitoring Station B-343 at Lake Cherokee

Attachment 187-05 United States Environmental Protection Agency STORET Legacy Data Site Station Description Report and Summary Data Report

ER RAI Attachment 187-01

Make-Up Pond C Supplement

Revised Subsection 4.2.2, Hydrologic Alterations, Make-Up Pond C Area

Revised Subsection 4.2.2, Hydrologic Alterations, Make-Up Pond C Area, REVISED TEXT:

The groundwater table currently intercepts the ground surface along London Creek and its flowing tributaries within the watershed. During filling of Make-Up Pond C, there will be a period of "leakage" from the pond to previously unsaturated surrounding soil. As previously unsaturated soils become saturated, the groundwater table will rise to intercept the ground surface at or near full pond elevation ±650 ft msl. This will result in shallower groundwater gradients from the groundwater divides at the watershed boundaries to the pond edges. But the overall directions of groundwater flow will remain generally consistent with typical Piedmont groundwater conditions (from higher topographic recharge areas to lower topographic discharge areas) and pre-construction conditions.

The expected exception will be near the constructed dams, where phreatic surface(s) will develop through the dams/abutments, and potentially through nearby narrow topographic ridges. In these isolated locations, because of increased potentiometric head levels from the full-pond pool, water level divides and gradients are expected to shift and groundwater/phreatic water flow directions are expected to change from toward the pond to away from the pond. Thus, steady-state groundwater flow directions in the area of Make-Up Pond C will only be modified near the constructed dams. This represents a small proportion of the perimeter of the pond.

ER RAI Attachment 187-02

Make-Up Pond C Supplement

Revised Subsection 5.2.1.5, Hydrological Alterations Affecting Groundwater

Revised Subsection 5.2.1.5, Hydrological Alterations Affecting Groundwater, REVISED TEXT

The filling of Make-Up Pond C increases groundwater levels in the immediate vicinity of the pond. The pond is kept full (elevation 650 ft msl) for the purpose of providing a supplemental source of water to Lee Nuclear Station during periods of prolonged low flow in the Broad River. Minor variations to the Make-Up Pond C operating level result in minor variations of the surrounding groundwater level. But, future relatively steady-state conditions are comprised of precipitation recharging groundwater in the London Creek watershed, and groundwater discharging at or near the perimeter operating level of Make-Up pond C. Consequently, the elevated groundwater level around Make-Up Pond C will become the normal groundwater level. Make-Up Pond C will rarely experience significant drawdown events (refer to Subsection 5.2.1).

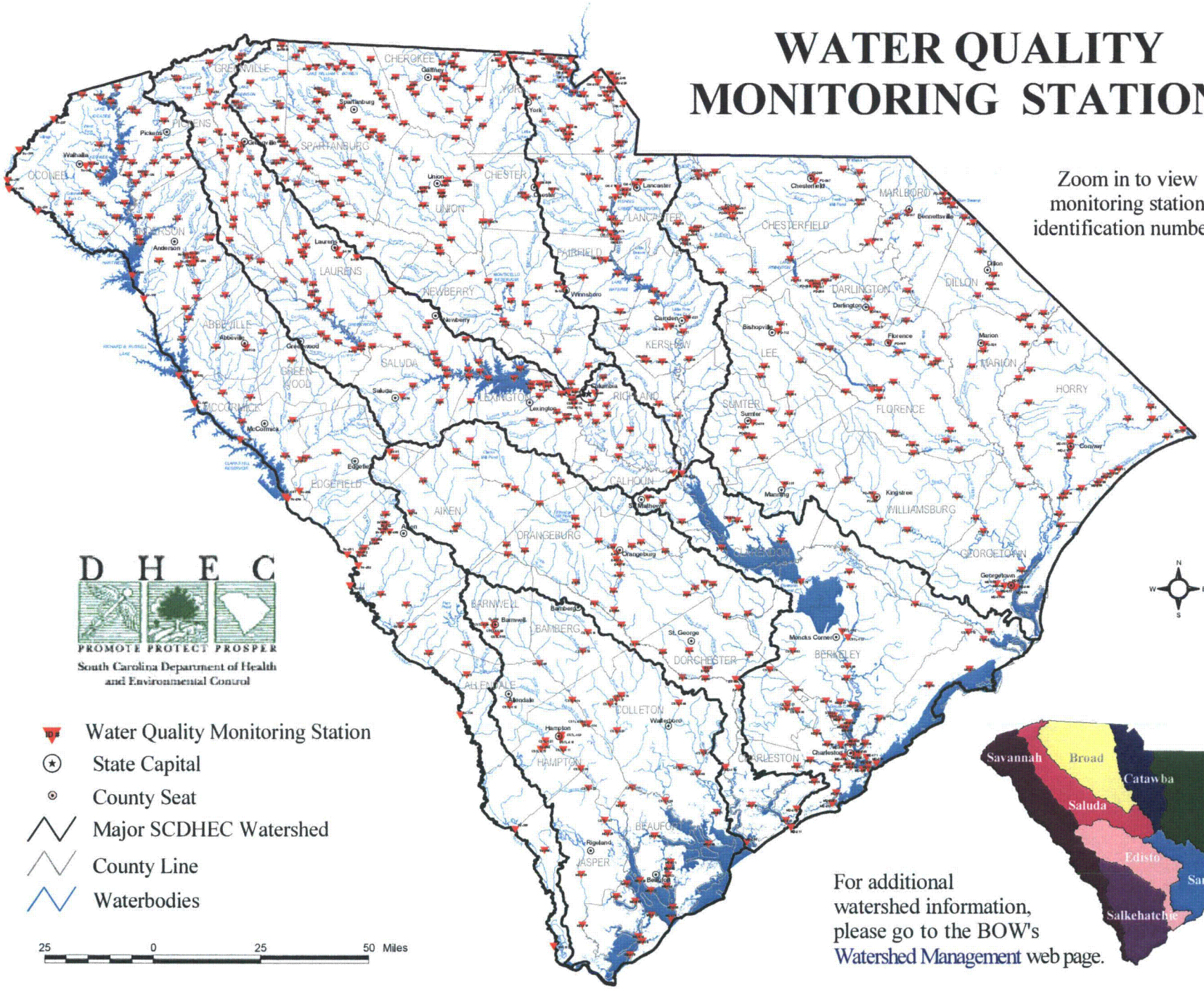
In the unusual drought situations in which Make-Up Pond C is drawn down, groundwater gradients in the majority of the watershed will steepen toward the pond during the drawn-down condition but the direction of groundwater flow, in most areas, will remain toward the pond. Localized draw down effects on the phreatic surfaces through the dams/abutments will be transitory, and proportional to the amount and duration of draw-down. Phreatic surfaces will re-establish upon re-filling to continue to feed the stream below the dam (Subsection 4.2.2.).

