CCNPP3COLA NPEmails

From: Perdomo, Federico R [Federico.Perdomo@unistarnuclear.com]
Sent: Monday, September 28, 2009 9:59 AM
To: Schaaf, Robert
Cc: Quinn, Laura; Lutchenkov, Dimitri
Subject: FW: UN#09-403 - Responses to RAI's 1015 1016 1017 and 1018 (E-Mail 1 of 2)
Attachments: UniStar letter UN#09-403 -- (Pages 1 - 20) Response to RAI's 1015 - 1018.pdf

Mr. Schaff,

E-Mail forwarded to you as requested by Dimitri Lutchenkov.

Thank You

Federico Perdomo

From: Perdomo, Federico R
Sent: Friday, September 25, 2009 11:14 PM
To: 'Quinn, Laura'
Cc: Stevenson, Michael; Frailer, Melanie D; Yox, Michael J; Lutchenkov, Dimitri; 'Cheryl.Baker@CH2M.com'; Klinch, David
Subject: UN#09-403 - Responses to RAI's 1015 1016 1017 and 1018 (E-Mail 1 of 2)

Laura,

Attached please find UniStar letter UN#09-403, "Responses to RAI's 1015 1016 1017 and 1018." The hard copies of this letter will be distributed as normal. This E-mail copy will help in any telephone discussions that we may have near-term.

Due to file size limitations, I will send the letter in two parts.

Thank You

Federico Perdomo

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Created By: Federico.Perdomo@unistarnuclear.com

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Tracking Status: None
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Tracking Status: None

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UniStar
NUCLEAR ENERGY

10 CFR 50.4
10 CFR 52.79

September 25, 2009

UN#09-403

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

Subject: UniStar Nuclear Energy, NRC Docket No. 52-016
Calvert Cliffs Nuclear Power Plant, Unit 3
Responses to RAI 1015, 1016, 1017, and 1018

Reference: 1) Laura Quinn (NRC) to Greg Gibson (UniStar Nuclear Energy), "Request for Additional Information Related to the Environmental Review for the Calvert Cliffs Combined License Application – Alternative Sites," dated September 18, 2009.

The purpose of this letter is to provide responses to requests for additional information (RAIs) identified in Reference 1. Enclosure 1 provides our responses to RAI No. 1015, 1016, 1017, and 1018 and includes revised Combined License Application (COLA) content. The submittal of the enclosed RAI responses addresses all of the outstanding items needed to publish the environmental impact statement (EIS) and information necessary for completion of regulatory reviews.

Our responses to RAIs identified in Reference 1 do not include any new regulatory commitments. A Licensing Basis Document Change Request has been initiated to incorporate the revised COLA changes into a future revision to the COLA.

If there are any questions regarding this transmittal, please contact me at (410) 470-4205, or Mr. Dimitri Lutchenkov at (410) 470-5524.

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

Executed on September 25, 2009

for Greg Gibson

Enclosures: 1) Responses to NRC Request for Additional Information, RAI No. 1015, 1016, 1017, and 1018, Calvert Cliffs Nuclear Power Plant Unit 3

cc: Surinder Arora, NRC Project Manager, U.S. EPR Projects Branch
Laura Quinn, NRC Environmental Project Manager, U.S. EPR COL Application
Getachew Tesfaye, NRC Project Manager, U.S. EPR DC Application (w/o enclosure)
Loren Plisco, Deputy Regional Administrator, NRC Region II (w/o enclosure)
Silas Kennedy, U.S. NRC Resident Inspector, CCNPP, Units 1 and 2
U.S. NRC Region I Office

GTG/INJ/mfd

Enclosure 1
Responses to NRC Requests for Additional Information
RAI No. 1015, 1016, 1017, and 1018
Calvert Cliffs Nuclear Power Plant Unit 3

RAI No. 1015

Question 1: ESRP 9.3 and RG 4.2

In UniStar's August 29, 2009 submittal, the score for criteria 1d (Distance to dedicated land) in Table 6-1 of the Alternative Site Evaluation Report (ASER), was revised from the July 17, 2009 submittal for the Bainbridge alternative site from 1 to 2.8. However, Appendix C of the ASER states that Deer Creek Park is 6.9 miles from the Bainbridge site. This appears to match the criterion for a score of 3 in ER Table 9.3-2, which is for dedicated land >5 miles from the site but less than 10. Explain why the Bainbridge site was scored 2.8 instead of 3 (or higher if scaling by use of decimals). [Site Audit Information Need 9]

Response

The score for Criterion 1d in ER Table 6-1 of the Alternate Site Evaluation Report (ASER) for the Bainbridge site was revised from 1 to 2.8 to correct a transcription error with the adjacent Beiler value that occurred in Rev. 0 of the ASER.

Criterion 1d was subjectively scored by a Delphi Panel. Although scoring bases were provided for Criterion 1d to guide the subjective scoring, the Delphi Panel team members' subjective scoring reflected their personal knowledge base and other considerations. All Delphi Panel team members, except one, scored Criterion 1d for the Bainbridge site as a 3. Based upon the prescriptive process/procedure defined in the ASER, once the subjective scoring had stabilized, the averaged Delphi Panel scores were used for each subjectively scored criterion. Consequently, the averaged scores will not correspond exactly with the identified scoring bases. This is an acceptable approach for the Delphi process.

