PMVictoriaESPPEm Resource

From: Terry, Tomeka
Sent: Thursday, August 09, 2012 5:16 PM
To: VictoriaESP Resource
Subject: FW: Courtesy copy of Exelon letter NP-12-0031 - Responses to ER RAI Letters No.10 and No.15
Attachments: NP-12-0031 - Responses to ER RAI Letters No.10 and No.15.pdf

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From: Joshua.Trembley@exeloncorp.com [mailto:Joshua.Trembley@exeloncorp.com]
Sent: Thursday, July 19, 2012 2:14 PM
To: Terry, Tomeka
Cc: dpatton@bechtel.com; acarson@bechtel.com; Lisa.Matis@tetratech.com; Steven.Connor@tetratech.com; David.Distel@exeloncorp.com; christopher.kerr@exeloncorp.com; avci@anl.gov; wescott@anl.gov; richardcodell@yahoo.com; Haque, Mohammad; kfischer@anl.gov; Mussatti, Daniel; GPoremba@entrix.com; Purdie, Michael
Subject: Courtesy copy of Exelon letter NP-12-0031 - Responses to ER RAI Letters No.10 and No.15

Tomeka,

Please find attached a courtesy copy of Exelon letter NP-12-0031. The letter provides a complete response to NRC RAI letter No.10 and a partial response to RAI letter No.15. Responses to the remaining RAI letter No.15 questions, HY-1 and HY-5, will be provided to the NRC no later than August 3, 2012, in accordance with the timeframe requested in the RAI letter.

NP-12-0031 was submitted to the NRC Document Control Desk this afternoon via US Mail. Hard carbon copies were sent to you and ANL. Please note that we intend to use the NRC EIE system to submit letters when it is feasible; however, for letters such as NP-12-0031, the inclusion of certain content (e.g., color figures or multiple attachments) and the resulting file sizes and attributes are better suited to hard copy submittals.

Please let me know if you have questions regarding the submittal.

Thank you and have a good day,
JT

610-765-5345

Hearing Identifier: Victoria_ESP_Public
Email Number: 710

Mail Envelope Properties (0A64B42AAA8FD4418CE1EB5240A6FED1A1224C934C)

Subject: FW: Courtesy copy of Exelon letter NP-12-0031 - Responses to ER RAI Letters No.10 and No.15
Sent Date: 8/9/2012 5:16:27 PM
Received Date: 8/9/2012 5:16:31 PM
From: Terry, Tomeka

Created By: Tomeka.Terry@nrc.gov

Recipients:
"VictoriaESP Resource" <VictoriaESP.Resource@nrc.gov>
Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

Files	**Size**	**Date & Time**	
MESSAGE	2363	8/9/2012 5:16:31 PM	
NP-12-0031 - Responses to ER RAI Letters No.10 and No.15.pdf			165338

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Reply Requested: No
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Expiration Date:
Recipients Received:

NP-12-0031
July 19, 2012

10 CFR 52, Subpart A

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

Subject: Exelon Nuclear Texas Holdings, LLC
Victoria County Station
Early Site Permit Application
Environmental Report – Responses to ER RAI Letters No.10 and No.15
Docket No. 52-042

References: (1) USNRC letter to Ms. Marilyn C. Kray, Environmental Request for Additional Information Letter No.10, Related to Cumulative Impacts for the Victoria County Station Early Site Permit Application, dated May 24, 2012

(2) USNRC letter to Ms. Marilyn C. Kray, Environmental Request for Additional Information Letter No.15 Related to Hydrology for Victoria County Station Early Site Permit Application, dated June 4, 2012

Exelon is responding to the following questions contained in NRC Request for Additional Information (RAI) letter No.10 (Reference 1):

- ESP EIS 7.0-1 (eRAI No.6431)

Exelon's response to the above-referenced RAI constitutes a complete response to NRC RAI Letter No.10. The response to RAI 6431 is provided in Attachment 1. Enclosure 1 is a compact disc (CD) providing updated versions of ER Sections 4.7 and 5.11. For ease of review, revised ER sections 4.7 and 5.11 shall supersede the current versions contained in ESPA Revision 1. As indicated in Attachment 1, the enclosed ER sections will be included in a future ESPA revision.

Exelon is also responding to the following questions contained in NRC RAI letter No.15 (Reference 2):

- HY-2 (eRAI No.6484)
- HY-3 (eRAI No.6484)
- HY-6 (eRAI No.6521)
- HY-8 (eRAI No.6491)
- HY-9 (eRAI No.6492)

Exelon's responses to the above-referenced RAIs constitute a partial response to NRC RAI Letter No.15. Responses to the remaining RAI letter No.15 questions, HY-1 and HY-5, will be provided no later than August 3, 2012, in accordance with the response timeframe requested in the RAI letter.

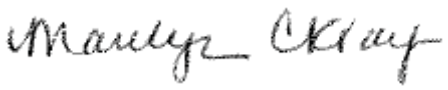
The RAI letter No.15 responses comprise Attachments 2-6. The CD provided in Enclosure 1 includes the documents requested in RAIs HY-2, HY-3, and HY-6.

Regulatory commitments are summarized in Attachment 7.

If additional information is required, please contact Joshua Trembley at (610) 765-5345.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 19th day of July, 2012.

Respectfully,



Marilyn C. Kray
Vice President, Nuclear Project Development

Attachments:

(1) Response to ESP EIS 7.01-1 (eRAI No.6395)
(2) Response to HY-2 (eRAI No.6484)
(3) Response to HY-3 (eRAI No.6484)
(4) Response to HY-6 (eRAI No.6521)
(5) Response to HY-8 (eRAI No.6491)
(6) Response to HY-9 (eRAI No.6492)
(7) Summary of Commitments

Enclosures:

(1) CD titled "Victoria County Station, Early Site Permit Application, Part 3, Environmental Report, RAI 6431 Response: Revised ER 4.7 and 5.11, RAI HY-2, HY-3, HY-6 Supporting Information, NP-12-0031, Enclosure 1, July 2012"

cc: USNRC, Director, Office of New Reactors/NRLPO (w/out Enclosures)
USNRC, Project Manager, VCS, Division of New Reactor Licensing (w/out Enclosures)
USNRC, Environmental Project Manager, VCS, Division of New Reactor Licensing (with Enclosures)
USNRC Region IV, Regional Administrator (w/out Enclosures)
Argonne National Laboratory, Project Manager, VCS (with Enclosures)
EDMS

ESP EIS 7.0-1 (eRAI No.6431):

NRC Request:

ESP EIS 7.0-1

ESRP 4.7 and 5.11 direct the staff to obtain information from the applicant about past, present, and reasonably foreseeable future actions (Federal, non-Federal, and private) that could have meaningful cumulative impacts on any resource area considered in the environmental impact statement (EIS), along with a characterization of their impacts for assessment of environmental consequences. The environmental report (ER) does not address cumulative impacts (or does not specify the results of the analysis) for all research areas (e.g., cultural, visual, and air quality) for actions in the vicinity of the proposed site. If an analysis was performed and the anticipated impact is low or non-existent (i.e., an activity has no significant impact), if the activity impacts only one resource area, or if the analysis was not performed, this should be stated. The ER does not identify or analyze the cumulative impacts of some known past, present, and reasonably foreseeable actions in the vicinity of the proposed site (e.g., the GBRA infrastructure upgrade, US-77 upgrade, hydraulic fracturing activities, Caterpillar plant, DuPont modernization), or does not analyze the cumulative impacts for all resource areas (e.g., heavy haul road). Cumulative impacts from past, present, and reasonably foreseeable future actions must also be considered for all alternative sites, and for all resource areas. The ER does not identify or analyze the cumulative impacts of activities in the vicinity of the four alternative sites.

(a) Provide a list (including description and status) of past, present, and reasonably foreseeable future projects/activities in the vicinity of the proposed Victoria County Station (VCS) site and the four alternative sites that should be considered in the cumulative impact analysis.

(b) Address the cumulative impacts of past, present, and reasonably foreseeable projects/activities in the vicinity of the VCS site for all resource areas and all project phases considered in the ER.

(c) Provide copies of all correspondence and documentation of personal communications used to support the cumulative impact analysis presented in the ER, including summaries of informal discussions with local government authorities on current or future activities/projects (public or private) in the vicinity of the VCS site (and alternative sites).

Response:

(a) Tables 1 through 4 identify projects/activities in the vicinity of the four alternative sites. A new ER Section 4.7 identifies projects/activities in the vicinity of the VCS site that were considered in the cumulative impact analysis.

(b) Updates to ER Sections 4.7 and 5.11 are provided with this response. Section 4.7 addresses the potential impacts that may be cumulative with the construction impacts for the VCS site. Section 5.11 addresses the potential impacts that may be cumulative with impacts from operation for the VCS site.

(c) The cumulative impacts analysis was performed using information obtained from public sources. There are no personal communications supporting the analysis. However, as discussed in the response to RAI SE-5.11-2, an Exelon representative met with local officials and community members on April 24, 2012, to corroborate the publically available information used in Exelon's updated socioeconomic analyses and inquire about new or changed conditions. These meetings included discussions about the status of planned or potential local and regional projects. The response to RAI SE-5.11-2 is provided in Exelon letter NP-12-0030, dated July 12, 2012.

