PMSummerColpEM Resource

From:	Wentzel, Michael
Sent:	Wednesday, June 16, 2010 2:48 PM
To:	PMSummerColpEM Resource
Cc:	'MONROE, AMY'; Sebrosky, Joseph
Subject:	Summary of June 10, 2010 follow-up phone call with Summer to discuss hydrology
Attachments:	June Hydrology Draft_revB.doc

MEMORANDUM TO: File (Summer Units 2 and 3)

From: Michael Wentzel, Project Manager
AP1000Projects Branch (NWE1)
Division of New reactor Licensing
Office of New Reactors

Subject: Summary of June 16, 2010 follow-up phone call with Summer to discuss hydrology

Purpose: To discuss Summer's revised draft supplemental response to RAI 2.4.12-6

The NRC attendees were:
- Michael Wentzel

The applicant participants included:
- SCE&G: Amy M. Monroe

Prior to the meeting, the staff reviewed the attached draft response to RAI 2.4.12-6 that was prepared in response to the phone call held with the applicant on June 10, 2010.

During the course of the call, the staff conveyed that the information provided by the applicant was sufficient for the staff to support their regulatory conclusions and that there were no further comments.

>>Summary of June 10 Meeting<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Prior to the meeting, the staff reviewed the attached draft response to RAI 2.4.12-6 that was prepared in response to the phone call held with the applicant on June 7, 2010.

During the course of the call, the staff conveyed that the information provided by the applicant was generally what was needed by the staff to support their regulatory conclusions. Based on feedback from the staff, the applicant agreed to modify their draft in the following ways:

- State the maximum level for storm basin #1
- Define their use of the description of gravel/hardscape to state whether or not it was compacted and, therefore, would increase runoff in the area
- Separate out the buildings that are founded on rock from the Impervious Groundcover classification
- Update the FSAR to include the breakdown of landscape coverage on the site and delineate where the grassy areas of the site will be

Additionally, SCE&G stated that they would provide the staff with an updated draft response to review on June, 11 2010.

>>Summary of June 7 Meeting<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

In preparation for the phone call the staff developed the following topics of discussion related to RAI 2.4.12-6:

1) Post-construction Site Topography above the 394' Contour. Figure 2.5.4-245 (the Site Grade Plan) provides a good site-wide view of the topography, but it lacks topographic specificity in the vicinity of the two reactors. For example, unofficial drawings indicate drainage swales and catch basins near the reactors; these features can't be seen in Figure 2.5.4-245. It would be helpful to see a Site Grade Plan for the area bounded by the 394' contour which used one-foot contour intervals to clarify the locations of surface water routing pathways and zones where the soil surface is above 398 ft.

2) Post-construction soil properties in the reactor areas above the 394' Contour. Figures 2.5.4-219 to -223 show in cross section roughly where structural fill and common fill will be placed within the excavation. For those areas above the 394' contour, will each fill material be emplaced up to the soil surface? Or will topsoil be brought in? If so, how much and what properties will it have?

3) Areal distribution of post construction surface features above the 394' elevation contour. A map or GIS coverage identifying areas of pavement; grass; gravel; concrete pads; structures; whatever other surface features are envisioned.

4) Storm Water Basins. What are the maximum surface water elevations possible in each basin? Are they lined? Do they have a drain system that lowers the water elevation to a minimum level? If so, what is that minimum level?

During the phone call, SCE&G agreed to provide an estimate of permeable vs impermeable land cover on the Summer 2&3 site based on FSAR Figure 2.5.4-245. This would facilitate the confirmatory calculations that must be performed as part of the staff's review and should address agenda items 1-3. The NRC expressed the desire for this information to be included in the FSAR.

During discussions on the storm water basins, SCE&G stated that those are dry detention basins designed to empty within the timeframe required by South Carolina regulations. SCE&G agreed to provide the references to the state requirements for those basins.

Additionally, SCE&G and the NRC agreed to a follow-up phone call on June 10, 2010 to further discuss these issues.