As verified by sensitivity analysis, correction of the transcription error or the use of the average of the Delphi Panel scores does not change the outcome of the ASER. More explicitly, the alternative sites identified in ASER Rev 0 remain unchanged and are carried forward into ASER Rev 1.

COLA Impact

The COLA will not be revised as a result of this response.

Question 2: ESRP 9.3 and RG 4.2

In UniStar's August 29, 2009 submittal, the ranking score values for criteria 1b (hazardous waste or spoils areas) in Table 6-1 of the ASER for the Bainbridge and EASTALCO alternative sites have been modified from the values in the July 17, 2009 submittal. The justification text in Appendix C of the ASER did not change for either site. Explain the basis for the modified scores. [Site Audit Information Need 9]

Response

During the investigation of the scoring basis for certain Criteria 1 scores, it was found that transcription errors have been made for several scores for the Bainbridge, EASTALCO, and Conowingo alternative sites. These errors were corrected to reflect final Delphi panel scores. Based on the prescriptive process/procedure defined in the ASER, once the subjective scoring had stabilized, the averaged Delphi Panel scores were used for each subjectively-scored criterion. Consequently, the averaged scores will not correspond exactly with the identified scoring bases. This is an acceptable approach for the Delphi process.

As verified by sensitivity analysis, correction of the transcription error or the use of the average of the Delphi Panel scores does not change the outcome of the ASER. More explicitly, the alternative sites identified in ASER Rev 0 remain unchanged and are carried forward into ASER Rev 1.

COLA Impact

The COLA will not be revised as a result of this response.

Question 3: ESRP 9.3 and RG 4.2.

In UniStar's August 29, 2009 submittal, the score for criteria 1c (Zoning) changed from the July 17, 2009 score of 5 to 2 in Table 6-1 of the ASER for the Bainbridge alternative site. The staff notes that (1) the Port Deposit website says that industrial uses are permitted at the Bainbridge site http://www.portdeposit.org/?a=bainbridge1, and (2) an area zoned for industrial facilities should be scored 5 according to Environmental Report (ER) Table 9.3-2. Explain the basis for the modified score. [Site Audit Information Need 9]

Response

The score for Criterion 1c in Table 6-1 of the ASER for the Bainbridge site was revised from 5 to 2.0 to correct a transcription error with the adjacent Beiler value that occurred in Rev. 0 of the ASER.

Criterion 1c was subjectively scored by a Delphi Panel. Although scoring bases were provided for Criterion 1c to guide the subjective scoring, the Delphi Panel team members' subjective scoring reflected their personal knowledge base and other considerations. Although the cited website states that industrial uses are permitted, as noted by the NRC, the site is zoned as Bainbridge Special Use and other uses are permitted as well. The current zoning and permitting of other uses, along with the current land use plan (i.e., mixed-use development, including commercial and residential), may have factored into some of the Delphi Panel team members' scoring of this criterion, which ranged from a 5 to a 1. Based on the prescriptive process/procedure defined in the ASER, once the subjective scoring had stabilized, the averaged Delphi Panel scores were used for each subjectively-scored criterion. Consequently, the averaged scores will not correspond exactly with the identified scoring bases. This is an acceptable approach for the Delphi process.

As verified by sensitivity analysis, correction of the transcription errors does not change the outcome of the ASER. More explicitly, the alternative sites identified in ASER Rev 0 remain unchanged and are carried forward into ASER Rev 1.

COLA Impact

The COLA will not be revised as a result of this response.

Question 4: ESRP 9.3 and RG 4.2

In UniStar's August 29, 2009 submittal, the score for criteria 1e (Topography) for the Thiokol alternative site is 4.4. The justification for the Thiokol site in Appendix C of the ASER reads exactly the same as EASTALCO, which is scored 5. Why is the Thiokol site scored differently than the EASTALCO site? [Site Audit Information Need 9]

Response

Criterion 1e was subjectively scored by a Delphi Panel. Although scoring bases were provided for Criterion 1e to guide the subjective scoring, the Delphi Panel team members' subjective scoring reflected their personal knowledge base and other considerations. Although both sites have 33 ft of relief across the site, the EASTALCO site relief is primarily at and along the eastern edge of the site while the rest of the site was essentially flat; however, the Thiokol site is more undulating with the 33 ft of relief throughout the site. The difference in distribution of the relief across the sites may have factored into some of the Delphi Panel team members' scoring of this criterion, which ranged from a 5 to a 3 for the Thiokol site but were all scores of 5 for the EASTALCO site. Based on the prescriptive process/procedure defined in the ASER, once the subjective scoring had stabilized, the averaged Delphi Panel scores were used for each subjectively-scored criterion. Consequently, the averaged scores will not correspond exactly with the identified scoring bases. This is an acceptable approach for the Delphi process.

As verified by sensitivity analysis, correction of the transcription errors does not change the outcome of the ASER. More explicitly, the alternative sites identified in ASER Rev 0 remain unchanged and are carried forward into ASER Rev 1.

