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November 22, 2011

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

Subject: Duke Energy Carolinas, LLC (Duke Energy)
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 (Lee)
Supplemental Information Related to Design Changes to the Circulating Water System
Ltr# WLG2011.11-04

Reference: (1) Letter from Bryan J Dolan (Duke Energy) to the attention of R. William Borchardt, Document Control Desk (NRC), *Duke Energy Carolinas, LLC,* William States Lee III Nuclear Station – Project Number 742, *Application for a Combined License for William States Lee III Nuclear Station Units 1 and 2,* December 12, 2007 (ML073510494)

In the referenced submittal Duke Energy provided a site specific conceptual design for the circulating water system in Chapter 10 of the Final Safety Analysis Report (FSAR). This letter provides an update to the NRC regarding proposed changes to this design and to the FSAR.

This initial, conceptual design consisted of a three cooling towers per unit configuration. As the design process has evolved Duke Energy revised this approach to consist of two cooling towers per unit. The only technical analysis impacted by this change is the cooling tower plume analysis, as described in Subsection 2.3 of the FSAR. The associated conforming changes in the FSAR consist of text, table and figure changes that are considered administrative changes. Enclosure 1 of this letter presents changes affecting the FSAR. These changes will be incorporated in a future revision of the FSAR.

If you have any questions or need any additional information, please contact James R. Thornton, acting Nuclear Plant Development Licensing Manager, at (704) 382-2612.

Sincerely,

for John S. Thrasher

Ronald A. Jones
Senior Vice President
Nuclear Development

D093
NRO

Enclosure:

1) FSAR Changes to Text, Tables, and Figures Related to the Circulating Water System

AFFIDAVIT OF JOHN S. THRASHER

John S. Thrasher, being duly sworn, states that he is Manager Nuclear Plant Development Engineering, 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 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.

John S. Thrasher

John S. Thrasher, Manager Nuclear Plant
Development Engineering

Subscribed and sworn to me on November 22, 2011

Teresa D. Neely

Notary Public

My commission expires: 9/2/2015

SEAL

TERESA D. NEELY
NOTARY PUBLIC
GASTON COUNTY, NC
MY COMMISSION EXPIRES 09/02/2015

xc (w/o enclosure):

Charles Casto, Deputy Regional Administrator, Region II

xc (w/enclosure):

Brian Hughes, Senior Project Manager, DNRL

FSAR Changes to Text, Tables, and Figures Related to the Circulating Water System

This enclosure provides changes to William States Lee III FSAR resulting from the change in design from three cooling towers per unit to two cooling towers per unit as follows:

Attachments:

Attachment 1:
Revision to COLA Part 2, FSAR Chapter 1, Subsection 1.2.2

Attachment 2:
Revision to COLA Part 2, FSAR Chapter 1, Figure 1.1-202

Attachment 3:
Revision to COLA Part 2, FSAR Chapter 2, Subsections 2.3.2.5.1, 2.4.1.1.2, and 2.4.11.5

Attachment 4:
Revision to COLA Part 2, FSAR Chapter 2, Tables 2.3-278, 2.3-279, and 2.3-280

Attachment 5:
Revision to COLA Part 2, FSAR Chapter 2, Figures 2.1-201, 2.3-274, 2.3-275, 2.3-276, 2.3-277, 2.3-278, 2.3-279, 2.4.1-201, 2.4.1-202, 2.4.3-201, 2.4.3-239, 2.4.4-201, 2.4.4-202, 2.4.5-201, 2.4.12-206

Attachment 6:
Revision to COLA Part 2, FSAR Chapter 2, Appendix 2DD

Attachment 7:
Revision to COLA Part 2, FSAR Chapter 8, Figure 8.2-202

Attachment 8:
Revision to COLA Part 2, FSAR Chapter 9, Subsection 9.2.11.2.1

Attachment 9:
Revision to COLA Part 2, FSAR Chapter 9, Figure 9.2-202

Attachment 10:
Revision to COLA Part 2, FSAR Chapter 10, Subsections 10.4.5.2.1, 10.4.5.2.2, 10.4.5.2.3, and 10.4.5.5

Attachment 11:
Revision to COLA Part 2, FSAR Chapter 10, Tables 10.4-201 and 10.4-202

Attachment 12:
Revision to COLA Part 2, FSAR Chapter 10, Figure 10.4-201

Attachment 1

Revision to COLA Part 2

FSAR Chapter 1

Subsection 1.2.2

COLA Part 2, FSAR Chapter 1, Subsection 1.2.2, fifth paragraph under the sub-heading Site Plan, is revised at the first sentence to read:

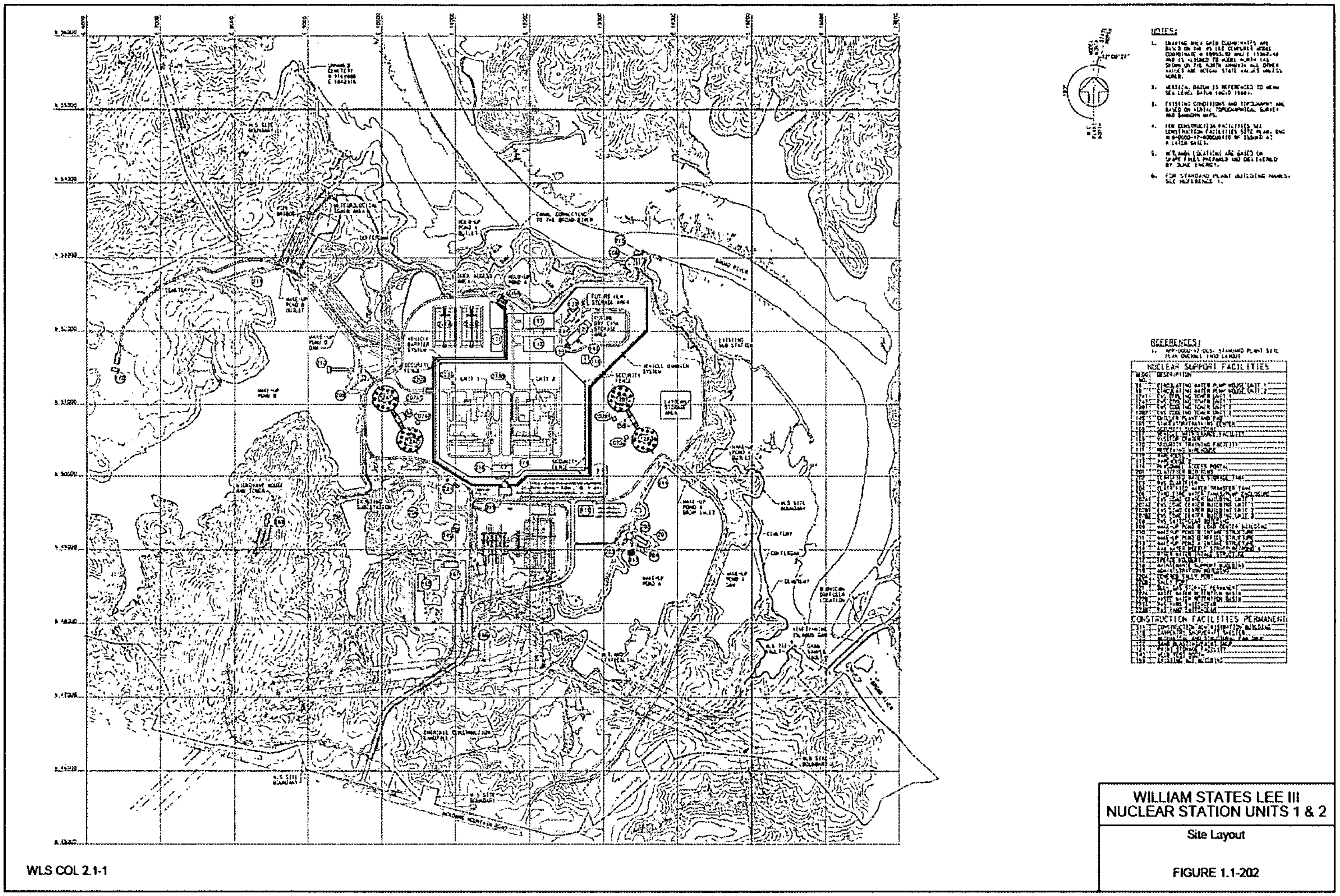
Each of the two main cooling tower-circulating water pump complexes consists of ~~three~~ two mechanical-draft cooling towers, a pump basin, circulating water pumps and associated piping.

Attachment 2

Revision to COLA Part 2

FSAR Chapter 1

Figure 1.1-202



WILLIAM STATES LEE III
NUCLEAR STATION UNITS 1 & 2

Site Layout

FIGURE 1.1-202

Attachment 3

Revision to COLA Part 2

FSAR Chapter 2

Subsection 2.3.2.5.1

Subsection 2.4.1.1.2

Subsection 2.4.11.5

COLA Part 2, FSAR Chapter 2, Subsection 2.3.2.5.1 is revised as follows:

2.3.2.5.1 Cooling Tower Plumes

The following discussion focuses on an evaluation of cooling tower plume effects. An assessment of the contribution of moisture to the ambient environment from cooling tower blowdown waste heat discharge is included. Finally, a qualitative evaluation of the effects of the cooling system on daily variations of several meteorological parameters is presented.

The operation of two~~three~~ circular mechanical draft cooling towers (CMDCTs) for each unit at the site will result in the emission of small water droplets entrained in the tower air flow (i.e., drift). The droplets contain the dissolved solids found in the circulating water (e.g., salts) that may eventually deposit on the ground as well as on structures and vegetation. The drift droplet emissions are controlled by the use of drift eliminators that rely on inertial separation caused by exhaust flow direction changes. State-of-the-art drift eliminators installed in the CMDCTs are capable of reducing the emissions to approximately 0.0005 percent of the circulating water flow. In addition to drift emissions, there is another potential impact of the cooling towers to the environment. The warm saturated air leaving the towers is cooled by the ambient air such that the water vapor condenses into a visible plume that may persist for some distance downwind depending on meteorological conditions (e.g., wind speed, relative humidity). These visible plume occurrences may pose some aesthetic and ground shadowing impacts. Under relatively high wind speeds and humid conditions, the aerodynamic wake turbulence caused by air flowing around the tower housing may result in the visible plume touching down causing ground level fogging and, under freezing conditions, icing.

An analysis of the potential environmental impacts caused by the operation of CMDCTs was conducted using the Electric Power Research Institute (EPRI) sponsored Seasonal/Annual Cooling Tower Impact (SACTI) Program. This model is considered a state-of-the-art cooling tower impact model by EPRI and the nuclear industry. It was developed by Argonne National Laboratory (ANL) using the knowledge obtained from extensive research conducted on cooling tower environmental effects. The SACTI model provides salt drift deposition pattern (i.e., kg/km^2 per month) as a function of distance and direction from the cooling towers as well as the frequency of occurrence of visible plumes, hours of plume shadowing, and ground level fogging and icing occurrences by season resulting from the operation of the cooling towers. The most recent 5-year database (i.e, 2001-2005) from the National Weather Service (NWS) site in Charlotte, North Carolina, was used in the SACTI analysis. Additionally, the seasonal mixing height values for Greensboro, North Carolina (Reference 219), are used in the SACTI model. Appendix 2DD provides justification for use of this five-year meteorological dataset as reasonably representative of the conditions expected at the Lee Nuclear Station site.

The SACTI results, as presented in Table 2.3-278, indicate that the majority (i.e. >50 percent) of the visible plumes do not reach 1000 meters downwind and ~~200~~ 300 meters in height. ~~It also shows that t~~The longest and largest visible plumes occur in the winter with smaller plumes occurring in the spring and fall seasons due to the cold air in winter causing condensation of the moist plumes more readily than in the warmer seasons (i.e., cold air has a much smaller capacity of holding water vapor). The summer visible plumes are noticeably smaller since warmer ambient air results in less condensation of the moist plumes due to its ability to accommodate higher water vapor concentrations. On an annual basis, 40 percent of the plumes reach 500~~400~~ meters downwind and 230~~170~~ meters in height. The winter visible plume length frequency as a function of direction is shown on Figure 2.3-274. The winter visible plume radius frequency as a function of ~~distance~~ direction is shown on Figure 2.3-275.

The largest visible plumes shown in Table 2.3-278 reach a distance of 9900 meters (6.15 miles) downwind of the towers and a height of approximately 1600~~1400~~ meters and occur approximately one percent of the time. It should be noted that the longest plumes occur during conditions of high ambient relative humidity that are conducive to natural fog formation and poor visibility conditions. Under these conditions, the atmosphere is already at, or close to, saturation. Therefore, the largest plumes may not be discernable from the ambient fogging conditions.

Table 2.3-279 provides the downwind distances at which plume shadowing effects are felt for a range of hours of occurrence by season. Consistent with the visible plume frequency results, most shadowing occurs in the winter season with lesser amounts in the spring and fall and the least amounts in the summer. The hours of plume shadowing during the winter season are given in Figure 2.3-276. Annually, plume shadowing effects reach 1200~~1100~~ meters downwind 1 percent of the time with the farthest impact reaching approximately 4000~~4600~~ meters downwind in the winter for 0.5 percent of the time. The SACTI output also shows that there are ~~virtually~~ no occurrences of ground level fogging. ~~with only 2 hours of fogging 500 meters south of the tower and only 1 hour of fogging south and southwest of the towers at distances between 400 and 600 meters, mostly in the spring season. The hours of fogging during the spring are shown in Figure 2.3-279.~~ More importantly, no occurrences of ground level icing are predicted.

The salt deposition pattern shown in Table 2.3-280 indicates that there is negligible salt deposition with the highest amount being approximately 1.03~~1.2~~ kg/km^2/month occurring 200 meters north of the towers in the summer. ~~The salt deposition rate for the summer is shown in Figure 2.3-277.~~ All other salt deposition amounts are below 1 kg/km^2/month. On an annual basis, the largest amount of deposition is 0.71~~0.82~~ kg/m^2/month occurring 200 meters north of the towers. The summer salt deposition rate as a function of downwind sector is shown on Figure 2.3-277. ~~This~~ The maximum salt deposition amount can be compared with a value of 400 kg/km^2/month below which damage to vegetation is not expected to occur according to a study of the environmental effects of cooling towers. In addition, according to NUREG-1555, general guidelines for predicting effects of drift deposition on plants suggest that many species have thresholds for visible leaf damage in the range of 10 to 20 kg/ha/mo of NaCl deposited on leaves during the growing season. This range of deposition corresponds to 1000 to 2000 kg/km^2/month. Therefore, no impacts on vegetation are expected.

While salt deposition from evaporative cooling towers has the potential to build up on bushings of electrical equipment such as transformers, switchyard equipment, and transmission lines, IEEE C57.19.100-1995 "IEEE Guide for Application of Power Apparatus Bushings" (Reference 241), Section 9 and Table 1, indicates that environments of less than 0.03 mg/cm^2 are below the typical measured equivalent salt deposition threshold to be designated the lowest level of contamination.

Assuming the worst case seasonal potential salt deposition rate of 1.03~~1.2~~ kg/km^2/month (0.000103~~0.00012~~ mg/cm^2/month), based on 5 years of CLT meteorological data and no washing/cleaning from rain/wind at the Lee Nuclear Station site for an entire month, the result would be a monthly accumulation of only 0.34~~0.4~~ percent (0.34~~0.4~~%) of the 0.03 mg/cm^2, or 300 kg/km^2 threshold amount for contamination designation by IEEE C57.19.100-1995. If it was assumed that no washing occurred over an entire year, the annual accumulation rate of 0.000071~~0.000082~~ mg/cm^2/month would result in only 2.8~~3.3~~ percent (2.8~~3.3~~%) of the threshold amount. Using the annual salt deposition rate of 0.000071~~0.000082~~ mg/cm^2/month and no washing/cleaning of electrical equipment and insulators from rain/wind, it would take 422~~365~~

months (35~~30~~+ years) before the buildup would equal the minimum buildup level classified as contaminated environment by IEEE C57.19.100-1995.

Due to natural wash off from local precipitation, total deposits are not expected to ever reach a level requiring attention. Therefore, none of the outdoor electrical equipment in the transformer yard or the switchyard requires special consideration for application in the environment at the Lee Nuclear Station site, and cooling tower plume generated salt deposits are not expected to adversely affect any electrical equipment at the Lee Nuclear Station site.

Plant heating, ventilation and air conditioning (HVAC) intakes and equipment are located at distances ranging approximately 200 to 800 meters from the centerline of either group of Unit 1 or Unit 2 cooling towers. Due to the spatially distributed nature of the cooling towers and plant equipment, cooling tower plumes from a wide range of plume directions could potentially impact plant equipment. Plume trajectories moving downwind from Unit 1 cooling towers toward sectors ranging from NE to ESE could potentially result in exposure of HVAC intakes and plant equipment to salt deposition from Unit 1 cooling tower plumes, while plume trajectories from Unit 2 cooling towers toward sectors ranging from WSW to NW could potentially result in salt deposition from Unit 2 cooling tower plumes. ~~FSAR~~ Table 2.3-280 shows that the maximum salt deposition rate anticipated at the distance range and directions where HVAC intakes and equipment are located is less than 0.000004~~0.00005~~ mg/cm^2/month. Based on guidance provided by IEEE C57.19.100-1995, it would take more than 750~~600~~ months (62.5~~50~~ years) of buildup without washing/cleaning from rain/wind before the threshold for low level contamination would be reached. Therefore, impacts from cooling tower plume salt deposition on HVAC intakes or equipment are negligible.

