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January 24, 2011

Via NRC's Electronic Information Exchange
United States Nuclear Regulatory Commission
Atomic Safety and Licensing Board
11555 Rockville Pike
Rockville, MD 20852

RE: Docket No. 52-042; NRC-2010-0165; *Exelon Nuclear Texas Holdings, LLC, Early Site Permit Application for the Victoria County Station Site, Notice of Hearing, Opportunity To Petition for Leave To Intervene, and Associated Order Imposing Procedures for Access to Sensitive Unclassified Non- Safeguards Information and Safeguards Information for Contention Preparation*, 75 Fed. Reg. 71467 (Nov. 23, 2010)

Dear Sir/Madam:

Pursuant to Nuclear Regulatory Commission's rules and guidance regarding submissions, the following documents are being submitted on behalf of Texans for a Sound Energy Policy ("TSEP") for filing in connection with the above referenced matter:

Part 1 of 3:

Texans for a Sound Energy Policy's Petition to Intervene and Contentions
Exhibit A: Declaration of Ralph R. Gilster, III
Exhibit B: Declaration of Michael S. Anderson
Exhibit C: Declaration of Joe B. Bland

Part 2 of 3:

Exhibit D: Declaration of John C. Halepaska, John C. Halepaska and Associates, Inc.
Exhibit D-1: *A Summary of Contentions on Exelon's ESP Application for the proposed Victoria County Station Site, October 8, 2010.*
Exhibit D-2: *Contested Issues Concerning Early Site Permit, Exelon's Victoria County Station, January 2011.*
Exhibit D-3: Resumes of John C. Halepaska and Associates, Inc. Staff

Part 3 of 3:

- Exhibit E: Declaration of Joseph F. Trungale, Trungale Engineering & Science.
- Exhibit E-1: *Effect of Diversions from the Guadalupe River on San Antonio Bay and Estuary Health*, January 2011.
- Exhibit E-2: Resume of Joseph F. Trungale.
- Exhibit F: Declaration of Ronald L. Sass.
- Exhibit F-1: *Grus Americana and a Texas River: A Case for Environmental Justice* published by the James A. Baker III Institute for Public Policy, Rice University (Nov. 9, 2010).
- Exhibit F-2: Resume of Ronald L. Sass.
- Exhibit G: *San Antonio Guadalupe Estuarine System ("SAGES")* Comments of Stehn, Blackburn Carter, P.C., Chavez-Ramirez, TPWD, Montagna, TWDB, & Kirkwood.
- Exhibit H: Appendix D, Summary of Water Management Strategies, *2011 South Central Texas Regional Water Plan*, South Central Texas Regional Water Planning Group, September 2010.
- Exhibit I: U.S. Fish & Wildlife Service, *International Recovery Plan Whooping Crane* (3d. Revision, March, 2007).

Any question regarding this submission may be directed to Charles W. Irvine, Blackburn Carter, P.C., 4709 Austin, St., Houston, Texas 77004 (713) 524-1012.

Sincerely,

BLACKBURN CARTER, P.C.

by s/James B. Blackburn, Jr.
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Counsel for Texans for a Sound Energy Policy (TSEP)

Attachments as noted above.

- c: See Service List Attached to
Texans for a Sound Energy Policy's Petition to Intervene and Contentions

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of

EXELON NUCLEAR TEXAS
HOLDINGS, LLC

EARLY SITE PERMIT FOR
VICTORIA COUNTY STATION

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Docket No. 52-042

TEXANS FOR A SOUND ENERGY POLICY'S
PETITION TO INTERVENE AND CONTENTIONS

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January 24, 2011

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**TEXANS FOR A SOUND ENERGY POLICY'S
PETITION TO INTERVENE AND CONTENTIONS**

I. JURISDICTION & STANDING

A. Request and Party Identity

Texans for a Sound Energy Policy (“TSEP” or “Petitioner”) hereby petitions for a hearing to be held on the application of the Exelon Nuclear Texas Holdings, LLC (“Exelon”), a wholly-owned subsidiary of Exelon Generation Company, LLC, for an Early Site Permit (“ESP”) for the proposed Victoria County Station (hereinafter referred to as the “proceeding”). TSEP petitions to intervene as a full party to this proceeding. The name of the party and its address (and related contact information) are as follows:

Name of party: Texans for a Sound Energy Policy

Address: P.O. Box 2902, Victoria, Texas 77902

TSEP is a Domestic Nonprofit Corporation under Texas law and a 501(c)(3) tax-exempt organization. TSEP is an organization of citizens and businesses located in Victoria County, Texas. TSEP’s members include landowners, ranchers, and mineral owners whose properties are in very close proximity to the proposed site.

B. Timeliness

The application was noticed for hearing on November 23, 2010 (75 Fed. Reg. 71,467), and this Petition is timely filed by the due date of Jan. 24, 2011 as listed in that notice. 75 Fed. Reg. 71,468.

C. Standing

Pursuant to 10 C.F.R. § 2.309(d)(1)(ii)-(iv), a request for hearing or petition for leave to intervene must address 1) the nature of the petitioner’s right under the Atomic Energy Act to be made a party to the proceeding, 2) the nature and extent of the petitioner’s property, financial, or

other interest in the proceeding, and 3) the possible effect of any order that may be entered in the proceeding on the petitioner's interest. In determining whether a petitioner in a Nuclear Regulatory Commission ("NRC") proceeding has established the necessary "interest" under the rule, licensing boards are directed to follow the guidance found in judicial concepts of standing, as stated in federal court case law. *See, e.g., Yankee Atomic Elec. Co.* (Yankee Nuclear Power Station), CLI-98-21, 48 NRC 185, 195 (1998); *Quivira Mining Co.* (Ambrosia Lake Facility), CLI-98-11, 48 NRC 1, 5-6 (1998); *Ga. Inst. of Tech.* (Georgia Tech Research Reactor), CLI-95-12, 42 NRC 111, 115 (1995). Under these concepts, a board considers whether a petitioner has alleged (1) a "concrete and particularized injury that is (2) fairly traceable to the challenged action and (3) likely to be redressed by a favorable decision." *Yankee*, CLI-98-21, 48 NRC at 195 (citing *Steel Co. v. Citizens for a Better Env't*, 523 U.S. 83, 102-04 (1998); *Kelley v. Selin*, 42 F.3d 1501, 1508 (6th Cir. 1995)).

An organization that wishes to intervene in a proceeding may do so either in its own right by demonstrating harm to its organizational interests, or in a representational capacity by demonstrating harm to its members. *See Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), LBP-98-9, 47 NRC 261, 271 (1998). To intervene in a representational capacity, an organization must show not only that at least one of its members would fulfill the standing requirements, but also that he or she has authorized the organization to represent his or her interests. *See Private Fuel Storage, L.L.C.* (Independent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 168, *aff'd on other grounds*, CLI-98-13, 48 NRC 26 (1998).

Under NRC case law, there are some circumstances in which petitioners may be presumed to have standing based on their geographical proximity to a facility or source of

radioactivity. In nuclear power reactor licensing proceedings, a “rule of thumb” has been developed whereby “persons who reside or frequent the area within a 50-mile radius of” the reactor are presumed to have standing to participate in a proceeding involving that reactor. *See Sequoyah Fuels Corp. & Gen. Atomics (Gore, Oklahoma Site)*, CLI-94-12, 40 NRC 64, 75 n.22 (1994).

1. Injuries in Fact and Causation

According to the ESP application submitted by Exelon to the NRC, the Victoria County Station (“VCS”) will be located in Victoria County, Texas near the west bank of the Guadalupe River approximately 13 miles south of the City of Victoria, approximately 8 miles west of Bloomington, Texas, and east of U.S. Highway 77.

Standing to participate in this proceeding is demonstrated by the declarations of the following members of TSEP, people who live within 50 miles of the proposed site and who have authorized Petitioner to represent their interests in this proceeding:

1. Mr. Ralph Gilster, III (Exhibit A);
2. Mr. Michael Anderson (Exhibit B);
3. Mr. Joe Bland (Exhibit C).

As demonstrated by the attached declarations,¹ Petitioner’s members live near the proposed site, *i.e.*, within 50 miles. Thus, they have presumptive standing by virtue of their proximity to the proposed nuclear plant that may be constructed on the site. *Diablo Canyon*, 56 NRC at 426-427 (citing *Florida Power & Light Co. (Turkey Point Nuclear Generating Plant, Units 3 and 4)*, LBP-01-6, 53 NRC 138, 146, *aff’d*, CLI-01-17, 54 NRC 3 (2001)). In *Diablo Canyon*, the Licensing Board noted that petitioners who live within 50 miles of a proposed nuclear power plant are presumed to have standing in reactor construction permit and operating

¹ Ex. A, ¶2; Ex. B, ¶¶2, 4; Ex. C, ¶2.

license cases, because there is an “obvious potential for offsite consequences” within that distance. *Id.* Here, the granting of an ESP to Exelon would permit the later construction and operation of one or more reactors on the Victoria County Station site near Victoria, Texas. Thus, the same standing concepts apply.

2. Zone of Interests

TSEP’s stated injuries, and those of its members,² are radiological and environmental in nature, and therefore, they fall within the zone of interests protected by the Atomic Energy Act (“AEA”) and the National Environmental Policy Act (“NEPA”).

3. Redressibility

TSEP’s members seek to protect their lives and health by opposing the issuance of an ESP to Exelon. Petitioner seeks to ensure that no ESP is issued by the U.S. Nuclear Regulatory Commission unless Exelon demonstrates full compliance with the Atomic Energy Act, NEPA, and the Endangered Species Act. These injuries will not occur if the ESP application in this proceeding is denied, which is the relief requested by TSEP.

D. Hearing Requested

TSEP requests an adjudicatory hearing on each of its contentions in accordance with section 189a(1)(A) of the Atomic Energy Act of 1954, as amended, and 10 C.F.R. Part 2. In addition, TSEP asks to participate in the resolution of uncontested issues to the same extent, and in the same manner, as Exelon or any other party may be allowed to participate in the resolution of the issues.

² Ex. A, ¶3; Ex. B, ¶3; Ex. C, ¶3.

II. INTRODUCTION

A. Introduction to Contentions

For the first time in NRC's history of evaluating early site permits, an applicant for an ESP has selected a greenfield site. The VCS site has not been previously used by industry. Not only is the site a greenfield one, but the selected site poses unparalleled safety problems and potentially devastating environmental impacts to the region.

As set forth in the contentions below, TSEP has a number of profound concerns about the suitability of the VCS site from a safety perspective, and therefore urges the NRC to deny the ESP application. For example, Exelon's proposed nuclear reactor site is traversed by numerous active growth faults, creating an unstable foundation and creating clear danger for surface deformation. The faults are more extensive and move thousands of times faster than Exelon discloses. And Exelon fails completely to evaluate the impacts of certain growth faults on the cooling pond. No other existing U.S. nuclear site has faults that show evidence of current fault movement at the surface.

The VCS site is also unsuitable because it is located in a drought-prone basin with over-allocated rivers, creating an insecure source of water for Exelon in light of competition from municipal, agricultural, and other industrial users. A new reactor on the VCS site would also compete for water with the Aransas National Wildlife Refuge, which requires fresh water from the Guadalupe River to support the endangered Whooping Crane.

Exelon demands 75,000 acre feet of water for its proposed plant. Importantly, this water cannot come from a new water right because there is no remaining unappropriated 'firm' water in the Guadalupe River basin. Exelon expects this water to come from an agreement with the Guadalupe-Blanco River Authority ("GBRA") (the so-called Reservation Agreement). Should this water be appropriated to Exelon, the water will be unavailable for long-term planning for the

projected dense municipal and industrial growth in the area. Equally devastating to the area's scarce water resources, GBRA consequently has been seeking additional surface water and groundwater rights that will, literally, drain the Guadalupe River basin and surrounding counties dry.

The VCS site is also unsuitable because it sits on top of hundreds of active and abandoned oil and gas wells, and oil and gas pipelines, creating undue risk for safe operation of a nuclear power plant. Literally hundreds of oil and gas wells that lie on and under the VCS site. They create undue risk for the safe operation of a nuclear power plant. They pose the threat of explosion, the threat of leakage of poisonous gas (such as hydrogen sulfide), and the threat of upward migration of hydrocarbons and other contaminants. The active and abandoned oil and gas wells also pose dangers of enhanced seepage within the site's cooling basin. Unlike the proposed VCS site, no other U.S. nuclear plant site has such extensive oil and gas operations on or near the site. Exelon has failed to adequately evaluate all of these potential hazards and the undue risk they pose.

The same problems which make the Victoria County site unsuitable from a safety and public health perspective also demonstrate that it constitutes a very poor choice of alternative sites under the National Environmental Policy Act. Exelon has selected a site in a dry, drought-prone river basin, without taking into account the fact that the basin already has too many demands on scarce water. Exelon also fails to analyze water availability in light of future changes predicted by current climate change models. Additionally, the proposed water use by Exelon fundamentally threatens the integrity of the human environment by imperiling the survival of the endangered Whooping Crane. The Whooping Cranes rely on a healthy and productive ecosystem, particularly blue crabs and wolfberries, which, in turn, depend on

adequate freshwater inflows from the Guadalupe River. The huge amounts of water withdrawn by Exelon from the Guadalupe River will lead to lower freshwater inflows and higher salinity for San Antonio Bay, placing the endangered Whooping Crane in peril. Stated another way, Exelon's water diversions will result in more severe, more frequent and longer lasting high-salinity drought conditions in the San Antonio Bay system that will adversely modify the designated critical habitat for the Whooping Crane. The NRC may not license any activity that results in adverse modification of designated critical habitat or results in a prohibited "take" of this listed species. Exelon's NEPA analysis is flawed because it does not consider these Endangered Species Act violations.

Finally, by underplaying the significance of the environmental risks posed by the VCS site, Exelon also understates the obvious superiority of an alternative site in Matagorda County. Among other reasons, the Matagorda County site is obviously superior because it will use abundant saltwater from the Gulf Intracoastal Waterway for cooling, instead of scarce surface freshwater. Moreover, water use for the Matagorda site will not impact the endangered Whooping Crane. Other pivotal considerations include the facts that: (a) there are no identified growth faults at the Matagorda County site and (b) state agency records show that the Matagorda County site has only three oil and gas wells.

In short, the VCS site poses unparalleled safety issues and devastating environmental impacts which do not exist at the obviously superior Matagorda County site. TSEP therefore urges the NRC to deny the ESP application.

B. Organization and Citation

As described, TSEP's concerns are related to safety (growth faults and oil and gas activity), environmental impacts (water, aquatic and endangered species) and alternative sites. In the body of this brief, TSEP's contentions are organized according to these categories: safety

contentions, environmental (or NEPA) contentions, and other (miscellaneous) contentions. TSEP has drafted “single-issue” contentions, each raising a single safety, environmental (NEPA), or legal issue and supported by a single set of related facts or omissions.

Citations to portions of the Exelon ESP application are as follows: Part 2 – Site Safety Analysis Report is designated “SSAR”; Part 3 – Environmental Report is designated “ER”. Citations to the SSAR and ER are either to the section number (denoted by “§”), or page number (preceded by “at”), as appropriate.

III. CONTENTIONS

NRC regulations require a petitioner to “set forth with particularity the contentions sought to be raised,” and to satisfy the following six criteria: (1) provide a specific statement of the legal or factual issue sought to be raised; (2) provide a brief explanation of the basis for the contention; (3) demonstrate that the issue raised is within the scope of the proceeding; (4) demonstrate that the issue raised is material to the findings the NRC must make to support the licensing action that is the subject of the proceeding; (5) provide a concise statement of the alleged facts or expert opinions, including references to specific sources and documents that support the petitioner’s position and upon which the petitioner intends to rely; and (6) provide sufficient information to show that a genuine dispute exists with regard to a material issue of law or fact. 10 C.F.R. § 2.309(f)(1)(i)-(vi).

In NRC proceedings, a petitioner “is not require[d] ... to prove its case at the contentions stage.” *Yankee Atomic Elec. Co.* (Yankee Nuclear Power Station), LBP-96-2, 43 NRC 61, 249, *rev’d in part on other grounds*, CLI-96-7, 43 NRC 235 (1996) (citing 54 Fed. Reg. at 33,171). While it is the petitioner’s burden to establish the admissibility of a contention, a “Board may appropriately view Petitioners’ support for its contention in a light that is favorable to the

Petitioner.” *Ariz. Pub. Serv. Co.* (Palo Verde Nuclear Generating Station, Units 1, 2, and 3), CLI-91-12, 34 NRC 149, 155 (1991).

Where applicable, these contentions are supported by the expert reports of John C. Halepaka and Associates (“JCHA”) (Exhibit D-1 “JCHA Summary”; Exhibit D-2 “JCHA Report”)³, the expert report of Trungale Engineering & Science (Exhibit E-1 “Trungale Report”)⁴, and the declaration and report of Dr. Ronald Sass (Exhibit F “Sass Declaration”, F-1 Sass Report”)⁵. They are also supported by documents submitted as Exhibits G (comments submitted concerning the SAGES report), H (excerpts of the Region L 2011 Water Plan) and I (Whooping Crane Recovery Plan), as well as by other fact-based arguments.

A. Safety-Related Contentions

TSEP presents four safety contentions regarding the inadequacy of information and analyses presented by Exelon in the SSAR. Contentions TSEP-SAFETY-1, TSEP-SAFETY-2, and TSEP-SAFETY-3 relate to the geological unsuitability of the site. First, growth faults make the VCS unsuitable and unsafe. Exelon does not fully disclose the locations, nature and extent of the growth faults at the VCS site. Second, Exelon greatly underestimates the rate of movement of the growth faults. Because Exelon underestimates both the extent and rate of movement of the growth faults, it fails to evaluate the safety implications. Third, hundreds of active and abandoned oil and gas wells, borings and pipelines exist on the VCS site footprint, creating undue risk for the safe operation of a nuclear power plant and the ESP application fails to

³ John C. Halepaka & Associates, Inc., *Contested Issues Concerning Early Site Permit, Exelon’s Victoria County Station* (Jan., 2011); Letter from John Halepaka to James B. Blackburn, *Summary of Contentions, Exelon’s ESP Application for the proposed Victoria County Station Site* (Oct. 8, 2010).

⁴ Trungale Engineering & Science, *Effects of Diversions from the Guadalupe River on San Antonio Bay and Estuary Health* (Jan. 20, 2011).

⁵ Ronald Sass, *Grus Americana and a Texas River: A Case For Environmental Justice* (Nov. 9, 2010) (published by James A. Baker III Institute for Public Policy of Rice University).

evaluate the safety implications and risks. Fourth, contention TSEP-SAFETY-4 relates to the lack of assurance that surface water is available for cooling the plant.

TSEP-SAFETY-1 – INADEQUATE IDENTIFICATION OF GROWTH FAULTS

A statement of the Contention itself

The Exelon application does not satisfy the requirements of 10 C.F.R. § 100.23(d)(2) because it does not provide sufficient geological data regarding growth faults or present an adequate evaluation of the potential for subsurface deformation. As result, Exelon underestimates the risk of surface deformation.