The foregoing also exemplifies differences that can occur between the scoring by the Delphi Panel which was provided with overall site characteristics, in this instance the total relief of the entire site, and the subsequent evaluation made for ER Section 9.3.2. Although the scoring criteria directed the panel to score both sites as a 5.0 based upon its consideration of the entire site, Section 9.3.2, Proposed and Alternative Site Evaluation, assesses a proposed 420 acre footprint plant location using the NRC three level standard, of significance which in this case is more favorable toward the EASTALCO site. The impacts of the site relief are mitigated by the selection of the plant footprint.

Apparent inconsistencies, characterized by the foregoing, are observable in many areas when detailed comparisons of ASER scores are compared to the determinations of significance contained in ER Section 9.3.

COLA Impact

The COLA will not be revised as a result of this response.

Question 5: ESRP 9.3 and RG 4.2

The staff requests additional explanatory information for the items below regarding the scores in Table 7-1 of the ASER for the proposed Calvert Cliffs site for ranking criteria 1b, 1d, and 1e. Site Audit Information Need 9]

A. For criteria 1b (Hazardous waste or spoils areas), the justification text in Appendix C of the ASER clearly states that no remediation is expected. This seems to align with a score of 5 in ER Table 9.3-2 rather than 4.8 shown in Table 7-1.

Response (A)

Criterion 1b was subjectively scored by a Delphi Panel. Although scoring bases were provided for Criterion 1b to guide the subjective scoring, the Delphi Panel team members' subjective scoring reflected their personal knowledge base and other considerations. Two of the Delphi Panel team members, which included experts intimately familiar with the Calvert Cliffs site, scored Criterion 1b for Calvert Cliffs as a 4, whereas all other members scored the criterion as a 5. Based on the prescriptive process/procedure defined in the ASER, once the subjective scoring had stabilized, the averaged Delphi Panel scores were used for each subjectively-scored criterion. Consequently, the averaged scores will not correspond exactly with the identified scoring bases. This is an acceptable approach for the Delphi process.

As verified by sensitivity analysis, correction of the transcription errors does not change the outcome of the ASER. More explicitly, the alternative sites identified in ASER Rev 0 remain unchanged and are carried forward into ASER Rev 1.

COLA Impact

The COLA will not be revised as a result of this response.

B. For criteria 1d (Distance to dedicated land), Appendix C of the ASER states that there is dedicated land (Calvert Cliffs State Park) less than 1 mile from the site, which seems to correspond to a score of 1 in ER Table 9.3-2. Why was the site scored 1.4 in Table 7-1, and what was the purpose of changing the score from the previous value in the July 17, 2009 submittal of 1.3?

Response (B)

Errors in transcription of original scores were corrected to reflect final Delphi panel scores, resulting in the change of 1.3 to 1.4.

Criterion 1d was subjectively scored by a Delphi Panel. Although scoring bases were provided for Criterion 1d to guide the subjective scoring, the Delphi Panel team members' subjective scoring reflected their personal knowledge base and other considerations. The Delphi Panel team members, which included experts intimately familiar with the Calvert Cliffs site, subjectively scored Criterion 1d for Calvert Cliffs from a 3 to a 1. Based on the prescriptive process/procedure defined in the ASER, once the subjective scoring had stabilized, the

averaged Delphi Panel scores were used for each subjectively-scored criterion. Consequently, the averaged scores will not correspond exactly with the identified scoring bases. This is an acceptable approach for the Delphi process.

As verified by sensitivity analysis, correction of the transcription errors does not change the outcome of the ASER. More explicitly, the alternative sites identified in ASER Rev 0 remain unchanged and are carried forward into ASER Rev 1.

COLA Impact

The COLA will not be revised as a result of this response.

C. For criteria 1e (Topography), relief of 98 feet (Appendix C of the ASER) seems to correspond with the range defined for a value of 3 (between 50 and 100 feet of relief) according to ER Table 9.3-2. Why is it scored 4.4 in Table 7-1 and what was the purpose of changing the score from the previous value in the July 17, 2009 submittal of 4.8?

Response (C)

The score for Criterion 1e in ER Table 6-1 of the ASER for the Calvert Cliffs site was revised from 4.8 to 4.4 to correct a transcription error that occurred in the July 17, 2009 submittal.

Criterion 1e was subjectively scored by a Delphi Panel. Although scoring bases were provided for Criterion 1e to guide the subjective scoring, the Delphi Panel team members' subjective scoring reflected their personal knowledge base and other considerations. The Delphi Panel team members, which included experts intimately familiar with the Calvert Cliffs site, subjectively scored Criterion 1e for Calvert Cliffs from a 5 to a 3. Based on the prescriptive process/procedure defined in the ASER, once the subjective scoring had stabilized, the averaged Delphi Panel scores were used for each subjectively-scored criterion. Consequently, the averaged scores will not correspond exactly with the identified scoring bases. This is an acceptable approach for the Delphi process.

As verified by sensitivity analysis, correction of the transcription errors does not change the outcome of the ASER. More explicitly, the alternative sites identified in ASER Rev 0 remain unchanged and are carried forward into ASER Rev 1.

COLA Impact

The COLA will not be revised as a result of this response.