The maximum predicted water deposition rate, occurring during the ~~summer~~ fall season, is ~~1.7×10^3~~740 kg/km^2/month at a downwind distance of ~~200~~ 900 meters ~~North~~ SE of the cooling towers. The water deposition rate during the ~~summer~~ fall is shown in Figure 2.3-278. This deposition rate is the rainfall equivalent of 0.00003~~0.00007~~ inch per month based on the density of water (i.e., 1000 kg/m^3), which is a trivial amount. The NWS considers precipitation of less than 0.01 inch as a trace amount.

The drift deposition results are indicative of the performance of the state-of-the-art drift eliminators, minimizing the size of the drift droplets. Small drift droplet sizes tend to evaporate and remain suspended in air. The entrained salt particles would then separate from the vapor and would either deposit out or remain suspended in the air. The trivial drift deposition that does occur is most likely the result of meteorological conditions conducive to reduced plume rise (i.e., stronger wind speeds). The use of fresh water as make-up ~~is also a major contributor to the trivial deposition impacts as this~~ minimizes the total dissolved solids content of the circulating water.

COLA Part 2, FSAR Chapter 2, Subsection 2.4.1.1.2 is revised at the fourth sentence as follows:

Duke Energy selected the AP1000 certified plant design for the Lee Nuclear Station combined operating license application. The AP1000 units (Units 1 and 2) are planned to be in the vicinity of the previously proposed Cherokee Units 1 and 3. The AP1000 is rated at 3400 megawatts thermal (MWt) with a minimum electrical output of 1000 megawatts electrical (MWe). Each unit uses ~~three~~ two mechanical draft towers for circulating water system cooling with the intake system providing all raw water requirements.

COLA Part 2, FSAR Chapter 2, Subsection 2.4.11.5 is revised at the ninth paragraph is provided below. In addition to updating cooling tower design information, a correction to Subsection 2.4.11.5 text identifying make-up pond sources is included in this markup.

The circulating water system for the station is a closed-cycle type system coupled with mechanical draft, wet cooling towers. For each unit the circulating water system flow rate is estimated at ~~560,050~~600,000 gpm (Subsection 10.4.5). Figure 10.4-201 presents the circulating water system. Make-Up Ponds ~~A~~ B and ~~B~~ C are used to supplement flow during periods of low flow. Emergency cooling is discussed in Subsection 2.4.11.6.

Attachment 4

Revision to COLA Part 2

FSAR Chapter 2

Table 2.3-278

Table 2.3-279

Table 2.3-280

COLA Part 2, FSAR Chapter 2, Table 2.3-278 is revised as follows:

VLS COL 2.3-2

TABLE 2.3-278
VISIBLE PLUME FREQUENCY OF OCCURRENCE BY SEASON
(ALL WIND DIRECTIONS)

	Percent Frequency of Occurrence					
	100	80	60	40	20	1
Winter:						
length (m)	100	300~~200~~	500~~400~~	3,300~~900~~	5,900~~5,100~~	9,900
height (m)	60~~40~~	160~~120~~	200~~160~~	1,200~~370~~	1,400	~~1~~1,600~~,400~~
radius (m)	30~~25~~	50~~45~~	65~~60~~	320~~85~~	540~~520~~	1,200~~1,400~~
Spring:						
length (m)	100	200	300~~250~~	500~~300~~	5,100~~4,800~~	9,900
height (m)	60~~40~~	150~~110~~	170~~120~~	200~~160~~	1,400	1,600~~1,400~~
radius (m)	30~~25~~	45~~35~~	50~~45~~	65~~60~~	470	900~~650~~
Summer:						
length (m)	100	200~~150~~	250~~200~~	300~~250~~	700~~600~~	9,800
height (m)	60~~40~~	150~~110~~	170~~120~~	190~~130~~	350~~330~~	1,600~~1,400~~
radius (m)	30~~25~~	40~~35~~	45~~40~~	50~~45~~	85~~75~~	880~~650~~
Fall:						
length (m)	100	250~~200~~	300~~250~~	500~~400~~	4,900~~4,700~~	9,900
height (m)	60~~40~~	150~~110~~	170~~125~~	220~~160~~	1,400	1,600~~1,400~~
radius (m)	30~~25~~	45~~35~~	50~~45~~	70~~60~~	420~~435~~	1,200~~1,400~~

VLS COL 2.3-2

TABLE 2.3-278
VISIBLE PLUME FREQUENCY OF OCCURRENCE BY SEASON
(ALL WIND DIRECTIONS)

	Percent Frequency of Occurrence					
	100	80	60	40	20	1
Annual:						
length (m)	100	200	300~~250~~	500~~400~~	4,900~~4,600~~	9,900
height (m)	60~~40~~	150~~110~~	180~~120~~	230~~170~~	1,400	1,600~~1,400~~
radius (m)	30~~25~~	45~~35~~	50~~40~~	70~~65~~	435	1,200~~1,400~~

Notes:

1. SACTI results based on: U. S. Department of Commerce, National Oceanic and Atmospheric Administration National Climatic Data Center (NCDC), "Integrated Surface Hourly", 2001-2005, Charlotte, NC.
2. Mixing height from George C. Holzworth, "Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States", Reference 219.

COLA Part 2, FSAR Chapter 2, Table 2.3-279 is revised as follows:

WLS COL 2.3-2

TABLE 2.3-279
FREQUENCY OF PLUME SHADOWING BY SEASON
(AVERAGE FOR ALL WIND DIRECTIONS)

	Percent Frequency of Occurrence				
	10%	5%	2%	1%	0.5%
Winter:					
downwind distance (m)	200	400~~300~~	800~~600~~	2,000~~1,600~~	6,000~~4,600~~
Spring:					
downwind distance (m)	200	400~~300~~	600	1,400~~1,200~~	5,400~~4,200~~
Summer:					
downwind distance (m)	200~~100~~	300	500~~400~~	800~~600~~	1,600~~1,400~~
Fall:					
downwind distance (m)	200	300	500	1,000	2,400~~3,200~~
Annual:					
downwind distance (m)	200	300	600	1,200	4,000

Notes:

1. SACTI results based on: U. S. Department of Commerce, National Oceanic and Atmospheric Administration National Climatic Data Center (NCDC), "Integrated Surface Hourly", 2001-2005, Charlotte, NC.
2. Mixing height from George C. Holzworth, "Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States", Reference 219.

COLA Part 2, FSAR Chapter 2, Table 2.3-280 is revised as follows:

WLS COL 2.3-2

TABLE 2.3-280																	
MAXIMUM SALT DRIFT DEPOSITION RATE ($KG/KM^2/MO$)																	
Summer																	
Downwind	Plume Headed																
Distance (m)	S	SSW	SW	WSW	W	WNW	NW	NNW	N	NNE	NE	ENE	E	ESE	SE	SSE	~~All~~Avg.
100.	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00
200.	~~0.38~~.33	~~0.08~~.07	~~0.12~~.10	~~0.17~~.13	~~0.18~~.16	~~0.04~~.03	~~0.15~~.12	~~0.20~~.16	~~1.18~~**1.03**	~~0.73~~.58	~~0.48~~.39	~~0.16~~.13	~~0.26~~.23	~~0.37~~.29	~~0.38~~.31	~~0.25~~.20	~~0.32~~.27
300.	~~0.00~~.09	~~0.00~~.02	~~0.00~~.03	~~0.00~~.05	~~0.00~~.04	~~0.00~~.01	~~0.00~~.04	~~0.00~~.06	~~0.00~~.30	~~0.00~~.21	~~0.00~~.14	~~0.00~~.05	~~0.00~~.07	~~0.00~~.11	~~0.00~~.11	~~0.00~~.07	~~0.00~~.09
400.	~~0.00~~.01	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0.00~~.01	~~0.00~~.06	~~0.00~~.01	~~0.00~~.01	~~0.00~~.01	~~0~~.00	~~0.00~~.02	~~0.01~~.03	~~0.00~~.01	~~0.00~~.01
500.	~~0.00~~.01	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0.00~~.01	~~0.00~~.06	~~0.00~~.01	~~0.00~~.01	~~0.00~~.01	~~0~~.00	~~0.01~~.02	~~0.01~~.03	~~0.00~~.01	~~0.00~~.01
600.	~~0.00~~.01	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0.00~~.01	~~0.01~~.06	~~0.00~~.02	~~0.00~~.01	~~0.00~~.01	~~0~~.00	~~0.01~~.02	~~0.01~~.03	~~0.00~~.01	~~0.00~~.01
700.	~~0.00~~.01	~~0~~.00	~~0.00~~.01	~~0.00~~.01	~~0~~.00	~~0~~.00	~~0~~.00	~~0.00~~.01	~~0.01~~.06	~~0.00~~.02	~~0.00~~.01	~~0.00~~.01	~~0~~.00	~~0.01~~.02	~~0.01~~.03	~~0.00~~.01	~~0.00~~.01
800.	~~0.00~~.03	~~0~~.00	~~0.00~~.01	~~0.00~~.01	~~0~~.00	~~0.00~~.01	~~0~~.00	~~0.00~~.02	~~0.01~~.14	~~0.00~~.03	~~0.00~~.02	~~0.00~~.01	~~0~~.00	~~0.01~~.05	~~0.01~~.06	~~0.00~~.01	~~0.00~~.02
900.	~~0.00~~.03	~~0~~.00	~~0.00~~.02	~~0.00~~.01	~~0~~.00	~~0.00~~.01	~~0~~.00	~~0.00~~.03	~~0.01~~.16	~~0.01~~.04	~~0.01~~.03	~~0.00~~.01	~~0~~.00	~~0.01~~.07	~~0.01~~.08	~~0.00~~.01	~~0.00~~.03
1000.	~~0.01~~.03	~~0.00~~.01	~~0.01~~.02	~~0.01~~.01	~~0.01~~.01	~~0.01~~.01	~~0.01~~00	~~0.00~~.02	~~0.02~~.14	~~0.02~~.04	~~0.01~~.03	~~0.00~~.01	~~0~~.00	~~0.01~~.06	~~0.02~~.08	~~0.00~~.01	~~0.01~~.03
1100.	~~0.01~~.02	~~0.00~~.01	~~0.01~~.01	~~0.01~~.01	~~0.01~~.01	~~0.01~~.00	~~0.01~~.00	~~0.01~~.01	~~0.05~~.06	~~0.02~~.03	~~0.01~~.02	~~0~~.00	~~0~~.00	~~0.02~~.03	~~0.04~~.04	~~0~~.00	~~0.01~~.02
1200.	~~0.01~~.02	~~0.00~~.01	~~0~~.01	~~0~~.01	~~0~~.01	~~0.01~~.00	~~0.01~~.00	~~0~~.01	~~0.05~~.06	~~0.02~~.02	~~0.01~~.02	~~0~~.00	~~0~~.00	~~0~~.02	~~0.04~~.03	~~0~~.00	~~0~~.01

WLS COL 2.3-2

TABLE 2.3-280

MAXIMUM SALT DRIFT DEPOSITION RATE ($KG/KM^2/MO$)

1300.	~~0.01~~.02	~~0.00~~.01	~~0.00~~.01	~~0.00~~.01	~~0.00~~.01	~~0~~.00	~~0~~.00	~~0~~.01	~~0.05~~.06	~~0.01~~.03	~~0.01~~.02	~~0~~.00	~~0~~.00	~~0~~.02	~~0.02~~.03	~~0~~.00	~~0~~.01
1400.	~~0.01~~.02	~~0.00~~.01	~~0.00~~.01	~~0.00~~.01	~~0.00~~.01	~~0~~.00	~~0~~.00	~~0~~.01	~~0.02~~.06	~~0.01~~.03	~~0.01~~.02	~~0~~.00	~~0~~.00	~~0~~.02	~~0.02~~.03	~~0~~.00	~~0~~.01
1500.	~~0.01~~.02	~~0.00~~.01	~~0.00~~.01	~~0.00~~.01	~~0.00~~.01	~~0~~.00	~~0~~.00	~~0.00~~.01	~~0.02~~.06	~~0.01~~.03	~~0.01~~.02	~~0~~.00	~~0~~.00	~~0.01~~.02	~~0.02~~.03	~~0~~.00	~~0~~.01
1600.	~~0~~.01	~~0.00~~.01	~~0.00~~.01	~~0.00~~.01	~~0~~.00	~~0~~.00	~~0~~.00	~~0.00~~.01	~~0.02~~.05	~~0.01~~.02	~~0~~.01	~~0~~.00	~~0~~.00	~~0.01~~.02	~~0.02~~.03	~~0~~.00	~~0~~.01
1700.	~~0.01~~.00	~~0.00~~.01	~~0.00~~.01	~~0.00~~.01	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0.02~~.01	~~0~~.01	~~0~~.01	~~0~~.00	~~0~~.00	~~0~~.01	~~0.02~~.01	~~0~~.00	~~0.01~~.00
1800.	~~0.01~~.00	~~0.00~~.01	~~0.00~~.01	~~0.00~~.01	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0.02~~.01	~~0~~.01	~~0~~.01	~~0~~.00	~~0~~.00	~~0.01~~.00	~~0.02~~.00	~~0~~.00	~~0.01~~.00
1900.	~~0.01~~.00	~~0.00~~.01	~~0.00~~.01	~~0.00~~.01	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0.02~~.01	~~0~~.01	~~0~~.01	~~0~~.00	~~0~~.00	~~0.01~~.00	~~0.02~~.00	~~0~~.00	~~0.01~~.00
2000.	~~0.01~~.00	~~0.00~~.01	~~0.00~~.01	~~0.00~~.01	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0.02~~.01	~~0~~.01	~~0.00~~.01	~~0~~.00	~~0~~.00	~~0.01~~.00	~~0.01~~.00	~~0~~.00	~~0~~.00

WLS COL 2.3-2

TABLE 2.3-280

MAXIMUM SALT DRIFT DEPOSITION RATE (KG/KM²/MO)

Fall

Downwind	Plume Headed																
Distance (m)	S	SSW	SW	WSW	W	WNW	NW	NNW	N	NNE	NE	ENE	E~~W~~	ESE	SE	SSE	~~ALL~~ Avg. ~~SUM~~
100.	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00
200.	~~0.56~~.48	~~0.14~~.11	~~0.17~~.13	~~0.18~~.13	~~0.28~~.23	~~0.20~~.15	~~0.11~~.08	~~0.34~~.27	~~0.65~~.55	~~0.56~~.46	~~0.31~~.25	~~0.05~~.04	~~0.18~~.16	~~0.33~~.25	~~0.49~~.39	~~0.29~~.23	~~0.30~~.24
300.	~~0.00~~.14	~~0.00~~.04	~~0.00~~.05	~~0.00~~.05	~~0.00~~.07	~~0.00~~.06	~~0.00~~.03	~~0.00~~.10	~~0.00~~.18	~~0.00~~.18	~~0.00~~.10	.01~~0.00~~	~~0.00~~.05	~~0.00~~.10	~~0.00~~.15	~~0.00~~.09	~~0.00~~.09
400.	~~0.00~~.03	~~0~~.00	~~0~~.00	~~0.00~~.01	.01~~0.00~~	.01~~0.00~~	~~0.00~~.01	~~0.00~~.04	~~0.00~~.06	~~0.00~~.03	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0.00~~.05	~~0.02~~.08	~~0.00~~.04	~~0.00~~.02
500.	~~0.00~~.03	~~0~~.00	~~0~~.00	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~	~~0~~.01	~~0.01~~.04	~~0.02~~.06	~~0.00~~.03	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0.02~~.06	~~0.03~~.08	~~0.01~~.04	~~0.01~~.03
600.	~~0.01~~.03	~~0~~.00	~~0~~.00	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~	~~0~~.01	~~0.01~~.04	~~0.02~~.06	~~0.00~~.03	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0.02~~.06	~~0.03~~.08	~~0.02~~.04	~~0.01~~.03
700.	~~0.01~~.03	~~0.00~~.01	~~0.00~~.01	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~	~~0~~.01	~~0.01~~.04	~~0.02~~.07	~~0.00~~.03	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0.02~~.06	~~0.03~~.08	~~0.01~~.04	~~0.01~~.03
800.	~~0.00~~.06	~~0.00~~.01	.01~~0.00~~	.01~~0.00~~	~~0.00~~.02	.01~~0.00~~	~~0.01~~.03	~~0.01~~.09	~~0.02~~.15	~~0.00~~.04	.01~~0.00~~	~~0.00~~.02	.01~~0.00~~	~~0.02~~.13	~~0.03~~.18	~~0.01~~.10	~~0.01~~.05
900.	~~0.00~~.07	~~0.00~~.01	.01~~0.00~~	.01~~0.00~~	~~0.00~~.02	~~0.00~~.02	~~0.01~~.04	~~0.01~~.14	~~0.02~~.18	~~0.01~~.06	.01~~0.00~~	~~0.00~~.03	.01~~0.00~~	~~0.02~~.19	~~0.05~~.26	~~0.01~~.14	~~0.01~~.07
1000.	~~0.01~~.05	~~0.00~~.01	.01~~0.00~~	.01~~0.00~~	~~0~~.01	~~0~~.01	~~0.02~~.04	~~0.02~~.13	~~0.02~~.15	~~0.02~~.04	~~0~~.00	~~0.01~~.03	.01~~0.00~~	~~0.02~~.18	~~0.12~~.24	~~0.02~~.13	~~0.02~~.07
1100.	~~0.02~~.03	~~0.00~~.02	.01~~0.00~~	.01~~0.00~~	~~0~~.01	~~0~~.01	~~0~~.02	~~0.05~~.06	~~0~~.06	~~0~~.02	~~0~~.00	~~0~~.01	~~0~~.00	~~0.07~~.09	~~0~~.12	~~0.05~~.06	~~0~~.03
1200.	.03~~0.02~~	~~0.00~~.02	.01~~0.00~~	.01~~0.00~~	~~0~~.01	~~0.01~~.00	~~0~~.02	~~0~~.05	~~0~~.06	~~0~~.02	.01~~0.00~~	~~0~~.01	~~0~~.00	~~0~~.07	~~0.12~~.09	~~0~~.05	~~0~~.03