Hearing Identifier: VCSummer_COL_Public
Email Number: 297

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Subject: Summary of June 10, 2010 follow-up phone call with Summer to discuss hydrology
Sent Date: 6/16/2010 2:48:06 PM
Received Date: 6/16/2010 2:48:06 PM
From: Wentzel, Michael

Created By: Michael.Wentzel@nrc.gov

Recipients:
"'MONROE, AMY'" <AMONROE@scana.com>
Tracking Status: None
"Sebrosky, Joseph" <Joseph.Sebrosky@nrc.gov>
Tracking Status: None
"PMSummerColpEM Resource" <PMSummerColpEM.Resource@nrc.gov>
Tracking Status: None

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June Hydrology Draft_revB.doc	847354	

Options
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Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

June 16, 2010
NND-10-0XXX

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

ATTN: Document Control Desk

Subject: Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3 Combined License Application (COLA) - Docket Numbers 52-027 and 52-028 Supplemental Response No. 2 to NRC Request for Additional Information (RAI) Letter No.041 Related to Groundwater

References:

1. Letter from Manny Comar (NRC) to Alfred M. Paglia (SCE&G), Request for Additional Information Letter No. 041 Related to SRP Section 2.4.12 for the Virgil C. Summer Nuclear Station Units 2 and 3 Combined License Application, dated March 1, 2009

2. Letter from Ronald B. Clary (SCE&G) to Document Control Desk (NRC), Response to NRC Request for Additional Information (RAI) Letter No. 041 dated May 1, 2009

3. Letter from Ronald B. Clary (SCE&G) to Document Control Desk (NRC), Supplemental Response to NRC Request for Additional Information (RAI) Letter No. 041 dated May 27, 2010

The enclosure to this letter provides the South Carolina Electric & Gas Company (SCE&G) supplemental response to RAI 02.04.12-6 that was included in Reference 3. The enclosure also identifies any associated changes that will be incorporated in a future revision of the VCSNS Units 2 and 3 COLA.

Should you have any questions, please contact Mr. Alfred M. Paglia by telephone at (803) 345-4191, or by email at apaglia@scana.com.

DRAFT

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

Executed on this ___ day of _____, 2010.

Sincerely,

Ronald B. Clary
Vice President
New Nuclear Deployment

AMM/RBC/jf

Enclosure

c: Luis A. Reyes
Kenneth See
Joseph M. Sebrosky
Michael Wentzel
John Zeiler
Stephen A. Byrne
Jeffrey B. Archie
Ronald B. Clary
Bill McCall
William M. Cherry
Randolph R. Mahan
Kathryn M. Sutton
Amy M. Monroe
Dan Patton
Frederick P. Hughes
William E. Hutchins
William A. Fox
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NRC RAI Letter No. 041 Dated March 1, 2009

SRP Section: 2.4.12 – Groundwater

Questions from Hydrologic Engineering Branch (RHEB)

NRC RAI Number: 02.04.12-6

10 CFR52.79(d)(2) requires that the FSAR demonstrate that the interface requirements established under 10CFR52.47 (site parameters) have been met and to show compliance with 10CFR 100.20(c), which requires consideration of the physical characteristics of the site. The staff requests that the applicant describe the impact of the post-construction / operational setting on water table elevations (site grading including infilling on east below cooling towers, removal of saprolite/shallow bedrock zone, hydraulic properties and use of common fill and structural fill, changes in surface recharge) and subsurface pathways. This would include descriptions of changes in site grading, land cover, recharge rates, and fill material properties.

VCSNS RESPONSE:

The original response to this RAI was provided to the NRC by SCE&G Letter NND-09-0109, dated May 1, 2009 (ML091270890). Supplemental information was provided by SCE&G Letter NND-10-0191, dated May 27, 2010 (ML101520180). During a June 7, 2010 telephone conference, the NRC requested additional details regarding the distribution of ground cover materials (ie: asphalt, grass, buildings, etc.) around the power block areas. Additional details were also requested regarding the storm water basin design including the drain time and the spillway elevations.

The ground cover of the proposed immediate plant area will change drastically from the pre-construction conditions. These changes will reduce the amount of area available for groundwater recharge due to the addition of a large amount of impervious ground cover, a closed conduit system for handling stormwater runoff and the distance that piping system carries the water prior to discharging it into a water quality basin(s).

The condition of the proposed site prior to any pre-construction operations was wooded with a groundwater level of approximately 380' (FSAR Subsection 2.4.12.5). The condition of the site following construction will include a large amount of impervious area due to the addition of structures, roads, etc. In addition, a large majority of the remaining surface area in the vicinity of the plant area will be covered in compacted gravel or similar hardscaping that will help facilitate run off away from the operating facility. As a result, the groundwater level in the vicinity of the plant area is expected to remain well below the AP1000 maximum allowable groundwater level of 398'.

The ground cover following construction is expected to contain a relatively large amount of impervious cover within the immediate plant area. For the purpose of this evaluation, the immediate plant area is defined as the area inside of the following relative to True North:

- 394' contours that run approximately North-South on either side of the proposed units as shown on VCSNS FSAR Figure 2.5.4-245.
- The innermost fence shown running East-West on the North side of Unit 2 and South side of Unit 3 as shown of VCSNS FSAR Figure 2.5.4-245.