A brief summary of the basis for the contention

NRC regulations require that the SSAR include detailed information to determine whether there is the potential for surface deformation at the proposed site. Exelon's application presents interpretations of growth faults and surface deformation that are based upon interpretations of two-dimensional ("2D") seismic data. TSEP's consultant reviewed three-dimensional ("3D") seismic data, which indicated that the movement along the faults is considerably more than that estimated in the SSAR (by hundreds of feet). According to preliminary field investigation of the faults at locations near the site boundary, the fault traversing the cooling pond area exhibits evidence of recent and continuing movement. This movement poses an immediate and substantial threat to the stability of the cooling pond and related infrastructure. Further, the SSAR does not evaluate the possibility that seepage from the pond into the fault zone could cause activation of the fault; should the fault be activated, this would result in cooling pond infrastructure failure. The SSAR erroneously maintains that the cooling ponds are not a safety feature and that a release of water from the ponds would not flood the reactors. However, any potential damage to the cooling ponds is a considerable safety issue:

a total loss of normal load cooling water and the resulting water levels would pose significant safety-related operational difficulties.⁶

A demonstration that the contention is within the scope of the hearing

This contention raises an issue of whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Federal Register Notice of Hearing, 75 Fed. Reg. at 71468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. According to 10 C.F.R. § 100.23(d)(2), “Sufficient geological, seismological, and geophysical data must be provided to clearly establish whether there is a potential for surface deformation.” Also 10 C.F.R. § 100, Appendix A contains detailed seismic and geological siting criteria for nuclear power plants: “In order to determine whether a nuclear power plant is required to be designed to withstand the effects of surface faulting, the location of the nuclear power plant with respect to capable faults shall be considered.”⁷ “The design basis for surface faulting shall be taken into account in the design of the nuclear power plant by providing reasonable assurance that in the event of such displacement during faulting certain structures, systems, and components will remain functional.”⁸

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

According to the JCHA Report prepared for TSEP, there are at least two, and perhaps as many as four, growth faults which reach the surface onsite, or adjacent to the site, of VCS.⁹

⁶ Ex. D-2, JCHA Report, at 108.

⁷ 10 C.F.R. § 100, App. A, § V.(b).

⁸ 10 C.F.R. § 100, App. A, § VI.(b)(3).

⁹ Ex. D-2, JCHA Report, at 108; Ex. D-1, JCHA Summary, at 11.

Importantly, these faults pass near the power block and cross the cooling pond.¹⁰ Additional growth faults which do not reach to the surface are also present beneath and near the VCS site.¹¹ Contrary to Exelon's evaluation in the application for the VCS site, the JCHA Report found evidence of significant historical as well as recent movement along some of these faults, rendering this site unsuitable for a nuclear power station.¹²

JCHA analyzed 3D seismic data which shows that movement across some growth faults in the area is as much as several hundreds of feet at depth, which is considerably higher than what was estimated from the 2D seismic data relied on by Exelon in the application.¹³ The 3D seismic data provides a much more complete picture of the area than the 2D data examined by Exelon.¹⁴

JCHA also reviewed the siting information for nuclear reactors in the United States: there are 64 sites which contain the 104 currently permitted and operating nuclear reactors in the U.S.¹⁵ None of the sites investigated contained capable faults on site or showed evidence of recent non-tectonic faults or folds. Those in known seismically active zones were required to design equipment to withstand higher ground accelerations. Importantly, none of the sites had active growth faults on site. Although site specific data was not found for all sites within the time allowed for the review, those plants with no data were not within the geologic environment associated with growth faults. The South Texas Project delineated 10 subsurface growth faults near the site, but 8 were buried under at least 5000 ft with an age greater than 5 million years. The other two were located at least 3 miles from the site and were buried at least 800 ft.¹⁶ No

¹⁰ Ex. D-2, JCHA Report, at 108; Ex. D-1, JCHA Summary, at 11.

¹¹ Ex. D-2, JCHA Report, at 108; Ex. D-1, JCHA Summary, at 11.

¹² Ex. D-2, JCHA Report, at 108-114; Ex. D-1, JCHA Summary, at 11-12.

¹³ Ex. D-2, JCHA Report, at 108-113; Ex. D-1, JCHA Summary, at 11.

¹⁴ Ex. D-2, JCHA Report, at 108.

¹⁵ Ex. D-1, JCHA Summary, at 18-21, 24-31.

¹⁶ Ex. D-1, JCHA Summary, at 20, 29.

evidence of recent movement was found at the South Texas Project site. In sum, the VCS site is the only site in the United States with faults showing evidence of current fault movement at the surface.¹⁷

Sufficient information exists to show that there is a genuine dispute with Exelon, with specific references to the portions of the application being controverted

The Exelon SSAR identifies five growth faults within the larger VCS area (the five mile radius), and only two faults on the site itself.¹⁸ One of these growth faults (Fault D) traverses the entire site underneath the proposed cooling pond and passes as close as 509 feet to the proposed power block.¹⁹ Exelon asserts that Fault D is the only one reaching the surface, and along with Fault E, they are the only ones showing recent activity. According to Exelon, the SSAR consequently analyzes them in greater detail.²⁰ By contrast, JCHA identified as many as four growth faults reaching the surface on the site itself.²¹ JCHA's analysis of the 3D seismic data shows that movement along these faults is as much as several hundred of feet at depth, much greater than Exelon estimates.²² The 3D seismic data provides a much more complete picture of the area than the 2D data examined by Exelon.²³

The potential exists for failure or damage to the VCS structures constructed on top of these growth faults, and Exelon does not rigorously explore and objectively evaluate this. The growth faults pose an unacceptable risk to the proposed facility's cooling pond, and the resulting impacts of these growth faults on the design and operation of the nuclear power station are ignored in the Exelon application. Indeed, Exelon conspicuously fails to present any maps or

¹⁷ Ex. D-1, JCHA Summary, at 20-21; 24-31.

¹⁸ SSAR § 2.5.1.2.4.2, Fig 2.5.1-40, and § 2.5.3.2.2.

¹⁹ SSAR at 2.5.1-85.

²⁰ SSAR § 2.5.3.4.2.1.

²¹ Ex. D-1, JCHA Summary, at 11-12; Ex. D-2, JCHA Report, at 108-114.

²² Ex. D-2, JCHA Report, at 108-114.

²³ Ex. D-2, JCHA Report, at 108.

figures showing the relationship of the growth faults to important plant infrastructure²⁴ with the exception of the power block.²⁵ TSEP estimates that Fault D most likely runs underneath extended portions of the northern wall of the cooling pond, directly opposite the powerblock. Based on Exelon's schematics in the ER,²⁶ TSEP estimates that Fault D would cross very close to the depicted locations of the cooling pond intake/outfall structures or the pipes carrying cooling water to the power block.

Therefore, although Exelon and TSEP used different sets of seismic data (2D versus 3D), a genuine dispute exists, based on the differing interpretations of the respective seismic data, about the locations and extent of growth faults on and around the VCS site. This issue carries significant safety implications, and admitting TSEP's contention would result in a full development of the facts to help the NRC reach a decision.

TSEP-SAFETY-2 –RATE OF RECENT SURFACE MOVEMENT AT GROWTH FAULTS

A statement of the Contention itself

Exelon fails to satisfy 10 C.F.R. § 100.23(d)(2) because the SSAR greatly understates the rate of recent surface movement of the growth faults, as established by field studies showing rates of movement 1000 to 10,000 times greater than Exelon estimates.

A brief summary of the basis for the contention

Field surveys, including radioisotope dating, indicate that the rate of recent surface deformation of the growth faults on the site is much greater than estimated in the Exelon application. TSEP data indicates rates of surface movement along these faults between 0.2 and 0.265 in/yr. This rate is 1000 to 10,000 times greater than Exelon estimated in its application.

²⁴ See, e.g., SSAR Figs. 2.5.1-37, 2.5.1-38, 2.5.1-39, 2.5.1-40, 2.5.1-41, 2.5.1-42.

²⁵ SSAR Fig. 2.5.1-43 (showing only the power block outline).

²⁶ E.g. SSAR Fig 1.2-2.

Since Exelon performed no field testing on rates of surface movement at the fault locations, it failed to analyze any of the impacts of such movement on plant infrastructure, including the cooling pond and related pumps, pipes, and other structures.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue of whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. According to 10 C.F.R. § 100.23(d)(2), “Sufficient geological, seismological, and geophysical data must be provided to clearly establish whether there is a potential for surface deformation.” Also 10 C.F.R. § 100, Appendix A contains detailed seismic and geological siting criteria for nuclear power plants: “In order to determine whether a nuclear power plant is required to be designed to withstand the effects of surface faulting, the location of the nuclear power plant with respect to capable faults shall be considered.”²⁷ “The design basis for surface faulting shall be taken into account in the design of the nuclear power plant by providing reasonable assurance that in the event of such displacement during faulting certain structures, systems, and components will remain functional.”²⁸

²⁷ 10 C.F.R. § 100, App. A, § V.(b).

²⁸ 10 C.F.R. § 100, App. A, § VI.(b)(3).

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

JCHA used Light Detection and Ranging (“LIDAR”) data to locate the surface expression of the growth faults on the proposed site and their offsite extensions.²⁹ Preliminary field trenching conducted by JCHA across the faults at locations near the site boundary indicates that the fault traversing the cooling pond area exhibits evidence of recent and continuing movement.³⁰ This movement poses an immediate and substantial threat to the stability of the cooling pond.

The LIDAR data indicates that the fault known as “Growth Fault E” crosses McFaddin Road.³¹ Field observation indicates a dip in the road where the fault trace intersected the road. JCHA obtained the survey data from when the road was constructed in 1970, and found that the road was not built with a dip in it.³² A 2009 survey of the road’s center line showed a dip of approximately eight inches across the growth fault.³³

Assuming that this activity happened at a uniform rate over the past 39 years, the resulting movement rate of this growth fault would be 0.2 in/yr, which is approximately 1,000 to 10,000 times larger than rates estimated in the SSAR (the SSAR estimated 0.00005-0.0005 in/yr).³⁴ Of course, it is unlikely that the rate of movement is uniform. The actual rate of movement during episodic events would be significantly higher.³⁵ The LIDAR data also

²⁹ Ex. D-2, JCHA Report, at 108-114; Ex. D-1, JCHA Summary, at 11-12.

³⁰ Ex. D-2, JCHA Report, at 113-114; Ex. D-1, JCHA Summary, at 11-12; *see generally* JCHA Report, at 108-114 .

³¹ Ex. D-2, JCHA Report, at 108-113; Ex. D-1, JCHA Summary, at 11-12.

³² Ex. D-2, JCHA Report, at 110.

³³ Ex. D-2, JCHA Report, at 110, 114.

³⁴ Ex. D-2, JCHA Report, at 110, 114.

³⁵ Ex. D-2, JCHA Summary, at 11-12.

indicates that the trace of the growth fault crossed U.S. Highway 77.³⁶ A dip in the highway was also noted on U.S. Highway 77.³⁷

Cesium 137 age dating is also a useful method to estimate growth fault movement.³⁸ Samples at depths ranging from 0-56 cm were collected from each side of Growth Fault E near where it crosses the San Antonio River. Results of these analyses show a vertical movement of at least 13 inches since the test era (c. 1960). This would suggest a movement rate of 0.265 in/yr, which is comparable to the estimate from the road survey.³⁹ JCHA conducted further field testing which showed a visible offset in near surface stratigraphy of at least six inches, corroborating the presence of fault movement in the vicinity of the VCS site.⁴⁰

JCHA reviewed the siting information for the 64 U.S. nuclear sites.⁴¹ The South Texas Nuclear Project (“STNP”) was the only site with subsurface growth faults on and near the site.⁴² No evidence of recent movement was found at the STNP site. As stated, the VCS site is the only site in the United States with faults showing evidence of current fault movement at the surface.

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

Exelon’s estimates of surface movement at the fault significantly underestimate actual movement as found by JCHA’s field investigations. Exelon used a standard NRC procedure to estimate that the long-term activity of these two faults is 5.1×10^{-5} to 5.4×10^{-4} inches per year based on the total deformation and the age of the sediments.⁴³ According to the SSAR, and

³⁶ Ex. D-2, JCHA Report, at 108-114; Ex. D-1, JCHA Summary, at 11-12.

³⁷ Ex. D-2, JCHA Report, at 109-11.

³⁸ Fallout from the early 1960’s era of atmospheric nuclear testing contained elevated concentrations of Cs-137. If samples collected from the same depth on different sides of the fault trace have different Cs-137 concentrations, recent movement would be indicated.

³⁹ Ex. D-2, JCHA Report at 112.

⁴⁰ Ex. D-2, JCHA Report at 112.

⁴¹ Ex. D-1, JCHA Summary, at 18-21, 24-31.

⁴² Ex. D-1, JCHA Summary, at 18-21, 24-31.

⁴³ SSAR at 2.5.3-10 (rate of growth fault movement is estimated based on the total throw of the growth fault divided

assuming that growth faults slip at continuous and uniform rates, this equates to 1/18th of an inch over 100 years.⁴⁴ Exelon stated in supplemental responses to NRC that it assumed the slip rate was continuous “as a matter of convenience” and that “the rates presented in the SSAR are lower-bound estimates.”⁴⁵ The field data and testing collected by JCHA dramatically contradicts Exelon’s estimates.

The potential exists for failure or damage to the VCS structures constructed on top of these growth faults, and Exelon does not rigorously explore or objectively account for this. The growth faults pose an unacceptable risk to the proposed facility’s cooling pond, and the resulting impacts of these growth faults on the design and operation of the nuclear power station are ignored in the ESP application.

Therefore, a genuine dispute exists between Exelon, using its estimate, and TSEP, relying on field testing, about the rate of recent surface movement along the growth faults on and around the VCS site.

TSEP-SAFETY-3 – DANGERS FROM OIL AND GAS WELLS AND BORINGS

A statement of the Contention itself

Exelon’s SSAR fails to provide adequate data or an adequately reasoned evaluation of the threats of explosion and seepage of poisonous gas posed by the existence of hundreds of active and abandoned oil and gas wells and borings on and near the VCS site.

A brief summary of the basis for the contention

There are hundreds of active and abandoned oil and gas wells on and near the VCS site. The presence of these wells on and near the proposed nuclear power station and massive cooling pond poses a grave and unanalyzed threat to the safety of the construction and operation of the

by the age of the sediments).

⁴⁴ SSAR at 2.5.3.-10.

⁴⁵ Exelon letter of August 16, 2010, responding to RAI Question 02.05.01-1, available at http://adamswebsearch2.nrc.gov/idmws/doccontent.dll?library=PU_ADAMS%5EPBNTAD01&ID=102730203.

power station. Old abandoned wells are poorly documented, may be improperly plugged, and pose risks from possible emissions of explosive and poisonous gases and upward migration of hydrocarbons. The site is a veritable “Swiss cheese” and unsuitable as a location of a future nuclear power plant.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue of whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. According to 10 C.F.R. § 100.21(e), “Potential hazards associated with nearby transportation routes, industrial and military facilities must be evaluated and site property established such that potential hazards from such routes and facilities will pose no undue risk to the type of facility proposed to be located at the site.” In addition, Regulatory Guide 1.70, Section 2.2.1 states that these hazards include “oil and gas pipelines, drilling operations, and wells”. According to 10 C.F.R. § 100.20(b), “The nature and proximity of man-related hazards must be evaluated to establish site parameters for use in determining whether a plant design can accommodate commonly occurring hazards.”

Also, all oil and gas wells must be plugged and abandoned in accordance with the Texas Railroad Commission rules, 16 TEX. ADMIN. CODE § 3.14. Among specific provisions, all oil and gas wells must be plugged to ensure that all formations bearing usable quality water, oil, gas, or geothermal resources are protected.⁴⁶

⁴⁶ 16 TEX. ADMIN. CODE § 3.14(d).

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

According to the JCHA Report, data from the Texas Railroad Commission (“TRRC”) show almost 300 wells within the Exelon property boundary and the immediate vicinity.⁴⁷ From the information gathered by JCHA, 133 of those wells have been abandoned and 70 wells have an unknown status.⁴⁸ The JCHA Report states that approximately 27 wells are currently producing.⁴⁹ Production at and around the site began before 1960. Given the historical plugging and abandoning methods for oil and gas wells in Texas, the potential of these wells to be leaking hazardous gases or liquids is unknown. However, it is likely that some of the wells may be leaking.

Notably, JCHA found that much of the data on the wells is incomplete.⁵⁰ For example, incomplete information from the Texas Railroad Commission includes the following:

- API well numbers were not available for 20% of the wells;
- Total depth was not available for 40% of the wells;
- Current status (active or abandoned) was not available for 25% of the wells;
- The date and method for abandonment was not available for 50% of the wells;
- The type of well was not available for 15% of the wells;
- Nearly 60% of the wells did not have completion data on file;
- None of the wells had data for surface casing length, long string length, or cementing schedule; and
- None of the wells had data for hydrogen sulfide occurrence.⁵¹

⁴⁷ Ex. D-2, JCHA Report, at 71-72; *see generally* JCHA Report, at 69-85.

⁴⁸ Ex. D-2, JCHA Report, at 71.

⁴⁹ Ex. D-2, JCHA Report, at 71-72; *see generally* JCHA Report, at 69-85.

⁵⁰ Ex. D-2, JCHA Report, at 71-72; *see generally* JCHA Report, at 69-85.

⁵¹ Ex. D-2, JCHA Report, at 72; *see generally* JCHA Report, at 69-85.

Incomplete information creates added dangers because the actual risks are difficult to identify without full information. In order to evaluate the hazards posed by the abandoned wells on the property, it is necessary to know whether the wells were properly constructed and properly abandoned, or if mitigation is needed to prevent surface migration of gas or to protect surface structures. The only practical way to confirm whether a well has been properly plugged is to locate it on the ground and re-drill it.⁵²

Due to the age of the wells, dating back to the 1960s or earlier, the casing on the wells may be aging beyond its effectiveness.⁵³ The Texas Land and Mineral Owner's Association states that "a casing job in an area of average acidity is estimated to be effective for 20 years, after which time it must be tended to and plugged".⁵⁴ This information would show that it is important to know when wells were created so that they are plugged and abandoned in a timely manner. According to the JCHA Report, only 41% of the wells that were examined had completion data on file with the TRRC.⁵⁵ Of the wells that did have completion data on file, 62 have been in the ground for 20 years or more.⁵⁶

The JCHA Report stated that as many as 80% of the 300 wells investigated could be over 20 years old.⁵⁷ Wells abandoned 20 or more years ago are even more likely candidates for improper abandonment due to fewer regulatory requirements in place at that time.⁵⁸

Structural integrity of well components and seals is not permanent.⁵⁹ Therefore, the potential exists for many of the oil and gas wells on the VCS site to be deteriorated, and these wells could be used as conduits for seepage through otherwise disconnected layers in the ground.

⁵² Ex. D-2, JCHA Report, at 72; *see generally* JCHA Report, at 69-85.

⁵³ Ex. D-2, JCHA Report, at 69-73; Ex. D-1, JCHA Summary at 15.

⁵⁴ Ex. D-2, JCHA Report, at 72.

⁵⁵ Ex. D-2, JCHA Report, at 72.

⁵⁶ Ex. D-2, JCHA Report, at 72.

⁵⁷ Ex. D-2, JCHA Report, at 72.

⁵⁸ Ex. D-1, JCHA Summary, at 15.

⁵⁹ Ex. D-2, JCHA Report, at 71.

Deterioration occurs because both casings and seals are subject to corrosion caused by exposure to chemicals, high and fluctuating pressures, high temperatures, and ground movement.⁶⁰ Any deterioration of well integrity can lead to leaks.

The following is a discussion of the safety issues posed by these wells and the wells' condition:

The active and abandoned oil and gas wells and borings pose threats of explosion on and near the proposed facility. Methane from oil and gas wells presents a risk of explosion.⁶¹ Methane is a component of thermogenic gas found in oil and gas deposits. Thermogenic gas can reach the surface through various natural and/or man-made pathways. Methane presents a risk of explosion when it accumulates in an enclosed space. Mixtures of methane and air with a methane content between 5% and 15% by volume are explosive.⁶²

Explosions can occur as a result of natural gas venting from the ground. Examples of this exist in Texas and elsewhere. For example, a massive explosion occurred in 2005 near Palo Pinto, Texas, which blew large chunks of rock out of the ground and left a half-acre crater.⁶³ According to the Texas Railroad Commission, high pressure natural gas migrated to the surrounding subsurface and formed pockets. As the higher pressure gas vented to the surface, it was ignited, creating an explosion. As another example, a shopping center in Los Angeles exploded in 1999, and the center had been built over a series of abandoned oil and gas wells.⁶⁴ As yet another example, a private house exploded in Las Animas County, Colorado in 2007 due to old abandoned natural gas wells located near or under the home.⁶⁵

⁶⁰ Ex. D-2, JCHA Report, at 71.