References:

See Tables 1 through 4 for sources.

Associated ESPA Revisions:

Sections 4.7 and 5.11 will be updated in a future revision to the Environmental Report. Both sections are being replaced in their entirety. Revised ER 4.7 and 5.11 are included on the compact disc provided as Enclosure 1 to this response.

The attached Sections 4.7 and 5.11 include changes to land use impacts presented in the Environmental Report as identified in the response to RAI Letter No. 8 (TE-5) transmitted by Exelon letter NP-12-0024, dated June 11, 2012.

The attached Sections 4.7 and 5.11 include changes to radiological health impacts presented in Table 5.4-5 of the Environmental Report as identified in the response to RAI Letter No. 12 (HP 5.4.1-8) transmitted by Exelon letter NP-12-0028, dated July 13, 2012.

The attached Section 4.7 includes changes to cultural resource impacts as identified in the response to RAI Letter No. 9 (CR-1) transmitted by Exelon letter NP-12-0022, dated June 18, 2010. Cultural resource impacts are now presented in a separate Subsection 4.7.5.

The attached Sections 4.7 and 5.11 include changes to air quality impacts as identified in the response to RAI Letter No. 14 (MET-4), which will be transmitted to NRC no later than July 30, 2012.

The attached Section 5.11 includes changes to ER Subsection 5.11.3.3 identified in the response to RAI Letter No. 15 (HY-2). The RAI HY-2 response is included as Attachment 2 of this response letter.

Table 1. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Matagorda County Site (Sheet 1 of 5)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Energy Projects				
White Stallion Energy Center (WSEC)	Proposed 1320-MW baseload power plant fueled by a petroleum coke/bituminous coal combination	About 16 mi north-northeast	Proposed. Four to five year project; construction is expected to be completed by 2015.	http://www.whitestallionenergycenter.com/community/economic-impact/
South Texas Project Units 1 and 2	Two 1265 MW(e) Westinghouse pressurized water reactors	About 12 mi north-northeast	Operational. STPNOC submitted an application for renewal of the operating licenses for Units 1 and 2 in October 2010. If granted, the operating licenses would be extended for 20 years, or until 2047 for Unit 1 and 2048 for Unit 2.	Letter from G.T. Powell, South Texas Project Nuclear Operating Company (STPNOC), to NRC, dated October 25, 2010, "South Texas Project Units 1 and 2 Docket Nos. STN 50-498, STN 50-499 License Renewal Application." Accession No. ML103010257. http://www.nrc.gov/reactors/operating/licensing/renewal/applications/south-texas-proj/south-texas-project-lra.pdf
South Texas Project Units 3 and 4	Two approximately 1300 MW(e) net U.S. Advanced Boiling Water Reactors (ABWR)	About 12 mi north-northeast	Proposed. STPNOC submitted an application to NRC for a COL in September 2007.	http://pbadupws.nrc.gov/docs/ML0728/ML072830407.pdf
Calhoun Liquefied Natural Gas (LNG) Terminal (Port Lavaca)	LNG terminal on Port Lavaca-Point Comfort	About 24 mi west	Proposed	http://www.ferc.gov/industries/lng/enviro/eis/2007/08-10-07-eis.asp
E.S. Joslin Power Plant Project (Port Lavaca)	Proposed upgrade from 261-MW to 303-MW power plant fueled by petroleum coke	About 23 mi west	The E.S. Joslin Power Plant operated from 1971 until 2004. Currently not operating. NuCoastal Power Corp had plans to repower the plant. Air permits have been issued. Property is for sale and proposed project is no longer viable.	http://www.reuters.com/article/2008/08/20/utilities-arclight-texas-idUSN2044372820080820

Table 1. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Matagorda County Site (Sheet 2 of 5)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Transmission Lines	Various transmission lines currently exist throughout region and installation of additional lines would occur if other large energy projects such as the WSEC are built. New transmission lines could require the following: widening of existing corridors, building new corridors, moving facilities within corridors, building new facilities within corridors.	Throughout region	Currently existing as well as the potential for additional transmission lines to be built	
Water Resources				
Matagorda Ship Channel Improvement Project	Widen and deepen the Matagorda Ship Channel by dredging.	Port of Port Lavaca – Point Comfort Turning Basin through the Matagorda Bay to the Gulf of Mexico	Proposed. Record of Decision issued November 2010.	http://www.swg.usace.army.mil/reg/eis.asp or http://pbadupws.nrc.gov/docs/ML1100/ML110030893.pdf
Lower Colorado River Authority-San Antonio Water System (LCRA-SAWS) project	Water sharing proposal to develop alternative water supplies that could help meet long-term needs in the lower Colorado River Basin and the San Antonio area. Delivery of water would occur from LCRA to SAWS.	Entire Lower Colorado River Basin	Proposed. Delivery of water from LCRA to SAWS could begin in 2025.	http://www.lcra.org/library/media/public/docs/lswp/findings/MBHE_Inflow_Criteria_FINAL_Dec_08.pdf

Table 1. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Matagorda County Site (Sheet 3 of 5)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Mouth of the Colorado River Project	Construct a channel to divert all Colorado River flow from the Gulf of Mexico into the Matagorda Bay	Mouth of the Colorado River (approx 12-13 mi east-southeast)	Constructed 1989-1992 by the Corps.	http://www.swg.usace.army.mil/items/coloradoriver/MOC.asp
Gulf Intracoastal Waterway (GIWW) Reroute	Reroute of the GIWW across Matagorda Bay	Matagorda Bay	Completed	http://ftp.dot.state.tx.us/pub/txdotinfo/tpp/giww/giww00.pdf
Municipal diversions from the Colorado River	Diversion for city water supplies	Various locations along the Colorado River such as Bay City and Selkirk	Operational	
Mary Rhodes Pipeline Phase II project	Construct a 40-mi pipeline to divert water from the Lower Colorado River to Lake Texana for the City of Corpus Christi	Between Bay City and existing Mary Rhodes Pipeline.	Proposed. Anticipated in the 2020 to 2030 time frame with a two to three year construction duration. Actual implementation is dependent on increases in future demand.	http://www.cctexas.com/files/g17/20010501COLORADOGARWOOD.pdf http://www.cctexas.com/files/g17/GarwoodCouncilPresentation100209.pdf
Municipal wastewater treatment facilities	Palacios	Within 10 mi of Matagorda County site	Operational	
East Jetty construction and pipeline dredging	Sediment removal and channel excavation and repairs	Colorado River and Tributaries, Texas mouth of Colorado River in Matagorda County	Completed in October 2010	http://www.swg.usace.army.mil/items/NewsReleases/NR101001_CorpsOfEngineersCompletesJettyConstructionInMatagorda.pdf http://www.dboland.com/pipelinedredging.html

Table 1. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Matagorda County Site (Sheet 4 of 5)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Port of Bay City Authority Barge Terminal	Barge terminal with a liquid cargo dock, a concrete dock, a low level heavy duty dock and a turning basin	About 16 mi north-northeast	Operational	http://www.portofbaycity.com/
Parks				
Brazos Bend State Park	Camping, picnicking, hiking, biking, equestrian, and fishing at six lakes	About 60 mi north-northeast	Development likely limited within this park	http://www.tpwd.state.tx.us/spdest/findadest/parks/brazos_bend
Clive Runnels Family Mad Island Marsh Preserve	Natural preserve	About 5 mi east-southeast	Development unlikely in this preserve	http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/texas/placesweprotect/clive-runnells-family-mad-island-marsh-preserve.xml
Mad Island Wildlife Management Area	Wildlife management area	About 6 mi east-southeast	Development unlikely in this area	http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/list/?id=39
Big Boggy National Wildlife Refuge	Wildlife management area	About 21 mi northeast	Development unlikely in this area	http://www.fws.gov/southwest/refuges/texas/texasmidcoast/bigboggy.htm
Other Actions/Projects				
Formosa Plastics Corporation	Manufactures plastic resins and petrochemicals	About 23 mi west	Operational	http://oaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110018925957
Alcoa Aluminum Plant	Aluminum manufacturing	About 24 mi west	Operational	http://cfpub.epa.gov/supercpad/cursites/csitinfo.cfm?id=0601752
Equistar Chemicals LP, Matagorda Facility	Manufactures plastics, synthetic resins, and nonvulcanized elastomers	About 16 mi northeast	Operational	http://oaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110006126717
OXEA Corporation, Bay City Plant (formerly Celanese)	Manufactures organic chemicals	About 16 mi north-northeast	Operational	http://oaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110000728062 and http://oaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110031389192
Texas Liquid Fertilizer Co. Point Comfort	Manufactures nitrogenous fertilizer	About 23 mi west	Operational	http://oaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110018939158

Table 1. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Matagorda County Site (Sheet 5 of 5)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Various hospitals and industrial facilities that use radioactive materials	Medical and other isotopes	Within 50 mi	Operational in nearby cities and towns	
Future Urbanization	Construction of housing units and associated commercial buildings; roads (such as the I-69 Corridor project), bridges, and rail; construction of water and/or wastewater treatment and distribution facilities and associated pipelines, as described in local land-use planning documents. There is a low potential for increased urbanization within Matagorda county as population growth is expected to be less than 2 percent per year.	Throughout region	Construction would occur in the future, as described in State and local land use planning documents	http://www.txdot.gov/public_involvement/committees/i69/default.htm

