



CHRISTOPHER M. FALLON
Vice President
Nuclear Development (Acting)

June 27, 2012

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

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Christopher.Fallon@duke-energy.com

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
Supplemental Response to Request for Additional Information (eRAI
5507)
Ltr# WLG2012.06-03

- References:
1. Letter from Brian Hughes (NRC) to Peter Hastings (Duke Energy), Request for Additional Information Letter No. 096 Related to SRP Section 02.04.12 – Groundwater for William States Lee III Nuclear Station, Units 1 and 2, Combined License Application, dated April 14, 2011 (ML111030569)
 2. Letter from Ronald A. Jones (Duke Energy) to NRC Document Control Desk, Supplemental Response to Request for Additional Information Letter No. 096 Related to SRP Section 02.04.12 (eRAI 5507) for the William States Lee III Units 1 and 2 Combined License Application, Ltr# WLG2011.11-05, dated November 22, 2011 (ML11332A156)

This letter provides supplemental information to Duke Energy's response (Reference 2) to the Nuclear Regulatory Commission's request for additional information (RAI 02.04.12-020) included in Reference 1.

The supplemental information for the response to RAI 02.04.12-020 is addressed in Enclosure 1, which also identifies associated changes to be made in a future revision of the Final Safety Analysis Report for the Lee Nuclear Station. Enclosure 2 contains Input-Output Files for the groundwater numerical analysis associated with information in Enclosure 1.

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

Sincerely,

Christopher M. Fallon
Vice President
Nuclear Development (Acting)

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Enclosures:

- 1) Lee Nuclear Station Supplemental Response to Request for Additional Information (RAI), Letter No. 096, RAI 02.04.12-020.
- 2) Groundwater Numerical Analysis, Input - Output Files for the Representative Case

xc (w/out enclosures):

Frederick Brown, Deputy Regional Administrator, Region II

xc (w/ enclosures):

Brian Hughes, Senior Project Manager, DNRL

AFFIDAVIT OF CHRISTOPHER M. FALLON

Christopher M. Fallon, being duly sworn, states that he is Vice President, Nuclear Development (Acting), 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.

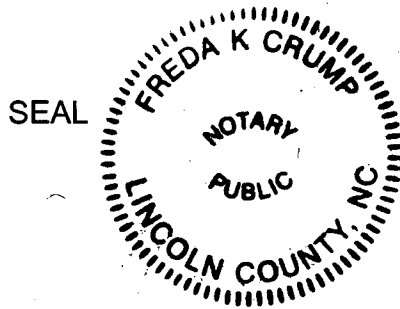
Christopher M. Fallon

Christopher M. Fallon, Vice President
Nuclear Development (Acting)

Subscribed and sworn to me on June 27, 2012

Freda K Crump
Notary Public

My commission expires: August 17, 2016



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

RAI Letter No. 096

NRC Technical Review Branch: Hydrologic Engineering Branch (RHEB)

Reference NRC RAI Number(s): 02.04.12-020

NRC Request for Additional Information:

Additional information regarding maximum post-construction groundwater elevations at the Lee Nuclear Site is required to meet the requirements of 10 CFR 52.79(a)(1)(iii), 10 CFR 100.20(c), 10 CFR 100.21(d), and GDC 2. The applicant's past estimates based on observed water levels in the Cherokee excavation and generalizations based on LeGrand (2004) are insufficient, since they do not sufficiently take into account the actual conditions that are anticipated to exist after construction. Staff needs an estimate of the maximum post-construction groundwater level that is based on anticipated post-construction surface conditions, and also on a plausible conceptual model of the post-construction subsurface conditions. The estimate must be based on recharge rates associated with each of the main surface features, including semi-impervious surfaces, grass-covered surfaces, drainage ditches, and the cooling tower mounds. The estimate must address groundwater response to the maximum plausible recharge rates and to potential groundwater mounds that might form, e.g., beneath the cooling towers and drainage ditches. The groundwater response must account for the post-construction subsurface conditions, including engineered fill and backfill. The area of interest is bounded approximately by the 588-ft contour just north and south of Units 1 and 2, as shown in COLA Rev. 2, FSAR Fig. 2.4.2 202, and bounded east and west by the cooling towers.

Duke Energy Supplemental Response:

Duke Energy submitted an initial response (Reference 2) to the subject RAI (Reference 1) and a supplemental response (Reference 3) that provided an updated groundwater analysis demonstrating compliance with the AP1000 DCD criteria for groundwater level. This supplemental response provides additional information updating the previous response (Reference 3) with revised runoff curve numbers and improvements to site post-construction surface cover treatment.