⁶¹ Ex. D-2, JCHA Report, at 74-75.

⁶² Ex. D-2, JCHA Report, at 75.

⁶³ Ex. D-2, JCHA Report, at 74.

⁶⁴ Ex. D-2, JCHA Report, at 74.

⁶⁵ Ex. D-2, JCHA Report, at 74.

Natural gas has been detected at the surface in many areas overlying oil and gas fields.⁶⁶ Seepage of natural gas from old wells presents a risk of explosion near or on the VCS site.

The active and abandoned oil and gas wells and borings pose threats of leakage of poisonous gas, such as hydrogen sulfide, on and near the proposed facility. In addition to methane, poisonous gases may also be released from oil and gas wells. The most common poisonous gas associated with gas and oil fields is hydrogen sulfide (H₂S).⁶⁷ The U.S. Environmental Protection Agency states that well blowouts, line releases, extinguished flares, collection of sour gas in low-lying areas, line leakage, and leakage from idle or abandoned wells are sources of documented accidental releases that have impacted the public, not just workers at oil and gas extraction sites.⁶⁸

The effects of exposure to hydrogen sulfide depend on the dose and the duration of exposure. The current OSHA workplace standard for H₂S exposure is 10 parts per million (ppm).⁶⁹ The OSHA regulations do not specify an 8-hour time weighted average for H₂S.⁷⁰ Low levels can irritate the eyes and nose, but at higher levels, such as at 300 parts per million, the gas is immediately toxic. Brief exposure to high concentrations (500 parts per million and higher) causes a loss of consciousness and with prolonged exposure, death.⁷¹

Many of the wells located on and near the site were not tested for hydrogen sulfide.⁷² However, data contained in the Texas Railroad Commission online database indicated that 6 wells within Victoria County (two at the Kay Creek oil field, two at the McFaddin oil field, and two at the Richard Adcock oil field) showed signs of elevated H₂S levels with average

⁶⁶ Ex. D-2, JCHA Report, at 74-75.

⁶⁷ Ex. D-2, JCHA Report, at 76-77.

⁶⁸ Ex. D-2, JCHA Report, at 76.

⁶⁹ Ex. D-2, JCHA Report, at 76.

⁷⁰ Ex. D-2, JCHA Report, at 76.

⁷¹ Ex. D-2, JCHA Report, at 76-77.

⁷² Ex. D-2, JCHA Report, at 77.

concentrations being between 38-650 ppm.⁷³ One well (McFaddin 1900) showed a peak level of 1,035 ppm.⁷⁴

The abandoned oil and gas wells allow the potential for upward migration of hydrocarbons and other contaminants at the VCS site. Although the majority of the wells completed on the site produced gas, some of the wells are oil wells. These wells, if improperly abandoned, could provide a pathway for liquid petroleum to move to the surface. Even if the wells were properly abandoned, the construction activities at the site could compromise the well seal. Additionally, oil moving up a well could pose a danger to the stability of the cooling dam, as well as the structural integrity of the reactor building. Finally, because crude oil can burn, there is a risk of fire.

The presence of oil and gas wells and pipelines at a nuclear site is a rarity, and construction and operation at the Victoria Site would represent a nearly unprecedented location for a nuclear power plant. JCHA reviewed site conditions at 64 nuclear sites, which contained 104 licensed, operating, commercial nuclear reactors.⁷⁵ Of the 64 sites investigated, 63 of the sites had no oil and gas wells present on-site, and one (the STNP site) had 2 wells on-site which were plugged and abandoned.⁷⁶ By stark contrast, the VCS Site has 27 operating wells and over 100 inactive wells within the site boundary, with many more nearby.⁷⁷ No nuclear power plant has been built on a site with as many oil and gas wells on the site as Exelon's proposed Victoria site.

Four of the sites reviewed had wells in the area around the site, including Comanche Peak (37 gas wells in the Barnett Shale with the closest 1.2 miles from the site), River Bend (one

⁷³ Ex. D-2, JCHA Report, at 77.

⁷⁴ Ex. D-2, JCHA Report, at 77.

⁷⁵ Ex. D-2, JCHA Report, at 72-73; Ex. D-1, JCHA Summary, at 18-19, 24-31.

⁷⁶ Ex. D-2, JCHA Report, at 72-73; Ex. D-1, JCHA Summary, at 18-19, 24-31.

⁷⁷ Ex. D-2, JCHA Report, at 72-73; Ex. D-1, JCHA Summary, at 18-19, 24-31.

plugged and abandoned well 0.75 miles from the site), South Texas Project (seven oil plus 26 gas plus 9 oil and gas wells within 6 miles of the site), and Wolf Creek (one plugged and abandoned well 2 miles from the site and one producing oil well 3 miles away).⁷⁸ In contrast, the proposed VCS site has roughly 300 wells on it and in the immediate vicinity.⁷⁹

With respect to pipelines, fifty-nine of the sites have no pipelines onsite, and five have pipelines. Three of the sites with pipelines have co-located fossil fuel generating plants which have a natural gas supply line for the facility. Two other nuclear reactor sites have pipelines which cross the site, but are located away from the power block. At the VCS site, thirteen pipelines are found on or near the site. Exelon represents that it plans to move the pipelines located close to the planned power block, but they may leave the pipelines in the vicinity of the cooling basin.⁸⁰

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

In the SSAR, Exelon reports that there are 130 oil and gas borings on the approximately 11,500 acre footprint of the Victoria site.⁸¹ Exelon further reports that, of these, 21 are considered active; all of the active wells produce gas and three produce oil.⁸² Exelon reports that production of the wells dates back to the mid-1960s.⁸³ The only hazard that Exelon evaluates in connection with the wells is land subsidence.⁸⁴ Exelon appears to assume that all wells are

⁷⁸ Ex. D-2, JCHA Report, at 72-73; Ex. D-1, JCHA Summary, at 18-19, 24-31.

⁷⁹ Ex. D-2, JCHA Report, at 72-73; Ex. D-1, JCHA Summary, at 18-19, 24-31.

⁸⁰ Ex. D-1, JCHA Summary, at 20, 24-31.

⁸¹ SSAR at 2.5.1-97 to 98, also Fig. 2.2-5.

⁸² SSAR at 2.5.1-97 to 98.

⁸³ SSAR at 2.5.1-98.

⁸⁴ SSAR § 2.5.1.2.6.4.2.

known and that unused wells have been properly abandoned. Exelon states that gas pipelines are a greater hazard.⁸⁵ As described above, Petitioner strongly disagrees.

The ESP application defers consideration of poisonous gases to the combined operating license (COL) stage. However, it appears that any consideration will be focused on transportation of hazardous materials (for example, movement of materials along U.S. Highway 77, which is adjacent to the Exelon property). The only mention of H₂S in the SSAR is on a table that shows the hazardous materials that could potentially be moved on U.S. Highway 77 adjacent to the Exelon property.⁸⁶ The gas is not, however, mentioned as being found in or near the Exelon property, even though two of the oil fields containing these elevated concentrations are directly within the property boundaries.⁸⁷ Therefore, the ESP application fails to rigorously evaluate explosive or poisonous gas in connection with the oil and gas wells.

In conclusion, Exelon has not rigorously evaluated the condition of, or the risks associated with, the wells on and adjacent to the site. The site is a veritable “Swiss cheese” and unsuitable as a location of a future nuclear power plant. The gravest risks include explosions or poisonous gas leakage, due to migration of gas up the vertical conduit of old, abandoned wells.

TSEP-SAFETY-4 – FAILURE TO ASSURE DEPENDABLE WATER SUPPLY.

A statement of the Contention itself

The ER fails to demonstrate the existence of a dependable water supply for a new reactor.

A brief summary of the basis for the contention

The SSAR and ER understate and misrepresents the actual usage of water from GBRA’s lower basin water rights. Exelon fails to acknowledge that, because of other pending permit applications and the state law requiring environmental flows for new permits, no unappropriated

⁸⁵ SSAR § 2.2.2.3.4 (“Potential hazards from these wells are bounded by the analysis of the natural gas transmission lines”).

⁸⁶ SSAR Table 2.2-203.

⁸⁷ See SSAR Fig. 2.2-203.

firm water remains for a new surface water right that Exelon might seek. Exelon fails to consider the true availability of water during drought and other factors that render the long-term availability of water from the Guadalupe River too uncertain for the ESP to be issued.

The ER understates the 2000-2006 usage of water from GBRA's lower basin water rights, and also fails to identify even higher reported usages in earlier years. The ER does not adequately describe the consequences of the several water permit applications pending with TCEQ, which seek 264,484 acft/yr of surface water from the Guadalupe River. These pending applications will, if issued, have earlier priority dates than any new Exelon permit. Finally, any new permit will be subject to the Texas state law mandating certain environmental flows processes and water will only be available for diversion once the required set-aside for instream flows and estuary health has been satisfied. All of these factors create tremendous uncertainty regarding Exelon's prospects for obtaining surface water for a new reactor. Therefore Exelon fails to give assurances that a "highly dependable" supply of water exists.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue of whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. According to 10 C.F.R. § 100, Appendix A, "Assurance of adequate cooling water supply for emergency and long-term shutdown decay heat removal shall be considered in the design of the nuclear power plant."⁸⁸ The Regulatory Guide ("RG") 4.7 states that a "highly dependable system of water supply sources must be shown to be available under postulated

⁸⁸ 10 C.F.R. § 100, App. A, § V.(d)(3).

occurrences of natural and site-related accidental phenomena or combinations of such phenomena.”⁸⁹ The RG also states: “To evaluate the suitability of sites there should be reasonable assurance that permits for consumptive use of water in the quantities needed for a nuclear power plant ... can be obtained by the applicant from the appropriate State, local, or regional agency.”⁹⁰

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

The VCS site is located in the South Central Texas Regional Water Planning Area (Region L). The ESP application uses the 2006 Region L plan as the basis for analyzing water availability for the VCS, as well as for analyzing potential water use impacts.⁹¹ The proposed source of the VCS raw water makeup system is the Guadalupe River. The ESP application claims the water could be secured under existing water rights via contract with an existing water rights holder, or by obtaining ownership of existing water rights or a new water right to withdraw water from the Guadalupe River.⁹² But Exelon’s exercise of any of these alternative options will impact other currently permitted or future users. Permitted uses of surface water bodies potentially impacted by this project include municipal water supply, manufacturing, steam electric, irrigation, mining, and livestock.

Permitted diversions under Certificates of Adjudication 18-5173 through 18-5178 held jointly by GBRA and Union Carbide, or singularly by GBRA (18-3863), total 175,501 acft/yr. These diversions authorize municipal, industrial and irrigation use in the lower Guadalupe basin. These are the only existing lower basin water rights sufficient for Exelon’s needs.

⁸⁹ NRC RG 4.7, General Site Suitability Criteria for Nuclear Power Stations (Rev. 2, Apr. 1998), at 4.7-13.

⁹⁰ NRC RG 4.7, General Site Suitability Criteria for Nuclear Power Stations (Rev. 2, Apr. 1998), at 4.7-13.

⁹¹ ER § 2.3.2.3, ER § 5.2.2.1.

⁹² ER at 2.3-133 to 134, ER at 5.2-11 to 12.

Considering existing and pending permits, no unappropriated firm water exists for any new water right in the Lower Guadalupe River Basin. Permits for the use of surface water in Texas are based on the prior appropriation doctrine. When surface water supplies are insufficient, the oldest water right (the “senior” right) has first call on available supplies. If the water supplied to the VCS cooling system is an existing “senior” water right, Exelon would have “first call” on diverting the water during periods when the Guadalupe River flows are low.⁹³ Exelon plans to finalize contractual arrangements to withdraw water under one or more of existing rights (senior priority and/or a new water right) at the COL stage.⁹⁴ However, Exelon purports to analyze water availability in its ESP application.

Data obtained from the South Texas Water Master shows that the reported water usage for just one of GBRA’s lower basin rights (18-5178) was higher than Exelon reports in its ER for all ten of the GBRA water rights.⁹⁵

Each of water supply projects identified in the 2011 Region L Water Plan has the potential, when implemented, to reduce the water available in the Guadalupe River.⁹⁶ Two proposed surface water supply projects in particular will most certainly eliminate any option for Exelon to apply for a new permit for firm water from TCEQ. These are the two GBRA new appropriations in the lower and mid-basins, for 189,484 acft/yr and 75,000 acft/yr respectively.⁹⁷ These permit applications have already been submitted, and at least one has been declared administratively complete and already has a priority date.⁹⁸ The Exelon application fails to appropriately identify the consequences these two pending permits in the application. Instead the

⁹³ ER at 5.2-10.

⁹⁴ ER at 5.2-12.

⁹⁵ Ex. E-1, Trungale Report, at 2-3, Table 1.

⁹⁶ Ex. H, Region L 2011 Water Plan (Attachment D, listing recommended projects).

⁹⁷ Ex. H, Region L 2011 Water Plan (Identifying two new GBRA permits).

⁹⁸ Ex. H, Region L 2011 Water Plan (Identifying two new GBRA permits).

Exelon application asserts that unappropriated firm water remains available for a new application.⁹⁹ This statement is simply not true.

The Guadalupe and San Antonio River basin is one of the most drought-prone areas of Texas. It suffers from frequent and prolonged droughts. Water, both groundwater and surface water, is therefore a precious resource and a highly valued commodity. To make matters worse, the basin is also one of the fastest growing parts of Texas, placing relentlessly increasing demands on water resources. The 2011 Regional Water Plan predicts additional demand in the basin of 420,000 acre feet per years by 2060.¹⁰⁰ The majority of this demand is driven by population growth.

The Exelon application states that the VCS cooling basin would contain enough water to support the operation of the plant “for several months during potential low flow periods.”¹⁰¹ The most recent basin-wide drought was in 2008-09 and lasted twenty months. Other recent prolonged droughts occurred in 2006, 1999-2000, 1996-97, 1988-90, 1984 with many more.

Exelon fails to recognize that future droughts will result in increased groundwater use which will result in further decreases in available surface flows for diversion to the VCS. None of the water availability studies conducted by Region L, GBRA, or TCEQ fully take into consideration these issues. In fact, the drought analysis used by Exelon assumes 70,000 acre-feet of return flows would be available from San Antonio. The San Antonio water supply is groundwater from the Edwards Aquifer which may be unavailable in a drought, or San Antonio may reuse all or part of this amount to meet its demand, further reducing flows available for diversion by Exelon. As discussed in the comparison of the VCS with the Matagorda County site, the use of sea water for cooling makes water reliability issues disappear.

⁹⁹ ER at 2.3-134.

¹⁰⁰ Ex. D-1, JCHA Summary, at 14; Ex. D-2, JCHA Report, at 66.

¹⁰¹ ER at 5.2-13.

JCHA reviewed the siting information for the 64 sites which contain the 104 currently permitted and operating nuclear reactors in the United States.¹⁰² Of the 104 U.S. nuclear reactors, 60 use once-through cooling, 35 use wet cooling towers or cooling basins, and 9 use dual systems, switching according to environmental conditions.¹⁰³ A review of the sources of cooling water indicates that 21 of the sites obtain water from either the ocean or the great lakes, 17 sites obtain water from large rivers (Mississippi, Ohio, etc), 11 obtain water from large reservoirs on large rivers, 3 from non-traditional sources (groundwater, municipal waste water, precipitation) and 12 from small rivers.¹⁰⁴ Of the 12 obtaining water from small rivers, 8 have total thermal requirements less than 5000 MWt. Only 4 plants have thermal requirements in the 7000 MWt range.¹⁰⁵ The projected VCS site will have a thermal capacity of 9000 MWt making it the largest plant on a small river.¹⁰⁶

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

The Exelon application states that between 2000 and 2006, the maximum reported use of the GBRA/UCC Lower Basin rights did not exceed 51,670 acft/yr out of the combined permits totaling 175,501 acft/yr.¹⁰⁷ This information contradicts data from the South Texas Water Master (STWM) just for permit 18-5178, which is for a total of 106,000 acft/yr. For this one permit the STWM reported water usage of 58,526 acre feet in 2001, and 70,544 acre feet in 2000.¹⁰⁸ STWM data also shows that between 1991 and 1999, reported diversions, again for this one permit,

¹⁰² Ex. D-1, JCHA Summary, at 18-19.

¹⁰³ Ex. D-1, JCHA Summary, at 19.

¹⁰⁴ Ex. D-1, JCHA Summary, at 19.

¹⁰⁵ Ex. D-1, JCHA Summary, at 19.

¹⁰⁶ Ex. D-1, JCHA Summary, at 19.

¹⁰⁷ ER at 2.3-133.

¹⁰⁸ Ex. E-1, Trungale report at 2-3, Table 1.

exceeded the figure stated in the ESP in five of the eight years, including 1994 when 115,966 acre feet was diverted.¹⁰⁹

Therefore the Exelon application presents a misleadingly narrow time period for evaluating water diversions, and even then inaccurately describes the diversions as lower than those as reported by GBRA. The Exelon application's statement that "approximately 70%" of the GBRA/UCC right are available is simply false.

The Exelon application fails to identify the two GBRA pending permits that will have priority over any new application, and that will consume the remaining unappropriated water. Instead the Exelon asserts that unappropriated firm water remains available for a new application, when in fact it is not.¹¹⁰

Exelon's assertion that the VCS plant could operate "for several months during potential low flow periods."¹¹¹ without additional makeup water is far too vague a statement to satisfy the rigorous safety requirements of the NRC. For example, specifically how many months? What criteria would Exelon use to determine when they could no longer operate safely? What are the safety implications of long-term shutdowns during a three-year drought? Exelon's claim must therefore be scrutinized carefully, because in reality, it is an admission that there is no assurance that a "highly dependable" supply of water exists.

B. Environmental Contentions

Every application for a NRC permit must be accompanied by an Environmental Report ("ER"), which shall discuss: (1) the impacts of the proposed action; (2) adverse environmental effects that cannot be avoided; (3) alternatives to the proposed action; (4) the relationship between local short-term uses of man's environment and the maintenance and enhancement of

¹⁰⁹ Ex. E-1, Trungale report at 2-3, Table 1.

¹¹⁰ ER at 2.3-134.

¹¹¹ ER at 5.2-13.

long-term productivity; and (5) any irreversible and irretrievable commitments of resources associated with the proposed action. 10 C.F.R. §§ 51.45(b) & (c); 10 C.F.R. § 51.50(b). The ER “should contain sufficient data to aid the Commission in its development of an independent analysis” of environmental impacts pursuant to the National Environment Policy Act (“NEPA”). 10 C.F.R. § 51.45(c).

TSEP has **eighteen** environmental contentions disputing information and analyses presented by Exelon in the ER. TSEP’s environmental contentions relate to the impacts of oil and gas activities on and around the VCS site (TSEP-ENV-1 & 15), water availability (TSEP-ENV-2, 3, 4, & 5), downstream aquatic impacts on the San Antonio Bay (TSEP-ENV-6, 10, 11 & 12), and upon the endangered Whooping Cranes and the nearby Aransas National Wildlife Refuge (TSEP-ENV-7, 8, 9, 12, 13, & 14), the existence of an obviously superior alternative site (TSEP-ENV-16), and the Waste Confidence Rule (TSEP-ENV-17 & 18).