Table 2. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Buckeye Site (Sheet 1 of 5)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Energy Projects				
White Stallion Energy Center (WSEC)	Proposed 1320-MW baseload power plant fueled by a petroleum coke/bituminous coal combination	About 6 mi southeast	Proposed. Four to five year project; construction is expected to be completed by 2015.	http://www.whitestallionenergycenter.com/community/economic-impact/
South Texas Project Units 1 and 2	Two 1265 MW(e) Westinghouse pressurized water reactors	About 6 mi south-southeast	Operational. STPNOC submitted an application for renewal of the operating licenses for Units 1 and 2 in October 2010. If granted, the operating licenses would be extended for 20 years, or until 2047 for Unit 1 and 2048 for Unit 2.	Letter from G.T. Powell, South Texas Project Nuclear Operating Company (STPNOC), to NRC, dated October 25, 2010, "South Texas Project Units 1 and 2 Docket Nos. STN 50-498, STN 50-499 License Renewal Application." Accession No. ML103010257. http://www.nrc.gov/reactors/operating/licensing/renewal/applications/south-texas-proj/south-texas-project-lra.pdf
South Texas Project Units 3 and 4	Two approximately 1300 MW(e) net U.S. Advanced Boiling Water Reactors (ABWR)		Proposed. STPNOC submitted an application to NRC for a COL in September 2007.	http://pbadupws.nrc.gov/docs/ML0728/ML072830407.pdf
Calhoun Liquefied Natural Gas (LNG) Terminal (Port Lavaca)	LNG terminal on Port Lavaca-Point Comfort	About 34 mi southwest	Proposed	http://www.ferc.gov/industries/lng/enviro/eis/2007/08-10-07-eis.asp
E.S. Joslin Power Plant Project (Port Lavaca)	Proposed upgrade from 261-MW to 303-MW power plant fueled by petroleum coke	About 32 mi southwest	The E.S. Joslin Power Plant operated from 1971 until 2004. Currently not operating. NuCoastal Power Corp had plans to repower the plant. Air permits have been issued. Property is for sale and proposed project is no longer viable.	http://www.reuters.com/article/2008/08/20/utilities-arclight-texas-idUSN2044372820080820

Table 2. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Buckeye Site (Sheet 2 of 5)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Transmission Lines	New transmission lines are not required for STP, but various transmission lines currently exist throughout region and installation of additional lines would occur if new nuclear plants such as the Victoria County Station or other large energy projects such as the WSEC are built. New transmission lines could require the following: widening of existing corridors, building new corridors, moving facilities within corridors, building new facilities within corridors.	Throughout region	Currently existing as well as the potential for additional transmission lines to be built	
Water Resources				
Matagorda Ship Channel Improvement Project	Widen and deepen the Matagorda Ship Channel by dredging.	Port of Port Lavaca – Point Comfort Turning Basin through the Matagorda Bay to the Gulf of Mexico	Proposed. Record of Decision issued November 2010.	http://www.swg.usace.army.mil/reg/eis.asp or http://pbadupws.nrc.gov/docs/ML1100/ML110030893.pdf
Lower Colorado River Authority-San Antonio Water System (LCRA-SAWS) project	Water sharing proposal to develop alternative water supplies that could help meet long-term needs in the lower Colorado River Basin and the San Antonio area. Delivery of water would	Entire Lower Colorado River Basin	Proposed. Delivery of water from LCRA to SAWS could begin in 2025.	http://www.lcra.org/library/media/public/docs/lswp/findings/MBHE_Inflow_Criteria_FINAL_Dec_08.pdf
Mouth of the Colorado River Project	Construct a channel to divert all Colorado River flow from the Gulf of Mexico into the Matagorda Bay	Mouth of the Colorado River (approx 17 mi south-southeast)	Constructed 1989-1992 by the Corps.	http://www.swg.usace.army.mil/items/coloradoriver/MOC.asp

Table 2. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Buckeye Site (Sheet 3 of 5)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Gulf Intracoastal Waterway (GIWW) Reroute	Reroute of the GIWW across Matagorda Bay	Matagorda Bay	Completed	http://ftp.dot.state.tx.us/pub/txdotinfo/tpp/giww/giww00.pdf
Municipal diversions from the Colorado River	Diversion for city water supplies	Various locations along the Colorado River such as Bay City and Selkirk	Operational	
Mary Rhodes Pipeline Phase II project	Construct a 40-mi pipeline to divert water from the Lower Colorado River to Lake Texana for the City of Corpus Christi	Between Bay City and existing Mary Rhodes Pipeline.	Proposed. Anticipated in the 2020 to 2030 time frame with a two to three year construction duration. Actual implementation is dependent on increases in future demand.	http://www.cctexas.com/files/g17/20010501COLORADOGARWOOD.pdf http://www.cctexas.com/files/g17/GarwoodCouncilPresentation100209.pdf
Municipal wastewater treatment facilities	Wadsworth, Markham Municipal Utility District, Bay City, Midfield	Within 10 mi of Buckeye Site	Operational	
East Jetty construction and pipeline dredging	Sediment removal and channel excavation and repairs	Colorado River and Tributaries, Texas mouth of Colorado River in Matagorda County	Completed in October 2010	http://www.swg.usace.army.mil/items/NewsReleases/NR101001_CorpsOfEngineersCompletesJettyConstructionInMatagorda.pdf http://www.dboland.com/pipelinedredging.html
Port of Bay City Authority Barge Terminal	Barge terminal with a liquid cargo dock, a concrete dock, a low level heavy duty dock and a turning basin	About 3 mi southeast	Operational	http://www.portofbaycity.com/
Parks				
Brazos Bend State Park	Camping, picnicking, hiking, biking, equestrian, and fishing at six lakes	About 44 mi northeast	Development likely limited within this park	http://www.tpwd.state.tx.us/spdest/findadest/parks/brazos_bend

Table 2. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Buckeye Site (Sheet 4 of 5)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Clive Runnels Family Mad Island Marsh Preserve	Natural preserve	About 15 mi south	Development unlikely in this preserve	http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/texas/placesweprotect/clive-runnells-family-mad-island-marsh-preserve.xml
Mad Island Wildlife Management Area	Wildlife management area	About 12 mi south	Development unlikely in this area	http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/list/?id=39
Big Boggy National Wildlife Refuge	Wildlife management area	About 16 mi southeast	Development unlikely in this area	http://www.fws.gov/southwest/refuges/texas/texasmidcoast/bigboggy.htm
Other Actions/Projects				
Formosa Plastics Corporation	Manufactures plastic resins and petrochemicals	About 32 mi southwest	Operational	http://oaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110018925957
Alcoa Aluminum Plant	Aluminum manufacturing	About 33 mi southwest	Operational	http://cfpub.epa.gov/supercpad/cursites/csitinfo.cfm?id=0601752
Equistar Chemicals LP, Matagorda Facility	Manufactures plastics, synthetic resins, and nonvulcanized elastomers	About 10 mi southeast	Operational	http://oaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110006126717
OXEA Corporation, Bay City Plant (formerly Celanese)	Manufactures organic chemicals	About 3.5 mi southeast	Operational	http://oaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110000728062 and http://oaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110031389192
Texas Liquid Fertilizer Co. Point Comfort	Manufactures nitrogenous fertilizer	About 33 mi southwest	Operational	http://oaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110018939158
Various hospitals and industrial facilities that use radioactive materials	Medical and other isotopes	Within 50 mi	Operational in nearby cities and towns	

Table 2. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Buckeye Site (Sheet 5 of 5)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Future Urbanization	Construction of housing units and associated commercial buildings; roads (such as the I-69 Corridor project), bridges, and rail; construction of water- and/or wastewater treatment and distribution facilities and associated pipelines, as described in local land-use planning documents. There is a low potential for increased urbanization within Matagorda County as population growth is expected to be less than 2 percent per year.	Throughout region	Construction would occur in the future, as described in State and local land use planning documents	http://www.txdot.gov/public_involvement/committees/i69/default.htm

Table 3. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Alpha Site (Sheet 1 of 3)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Energy Projects				
W.A. Parish Electric Generating Station	Nine-unit, 3653-MW coal- and gas-fired plant	About 30 mi southeast of Alpha site	Operational	http://oaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?pgm_sys_id_in=TXD097311849&pgm_sys_acrnm_in=RCRAINFO
South Texas Project Units 1 and 2	Two 1250 MW(e) net Westinghouse pressurized water reactors	About 60 mi south of Alpha site	Operational. STPNOC submitted an application for renewal of the operating licenses for Units 1 and 2 in October 2010. If granted, the operating licenses would be extended for 20 years, or until 2047 for Unit 1 and 2048 for Unit 2.	Letter from G.T. Powell, South Texas Project Nuclear Operating Company (STPNOC), to NRC, dated October 25, 2010, "South Texas Project Units 1 and 2 Docket Nos. STN 50-498, STN 50-499 License Renewal Application." Accession No. ML103010257. http://www.nrc.gov/reactors/operating/licensing/renewal/applications/south-texas-proj/south-texas-project-lra.pdf
South Texas Project Units 3 and 4	Two approximately 1300 MW(e) net U.S. Advanced Boiling Water Reactors (ABWR)		Proposed. STPNOC submitted an application to NRC for a COL in September 2007.	http://pbadupws.nrc.gov/docs/ML0728/ML072830407.pdf
Transportation Projects				
Highway construction	Construction of a 11.9-mi new location, four-lane, controlled access toll road from US Highway 290 to State Highway 249 in Harris County, Texas	Approx 40 mi from Alpha site	Proposed. Final EIS issued June 2009.	http://www.grandpky.com/downloads/segment_f1/20090605_F-1_FEIS%20Draft_ReEval.pdf
Water Resources				
Allens Creek Reservoir	9500-ac municipal water supply reservoir on Allens Creek proposed by Brazos River Authority	At the Alpha site	Proposed. Construction is expected to begin by 2018.	http://www.brazos.org/generalPdf/acr_Project_Timeline.pdf
Waste Water Treatment Plants	Numerous plants	Within 30 mi radius of site	Operational	