WLS COL 2.3-2

TABLE 2.3-280

MAXIMUM SALT DRIFT DEPOSITION RATE (KG/KM^2/MO)

1300.	.03~~0.02~~	~~0.00~~.02	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0.01~~.02	~~0~~.05	~~0~~.06	~~0.01~~.02	.01~~0.00~~	~~0~~.01	~~0~~.00	~~0~~.07	~~0.06~~.09	~~0~~.05	~~0.02~~.03
1400.	.03~~0.02~~	~~0.00~~.02	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0.01~~.02	~~0~~.05	~~0.05~~.06	~~0.01~~.02	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0.06~~.07	~~0.05~~.09	~~0~~.05	~~0.02~~.03
1500.	.03~~0.01~~	~~0.00~~.02	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0.01~~.02	~~0.02~~.05	~~0.02~~.06	~~0.01~~.02	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0.03~~.07	~~0.05~~.09	~~0.02~~.05	~~0.01~~.03
1600.	~~0.01~~.02	~~0.00~~.01	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0.01~~.02	~~0.02~~.05	~~0.02~~.06	~~0.01~~.02	~~0~~.00	.01~~0.00~~	~~0~~.00	~~0.03~~.07	~~0.05~~.09	~~0.02~~.05	~~0.01~~.03
1700.	~~0~~.01	~~0.00~~.01	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0.01~~.00	~~0~~.02	.01~~0.02~~	~~0~~.01	~~0~~.00	~~0~~.00	~~0~~.00	~~0.03~~.02	~~0.05~~.03	~~0~~.02	~~0~~.01
1800.	~~0~~.01	~~0.00~~.01	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0.01~~.00	~~0.02~~.00	.01~~0.02~~	~~0~~.01	~~0~~.00	~~0~~.00	~~0~~.00	~~0.03~~.00	~~0.05~~.00	~~0.02~~.00	~~0.01~~.00
1900.	~~0~~.01	~~0.00~~.01	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0.01~~.00	~~0.02~~.00	.01~~0.02~~	~~0~~.01	~~0~~.00	~~0~~.00	~~0~~.00	~~0.03~~.00	~~0.05~~.00	~~0.02~~.00	~~0.01~~.00
2000.	~~0~~.01	~~0.00~~.01	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0.01~~.00	~~0.02~~.00	.01~~0.02~~	~~0~~.01	~~0~~.00	~~0~~.00	~~0~~.00	~~0.03~~.00	~~0.03~~.00	~~0.02~~.00	~~0.01~~.00

WLS COL 2.3-2

TABLE 2.3-280

MAXIMUM SALT DRIFT DEPOSITION RATE (KG/KM^2/MO)

Winter

Downwind Distance	Plume Headed																
	S	SSW	SW	WSW	W	WNW	NW	NNW	N	NNE	NE	ENE	E	ESE	SE	SSE	~~All~~Avg.
100.	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00
200.	~~0.27~~.22	~~0.08~~.07	~~0~~.03	~~0.06~~.04	~~0~~.06	~~0.10~~.08	~~0.16~~.13	~~0.35~~.29	~~0.53~~.45	~~0.57~~.46	~~0.14~~.10	~~0.11~~.08	~~0.14~~.12	~~0.29~~.23	~~0.30~~.23	~~0.17~~.13	~~0.21~~.17
300.	~~0.00~~.07	~~0.00~~.03	~~0.00~~.01	~~0.00~~.02	~~0.00~~.02	~~0.00~~.03	~~0.00~~.05	~~0.00~~.11	~~0.00~~.14	~~0.00~~.17	~~0.00~~.04	~~0.00~~.03	~~0.00~~.03	~~0.00~~.08	~~0.00~~.08	~~0.00~~.05	~~0.00~~.06
400.	~~0.00~~.02	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	.01~~0.00~~	~~0.00~~.02	~~0.00~~.06	~~0.00~~.03	.01~~0.00~~	.01~~0.00~~	.02~~0.00~~	.02~~0.00~~	~~0.01~~.02	~~0.00~~.03	.02~~0.00~~
500.	~~0.00~~.02	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	.01~~0.00~~	~~0.01~~.02	~~0.01~~.06	~~0.01~~.03	.01~~0.00~~	~~0~~.01	.02~~0.01~~	.02~~0.01~~	.03~~0.01~~	~~0.01~~.03	.02~~0.01~~
600.	~~0.00~~.02	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	.01~~0.00~~	~~0.01~~.02	~~0.01~~.05	~~0.01~~.03	.01~~0.00~~	~~0~~.01	.02~~0.01~~	.02~~0.01~~	.03~~0.01~~	~~0.01~~.03	.02~~0.01~~
700.	~~0.00~~.02	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	.01~~0.00~~	~~0.01~~.02	~~0.01~~.06	~~0.01~~.03	.01~~0.00~~	~~0~~.01	.02~~0.01~~	.02~~0.01~~	.03~~0.01~~	~~0.01~~.03	.02~~0.01~~
800.	~~0.00~~.04	.01~~0.00~~	~~0~~.00	~~0~~.00	.01~~0.00~~	~~0~~.00	.01~~0.00~~	~~0.01~~.04	~~0.01~~.13	~~0.01~~.05	~~0.00~~.02	~~0.01~~.03	~~0.01~~.05	~~0.01~~.05	~~0.01~~.06	~~0.01~~.06	~~0.01~~.04
900.	~~0.00~~.04	~~0.00~~.02	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~	~~0~~.00	.01~~0.00~~	~~0.01~~.06	~~0.01~~.16	~~0.01~~.08	~~0.01~~.03	~~0.01~~.05	~~0.01~~.06	~~0.01~~.08	~~0.02~~.09	~~0.01~~.09	~~0.01~~.05
1000.	~~0.00~~.03	~~0.01~~.02	.01~~0.00~~	.01~~0.00~~	~~0~~.01	~~0~~.00	.01~~0.00~~	~~0.01~~.05	~~0.02~~.13	~~0.03~~.07	~~0.02~~.04	~~0.02~~.05	~~0.01~~.06	~~0.01~~.07	~~0.05~~.09	~~0.01~~.08	~~0.01~~.05
1100.	~~0~~.01	~~0~~.01	.01~~0.00~~	.01~~0.00~~	~~0~~.01	~~0~~.00	~~0~~.00	~~0.02~~.03	~~0.05~~.06	.05~~0.03~~	~~0~~.02	~~0.02~~.03	~~0~~.02	~~0.03~~.04	~~0.05~~.04	~~0.03~~.04	~~0~~.02
1200.	~~0~~.01	~~0.01~~.02	.01~~0.00~~	.01~~0.00~~	~~0~~.01	~~0~~.00	~~0~~.00	~~0~~.02	~~0.05~~.06	.05~~0.03~~	~~0~~.02	~~0~~.02	.03~~0.02~~	~~0~~.03	.03~~0.05~~	~~0~~.03	~~0~~.02

WLS COL 2.3-2

TABLE 2.3-280

MAXIMUM SALT DRIFT DEPOSITION RATE ($KG/KM^2/MO$)

1300.	~~0.01~~.02	~~0.01~~.02	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.02	~~0.05~~.06	.05~~0.02~~	.02~~0.01~~	.02~~0.01~~	.03~~0.02~~	~~0~~.03	.03~~0.02~~	~~0~~.03	~~0~~.02
1400.	~~0.01~~.02	~~0.00~~.02	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.02	~~0.05~~.06	.05~~0.01~~	.02~~0.01~~	.02~~0.01~~	.03~~0.02~~	~~0~~.03	.03~~0.02~~	~~0~~.03	.02~~0.01~~
1500.	~~0.01~~.02	~~0.01~~.02	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0.01~~.02	~~0.02~~.06	.05~~0.01~~	.02~~0.01~~	.02~~0.01~~	.03~~0.01~~	.03~~0.01~~	~~0.02~~.04	.03~~0.01~~	.02~~0.01~~
1600.	~~0.01~~.02	~~0.01~~.02	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0.01~~.02	~~0.02~~.05	.05~~0.02~~	.02~~0.01~~	.02~~0.01~~	.02~~0.01~~	.03~~0.01~~	~~0.02~~.04	.03~~0.01~~	.02~~0.01~~
1700.	~~0~~.01	~~0~~.01	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.01	.01~~0.02~~	~~0.02~~.03	~~0~~.01	~~0~~.01	.00~~0.01~~	~~0~~.01	~~0.02~~.01	~~0~~.01	~~0~~.01
1800.	~~0~~.01	~~0~~.01	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	~~0.01~~.00	.01~~0.02~~	~~0~~.02	~~0~~.01	~~0~~.01	~~0.01~~.00	~~0.01~~.00	~~0.02~~.00	~~0.01~~.00	~~0~~.01
1900.	~~0~~.01	~~0~~.01	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	~~0.01~~.00	.01~~0.02~~	~~0~~.02	~~0~~.01	~~0~~.01	~~0.01~~.00	~~0.01~~.00	~~0.02~~.00	~~0.01~~.00	~~0~~.01
2000.	~~0~~.01	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	~~0.01~~.00	.01~~0.02~~	~~0.01~~.02	~~0~~.01	~~0~~.01	~~0.01~~.00	~~0.01~~.00	~~0.01~~.00	~~0.01~~.00	~~0~~.01

WLS COL 2.3-2

TABLE 2.3-280

MAXIMUM SALT DRIFT DEPOSITION RATE ($KG/KM^2/MO$)

Spring

Downwind	Plume Headed																
Distance (m)	S	SSW	SW	WSW	W	WNW	NW	NNW	N	NNE	NE	ENE	E	ESE	SE	SSE	~~SAll~~ Avg.
100.	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00
200.	~~0.18~~.15	~~0.08~~.06	~~0.08~~.07	~~0.07~~.06	~~0.12~~.09	~~0.06~~.05	~~0.08~~.06	~~0.27~~.22	~~0.92~~.79	~~0.60~~.46	~~0.17~~.13	~~0.07~~.06	~~0.13~~.11	~~0.33~~.25	~~0.16~~.12	~~0.20~~.16	~~0.22~~.18
300.	~~0.00~~.04	~~0.00~~.02	~~0.00~~.02	~~0.00~~.02	~~0.00~~.03	~~0.00~~.02	~~0.00~~.02	~~0.00~~.08	~~0.00~~.23	~~0.00~~.17	~~0.00~~.05	~~0.00~~.02	~~0.00~~.03	~~0.00~~.09	~~0.00~~.04	~~0.00~~.06	~~0.00~~.06
400.	~~0.00~~.03	~~0~~.00	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	.01~~0.00~~	~~0.00~~.04	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	.02~~0.00~~	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~
500.	~~0.01~~.03	~~0~~.00	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	.01~~0.00~~	~~0.01~~.03	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	.02~~0.00~~	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~
600.	~~0.01~~.03	~~0~~.00	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	.01~~0.00~~	~~0.01~~.03	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	.02~~0.00~~	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~
700.	~~0.01~~.03	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	.01~~0.00~~	~~0.01~~.04	~~0.00~~.02	.01~~0.00~~	~~0~~.00	~~0~~.00	.02~~0.01~~	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~
800.	~~0.01~~.08	.01~~0.00~~	~~0.00~~.02	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	.01~~0.00~~	~~0.01~~.08	~~0.00~~.03	.02~~0.00~~	.01~~0.00~~	~~0~~.00	~~0.00~~.03	.01~~0.00~~	~~0.00~~.02	~~0.00~~.02
900.	~~0.01~~.10	.01~~0.00~~	~~0.01~~.03	.02~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0.00~~.02	~~0.01~~.09	~~0.01~~.04	.02~~0.00~~	.01~~0.00~~	~~0~~.00	~~0.00~~.04	~~0.00~~.02	~~0.00~~.03	~~0.00~~.03
1000.	~~0.01~~.09	~~0.00~~.01	~~0.01~~.03	~~0.00~~.02	~~0.00~~.01	~~0.00~~.00	~~0.00~~.00	~~0.00~~.02	~~0.01~~.07	~~0.01~~.04	~~0.01~~.02	~~0.00~~.01	~~0.00~~.00	~~0.00~~.04	~~0.01~~.02	~~0.00~~.03	~~0.01~~.02
1100.	~~0~~.04	.01~~0.00~~	.02~~0.01~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.01	~~0.02~~.03	.03~~0.01~~	~~0~~.01	.01~~0.00~~	~~0~~.00	~~0.01~~.02	~~0~~.01	~~0~~.01	~~0~~.01
1200.	~~0~~.04	.01~~0.00~~	.02~~0.01~~	~~0~~.01	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.01	~~0.02~~.04	.03~~0.01~~	~~0~~.01	.01~~0.00~~	~~0~~.00	.01~~0.02~~	~~0~~.01	~~0~~.01	~~0~~.01

WLS COL 2.3-2

TABLE 2.3-280

MAXIMUM SALT DRIFT DEPOSITION RATE (KG/KM^2/MO)

1300.	~~0~~.04	.01~~0.00~~	.02~~0.01~~	~~0~~.01	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.01	~~0.02~~.04	.03~~0.01~~	.02~~0.00~~	.01~~0.00~~	~~0~~.00	.01~~0.02~~	~~0~~.01	~~0~~.01	~~0~~.01
1400.	~~0~~.~~03~~04	.01~~0.00~~	.02~~0.01~~	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.01	~~0.02~~.04	.03~~0.01~~	.02~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.01	~~0~~.01	~~0~~.01	~~0~~.01
1500.	~~0~~.~~01~~04	.01~~0.00~~	.02~~0.01~~	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	.01~~0.00~~	~~0.01~~.04	.03~~0.01~~	.02~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.01	~~0~~.01	~~0~~.01	.01~~0.00~~
1600.	~~0.01~~.03	.01~~0.00~~	.02~~0.01~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	.01~~0.00~~	~~0.01~~.03	~~0.01~~.02	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.01	~~0~~.01	~~0~~.01	.01~~0.00~~
1700.	~~0.01~~.00	.01~~0.00~~	~~0~~.01	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.01	~~0.01~~.02	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.01	~~0.01~~.00	~~0.01~~.00	.01~~0.00~~
1800.	~~0.01~~.00	.01~~0.00~~	~~0~~.01	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.01	~~0~~.01	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0.01~~.00	~~0.01~~.00	~~0.01~~.00	~~0~~.00
1900.	~~0.01~~.00	.01~~0.00~~	~~0~~.01	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.01	~~0~~.01	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0.01~~.00	~~0.01~~.00	~~0.01~~.00	~~0~~.00
2000.	~~0.01~~.00	.01~~0.00~~	.01~~0.00~~	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.00	~~0~~.01	~~0~~.01	.01~~0.00~~	~~0~~.00	~~0~~.00	~~0.01~~.00	~~0.00~~.00	~~0.01~~.00	~~0~~.00

Notes:

1. ~~Bold~~ Shaded Values indicate on-site locations
2. SACTI modeling based on surface meteorological data from CLT, U. S. Department of Commerce, National Oceanic and Atmospheric Administration National Climatic Data Center (NCDC), "Integrated Surface Hourly", 2001-2005, Charlotte, NC.
3. Mixing height from George C. Holzworth, "Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States", Reference 219.