Runoff from the site for various surface cover treatments was estimated using guidance from the US Department of Agriculture's Natural Resources Conservation Service, Technical Release-55 (TR-55, Reference 4). Subsequent to the submittal of Reference 3, it was found that the analysis did not fully implement the TR-55 guidance on estimating runoff. The revised analysis correctly applies TR-55 guidance regarding the use of TR-55 runoff curve numbers and the appropriate calculation of runoff values.

In addition, there are improvements to the site regarding surface cover treatment, which promotes additional runoff, further reducing the extent of groundwater recharge. A revised FSAR Figure 2.4.12-209 (see Attachment 1) shows the updated surface cover treatment plans for the site. Key changes in surface cover treatments that have been updated in the groundwater analysis include the following:

- Addition of lined wastewater retention ponds to the northwest of the power block,
- Representation of the cooling towers and associated hardscape coverage to the east and west of the power block,

- Increased application of hardscape to the immediate north of the power block (in the area of the heavy haul road),
- Change of brush areas, southwest of Unit 1, to grass coverage,
- Representation of the parking lots to the south of the power blocks, and
- Application of hardscape to the switchyard area to the south of parking lots.

The numerical analysis described in Reference 3 was updated (1) using corrected runoff values, and (2) reflecting the above improvements to surface cover treatments. The changes in ground surface treatments improve runoff and decrease recharge in this updated analysis. Generally, the revised analysis shows a reduction in the estimated maximum post-construction groundwater levels. The limiting observation point in the model remains in a location to the southwest of Unit 1.

In Reference 3, the limiting observation point was designated "U1-3." In the current analysis, the location of this point is re-located (slightly to the north-northwest of the prior position) to obtain a more conservative result. This new point is designated "U1-4." The maximum post-construction groundwater level, from the Representative Case (as defined in Reference 3), results in an estimated groundwater level of 581.39 ft. msl at the southwest observation point (U1-4). (This value is slightly lower than the estimated maximum level of 582.22 ft. msl, determined at the prior southwest observation point, U1-3, reported in Reference 3.)

Revised FSAR Figure 2.4.12-210 (see Attachment 1) shows the location of the model domain, power block locations, and designated observation points.

Revised FSAR Figure 2.4.12-211 (see Attachment 1) illustrates the updated hydrograph traces for all observation points for the Representative Case over the model duration.

Input and output files for the Representative Case numerical analysis are provided in Enclosure 2 via CD-ROM.

References:

1. Letter from Brian Hughes (NRC) to Peter Hastings (Duke Energy), Request for Additional Information Letter No. 096 Related to SRP Section 02.04.12 – Groundwater for William States Lee III Nuclear Station, Units 1 and 2, Combined License Application, dated April 14, 2011 (ML111030569).
2. Letter from Ronald A. Jones (Duke Energy) to NRC Document Control Desk, Response to Request for Additional Information Letter No. 096 Related to SRP Section 02.04.12 (eRAI 5507) for the William States Lee III Units 1 and 2 Combined License Application, Ltr# WLG2011.05-02, dated May 18, 2011 (ML11139A408).
3. Letter from Ronald A. Jones (Duke Energy) to NRC Document Control Desk, Supplemental Response to Request for Additional Information Letter No. 096 Related to SRP Section 02.04.12 (eRAI 5507) for the William States Lee III Units 1 and 2 Combined License Application, Ltr # WLG2011.11-05, dated November 22, 2011 (ML11332A156).
4. Natural Resources Conservative Service, United States Department of Agriculture, Technical Release 55, "Urban Hydrology for Small Watersheds," 210-VI-TR-55, June 1986, Chapter 2.

Associated Revisions to the Lee Nuclear Station Final Safety Analysis Report:

1. FSAR Figure 2.4.12-209
2. FSAR Figure 2.4.12-210
3. FSAR Figure 2.4.12-211

Attachment:

1. Lee Nuclear Station Supplemental Response to Request for Additional Information, RAI 02.04.12-020, Revision to FSAR Chapter 2 Figures 2.4.12-209, 2.4.12-210, and 2.4.12-211