Question 6: ESRP 9.3.2.2.3-8, 9.3.2.3.3 and 9.3.3

In the selection of alternative sites from the list of candidate sites in ER Table 9.3-4, the Bainbridge and Eastalco sites are scored 42 and 39, respectively for hydrology. The proposed Calvert Cliffs site is shown with a score of 36. Explain why the Bainbridge and Eastalco sites rate higher in ER Table 9.3-4 for hydrology than the proposed Calvert Cliffs site, but in ER Table 9.3-8 they are shown with higher impact levels than the Calvert Cliffs site for water. [Site Audit Information Need 11]

Response

The assigned weighted scores for the sites do not have any direct correlation to the environmental impact levels identified for the evaluation criteria. The respective scores for Hydrology for the Bainbridge, EASTALCO, and Calvert Cliffs sites reflect the results of the alternate site evaluation process whereby the inclusive (entire) properties associated with these three sites were ranked. There is a fundamental difference in relating raw weighted scores for evaluation criteria to the environmental impact levels assigned to a particular alternate site, because the impact levels are evaluated in relation to impacts predicted over and above the specific criteria used for the initial scoring in the ASER.

Furthermore, the intent and sole purpose of the ASER is to implement a prescriptive and systematic site-selection process search for alternatives to a Proposed Site, Calvert Cliffs 3, and then compare the Alternative Sites to the Proposed Site in regard to environmental impacts to identify if environmental preference can be established for an alternate site. In order for the process to be fair, a standard set of reconnaissance level source data is utilized to conduct the evaluations/comparisons. This ensures a consistent and repeatable process. Once Alternative Sites are established more granular information can be identified and used for the finite set of Alternative Sites to develop more insightful descriptions of the sites in Section 9.3 of the ER. The ASER and Section 9.3 of the ER are separate and distinct processes with different levels of information. In order to maintain the integrity, equal basis of information and repeatability of the ASER process, any newer more granular information identified in support of Section 9.3 of the ER cannot and should not be retrofitted into the ASER. The difference between the reconnaissance-level data sources used for the two evaluations (i.e., the screening-level candidate site evaluation and more detailed alternative site evaluation) is the reason for apparent discrepancies between Appendix C of the Alternate Site Evaluation Report (i.e., the screening-level candidate site evaluation) and the identified ER sections (i.e., the more detailed alternative site evaluation).

For the screening-level evaluation, three subcriteria were included in the overall score for Criterion 2, Hydrology. Of these three subcriteria, the only difference in scoring for the Bainbridge, EASTALCO and Calvert Cliffs sites occurred in Subcriterion 2a, Water Quality. Each of the sites was scored the same for Subcriteria 2b and 2c. For Subcriterion 2a, the Calvert Cliffs site was scored as a 2 for having the Middle Central Chesapeake Bay segment of the Chesapeake Bay, designated as mesohaline water (i.e., moderately brackish water), as a cooling water source. Bainbridge was scored a 4 for having a portion of the Northern Chesapeake Bay surface water segment of the Susquehanna River, designated as tidal fresh water estuary, as a cooling water source. EASTALCO was scored a 5 for having a portion of the Potomac River, the Middle Potomac River Area Sub-Basin surface water segment, which is

designated as fresh waters, as a cooling water source. The resulting weighted scores for Criterion 2 for Calvert Cliffs, Bainbridge, and EASTALCO are 36.0, 42.0, and 45.0. Please note that ER Table 9.3-4 contains a typographical error for the EASTALCO site and the correct weighted score should be 45.0. As verified by sensitivity analysis, correction of the transcription error or the use of the average of the Delphi Panel scores does not change the outcome of the ASER. More explicitly, the alternative sites identified in ASER Rev 0 remain unchanged and are carried forward into ASER Rev 1.

While the Bainbridge and EASTALCO properties demonstrate a higher water quality and, thus, screening-level propensity for EPR development based on the evaluation criteria than the Calvert Cliffs property (e.g. scores of 42 and 45 versus 36), Calvert Cliffs compares more favorably in regard to overall hydrologic impacts than for Bainbridge and EASTALCO.

For example, as described in ER Section 9.3.2.1.3 for the Calvert Cliffs site, the impacts to water resources at the site from construction and operation of the new reactor unit are anticipated to be SMALL due to the large size of both the surface water and groundwater resources at the site and the current rural nature of the area and resultant low usage of these resources.

As described in ER Section 9.3.2.2.3 for the Bainbridge site, overall water related impacts to the surrounding area attributable to the construction and operation of the proposed facility would be MODERATE due to the fraction of available water that may be pulled from the Susquehanna River under low flow conditions.

As described in ER Section 9.3.2.3.3 for the EASTALCO site, the hydrology impacts are expected to be MODERATE due to the potential restrictions to withdraw a significant portion of the Potomac River during low flow conditions.

COLA Impact

The COLA ER will be revised as a result of this response. COLA ER Table 9.3-4 will be revised to correct the typographical error for the EASTALCO site for Criterion 2. The weighted score for Criterion 2 for EASTALCO should be 45.0.