Water is of critical importance in the Guadalupe River basin, and throughout most of Texas. The water required by the future VCS plant has the potential to seriously disrupt regional long-term water availability. Equally important, the consumption of the massive quantities of water required to operate the VCS plant would seriously increase the salinity of the San Antonio Bay and harm estuarine productivity. The NRC must conduct a rigorous review and objective analysis, because Exelon certainly has not. TSEP will show that these impacts will violate the Section 7 of the federal Endangered Species Act because the NRC will be authorizing an activity that significantly modifies designated critical habitat and jeopardizes the Whooping Crane, a listed and protected species.

TSEP-ENV-1 –IMPACTS FROM ENHANCED COOLING BASIN SEEPAGE.

A statement of the Contention itself

The ER fails to satisfy 10 C.F.R. § 51.45 because it understates and does not rigorously evaluate the environmental impacts of enhanced seepage of fluids and contaminants out of the cooling pond into oil and gas wells and borings beneath the VCS site. Exelon’s ER does not identify how it will prevent or mitigate this impact by identifying and plugging the wells and borings.

A brief summary of the basis for the contention

The abandoned oil and gas wells within the footprint of the cooling basin pose dangers of enhanced seepage of liquids out of the site’s cooling basin. Undocumented or unplugged wells and corroded casing could allow fluids and contaminants to seep out of the cooling pond and into the groundwater.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue of whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. Pursuant to the requirements of NEPA, 42 U.S.C. § 4321, et seq., NRC rules require that the environmental report must include a description of the “impact of the proposed action on the environment,” 10. C.F.R. § 51.45(b), and “must include an analysis that considers and balances the environmental effects of the proposed action, ... [and] must also contain an analysis of the cumulative impacts of the activities to be authorized.” 10 C.F.R. § 51.45(c).

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

Exelon estimates that there will be 3,930 gallons per minute (“gpm”) loss of water due to seepage from the bottom of the cooling basin.¹¹² This alone equates to almost six million gallons a day.¹¹³ Exelon does not discuss the possibility of increased seepage and movement of water due to the large number of abandoned and active oil and gas wells beneath the cooling pond. Oil and gas wells are identified within the footprint of the cooling basin.¹¹⁴ It is likely that these wells and additional wells were not documented or not properly plugged and abandoned and therefore, could become conduits for contaminated water to seep out of the cooling basin, affecting groundwater.¹¹⁵ In the ESP application, Exelon does not discuss seepage losses posed by oil and gas wells.¹¹⁶ Exelon states that the wells within the footprint of the cooling basin will be plugged, but does not provide any information on how they will locate the wells.¹¹⁷ Additionally, the ESP application references certain regulations for water wells but does not reference the proper regulations for plugging oil and gas wells.¹¹⁸

There is further danger of seepage from the water treatment chemicals, which are harmful to the ecosystem. Exelon should be required to investigate the possibility of seepage of these chemicals from the cooling basin into the groundwater system, in particular, the possibility of increased seepage from abandoned oil and gas wells as conduits. Critically, there is the potential of enhanced seepage of tritium, which can contaminate groundwater.¹¹⁹ Tritium is a known by-product of nuclear fission and is in cooling basins at nuclear facilities. Leakage of tritium into the

¹¹² SSAR at 2.4.12-12, ER § 5.2.1.2.2.1.

¹¹³ Ex. D-2, JCHA Report, at 79.

¹¹⁴ ER Fig. 2.2-5.

¹¹⁵ Ex. D-2, JCHA Report, at 79-81.

¹¹⁶ Ex. D-2, JCHA Report, at 79-81.

¹¹⁷ Ex. D-2, JCHA Report, at 79.

¹¹⁸ Ex. D-2, JCHA Report, at 79-80.

¹¹⁹ Ex. D-2, JCHA Report, at 79.

environment can affect drinking water quality and overall ecosystem health.¹²⁰ Improperly abandoned oil and gas wells on the Exelon property provide additional seepage pathways for tritium-contaminated water to escape the cooling basin and enter the surrounding freshwater aquifers.¹²¹ Exelon has not rigorously investigated or evaluated the number or scope of oil and gas wells within the footprint of the cooling basin that could result in tritium seepage and groundwater contamination.

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

In the ESP application, Exelon does not discuss seepage losses posed by the oil and gas wells, nor has Exelon rigorously evaluated the possible tritium contamination of groundwater that could occur due to the additional seepage losses. Exelon has not evaluated the impacts on the water treatment chemicals that would be released from the cooling basin. Petitioner urges that these evaluations must be done.

TSEP-ENV-2 – IMPACTS OF LIMITED WATER AVAILABILITY

A statement of the Contention itself

The ER fails to provide an adequate evaluation of the environmental impacts of severe limits on water availability in the region of the VCS site.

A brief summary of the basis for the contention

understate and misrepresents the actual usage of water from GBRA's lower basin water rights. Exelon fails to acknowledge that, because of other pending permit applications and the state law requiring environmental flows for new permits, no unappropriated firm water remains for a new surface water right that Exelon might seek. Exelon fails to consider the true availability

¹²⁰ Ex. D-2, JCHA Report, at 79.

¹²¹ Ex. D-2, JCHA Report, at 79.

of water during drought and other factors that render the long-term availability of water from the Guadalupe River too uncertain for the ESP to be issued.

The ER understates the 2000-2006 usage of water from GBRA's lower basin water rights, and also fails to identify even higher reported usages in earlier years. The ER does not adequately describe the consequences of the several water permit applications pending with TCEQ, which seek 264,484 acft/yr of surface water from the Guadalupe River. These pending applications will, if issued, have earlier priority dates than any new Exelon permit. Finally, any new permit will be subject to the Texas state law mandating certain environmental flows processes and water will only be available for diversion once the required set-aside for instream flows and estuary health has been satisfied. All of these factors create tremendous uncertainty regarding Exelon's prospects for obtaining surface water for a new reactor.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue of whether Exelon has complied with NRC regulations for the implementation of NEPA and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. Pursuant to the requirements of NEPA, 42 U.S.C. § 4321, *et seq.*, NRC rules require that the environmental report "must include an analysis that considers and balances the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and alternatives available for reducing or avoiding adverse environmental effects... [and] must also contain an analysis of the cumulative impacts of the activities to be authorized." 10 C.F.R. § 51.45(c).

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

The VCS site is located in the South Central Texas Regional Water Planning Area (Region L). The ESP application uses the 2006 Region L plan as the basis for analyzing water availability for the VCS, as well as for analyzing potential water use impacts.¹²² The proposed source of the VCS raw water makeup system is the Guadalupe River. The ESP application claims the water could be secured under existing water rights via contract with an existing water rights holder, or by obtaining ownership of existing water rights or a new water right to withdraw water from the Guadalupe River.¹²³ But Exelon's exercise of any of these alternative options will impact other currently permitted or future users. Permitted uses of surface water bodies potentially impacted by this project include municipal water supply, manufacturing, steam electric, irrigation, mining, and livestock.

Permitted diversions under Certificates of Adjudication 18-5173 through 18-5178 held jointly by GBRA and Union Carbide, or singularly by GBRA (18-3863), total 175,501 acft/yr. These diversions authorize municipal, industrial and irrigation use in the lower Guadalupe basin. These are the only existing lower basin water rights sufficient for Exelon's needs.

Considering existing and pending permits, no unappropriated firm water exists for any new water right in the Lower Guadalupe River Basin. Permits for the use of surface water in Texas are based on the prior appropriation doctrine. When surface water supplies are insufficient, the oldest water right (the "senior" right) has first call on available supplies. If the water supplied to the VCS cooling system is an existing "senior" water right, Exelon would have "first call" on diverting the water during periods when the Guadalupe River flows are low.¹²⁴

¹²² ER § 2.3.2.3, ER § 5.2.2.1.

¹²³ ER at 2.3-133 to 134, ER at 5.2-11 to 12.

¹²⁴ ER at 5.2-10.

Exelon plans to finalize contractual arrangements to withdraw water under one or more of existing rights (senior priority and/or a new water right) at the COL stage.¹²⁵ However, Exelon purports to analyze water availability in its ESP application.

Data obtained from the South Texas Water Master shows that the reported water usage for just one of GBRA's lower basin rights (18-5178) was higher than Exelon reports in its ER for all ten of the GBRA water rights.¹²⁶

Each of water supply projects identified in the 2011 Region L Water Plan has the potential, when implemented, to reduce the water available in the Guadalupe River.¹²⁷ Two proposed surface water supply projects in particular will most certainly eliminate any option for Exelon to apply for a new permit for firm water from TCEQ. These are the two GBRA new appropriations in the lower and mid-basins, for 189,484 acft/yr and 75,000 acft/yr respectively.¹²⁸ These permit applications have already been submitted, and at least one has been declared administratively complete and already has a priority date.¹²⁹ The Exelon application fails to appropriately identify the consequences these two pending permits in the application. Instead the Exelon application asserts that unappropriated firm water remains available for a new application.¹³⁰ This statement is simply not true.

The Guadalupe and San Antonio River basin is one of the most drought-prone areas of Texas. It suffers from frequent and prolonged droughts. Water, both groundwater and surface water, is therefore a precious resource and a highly valued commodity. To make matters worse, the basin is also one of the fastest growing parts of Texas, placing relentlessly increasing

¹²⁵ ER at 5.2-12.

¹²⁶ Ex. E-1, Trungale Report, at 2-3, Table 1.

¹²⁷ Ex. H, Region L 2011 Water Plan (Attachment D, listing recommended projects).

¹²⁸ Ex. H, Region L 2011 Water Plan (Identifying two new GBRA permits).

¹²⁹ Ex. H, Region L 2011 Water Plan (Identifying two new GBRA permits).

¹³⁰ ER at 2.3-134.

demands on water resources. The 2011 Regional Water Plan predicts additional demand in the basin of 420,000 acre feet per years by 2060.¹³¹ The majority of this demand is driven by population growth.

The Exelon application states that the VCS cooling basin would contain enough water to support the operation of the plant “for several months during potential low flow periods.”¹³² The most recent basin-wide drought was in 2008-09 and lasted twenty months. Other recent prolonged droughts occurred in 2006, 1999-2000, 1996-97, 1988-90, 1984 with many more.

Exelon fails to recognize that future droughts will result in increased groundwater use which will result in further decreases in available surface flows for diversion to the VCS. None of the water availability studies conducted by Region L, GBRA, or TCEQ fully take into consideration these issues. In fact, the drought analysis used by Exelon assumes 70,000 acre-feet of return flows would be available from San Antonio. The San Antonio water supply is groundwater from the Edwards Aquifer which may be unavailable in a drought, or San Antonio may reuse all or part of this amount to meet its demand, further reducing flows available for diversion by Exelon. As discussed in the comparison of the VCS with the Matagorda County site, the use of sea water for cooling makes water reliability issues disappear.

JCHA reviewed the siting information for the 64 sites which contain the 104 currently permitted and operating nuclear reactors in the United States.¹³³ Of the 104 U.S. nuclear reactors, 60 use once-through cooling, 35 use wet cooling towers or cooling basins, and 9 use dual systems, switching according to environmental conditions.¹³⁴ A review of the sources of cooling water indicates that 21 of the sites obtain water from either the ocean or the great lakes, 17 sites

¹³¹ Ex. D-1, JCHA Summary, at 14; Ex. D-2, JCHA Report, at 66.

¹³² ER at 5.2-13.

¹³³ Ex. D-1, JCHA Summary, at 18-19.

¹³⁴ Ex. D-1, JCHA Summary, at 19.

obtain water from large rivers (Mississippi, Ohio, etc), 11 obtain water from large reservoirs on large rivers, 3 from non-traditional sources (groundwater, municipal waste water, precipitation) and 12 from small rivers.¹³⁵ Of the 12 obtaining water from small rivers, 8 have total thermal requirements less than 5000 MWt. Only 4 plants have thermal requirements in the 7000 MWt range.¹³⁶ The projected VCS site will have a thermal capacity of 9000 MWt making it the largest plant on a small river.¹³⁷

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

The Exelon application states that between 2000 and 2006, the maximum reported use of the GBRA/UCC Lower Basin rights did not exceed 51,670 acft/yr out of the combined permits totaling 175,501 acft/yr.¹³⁸ This information contradicts data from the South Texas Water Master (STWM) just for permit 18-5178, which is for a total of 106,000 acft/yr. For this one permit the STWM reported water usage of 58,526 acre feet in 2001, and 70,544 acre feet in 2000.¹³⁹ STWM data also shows that between 1991 and 1999, reported diversions, again for this one permit, exceeded the figure stated in the ESP in five of the eight years, including 1994 when 115,966 acre feet was diverted.¹⁴⁰

Therefore the Exelon application presents a misleadingly narrow time period for evaluating water diversions, and even then inaccurately describes the diversions as lower than those as reported by GBRA. The Exelon application's statement that "approximately 70%" of the GBRA/UCC right are available is simply false.

¹³⁵ Ex. D-1, JCHA Summary, at 19.

¹³⁶ Ex. D-1, JCHA Summary, at 19.

¹³⁷ Ex. D-1, JCHA Summary, at 19.

¹³⁸ ER at 2.3-133.

¹³⁹ Ex. E-1, Trungale report at 2-3, Table 1.

¹⁴⁰ Ex. E-1, Trungale report at 2-3, Table 1.

The Exelon application fails to identify the two GBRA pending permits that will have priority over any new application, and that will consume the remaining unappropriated water. Instead the Exelon asserts that unappropriated firm water remains available for a new application, when in fact it is not.¹⁴¹

TSEP-ENV-3 – IMPACTS ON REGIONAL WATER AVAILABILITY

A statement of the Contention itself

The ER fails to satisfy 10 C.F.R. §§ 51.50 & 51.45 because it does not evaluate the impacts on regional water availability. In order to provide water for Exelon, other water supply projects must be developed or changed in the region to satisfy other demands.

A brief summary of the basis for the contention

The Guadalupe and San Antonio river basin is one of the most drought-prone areas of Texas. It suffers from frequent and prolonged droughts. To make matters worse, the basin is also one of the fastest growing parts of Texas, placing relentlessly increasing demands on water resources. The 2011 Regional Water Plan predicts additional demand in the basin of 420,000 acre feet per years by 2060, largely driven by population growth. Water, both groundwater and surface water, is therefore a precious resource and a highly valued commodity. Exelon fails to evaluate these important regional considerations, in violation of the NRC regulations.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue of whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71468.

¹⁴¹ ER at 2.3-134.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. Pursuant to the requirements of NEPA, 42 U.S.C. § 4321, *et seq.*, NRC rules require that the environmental report “must include an analysis that considers and balances the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and alternatives available for reducing or avoiding adverse environmental effects... [and] must also contain an analysis of the cumulative impacts of the activities to be authorized.” 10 C.F.R. § 51.45(c).

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

The source of the VCS raw water makeup system is the Guadalupe River. As described above, no unappropriated water remains for Exelon to obtain a new permit. The ESP application does not identify any particular existing permit that it might purchase or contract. However, the only existing water rights at the lower basin diversion point identified in the application, and which could supply the VCS, are those held jointly by GBRA and Union Carbide, or by GBRA alone. Indeed, Petitioner is aware that Exelon currently maintains a Reservation Agreement with GBRA for up to 75,000 acft/yr of water from permit number 18-5178.¹⁴²

Texas has a regional water planning process, which was established by Texas law in 1997 (Senate Bill 1). The law requires each region to develop and submit a fifty year plan that identifies current water supplies, projected demand, and proposed projects to satisfy the projected demand.¹⁴³ Every five years the regional plans are reviewed and, if approved by the Texas Water Development Board, incorporated into the State Water Plan.¹⁴⁴

¹⁴² This is the same reservation agreement described in Exelon’s COLA for VCS (now withdrawn).

¹⁴³ TEX. WATER CODE § 16.053.

¹⁴⁴ TEX. WATER CODE § 16.051.

For the region in which the VCS site is located, the following projects and their water demands are identified in the Region L Planning Process (2011 Regional Plan)¹⁴⁵: GBRA-Exelon Project (4C.10); Lower Guadalupe Water Supply Project (“LGWSP”) for Upstream Needs at Reduced Capacity (4C.11); LGWSP for Upstream GBRA Needs (4C.12); GBRA New Appropriation (Lower Basin) (4C.14); GBRA Mid-Basin Project (4C.15); GBRA Simsboro Project (4C.21).

In the 2006 Region L Water Plan, a portion of the unused water from the GBRA/UCC lower basin right (18-5178) was identified as destined for transmission by pipeline to the mid- and upper-basin as part of the original LGWSP. Texas statute (H.B. 3776) limited this amount to 60,000 acft/yr. This is a part of the same water that Exelon now identifies for VCS. In its previous COL application submitted to the NRC, Exelon identified that it had executed a Reservation Agreement with GBRA to obtain up to 75,000 acft/yr of water necessary for the project. Nowhere does the Exelon application identify this ongoing Reservation Agreement, but instead discusses in detail the diversion point and raw water makeup intake system as being at the same location as already authorized for the GBRA/UCC rights. TSEP has a copy of the executed second amended Reservation Agreement that shows that it has been extended through 2013, although this is not mentioned in the ESP application.

Under the terms of the Reservation Agreement between GBRA and Exelon in 2007, GBRA has committed 75,000 acft/yr of water from 18-5178 to the VCS. Importantly, this makes water unavailable for other projects in the region. Per the terms of the agreement, this water is no longer available for long-term contract sales (*e.g.* to municipalities, farmers or other industries)

¹⁴⁵ Ex. H, Region L 2011 Water Plan (Appendix D listing recommended projects).

or for long term water planning.¹⁴⁶ As detailed above, in order to satisfy the requirements of long term water planning and to meet projected demands, GBRA now seeks to replace this committed water. In the 2011 Region L Plan, GBRA proposes two new surface water rights on the Guadalupe River, as well as extensive use of groundwater to replace the water committed to VCS.

Under NEPA, Exelon cannot merely analyze the impacts of the loss of 75,000 acre feet from the basin, but must also look at the consequences and derivative impacts. The consequences are that, in order to meet other known demands, GBRA is must now develop water supplies from new surface water and groundwater sources. The projects identified as 4C.11, 4C.14, 4C.15, 4C.21 and the Simsboro expansion project were included in the Regional L Plan as a direct consequence of GBRA committing 75,000 acft/yr to VCS, and GBRA's needing to replace it to satisfy the future demands elsewhere.¹⁴⁷ The region's water sources are under tremendous strain.

An ESP is valid for twenty years from the date of issuance¹⁴⁸ and can be extended for up to a further twenty years.¹⁴⁹ The NRC schedule for this ESP lists August 2013 as the earliest date of issuance. The ESP will therefore be valid until at least 2033, and could be extended to 2053. At any time during the next four decades Exelon may submit its COL application. It could be after 2050 before the COL is issued, and the VCS is constructed and begins operation. It is therefore possible that the plant could operate until nearly the end of this century. Under NRC regulations, the site safety and environmental issues addressed in an approved ESP are

¹⁴⁶ The Reservation Agreement allows GBRA to enter into short-term water sales. Many of GBRA's long-term water contracts are for periods of up to forty years or more, especially contracts to supply water to municipalities.

¹⁴⁷ Ex. H, Region L 2011 Plan. (describing the recommended projects).

¹⁴⁸ 10 C.F.R. § 52.23(a).

¹⁴⁹ 10 C.F.R. § 52.33.

considered final and will not be addressed again at the COL stage.¹⁵⁰ Exelon must consider the long-range impacts on water availability of its proposed project. The region's water sources are reaching a breaking point, and Exelon has not rigorously evaluated this crucial issue.

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

As discussed above, the Exelon application does not accurately reflect the current water availability. This omission is serious. It is perhaps even more serious that the application does not even begin to analyze the region-wide impacts of the proposed VCS water use.