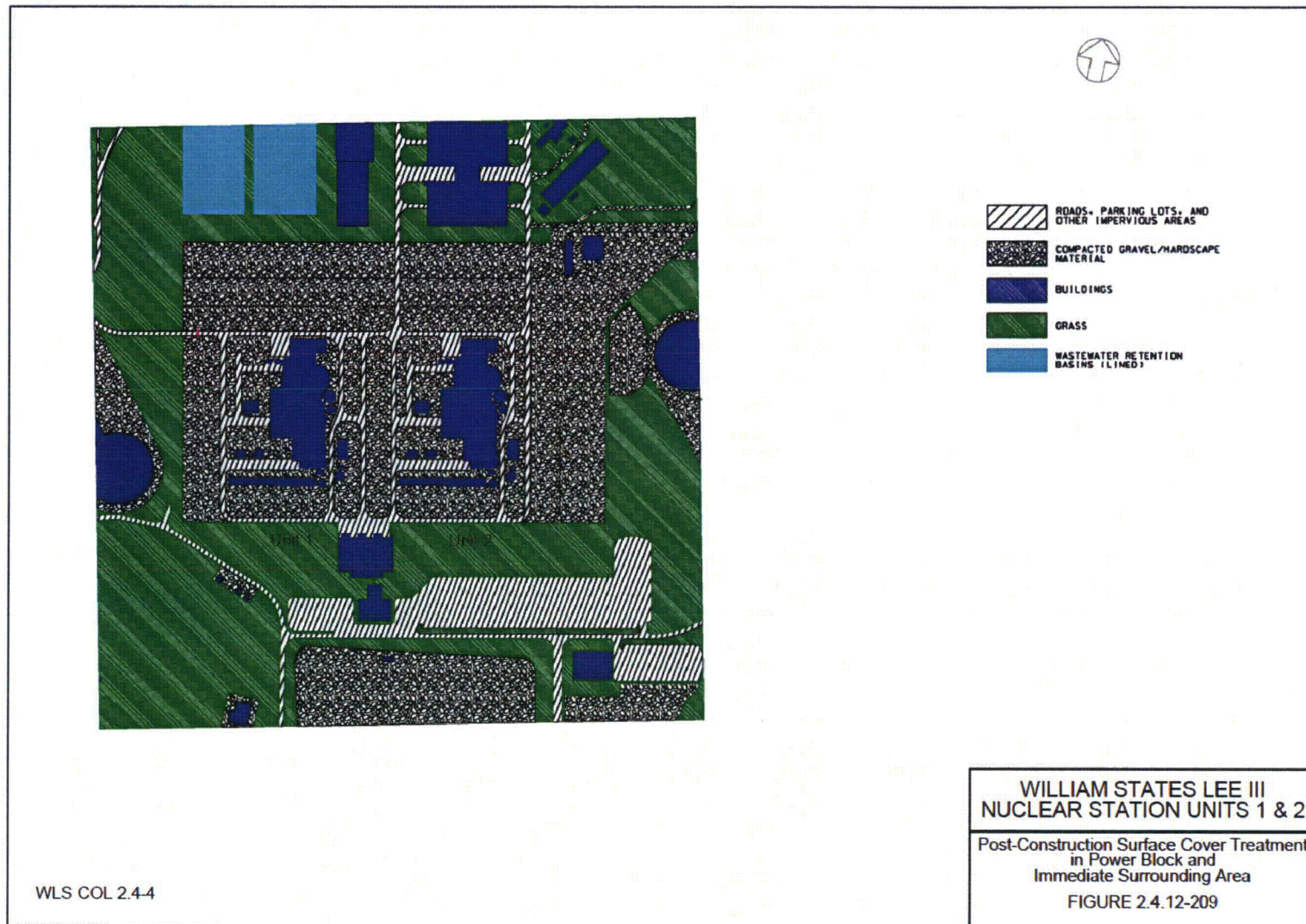
Attachment 1

Lee Nuclear Station Supplemental Response to Request for Additional Information

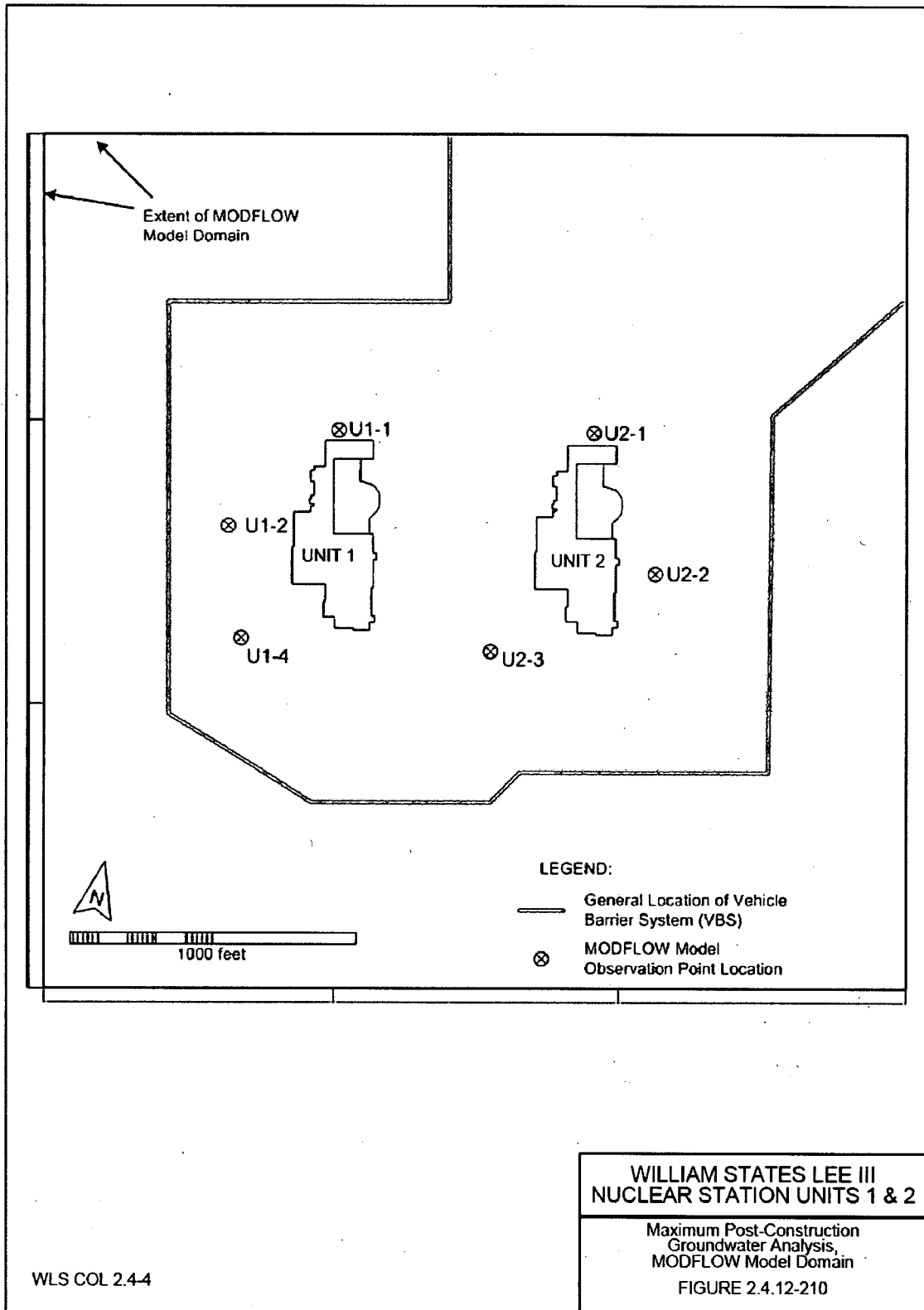
RAI 02.04.12-020

Revision to FSAR Chapter 2 Figures 2.4.12-209, 2.4.12-210, and 2.4.12-211

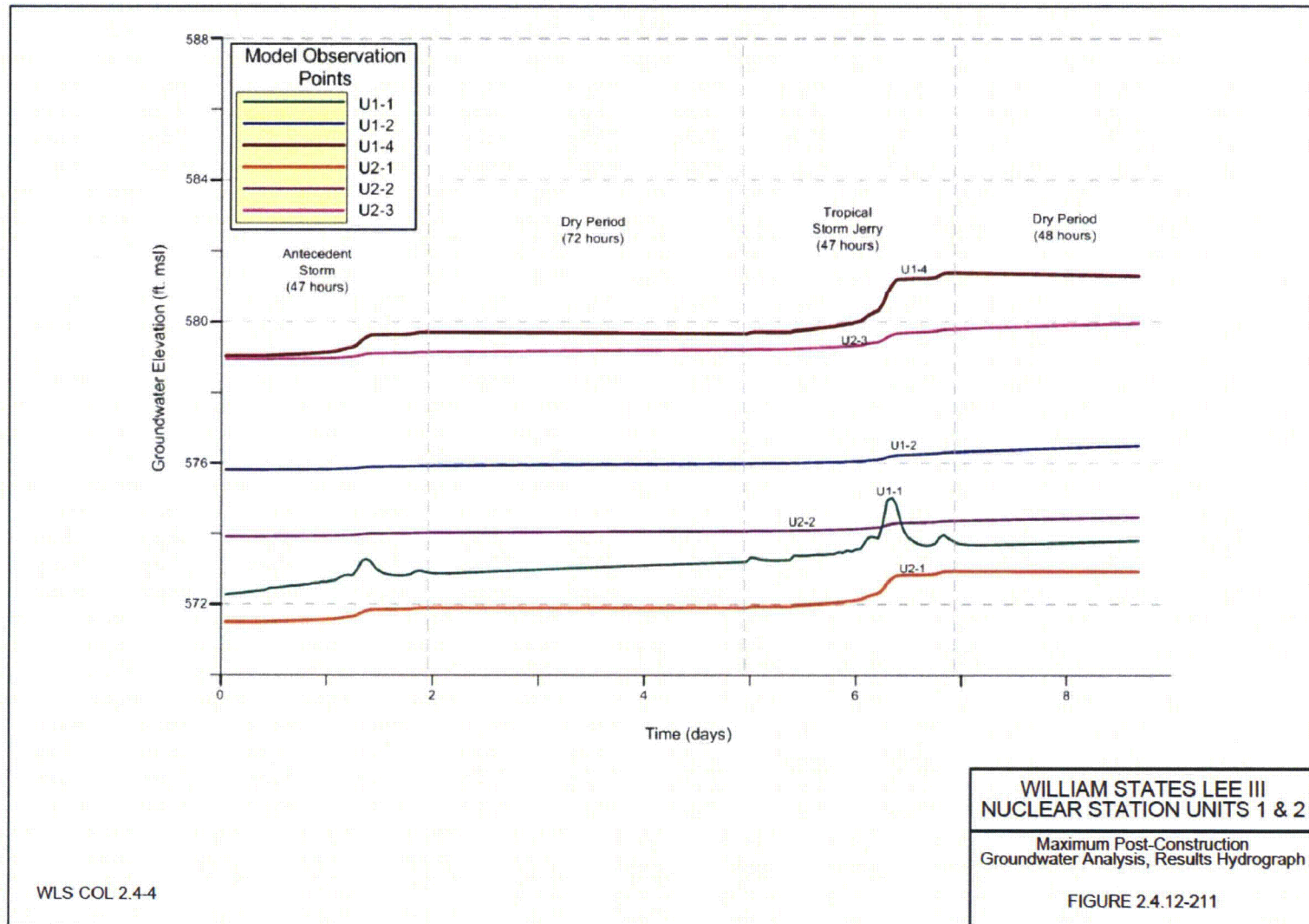
COLA Part 2, FSAR Figure 2.4.12-209 is revised as shown:



COLA Part 2, FSAR Figure 2.4.12-210 is revised as shown:



COLA Part 2, FSAR Figure 2.4.12-211 is revised as shown:



Groundwater Numerical Analysis, Input - Output Files for the Representative Case

Listing of files provided on CD-ROM disc (Attachment 1)

Table A
List of Files