ER RAI Attachment 187-03

South Carolina Department of Health and Environmental Control

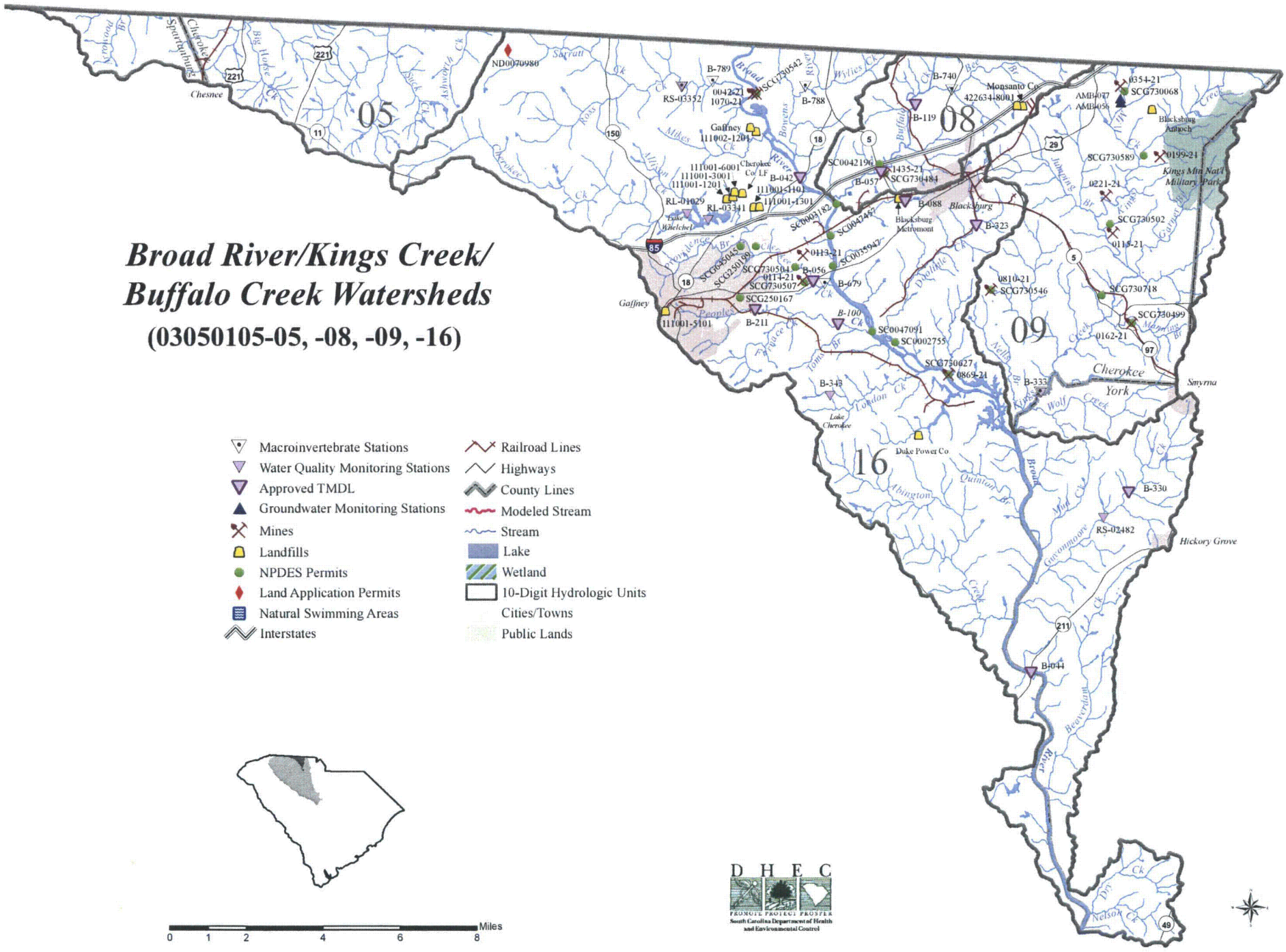
Water Quality Monitoring Stations

WATER QUALITY MONITORING STATIONS



ER RAI Attachment 187-04

Broad River/Kings Creek/Buffalo Creek Watersheds
Showing Water Quality Monitoring Station B-343 at Lake Cherokee


Broad River/Kings Creek/
Buffalo Creek Watersheds
(03050105-05, -08, -09, -16)
05
08
09
16
Macroinvertebrate Stations
Water Quality Monitoring Stations
Approved TMDL
Groundwater Monitoring Stations
Mines
Landfills
NPDES Permits
Land Application Permits
Natural Swimming Areas
Interstates
Railroad Lines
Highways
County Lines
Modeled Stream
Stream
Lake
Wetland
10-Digit Hydrologic Units
Cities/Towns
Public Lands
Miles
0 1 2 4 6 8
DHEC
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

ER RAI Attachment 187-05

United States Environmental Protection Agency STORET Legacy Data Site

Station Description Report and Summary Data Report

STORET LDC - Station Description Report

Organization Code:	**21SC60WQ**	Organization Name:	**SC DEPT HEALTH & ENV CON**
Station ID:	**CL-028**	Station Alias:	**B-343**
Station Name:	**LK CHEROKEE 15 M W DAM (UNIMPROVED RD FR SC 105)**		
	SOUTHEAST		
	SANTEE-COOPER		
Station Depth:	**32 Feet**		
State:	**South Carolina**	County:	**Cherokee**
Latitude:	**35deg. 2min. 25.2sec. N**	Longitude:	**81deg. 35min. 2.9sec. W**

Station Type Indicator Description:	**Surface Water**
Legacy STORET Station Type:	**/TYPA/AMBNT/LAKE**
Hydrologic Unit Code (HUC):	**03050105**
RF1 Reach Segment:	
Miles Up Reach:	
On/Off Reach:	
Old EPA Basin Code:	**030856**
Descriptive Text:	