Table 9.3-4 Weighted Scoring of Candidate Site

	CCNPP	Bainbridge	Conowingo	EASTALCO	Thiokol
1. Land Use	26.5	23.7	20.3	22.9	19.4
2. Hydrology	36.0	~~42.0~~ 45.0	42.0	39.0	36.0
3. Terrestrial Resources	21.8	18.2	18.2	29.1	18.2
4. Aquatic Biological Resources	7.3	7.3	7.3	21.8	7.3
5. Socioeconomics	18.7	22.0	24.2	27.5	19.8
6. Environmental Justice	16.5	18.9	18.9	11.8	11.8
7. Historical and Cultural Resources	14.8	4.9	4.9	9.9	19.8
8. Air Quality	14.0	14.0	14.0	16.0	18.0
9. Human Health	18.2	6.1	12.1	16.2	20.2
10. Postulated Accidents	4.6	4.6	4.6	4.6	13.7
11. Transport of Radioactive Material	6.0	6.0	6.0	3.0	6.0
12. Transmission Corridors	34.7	30.9	27.0	30.9	23.2
13. Population	39.0	21.7	21.7	13.0	39.0
14. Facility costs	16.5	25.6	11.8	17.6	8.5
15. Geology	28.4	28.4	32.0	26.7	26.7
16. Wetlands	30.5	41.7	30.5	41.7	30.5
Total:	**333.5**	**316.0**	**295.5**	**331.7**	**318.1**

Note: The scoring for the Proposed Site (CCNPP) is not required when ranking the Candidate Sites to select the Alternative Sites but is included here for reference.

Question 7: ESRP 9.3

Regarding the criteria used to score and rank the candidate sites and to compare the alternative sites to the proposed site in the August 29, 2009 submittal of the Alternative Site Evaluation report, explain the rationale used when scoring sites according to criteria 3a and 4a (listed species). It appears that, with the exception of the Bainbridge site, the sites do not have the endangered/threatened terrestrial habitats (August 29, 2009 ER Rev 5 Sections 9.3.2.3.4, 9.3.2.4.4) or aquatic habitats (August 29, 2009 ER Rev 5 Sections 9.3.2.3.4, 9.3.2.3.5, and 9.3.2.4.5) but are scored as having such habitat. For example, the Thiokol site has a score of 1 for criterion 3a (the entire site falls within a known location of a Federally listed species), but the August 29, 2009 Revision 5 of ER Section 9.3.2.3.5 states that there is no suitable habitat on the Thiokol site for Federally listed terrestrial species. Similarly, criterion 4a is scored 1, but the revised ER text, in the August 29, 2009 submittal, states that a federally listed species occurs downstream of the Thiokol site. Clarify the application of criteria 3a and 4a for each candidate site, and state which Federally and State-listed species are considered at each candidate site, including the Conowingo site.

Explain how a State-listed terrestrial and a State-listed aquatic species can be known to occur one mile south of the Eastalco site if the species cannot be identified (Appendix C of the August 29, 2009 Alternative Site Evaluation Report, Page C-6, criteria 3a and 4a).

The Eastalco aquatic ecology section (August 29, 2009 Revision 5 of ER Section 9.3.2.3.5) discusses the occurrence of the Federally listed shortnose sturgeon in the Potomac River. Provide the reasoning for the discussion, especially since the text mentions that one was recorded 10 miles from the Thiokol site and not at the site itself. Is this species likely to occur in the stretch of the river near the Eastalco site?

Identify which Federally listed aquatic species at the Bainbridge site may have habitat encompassing wetlands as stated in Appendix C of the August 29, 2009 Alternative Site Evaluation report. The August 29, 2009 ER Revision 5 Section 9.3.2.3.5 does not mention any Federally listed species that use wetlands. Rectify the apparent discrepancy between the Appendix C statement about wetlands habitat on the site and the statement in Table 9.3-12 in Revision 5 of 9.3 that the Bainbridge site does not contain any wetlands.

Response

For the screening-level (i.e., reconnaissance-level) site evaluation, in order to prevent bias for or against sites where additional threatened and endangered (T&E) information may have been available at some sites for some species but not consistently available for all species for all sites, a metric that was consistently available for all sites within the Region of Interest (ROI) had to be identified and applied to all candidate sites for a fair comparison. As stated in Appendix A of the Alternative Site Evaluation Report, the established metric for both Criteria 3a and 4a for the screening-level evaluation of the candidate sites for selection of the alternative sites was "existence of mapped Federal and State T&E habitat on or adjacent to the site."

Based on geospatial data downloaded from Maryland Department of Natural Resources (MDNR) websites (MDNR, 2009a; MDNR, 2009b), buffered areas that primarily contain habitat for rare, threatened, and endangered species and rare natural community types were mapped and used to score each site based on the scoring bases identified in Appendix A of the Alternate

Site Evaluation Report. The mapped areas included regulated areas identified by the MDNR, such as Natural Heritage Areas, Wetlands of Special State Concern, Colonial Waterbird Colonies, and Habitat Protection Area. This screening-level geospatial data was consistently available for evaluation of candidate sites throughout the ROI. For consistent comparison, each site was scored for Criteria 3a and 4a based on this geospatial data, without regard for additional data that may have been known or later identified for certain species at some of the sites. However, information on the specific species of concern in each of the mapped habitat areas was not available from the MDNR geographical information system (GIS) data and, therefore, cannot be provided for the candidate site evaluation.