MODFLOW Input - Output for the Representative Case

Filename	File Type
GWV_Max-GW10-Base5b.bas	BAS File
GWV_Max-GW10-Base5b.cbb	CBB File
GWV_Max-GW10-Base5b.cbg	CBG File
GWV_Max-GW10-Base5b.ddn	DDN File
GWV_Max-GW10-Base5b.dis	DIS File
GWV_Max-GW10-Base5b.ghb	GHB File
GWV_Max-GW10-Base5b.glo	GLO File
GWV_Max-GW10-Base5b.hds	HDS File
GWV_Max-GW10-Base5b.lpf	LPF File
GWV_Max-GW10-Base5b.lst	LST File
GWV_Max-GW10-Base5b.mf2	MF2Kwin32 File
GWV_Max-GW10-Base5b.nam	NAM File
GWV_Max-GW10-Base5b.oc	OC File
GWV_Max-GW10-Base5b.pcg	PCG File
GWV_Max-GW10-Base5b.rch	RCH File
GWV_Max-GW10-Base5b.zone	ZONE File
GWV_Max-GW10-Base5b.gwv	Groundwater Vistas File
BldgOutlin ROADS purged.map	MAP File
Bldg_map2012b.map	MAP File
DTW 05-1993 AL SMALL.map	MAP File
FD-Fill outtines.map	MAP File
Power-Block area CGS.map	MAP File
Updated_Post-Constr_roads.map	MAP File

References:

None

Associated Revisions to the Lee Nuclear Station Combined License Application:

None

Attachment:

1. Lee Nuclear Station Supplemental Response to Request for Additional Information, RAI 02.04.12-020, CD-ROM Disc Containing Groundwater Numerical Analysis, Input – Output Files

Attachment 1

Lee Nuclear Station Supplemental Response to Request for Additional Information

RAI 02.04.12-020

CD-ROM Disc Containing Groundwater Numerical Analysis, Input - Output Files