Table 3. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Alpha Site (Sheet 2 of 3)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Parks				
Texas Independence Trail	Driving route within the Texas Independence Trail region	Throughout the region near site	Development likely limited at specific points along the trail	Letter from Scott Head, STPNOC, to NRC, dated October 27, 2009, "Response to Request for Additional Information." Accession No. ML093060175.
Stephen F. Austin State Historical Park	Activities include picnicking, camping, fishing, hiking, and nature and historical tours	About 10 mi north of Alpha site	Development likely limited within this park	http://www.tpwd.state.tx.us/spdest/findadest/parks/stephen_f_austin_and_san_felipe
Attwater Prairie Chicken National Wildlife Refuge	Home to one of the last populations of the critically endangered Attwater's prairie chicken	Closest parcel of land is 5 mi west of Alpha site	Development likely limited within this refuge	Letter from Scott Head, STPNOC, to NRC, dated October 27, 2009, "Response to Request for Additional Information." Accession No. ML093060175.
Brazos Bend State Park	Activities include camping, picnicking, hiking, biking, equestrian, and fishing at six lakes	About 20 mi southeast of Alpha site	Development likely limited within this park	http://www.tpwd.state.tx.us/spdest/findadest/parks/brazos_bend
Other Actions/Projects				
US Steel Tubular Products Inc. – Bellville Operations Division	Line pipe and tubular goods manufacture	About 20 mi northwest of Alpha site	Operational	http://www.ussteel.com/corp/facilities/Bellville.asp
Hudson Products Corporation	Design and manufacture air-cooled heat exchanger equipment to serve the oil, gas and petrochemical processing industries	About 10 mi southeast of Alpha site	Operational	http://www.hudsonproducts.com/about/index.html
Frito Lay – Rosenberg Facility	Food manufacturer	About 20 mi southeast of Alpha site	Operational	http://oaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?pgm_sys_id_in=77471FRTLY3310H&pgm_sys_acrnm_in=TRIS
Acme Brick, San Felipe Plant, Sealy	Brick and structural clay tile manufacture	About 10 mi north-northwest of Alpha site	Operational	http://oaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?pgm_sys_id_in=TXR000017343&pgm_sys_acrnm_in=RCRAINFO

Table 3. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Alpha Site (Sheet 3 of 3)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Future Urbanization	Construction of housing units and associated commercial buildings; roads (such as the I-69 Corridor project), bridges, and rail; construction of water- and/or wastewater- treatment and distribution facilities and associated pipelines, as described in local land-use planning documents.	Throughout region	Construction would occur in the future, as described in state and local land-use planning documents	http://www.txdot.gov/public_involvement/committees/i69/default.htm
Various hospitals and industrial facilities that use radioactive materials	Medical and other isotopes	Within 50 mi	Operational in nearby cities and towns	

Table 4. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Bravo Site (Sheet 1 of 7)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Energy Projects				
Big Brown Steam Electric Station	Two-unit, 1,150-MW coal-fired plant	About 22 mi south of the Bravo site	Operational	http://www.luminant.com/plants/pdf/PwrPtsMines.pdf
Comanche Peak Units 1 & 2	Two Westinghouse pressurized water reactor units with total net output of 2,300 MW	About 103 mi west of the Bravo site	Operational.	http://www.luminant.com/plants/pdf/PwrPtsMines.pdf http://www.nrc.gov/info-finder/reactor/cp1.html http://www.nrc.gov/info-finder/reactor/cp2.html
Comanche Peak Units 3 &4	Proposed nuclear plant consisting of two approximately 1600 MW(e) net U.S. Advanced Pressurized Water Reactor (US-APWR) units	About 103 mi west of the Bravo site	Proposed. Luminant submitted an application to NRC for a COL in September 2008.	http://pbadupws.nrc.gov/docs/ML0826/ML082680250.pdf
Ennis Tractebel Power Project	One-unit, 343-MW gas-fired plant	About 39 mi northwest of the Bravo site	Operational	http://annualreport2011.iprplc-gdfsuez.com/assets/downloads/pdfs/IP-2011-RR-NorthAmerica.pdf
Forney Energy Center	Eight-unit, 1,792-MW gas-fired plant	About 50 mi northwest of the Bravo site	Operational	http://www.nexteraenergyresources.com/content/where/portfolio/pdf/Forney1.pdf
Freestone Power Generation Plant	Six-unit, 1036-MW gas-fired plant	About 18 mi southwest of the Bravo site	Operational	http://www.ercot.com/content/news/presentations/2012/CapacityDemandandReserveReport-2012.xls
Lakeside Energy Center	Proposed baseload plant consisting of two 640-MW gas-fired combined cycle units	About 15 mi southwest of the Bravo site	Proposed. Pending approval of state permits.	http://www10.tceq.state.tx.us/epic/enotice/index.cfm?fuseaction=main.PublicNoticeDescResults&requesttimeout=5000&CHK_ITEM_ID=42840598 2011222
Limestone Electric Generating Station	Two-unit, 1,690-MW coal-fired plant	About 51 mi southwest of the Bravo site	Operational	http://www.nrgenergy.com/pdf/factsheets/factsheet_limestone.pdf
Limestone 3 Expansion Project	Proposed one-unit 800-MW combined cycle gas-fired plant	About 51 mi southwest of the Bravo site	Proposed. Air permits received in 2009.	http://www.nrgenergy.com/pdf/factsheets/factsheet_limestone.pdf
Navarro Energy Center	Proposed baseload plant consisting of two 700-MW gas-fired combined cycle units	About 30 mi southwest of the Bravo site	Proposed. Pending approval of state permits.	http://www10.tceq.state.tx.us/epic/enotice/index.cfm?fuseaction=main.PublicNoticeDescResults&requesttimeout=5000&CHK_ITEM_ID=13438173 2012117

Table 4. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Bravo Site (Sheet 2 of 7)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Trinidad Power Plant	One-unit, 244-MW gas-fired plant	About 4 mi southwest of the Bravo site	Operational	http://www.luminant.com/plants/pdf/PwrPtsMines.pdf
Atmos Energy Pipeline Tri-Cities Station	Underground gas storage facility – maximum storage capacity = 556.1 million cubic meters	About 6 mi west of the Bravo site	Operational	http://www.igu.org/html/wgc2009/committee/WOC2/Excel/Report_Tab_World_Data_All_in_operation_2009.xls
Transmission Lines	Various transmission lines currently exist throughout region and installation of additional lines would occur if new nuclear plants or other large energy projects such as the Navarro Energy Center are built. New transmission lines could require the following: widening of existing corridors, building new corridors, moving facilities within corridors, building new facilities within corridors.	Throughout region	Currently existing as well as the potential for additional transmission lines to be built	
Transportation Projects				
State Loop 49 Project	Construct an outer loop highway around Tyler Texas	Nearest section about 38 mi northeast of the Bravo site	South section completed. West section under construction. Additional sections will be constructed as funding becomes available.	http://www.dot.state.tx.us/TYL/projects/SL49/default.htm
Water Resources				
Integrated Pipeline Project	Construct a 150-mile pipeline to divert water from Lake Palestine, Cedar Creek Reservoir and Richland-Chambers Reservoir to Lake Benbrook for the Dallas /Ft. Worth area.		Proposed. Construction could begin as early as 2014 and the pipeline is expected to be operational by 2021.	http://www.trwd.com/IPL.aspx http://www.gdhcc.com/clientuploads/ECO_WEEK_APRIL_19_2010/City_ofDAllas_Geo.pdf
Municipal diversions from lakes and rivers in the Trinity River Basin	Diversion for city water supplies	Various locations in the Trinity River Basin such as Malakoff and Corsicana	Operational	http://www10.tceq.state.tx.us/iwud/reports/index.cfm?RequestTimeout=1000