Attachment 5

Revision to COLA Part 2

FSAR Chapter 2

Figure 2.1-201

Figure 2.3-274

Figure 2.3-275

Figure 2.3-276

Figure 2.3-277

Figure 2.3-278

Figure 2.3-279

Figure 2.4.1-201

Figure 2.4.1-202

Figure 2.4.3-201

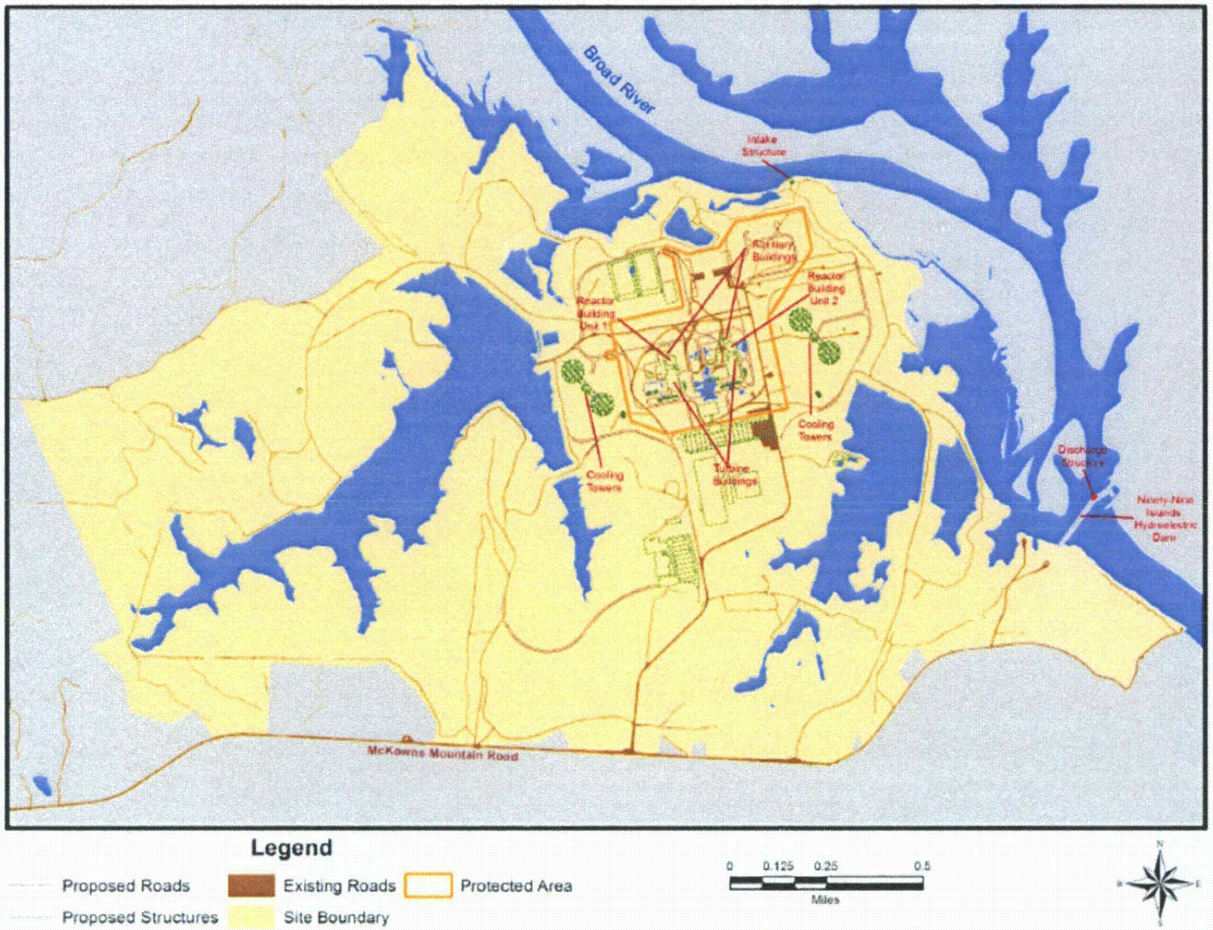
Figure 2.4.3-239

Figure 2.4.4-201

Figure 2.4.4-202

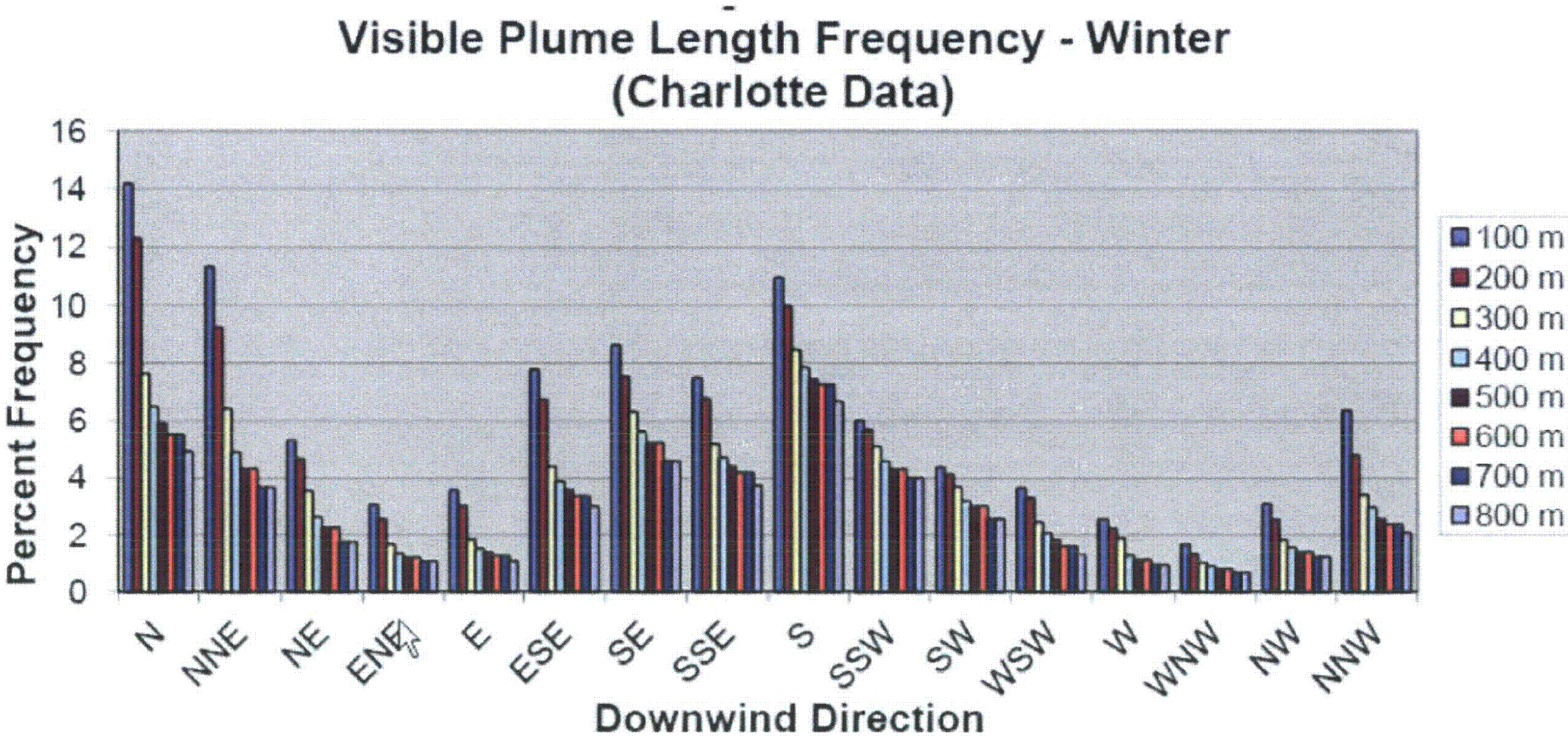
Figure 2.4.5-201

Figure 2.4.12-206



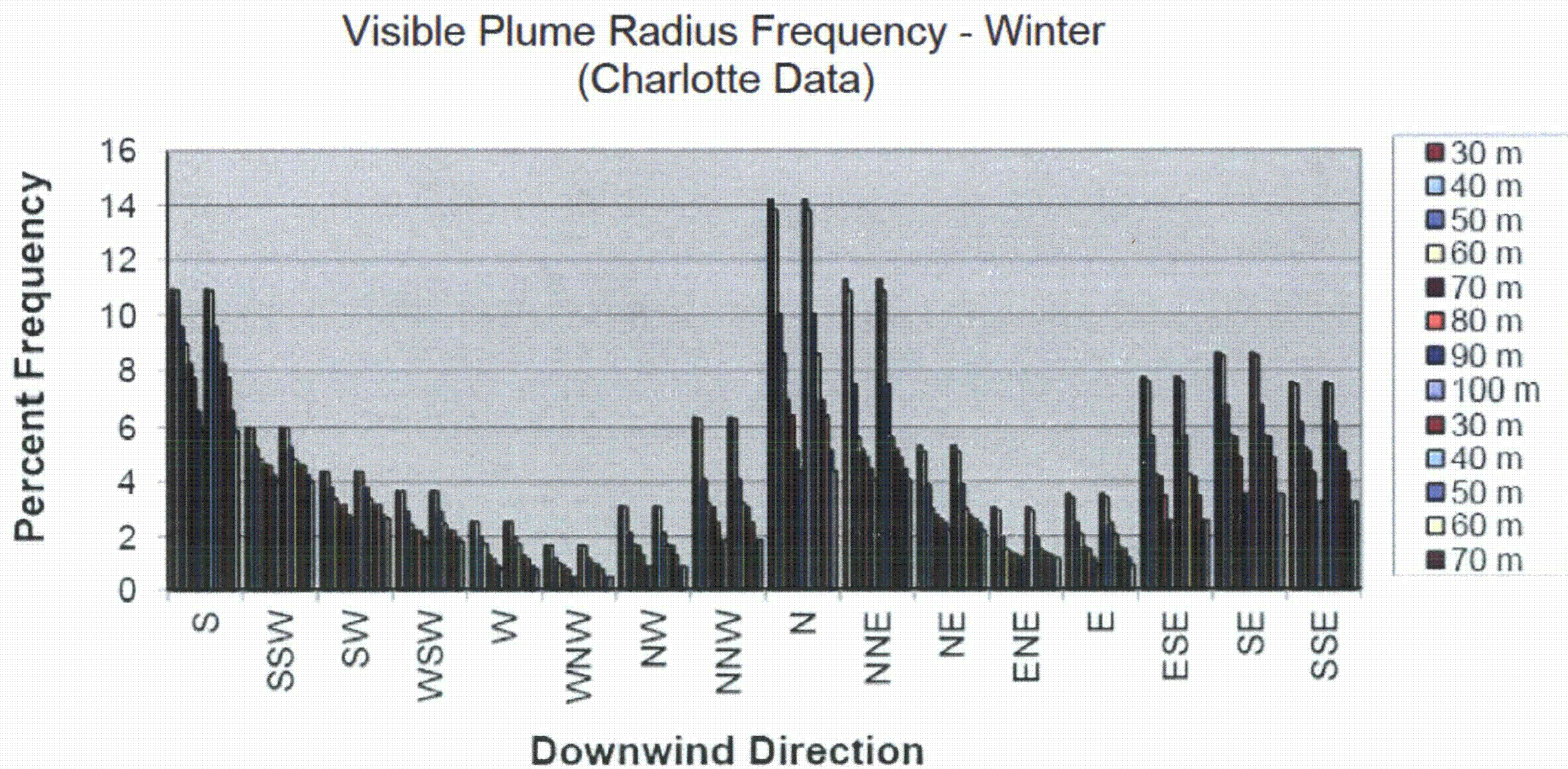
WLS COL 2.1-1

WILLIAM STATES LEE III NUCLEAR STATION UNITS 1 & 2
Site Plot Plan FIGURE 2.1-201



WLS COL 2.3-2

WILLIAM STATES LEE III NUCLEAR STATION UNITS 1 & 2
Visible Plume Length Frequency - Winter Cooling Tower FIGURE 2.3-274

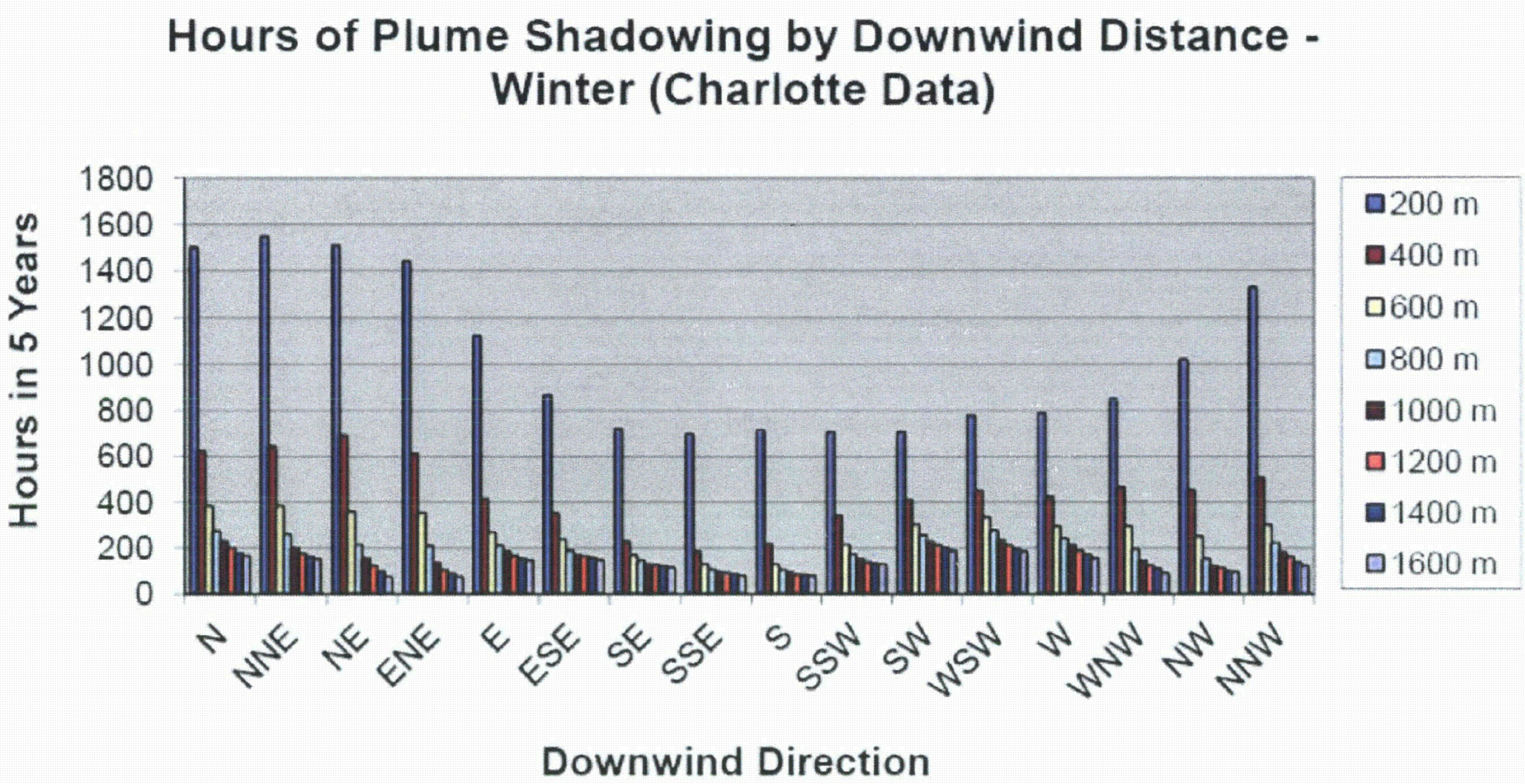


WLS COL 2.3-2

WILLIAM STATES LEE III
NUCLEAR STATION UNITS 1 & 2

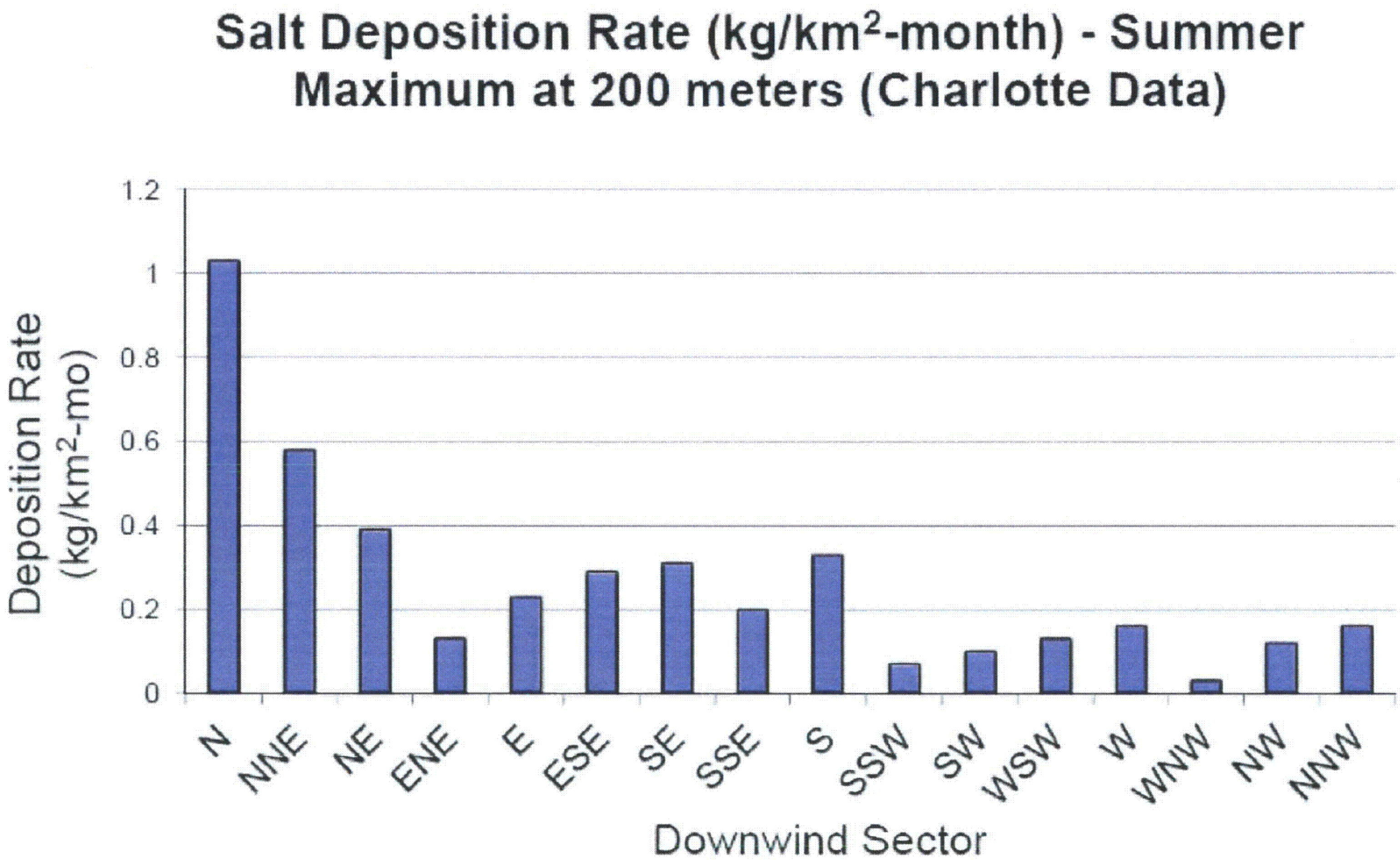
Visible Plume Radius Frequency - Winter
Cooling Tower