As defined above, the immediate plant area contains approximately 42.5 acres. Included in that area is approximately 17 acres of impervious ground cover (1.5 acres of nuclear island structures founded on hard rock, 4 acres of power block structures whose foundations are located on engineered backfill, and the remaining 11.5 acres are of buildings and paved areas throughout the immediate plant area), approximately 15 acres of surface area assumed to be covered in compacted gravel or otherwise hardscaped to promote run off, and approximately 10.5 acres of grass serving as an outer most border (see attached Figure RAI 2.4.12-6). This combination of ground cover will shed much of the stormwater runoff to the closed Storm Drain System (DRS) for transportation away from the immediate plant area. Thus, the opportunity for infiltration recharge to increase groundwater levels in the plant area is expected to be reduced.

Operating experience at VC Summer Unit 1 has shown that vegetative areas near plants has unintended drawbacks such as welcoming wildlife that creates housekeeping concerns. It is expected that the surface areas covered in vegetation near the proposed units will be minimized for miscellaneous reasons. Therefore, the amount of impervious or compacted gravel/hardscaped ground cover may be even higher than that estimated above.

The water collected in the DRS system as described in SCE&G Letter NND-10-0191 is transported to unlined stormwater quality basins for sediment control. These basins will be designed as dry detention ponds per the requirements of the South Carolina Department of Health and Control (SCDHEC) "Standards for Stormwater Management and Sediment Reduction Regulation 72-307".

The following is an excerpt from the SCDHEC Regulation 72-307. Subsection D(3) states that dry detention systems should be designed to drain within three (3) days:

> *D. All stormwater management and sediment control practices shall be designed, constructed and maintained with consideration for the proper control of mosquitoes and other vectors. Practices may include, but are not limited to:*
>
> > *(1) The bottom of retention and detention ponds should be graded and have a slope not less than 0.5 percent.*

(2) There should be no depressions in a normally dry detention facility where water might pocket when the water level is receding.
(3) Normally dry detention systems and swales should be designed to drain within three (3) days.

The water collected in the basins will be required to drain down within 3 days (72 hours) to comply with the statement in SCDHEC Regulation 72-307 Subsection D(3). Therefore, the dry detention ponds used for sediment control and stormwater management should only have water in them during and immediately following a rain event.

The maximum possible elevations in the basins are expected to be well below the 398' elevation as well. The basins that will be the outfalls for the DRS piping systems are anticipated to have emergency spillways that keep the maximum water elevation in each below the 395' elevation. Specifically, the top of Basin 1 (see VCSNS FSAR Figure 2.5.4-245) is currently designed to be 396' so that even if the outlet pipe were to be clogged, the water would overflow the basin 2' below the 398' groundwater elevation limit of the AP1000. Any rise in groundwater elevations around these basins would be temporary, away from the immediate plant area and well below the 398' elevation.

This response is PLANT SPECIFIC.

ASSOCIATED VCSNS COLA REVISIONS:

In a future revision to the VCSNS COLA, the following paragraphs will be added to the end of FSAR Subsection 2.4.12.5 to provide additional design details for the storm water collection system and the impact to groundwater levels on site.

The ground cover of the proposed immediate plant area will change drastically from the pre-construction conditions. These changes will reduce the amount of area available for groundwater recharge due to the addition of a large amount of impervious ground cover, a closed conduit system for handling stormwater runoff and the distance that piping system carries the water prior to discharging it into a water quality basin(s).

The condition of the proposed site prior to any pre-construction operations was wooded with a groundwater level of approximately 380' (Subsection 2.4.12.5). The condition of the site following construction will include a large amount of impervious area due to the addition of structures, roads, etc. In addition, a large majority of the remaining surface area in the vicinity of the plant area will be covered in compacted gravel or similar hardscaping that will help facilitate run off away from the operating facility. As a result, the groundwater level in the vicinity of the plant area is expected to remain well below the AP1000 maximum allowable groundwater level of 398'.

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The ground cover following construction is expected to contain a relatively large amount of impervious cover within the immediate plant area. To quantify the approximate area

of each type of groundcover expected to exist around plant, the immediate plant area is defined as the area inside of the following relative to True North:

- 394' contours that run approximately North-South on either side of the proposed units as shown on Figure 2.5.4-245.
- The innermost fence shown running East-West on the North side of Unit 2 and South side of Unit 3 as shown of Figure 2.5.4-245.