However, once the alternative sites were identified, additional data on T&E species beyond the initial screening-level geospatial data were obtained when available from internet-based and hard-copy reconnaissance-level data sources. The additional data on various T&E species at the alternative sites were then used to describe the potential environmental impacts on the terrestrial and aquatic resources documented in the ER. The difference between the reconnaissance-level data sources used for the two evaluations (i.e., the screening-level candidate site evaluation and more detailed alternative site evaluation) is the reason for apparent discrepancies between Appendix C of the Alternate Site Evaluation Report (i.e., the screening-level candidate site evaluation) and the identified ER sections (i.e., the more detailed alternative site evaluation).

RAI No. 1017, Aquatic Ecology Question 2, provides some detail on the above question regarding the Short Nose Sturgeon. Given its identification in reaches of the Potomac River below the Great Falls, it is unlikely that this species would be found in the vicinity of the EASTALCO site.

References:

MDNR, 2009a. Maryland's Natural Heritage Areas, Wildlife & Heritage Service, website: http://dnrweb.dnr.state.md.us/gis/data/sampledata.asp?data=NHA, accessed on June 19, 2009.

MDNR, 2009b. Sensitive Species Project Review Areas, website: http://dnrweb.dnr.state.md.us/gis/data/sampledata.asp?data=SSPRA, accessed on June 19, 2009.

COLA Impact

The COLA will not be revised as a result of this response.

RAI No. 1016

Terrestrial Ecology

Question 1: ESRP 9.3.2.2.4-3 and 9.3.2.3.4

Accessing a water supply for reactor cooling would require a pipeline at Bainbridge that drops down the Port Deposit bluffs to the Susquehanna River. A 5.8-mi pipeline would be needed to supply water from the Potomac River to the EASTALCO site. Provide the total area (length, width, total acreage) that would be temporarily and permanently impacted by the cooling water pipeline and intake from construction/upgrade at each alternative site. Would wetlands or streams be impacted by this construction? If so, describe the extent of wetlands/streams that would be impacted at each site.

Response

To determine potential off site impacts primarily associated with water line and transmission right-of-way (ROW), conceptual paths were identified utilizing GIS tools. These work products allowed for discrete calculation of wetland and stream impacts needed for completeness of alternative site evaluations. However, because these work products characterize 3rd party properties and are considered sensitive from a liability risk standpoint and, as such, are not included in any responses forwarded to the NRC. These work products can however be reviewed by NRC staff via reading rooms..

ER Table 9.3-12 Comparison of Wetland and Waterway Impacts CC3 vs. Alternate Sites,provides details of the impacts to these wetlands and streams in acres or linear feet as appropriate. Included in ER Table 9.3-12 are the assumptions made to calculate these impacts, such as the proposed water line ROW size (120' throughout, accommodating 2-60" pipes) and the impacts associated with its installation.

Note that as described in ER Table 9.3-12, impacts associated with construction of a water line ROW or transmission line ROW are considered to be temporary impacts capable of being restored following construction.

COLA Impact

COLA ER Tables 9.3-12, 9.3-13, and 9.3-14 will be revised as follows to reflect the latest wetland and stream impact revisions:

Table 9.3-12 Comparison of Wetland and Waterway Impacts: from~~CC3 vs.~~ Alternative Sites Evaluation Reconnaissance Level Data

	Proposed Site		Alternative Sites					
	Calvert Cliffs 3[13]		Bainbridge		EASTALCO		Thiokol[14]	
Property Acreage	2057.2		1068.6		1742.1		620.0	
Wetlands – Total Property[1] (ac)	173.2		4.6		~~21.0~~ 22.0		49.8	
Wetlands – Site[2] (ac)	6.6		0.0		0.0		34.5	
Streams – Total Property[3] (LF)	21805		8654		32944		7055	
Streams – Site[4] (LF)	3604		1557		1311		3435	
Wetlands Affected – Site[5] (ac)	6.6		0.0		0.0		34.5	
Streams Affected – Site[6] (LF)	3604		1557		1311		3435	
Off-Site Wetlands/Waterways Affected –ROWs and Interconnects (ac/LF)[7]	Wetlands	Streams	Wetlands	Streams	Wetlands	Streams	Wetlands	Streams
CWIS (in-water components)(ac)[8]	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
CW Pump House (ac.)[9]	NA	NA	0	0	0	0	0	0
Water Line ROW (ac)[10]	NA	NA	1.3	0	3.2	865	0.4	0
Transmission Line ROW (ac)[11]	0	0	~~3.0~~ 5.2	~~4926~~ 3517	0.2	1820	26.6	4051
RR Spur/Improvements (ac)	NA	NA	NA	NA	NA	NA	NA	NA
Access Roadways (ac)	NA	NA	NA	NA	NA	NA	NA	NA
Other Off-Site Uses (ac)[12]								

[1]"*Total Property*" includes the entirety of the alternate site facility contiguous land holdings (black outline).

[2]"*Site*" includes the 420 parcel on the Total Property selected for EPR development (red outline).

[3]Describes the total length of all streams on the Total Property in linear feet. Includes both mapped perennial and intermittent waterways and obvious drainage ways observed during site inspections or interpreted from desktop mapping.

[4]Describes streams within the 420 EPR Site, calculated in the same manner as streams for "Total Property".

[5] An assumption has been made that any wetlands within the 420 acre Site would be affected.