FIGURE 2.3-275



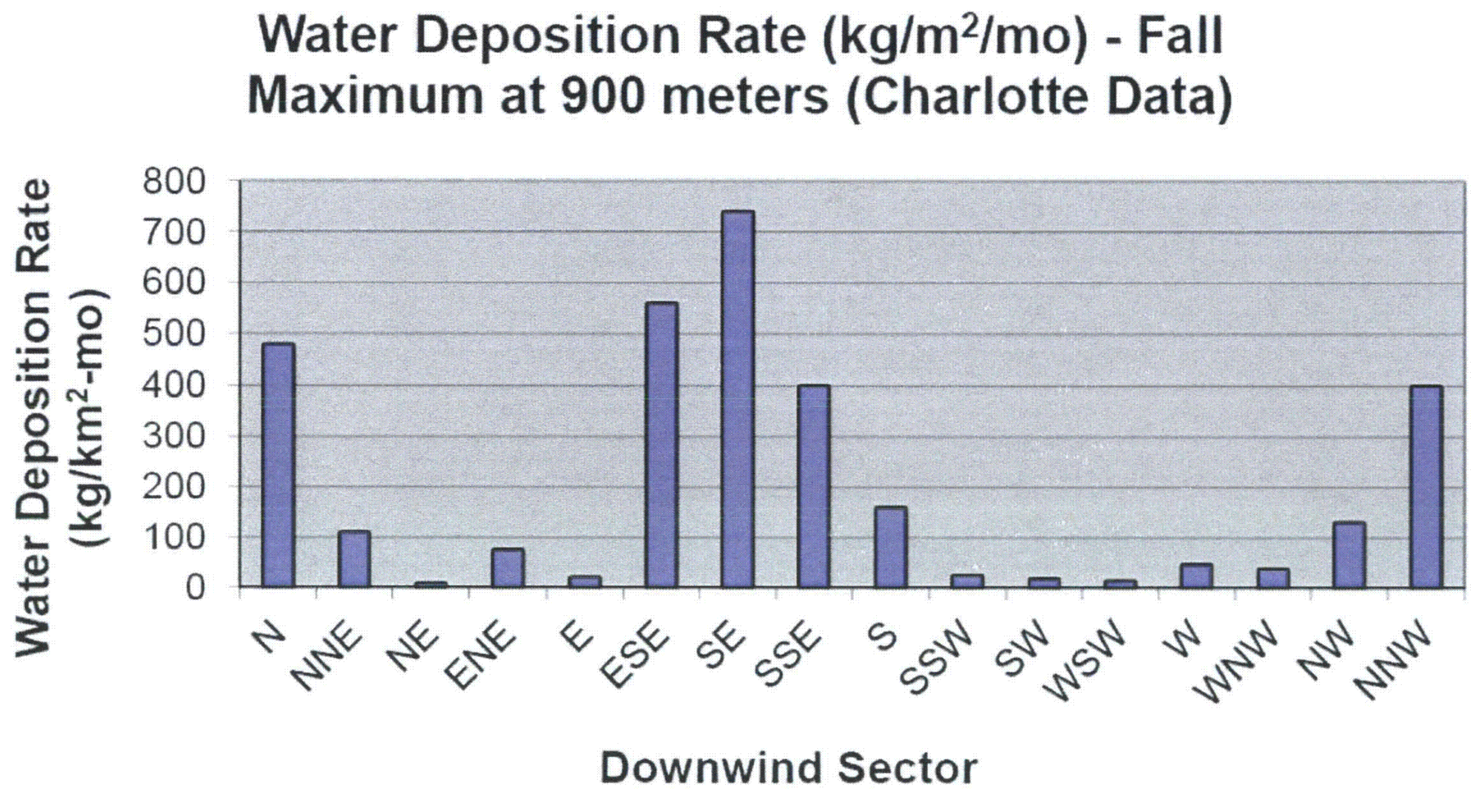
WLS COL 2.3-2

WILLIAM STATES LEE III NUCLEAR STATION UNITS 1 & 2
Hours of Plume Shadowing by Downwind Distance - Winter Cooling Tower FIGURE 2.3-276



WLS COL 2.3-2

WILLIAM STATES LEE III NUCLEAR STATION UNITS 1 & 2
Salt Deposition Rate (kg/km^2-month) - Summer Maximum at 200 meters Cooling Tower FIGURE 2.3-277



WLS COL 2.3-2

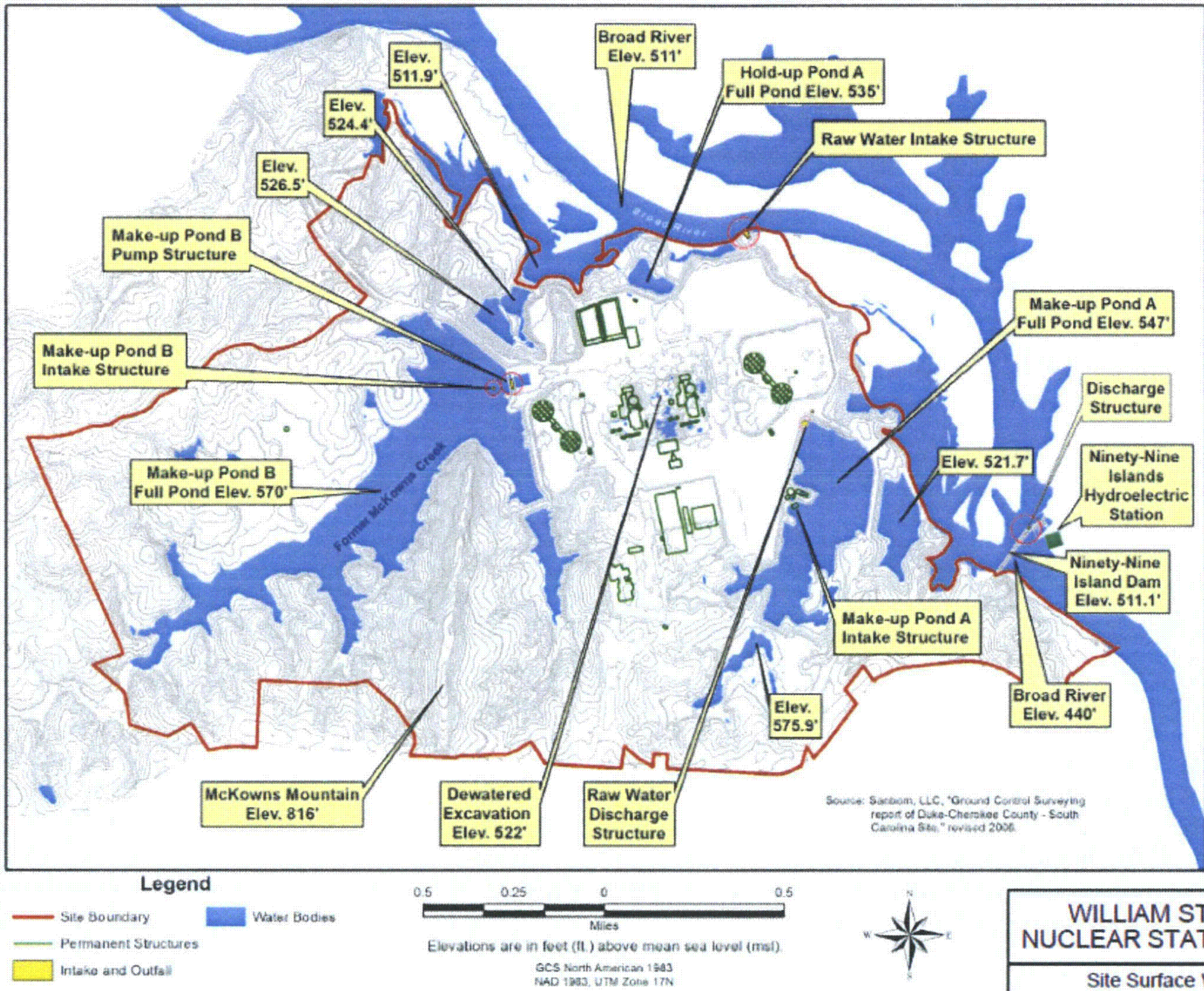
WILLIAM STATES LEE III
NUCLEAR STATION UNITS 1 & 2

Water Deposition Rate - Fall
Cooling Tower

FIGURE 2.3-278

FSAR Figure 2.3-279

DELETED



WILLIAM STATES LEE III
NUCLEAR STATION UNITS 1 & 2

Site Surface Water Features

WLS COL 2.4-1

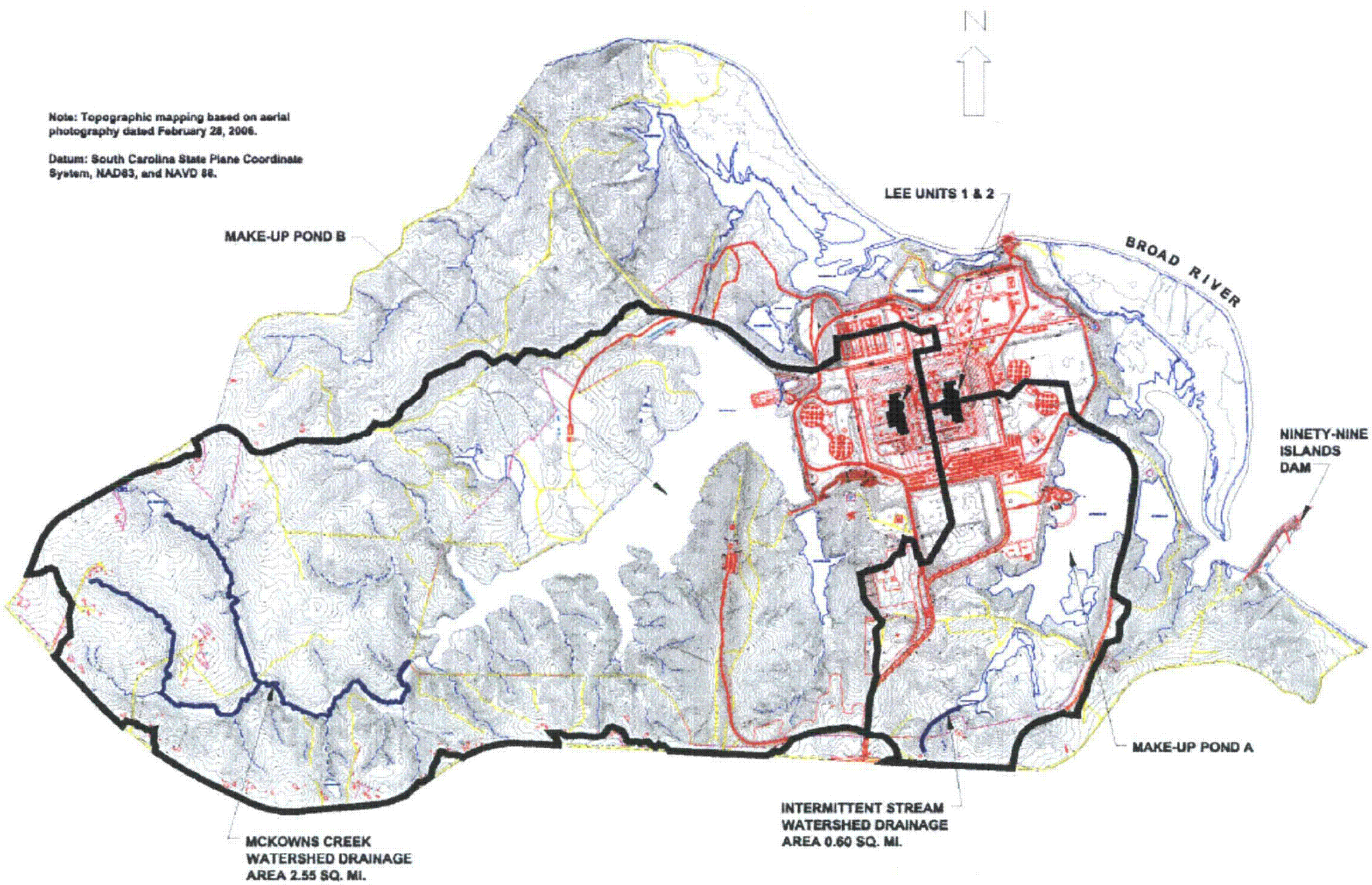
Datum: South Carolina State Plane Coordinate System
NAD 83, NAVD 88, UTM Zone 17N

FIGURE 2.4.1-201

Figure 2.4.1-202

DELETED

(Figure deleted consistent with COLA Part 2, FSAR, Ch. 2, Subsection 2.1.1.4 text)

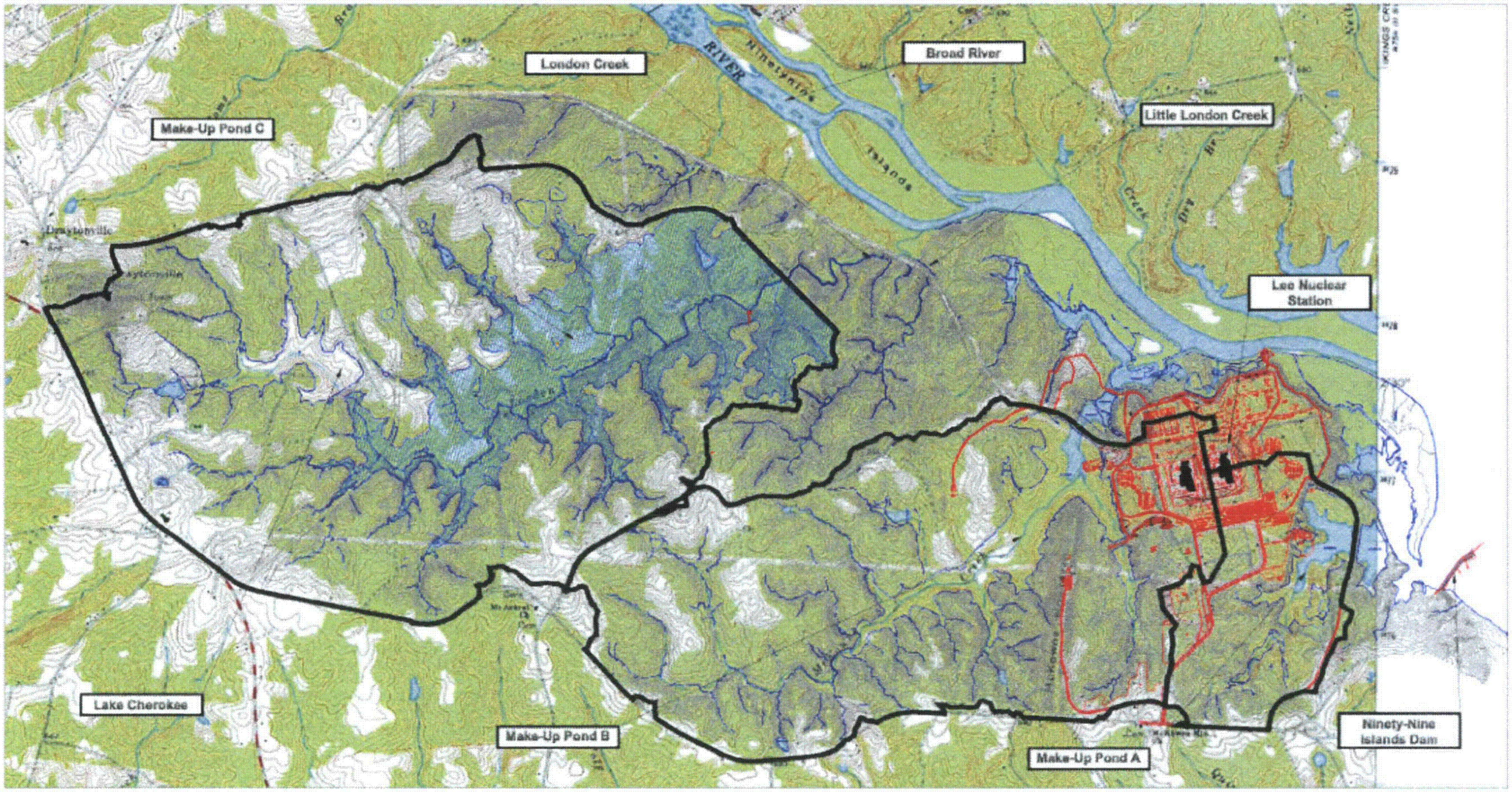


WLS COL 2.4-2

WILLIAM STATES LEE III
NUCLEAR STATION UNITS 1 & 2

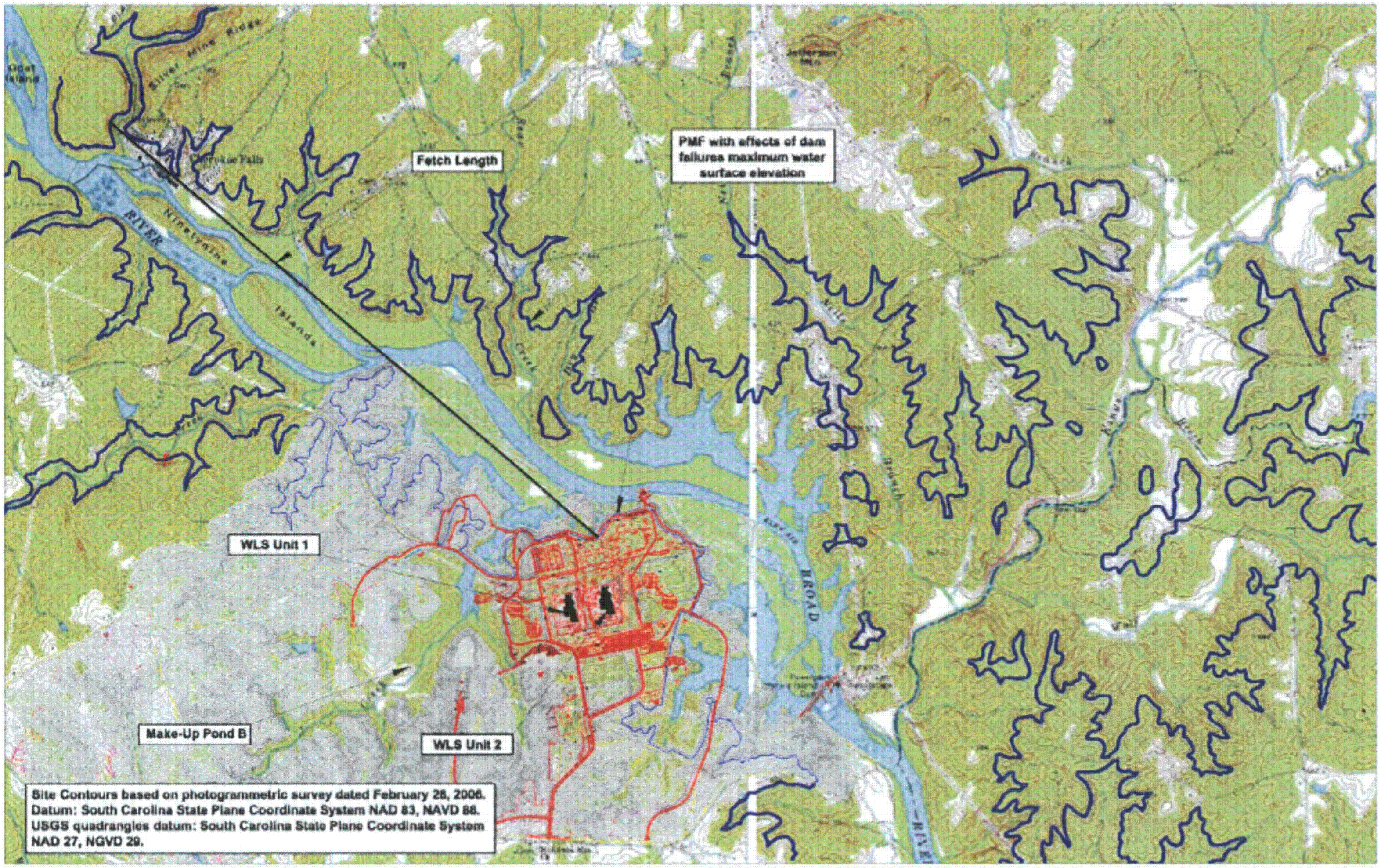
Make-Up Pond A and
Make-Up Pond B Watersheds