Date Created: Jun 28, 2010

STORET LDC - Summary Data Report

Organization Code: **21SC60WQ** Organization Name: **SC DEPT HEALTH & ENV CON**

Station ID: **CL-028** Station Alais: **B-343**

Station Name: **LK CHEROKEE 15 M W DAM (UNIMPROVED RD FR SC 105)**
SOUTHEAST
SANTEE-COOPER

State: **South Carolina** County: **Cherokee**

Latitude: **35deg. 2min. 25.2sec. N** Longitude: **81deg. 35min. 2.9sec. W**

Hydrologic Unit Code (HUC): **03050105**

Station Type Indicator Description: **Surface Water**

Legacy STORET Station Type: **/TYPA/AMBNT/LAKE**

Parameter Code	Short Name01	Short Name02	Short Name03	Number of Results	First Date Recorded	Last Date Recorded
00002	HSAMPLOC	% FROM	RT BANK	16	10-29-1980	05-21-1998
00010	WATER	TEMP	CENT	158	10-29-1980	05-21-1998
00020	AIR	TEMP	CENT	16	10-29-1980	05-21-1998
00034	DEPTH-FT	1% LIGHT	REMAINS	4	10-29-1980	07-15-1981
00041	WEATHER	WMO CODE	4501	16	10-29-1980	05-21-1998
00076	TURB	TRBIDMTR	HACH FTU	7	05-11-1995	05-21-1998
00078	TRANSP	SECCHI	METERS	12	10-29-1980	05-21-1998
00204	DEPTH-M	1% LIGHT	REMAINS	4	07-31-1989	04-12-1990
00300	DO		MG/L	158	10-29-1980	05-21-1998
00301	DO	SATUR	PERCENT	158	10-29-1980	05-21-1998
00310	BOD	5 DAY	MG/L	6	05-11-1995	05-21-1998
00400	PH		SU	13	04-29-1981	05-21-1998
00402	SPECIFIC	CONDUCT	UMHOS/CM	18	10-29-1980	04-12-1990
00403	PH	LAB	SU	1	05-11-1995	05-11-1995
00410	T ALK	CACO3	MG/L	1	05-11-1995	05-11-1995
00610	NH3+NH4-	N TOTAL	MG/L	16	10-29-1980	05-21-1998
00612	UN-IONZD	NH3-N	MG/L	7	05-11-1995	05-21-1998
00619	UN-IONZD	NH3-NH3	MG/L	7	05-11-1995	05-21-1998
00625	TOT KJEL	N	MG/L	16	10-29-1980	05-21-1998
00630	NO2&NO3	N-TOTAL	MG/L	16	10-29-1980	05-21-1998

Date Created: Jun 28, 2010

STORET LDC - Summary Data Report

Organization Code:	**21SC60WQ**	Organization Name:	**SC DEPT HEALTH & ENV CON**
Station ID:	**CL-028**	Station Alais:	**B-343**
Station Name:	**LK CHEROKEE 15 M W DAM (UNIMPROVED RD FR SC 105)**		
	SOUTHEAST		
	SANTEE-COOPER		
State:	**South Carolina**	County:	**Cherokee**
Latitude:	**35deg. 2min. 25.2sec. N**	Longitude:	**81deg. 35min. 2.9sec. W**

Hydrologic Unit Code (HUC): **03050105**

Station Type Indicator Description: **Surface Water**

Legacy STORET Station Type: **/TYPA/AMBNT/LAKE**

Parameter Code	Short Name01	Short Name02	Short Name03	Number of Results	First Date Recorded	Last Date Recorded
00665	**PHOS-TOT**		**MG/L P**	**16**	**10-29-1980**	**05-21-1998**
00671	**PHOS-DIS**	**ORTHO**	**MG/L P**	**8**	**10-29-1980**	**04-12-1990**
31616	**FEC COLI**	**MFM-FCBR**	**/100ML**	**7**	**05-11-1995**	**05-21-1998**
32209	**CHLRPHYL**	**A**	**UG/L**	**15**	**10-29-1980**	**05-21-1998**
70507	**PHOS-T**	**ORTHO**	**MG/L P**	**9**	**10-29-1980**	**04-12-1990**
70971	**LIGHT AT**	**TENUATIO**	**N COEFF**	**4**	**07-31-1989**	**04-12-1990**
82048	**BOT DPTH**	**OF SMPL**	**METERS**	**166**	**10-29-1980**	**05-21-1998**
85301	**TROPHIC**	**STATE O**	**F LAKE**	**1**	**08-12-1981**	**08-12-1981**
85329	**TROPH ST**	**CARLSON**	**CHLORPLA**	**1**	**08-12-1981**	**08-12-1981**
85330	**TROPH ST**	**CARLSON**	**SECHDEP**	**1**	**08-12-1981**	**08-12-1981**
85331	**TROPH ST**	**CARLSON**	**PHOSRUS**	**1**	**08-12-1981**	**08-12-1981**

Date Created: Jun 28, 2010

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 2010

Reference NRC RAI Number(s): ER RAI 190, Ecology-Aquatic

NRC RAI:

Provide physical descriptions (e.g., location, dimensions, construction materials, pump systems) of the "River Water Intake Subsystem" and the "Refill Subsystem Intake" referred to in Supplemental ER Figure 3.3-1, Sheets 1 and 2.

Discuss any changes to the site preparation and construction methods, affected area, spoils volume and disposition, timing, and duration for the river intake and associated distribution systems. Provide a narrative description of the relationship or interconnections between these intake(s) and the various Make-Up ponds, including the expected flow rate and duration of refill pumping operations.

Duke Energy Response:

The RWS withdraws water from the Broad River, transfers it for storage in Make-Up Ponds A, B, and C and supplies raw and treated water to various plant systems.

Make-Up Pond A serves as a central repository for raw water and contains the intake structure for the nuclear station. During normal Broad River flow conditions, withdrawal from the river is used to maintain a normal level in Make-Up Pond A and, if required, store water in Make-Up Ponds B and C. When permit conditions limit withdrawal from the Broad River, withdrawal from Make-Up Ponds B and C, and if allowed, the Broad River, is used to maintain a normal level in Make-Up Pond A. See ER Supplement Subsection 5.2.1 for a full description of how the ponds are used under low flow conditions.