The 2011 Regional Water Plan describes all the proposed water projects in the region for the next fifty years (both surface water and groundwater).¹⁵¹ Some of these projects may never be implemented, but many will. Moreover, as other water projects are implemented, they will have impacts on the surface water flows in the rivers. The groundwater projects identified in the 2011 Regional Water Plan will certainly alter river flows. As the aquifers in the Guadalupe and San Antonio River basins are drawn-down, the base flow of the rivers will likely decrease. This impact is not described or evaluated in the ESP application, nor is it reflected in the Water Availability Models or 2011 Regional Water Plan, upon which Exelon heavily relies. Exelon has not demonstrated an understanding that removal of groundwater will reduce the amount of water available for surface flows and thus the amount of water available for diversion.¹⁵²

In short, all of these water projects (surface and groundwater) are likely to have an impact on regional water availability, and the ESP application fails to describe or evaluate these impacts. For example, projects 4C.11, 4C.14, 4C.15, 4C.21 and the Simsboro project are a direct

¹⁵⁰ 10 C.F.R. § 52.39(a) (“if the application for the construction permit or combined license references an early site permit, the Commission shall treat as resolved those matters resolved in the proceeding on the application for issuance or renewal of the early site permit” absent narrow circumstances).

¹⁵¹ See 2011 Regional Plan, at Sections 4B & 4C; TEX. WATER CODE §§ 16.051; 16.053.

¹⁵² Ex. D-2, JCHA Report, at 67.

consequence of GBRA committing 75,000 acft/yr to VCS and needing to replace it to satisfy the future demands elsewhere. These five projects must be described as indirect effects in the ESP application, and must be analyzed accordingly to satisfy the requirements of NEPA. The ESP application does not provide sufficient information or an accurate description of these indirect effects and is therefore deficient.

TSEP-ENV-4 – IMPACTS ON LONG-TERM WATER AVAILABILITY

A statement of the Contention itself

The ER fails to satisfy 10 C.F.R. §§ 51.50 & 51.45 because it does not evaluate the impacts on long-term water availability. In order to provide water for Exelon, other water supply projects must be developed or changed to satisfy other demands. Because the ESP has a life span of twenty to forty years, water availability over that long-term period must be fully evaluated. The ER does not describe or evaluate the long-term impacts on water availability.

A brief summary of the basis for the contention

The Guadalupe and San Antonio river basin is one of the most drought-prone areas of Texas. It suffers from frequent and prolonged droughts. To make matters worse, the basin is also one of the fastest growing parts of Texas, placing relentlessly increasing demands on water resources. The 2011 Regional Water Plan predicts additional demand in the basin of 420,000 acft/yr by 2060, largely driven by population growth. Water, both groundwater and surface water, is therefore a precious resource and a highly valued commodity. Exelon fails to evaluate these important long-term considerations, in violation of the NRC regulations.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue of whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. Pursuant to the requirements of NEPA, 42 U.S.C. § 4321, *et seq.*, NRC rules require that the environmental report “must include an analysis that considers and balances the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and alternatives available for reducing or avoiding adverse environmental effects... [and] must also contain an analysis of the cumulative impacts of the activities to be authorized.” 10 C.F.R. § 51.45(c).

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

This contention relies of the same supporting facts and opinions as TSEP-ENV-3, which is hereby incorporated by reference.

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

As discussed, the Exelon application does not accurately reflect the current water availability. This omission is serious. It is perhaps even more serious that the application does not even begin to analyze future water availability over the potential lifetime of the ESP, let alone the lifetime of the plant.

The 2011 Regional Water Plan describes all the proposed water projects in the region for the next fifty years (both surface water and groundwater).¹⁵³ Some of these projects may never be implemented, but many will. Moreover, as other water projects are implemented, they will have impacts on the surface water flows in the rivers. The groundwater projects identified in the 2011 Regional Water Plan will certainly alter river flows. As the aquifers in the Guadalupe and San Antonio River basins are drawn-down, the base flow of the rivers will likely decrease. This

¹⁵³ See 2011 Regional Plan, at Sections 4B & 4C; TEX. WATER CODE §§ 16.051; 16.053.

impact is not described or evaluated in the ESP application, nor is it reflected in the Water Availability Models or 2011 Regional Water Plan, upon which Exelon heavily relies. Exelon has not demonstrated an understanding that removal of groundwater will reduce the amount of water available for surface flows and thus the amount of water available for diversion.¹⁵⁴

In short, all of these water projects (surface and groundwater) are likely to have an impact on water availability, and the ESP application fails to describe or evaluate these impacts. For example, projects 4C.11, 4C.14, 4C.15, 4C.21 and the Simsboro project are a direct consequence of GBRA committing 75,000 acft/yr to VCS and needing to replace it to satisfy the future demands elsewhere. These five projects must be described as indirect effects in the ESP application, and must be analyzed accordingly to satisfy the requirements of NEPA. The ESP application fails to describe or evaluate water availability over the twenty to forty-year life span on the ESP. The ESP application does not provide sufficient information or an accurate description of these indirect effects and is therefore deficient.

TSEP-ENV-5 – POTENTIAL FEDERAL RESERVED WATER RIGHT FOR THE ARANSAS NATIONAL WILDLIFE REFUGE

A statement of the Contention itself

The ER fails to document the potential federal reserved water right mandating freshwater inflow requirements for the Aransas National Wildlife Refuge. The federal government may invoke this right to protect the endangered Whooping Crane, which would preclude further use of the waters of the Guadalupe River.

A brief summary of the basis for the contention

The reserved water rights doctrine emerged from the decision of the Supreme Court in *Winters v. United States*, 207 U.S. 564 (1908). Under the reserved water rights doctrine, when

¹⁵⁴ Ex. D-2, JCHA Report, at 67.

lands are reserved from the public domain for a specific federal purpose, the minimum quantity of water needed to fulfill the primary purpose(s) of the reservation is reserved by implication from water unappropriated as of the time of the reservation.¹⁵⁵ The federal government could assert a federal reserved water right on behalf of the Aransas National Wildlife Refuge with a priority date of December 31, 1937. The total quantity of that right would be 1,242,500 acft/yr. Should the government invoke this right, Exelon's water supply will not be highly dependable.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue of whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. Pursuant to the requirements of NEPA, 42 U.S.C. § 4321, *et seq.*, NRC rules require that the environmental report “must include an analysis that considers and balances the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and alternatives available for reducing or avoiding adverse environmental effects... [and] must also contain an analysis of the cumulative impacts of the activities to be authorized.” 10 C.F.R. § 51.45(c). These regulations require NRC to provide an analysis of all reasonably foreseeable impacts to the environment.

Also, the RG 4.7 states that a “highly dependable system of water supply sources must be shown to be available under postulated occurrences of natural and site-related accidental phenomena or combinations of such phenomena.”¹⁵⁶

¹⁵⁵Ex. D-2, JCHA Report, at 14.

¹⁵⁶ NRC RG 4.7, General Site Suitability Criteria for Nuclear Power Stations (Rev. 2, Apr. 1998), at 4.7-13.

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

As detailed in the next section, just miles from the VCS site lies the San Antonio Bay and the Aransas National Wildlife Refuge, home to the last natural flock of endangered and federally-protected Whooping Cranes. During the last drought (2008-2009), 23 Cranes died at Aransas because reduced freshwater inflows led to very high bay salinity and caused severe food shortages.

In order to protect this species, the federal government may invoke the Federal Reserved Water Rights Doctrine. Under this doctrine, when land owned by the federal government is reserved for a specific federal purpose, the minimum quantity of unappropriated water needed to meet the primary purposes of the reservation is reserved by implication.¹⁵⁷ The Reserved Water Rights Doctrine applies to land owned by the federal government irrespective of whether the land was once part of the public domain or was acquired by the federal government; in the case of the Aransas National Wildlife Refuge, the land was both part of the public domain and acquired by the government.¹⁵⁸

On December 31, 1937, President Franklin D. Roosevelt issued Executive Order No. 7784 establishing what is now known as the Aransas National Wildlife Refuge (“Refuge”).¹⁵⁹ In part, the Refuge was established to fulfill the requirements of both the Migratory Bird Treaty and the Migratory Bird Conservation Act.

The best estimate of the minimum quantity of water needed to fulfill the primary purposes of the Refuge is 1,242,500 acre-feet per year (acft/yr).¹⁶⁰ Assuming (1) that 1,242,500 acft/yr of water is the minimum quantity of water needed to fulfill the primary purposes of the

¹⁵⁷ Ex. D-2, JCHA Report, at 18.

¹⁵⁸ Ex. D-2, JCHA Report, at 13.

¹⁵⁹ Ex. D-2, JCHA Report, at 12.

¹⁶⁰ Ex. D-2, JCHA Report, at 12-32, 49-62.

Refuge and (2) that this quantity fulfills the needs of federal species protection statutes, historic records indicate that Exelon would have no water available between 28.4% and 79.7% of the time, both physically and legally, depending on month.¹⁶¹ The historic records also indicate that there are multiple months when actual flows only minimally exceeded the freshwater inflow requirements of the Refuge.¹⁶² In essence, based on both the historic record and existing surface water right priorities on the Guadalupe River, only a portion of the 75,000 acft/yr required by the plant would be both physically and legally available on a firm basis.¹⁶³ The water that is available would be so only on an intermittent basis.

The federal reserved water right for the Refuge, having a priority date of December 31, 1937, would have priority over any new water rights as well as all of the GBRA's surface water rights on the Guadalupe River.

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

This is a contention of omission. Nowhere in its application does Exelon identify the potential that the federal government might assert a federal reserved water right for the Refuge. NRC's NEPA obligations require Exelon to provide an analysis of all reasonably foreseeable impacts to the environment. Exelon is also required to demonstrate a "highly dependable" supply of water.

¹⁶¹ Ex. D-2, JCHA Report, at 58-59; *see generally* JCHA Report, at 49-62.

¹⁶² Ex. D-2, JCHA Report, at 61.

¹⁶³ Ex. D-2, JCHA Report, at 49-62.

TSEP-ENV-6 – IMPACTS ON WATER AVAILABILITY AND AQUATIC RESOURCES IN LIGHT OF REASONABLY FORESEEABLE CLIMATE CHANGES

A statement of the Contention itself

The ER fails to describe or analyze the future changes in water availability in light of the reasonably foreseeable impacts of a changing climate in the Guadalupe and San Antonio River basin.

A brief summary of the basis for the contention

According to scientific models and reports, by the year 2100 there will be dramatic reductions in precipitation and runoff for the Guadalupe River and San Antonio River basins, resulting in lower river flows. These impacts are predicted from climate change and hydroclimate models, which were reviewed and analyzed with calculations by TSEP's expert Dr. Ron Sass. Dr. Sass' calculations also predict that there will also be increased evaporation from San Antonio Bay, leading to increased salinities.

These impacts will likely equate to a freshwater deficit to the bay of 270,000 acft/yr or more by 2100. These changes will affect the availability of water for VCS itself, and they will result in increased impacts to salinities in the San Antonio Bay and increased impacts on the Whooping Crane, if VCS continues to divert water despite the reduced river flows. Exelon has failed to analyze climate change impacts. Climate change impacts warrant consideration because of their impact on the analysis of the environmental effects of a proposed agency action.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. Pursuant to the requirements of NEPA, 42 U.S.C. § 4321, *et seq.*, NRC rules require that the environmental report must include a description of the “impact of the proposed action on the environment,” 10. C.F.R. § 51.45(b), and “must include an analysis that considers and balances the environmental effects of the proposed action, ... [and] must also contain an analysis of the cumulative impacts of the activities to be authorized.” 10 C.F.R. § 51.45(c). These regulations require NRC to provide an analysis of all reasonably foreseeable impacts to the environment.

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

The consequences of climate change are predicted to be a temperature increase of 3.5°C (6.3°F) and a net decrease in annual precipitation of 15 percent along the Guadalupe River basin. In turn, this will result in reduced freshwater inflows into San Antonio Bay by the year 2100.¹⁶⁴ In his report, Dr. Sass relied on certain published studies and certain methodologies concerning the relationships between precipitation, runoff and river flows in order to estimate the effect of these climate changes on the river flows.¹⁶⁵ Dr. Sass calculated an estimated decrease in Guadalupe River flows of 120,000 acft/yr, and San Antonio River flows of 42,000 acft/yr by 2100.¹⁶⁶ This would bring the total reduction in the freshwater river inflow to the San Antonio Bay to approximately 162,200 acft/yr—a very significant loss of freshwater.¹⁶⁷

Based on a predicted temperature increase of 3.0°C (5.4°F) on the Texas coast, the estimated increase in evaporation from the San Antonio Bay system would require and additional

¹⁶⁴ Ex. F-1, Sass Report, at 22.

¹⁶⁵ Ex. F-1, Sass Report, at 23-24.

¹⁶⁶ Ex. F-1, Sass Report at 24.

¹⁶⁷ Ex. F-1, Sass Report at 24.

108,300 acft/yr of freshwater input (from Guadalupe and San Antonio Rivers) in order to maintain a stable salinity. Dr. Sass concludes that the effects of climate change on the hydroecology of the Guadalupe and San Antonio Rivers and San Antonio Bay will be severe. These impacts very likely will equate to a freshwater deficit of 270,000 acft/yr or more by 2100.¹⁶⁸ Exelon fails to describe or analyze the impacts on water availability and aquatic ecosystems in light of the reasonably foreseeable effects of climate change.

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

This is a contention of omission. The Exelon ER fails to describe or analyze the impacts on water availability and aquatic ecosystems in light of the reasonably foreseeable effects of climate change. The Exelon application must provide adequate information on, and the NRC must review, the environmental impacts of issuing an ESP that will be a final determination of the suitability of the VCS site. Long term-water availability, aquatic impacts and endangered species are critical issues in this proceeding, and all are likely to be effected by climate change. Without the necessary analysis of the effects of climate change in Exelon's application, the NRC cannot make a fully-informed decision on the environmental impacts of the VCS or any alternatives.

TSEP-ENV-7 – CATASTROPHIC IMPACTS TO THE ENDANGERED WHOOPING CRANE

A statement of the Contention itself

The Exelon ER is inadequate because it fails to rigorously explore and objectively evaluate the potential for catastrophic impacts of VCS water use on the endangered Whooping Crane—impacts that threaten the survival of the species.

¹⁶⁸ Ex. F-1, Sass Report at 25.

A brief summary of the basis for the contention

Exelon identifies that endangered Whooping Cranes and their habitat will be impacted by VCS operations. Therefore, before the NRC can issue this ESP, it must fully comply with both NEPA and the Endangered Species Act. NRC regulations require that Exelon provide detailed information on listed species, and all impacts upon them. The link between freshwater inflows into the bay and the well-being of the Whooping Crane is a long-recognized fact, enshrined in state and federal government publications. Exelon's ER downplays and minimizes this relationship, choosing instead to rely on the much-criticized SAGES Report, as well as other unreliable information. On this basis, Exelon determines that the impacts from VCS water use on the Whooping Crane are "small." However, Exelon failed to undertake any rigorous exploration of adverse information, and utterly failed to objectively evaluate the long-established facts and other studies. TSEP contends that the established facts, a legion of other scientific studies, and TSEP's own studies, all demonstrate that reduced inflows due to water use by the VCS plant will have catastrophic effects on the Whooping Cranes.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. Pursuant to the requirements of NEPA, 42 U.S.C. § 4321, *et seq.*, NRC rules require that the environmental report must include a description of the "impact of the proposed action on the environment," 10. C.F.R. § 51.45(b), and "must include an analysis that considers

and balances the environmental effects of the proposed action, ... [and] must also contain an analysis of the cumulative impacts of the activities to be authorized.” 10 C.F.R. § 51.45(c). Inherent in the NRC regulations are the requirement that Exelon submit a rigorous and objective analysis. NRC regulations also require that Exelon’s ER include adverse information. 10 C.F.R. § 51.45(e). The NRC must fully comply with Section 7 of the Endangered Species Act, 16 U.S.C. § 1536, and applicable USFWS regulations.

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

The Whooping Crane is a flagship species for the North American wildlife conservation movement, symbolizing the struggle for survival that characterizes endangered species worldwide. This Crane is a large white bird with black wing tips and a red crown and is the largest American bird, standing approximately six feet in height. In their native habitat in the flat marsh adjacent to the San Antonio, Copano, Aransas, Espiritu Santo, Carlos and Mesquite Bays in Aransas County, Texas, these birds are simply magnificent. The pairs hunt crabs in the marsh ponds, and when successful in breeding are joined by a single orange-tinted juvenile that relies on its parents in its early journey through life. Due to its charisma and aura, the Whooping Crane is often used as a cornerstone species in educational materials associated with endangered species.

In the United States, the Whooping Crane was listed as threatened with extinction in 1967, 32 Fed. Reg. 4001 (Mar. 11, 1967), and as endangered in 1970, 35 Fed. Reg. 16047 (Oct. 13, 1970). Both of these listings were “grandfathered” into the Endangered Species Act of 1973. 16 U.S.C. § 1531, *et seq.*, 87 Stat. 884. The Aransas National Wildlife Refuge, originally comprising 47,261 acres, was established on December 31, 1937 by Executive Order 7784. Critical Habitat was designated in 1978 for the Crane’s winter habitat at Aransas. Determination

of Critical Habitat for the Whooping Crane, 43 Fed. Reg. 20938, 20942 (final notice, May 15, 1978). This Designated Critical Habitat includes the Aransas National Wildlife Refuge and the Blackjack Peninsula, and extensive portions of San Antonio, Espiritu Santo Carlos, and Mesquite Bays, Matagorda Island, St. Charles Bay and Lamar Peninsula. *Id.*

TSEP urges that established facts, TSEP's own studies, and a legion of other scientific studies, all demonstrate that reduced inflows due to water use by the VCS plant will have catastrophic effects on the Whooping Cranes. For example, TSEP expert Dr. Sass describes the biology and behavior of the Whooping Cranes and identifies how critical crane resources, including food and drinking water, are impacted by salinity in the bay and marsh.¹⁶⁹ Whooping Cranes consume a wide variety of food, but two sources predominate: blue crabs and wolfberry fruit.¹⁷⁰ Both wolfberry and blue crab availability are impacted by salinity levels in the bay, which is caused by lower freshwater flows.¹⁷¹ High salinity can negatively affect the abundance of both blue crabs and wolfberry fruit.¹⁷²

With respect to blue crabs, this opinion accords with multiple studies and statements by staff from Texas Parks & Wildlife Department ("TPWD") and U.S. Fish & Wildlife Service ("USFWS").¹⁷³ These statements are discussed in TSEP-ENV-9 and incorporated here by reference. A publication by two Texas agencies list optimal salinity for blue crabs as 5-15 ppt.¹⁷⁴ Extended periods of high bay salinity results in reduced primary productivity (growth of algae, sea grass, and phytoplankton) and limits the food supply for organisms at the lower levels of the

¹⁶⁹ Ex. F-1, Sass Report, at 3-13.

¹⁷⁰ Ex. F-1, Sass Report, at 11-12.

¹⁷¹ Ex. F-1, Sass Report, at 12-13; 15-16.

¹⁷² Ex. F-1, Sass Report, at 12-13; 15.

¹⁷³ See generally Ex. G, Stehn Comments, TPWD comments.

¹⁷⁴ Longley, W.L., *et al.*, Freshwater inflows to Texas bays and estuaries: ecological relationships and methods for determination of needs, Texas Water Development Board and Texas Parks and Wildlife Department (1994).

food chain (zooplankton, mollusks), which in turn limits the food supply of blue crabs.¹⁷⁵ Such a sequence leads to fewer crabs for the whooping crane to eat.¹⁷⁶

Finally, whooping cranes do not drink water that is more saline than 23 ppt so when open water and marsh salinities exceed this, cranes must fly to upland water sources.¹⁷⁷ Food and water shortages mean that the cranes have to forage longer, work harder and travel further, expending more energy in the process.