Table 4. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Bravo Site (Sheet 3 of 7)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Waste Water Treatment Plants	Numerous plants	Within 30 mi radius of site	Operational	
Mining Projects				
Big Brown Mine	Surface mine – lignite. Produced 969,081 short tons in 2011.	About 21 mi south of the Bravo site	Operational	http://www.rrc.state.tx.us/data/production/_COALPRODthru2011.pdf
Turlington Mine	Surface mine – lignite. Produced 2,765,429 short tons in 2011.	About 19 mi south of the Bravo site	Operational	http://www.rrc.state.tx.us/data/production/_COALPRODthru2011.pdf
Jewitt Mine	Surface mine – lignite. Produced 4,221,546 short tons in 2011.	About 51 mi southwest of the Bravo site	Operational	http://www.rrc.state.tx.us/data/production/_COALPRODthru2011.pdf
Grand Saline Mine	Underground mine – salt. Produces about 550,000 tons per year.	About 41 mi northeast of the Bravo site	Operational	http://minerals.usgs.gov/minerals/pubs/commodity/salt/myb1-2010-salt.xls
Parks				
Big Lake Bottom Wildlife Management Area	3,894 acres to protect and enhance bottomland hardwood habitats and associated flora and fauna. Activities include fishing hunting and wildlife viewing.	About 29 mi southeast of the Bravo site	Development unlikely within this area	http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/list/?id=1 http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/maps/?action=getMap&region=2
Cedar Creek Islands Wildlife Management Area	Three islands totaling 160 acres in Cedar Creek Reservoir that are heavily used as rookeries by aquatic birds. Fishing and wildlife viewing is from boats or the banks of Cedar Creek Reservoir only	Nearest unit about 15 mi northwest of the Bravo site	Development unlikely within this area	http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/list/?id=5 http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/maps/?action=getMap&region=2
Cedar Hill State Park	Activities include camping, swimming, fishing, boating, mountain biking, picnicking and birding.	About 64 mi northwest of the Bravo site	Development likely limited within this park	http://www.tpwd.state.tx.us/state-parks/cedar-hill
East Texas Ecological Education Center at Tyler	The 82 acre nature center contains portions of three types of forest communities: dry upland, mesic (moist) upland, and mesic creek bottom. Activities include educational programs, hiking and wildlife viewing.	About 50 mi east of the Bravo site	Development unlikely within this area	http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/list/?id=59 http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/maps/?action=getMap&region=3 http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd_bk_w7000_0021.pdf

Table 4. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Bravo Site (Sheet 4 of 7)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Fairfield Lake State Park	Activities include camping, backpacking, hiking, horseback riding, nature study, bird watching, boating, fishing, and lake swimming.	About 23 mi south of the Bravo site	Development likely limited within this park	http://www.tpwd.state.tx.us/state-parks/fairfield-lake
Fort Parker State Park	Fort Parker offers camping, picnicking, swimming, fishing, bird watching, hiking, biking, canoeing, nature study and baseball/softball.	About 49 mi southwest of the Bravo site	Development likely limited within this park	http://www.tpwd.state.tx.us/state-parks/fort-parker
Gus Engeling Wildlife Management Area	10,958-acre wildlife research and demonstration area for the Post Oak Savannah Ecoregion. Activities include biking, camping, horseback riding, fishing, hiking, hunting, and wildlife viewing.	About 11.5 mi southeast of the Bravo site	Development unlikely within this area	http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/list/?id=10 http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/maps/?action=getMap&region=2
Keechi Creek Wildlife Management Area	1,500 acres for the preservation of bottomland hardwoods and for use as a waterfowl management area. Access is limited. An Annual Public Hunting Permit or Limited Public Use Permit is required to utilize the area.	About 47 mi south of the Bravo site	Development unlikely within this area	http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/list/?id=11 http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/maps/?action=getMap&region=2
Lake Tawakoni State Park	Lake Tawakoni offers 376 acres with more than five miles of shoreline and a variety of activities, including swimming, fishing, boating, mountain biking, geocaching, hiking and birding.	About 48 mi north of the Bravo site	Development likely limited within this park	http://www.tpwd.state.tx.us/state-parks/lake-tawakoni
Little Sandy National Wildlife Refuge	3,802 acres of old growth bottomland hardwood forest and associated wetlands that provide habitat for wintering waterfowl and a large number of other wildlife and plant species, Access to this refuge is limited to hunters with prior approval.	About 53 mi northeast of the Bravo site	Development unlikely within this refuge	http://www.fws.gov/southwest/refuges/Plan/docs/LittleSandyNWRNoticeofIntent.pdf

Table 4. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Bravo Site (Sheet 5 of 7)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Mineola Nature Preserve	2,911 acres home to more than 193 species of birds, numerous wildlife, buffalo, longhorn cattle, and a pristine wetlands environment. Activities include biking, camping, horseback riding, fishing, hiking, and wildlife viewing	About 46 mi northeast of the Bravo site	Development unlikely within this preserve	http://mineolanaturepreserve.com/about-the-preserve.html
Old Sabine Bottom Wildlife Management Area	5,158 acres of mostly bottomland hardwood habitat containing large stands of hardwoods such as oak, elm and ash that provide habitat for wintering waterfowl. Activities include biking, camping, horseback riding, fishing, hiking, hunting, and wildlife viewing.	About 50 mi northeast of the Bravo site	Development unlikely within this area	http://southern.ducks.org/OldSabine.php http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/list/?id=34 http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/maps/?action=getMap&region=3
Purtis Creek State Park	Activities include camping, picnicking, fishing, boating and hiking.	About 15 mi northeast of the Bravo site	Development likely limited within this park	http://www.tpwd.state.tx.us/state-parks/purtis-creek
Richland Creek Wildlife Management Area	13,783 acres to develop and manage populations of indigenous and migratory wildlife species and their habitats. Activities include biking, camping, horseback riding, fishing, hiking, hunting, and wildlife viewing.	About 12 mi south of the Bravo site	Development unlikely within this area	http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/list/?id=23 http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/maps/?action=getMap&region=2
Tawakoni Wildlife Management Area	Three units totaling 2,335 acres to provide habitat for white-tailed deer, feral hog, waterfowl, dove, other migratory game birds, squirrel, quail, rabbits, hares, furbearers and coyotes. Activities include camping, horseback riding, fishing, hiking, hunting, and wildlife viewing.	Nearest unit about 47 mi north of the Bravo site	Development unlikely within this area	http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/list/?id=24 http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/maps/?action=getMap&region=2
Texas State Railroad Historical Park	Historic railroad offers steam train excursions that travel 25 miles, between Rusk and Palestine, through the piney woods and hardwood creek bottoms of East Texas.	Closest terminal is about 37 mi southeast of the Bravo site	Development likely limited at specific points along the route	http://www.texasstaterr.com/

Table 4. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Bravo Site (Sheet 6 of 7)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Tyler State Park	Activities include picnicking, camping, boating, fishing, birding, hiking, mountain biking, lake swimming, and nature study.	About 48 mi northeast of the Bravo site	Development likely limited within this park	http://www.tpwd.state.tx.us/state-parks/tyler
Other Actions/Projects				
Abox Paperboard	Paperboard box manufacturer	About 34 mi northwest of the Bravo site	Operational	http://iaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110005117836
Acme Brick Co., Malakoff Plant	Brick and structural tile manufacturer	About 2 mi northeast of the Bravo site	Operational	http://iaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110000598791
Anchor Glass Container	Glass container manufacturer	About 25 mi west of the Bravo site	Operational	http://iaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110002339443
Baikowski Malakoff Industries, Inc.	high purity alumina manufacturer	About 1.5 mi north of the Bravo site	Operational	http://iaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110008171888 http://www.baikowski.com/about_us.php?s=10
Corsicana Technologies Plant	Petrochemical manufacturer	About 27 mi west of the Bravo site	Operational	http://iaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110000606835
Crestline Plastic Pipe Company	Plastic pipe and pipe fitting manufacturer	About 28 mi west of the Bravo site	Operational	http://iaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110009501413
Falcon Steel Company	Fabricated structural metal manufacturer	About 34 mi northwest of the Bravo site	Operational	http://iaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110000822352
Guardian Industries	Flat glass manufacturer	About 23 mi west of the Bravo site	Operational	http://iaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110002339434
Hanson Brick Athens Plant	Brick and structural tile manufacturer	About 13.5 mi northeast of the Bravo site	Operational	http://iaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110000458576
Oil City Iron Works Inc.	Gray and ductile iron foundry	About 25 mi west of the Bravo site	Operational	http://iaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110000456738
Pactiv Corsicana	Plastic and polystyrene foam manufacturer	About 28 mi west of the Bravo site	Operational	http://iaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110007178730

Table 4. Past, Present, and Reasonably Foreseeable Future Projects and Other Actions Considered in the Cumulative Analysis of the Bravo Site (Sheet 7 of 7)

Project Name	Summary of Project	Location (relative to site)	Status	Source
Russell Stover Candies	Sugar and confectionery product manufacturer	About 24 mi west of the Bravo site	Operational	http://iaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110002052901
Solar Turbines Incorporated	Steam, gas, and hydraulic turbines, and turbine generator manufacturer	About 17 mi northwest of the Bravo site	Operational	http://iaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110000911924
Toms Foods Inc.	Food manufacturer	About 27 mi west of the Bravo site	Operational	http://iaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110002339470
Future Urbanization	Construction of housing units and associated commercial buildings; roads (such as the I-635 Corridor project), bridges, and rail; construction of water- and/or wastewater- treatment and distribution facilities and associated pipelines, as described in local land-use planning documents.	Throughout region	Construction would occur in the future, as described in state and local land-use planning documents	http://www.my35.org/about/segment_committees/default.htm
Various hospitals and industrial facilities that use radioactive materials	Medical and other isotopes	Within 50 mi	Operational in nearby cities and towns	

HY-2 (eRAI No.6484):

NRC Request:

HY-2 ESRP Section 3.4.2 directs the staff to obtain information on the proposed intake, discharge, and heat-dissipation systems. ESRP Section 5.2.1 directs the staff to identify, analyze, and describe hydrologic alterations resulting from plant operation and the adequacy of water sources to supply plant water needs. ESRP section 9.4.2 directs the staff's analysis of alternatives to the proposed circulating water system. The staff needs to review the performance of the intake structure, particularly the approach velocity, trash removal, and maintenance. Therefore, the staff requests that the applicant provide information on the design and performance characteristics of the intake structure on the Guadalupe River and the alternative sites location. This information includes the approach velocity, trash removal, and maintenance of the structures, where available. Provide and docket the design reports for the VCS intake structure at the Guadalupe River location and the alternative sites location.