The figure in Attachment 190-02 shows the various subsystems in the RWS which are listed below and their interconnections:

- River Water Subsystem
- Refill Subsystem
- Raw Water Supply Subsystem
- Clarified Water Subsystem
- Make-Up Pond B Subsystem
- Make-Up Pond C Subsystem

The river intake is a single intake structure with two sections. One section is for the river water subsystem and the other section is for the refill subsystem. Each section has four forebays with a total of eight forebays for the intake structure. Attachment 190-01 provides a revised ER Figure 5.3-1 which shows the dimensions of the river intake structure. Figure 4.2-2 in the ER

Supplement shows the locations of the intake structures for the Broad River and Make-Up Ponds A, B and C. This figure also provides a plan view of the proposed pipelines for water transfers from the river intake to and between Make-Up Ponds A, B, and C.

River Water Subsystem
The river water subsystem withdraws water from the Broad River and transfers it to maintain normal level in Make-Up Pond A and provides water for storage in Make-Up Pond B.

This subsystem consists of two (2) river water pumps per unit (4 total for WS Lee site) located in the river water subsystem section of the intake structure. One (1) of the two (2) river water pumps per unit will run continuously during normal operation to maintain Make-Up Pond A at its normal level. One (1) river water pump is sized to support one unit, while the second river water pump is on stand-by. Water is pumped from the river intake structure located north of the nuclear station on the Broad River into Make-Up Pond A, via Break Tank 1 (see Attachment 190-02). Water is transferred from Break Tank 1 to Make-Up Pond A by way of gravity.

The river water intake structure supports the pumps and supporting equipment (i.e. intake screens, screen wash pumps, etc.) for the river water subsystem. The intake structure is composed of a concrete foundation and walls. Four (4) forebays are provided within the structure for the river water subsystem. The major equipment components inside of a typical forebay include one intake pump, one dual flow traveling screen and one steel bar/trash rack assembly. Other major equipment provided includes two screen wash pumps mounted to the east and west walls of the intake basin.

Refill Subsystem
When permit conditions on the Broad River support supplemental water withdrawals, the refill subsystem transfers water from the Broad River to Make-Up Ponds C or B for storage. The primary function of the refill subsystem is to maintain inventory in Make-Up Pond C. An alternate function is to transfer water to Make-Up Pond B.

This subsystem consists of four (4) refill pumps located in the refill subsystem section of the river water intake structure. All refill pumps will be operated as needed. This operation is considered independent of the power generation of the W.S. Lee Nuclear Station. Each of the refill pumps is a vertical turbine pump with a variable frequency drive. Water is pumped from the river intake structure located on the Broad River either into Make-Up Pond C via Break Tank 2 or directly into Make-Up Pond B (see Attachment 190-02).

The river water intake structure supports the pumps and supporting equipment (i.e. intake screens, screen wash pumps, etc.) for the refill subsystem. The intake structure is composed of a concrete foundation and walls. Four (4) forebays are provided within the structure for the refill subsystem. The major equipment components inside of a typical forebay include one intake pump, one dual flow traveling screen and one steel bar/trash rack assembly. Other major equipment provided includes two screen wash pumps mounted to the east and west walls of the intake basin.

If Make-Up Ponds B or C require additional make-up from the Broad River to recover from extended periods of low river flow conditions, the four pumps would be placed into operation, provided permit conditions on the river support the additional withdrawal.

Raw Water Supply Subsystem
The raw water supply subsystem receives and stores water from the Broad River and/or Make-Up Pond B and supplies untreated water to plant systems. The water from the Broad River and/or Make-Up Pond B is supplied to Make-Up Pond A via Break Tank 1. Break Tank 1gravity feeds into a discharge structure located in the northwestern portion of Make-Up Pond A.

The Make-Up Pond A discharge structure consists of high density polyethylene (HDPE) piping, concrete retaining wall structure with extended toe, and riprap to prevent scour and undermining of the foundation.

The Make-Up Pond A intake structure consists of bar screens, traveling screens, pumps, piping, valves and instrumentation. The intake contains six raw water supply pumps, three per unit. This intake structure supplies the nuclear station.

Clarified Water Subsystem
The Clarified Water subsystem receives water from the raw water supply subsystem and treats the water, using chemical and physical processes. The treated water is supplied to the service water system, demineralized water treatment system and fire protection system in both units.

Make-Up Pond B Subsystem
The Make-Up Pond B subsystem receives and stores water from the Broad River, utilizing a transfer path through Make-Up Pond A or a refill path directly from the river. The primary function of Make-Up Pond B is to maintain the normal level in Make-Up Pond A when withdrawals from the Broad River are reduced or terminated. Make-Up Pond B also receives water from Make-Up Pond C during low flow events when the Make-Up Pond B usable storage has been depleted. The water from Make-Up Pond C is pumped to Make-Up Pond B then to Make-Up Pond A to support continued plant operations. An alternate function is to transfer water to Make-Up Pond C for storage or refill.

When transfers from Make-Up Pond B are used to maintain Make-Up Pond A level, the Broad River is used to replenish Make-Up Pond B as allowed by the permit. The inventory in Make-Up Pond B can be rapidly replenished by aligning the Make-Up Pond A and refill subsystem pumps to Make-Up Pond B. In addition, there are periods when permit conditions allow limited withdrawal flows that are below the minimum capacity of the refill pumps. In order to refill Make-Up Pond C during these conditions, the river water subsystem pumps transfer water into Make-Up Pond A, which is in turn transferred to Make-Up Pond B and then on to Make-Up Pond C.

The intake on Make-Up Pond B contains five make-up pond pumps. Four pumps (two per unit) are used to transfer water to Make-Up Pond A. The fifth pump is dedicated to transferring water to Make-Up Pond C. The intake will have wedge-wire screens.

The discharge structure located within Make-Up Pond B receives water from the Broad River during refill operations and from Make-Up Pond C during low flow events. This structure is located on the shore, west of the Make-Up Pond B spillway. The discharge structure consists of high density polyethylene (HDPE) piping with a concrete headwall, a discharge box, and riprap to prevent scour and erosion.

Make-Up Pond C Subsystem

The Make-Up Pond C subsystem receives water from the Broad River through the refill subsystem. The function of the Make-Up Pond C subsystem is to store water and transfer it to Make-Up Pond B to support continued operation during extended periods of low river flow conditions.

A combined intake and discharge structure will be constructed in the southeastern portion of Make-Up Pond C to provide for water transfers between Make-Up Pond C and Make-Up Pond B and to receive water from the Broad River, as necessary. During periods of extreme drought, water will be pumped from Make-Up Pond C to Break Tank 2 where it will gravity feed into the discharge structure in Make-Up Pond B. The water will then be pumped from Make-Up Pond B to Break Tank 1 which gravity feeds into the discharge structure in Make-Up Pond A. During the drought recovery period, water will be pumped back into Make-Up Pond C from the Broad River under the normal refill path or from Make-Up Pond B as an alternate refill path.