FIGURE 2.4.3-201



WLS COL 2.4-2

WILLIAM STATES LEE III NUCLEAR STATION UNITS 1 & 2
Make-Up Pond C Watershed
FIGURE 2.4.3-239

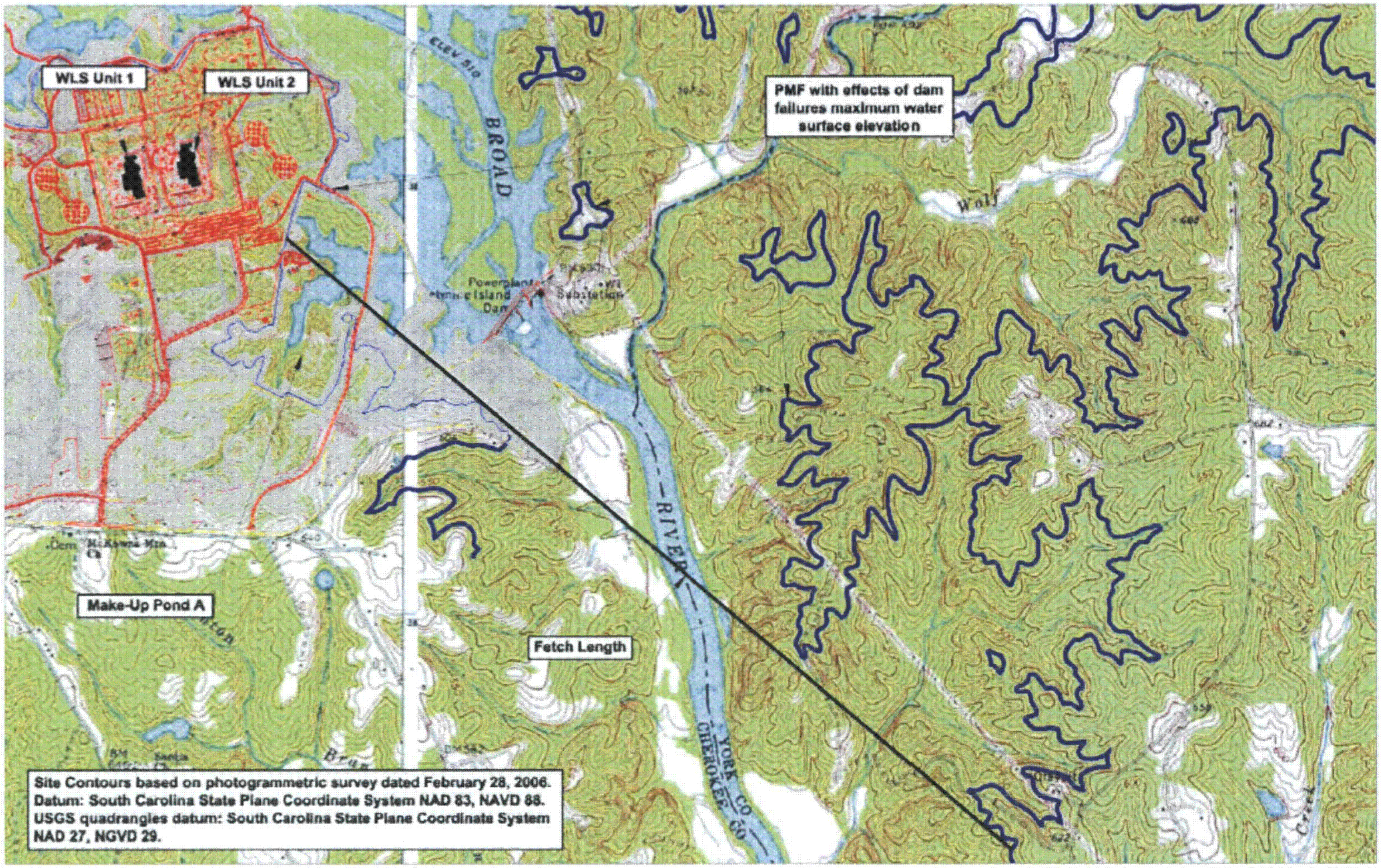


WLS COL 2.4-2

WILLIAM STATES LEE III
NUCLEAR STATION UNITS 1 & 2

Broad River Coincident Wind Wave Fetch Length

FIGURE 2.4.4-201

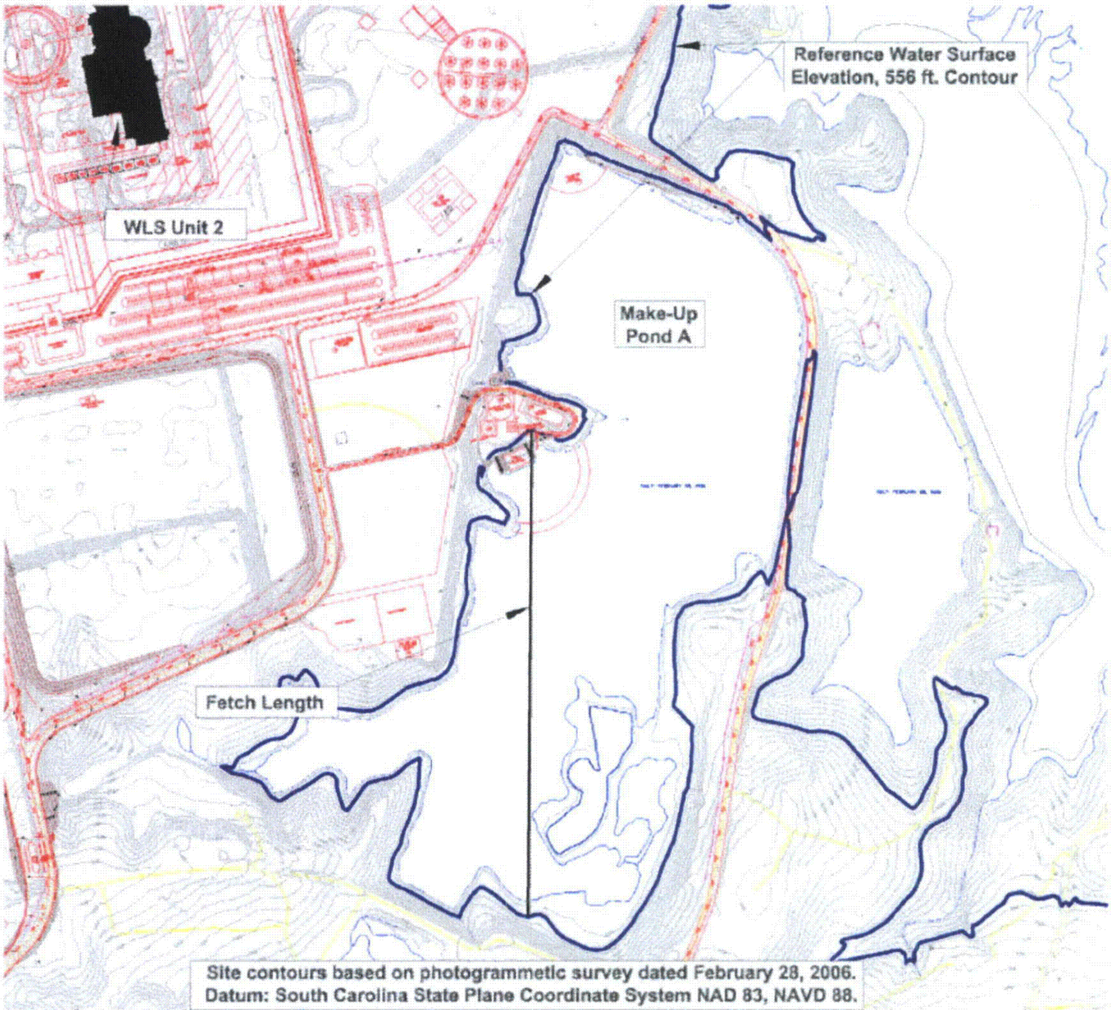


WLS COL 2.4-2

WILLIAM STATES LEE III
NUCLEAR STATION UNITS 1 & 2

Make-Up Pond A Coincident Wind Wave Fetch Length

FIGURE 2.4.4-202

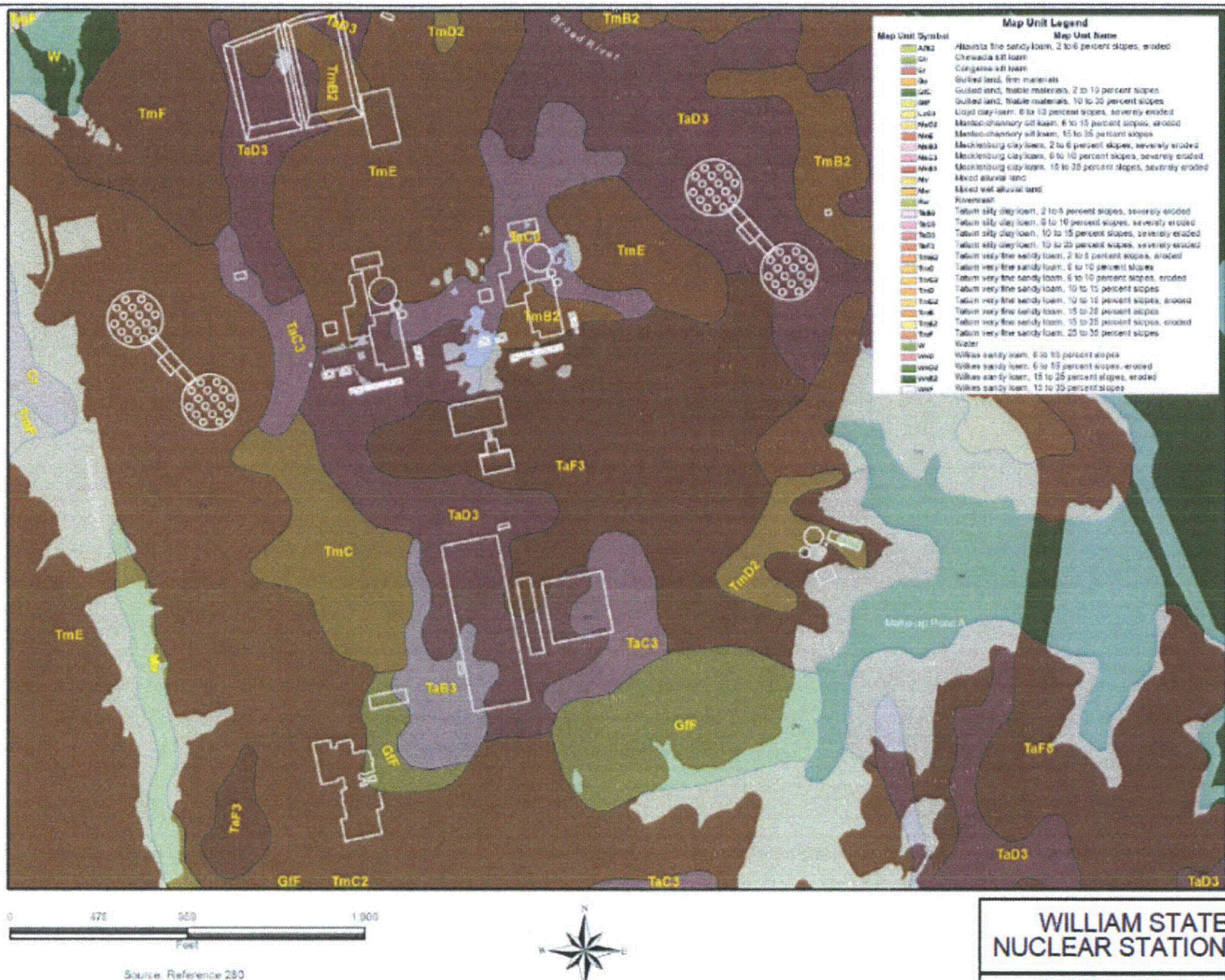


WILLIAM STATES LEE III
NUCLEAR STATION UNITS 1 & 2

Make-Up Pond A
Extreme Wind Speed Fetch Length

FIGURE 2.4.5-201

WLS COL 2.4-2



WILLIAM STATES LEE III NUCLEAR STATION UNITS 1 & 2
Soil Map of the Lee Nuclear Site
FIGURE 2.4.12-206

Datum: GCS North American 1983
Projection: NAD 1983 UTM Zone 17N

WLS COL 2.4-4

Attachment 6

Revision to COLA Part 2

FSAR Chapter 2

Appendix 2DD

COLA Part 2, FSAR Chapter 2, Appendix 2DD is revised from the sub-heading 'Plume Length and Height' through the end of 'Salt Deposition' as follows:

Plume Length and Height

The SACTI visible plume results for the Charlotte-Douglas (CLT), Greenville-Spartanburg (GSP), and Lee Nuclear Station onsite meteorological data are summarized in Tables 2DD-202, 2DD-203, and 2DD-204, respectively. Table 2DD-205 provides a comparison of the frequency of occurrence of visible plume dimensions for the three meteorological databases. These tables provide a range of frequency of occurrence of visible plume dimensions (i.e., length, width, and height) in meters from the towers for each season of the year and for the annual period.

On an annual average basis, 40 percent of the plumes reach 400-500 m downwind for all three meteorological databases. Twenty percent of the plumes reach a length of 4900~~4600~~ m using the CLT database, 6400~~5400~~m using the GSP database and 1100~~800~~m using the Lee Nuclear Station data. This is the only case in which the plume length based on GSP data exceeds the length using the CLT data. On an annual average basis, 40 percent of the plumes reach a maximum of 230~~170~~ m in height for the CLT database (190~~160~~ m for GSP and 130~~100~~ m for Lee Nuclear Station). The visible plumes predicted with the Lee Nuclear Station database are noticeably lower in height compared to the NWS databases. This could be due to higher wind speeds calculated by SACTI at plume height, which cause the plumes to bend over further, or a result of the greater frequency of G stability class in the Lee Nuclear Station meteorological dataset. Comparison of the plume length and height shows that CLT gives a reasonably conservative estimate of the plume extent offsite.

The largest visible plumes shown in Tables 2DD-202, 2DD-203, and 2DD-204 reach a distance of 9,900 m downwind of the towers and a height of approximately 1,700 m and occur approximately 1 percent of the time. The longer plumes occur a little less frequently with the Lee Nuclear Station database compared to the NWS databases, with the approximately 5200~~8000~~-meter visible plumes occurring less than 20 percent of the time. Note that the longest visible plumes occur during conditions of high ambient relative humidity that are conducive to natural fog formation and poor visibility conditions. Under these conditions, the atmosphere is either already at or near saturation. Therefore, the largest plumes may not be discernable from the ambient fogging conditions and present less of an aesthetic impact.

The SACTI results for three different meteorological databases (i.e., CLT, GSP, and Lee Nuclear Station) indicate that the majority (i.e., >50 percent) of the visible plumes do not exceed~~extend less than~~ 1,000 m downwind and ~~200~~ 300 m in height. ~~It also shows that t~~The longest and largest visible plumes occur in the winter with smaller plumes occurring in the spring and fall seasons due to the cold air in winter causing condensation of the moist plumes more readily than in the warmer seasons (i.e., cold air has a much smaller capacity of holding water vapor). The summer visible plumes are noticeably smaller since warmer ambient air results in less condensation of the moist plumes, due to its ability to maintain higher water vapor concentrations.