The impacts of low freshwater inflows and high salinities were dramatically demonstrated during the 2008-2009 winter when 8.5% of the flock, 23 Cranes, died at Aransas.¹⁷⁸ During that period, bay salinities remained above 25ppt,¹⁷⁹ and the abundance of both wolfberry fruit and blue crabs was observed as being very low.¹⁸⁰ The official reports from USFWS observers confirm that food availability was “very poor” and “the worst conditions I have ever observed.”¹⁸¹

Because bay salinity is strongly correlated with river inflows, Dr. Sass investigated whether the data shows a relationship between cranes and inflows.¹⁸² Dr. Sass developed a chart of whooping crane winter mortality expressed as a percentage of the flock population and the corresponding average river flow into the Guadalupe Estuary from the combined Guadalupe and San Antonio Rivers; the data was charted during the six month critical period of bay productivity from July to December and was shown ordered by year (1988-2009),¹⁸³ and ordered by river

¹⁷⁵ Ex. F-1, Sass Report, at 13.

¹⁷⁶ Ex. F-1, Sass Report, at 13.

¹⁷⁷ Ex. F-1, Sass Report, at 16; Ex. G, Stehn Comments, at 13.

¹⁷⁸ Ex. G, Stehn Comments, at 5-6; ER June 24, 2010 update at 2.4-11; 5.11-7.

¹⁷⁹ Ex. E-1, Trungale report, at Figs. 13; 15.

¹⁸⁰ Ex. G, Stehn Comments, at 5-6.

¹⁸¹ Ex. F, Sass Decl. at ¶10 (quoting reports of USFWS Whooping Crane Coordinator, Tom Stehn).

¹⁸² Ex. F-1, Sass Report, at 16-18.

¹⁸³ Ex. F-1, Sass Report, at 33, Fig 1a.

flow.¹⁸⁴ Dr. Sass found that a high rate of winter mortality (>1.1%) always occurs during years of low water flow.¹⁸⁵ According to Dr. Sass, in the 13 years recorded with inflows equal to or less than 2,350 cu-ft/sec, the average winter mortality rate was 2.81% of the whooping crane population.¹⁸⁶ In the 8 years with inflows greater than 2,300 cu-ft/sec the average winter mortality rate was 0.38% of the population.¹⁸⁷ This relationship was statistically significant.¹⁸⁸ Dr. Sass concluded that “[a]ny additional loss of freshwater flowing into the bay system would significantly increase the number of low-flow years and seriously threaten the continued existence of the whooping crane.”¹⁸⁹

The federal government, through the USFWS and in cooperation with counterparts in Canada, has published the Whooping Crane Recovery Plan (3d. Revision, March, 2007) which confirms the relationship between bay salinity levels and blue crab catch rates.¹⁹⁰ The Recovery Plan identifies impacts from low inflows and drought conditions including prolonged food shortage, lack of suitable nearby drinking water, drought-increased susceptibility to predation and disease, and possibly increased mortality during migration due to malnutrition.¹⁹¹ Importantly, in this Recovery Plan ensuring freshwater inflows is “priority 1” in the implementation schedule and vital to the recovery of the species.¹⁹²

Other facts and expert opinions supporting this contention are identified in contentions TSEP-ENV-8, 9, 10, 11, 12, 13 & 14, and are hereby incorporated by reference.

¹⁸⁴ Ex. F-1, Sass Report, at 34, Fig 1b.

¹⁸⁵ Ex. F-1, Sass Report, at 17.

¹⁸⁶ Ex. F-1, Sass Report, at 17.

¹⁸⁷ Ex. F-1, Sass Report, at 17.

¹⁸⁸ Ex. F-1, Sass Report, at 17-18.

¹⁸⁹ Ex. F-1, Sass Report, at 18.

¹⁹⁰ Ex. I, U.S. Fish & Wildlife Service, International Recovery Plan Whooping Crane, at 20 (3d. Revision, March, 2007), available at http://www.fws.gov/ecos/ajax/docs/recovery_plan/070604_v4.pdf.

¹⁹¹ Ex. I, Recovery Plan, at 20-21; 25.

¹⁹² Ex. I, Recovery Plan, at 50; 60.

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

Exelon's ER erroneously concludes that the impacts of water use during VCS operation on the endangered Whooping Crane will be "small."¹⁹³ In reaching this conclusion, Exelon has failed to heed the studies in the scientific community and those of federal and state agencies unanimously recognizing the critical importance of freshwater inflows for the Whooping Crane's vitality and long-term viability as a species. TSEP believes that this failure by Exelon is fatal to the ESP application. Related disputes are identified in contentions TSEP-ENV-8, 9, 10, 11, 12, 13 & 14, and are hereby incorporated by reference.

TSEP-ENV-8 –WHOOPING CRANE MORTALITY IN 2008-2009

A statement of the Contention itself

Exelon's ER fails to rigorously explore and objectively evaluate the unprecedented 2008-2009 mortality event of Whooping Cranes at the Aransas National Wildlife Refuge. In the ER, Exelon attempts to undermine the official reports of a federal agency and urges the NRC to rely instead on biologically unsound rationales.

A brief summary of the basis for the contention

During the low river flows of 2008-2009, the USFWS staff observed and documented unprecedented mortality of endangered Whooping Cranes in and around the Aransas National Wildlife Refuge. Official reports of the USFWS, based upon established census methodology, documented a loss of 23 cranes, or 8.5% of the flock. The Exelon ER, however, and specifically the June 24, 2010 updates to the ER, attempt to avoid analysis of these facts by questioning the census methodology.

¹⁹³ ER June 24, 2010 update at 5.11-12.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. Pursuant to the requirements of NEPA, 42 U.S.C. § 4321, *et seq.*, NRC rules require that the environmental report must include a description of the “impact of the proposed action on the environment,” 10. C.F.R. § 51.45(b), and “must include an analysis that considers and balances the environmental effects of the proposed action, ... [and] must also contain an analysis of the cumulative impacts of the activities to be authorized.” 10 C.F.R. § 51.45(c). Inherent in the NRC regulations are the requirement that Exelon submit a rigorous and objective analysis. NRC regulations also require that Exelon’s ER include adverse information. 10 C.F.R. § 51.45(e).

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

In its June 24, 2010 updates to sections 2.4 and 5.11 of its Environmental Report, Exelon questions the 2008-2009 mortality count (23 birds) stating, for example that,

“During the 2008-2009 overwintering season at ANWR, above-normal upland and water hole use was noted, scattering the cranes over a geographical area beyond their typical territory (USFWS 2009a). As described in the January 2009 USFWS aerial census report, “This makes it very difficult to determine the identity of pairs and family groups and leads to much uncertainty during the census count” (USFWS 2009a). Limited visibility due to weather conditions and smoke from prescribed burns, as well as flight time limitations, were noted on multiple census flights, adding to the difficulty in spotting the widely dispersed cranes (USFWS 2009a). Considering these and other factors, it is possible that the

extent of whooping crane mortality during the 2008-2009 overwintering period could be lower than reported.”¹⁹⁴

By these statements, Exelon questions the validity of the USFWS’s method used to perform a census count of the Cranes. However, the USFWS census methodology is long-established.¹⁹⁵ For example, the aerial census method can be relied upon because the cranes establish clearly delineated territories, which are known to the observers.¹⁹⁶ The same cranes will return year after year to the same territories (a phenomenon known as territorial fidelity).¹⁹⁷ The observers are familiar with each territory, and are able to track the life history of particular cranes, crane pairs, or family units (two adults plus one or two juveniles) with considerable accuracy.¹⁹⁸

Among other errors, Exelon fails to consider that Whooping Crane pairs and family units are never widely separated.¹⁹⁹ If one member of the family unit ventures to a distant site, every member of the family does likewise.²⁰⁰ In particular, juveniles never stray from their parents during their time at Aransas.²⁰¹ Thus if one member of the family unit that was present at the start of the winter, is later consistently absent from that group, it can be accurately concluded to be a mortality.²⁰² Out of the 23 Cranes that died during the 2008-2009 winter, 16 were juvenile birds, and, given known Crane behavior, these juveniles did not just wander off during the census.²⁰³ Therefore these Crane behaviors and especially the tightness of the pairs and family units, makes it relatively easy to identify the absence of any individual bird, and repeated

¹⁹⁴ ER June 24, 2010 update at 2.4-11; 5.11-7.

¹⁹⁵ Ex. F, Sass Decl. at ¶8.

¹⁹⁶ Ex. F, Sass Decl. at ¶8.

¹⁹⁷ Ex. F, Sass Decl. at ¶8.

¹⁹⁸ Ex. F, Sass Decl. at ¶8.

¹⁹⁹ Ex. F, Sass Decl. at ¶8.

²⁰⁰ Ex. F, Sass Decl. at ¶8.

²⁰¹ Ex. F, Sass Decl. at ¶8.

²⁰² Ex. F, Sass Decl. at ¶8.

²⁰³ Ex. F, Sass Decl. at ¶8.

absences of known birds can only be explained by mortality.²⁰⁴ This is widely accepted methodology.

In its June 24, 2010 update, Exelon states in addition that,

“Furthermore, the flock departed ANWR relatively early in 2009 (USFWS 2009b). Previous research has indicated that birds will generally migrate earlier than usual when food availability allows for rapid fattening and good physical condition (Studds and Marra 2007).”²⁰⁵

Exelon implies that the 23 Whooping Cranes did not die—that they merely were not observed because they had ample food and so migrated to Canada early. The Studds & Marra study cited by Exelon concerns a small migratory warbler that does not follow the same behavior pattern as Whooping Cranes.²⁰⁶ Also, the USFWS reported that the majority of the mortality occurred between January and mid-March, which is at a minimum, many weeks before the earliest migration.²⁰⁷ Finally, all the official reports from USFWS observers confirm that food availability was “very poor” and “the worst conditions I have ever observed.”²⁰⁸

Exelon makes much of the fact that “only four crane carcasses were recovered.”²⁰⁹ Dr. Sass reviewed the federal agency reports of known crane carcasses, and concluded that “in the nearly six decades from 1951 to 2009, only 18 carcasses have ever been found at ANWR. Four in one year is an extra-ordinary number and is indicative of an extra-ordinary number of deaths during that winter.”²¹⁰

²⁰⁴ Ex. F, Sass Decl. at ¶8.

²⁰⁵ ER June 24, 2010 update at 2.4-11; 5.11-7.

²⁰⁶ Ex. F, Sass Decl. at ¶10.

²⁰⁷ Ex. F, Sass Decl. at ¶10.

²⁰⁸ Ex. F, Sass Decl. at ¶10 (quoting reports of USFWS Whooping Crane Coordinator, Tom Stehn).

²⁰⁹ ER June 24, 2010 update at 2.4-11; 5.11-7.

²¹⁰ Ex. F, Sass Decl. at ¶12

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

In its June 24, 2010 updates to sections 2.4 and 5.11 of its Environmental Report, Exelon questions the 2008-2009 mortality count of 23 whooping cranes and questions the accuracy of official USFWS reports in an attempt to avoid discussion of adverse information, namely the cause of the mortality of 8.5% of the Whooping Crane flock and the relationship to low flows and high salinity.²¹¹ Exelon's ER is required to include pertinent adverse information, but Exelon has instead attempted to discount the findings of a federal agency.

This issue may appear narrow, but it is important. TSEP submits this contention not just to correct material misrepresentations and omissions in Exelon's application. Rather this issue highlights that the Whooping Crane is today, in serious peril because the Guadalupe and San Antonio Rivers are already over-allocated. This fact becomes very evident, for example, during periods of drought, such as during 2008-2009. Under current state practices, water diversions continued unabated during the drought, and this lowers inflows even more. If the deaths of 23 cranes occurred without Exelon diverting 75,000 acft/yr, it is entirely reasonable, and foreseeable, that when a drought reoccurs Crane mortality will be worse with the Exelon diversions.

TSEP-ENV-9 – THE FLAWED SAGES REPORT

A statement of the Contention itself

The ER fails to rigorously explore and objectively evaluate the impact of VCS water use on food resources and energetics of Whooping Cranes. Exelon relies heavily upon the SAGES report, despite the fact that it was universally criticized by experts in the field as flawed. Experts agreed it contained false assumptions, and was inconsistent and contrary to published science.

²¹¹ ER June 24, 2010 update at 2.4-11; 5.11-7.

Exelon failed to bring these critical facts to the attention of the NRC. TSEP contends that not only is the SAGES study fatally flawed on important scientific principles, but it also represents a prime example of junk science created by the same water supplier, GBRA, who wants to sell water to Exelon. As such, this contention challenges the use of the SAGES Report under the precedent of *Daubert*.

A brief summary of the basis for the contention

Exelon's ER relies primarily, if not exclusively, on the SAGES Report, by Slack *et al.* (2009) to conclude that the impacts of VCS operation on the endangered Whooping Crane will be "small."²¹² This same conclusion was used as the basis for Exelon's alternatives analysis.²¹³ The SAGES Report does not represent the best science and should not be considered as such by the NRC. The first release of the SAGES Report (entitled "final" by its authors and dated April 2009) was universally criticized on numerous grounds by expert scientists and by biological staff of the USFWS and Texas Parks & Wildlife Department. The Revised SAGES Report (dated August 2009) failed to alter its conclusions despite the criticisms. The Exelon ER also fails to include adverse information such as the published studies contradicting the SAGES findings.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71,468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. Pursuant to the requirements of NEPA, 42 U.S.C. § 4321, *et seq.*, NRC rules

²¹² ER June 24, 2010 update at 5.11-12.

²¹³ ER at 9.3-93, Table 9.3-3.

require that the environmental report must include a description of the “impact of the proposed action on the environment,” 10. C.F.R. § 51.45(b), and “must include an analysis that considers and balances the environmental effects of the proposed action, ... [and] must also contain an analysis of the cumulative impacts of the activities to be authorized.” 10 C.F.R. § 51.45(c). Inherent in the NRC regulations are the requirement that Exelon submit a rigorous and objective analysis. NRC regulations also require that Exelon’s ER include adverse information. 10 C.F.R. § 51.45(e).

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

TSEP’s contention is supported by numerous written comments (by scientific experts and others) that were submitted to the SAGES team. Criticisms of the final SAGES report include the comments of Tom Stehn, Whooping Crane Coordinator, USFWS; Cindy Loeffler and staff, Texas Parks & Wildlife Department; and Felipe Chavez-Ramirez, Platte River Whooping Crane Maintenance trust, as well as others.²¹⁴ The comments focused on the relationship between blue crabs, salinity and inflows, as well as other aspects of Whooping Crane energetics and behavior. The SAGES Report and its Whooping Crane energetic model were erroneously based on the assumption of a positive relationship between blue crab abundance and salinity. Because salinity is strongly correlated with inflow, the SAGES model erroneously predicts that, as inflows are reduced, more blue crabs will be available as food for the cranes.

Some of the important statements are listed below. Comments of Ton Stehn, USFWS Whooping Crane Coordinator (June 5, 2009):

²¹⁴ Ex. G (Collected comments on final SAGES report)

“I disagree with your conclusions about the relationship of inflows, blue crabs and whooping cranes. I find the SAGES study very misleading mainly because it contains false assumptions and does not properly account for existing knowledge in the scientific literature.”²¹⁵

“The SAGES study results are contrary to what I have observed during 28 years at Aransas monitoring the whooping crane population.... In general, when inflows are high and bay and marsh salinities are low, blue crab populations do well, and whooping crane mortality is low. With reduced inflows and high marsh and bay salinities, crabs do poorly and whooping crane mortality rises dramatically.”²¹⁶

“The correlation between increased whooping crane mortality occurring when blue crab populations in the marshes are low invalidates the SAGES conclusion ‘that food is not an issue for whooping cranes except in the most extreme conditions.’”²¹⁷

“The conclusions of the SAGES study fails to account for the record level of whooping crane mortality during the 2008 winter (8.5%). Neither of the crane winters in which the SAGES project collected blue crab data were anything near as bad for the cranes compared with 2008.”²¹⁸

“Field observations in the 2008 winter showed a correlation between low blue crab populations and high whooping crane mortality.... SAGES seems to be denying this by suggesting food supplies are more than sufficient in crane territories.”²¹⁹

“Numerous studies have found blue crabs to be an important food resource for wintering whooping cranes.”²²⁰

“A statistically significant inverse correlation between blue crab numbers and increased adult whooping crane mortality has been documented (Pugesek et al., 2008).”²²¹

“The SAGES study model assumes that blue crab numbers are directly correlated with rising salinities up to 30 ppt. This assumption is based on laboratory studies and is false!”²²²

“This assumption made by SAGES is false and pervades and invalidates the entire SAGES model and study.”²²³

²¹⁵ Ex. G, Stehn Comments, at 1.

²¹⁶ Ex. G, Stehn Comments, at 1.

²¹⁷ Ex. G, Stehn Comments, at 5.

²¹⁸ Ex. G, Stehn Comments, at 5.

²¹⁹ Ex. G, Stehn Comments, at 7.

²²⁰ Ex. G, Stehn Comments, at 8.

²²¹ Ex. G, Stehn Comments, at 8.

²²² Ex. G, Stehn Comments, at 9.

“Without sufficient inflows, wildlife resources, including fish, crabs, and shrimp, all decline.”²²⁴

“In the case of blue crabs, more than 1.15 million acre-feet is needed to produce high blue crab populations. TPWD data clearly show that increased water inflows result in higher blue crab numbers.”²²⁵

“In San Antonio Bay, the 3 highest blue crab harvest years were all having inflows greater than 3 million acre-feet annually. Thus, to maximize blue crabs for whooping cranes to eat, managers should maximize freshwater inflows on the Guadalupe River. Providing for guaranteed minimum inflows to the bay is essential.”²²⁶

“The SAGES study misuses data on the smallest age classes of blue crabs.”²²⁷

“The SAGES study fails to analyze the energetic costs of cranes being forced to leave the salt marsh to drink.... Cranes are observed leaving the marsh to seek out freshwater to drink when salinities approach or exceed 20 ppt. When marsh and bay salinities exceed 23 parts per thousand (ppt), whooping cranes are forced to make daily flights to freshwater to drink.... These flights use up energy, reduce time available for foraging or resting, and could make the cranes more vulnerable to predation on the uplands... inflows are crucial in keeping salinity levels below the threshold of 23 ppt in coastal marshes used by whooping cranes.”²²⁸

And from the Comment letter from Cindy Loeffler and staff, Texas Parks & Wildlife Department

(June 8, 2009):

“The initial interpretations and publicity regarding the SAGES study have surprised, and perhaps even alarmed, many in the scientific, regulatory, and conservation communities. Specifically, statements such as ‘In summarizing the study, researchers commented that in nearly all conditions simulated, the food supply for whooping cranes appears to be more than adequate to meet their energy needs. (GBRA press release, 04-29-09)’ seem inconsistent with earlier studies regarding whooping cranes, their food, and their habitats and imply that reductions in freshwater inflows will not affect the health of whooping cranes on the Texas coast. TPWD urges the project sponsors to carefully address these concerns, especially in light of contrary findings from previous studies.”²²⁹

²²³ Ex. G, Stehn Comments, at 9.

²²⁴ Ex. G, Stehn Comments, at 10.

²²⁵ Ex. G, Stehn Comments, at 10.

²²⁶ Ex. G, Stehn Comments, at 10.

²²⁷ Ex. G, Stehn Comments, at 11.

²²⁸ Ex. G, Stehn Comments, at 13.

²²⁹ Ex. G, TPWD Comments, at 1.