The intake in Make-Up Pond C contains three pumps. These pumps are not normally in operation. They are only used when the Make-Up Pond B usable storage has been depleted, in which case the pumps transfer water from Make-Up Pond C to Make-Up Pond B, which transfers it to Make-Up Pond A to support continued plant operations as discussed above. The intake will have wedge-wire screens.

The refill flow rate is provided in the ER Supplement on Figure 3.3-1 – Sheet 2 of 2. The duration of refill operations is based on the available flow in the river for pumping to the ponds and on how far the ponds are drawn down. Table 5.2-3 in the ER Supplement shows the duration of the refill for Make-Up Pond B based on historical droughts. Table 5.2-4 in the ER Supplement shows the duration of the refill for Make-Up Pond C based on historical droughts.

Changes to intake construction (site preparation and construction methods, affected area, spoils volume and disposition, timing and duration) are reflected in Attachment 190-03. This Attachment provides a revised ER Subsection 4.2.2.1 that discusses impacts from constructing both sections of the river intake structure (the river water subsystem section and the refill subsystem section).

Associated Revisions to the Lee Nuclear Station Combined License Application:

Figure 5.3-1 Sheets 1 and 2

ER Subsection 4.2.2.1

Attachments:

Attachment 190-01 Lee Nuclear Station River Water Intake Structure (Revised ER Figure 5.3-1 Sheets 1 and 2)

Attachment 190-02 Lee Nuclear Station Raw Water System Water Transfer Diagram

Attachment 190-03 Revised ER Subsection 4.2.2.1

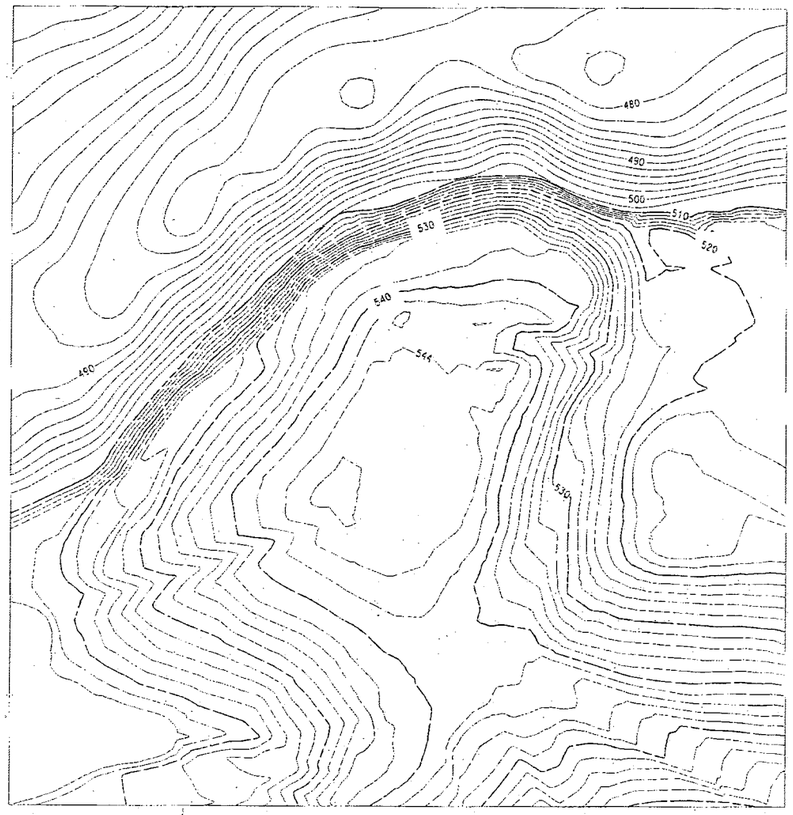
Attachment 190-01

Revision to Figure 5.3-1

River Water Intake Structure

Sheet 1 of 2

Sheet 2 of 2



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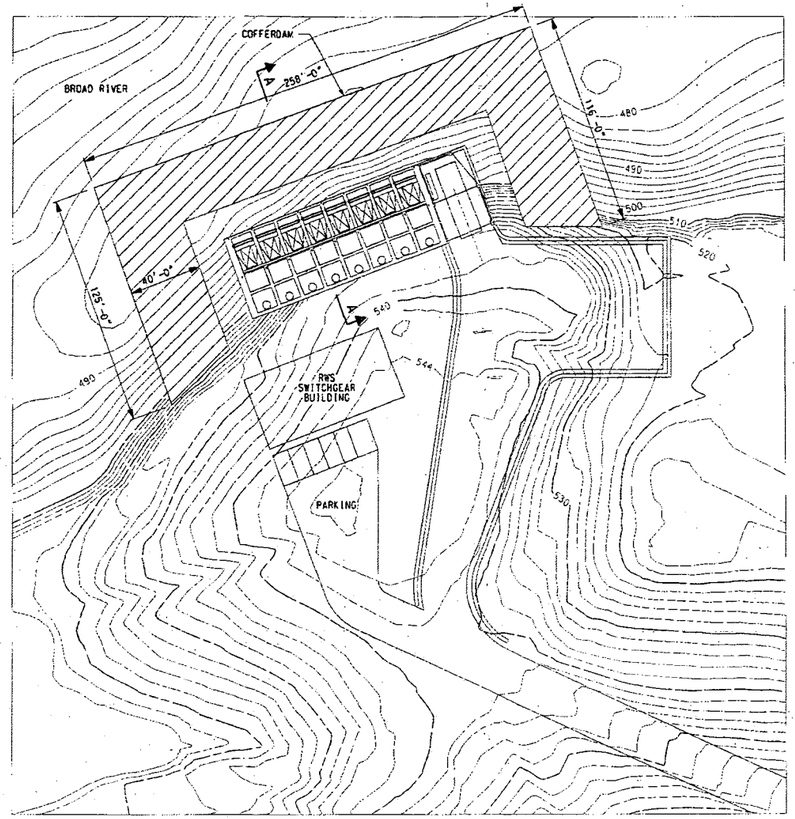
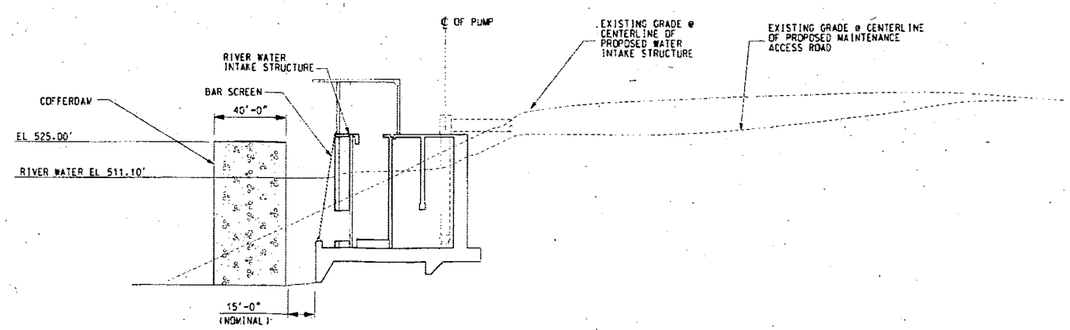