Plume Shadowing

Consistent with the visible plume frequency results, the most plume shadowing occurs in the winter season with lesser amounts in the spring and fall and the least amounts in the summer. Plume shadowing effects reach 800~~1,000~~ m downwind less than 2 percent of the time with the farthest impact reaching approximately 6000~~4,600~~ m in the winter for approximately 0.5% of the time (i.e., CLT meteorological database). The farthest extent of the winter plume shadowing effects is smaller for the GSP and Lee Nuclear Station meteorological databases with distances of 3,800~~2,600~~ m and 3,600~~2,400~~ m, respectively.

On an annual average basis, plume shadowing effects reach 1,200~~1,000~~ m downwind 1 percent of the time with the effects reaching 4,000~~3,200~~ m 0.5 percent of the time using the CLT meteorological database. The annual average shadowing effects are less extensive for the GSP and Lee Nuclear Station meteorological databases with 1 percent distances of 800~~600~~ m and 800 m and 0.5 percent distances of 1,800~~1,200~~ m and 2,000~~1,400~~ m, respectively.

Ground-level Fogging/Icing

The SACTI output for the CLT, ~~and~~ GSP and Lee Nuclear Station data shows that there are ~~virtually~~ no occurrences of ~~ground~~ ground-level or plume fogging. ~~Plume fogging occurred almost entirely in the Spring with the CLT meteorological data, with periods of fogging ranging from 0.5 to 2 hours in the south sector and a maximum of 2 hours at 500 m. Other sectors impacted were SSW (200 m) and SW (300-700 m) with 0.1 hour to 1.0 hour of fogging. Using GSP meteorological data, fogging occurred only in the Spring and Winter with 1.0 to 2.0 hours in the Spring in the SW downwind sector over a range of 300-700 m and 0.5 to 1.0 hour in the Winter in two downwind sectors (i.e., NNE and ENE).~~

~~The SACTI results for the Lee Nuclear Station data indicate that the maximum number of hours of ground level fogging is 362 hours over the 2-year 2006-2007 meteorological database (i.e., 2% of the time) for all directions occurring at a downwind distance of 400 m. However, many of those fogging occurrences are within the property boundary (i.e., onsite) leaving a maximum of 82 hours per 2-year period (i.e., 0.5% of the time) at a downwind distance of 500 m~~. The SACTI output for the CLT, GSP and Lee Nuclear Station meteorological data indicate no occurrences of ~~ground~~ ground-level icing.

Salt Deposition

The SACTI output for CLT, GSP, and Lee Nuclear Station was also reviewed to determine whether or not a CLT salt deposition analysis was valid. The CLT data was determined valid for use in the Lee Nuclear Station salt deposition assessment since it produced bounding results when compared to GSP and Lee Nuclear Station data. The maximum annual salt drift deposition amounts are over ~~five~~ two times smaller for the GSP and Lee Nuclear Station meteorological database than for CLT, whereby the maximum annual concentrations amounts are 0.18~~0.16~~ kg/km^2/month (0.000018~~16~~ mg/cm^2/month) for ~~both~~ GSP and 0.26 kg/km^2/month (0.000026 mg/cm^2/month) for the Lee Nuclear Station and 0.71~~0.82~~ kg/km^2/month (0.000071~~082~~ mg/cm^2/month) for CLT. Maximum seasonal and annual salt deposition impacts occurred at distances of 200~~-300~~m using CLT, ~~and~~ 400m GSP dataset~~s~~, and ~~600-700~~500m using the WLS onsite meteorological dataset. Impacts were larger with the CLT meteorological data, thus CLT is appropriate to use for design purposes.

Water Deposition

The highest water deposition rate from among the three meteorological databases is 960 kg/km^2/month in the fall for the Lee Nuclear Station data. This amount of water is the rainfall equivalent of 0.00004 inches per month based on the density of water (i.e., 1,000 kg/m^3), which is a trivial amount compared to the normal monthly precipitation at Charlotte of 3 to 4 inches. The NWS considers precipitation of less than 0.01 inches as a trace amount. While Lee Nuclear Station meteorological data results in a slightly higher water deposition rate than Charlotte (740 kg/km^2/month) the total rainfall equivalents from both datasets are still insignificant.

COLA Part 2, FSAR Chapter 2, Appendix 2DD, Table 2DD-202 is revised as follows:

TABLE 2DD-202
Visible Plume Frequency of Occurrence by Season Using
2001-2005 Charlotte Meteorological Data (All wind directions)

Percent Frequency of Occurrence

	100%	80%	60%	40%	20%	1%
Winter: ~~**Winter:**~~						
length (m) ~~length (m)~~	100 ~~100~~	300 ~~200~~	500 ~~400~~	3,300 ~~900~~	5,900 ~~5,100~~	9,900 ~~9,900~~
height (m) ~~height (m)~~	60 ~~40~~	160 ~~120~~	200 ~~160~~	1,200 ~~370~~	1,400 ~~1,400~~	1,600 ~~1,400~~
radius (m) ~~radius (m)~~	30 ~~25~~	50 ~~45~~	65 ~~60~~	320 ~~85~~	540 ~~520~~	1,200 ~~1,400~~
Spring: ~~**Spring:**~~						
length (m) ~~length (m)~~	100 ~~100~~	200 ~~200~~	300 ~~250~~	500 ~~300~~	5,100 ~~4,800~~	9,900 ~~9,900~~
height (m) ~~height (m)~~	60 ~~40~~	150 ~~110~~	170 ~~120~~	200 ~~160~~	1,400 ~~1,400~~	1,600 ~~1,400~~
radius (m) ~~radius (m)~~	30 ~~25~~	45 ~~35~~	50 ~~45~~	65 ~~60~~	470 ~~470~~	900 ~~650~~
Summer: ~~**Summer:**~~						
length (m) ~~length (m)~~	100 ~~100~~	200 ~~150~~	250 ~~200~~	300 ~~250~~	700 ~~600~~	9,800 ~~9,800~~
height (m) ~~height (m)~~	60 ~~40~~	150 ~~110~~	170 ~~120~~	190 ~~130~~	350 ~~330~~	1,600 ~~1,400~~
radius (m) ~~radius (m)~~	30 ~~25~~	40 ~~35~~	45 ~~40~~	50 ~~45~~	85 ~~75~~	880 ~~650~~
Fall: ~~**Fall:**~~						
length (m) ~~length (m)~~	100 ~~100~~	250 ~~200~~	300 ~~250~~	500 ~~400~~	4,900 ~~4,700~~	9,900 ~~9,900~~

TABLE 2DD-202
Visible Plume Frequency of Occurrence by Season Using
2001-2005 Charlotte Meteorological Data (All wind directions)

Percent Frequency of Occurrence

	100%	**80%**	**60%**	**40%**	**20%**	**1%**
height (m) ~~height (m)~~	60 ~~40~~	150 ~~110~~	170 ~~125~~	220 ~~160~~	1,400 ~~1,400~~	1,600 ~~1,400~~
radius (m) ~~radius (m)~~	30 ~~25~~	45 ~~35~~	50 ~~45~~	70 ~~60~~	420 ~~435~~	1,200 ~~1,400~~
Annual: ~~**Annual:**~~						
length (m) ~~length (m)~~	100 ~~100~~	200 ~~200~~	300 ~~250~~	500 ~~400~~	4,900 ~~4,600~~	9,900 ~~9,900~~
height (m) ~~height (m)~~	60 ~~40~~	150 ~~110~~	180 ~~120~~	230 ~~170~~	1,400 ~~1,400~~	1,600 ~~1,400~~
radius (m) ~~radius (m)~~	30 ~~25~~	45 ~~35~~	50 ~~40~~	70 ~~65~~	435 ~~435~~	1,200 ~~1,400~~

COLA Part 2, FSAR Chapter 2, Appendix 2DD, Table 2DD-203 is revised as follows:

TABLE 2DD-203
Visible Plume Frequency of Occurrence by Season Using
2001-2005 Greenville-Spartanburg Meteorological Data (All wind directions)
Percent Frequency of Occurrence

	100%	80%	60%	40%	20%	1%
Winter: ~~Winter:~~						
length (m) ~~length (m)~~	<100 ~~<100~~	300 ~~250~~	500 ~~400~~	900 ~~700~~	9,600 ~~9,700~~	9,900 ~~9,900~~
height (m) ~~height (m)~~	<10 ~~<10~~	120 ~~80~~	190 ~~160~~	340 ~~290~~	1,400 ~~1,400~~	1,700 ~~1,700~~
radius (m) ~~radius (m)~~	<5 ~~<5~~	45 ~~35~~	60 ~~60~~	85 ~~80~~	570 ~~560~~	870 ~~710~~
Spring: ~~Spring:~~						
length (m) ~~length (m)~~	100 ~~100~~	200 ~~200~~	300 ~~250~~	500 ~~300~~	5,600 ~~5,300~~	9,900 ~~9,800~~
height (m) ~~height (m)~~	40 ~~30~~	100 ~~75~~	120 ~~85~~	170 ~~120~~	1,400 ~~1,400~~	1,700 ~~1,700~~
radius (m) ~~radius (m)~~	25 ~~20~~	35 ~~30~~	40 ~~35~~	55 ~~55~~	420 ~~390~~	870 ~~710~~
Summer: ~~Summer:~~						
length (m) ~~length (m)~~	100 ~~100~~	200 ~~200~~	250 ~~250~~	300 ~~300~~	700 ~~600~~	9,900 ~~9,800~~
height (m) ~~height (m)~~	60 ~~40~~	100 ~~75~~	110 ~~85~~	130 ~~90~~	250 ~~240~~	1,700 ~~1,600~~
radius (m) ~~radius (m)~~	25 ~~25~~	35 ~~27~~	40 ~~30~~	45 ~~35~~	75 ~~75~~	870 ~~710~~
Fall: ~~Fall:~~						
length (m) ~~length (m)~~	100 ~~100~~	200 ~~200~~	300 ~~250~~	500 ~~400~~	6,400 ~~5,400~~	9,900 ~~9,800~~
height (m) ~~height (m)~~	40 ~~40~~	100 ~~80~~	120 ~~85~~	190 ~~160~~	1,400 ~~1,400~~	1,700 ~~1,600~~

TABLE 2DD-203
Visible Plume Frequency of Occurrence by Season Using
2001-2005 Greenville-Spartanburg Meteorological Data (All wind directions)
Percent Frequency of Occurrence

	100%	**80%**	**60%**	**40%**	**20%**	**1%**
radius (m) ~~radius (m)~~	25 ~~25~~	35 ~~30~~	40 ~~35~~	60 ~~60~~	475 ~~475~~	870 ~~710~~
Annual: ~~**Annual:**~~						
length (m) ~~length (m)~~	100 ~~100~~	200 ~~200~~	300 ~~250~~	500 ~~400~~	6,400 ~~5,400~~	9,900 ~~9,800~~
height (m) ~~height (m)~~	40 ~~40~~	100 ~~80~~	120 ~~85~~	190 ~~160~~	1,400 ~~1,400~~	1,700 ~~1,600~~
radius (m) ~~radius (m)~~	25 ~~25~~	35 ~~30~~	40 ~~35~~	60 ~~60~~	475 ~~475~~	870 ~~710~~

COLA Part 2, FSAR Chapter 2, Appendix 2DD, Table 2DD-204 is revised as follows:

TABLE 2DD-204
Visible Plume Frequency of Occurrence by Season Using
2006-2007 Lee Onsite Meteorological Data (All wind directions)

Percent Frequency of Occurrence

	100%	80%	60%	40%	20%	1%
Winter: ~~**Winter:**~~						
length (m) ~~length (m)~~	100 ~~100~~	250 ~~300~~	300 ~~400~~	800 ~~500~~	5,200 ~~8,000~~	9,900 ~~9,900~~
height (m) ~~height (m)~~	40 ~~10~~	100 ~~80~~	120 ~~100~~	230 ~~120~~	980 ~~960~~	1,500 ~~1,400~~
radius (m) ~~radius (m)~~	25 ~~5~~	45 ~~35~~	50 ~~50~~	70 ~~60~~	425 ~~330~~	800 ~~640~~
Spring: ~~**Spring:**~~						
length (m) ~~length (m)~~	100 ~~100~~	200 ~~200~~	250 ~~250~~	300 ~~300~~	700 ~~450~~	9,800 ~~9,900~~
height (m) ~~height (m)~~	20 ~~10~~	90 ~~40~~	100 ~~70~~	110 ~~90~~	230 ~~120~~	1,500 ~~1,400~~
radius (m) ~~radius (m)~~	20 ~~5~~	30 ~~25~~	40 ~~30~~	45 ~~45~~	70 ~~60~~	790 ~~640~~
Summer: ~~**Summer:**~~						
length (m) ~~length (m)~~	100 ~~100~~	200 ~~150~~	250 ~~250~~	300 ~~300~~	500 ~~500~~	9,800 ~~9,900~~
height (m) ~~height (m)~~	20 ~~10~~	90 ~~40~~	100 ~~70~~	110 ~~90~~	160 ~~120~~	1,500 ~~1,400~~
radius (m) ~~radius (m)~~	20 ~~5~~	30 ~~20~~	35 ~~30~~	45 ~~35~~	55 ~~60~~	790 ~~640~~
Fall: ~~**Fall:**~~						
length (m) ~~length (m)~~	100 ~~100~~	200 ~~200~~	250 ~~300~~	300 ~~400~~	1,000 ~~700~~	9,800 ~~9,900~~

TABLE 2DD-204

Visible Plume Frequency of Occurrence by Season Using
2006-2007 Lee Onsite Meteorological Data (All wind directions)

Percent Frequency of Occurrence

	100%	**80%**	**60%**	**40%**	**20%**	**1%**
height (m) ~~height (m)~~	20 ~~10~~	90 ~~50~~	100 ~~80~~	120 ~~100~~	320 ~~190~~	1,500 ~~1,400~~
radius (m) ~~radius (m)~~	20 ~~5~~	35 ~~25~~	45 ~~35~~	50 ~~50~~	80 ~~70~~	790 ~~640~~
Annual: ~~**Annual:**~~						
length (m) ~~length (m)~~	100 ~~100~~	200 ~~200~~	300 ~~300~~	400 ~~400~~	1,100 ~~800~~	9,900 ~~9,900~~
height (m) ~~height (m)~~	20 ~~10~~	90 ~~50~~	100 ~~80~~	130 ~~100~~	350 ~~210~~	1,500 ~~1,400~~
radius (m) ~~radius (m)~~	20 ~~5~~	35 ~~25~~	45 ~~35~~	50 ~~50~~	85 ~~75~~	790 ~~640~~

COLA Part 2, FSAR Chapter 2, Appendix 2DD, Table 2DD-205 is revised as follows:

TABLE 2DD-205
Visible Plume Frequency of Occurrence by Season
Comparison of Meteorological Databases (All wind directions)
Percent Frequency of Occurrence

		100%	80%	60%	40%	20%	1%
Winter:							
length (m)	CLT GSP WLS	100 <100 100	300 300 250	500 500 300	3,300 900 800	5,900 9,600 5,200	9,900 9,900 9,900
height (m)	CLT GSP WLS	60 <10 40	160 120 100	200 190 120	1,200 340 230	1,400 1,400 980	1,600 1,700 1,500
radius (m)	CLT GSP WLS	30 <5 25	50 45 45	65 60 50	320 85 70	540 570 425	1,200 870 800
Spring:							
length (m)	CLT GSP WLS	100 100 100	200 200 200	300 300 250	500 500 300	5,100 5,600 700	9,900 9,900 9,800
height (m)	CLT GSP WLS	60 40 20	150 100 90	170 120 100	200 170 110	1,400 1,400 230	1,600 1,700 1,500
radius (m)	CLT GSP WLS	30 25 20	45 35 30	50 40 40	65 55 45	470 420 70	900 870 800
Summer:							
length (m)	CLT GSP WLS	100 100 100	200 200 200	250 250 250	300 300 300	700 700 500	9,800 9,900 9,800
height (m)	CLT GSP WLS	60 60 20	150 100 90	170 110 100	190 130 110	350 250 160	1,600 1,700 1,500
radius (m)	CLT GSP WLS	30 25 20	40 35 30	45 40 35	50 45 45	85 75 55	880 870 790
Fall:							
length (m)	CLT GSP WLS	100 100 100	250 200 200	300 300 250	500 500 300	4,900 6,400 1,000	9,900 9,900 9,800
height (m)	CLT GSP WLS	60 40 20	150 100 90	170 120 100	220 190 120	1,400 1,400 320	1,600 1,700 1,500
radius (m)	CLT GSP WLS	30 25 20	45 35 35	50 40 45	70 60 50	420 475 80	1,200 870 790

TABLE 2DD-205
Visible Plume Frequency of Occurrence by Season
Comparison of Meteorological Databases (All wind directions)
Percent Frequency of Occurrence