Response:

VCS Conceptual Intake Structure Design

As described ER Subsection 3.4.2.1, the maximum instantaneous pumping rate for the VCS Raw Water Makeup (RWMU) system intake structure would be 267 cubic feet per second (cfs). Up to 217 cfs would be dedicated for VCS cooling water use, with an additional 50 cfs reserved for future use by another entity or entities to meet increasing demand for other non-VCS water users.

The document titled "Victoria County Station Raw Water Makeup Intake Structure Conceptual Design" is provided on the compact disc (CD) in Enclosure 1. The conceptual design evaluates a maximum intake flow rate of 237 (cfs), with the flow dedicated to VCS limited to 217 cfs by a modeled restrictor device. At pump run-out, the through-screen velocity would be 0.5 feet per second (fps) or less in accordance with the EPA Clean Water Act (CWA) new facilities rule. Additionally, the intake structure would include Ristroph-style traveling screens and a fish return system (ER Subsection 3.4.2.1) to minimize impingement mortality.

The conceptual design includes trash racks, constructed of coated ½" x 4" steel bars with 3" spacing (2-1/2" gap width), across the front of the intake structure to prevent large debris from entering the pump bay (see Attachment 8.6 of the enclosed conceptual design document). Rakes provided in front of the racks would remove debris, which would be collected in containers for off-site disposal in accordance with applicable regulations.

Trash racks and traveling screens would ensure that the pumps receive an adequate water supply free of aquatic life and debris. Each traveling screen is designed as a continuous linkage of framed baskets approximately 12.5 feet wide and smooth woven mesh basket screening wire with 3/8 inch openings. Each basket would have a trough (fish bucket) on the lower lip designed to prevent re-impingement of fish and provide the mechanism to return fish to the river. The fish buckets would allow organisms to remain in the water while being lifted to the fish return trough. As the traveling screen panel travels over the head sprocket of the traveling screen, low pressure sprays would wash the organisms into the fish return trough. As the traveling screen panel traverses further,

high pressure sprays would remove the remaining debris into the debris trough. The debris trough would be discharged to a trash basin. Overflow water from the trash basin would be returned to the forebay.

The traveling water screens and screen wash pumps are designed to automatically start when the associated RWMU pump is operated. When any traveling water screen develops a high-pressure drop, as sensed by the differential level switches in the pump bays, the screen drive speed would increase and the condition would be annunciated.

Biocides, corrosion inhibitors, and dispersants would be added in the pump bays near the suction of the RWMU pumps to prevent fouling and reduce degradation in the RWMU pumps and in the transmission pipeline to the VCS cooling basin.

Additional detail on the proposed VCS intake structure is provided in the enclosed conceptual design document.

VCS RWMU Intake Operation and Maintenance (O&M) Impacts

Typical intake structure and pumphouse O&M activities with potential environmental impacts would include: periodic dredging and debris removal from the intake canal and forebay; trash rack and trough / basin debris removal and disposal; lubrication and preventive maintenance of the travelling screens and pumps; removal of sediment from pump bays; and the addition of biocides, corrosion inhibitors, and dispersants to the pump bays to prevent fouling and reduce pump and conveyance pipeline degradation.

Potential impacts from dredging and spoils disposal are addressed in the response to RAI NRW 3.6-1 (6530), submitted via letter NP-12-0028, dated July 13, 2012. The results of the evaluation therein indicate that dredging and spoils disposal impacts would be SMALL.

Potential effects on cooling basin water quality associated with the use of water treatment chemicals at the RWMU intake structure are discussed in ER Subsection 5.2.3.1:

> "Biocides and chemical additives used in VCS plant systems would be consistent with those approved by the U.S. Environmental Protection Agency or the state of Texas. The effluents associated with these systems may contain low concentrations of some chemicals and/or biocides. The cooling basin water could contain low concentrations of chemicals and/or biocides introduced by the plant effluents or as constituents in the raw water makeup supply from the intake canal. The volume and concentration of each constituent discharged to the Guadalupe River as part of the blowdown would meet all requirements established in the TPDES permit issued by the TCEQ. Considering the anticipated amount of mixing and the limits that will be placed on the discharge in the TPDES permit, the effects of chemicals in the blowdown discharge on the Guadalupe River water quality would be SMALL."

Relatively small quantities of petroleum products such as hydraulic fluid and lubricants would likely be used for equipment maintenance and stored in the intake pumphouse. The implementation of best management practices, including storing containers on secondary containment, frequent inspections, and providing spill response materials,

would minimize the likelihood of impacts from potential spills. Accordingly, impacts from the use of petroleum products would be SMALL.

As discussed in the previous section of the response, rakes provided in front of the trash racks would remove debris. Additional debris removed from the travelling screens would be collected in the debris trough and trash basin. Removed debris would be collected in containers for off-site disposal in accordance with applicable regulations. Accordingly, impacts associated with debris removal would be SMALL.

Alternative Sites

Representative locations for the alternative site cooling water intake structures were provided in response to RAI ESP EIS 9.3-1 (6371) via Exelon letter NP-12-0020, dated May 17, 2012 (ML12146A028). Performing cooling water intake design analyses for the alternative sites is beyond reconnaissance level information. Accordingly, Exelon has assumed that intake structure design, performance, and maintenance at the alternative sites would be the similar to the conceptual design for VCS at a maximum pumping capacity of 217 cfs. This assumption is the basis for the impact evaluations presented in ER Subsections 9.3.3.1.5, 9.3.3.2.5, 9.3.3.3.5, and 9.3.3.4.5 for the Matagorda County, Buckeye, Alpha, and Bravo sites, respectively.

Additional potential impacts associated with cooling water intake structure trash removal and maintenance would be expected to be SMALL, consistent with the VCS discussion in the preceding section.

Summary

The enclosed conceptual design conservatively demonstrates that a through-screen velocity of 0.5 fps or less can be achieved at the proposed VCS pumping rate of 217 cfs. The discussion in ER Section 5.11 indicates that no user has been identified for the additionally proposed 50 cfs capacity at this time. However, as noted in ER Subsection 5.11.3.3, Exelon is committed to limiting the through-screen velocity for the entire intake flow rate (i.e., for Exelon and other potential users) to 0.5 fps or less. Accordingly, Exelon would demonstrate the performance of the intake structure for the maximum pumping capacity during detailed design at the COL stage of the project, as applicable.

VCS RWMU system intake and pumphouse O&M impacts would be SMALL. Conceptual designs have not been evaluated for the alternative sites. For the purpose of comparing the sites in ER Subsection 9.3.3, the intake structures for the alternative sites are assumed to be designed to reduce the effects of entrainment and impingement, similar to VCS. Consistent with the rationale provided for VCS, intake structure O&M impacts at the alternative site would be expected to be SMALL.

Associated ESPA Revisions

ER Subsection 5.11.3.3 will be updated as shown in a future ESPA:

5.11.3.3 Impingement and Entrainment

Additional pumping capacity of 50 cfs would be available at the RWMU intake structure beyond the maximum of 217 cfs needed to provide makeup water to the VCS cooling basin. This additional pumping capacity would not be used by VCS but would be held in reserve to support increasing demand for other non-VCS water users. Should another water user(s) take advantage of the full capacity of the RWMU intake structure, the increase in the pumping rate would increase the number of fish impinged and entrained. Even if the full 267 cfs pump capacity is used, Exelon is committed to limiting the through-screen velocity to 0.5 feet per second or less in accordance with "technology-based performance standards" for cooling water intake structures established in EPA's Track 1 requirements for compliance with Section 316(b) of the Clean Water Act. Accordingly, Exelon would demonstrate the performance of the intake structure for the maximum pumping capacity during detailed design at the COL stage of the project, as applicable.

HY-3 (eRAI No.6484):

NRC Request

HY-3 ESRP Section 3.4.2 directs the staff's preparation of the proposed intake, discharge, and heat dissipation system design and performance characteristics. The staff needs to review the performance of the discharge structure in terms of the thermal plume, erosion, and maintenance under a range of flow conditions in the Guadalupe River. Therefore, the staff requests that the applicant provide and docket any design reports on the discharge structure, especially the CORMIX model run reports. Provide additional information on the design and performance of the discharge structure in the Guadalupe River.