PROPOSED PLAN ARRANGEMENT



SECTION A-A

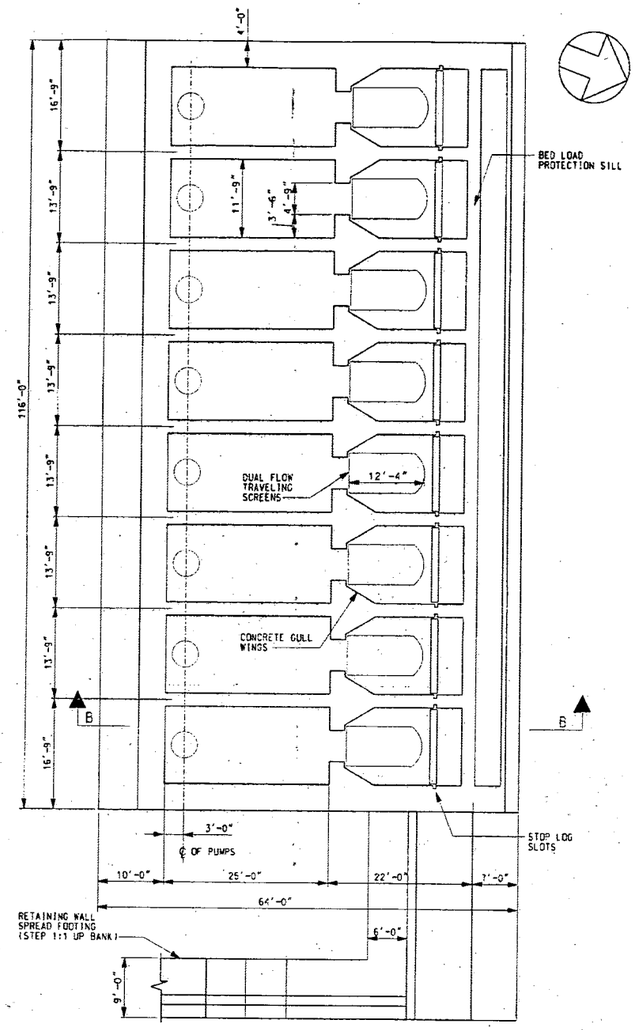
COFFERDAM AND INTAKE STRUCTURE

PUMP AND PIPE OUTLINE ARE NOT TO SCALE

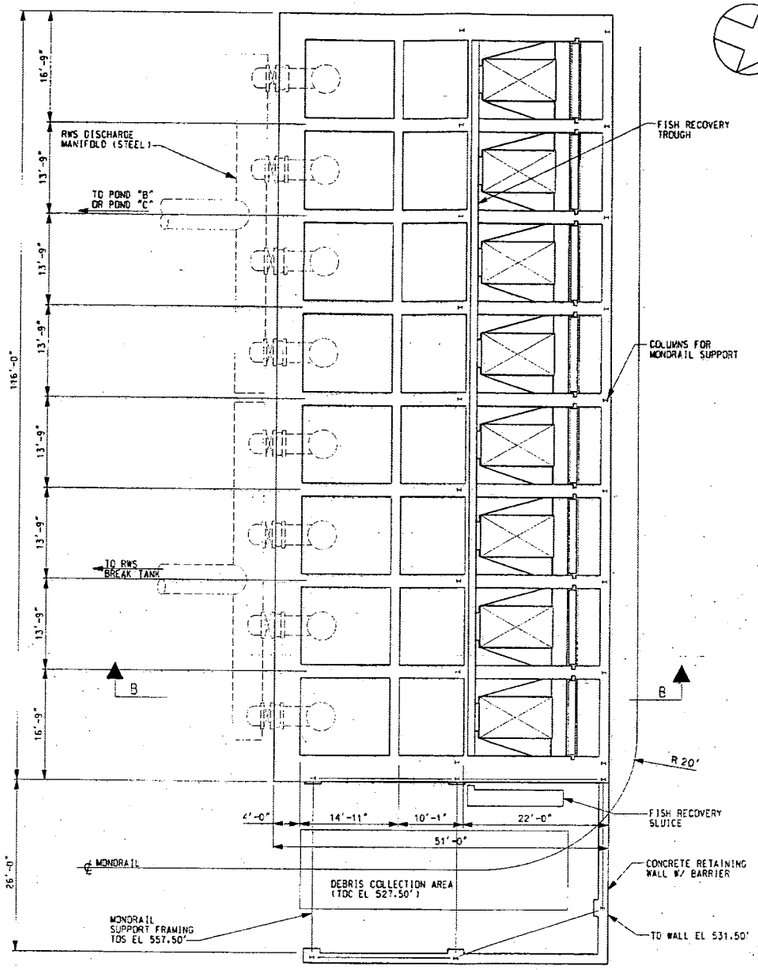
WILLIAM STATES LEE III
NUCLEAR STATTION UNITS 1 & 2