[6]An assumption has been made that any streams within the 420 acre Site would be affected by construction.

[7]An assumption has been made that any wetlands or streams within the ROWs or interconnects would be affected by construction. Impacts associated with ROW construction and some in-water construction activities are temporary in nature.

[8]An assumption has been made to allow a 100'x100' area of impact for in-water cooling water intake system (CWIS) components. No alternate sites are proposed to use shoreline intake structures; all intake/discharge structures are proposed to be sited at a depth of -20' MLW or greater. Horizontal directional drilling (HDD) is proposed to access off shore locations.

[9]A cooling water pump house would be located alongshore to the selected cooling water source, and would occupy 0.5 acre total area.

[10]For the purposes of this evaluation, it has been assumed that any water line ROW would require a 120' width for construction to allow installation of 2-60" pipes.

[11]For new transmission line construction or reconductoring of existing circuits to accommodate the EPR, a 300' wide cleared ROW is assumed to be required. The Transmission Corridor for the Thiokol site is different from the one in the March 2009 Requests for Additional Information Responses (UN#09-140)

[12]Other off-site uses include any required parking, laydown, staging requiring land alteration.

[13]ER Section 4.1.1.1 (Rev. 5) states the CCNPP3 and supporting facilities will be located on 2,070 acres; ER Section 4.3.1.3 (Rev. 5) states the construction of CCNPP3 will permanently fill approximately 8,350 LF of stream and 11.72 acres of delineated wetland areas. This table provides data primarily for the approximate 420-acre EPR Site (see Footnote 2) for consistent comparison with the alternative sites and, therefore, some data in this table will be different from quantities of affected acreage stated in the ER Rev. 5.

[14] ER Section 9.3.2.4.5 (UN#09-319) states that the Thiokol site has approximately 49.2 ac of non-tidal wetlands and 14,411 LF of stream within the 619 ac Thiokol site. This table provides data primarily for an approximate 420-acre EPR site within the overall property boundary. Therefore the data on affected wetlands and streams in this table will differ from the data presented in ER Section 9.3.2.4.5 (UN#09-319). ~~[13]ER Section 4.1.1.1 claimed the CCNPP3 and supporting facilities would be located on 2,070 acres; ER Section 4.3.1.3 stated the construction of CCNPP3 would permanently fill approximately 8,350 LF of stream and 11.72 acres of delineated wetland areas~~

~~[14] RAI Section 9.3.2.4 states the former Thiokol site is a 620 ac property; RAI Section 9.3.2.4.5 states the Thiokol site has approximately 49.2 ac of non-tidal wetlands and 14,411 LF of stream (Source: National Wetlands Inventory, Branch of Resource and Mapping Support, Geospatial Data – The Wetlands Geo Web; U.S. Fish and Wildlife Service, Website: http://www.fws.gov/wetlands/. Accessed July 2008.)~~

Sources: USFWS, 2008. National Wetlands Inventory, U.S. Fish and Wildlife Service, CONUS_wet_poly, Classification of Wetlands and Deepwater Habitats of the United States, Washington, DC, FWS/OBS-79/31, National Wetlands Metadata, website: http://www.fws.gov/wetlands/Data/DataDownloadState.html, accessed: June 17, 2009.

MDNR, 2002. Wetlands of Special State Concern Data, Geospatial Data from the Maryland Department of Natural Resources, Metadata, website: http://dnrweb.dnr.state.md.us/gis/data/data.asp, accessed June 27, 2009.

Table 9.3-13 Summary of Wetlands on Alternate Sites

	Number of discrete wetlands or systems	Wetland types (NWI classification)	Description
Calvert Cliffs 3	5	1. Freshwater Forested/Shrub Wetland 2. Freshwater Pond 3. Freshwater Pond 4. Freshwater Forested/Shrub Wetland 5. Freshwater Pond	1. 4.7 ac of PFO[1] 2. 0.5 ac of PUB[2] 3. 0.02 ac of PUB 4. 0.5 ac of PFO 5. 0.9 ac of PUB
Bainbridge	~~3~~ 5	1. ~~Riverine~~ Freshwater Forested/Shrub Wetland 2. ~~Riverine~~ Freshwater Pond 3. Riverine 4. Riverine 5. Freshwater Forested/Shrub	1. ~~1.3~~ 3.7 ac 2. ~~0.8~~ 0.9 ac 3. ~~2.2~~ 1.3 ac 4. 3.2 ac 5. 0.7 ac
EASTALCO	~~8~~ 10	1. Freshwater Emergent Wetland 2. Freshwater Emergent Wetland 3. Freshwater Forested/Shrub Wetland 4. Freshwater Forested/Shrub Wetland 5. Freshwater Forested/Shrub Wetland 6. Freshwater Emergent Wetland 7. Riverine 8. Freshwater Emergent Wetland 9. Freshwater Emergent Wetland 10. Freshwater Forested/Shrub Wetland	1. 0.2 ac 2. 0.4 ac 3. 0.1 ac 4. 0.3 ac 5. 0.9 ac 6. 0.03 ac 7. 1.3 ac 8. 0.2 ac 9. 0.3 ac 10. 0.7 ac
Thiokol	~~5~~ 14	1. Freshwater Forested/Shrub Wetland 2. Freshwater Forested/Shrub Wetland 3. Freshwater Forested/Shrub Wetland 4. Freshwater Forested/Shrub Wetland 5. Freshwater Forested/Shrub Wetland 6. Freshwater Forested/Shrub Wetland 7. Freshwater Forested/Shrub Wetland 8. Freshwater Pond	1. 2.5 ac of PFO 2. 31.9 ac of PFO 3. 0.08 ac 4. 0.3 ac 5. 4.3 ac 6. 0.1 ac 7. 0.1 ac 8. 0.5 ac