Response:

ER Section 3.4.2.2 and Figure 3.4-4 describe the proposed plant discharge. For the purpose of environmental impact evaluation, an approximately 11-foot-long diffuser with four 1.5-foot diameter ports was considered. Each of the diffuser ports would be discharging from the west bank of the river. Riprap protection around the diffuser would be provided to protect the river bed against erosion from the discharge flow.

ER Section 5.3.2 describes the thermal discharge, the applicable water quality standards, and the CORMIX modeling used to evaluate the potential mixing zone. The CORMIX evaluation is further described in Tetra Tech (2009), a copy of which is included on the CD provided in Enclosure 1. The "Discharge Design" subsection discusses the thermal plume and CORMIX modeling considerations that resulted in the shoreline diffuser design proposed for environmental impact evaluation in the Exelon ESP application. The performance of the diffuser under various temperature and flow conditions is described in the thermal study and summarized in ER Section 5.3.2. Limiting conditions for operation of the blowdown diffuser were determined based on the environmental impact evaluation. Blowdown would be discharged whenever the river flow is adequate: (1) river flow of 7Q10 or more and (2) river flow at least seven times the discharge flow.

References:

Tetra Tech 2009. *Temperature Distribution in the Guadalupe River as a Result of Blowdown from Proposed Exelon Victoria Operation*. Calculation prepared for Exelon by Tetra Tech. October 2009.

Associated ESPA Revisions:

There are no ER changes associated with this response.

HY-6 (eRAI No.6521):

NRC Request:

Section 5.2.1 directs the staff's identification, analysis, and description of hydrologic alterations resulting from plant operation and the staff's analysis of the adequacy of the water sources proposed to supply plant water needs. ESRP Section 5.2.2 directs the staff's analysis and assessment of predicted impacts of plant operation on water use. ER Section 5.2.1.2.1 and 5.2.2.2 describe the analysis of development of groundwater from the Evangeline aquifer for VCS needs. The staff needs to review these studies for the adequacy of groundwater supply, effects on other groundwater users, and the potential for salt water intrusion. Please provide and docket the report "Groundwater Supply Development Study (25352-000-G65-GEK-00001, Rev 001)" and any other similar reports on this subject. Provide information on development of groundwater from the aquifers beneath the site for construction and operational needs.

Response:

The following document is included on the CD provided as Enclosure 1:

- 25352-000-30H-H01G-00002 – Engineering Study Summary Report, Groundwater Supply Development

The above-referenced document numbered 25352-000-30H-H01G-00002 is being provided in lieu of study 25352-000-G65-GEK-00001, "Exelon Victoria Site Groundwater Supply Development Engineering Study", Rev. 001, dated March 6, 2008. Document 25352-000-30H-H01G-00002 is a non-proprietary version of the referenced study 25352-000-G65-GEK-00001, and contains the requested technical information on development of groundwater from aquifers beneath the site for construction and operational needs. The ESBWR was selected as the representative technology for the groundwater study for the ESP. The results of the study will be re-evaluated at the time of COL based upon the chosen technology. For the purpose of the summary report submitted with this response all references and data from the original study are retained.

Associated ESPA Revisions:

There are no ER changes associated with this response.

HY-8 (eRAI No.6491):

NRC Request:

ESRP Section 9.3 directs the staff's analysis and evaluation of alternatives to the applicant's proposed site for the construction and operation of a nuclear power plant. There is no information on the proposed water treatment options for the alternative sites. Staff needs to review water treatment options that might differ from those options explored for the preferred site. Provide information on water treatment options for the alternative sites, including chemicals used and rates of use for fresh water and salt water cooling systems.

Response:

To determine if the water quality at an alternative site would necessitate consideration of alternative water treatment options from the proposed plant's water treatment option, surface and groundwater databases from the Texas Commission on Environmental Quality (TCEQ) and Texas Water Development Board (TWDB) were queried to obtain water quality data for each alternative site (Matagorda, Buckeye, Alpha, and Bravo). A qualitative discussion of water treatment requirements and options for surface and groundwater, based on data available from the TCEQ and TWDB, is provided below for each alternative site. Note that some water quality data needed to make the most appropriate recommendations for the alternative sites are not available through public databases. Onsite monitoring stations at the intake locations for all alternative sites would be necessary to obtain a more complete data set that would be used to determine more exact water treatment requirements. Additionally, when considering rate of use of water, because all sites are located in the same region of Texas, water evaporation rates are expected to be similar to those of the VCS site.

Groundwater

As indicated in ER Subsections 9.3.3.1.3, 9.3.3.2.3, 9.3.3.3.3, and 9.3.3.4.3, the Matagorda, Buckeye, Alpha and Bravo sites, similar to the preferred VCS site, would use groundwater during construction for the potable water system, concrete production and curing, backfill operations, dust control, cleaning and lubrication, hydro testing, and flushing. During operations each alternative site, similar to the preferred site, would use groundwater for the potable water system, fire protection system, demineralized water system, and filter backwash (ER Section 3.3). The Matagorda, Buckeye, and Alpha sites would draw groundwater from the Gulf Coast aquifer system—the same aquifer as the preferred VCS site. Therefore, the treatment of groundwater at the alternative sites is expected to be similar to the treatment described in ER Subsection 3.3.2.2 (Note the Alpha site is located in a different region of the Gulf Coast aquifer; therefore, the comparison analysis included the Jasper aquifer as well as the Evangeline and Chicot aquifers). However, the Bravo site would withdraw groundwater from the Carrizo-Wilcox aquifer. Analysis of the groundwater data showed no significant difference between the Carrizo-Wilcox aquifer and the Gulf Coast aquifer system necessitating use of an alternative water treatment system different from the preferred VCS site. The peak well water demand for the preferred site and each alternative site during construction is estimated to be approximately 580 gpm and a maximum of 1200 gpm of groundwater would be necessary for station operations. Thus, the groundwater treatment option for each alternative site would be similar to that for the preferred VCS site.

Surface Water

Matagorda Site

As discussed in ER Subsection 9.3.3.1, the cooling system at the Matagorda site would consist of onsite cooling towers with an intake line from the Gulf Intracoastal Waterway. Surface water quality data was obtained from TCEQ's database (TCEQ, 2012). Based on the available data, it is anticipated that both the rate of use for water and chemical consumption would be greater for this site than at the VCS site. The Gulf Intracoastal Waterway is a saline water source as opposed to the fresh water source at the VCS site; therefore, due to the higher total dissolved solids (TDS) concentration, the cycles of concentration that can be maintained in the cooling towers would likely be less than those of the VCS site resulting in greater overall rate of use of water. A review of the data also indicates that the total suspended solids (TSS) concentrations for surface water at the Matagorda site are higher than typically allowed without pre-treatment in cooling tower design; thus, a greater rate of chemical usage (i.e. dispersants) or an additional filtration system may need to be added to control TSS, similar to the VCS site.

While the rate of use for water would be greater at the Matagorda site than the VCS site due to the use of saline water, based on the water quality data available, it is not anticipated that an alternative water treatment option versus the preferred site would be necessary.

Buckeye Site

As discussed in ER Subsection 9.3.3.2, the cooling system at the Buckeye site would consist of an onsite cooling pond with an intake line from the Colorado River. Surface water quality data was obtained from TCEQ's database (TCEQ, 2012). The available data indicates that the TSS concentrations for surface water at the Buckeye site are higher than typically allowed without pre-treatment in cooling system design. Thus, chemical dispersants or an additional filtration system to control TSS may be required, similar to the preferred VCS site.

Therefore, because the water quality data available for the Buckeye site indicates that both the rate of use for water and chemical consumption would be similar to the preferred VCS site, consideration of an alternative water treatment option is not necessary.

Alpha Site

As described in ER Subsection 9.3.3.3, the cooling system at the Alpha site would consist of onsite cooling towers with an intake and discharge lines to the yet to be built Allen's Creek Reservoir. Note that surface water data for the to be built Allen's Creek reservoir were obtained from the Allen's Creek monitoring station (TCEQ Station ID 11577). The available data indicates that the TSS concentrations for surface water at the Alpha site are higher than typically allowed without pre-treatment in cooling tower design. Thus, a greater rate of chemical usage (i.e. dispersants) or an additional filtration system to control TSS may be required, similar to the preferred VCS site.

Therefore, because the water quality data available for the Alpha site indicates that both the rate of use of water and chemical consumption would be similar to the preferred VCS site, consideration of an alternative water treatment option is not necessary.

Bravo Site

As discussed in ER Subsection 9.3.3.4, the cooling system at the Bravo site would consist of onsite cooling towers with an intake line from the Cedar Creek Reservoir. Surface water quality data was obtained from the TCEQ's database (TCEQ, 2012). A review of the available data indicates that the pH readings are outside of limits typically allowed without pre-treatment for cooling tower operation, thus, chemical injection would be required to adjust the pH, similar to the preferred VCS site.

Therefore, because the water quality data available for the Bravo site indicates that both the rate of use for water and chemical consumption would be similar to the preferred VCS site, consideration of an alternative water treatment option is not necessary.

A review of ground and surface water uses for all alternative sites indicates that the conclusions drawn in ER subsection 9.3.4 are valid and there is no alternative site that is environmentally preferable to the VCS site based on water treatment requirements.