“The way in which the findings of this study have been presented have unfortunately led to implications that changes in freshwater inflows are unlikely to affect whooping crane food availability (and, by extension, their survival).”²³⁰

“Despite the wealth of research and literature regarding the relationship of blue crabs and salinity, the authors only listed a single reference (Cadman and Weinstein 1988) in their discussion of this source of variation (pp. 104-105). This reference focuses on a lab study which concluded that growth was generally higher at higher salinities. This is counter to previous work on blue crabs, which suggests that salinities in the range of 5-15 ppt are optimal.”²³¹

“Furthermore, the model is built on two offsetting premises-that higher salinities increase blue crabs as a food source and that lower salinities increase wolfberries as a food source.... If the model assumptions are wrong and blue crab abundance peaks at salinities lower than 30 ppt, then it would be highly unlikely that reductions in inflows of 90% would produce adequate food resources.... Statements such as this are likely to be widely-referenced as decisions are made regarding water use and allocation in the future.”²³²

“Statements are made that ‘more crabs were found in bay than any other habitat (p. 107)’ and ‘density was positively related to salinity (p. 108),’ yet nowhere in the chapter are there any data correlating density or abundance with salinity. This is a glaring omission considering that one of the four major relationships and a primary objective of the entire study concerns salinity.”²³³

“Limiting the model to 30ppt is not realistic”²³⁴

“Overall, the inability to successfully develop models linking freshwater inflows to marsh salinity, or to predict the density of crabs >30 mm would seem to render the modeling efforts unsuccessful.”²³⁵

“The SAGES model does not consider ancillary energetic costs of high salinities.”²³⁶

“The SAGES empirical study (Feb. 2003 - Dec. 2007) period did not include a year of extreme drought and low inflows, such as 1990 or 2008”²³⁷

²³⁰ Ex. G, TPWD Comments, at 1.

²³¹ Ex. G, TPWD Comments, at 3.

²³² Ex. G, TPWD Comments, at 3.

²³³ Ex. G, TPWD Comments, at 3.

²³⁴ Ex. G, TPWD Comments, at 4.

²³⁵ Ex. G, TPWD Comments, at 4.

²³⁶ Ex. G, TPWD Comments, at 4.

²³⁷ Ex. G, TPWD Comments, at 5.

As stated in these comments, the SAGES energetic model failed to comport with the field observations of the USFWS staff over the many decades of their work at the Aransas National Wildlife Refuge. The SAGES model plainly failed to explain the deaths of 23 Whooping Cranes during the extremely low inflows of 2008-2009 when bay salinities were extremely high. The SAGES model failed to reconcile the USFWS observations of a dramatic absence of blue crabs in the marsh and the associated USFWS conclusions about the lack of food being such a serious problem—so serious that USFWS began an artificial feeding program for the Cranes to prevent further deaths.

TSEP's contention is supported not only by these criticisms, but also by its own review of aspects of the SAGES Report by Dr. Sass.²³⁸ The SAGES model was developed from data collected during a roughly two-year period encompassing two Whooping Crane winters. Neither of these years had particularly low inflows, high salinities, food shortages or higher than normal crane mortality.²³⁹ Dr. Sass also explained the basic problem with the SAGES model thus: “the SAGES model assumed an inverse relationship between salinity and wolfberries (i.e., higher salinities mean fewer wolfberries), but used a positive relationship between salinities and blue crabs (i.e., as salinity increases, so too does blue crab abundance). As a result, as salinity in the model was increased, wolfberry abundance declined, but was simply replaced by purported increases in blue crab abundance.”²⁴⁰ He observed that SAGES salinity-blue crab relationship “did not appear to be well-supported by the underlying SAGES student studies.”²⁴¹

The Exelon ER fails to mention several other published studies that directly conflict with the conclusions of the SAGES study. In particular the ER does not mention or discuss the PhD

²³⁸ Ex. F, Sass Decl. at ¶¶13–17.

²³⁹ Ex. F, Sass Decl. at ¶14.

²⁴⁰ Ex. F, Sass Decl. at ¶14.

²⁴¹ Ex. F, Sass Decl. at ¶14.

thesis of Dr. Chavez-Ramirez that also compared two Crane winters (one high inflow/low mortality, the other low inflow/high mortality) and reached very different conclusions regarding food shortages, the impact on Crane energetic budgets, and observed mortality.²⁴² Exelon's ER also omits any mention of a paper by Pugesek *et al.* (2008) which found that "mortality amongst adult cranes was inversely related to [blue] crab abundance."²⁴³ Dr. Sass further observed that during the period of the Pugesek study, the years with high crab counts and low mortality were also years with adequate to high inflows, and conversely, when crab counts were low and mortality high, inflows were also low.²⁴⁴ This confirms the relationship between inflows and Whooping Crane mortality, via the mechanism of salinity, that Dr. Sass observed (contention TSEP-ENV-7).

In short, there is copious scientific support for the proposition that the SAGES study is flawed, or worse, blatantly wrong on the issues of blue crabs and Crane energetics. Exelon's reliance on the SAGES study and its omission of the study's critiques undermine critical conclusions that Exelon reaches with respect to the Whooping Crane.

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

Importantly, all of these criticisms cut to the very heart of the central premises of the SAGES report, namely, that the Whooping Crane will always have sufficient food regardless of the level of freshwater inflows. Exelon describes the SAGES thesis as follows:

"However, as discussed previously, empirical research indicates that the crane diet is rich and varied, and even when blue crab and wolfberry numbers are low, cranes can meet their daily energy and protein requirements by efficiently foraging on foods such as insects, snails, and razor clams (Slack *et al.*, Aug 2009)"²⁴⁵

²⁴² Ex. F, Sass Decl. ¶15 (quoting Chavez-Ramirez (1996)).

²⁴³ Ex. F, Sass Decl. at ¶16 (quoting Pugesek *et al.* 2008)).

²⁴⁴ Ex. F, Sass Decl. at ¶17.

²⁴⁵ ER June 24, 2010 update at 2.4-12; 5.11-7.

This rosy view of Whooping Crane biology is the basis for Exelon’s concluding that impacts of VCS operational water use on this endangered species will be “small.”²⁴⁶ However, as TSEP demonstrates, the impacts of VCS operational water use on the Whooping Cranes will not be small. Because the SAGES study is flawed, the flawed study undermines Exelon’s statement. Instead, the vast weight of scientific opinion, official government reports, and field observations directly contradict this statement. Exelon has not taken a “hard look” at the consequences of its water use. Exelon improperly creates uncertainty between the established body of science and the flawed SAGES report in a transparent attempt to avoid the “hard look” at the consequences of VCS water use.²⁴⁷

TSEP-ENV-10 – REDUCED SEDIMENT AND NUTRIENT INFLOW INTO SAN ANTONIO BAY

A statement of the Contention itself

The ER fails to explore and evaluate the impacts that the diversion and consumption of water from the Guadalupe River will have upon the San Antonio Bay due to the reduced sediment and nutrient inflows.

A brief summary of the basis for the contention

The diversion of water from the Guadalupe River will reduce the amount of sediment and nutrients transported to the Guadalupe Estuary, and have a significant impact on the ecosystems and wildlife. These impacts include those on the Whooping Crane and the food resources on which the Cranes depend. Exelon’s ER does not describe or evaluate these impacts.

²⁴⁶ ER June 24, 2010 update at 5.11-12.

²⁴⁷ ER June 24, 2010 update at 5.11-12 (“although the relationship of freshwater inflows, salinity, and other factors to whooping crane health and energetics remains unclear, the cumulative impacts on aquatic and terrestrial wildlife relying on the Guadalupe Estuary and San Antonio Bay system, including whooping cranes and their habitat, would be SMALL”).

A demonstration that the contention is within the scope of the hearing

This contention raises an issue whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71,468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. Pursuant to the requirements of NEPA, 42 U.S.C. § 4321, *et seq.*, NRC rules require that the environmental report must include a description of the “impact of the proposed action on the environment,” 10. C.F.R. § 51.45(b), and “must include an analysis that considers and balances the environmental effects of the proposed action, ... [and] must also contain an analysis of the cumulative impacts of the activities to be authorized.” 10 C.F.R. § 51.45(c). The NRC and Exelon must also comply with the Endangered Species Act, 16 U.S.C. § 1531, *et seq.*, including the Section 7 consultation with U.S. Fish & Wildlife Service (FWS), and must avoid a prohibited take of a protected species.

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

The Exelon application does not consider the reduced sediment load carried to the downstream estuary due to the diversion of 105,000 acre-feet of water per year (75,000 ac-ft for Exelon, and 30,000 ac-ft made possible by the over-sizing of the pumping station for GBRA use *i.e.* full exercise of GBRA/UCC permit 18-5178). According to the JCHA Report, the decrease in flow will result in a reduced capacity to transport sediment, which is an important part of estuary health.²⁴⁸ A study performed by the Texas Water Development Board in 1994 determined an empirical equation relating annual flow rates in the Guadalupe and San Antonio Rivers to

²⁴⁸ Ex. D-2, JCHA Report at 97.

sediment and nutrients transported into the estuary.²⁴⁹ Using this equation, JCHA calculated that a reduction of inflow to the estuary of 105,000 acre-feet per year would result in a reduction in sediment/nutrient inflow of approximately 56,000 metric tons per year.²⁵⁰ This is a significant loss. This loss of load will adversely impact the overall health of the Guadalupe Estuary.²⁵¹

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

This is a contention of omission. Exelon's ER briefly describes the sediment loads to the San Antonio Bay,²⁵² and in the Guadalupe and San Antonio Rivers.²⁵³ The ER states: "Freshwater inflows provide nutrient and sediment loading to the estuary, and they are one factor affecting salinity gradients in the bay system."²⁵⁴ However, the ER does not explore or evaluate the impacts that the diversion of water to operate the VCS will have upon sediment inflows into the San Antonio Bay. Such an analysis is directly relevant to the environmental consequences of Exelon's proposed action.

TSEP-ENV-11 –TREMENDOUS AQUATIC IMPACTS TO SAN ANTONIO BAY AND ITS IMPORTANT ECOSYSTEMS

A statement of the Contention itself

The water used by VCS will have tremendous aquatic impacts; it will result in more severe, more frequent, and longer lasting "man-made" high salinity drought conditions in the San Antonio Bay system. It will also significantly impact the bay's ecosystems.

A brief summary of the basis for the contention

The Exelon application fails to adequately address water needs to protect the health of the aquatic resources of San Antonio Bay. Water diversions required to meet the needs for the VCS

²⁴⁹ Ex. D-2, JCHA Report at 97 (citing Longley, W.L., ed. (1994)).

²⁵⁰ Ex. D-2, JCHA Report at 97.

²⁵¹ Ex. D-2, JCHA Report at 97.

²⁵² ER § 2.3.1.1.3.

²⁵³ ER § 2.3.1.1.6; Table 2.3.1-20.

²⁵⁴ ER at 5.11-6

plant would result in lowering freshwater inflows into San Antonio Bay, in turn causing an increase in the severity, frequency and duration of “man made” drought conditions. This means higher salinities, over greater areas, and for longer periods of time. The impact of this on the ecosystem is tremendous. It would likely lead to an alteration in the ecosystem structure by either reducing overall fisheries production or by reducing biodiversity. Specifically, VCS water diversions would result in salinity conditions unsuitable to many estuarine species.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71,468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. Pursuant to the requirements of NEPA, 42 U.S.C. § 4321, *et seq.*, NRC rules require that the environmental report must include a description of the “impact of the proposed action on the environment,” 10. C.F.R. § 51.45(b), and “must include an analysis that considers and balances the environmental effects of the proposed action, ... [and] must also contain an analysis of the cumulative impacts of the activities to be authorized.” 10 C.F.R. § 51.45(c).

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

TSEP’s expert, Mr. Joe Trungale, P.E., used the Texas Commission on Environmental Quality’s Water Availability Model (“WAM”) to estimate hydrological time series data for bay inflows under different scenarios.²⁵⁵ He also used the Texas Water Development Board’s approved and validated TxBLEND model (a two-dimensional finite element salinity and

²⁵⁵ Ex. E-1, Trungale Report, at 1; 5-6.

circulation model) to investigate the impacts of the VCS water diversions on salinity in the San Antonio Bay system.²⁵⁶

Mr. Trungale concluded that the operation of the Exelon plant will result in a significant decrease in freshwater inflows as compared to the natural and current conditions.²⁵⁷ Because the only reasonably available water for Exelon is the GBRA/UCC permit (Number 18-5178, the one Exelon identified in the Reservation Agreement with GBRA), there are no special conditions that would limit diversions under that permit.²⁵⁸ Therefore the Exelon water diversions have the potential to effectively dry up the river before it reaches San Antonio Bay. According to Mr. Trungale, “due to its proximity to the bay and the seniority of the permit that would likely be used to supply this water, the exercise of this water right for Exelon would have especially detrimental effects to bay health relative to the other growing demands in the basin.”²⁵⁹

Mr. Trungale determined that the severity of these man-made droughts (i.e. the magnitude by which inflows fall below the recommended levels) would increase with VCS operations.²⁶⁰ The duration of drought events would also be expected to substantially increase under a water management plan that includes the proposed Exelon project, with three droughts lasting longer than 21 months, compared with just one under current conditions, and none under natural conditions.²⁶¹ If the drought of record were to reoccur, under current conditions the minimum inflows would not be met for 22 months, whereas under future proposed conditions, include the VCS operations, that number would jump to 40 months below the minimum inflows.²⁶² Finally, Mr. Trungale found that the frequency of drought conditions would also

²⁵⁶ Ex. E-1, Trungale Report, at 1; 9-10.

²⁵⁷ Ex. E-1, Trungale Report, at 6.

²⁵⁸ Ex. E-1, Trungale Report, at 6.

²⁵⁹ Ex. E-1, Trungale Report, at 6.

²⁶⁰ Ex. E-1, Trungale Report at 7; Table 2.

²⁶¹ Ex. E-1, Trungale Report, at 7-8; Table 3.

²⁶² Ex. E-1, Trungale Report, at 7-8; Table 3.

increase.²⁶³ Therefore, the proposed future conditions including the VCS diversion would result in an increase in the severity, frequency and duration of “man-made” drought conditions, likely leading to an alteration in the ecosystem structure by either reducing overall fisheries production or by favoring one fisheries species production at the expense of others, thereby reducing biodiversity.²⁶⁴

To evaluate the effect of the proposed Exelon water diversion in greater detail, Mr. Trungale predicted salinity gradients using the TxBLEND model, with the freshwater inflow adjusted to reflect the same natural, current, and proposed conditions. According to the Texas Water Development Board, the model predictions are remarkably accurate and track daily average observed salinities at two monitors in the bay. Mr. Trungale used the model results to generate monthly isohaline maps,²⁶⁵ and to calculate the areas of the bay falling within each salinity range under each scenario.²⁶⁶ These results show that under the proposed future conditions that include VCS operations, a greater area of the bay remains mesohaline (>20ppt), and these conditions persist for a longer duration.²⁶⁷ That is, the proposed water diversions would result in salinity conditions unacceptable to many estuarine species, including the blue crab (preferred range of 5-15ppt), a primary food source for the Whooping Crane.²⁶⁸

Based on this analysis, it is reasonable to expect that the Exelon project will result in an increase in the severity, duration, and frequency of manmade drought conditions over the long term, and it will result in unacceptably high salinity conditions during naturally low inflow periods.²⁶⁹

²⁶³ Ex. E-1, Trungale Report, at 8-9; Fig. 2.

²⁶⁴ Ex. E-1, Trungale Report, at 1.

²⁶⁵ Ex. E-1, Trungale Report, at 12-13, Figs. 5, 6, & 7.

²⁶⁶ Ex. E-1, Trungale Report, at 14-15, Figs. 8, 9, & 10.

²⁶⁷ Ex. E-1, Trungale Report, at 13.

²⁶⁸ Ex. E-1, Trungale Report, at 1.

²⁶⁹ Ex. E-1, Trungale Report at 1.

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

Salinity impacts due to reduced freshwater inflows into San Antonio Bay are not analyzed in the ER. One section analyzes salinity, but only in the context of the impacts of the blowdown discharge on aquatic ecosystems.²⁷⁰ Exelon relies upon its Biostatistical Study that was submitted as updates to ER, Rev. 0, on June 24, 2010.²⁷¹ This study does not analyze bay salinities, but instead attempts to relate some components of the freshwater inflow regime (spring and fall freshets and summer low flows) directly to the abundance of select marine species. As stated in the Trungale Report, “this approach is not yet well documented in the scientific literature” and “this simplification of bay health and the factors that regulate it, produced an analysis that explains very little of the variation in species abundance.”

The Trungale Report identified serious problems with the Exelon study. The Exelon study generated simple linear regressions that explain little of the overall variation in the data, and the study then purports to apply these regressions to alternative inflow scenarios.²⁷² However, Mr. Trungale observed that “there is almost no difference between the scenarios selected in terms of total freshwater inflow.... It is no surprise that a regression, which explains little variation, applied two flow scenarios that represent the same annual diversion, would produce results that show ‘small’ difference. This analysis is an example of burying the impacts of the project in the proposed baseline (i.e. assuming the impacts have already occurred) and does not provide the kind of analysis necessary to support decisions that will affect a resource as ecologically valuable as San Antonio Bay.”²⁷³

²⁷⁰ ER § 5.3.2.2.

²⁷¹ ER June 24, 2010 update at 5.2-13 to 21; 5.11-10 to 12.

²⁷² Ex. E-1, Trungale Report, at 2.

²⁷³ Ex. E-1, Trungale Report, at 2.

Exelon also performed a drought analysis on the impacts of VCS operations and water use.²⁷⁴ However, Exelon only investigated the number of annual periods where freshwater inflows fell below recommended target values.²⁷⁵ Unlike TSEP's more detailed analysis, the Exelon application only counted occurrences, and did not consider the severity, or duration of these events. Therefore, TSEP disputes the adequacy of analysis in the Exelon application because it fails to describe the long-term impacts of reduced freshwater inflows into the bay.

TSEP-ENV-12 –ADVERSE MODIFICATION OF WHOOPING CRANE DESIGNATED CRITICAL HABITAT

A statement of the Contention itself

The water used by VCS will have tremendous aquatic impacts; it will result in more severe, more frequent, and longer lasting “man-made” high salinity drought conditions in the San Antonio Bay system. It will significantly impact the bay’s ecosystems and will adversely modify designated critical habitat for an endangered species.

A brief summary of the basis for the contention

The Exelon application fails to adequately address water needs to protect the health of aquatic resources of San Antonio Bay. Water diversions required to meet the needs for VCS would result in lowering the freshwater inflows into San Antonio Bay, causing an increase in the severity, frequency, and duration of “man made” drought conditions. This means higher salinities, over greater areas, and for longer periods of time. This would likely lead to an alteration in the ecosystem structure by either reducing overall fisheries production or by reducing biodiversity. Specifically, VCS water diversions would result in salinity conditions in the designated critical habitat that are unsuitable and adverse to blue crabs, and important food for endangered Whooping Cranes.

²⁷⁴ ER at 5.11-6 to 8.

²⁷⁵ ER at 4.11-7.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71,468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. Pursuant to the requirements of NEPA, 42 U.S.C. § 4321, *et seq.*, NRC rules require that the environmental report must include a description of the “impact of the proposed action on the environment,” 10. C.F.R. § 51.45(b), and “must include an analysis that considers and balances the environmental effects of the proposed action, ... [and] must also contain an analysis of the cumulative impacts of the activities to be authorized.” 10 C.F.R. § 51.45(c).

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

Under the Section 7 of the Endangered Species Act, 16 U.S.C. § 1536, all federal agencies must use their authority in furtherance of the purposes of the ESA, and they must consult with the USFWS when any activity permitted, funded or conducted by that agency may affect a listed species or designated critical habitat, or is likely to jeopardize proposed species or adversely modify proposed critical habitat. 16 U.S.C. § 1536(a)(2). The purpose of this consultation is to identify and quantify potential adverse affects on listed species and develop reasonable and prudent measures to aid in conserving the listed species. Pursuant to the requirements of the ESA, USFWS has designated the Aransas National Wildlife Refuge and the surrounding bays and marshes as critical habitat. 43 Fed. Reg. 20,938, 20,942 (May 15, 1978).²⁷⁶

²⁷⁶ See Ex. E-1, Trungale Report, at 16, Fig. 11 (map of Whooping Crane Designated Critical Habitat).