River Water Intake Structure

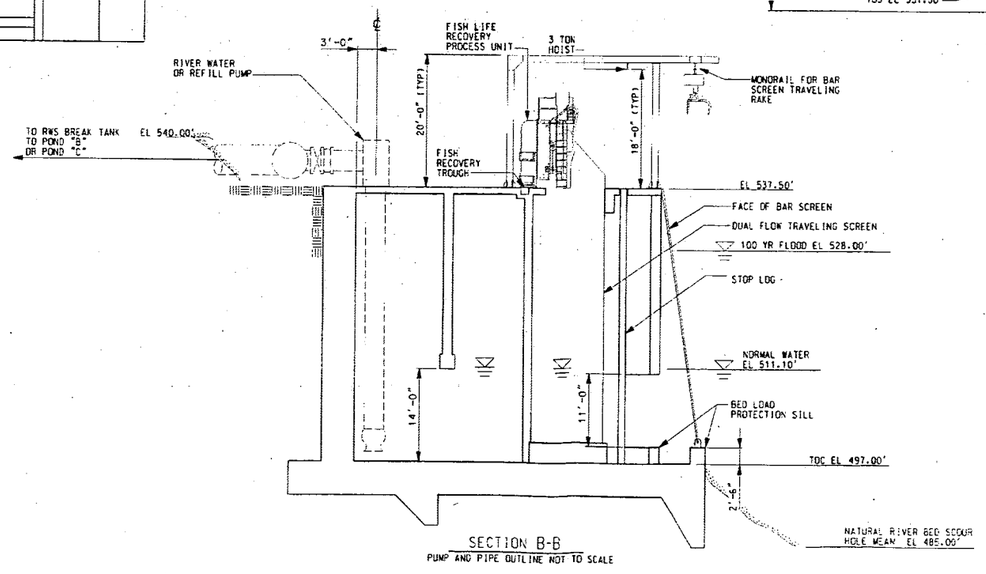
FIGURE 5.3-1 - Sheet 1 of 2 Rev 2



MAT PLAN @ EL 497.00'
PUMP AND PIPE OUTLINE NOT TO SCALE



DECK PLAN
PUMP AND PIPE OUTLINE NOT TO SCALE



SECTION B-B
PUMP AND PIPE OUTLINE NOT TO SCALE

WILLIAM STATES LEE III
NUCLEAR STATTION UNITS 1 & 2

River Water Intake Structure

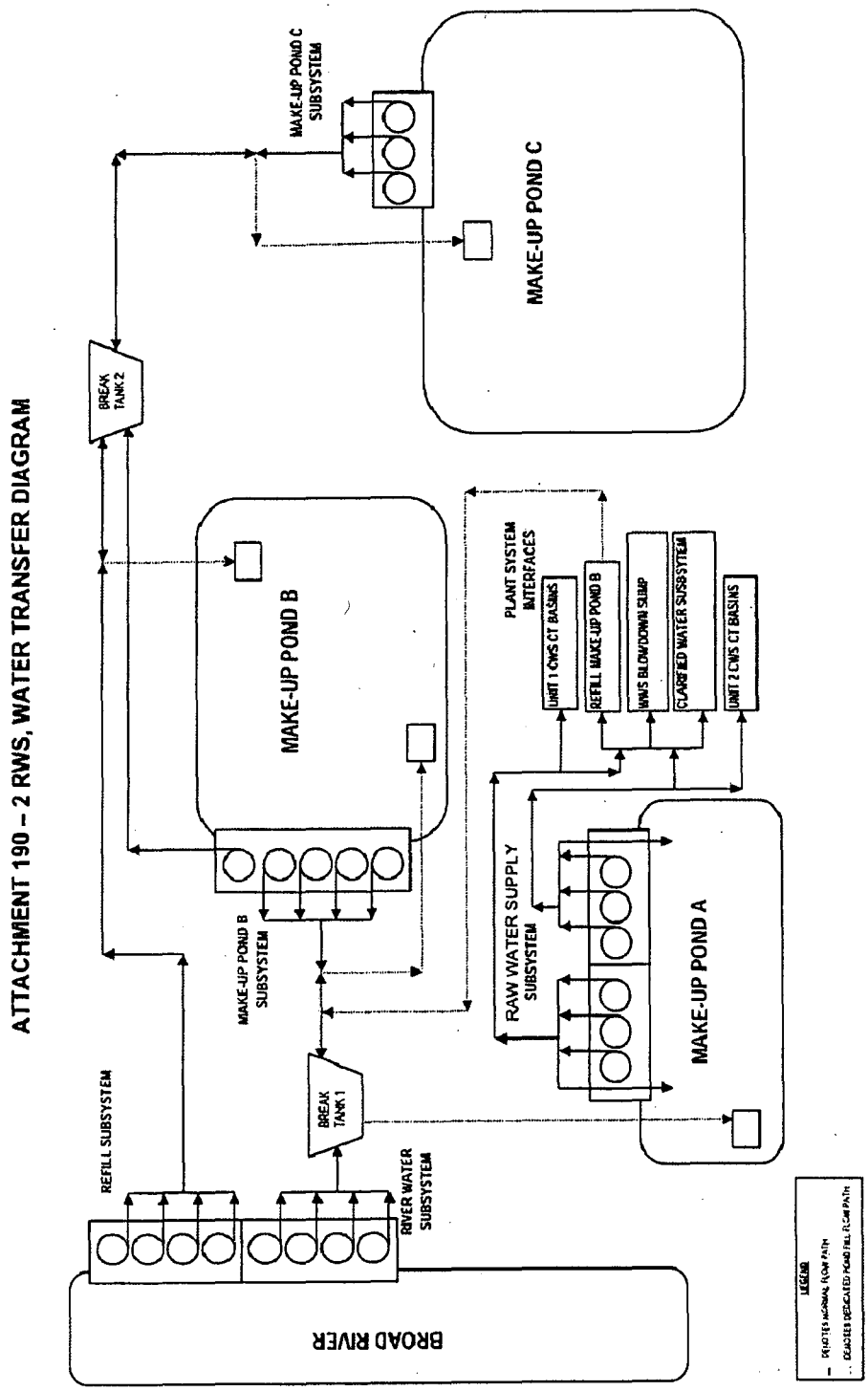
FIGURE 5.3-1 - Sheet 2 of 2 Rev 2

Attachment 190-02

Raw Water System (RWS)

Water Transfer Diagram

Sheet 1 of 1


ATTACHMENT 190 – 2 RWS, WATER TRANSFER DIAGRAM
MAKE-UP POND C
MAKE-UP POND C SUBSYSTEM
BREAK TANK 2
MAKE-UP POND B
MAKE-UP POND B SUBSYSTEM
PLANT SYSTEM INTERFACES
UNIT 1 CWS CT BASINS
REFILL MAKE-UP POND B
WWS BLOWDOWN SUMP
CLARIFIED WATER SUBSYSTEM
UNIT 2 CWS CT BASINS
RAW WATER SUPPLY SUBSYSTEM
MAKE-UP POND A
BREAK TANK 1
REFILL SUBSYSTEM
RIVER WATER SUBSYSTEM
BROAD RIVER
LEGEND