References:

TCEQ, 2012. Texas Commission on Environmental Quality, *Surface Water Quality Monitoring Web Reporting*, available online at: http://www8.tceq.state.tx.us/SwqmisWeb/public/index.faces, Accessed June, 2012.

TWDB, 2012. Texas Water Development Board, *Groundwater Database Reports*, available online at: http://www.twdb.state.tx.us/groundwater/data/gwdbrpt.asp, Accessed June, 2012.

Associated ESPA Revisions:

There are no ER changes associated with this response.

HY-9 (eRAI No.6492):

NRC Request:

HY-9 ESRP Section 9.4.2 directs the staff's analysis of alternatives to the proposed circulating water system. Radial collector wells are a technology often evaluated as a low-impact alternative for nuclear power plant water supplies. Staff would like to review the feasibility of their use at the preferred and alternative sites. Provide information on the practicality of radial collector wells as an alternative technology for providing intake water.

Response:

A radial well collection system would typically consist of a vertical concrete caisson 8 to 20 feet in diameter, from which screened collection wells extend outward in one or more horizontal plane. The horizontal collector wells are installed by either jacking outward from the vertical shaft under hydraulic pressure or by jetting them into place. Soil properties and compressive screen strength thus limit the practical length of screen installation, with maximum lengths typically not exceeding 350 to 375 feet. (Reclamation 2008)

When used for surface water collection, a radial well system is designed to induce surface water flow through the underlying soils at a low velocity, resulting in additional recharge to the screened formation. The feasibility of such a system is therefore highly dependent on soil properties and the communication between the surface water body and the underlying zones. The US Reclamation Bureau notes:

> "Prior to construction of a radial collector well, it is necessary to drill a number of vertical exploratory borings throughout the area to determine the subsurface geohydrologic characteristics. These characteristics include the location, lateral extent, type, and thickness of permeable aquifers, the location of potential faults in the area, and ground water quality and quantity." (Reclamation 2008)

As described in ER Subsections 4.3.2.3 and 5.3.1, Exelon determined that potential impacts from construction and operation of the proposed Raw Water Makeup (RWMU) system would be SMALL. Accordingly, Exelon has not collected the detailed hydrogeological information required to determine whether a radial collector well system would be a technically feasible or practicable alternative to the proposed system for VCS. Similarly, Exelon has not conducted the necessary legal and regulatory analyses. Nonetheless, a high-level assessment of the potential environmental impacts of constructing and operating a radial collector well system for VCS and alternative site makeup water withdrawals is provided in the sections that follow.

VCS Construction

Installation of the vertical caisson would likely be accomplished via conventional excavation and dewatering techniques. Assuming a caisson located 100-300 feet from the riverbank, an additional approximately 3000 linear feet of pipeline installation would be required to extend pipeline Routes A, B, and C described in ER Section 4.3.2.3 to the caisson location. The additional pipeline installation would be comparable to excavating the intake canal for the preferred option. Earth disturbing activities would take place within a confined area over a limited duration. Additionally, erosion and sedimentation

control methods and BMPs similar to those described in ER Subsection 4.3.2.3 would be employed to minimize potential water quality impacts during caisson and conveyance pipeline installation. The horizontal radial collector wells would likely be installed via direct push techniques, resulting in minimal impacts.

As described in ER Subsection 3.4.2.1, the proposed RWMU system pumphouse would be located approximately 0.6 miles from the Guadalupe River, beyond the active floodplain (see ER figure 2.3.1-12). In contrast, due to the aforementioned installation limits for horizontal collector wells, the caisson would have to be located within the floodplain. Placing structures in the active floodplain is typically avoided due to the potential for damage, operations and maintenance (O&M) concerns, and the potential to raise flood elevations. Although it is possible to finish the caisson flush with existing grade to ameliorate effects on flood elevations, at-grade installation would not be favorable for O&M and flood protection. Thus, it is expected that the caisson and pumphouse would be finished above expected flood elevations. Despite this requirement, it is likely that the relatively small size (typically 8 to 20 foot in diameter; Reclamation 2008) would limit substantive increases in flood elevations. Accordingly, construction impacts would be expected to be SMALL.

VCS Operation

Assuming that a radial collector well system were feasible, it would draw surface water through the bed and banks of the Guadalupe River at a relatively low velocity, eliminating the potential for entrainment and minimizing impingement impacts. Furthermore, as discussed in ER Subsection 2.4.2.2.1, no state-listed or federally listed species was collected during Exelon's pre-application sampling program.

Well maintenance and rehabilitation would generally be conducted in-situ, involving conventional vertical well techniques such as flushing of the gravel pack. Electricity consumption could be slightly higher than that for proposed VCS RWMU system intake because of the need to pump water an additional approximately 0.6 miles.

Depending on the horizontal well installation depth relative to the shallow aquifer, it is possible that the system could result in unwanted drawdown of the shallow aquifer during low-flow periods in the Guadalupe River. The potential for this impact would be evaluated during detailed feasibility studies, and it is thus assumed that a radial collector well system would not be selected if it would result in unacceptable aquifer drawdown. Accordingly, operational impacts from a radial collector well system would be expected to be SMALL.

Alternative Sites

Given the detailed hydrogeological information required, determining the feasibility of installing radial collector well systems at the alternative sites is beyond reconnaissance level information. It is expected that, if feasible, the impacts from constructing and operating such a system at the alternative sites would be small for the reasons discussed in the preceding sections. As summarized in ER Table 9.3-2 and Table 9.3-3, potential construction and operations impacts on aquatic ecosystems and threatened and endangered (T&E) species would be expected to be small for all sites except Alpha. For the Alpha site, the potential impacts to aquatic ecosystems and T&E species would result from construction of the proposed Brazos River Authority (BRA) Allens Creek Reservoir, not the nuclear plant (ER Subsection 9.3.3.3.5). In this case, it is likely that

the BRA would choose the intake structure technology for the reservoir without consulting the nuclear plant owner / operator. Additionally, given that the proposed BRA reservoir would be the source of makeup water for the Alpha site, it is unlikely that a radial collector well system would be warranted.

Summary

In summary, the hydrogeological information required to assess the feasibility of installing a radial collector well system for VCS makeup water withdrawals was not collected because impacts from the proposed RWMU intake system were determined to be SMALL. Assuming that a radial collector well system were technically feasible, potential construction and operations impacts would be expected to be SMALL. The primary differentiator between the proposed VCS intake system and a radial collector well system is that the latter would likely require erection of an above-grade structure in the active floodplain of the Guadalupe River. Accordingly, a radial well collector system would not be environmentally preferable to the proposed VCS RWMU intake system.

The feasibility or practicability of installing radial collector well systems at the alternative sites has not been evaluated. With the exception of the Alpha site, it is expected that using such a system for cooling system makeup water withdrawals would result in small construction and operations impacts. For the Alpha site, such a system would likely not be warranted due to reliance on the proposed BRA Allens Creek Reservoir for cooling system makeup.

References:

Reclamation 2008. US Bureau of Reclamation, Desalination and Water Purification Research and Development Program Report No. 151, Research and Development for Horizontal/Angle Well Technology. October 2008. Available at: http://www.usbr.gov/pmts/water/publications/reports.html, accessed July 8, 2012

Associated ESPA Revisions:

There are no ER changes associated with this response.

ATTACHMENT 7

SUMMARY OF REGULATORY COMMITMENTS

(Exelon Letter to USNRC No. NP-12-0031, dated July 19, 2012)

The following table identifies commitments made in this document. (Any other actions discussed in the submittal represent intended or planned actions. They are described to the NRC for the NRC's information and are not regulatory commitments.)

COMMITMENT	COMMITTED DATE	COMMITMENT TYPE	
		ONE-TIME ACTION (Yes/No)	Programmatic (Yes/No)
ER Sections 4.7 and 5.11 will be wholly replaced in a future ESPA revision with the revised versions provided in Enclosure 1. [RAI ESP EIS 7.0-1 (6431) Response]	March 31, 2013	Yes	No
ER Subsection 5.11.3.3 will be updated in a future ESPA revision to include the following commitment: "Exelon would demonstrate the performance of the intake structure for the maximum pumping capacity during detailed design at the COL stage of the project, as applicable." [RAI HY-2 (6484) Response]	March 31, 2013	Yes	No
The results of the Exelon Victoria Site Groundwater Supply Development Engineering Study will be reevaluated at the COL stage of the project based on the selected reactor technology. [RAI HY-6 (6521) Response]	COL stage of project	Yes	No

ENCLOSURE 1

CD titled:

Victoria County Station
Early Site Permit Application, Part 3, Environmental Report,
RAI 6431 Response: Revised ER 4.7 and 5.11
RAI HY-2, HY-3, HY-6 Supporting Information

NP-12-0031, Enclosure 1
July 2012

CD contents:

1. RAI 6431 Response Document: Revised VCS ER Section 4.7.pdf

2. RAI 6431 Response Document: Revised VCS ER Section 5.11.pdf

3. RAI HY-2 Response Document: 2008-06581 Rev 3 - RWMU Conceptual Design 08-11-09 FINAL.pdf

4. RAI HY-3 Response Document: Thermal Modeling Report _Exelon ESP.pdf

5. RAI HY-6 Response Document: 25352-000-30H-H01G-00002 – Eng. Study Summary Report, GW Supply Dev.pdf