As defined above, the immediate plant area contains approximately 42.5 acres. Included in that area is approximately 17 acres of impervious ground cover (1.5 acres of nuclear island structures founded on hard rock, 4 acres of power block structures whose foundations are located on engineered backfill, and the remaining 11.5 acres are of buildings and paved areas throughout the immediate plant area), approximately 15 acres of surface area assumed to be covered in compacted gravel or otherwise hardscaped to promote run off, and approximately 10.5 acres of grass serving as an outer most border. This combination of ground cover will shed much of the stormwater runoff to the closed Storm Drain System (DRS) for transportation away from the immediate plant area. Thus, the opportunity for infiltration recharge to increase groundwater levels in the plant area is expected to be reduced.

The water collected in the DRS system is transported to unlined stormwater quality basins for sediment control. These basins will be designed as dry detention ponds per the requirements of the South Carolina Department of Health and Control (SCDHEC) "Standards for Stormwater Management and Sediment Reduction Regulation 72-307". Per these requirements, the water collected in the basins will be required to drain down within 3 days (72 hours). Therefore, the dry detention ponds used for sediment control and stormwater management should only have water in them during and immediately following a rain event.

The maximum possible elevations in the basins are expected to be well below the 398' elevation as well. The basins that will be the outfalls for the DRS piping systems are anticipated to have emergency spillways that keep the maximum water elevation in each below the 395' elevation. Specifically, the top of Basin 1 (Figure 2.5.4-245) is currently designed to be 396' so that even if the outlet pipe were to be clogged, the water would overflow the basin 2' below the 398' groundwater elevation limit of the AP1000. Any rise in groundwater elevations around these basins would be temporary, away from the immediate plant area and well below the 398' elevation.

ASSOCIATED ATTACHMENTS:

RAI Figure 2.4.12-6

Attachment

RAI Figure 2.4.12-6

Ground Cover Layout between 394' Elevation Contours

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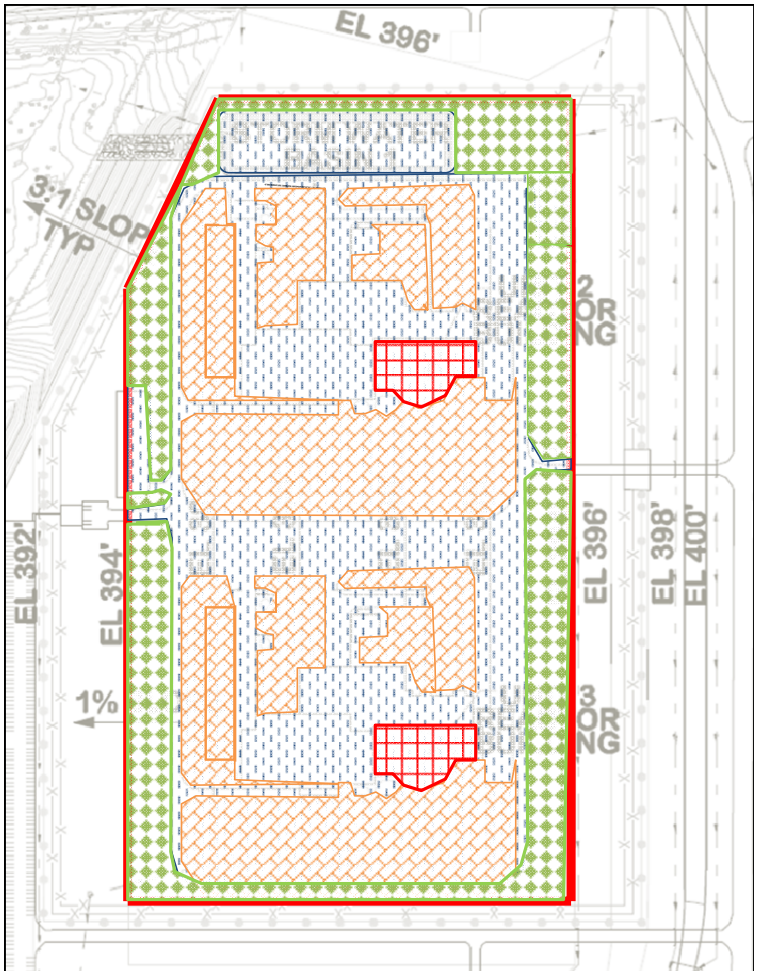

Nuclear Island Buildings

Other Buildings and Roads

Gravel / Hardscape Material

Grass

RAI Figure 2.4.12-6: Ground Cover Layout between 394' Elevation Contours

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