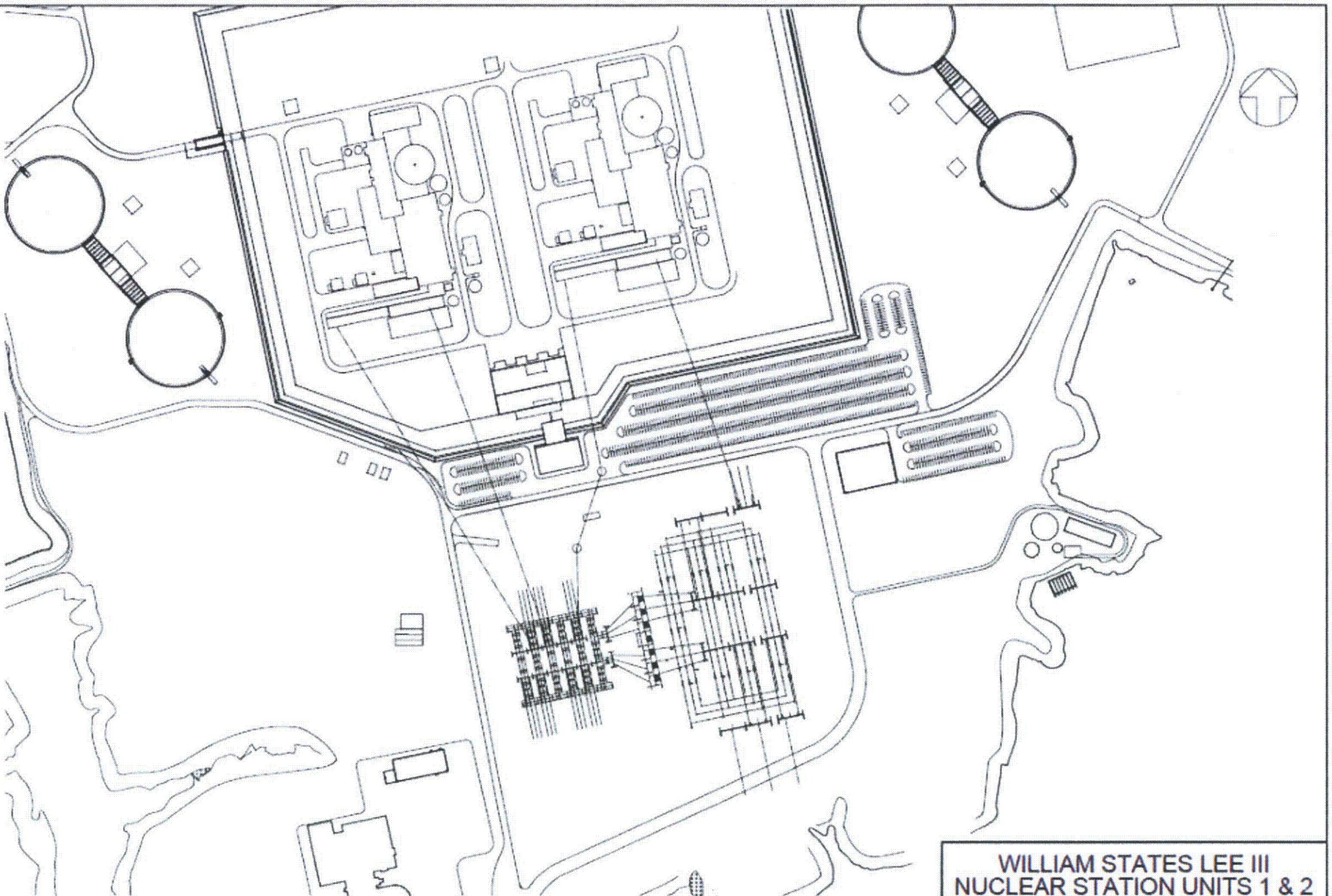
		100%	80%	60%	40%	20%	1%
Annual:							
length (m)	CLT	100	200	300	500	4,900	9,900
	GSP	100	200	300	500	6,400	9,900
	WLS	100	200	300	400	1,100	9,900
height (m)	CLT	60	150	180	230	1,400	1,600
	GSP	40	100	120	190	1,400	1,700
	WLS	20	90	100	130	350	1,500
radius (m)	CLT	30	45	50	70	435	1,200
	GSP	25	35	40	60	475	870
	WLS	20	35	45	50	85	790

Attachment 7

Revision to COLA Part 2

FSAR Chapter 8

Figure 8.2-202



WLS COL 8.2-1

WILLIAM STATES LEE III
NUCLEAR STATION UNITS 1 & 2

Switchyard General Arrangement

FIGURE 8.2-202

Attachment 8

Revision to COLA Part 2

FSAR Chapter 9

Subsection 9.2.11.2.1

COLA Part 2, FSAR Chapter 9, Subsection 9.2.11.2.1 is revised at the fifth paragraph as follows:

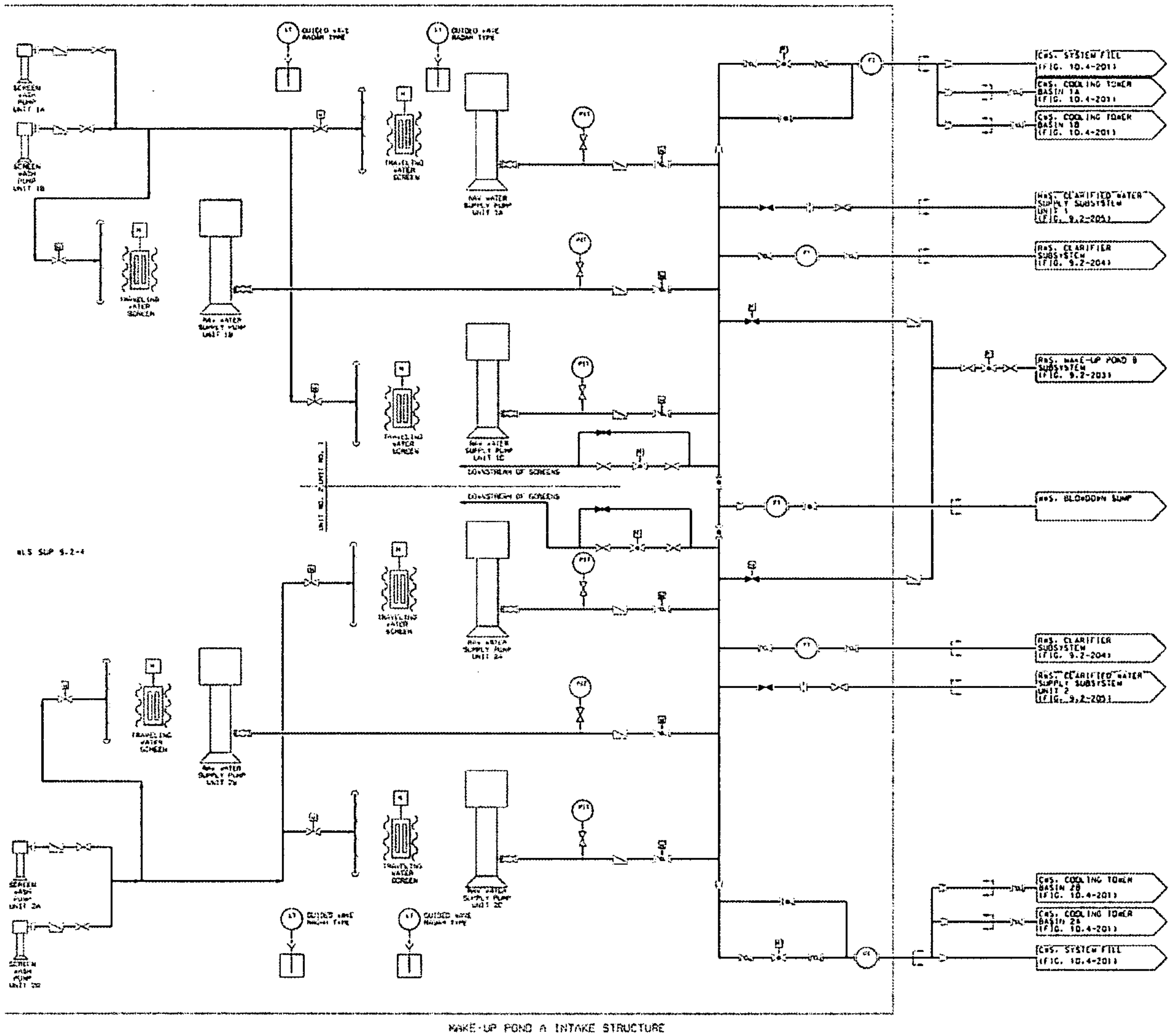
RWS underground piping is routed in the vicinity of the turbine building ~~uses the same routing as the CWS piping to the main condenser~~. Flooding in the yard area adjacent to the turbine building resulting from an RWS piping failure is bounded by a postulated piping failure in the CWS.

Attachment 9

Revision to COLA Part 2

FSAR Chapter 9

Figure 9.2-202



NOTES:
1. ALL MOTOR OPERATED VALVES SHALL HAVE MANUAL OPERATION HANDWHEELS.

WILLIAM STATES LEE III
NUCLEAR STATION UNITS 1 & 2

Raw Water System,
Raw Water Supply Subsystem

FIGURE 9.2-202

Attachment 10

Revision to COLA Part 2

FSAR Chapter 10

Subsection 10.4.5.2.1

Subsection 10.4.5.2.2

Subsection 10.4.5.2.3

Subsection 10.4.5.5

COLA Part 2, FSAR Chapter 10, Subsection 10.4.5.2.1 is revised at the third paragraph as follows:

WLS CDI

The circulating water system consists of ~~three~~ four 33-1/3-percent-capacity circulating water pumps, ~~three~~ two mechanical draft cooling towers, and associated piping, valves, and instrumentation.

COLA Part 2, FSAR Chapter 10, Subsection 10.4.5.2.2 is revised at the first three paragraphs as follows:

WLS CDI The ~~three~~ four circulating water pumps are vertical volute, dry pit, single-stage, mixed-flow pumps driven by electric motors. Three pumps are normally operating with one pump on standby. The pumps are mounted in a pump house~~, which is~~ with each pump in an individual pump bay. The pumps are connected to the cooling towers by discharge flumes ~~and a system of supply lines~~. The ~~three~~ four pump discharge lines combine in a single main header, at the pump house, with two discharge lines to the turbine building ~~rejoining in a common header~~ which connect~~s~~ to the two inlet water boxes of the condenser and ~~may also supply~~supplies cooling water to the TCS and condenser vacuum pump seal water heat exchangers. Each pump has ~~both suction and~~a discharge motor operated butterfly valve~~s~~ and stop logs for suction isolation. This permits isolation of ~~one~~ each pump for maintenance ~~and allows two-pump operation~~.

Cooling Towers

The ~~three~~ two mechanical draft cooling towers are round counter-flow type cooling towers with an impingement-type drift eliminator system, and a bypass system capable of passing approximately one half of the design circulating water flow to each tower directly to the cooling tower basin. Each cooling tower has ~~12~~ 16 induced draft fans located on the top deck of the cooling tower. The cooling tower hot water distribution system has the capability to isolate each tower cell.

Each cooling tower has a diameter of ~~245~~ approximately 360 feet and a height of ~~60~~ approximately 85 feet. The cooling towers are located on ~~berms with the top of the towers being 91 feet above~~ plant grade. The cooling towers are designed to cool the water to ~~91~~88°F with a hot water inlet temperature of ~~116.2~~113°F.

COLA Part 2, FSAR Chapter 10, Subsection 10.4.5.2.2 is revised under the subheading Piping and Valves as follows:

WLS CDI The underground portions of the circulating water system piping are constructed of prestressed concrete piping. The remainder of the piping is carbon steel ~~and is coated internally with a corrosive-resistant compound~~.

/LS COL 10.4-1 Condenser water box drains allow the condenser to be drained to the ~~blowdown sump~~turbine building sumps.

COLA Part 2, FSAR Chapter 10, Subsection 10.4.5.2.3 is revised at the first paragraph as follows:

WLS CDI The three normally operating circulating water pumps take suction from the cooling tower basin and circulate the water through the tube side of the main condenser with smaller flows to the TCS, the condenser vacuum pump seal water heat exchangers, and back through the piping discharge network to the cooling towers. See Figure ~~10-4-201~~10.4-201. The mechanical draft cooling towers cool the circulating water by discharging the water over a network of baffles in each tower. The water then falls through fill material to the basin beneath the tower and, in the process, rejects heat to the atmosphere.

COLA Part 2, FSAR Chapter 10, Subsection 10.4.5.5 is revised at the seventh paragraph as follows:

WLS CDI

Level instrumentation provided in the circulating water ~~pump house~~cooling tower basins activates makeup flow from the RWS to the basins of the cooling towers when required. Level instrumentation also annunciates a low-water level in the pump structure and a high-water level in the basins of the cooling towers.

Attachment 11

Revision to COLA Part 2

FSAR Chapter 10

Table 10.4-201

Table 10.4-202

TABLE 10.4-201
SUPPLEMENTAL MAIN CONDENSER DESIGN DATA

	Condenser Data	
WLS CDI	Circulating water flow	~~550,000~~600,000 gpm

Note: This table supplements DCD Table 10.4.1-1.

WLS COL 10.4-1

TABLE 10.4-202
DESIGN PARAMETERS FOR MAJOR CIRCULATING WATER SYSTEM COMPONENTS[a]

Circulating Water Pump	
Quantity	~~Three~~ Four per unit (Includes one spare)
Flow rate (gal/min)	~~190,000[b]~~ 210,000
Mechanical Draft Cooling Towers	
Quantity	~~Three~~ Two per unit
Approach temperature (°F)	~~10~~ 9
Inlet temperature (°F)	~~116.2[b]~~ 113
Outlet temperature (°F)	~~91~~ 88
Approximate temperature range (°F)	~~25.2~~ 25
Flow rate (gal/min)	~~560,050[b]~~ 614,600
Heat Transfer (Btu/hr)	~~$7{,}628 \times 10^6$~~ $7{,}624 \times 10^6$
Wind velocity design (mph)	110
Seismic design criteria per Uniform Building Code	

a) This table replaces DCD Table 10.4.5-1.

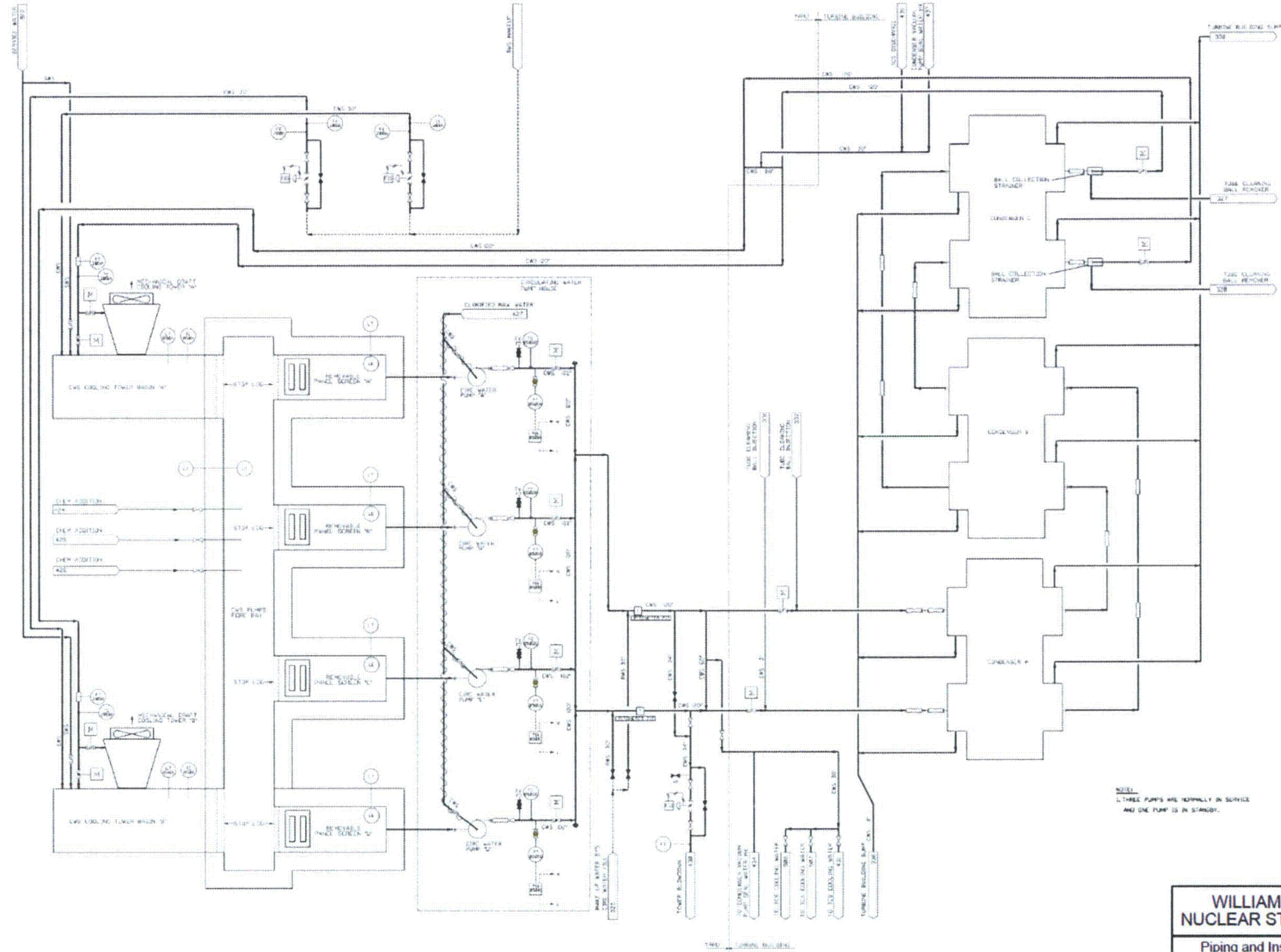
~~b) WLS site-specific values; all other values are the same as those provided in the DCD.~~

Attachment 12

Revision to COLA Part 2

FSAR Chapter 10

Figure 10.4-201



WLS CDI

WILLIAM STATES LEE III
NUCLEAR STATION UNITS 1 & 2

Piping and Instrumentation Drawing,
Circulating Water System, Sheet 1

FIGURE 10.4-201