		9. Freshwater Emergent Wetland 10. Freshwater Forested/Shrub Wetland 11. Freshwater Emergent Wetland 12. Estuarine and Marine Wetland 13. Estuarine and Marine Deepwater 14. Freshwater Emergent Wetland	9. 1.9 ac 10. 5.2 ac 11. 1.1 ac 12. 6.3 ac 13. 6.8 ac 14. 0.3 ac

[1] PFO is a palustrine forested wetland
[2] PUB is a palustrine unconsolidated bottom wetland
Sources: USFWS, 2008. National Wetlands Inventory, U.S. Fish and Wildlife Service, CONUS_wet_poly, Classification of Wetlands and Deepwater Habitats of the United States, Washington, DC, FWS/OBS-79/31, National Wetlands Metadata, website: http://www.fws.gov/wetlands/Data/DataDownloadState.html, accessed: June 17, 2009.
MDNR, 2002. Wetlands of Special State Concern Data, Geospatial Data from the Maryland Department of Natural Resources, Metadata, website: http://dnrweb.dnr.state.md.us/gis/data/data.asp, accessed June 27, 2009.

Table 9.3-14 Summary of Waterways on Alternate Sites

	Number of/names of streams	Stream type	Description
Calvert Cliffs 3	A. Johns Creek	A. Perennial	A. 4661 LF
	B. Tributary to the Bay	B. Perennial	B. 2093 LF
	C. Tributary of Johns Creek	C. Perennial	C. 7400 LF
	D. Goldstein Branch	D. Perennial	D. 2051 LF
	E. Tributary of Perrin Branch	E. Intermittent	E. 4517 LF
	F. Tributary of Perrin Branch	F. Perennial	F. 1083 LF
Bainbridge	A. Tributary of Susquehanna River	A. Perennial	A. 2638 LF
	B. Happy Valley Branch	B. Perennial	B. 6016 LF
	C. Tributary of Susquehanna River	C. Perennial	~~3. 1244 LF~~ C. 1279
	D. Tributary of Susquehanna River	D. Perennial	D. ~~319~~ 312 LF
	E. Tributary of Susquehanna River	E. Perennial	E. ~~319~~ 308 LF
	F. ~~Basin Run~~ Octoraro Creek	F. Perennial	F. ~~1429~~ 1433 LF
	G. ~~Octoraro Creek~~ Tributary to Octoraro Creek	G. Perennial	G. ~~1432~~ 185 LF
	~~H. Tributary of Octoraro Creek~~	~~H. Perennial~~	~~H. 183 LF~~
EASTALCO	A. Tributary of Tuscarora Creek	A. Perennial	A.2693 LF
	B. Tuscarora Creek	B. Perennial	B. 12319 LF
	C. Tributary of Tuscarora Creek	C. Intermittent	C. 6001 LF
	D. Tributary of Tuscarora Creek	D. Perennial	D. 3399 LF
	E. Tributary of Tuscarora Creek	E. Intermittent	E. 4634 LF
	F. Horsehead Run	F. Intermittent	F. 3898 LF
	G. Tributary of Tuscarora Creek	G. Intermittent	G. 120 LF
	H. Tuscarora Creek	H. Perennial	H. 745 LF
	I. Tributary of Tuscarora Creek	I. Perennial	I. 395 LF
	J. Tributary of Tuscarora Creek	J. Perennial	J. 327 LF
	K. Tributary of Tuscarora Creek	K. Perennial	K. 378 LF
	L. Tributary of Tuscarora Creek	L. Perennial	L. 403 LF
	M. Tributary of Tuscarora Creek	M. Perennial	M. 317 LF
Thiokol	A. Tributary of Burnt Mill Creek	A. Perennial	A. 5430 LF
	B. Rich Neck Creek	B. Perennial	B. 2250 LF
	C. Tributary of Burnt Mill Creek	C. Perennial	C. 312 LF
	D. Horse Landing Creek	D. Perennial	D. 486 LF
	E. Tributary of Persimmon Creek	E. Perennial	E. 332 LF
	F. Persimmon Creek	F. Perennial	F. 324 LF
	G. Tributary of Killpeck Creek	G. Perennial	G. 300 LF
	H. Killpeck Creek	H. Perennial	H. 300 LF
	I. Tributary of Patuxent Creek	I. Perennial	I. 445 LF
	J. Tributary of Patuxent Creek	J. Perennial	J. 354 LF
	K. Tributary of Patuxent Creek	K. Perennial	K. 308 LF
	L. Tributary of Patuxent Creek	L. Intermittient	L. 201 LF
	M. Tributary of Patuxent Creek	M. Perennial	M. 310 LF
	L. Swanson Creek	L. Perennial	L. 379 LF