Attachment 190-03

Revision to ER Subsection 4.2.2.1

4.2.2.1 Intake Construction

Revise second paragraph as follows:

The raw water river intake structure is expected to be built on the north end of the site along the Broad River, as illustrated in Figure 3.1-1 and Figure 3.4-1. The Broad River is expected to be dredged in areas affected by construction of the intake structure. The cofferdam at the Broad River raw water intake would be constructed using two banks of Z-shaped sheet piles tied together and filled with stone ballast. The cofferdam will be ~~with gravelballast in fill~~ approximately 258~~220~~ ft. long and extend~~ing~~ approximately 75 ft. into the river at the narrowest width of the river. Approximately 47,000 cubic yards* (cu. yd.) of soil and partially weathered rock are expected to be removed. Duration of the river intake construction would be about 20 ~~16~~months. It would take about 5 4 months to complete the cofferdam. Construction of the cofferdam would be scheduled to avoid the spawning seasons as much as possible (Subsection 4.3.2.1). While in place, the cofferdam would constrict flow through the Broad River by reducing the width of the river from approximately 240 ft. to 165 ft. Reducing the width of the river by approximately one-third would result in increasing the velocity of the river, increasing the energy for bottom scour and bank erosion. Following construction, the cofferdam would be removed behind a weighted silt curtain to protect the river from excess silt load during removal. The removal of the cofferdam would take approximately 3 ~~2~~ months. Flow velocities are expected to return to preconstruction conditions, and the resulting decrease in energy is expected to allow the river bottom and bank to return to preconstruction conditions. The potential adverse impact on aquatic biota is SMALL as a result of avoiding the spawning season during construction of the raw water intake structure.

*47,000 cubic yards previously reported in the ER Rev.1 is a conservative number and bounds the additional dredged material from adding the refill subsystem section of the river intake structure.

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 2010

Reference NRC RAI Number: ER RAI 191, Site Layout and Plant Description

NRC RAI:

Provide the piping plan for water transfers from the river intake system(s) to and between Make-Up Ponds A, B, and C.

Duke Energy Response:

Figure 4.2-2 in the ER Supplement provides a plan view of the proposed pipelines for water transfers from the river intake system(s) to and between Make-Up Ponds A, B, and C. Duke Response to RAI 190 provides a description of how the water is transferred between these ponds.

Associated Revision to the Lee Nuclear Station Combined License Application:

None

Attachment:

None

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 2010

Reference NRC RAI Number: ER RAI 193, Site Layout and Plant Description

NRC RAI:

Provide details regarding the origin of the fill materials to be used for construction of the earthen dam that will impound Pond C.

Duke Energy Response:

The fill materials to be used for construction of the earthen dam that will impound Pond C are expected to come from three borrow areas north of London Creek within the footprint of the proposed pond (as identified in Figure 4.1-2). Conceptual design of the dam and dikes estimates that approximately 1.6 million cubic yards of fill are required for construction of the water-retaining structures. Geotechnical investigations estimate that approximately 3.4 million cubic yards of fill meeting design parameters for the dam and dike are available from the three identified borrow areas. Material properties defining suitable fill to be used for construction of the dams and dike are based on soil classification, unit weight, and shear strength. The conceptual design incorporates the results of the geotechnical investigation for the borrow areas and identifies the design limits for each parameter.

An additional source of fill materials for the earthen dam may be generated by relocating a portion of SC 329. Impacts resulting from this realignment include approximately 11.9 acres of disturbed area and a total of 144,000 cubic yards of earthwork. Approximately 96,000 cubic yards of excess earthwork soil material is expected to be generated by the roadway construction. The excess soil material is expected to be used as fill material on site, possibly in the construction of the dams, pending additional geotechnical data on the material properties of the soil. The suitability of the excavated soil from the relocation of SC 329 will be evaluated against the design fill soil parameter limits referenced above. Excess material not needed for construction will be spoiled on site in locations identified in Figure 4.1-2 in the ER Supplement.

Associated Revision to the Lee Nuclear Station Combined License Application:

None

Attachment:

None

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 2010

Reference NRC RAI Number: ER RAI 204, Benefit-Cost Balance

NRC RAI:

Provide information on expected changes in the generating capacity of the plant resulting from the addition of Pond C.

Duke Energy Response:

With the addition of Pond C, the generating capacity and net electric generating benefits of Lee Nuclear Station as stated in Subsection 10.4.1.2.1 of Revision 1 of the Environmental Report are not impacted.

Without the addition of Pond C, the generating capacity and net electric generating benefits of Lee Nuclear Station would likely be reduced as a result of suspended plant operations in the event of significant extended drought periods. As stated in Subsection 5.2.1 of the ER Supplement, an analysis indicated that if Lee Nuclear Station had operated during the 83-year period of record (1926-2008) the water available in Pond B would have been insufficient five times. Per this analysis, Lee Nuclear Station would have suspended operations in 1954, 1956, 2002, 2007 and 2008. Refer to Table 5.2-3 of the ER Supplement for data on these 30 foot drawdown occurrences of Pond B.

Associated Revision to the Lee Nuclear Station Combined License Application:

None

Attachment:

None

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: June 22, 2010

Reference NRC RAI Number: ER RAI 205, Transportation

NRC RAI:

Provide an estimate of Pond C construction materials to facilitate calculation of transportation-related impacts from material transport.

Duke Energy Response:

The following materials will be transported on South Carolina roads to construct Pond C:

- Crushed stone for construction roads and laydown areas – 160,000 cubic yards.±
- Crushed stone / riprap for dams – 250,000 cubic yards.±
- Soil material for saddle dikes – 100,000 cubic yards.±
- Concrete – 50,000 cubic yards.±
- Rebar – 4,000 tons±
- Miscellaneous semi truck / trailer deliveries - 200±
- Precast – 2,000 tons± in Highway 329 Bridge
- Asphalt paving – 5,000 tons±
- Piping – 113,000 linear feet±
- Cabling – 4,000 linear feet±

The maximum total number of workers required for the construction of Make-Up Pond C and its associated facilities is expected to be 185 workers. This information was provided in the ER Supplement Subsection 4.4.1.1.

Associated Revision to the Lee Nuclear Station Combined License Application:

None

Attachments:

None