This contention is related to TSEP-ENV-11, which is hereby incorporated by reference. In addition to the facts and expert opinions set forth in TSEP-ENV-11, the Trungale Report specifically addresses impacts within the designated critical habitat. By using the isohaline maps produced by the TxBLEND model, it is possible to calculate the area of each salinity band within the designated critical habitat. Running the model for the same three scenarios described in TSEP-ENV-11 (*i.e.*, natural, existing, and proposed), Mr. Trungale was able to calculate how much of the designated critical habitat contains the preferred salinity ranges for particular species.²⁷⁷

The three maps, Figs 5, 6, & 7, in the Trungale Report demonstrate the dramatic differences in salinities for each of the three scenarios.²⁷⁸ A comparison between the natural and current conditions shows that even the current level of water diversions already adversely alters critical habitat.²⁷⁹ Moreover, a comparison of the current salinity map with the map of proposed future conditions, which includes the 75,000 acft/yr for VCS, reveals that the area of very high salinity within the critical habitat increases even further.²⁸⁰ This change in salinity would qualify as significant modification of the Whooping Crane critical habitat, due to the vital importance of salinity conditions on the health of the habitat.

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

The Exelon application does not specifically address adverse modification of designated critical habitat. Also, salinity impacts due to reduced freshwater inflows into San Antonio Bay are not analyzed in the ER. One section analyzes salinity, but only in the context of the impacts

²⁷⁷ Ex. E-1, Trungale Report, at 17-18, Table 4.

²⁷⁸ Ex. E-1, Trungale Report, at 12-13, Figs. 5, 6 & 7.

²⁷⁹ Ex. E-1, Trungale Report, at 12, Figs. 5 & 6.

²⁸⁰ Ex. E-1, Trungale Report, at 12-13, Figs. 6 & 7.

of the blowdown discharge on aquatic ecosystems.²⁸¹ Exelon relies upon its Biostatistical Study that was submitted as updates to ER, Rev. 0, on June 24, 2010.²⁸² This study does not analyze bay salinities, but instead attempts to relate some components of the freshwater inflow regime (spring and fall freshets and summer low flows) directly to the abundance of select marine species. As stated in the Trungale Report, “this approach is not yet well documented in the scientific literature” and “this simplification of bay health and the factors that regulate it, produced an analysis that explains very little of the variation in species abundance.”

The Trungale Report identified serious problems with the Exelon study. The Exelon study generated simple linear regressions that explain little of the overall variation of the data, and the study then purports to apply these regressions to alternative inflow scenarios.²⁸³ However, Mr. Trungale observed that “there is almost no difference between the scenarios selected in terms of total freshwater inflow.... It is no surprise that a regression, which explains little variation, applied two flow scenarios that represent the same annual diversion, would produce results that show ‘small’ difference. This analysis is an example of burying the impacts of the project in the proposed baseline (i.e. assuming the impacts have already occurred) and does not provide the kind of analysis necessary to support decisions that will affect a resource as ecologically valuable as San Antonio Bay.”²⁸⁴

Exelon also performed a drought analysis on the impacts of VCS operations and water use.²⁸⁵ However, Exelon only investigated the number of annual periods where freshwater inflows fell below recommended target values.²⁸⁶ Unlike TSEP’s more detailed analysis, the

²⁸¹ ER § 5.3.2.2.

²⁸² ER June 24, 2010 update at 5.2-13 to 21; 5.11-10 to 12.

²⁸³ Ex. E-1, Trungale Report, at 2.

²⁸⁴ Ex. E-1, Trungale Report, at 2.

²⁸⁵ ER at 5.11-6 to 8.

²⁸⁶ ER at 4.11-7.

Exelon application only counted occurrences, and did not consider the severity, or duration of these events. Therefore TSEP disputes the adequacy of analysis in the Exelon application because it fails to describe the long-term impacts on the Whooping Cranes’s designated critical habitat of reduced freshwater inflows into the bay.

TSEP-ENV-13 – MONITORING IMPACTS TO WHOOPING CRANE DESIGNATED CRITICAL HABITAT

A statement of the Contention itself

Exelon fails to satisfy 10 C.F.R. § 51.50(b)(4) because Exelon has not identified the procedures to protect the endangered Whooping Cranes’ environment, specifically the designated critical habitat at the Aransas National Wildlife Refuge.

A brief summary of the basis for the contention

The Endangered Species Act prohibits any person from causing a “take” of an endangered species. 16 U.S.C. § 1538.²⁸⁷ A “take” includes harm to the species, which in turn includes modification of the species’ habitat.²⁸⁸ The Act also requires the NRC to fully comply with Section 7 of the ESA, mandating consultation with U.S. Fish & Wildlife Service. Exelon’s proposed action to withdraw 75,000 acft/yr of water from the Guadalupe River is a direct threat to the ecological health of the Whooping Crane, its designated critical habitat, and the Aransas National Wildlife Refuge.²⁸⁹ Consequently, Exelon must identify actions to minimize and mitigate these impacts, including monitoring, to ensure the protection of the critical non-aquatic and aquatic Whooping Crane habitats.

²⁸⁷ See also Ex. D-2, JCHA Report, at 38.

²⁸⁸ See *Babbitt v. Sweet Home Chapter of Communities for a Great Oregon*, 515 U.S. 687 (1995).

²⁸⁹ Ex. D-2, JCHA Report, at 44.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue of whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71,468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. According to 10 C.F.R. § 51.50(b)(4), “Each environmental report must identify the procedures for reporting and keeping records of environmental data, and any conditions and monitoring requirements for protecting the non-aquatic environment, proposed for possible inclusion in the license as environmental conditions in accordance with § 50.36b of this chapter.”

Additionally, according to RG 4.2, entitled “Preparation of Environmental Reports for Nuclear Power Stations”, the applicant “should, to the extent feasible, describe the general scope and objectives of its intended programs and provide a tentative listing of parameters that it believes should be monitored for detailed evaluation.”²⁹⁰

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

According to the JCHA Report, threats to the Whooping Crane include both “habitat dewatering” and “salinity.”²⁹¹ Exelon proposes, through an agreement with the Guadalupe Blanco River Authority, to withdraw up to 75,000 acft/yr of water from the Guadalupe River. Exelon’s surface water withdrawals will reduce freshwater inflows into the Whooping Crane’s designated critical habitat and increase the bay’s salinity. The Whooping Crane habitat is directly linked to the salinity of the surrounding bay because the salinity concentrations rise or fall based

²⁹⁰ RG 4.2, page 6-4 (section 6.2).

²⁹¹ Ex. D-2, JCHA Report, at 44.

on the freshwater inflows from the rivers. For example, a reduction in freshwater inflows leads to increased salinity, which leads to a reduced blue crab population (a primary food source for the Cranes).²⁹²

When the Whooping Crane habitat changes due to lack of water (increased salinity), the Whooping Cranes undergo physical stress. As Dr. Ron Sass explained, “A minimum flow of freshwater into San Antonio Bay between the months of July and October is required, below which the whooping crane will exhibit a high probability of physical stress and increased mortality during its stay at the ANWR.”²⁹³ Exelon’s water withdrawing activities are a direct threat to the Whooping Crane habitat and may constitute a “take” under the Endangered Species Act. Exelon should have included Whooping Crane habitat monitoring in the Environmental Report of the ESP application.

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

In the ESP application, Exelon discusses Hydrological and Ecological Monitoring.²⁹⁴ For example, Exelon states that it “would continue to obtain Guadalupe River flow data from USGS Gaging Station 08176500 (Victoria) and Gaging Station 08188800 (GBRA saltwater barrier near Tivoli).”²⁹⁵ There is no provision to monitor the impacts of the increased salinity that results from the water withdrawals, nor is there a provision to monitor the impacts on the Aransas National Wildlife Refuge, which is critical habitat for the Whooping Cranes.

Exelon itself recognizes the relationship between their water use, bay inflows, salinity, and the viability of the Whooping Crane flock.²⁹⁶ Even so, Exelon has not included appropriate

²⁹² Ex. D-2, JCHA Report, at 44.

²⁹³ Ex. F, Sass Decl., at ¶ 4(b).

²⁹⁴ ER § 6.5.

²⁹⁵ ER § 6.3.3.1.

²⁹⁶ ER June 24, 2010 update at 5.11-16.

monitoring provisions. Petitioner TSEP maintains that Exelon must monitor the impacts on Whooping Cranes and their designated critical habitat downstream in the San Antonio Bay.

TSEP-ENV-14 –COMPLIANCE WITH THE ENDANGERED SPECIES ACT

A statement of the Contention itself

The Exelon application does not include sufficient or accurate information to enable the NRC to comply with the requirements of the federal Endangered Species Act, 16 U.S.C. § 1531 *et seq.*, because Exelon has not rigorously explored or objectively evaluated the impacts of the proposed VCS plant on listed Whooping Cranes.

A brief summary of the basis for the contention

Exelon has not rigorously explored or objectively evaluated the impacts of the proposed VCS plant on listed Whooping Cranes. While acknowledging the presence of the endangered Whooping Cranes at the Aransas National Wildlife Refuge, Exelon then goes to great lengths to portray the impacts of VCS to be minimal. Exelon dismisses or downplays the official reports of unprecedented mortality during the 2008-2009 drought. Exelon relies on the much criticized SAGES Report, the findings in which were contrary to the vast weight of scientific evidence. Exelon does not vigorously evaluate the relationship between Whooping Cranes and inflows and water diversions, and in particular, its own proposed water diversion.

VCS will be the single largest new consumer of water on the river, taking up to 75,000 acft/yr. This will cause a big decrease in freshwater inflows to the bay, which in turn, will increase bay salinities. The increase in salinities negatively impacts blue crab and wolfberry fruit abundance, and reduces availability of drinkable water in the Crane territories. The Whooping Cranes will be impacted by the proposed VCS diversion. The NRC requires full disclosure of these impacts. The NRC itself needs to understand these impacts, because pursuant to the ESA, it must formally consult with USFWS before issuing the ESP.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71,468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. Pursuant to the requirements of NEPA, 42 U.S.C. § 4321, *et seq.*, NRC rules require that the environmental report must include a description of the “impact of the proposed action on the environment,” 10. C.F.R. § 51.45(b), and “must include an analysis that considers and balances the environmental effects of the proposed action ... [and] must also contain an analysis of the cumulative impacts of the activities to be authorized.” 10 C.F.R. § 51.45(c).

The NRC and Exelon must also comply with the Endangered Species Act, 16 U.S.C. § 1531, *et seq.*, including the Section 7 consultation with USFWS, and must avoid a prohibited “take” of a protected species. *See Tennessee Valley Authority* (Hartsville Nuclear Plant, Units 1A, 2A, 1B & 2B), ALAB-463, 7 NRC 341, 360–361 (1978). NRC regulations require that the ER must identify all permits, licenses, and other approvals that are required from federal, state and local agencies and discuss the status of compliance. 10 C.F.R. § 51.45(d).

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

The ESP may not be issued if the agency finds that the authorized activity is likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. 16 U.S.C. § 1536(a)(2). “To jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed

species in the wild by reducing the reproduction, numbers, or distribution of that species. 50 C.F.R. § 402.02. And, “destruction or adverse modification” means a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. 50 C.F.R. § 402.02. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical. 50 C.F.R. § 402.02. In order for the NRC to make these evaluations, the agency needs sufficient and accurate information from Exelon on the impacts of the proposed VCS on the Whooping Crane and its habitat.

Other important facts and expert opinions supporting this contention are set forth in TSEP’s contentions, TSEP-ENV-7, 8, 9, 10, 11, 12, & 13 and are hereby incorporated by reference. TSEP contends that all these aforementioned impacts create a substantial risk that the proposed water use at VCS will jeopardize the continued existence of this endangered species, and adversely modify the Cranes’ designated critical habitat. The Whooping Crane is a flagship species for the North American wildlife conservation movement, symbolizing the struggle for survival that characterizes endangered species worldwide. The Aransas flock has taken almost a century to slowly grow back to a still-meager 270 (or so) birds in 2010. It remains the only naturally surviving and migrating flock in the world.²⁹⁷ The NRC must consult with USFWS before issuing Exelon an Early Site Permit. This consultation is mandated by Section 7 of the Endangered Species Act, 16 U.S.C. § 1536(a)(2)–(4), and during consultation NRC and USFWS must fully address the impacts to the whooping crane described herein.

²⁹⁷ Ex. F-1, Sass Report, at 4; 6.

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

The Exelon application identifies that endangered and threatened species exist on and around the VCS site, including Whooping Cranes.²⁹⁸ On June 24, 2010, Exelon submitted an update to its application to specifically address the Whooping Cranes and their habitat impacts, and which will be incorporated into a subsequent revision.²⁹⁹ This update discusses the Crane mortality event in 2008-09 and presents the results of a new biostatistical method for evaluating impacts of the VCS water use on San Antonio Bay.³⁰⁰ The Exelon application discloses the impacts on the Whooping Crane habitats in San Antonio Bay caused by water use by the VCS operations; however it concludes that these impacts will be “small.”³⁰¹ TSEP vigorously disputes this conclusion.

Exelon identifies that “the NRC will need formal consultation with the USFWS.”³⁰² TSEP agrees. However, TSEP urges that this contention must be admitted because Exelon’s ER is replete with scientific inaccuracies, omitted adverse information, and is at a very fundamental level, misleading and unreliable with respect to impacts on Whooping Cranes. The full participation of TSEP on this important issue will enable the development of complete and accurate administrative record.

For the reasons stated in TSEP’s contentions TSEP-ENV-7, 8, 9, 10, 11, 12, & 13, Exelon’s ER does not rigorously explore or objectively evaluate the impacts of VCS water use on the Whooping Crane, or its designated critical habitat. The facts and opinions submitted in

²⁹⁸ ER at 2.4-10

²⁹⁹ Victoria County Station Early Site Permit Application, Environmental Report Revisions to Incorporate Additional Supporting information (Jun 24, 2010), available at http://adamswebsearch2.nrc.gov/idmws/doccontent.dll?library=PU_ADAMS%5EPBNTAD01&ID=101930142

³⁰⁰ *Id.* (describing updates to ER §§ 2.4, 5.2, and 5.11)

³⁰¹ See generally ER § 5.2.2.

³⁰² ER Table 1.2-1 (Sheet 1 of 6)

support of TSEP’s contentions indicate that the impacts on the Whooping Crane are significantly larger than Exelon states.

For example, the primary impacts come from the planned surface water diversions from the Guadalupe River. Table 5.2.1 in the ER shows that 8.5% of the time, the VCS plant would consume more than 20% of the entire flow of the Guadalupe River (over the period 1947-2006).³⁰³ Remarkably, Exelon characterizes this impact as “small.”³⁰⁴ TSEP disagrees because on its face, consuming 20% of the flow of a river is not a small impact.

In addition, the Exelon application recognizes a strong relationship between inflows and salinity³⁰⁵ but fails to discuss or analyze the relationship or the impacts of VCS water use. Instead, the Exelon presents its “Biostatistical Study” that looks at the relationship between inflows and aspects of bay productivity.³⁰⁶ In its description of VCS impacts on the endangered whooping crane, Exelon relied on the much-criticized SAGES Report.³⁰⁷ Exelon also attempts to discredit USFWS data and reports of the unprecedented mortality of Whooping Cranes at Aransas during the 2008-09 drought.³⁰⁸ USFWS reported that 23 cranes (8.5% of the entire flock) died, most likely due to insufficient food during the drought. Exelon states that USFWS either is wrong about the deaths, or that the cranes left early because they had too much food.³⁰⁹ These and other statements in its application show that Exelon lacks knowledge of some of the most basic aspects of Whooping Crane behavior and biology. For example, it is unlikely that the

³⁰³ ER Table 5.2.1.

³⁰⁴ ER Table 5.2.1.

³⁰⁵ ER June 24, 2010 update at 5.2-14.

³⁰⁶ ER June 24, 2010 update 5.2.-13 to 21.

³⁰⁷ ER § 2.4.1.5; ER June 24, 2010 update at 5.11-6.

³⁰⁸ ER June 24, 2010 update 2.4-11 to 12.

³⁰⁹ ER June 24, 2010 update 2.4-12.

USFWS census missed individual cranes and incorrectly reported them as a dead, as Exelon asserts.³¹⁰

TSEP-ENV-15 – SOCIOECONOMIC IMPACTS OF PLUGGING WELLS AND OF THE IMPACTS ON MINERAL RIGHTS HOLDERS.

A statement of the Contention itself

Exelon's ER fails to address the economic impacts of plugging oil and gas wells, and impacts of the VCS on owners of onsite and adjacent mineral rights.

A brief summary of the basis for the contention

As described in contentions TSEP-SAFETY-3 and TSEP-ENV-1, there are hundreds of abandoned oil and gas wells on and around the VCS site. These have potential safety and environmental risks which Exelon must minimize and mitigate. Exelon has not evaluated the costs of locating and properly plugging these wells. Additionally, because it is inconceivable that Exelon would be able to operate the VCS plant with ongoing mineral exploration and extraction activities on the site, Exelon must evaluate the costs of condemning the minerals within the site boundaries. Nearby offsite oil and gas activities must also be evaluated to ensure compatibility with safe VCS operation so that any incompatible activities would be curtailed.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. Pursuant to the requirements of NEPA, 42 U.S.C. § 4321, *et seq.*, NRC rules

³¹⁰ ER June 24, 2010 update 2.4-12.

require that the environmental report must include a description of the “impact of the proposed action on the environment,” 10. C.F.R. § 51.45(b), and “must include an analysis that considers and balances the environmental effects of the proposed action ... [and] must also contain an analysis of the cumulative impacts of the activities to be authorized.” 10 C.F.R. § 51.45(c).

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

Exelon has not thoroughly evaluated the cost of properly plugging and abandoning all of the wells on the site, and one outside consultant estimates that plugging and abandoning all of the wells could be as high as \$60 million.³¹¹ There is uncertainty in estimating costs of properly plugging and abandoning the wells, but the costs would likely be in a range of \$30 to \$60 million.³¹²

As stated, 130 oil and gas wells were found within the VCS property boundary.³¹³ Most of the wells on site are non-producing and are in an idle or abandoned state with varying levels of plugging. These wells will need to be examined individually to see exactly how much effort and cost will be needed to properly plug and abandon them. Any wells left un-plugged or improperly plugged could pose an environmental hazard in the future; therefore Exelon should not be allowed to move forward with its attempts to build on the VCS site unless this issue is resolved.

There are difficulties associated with making an accurate estimate for the cost of plugging and abandoning all of the wells within the property boundary, including the existence of unregistered wells, partial or full deterioration of well casing, inadequate records of well depth

³¹¹ Ex. D-2, JCHA Report, at 84.

³¹² Ex. D-2, JCHA Report, at 84.

³¹³ Ex. D-2, JCHA Report, at 83.

or method of abandonment.³¹⁴ The JCHA Report relied on an outside consultant to estimate costs.

The JCHA Report stated that, according to the consultant, an estimated cost for plugging and abandoning operations is \$455,000 per well.³¹⁵ Using this dollar figure, and assuming that the location of all 130 wells can be identified and that the wells are intact, the final number is approximately \$59 million.³¹⁶ Thirty eight of the wells within the property boundary were documented as being plugged since the last set of regulations on plugging was enacted in 1984; assuming that there would be nothing more needed to be done to these thirty eight wells, the cost for the operation would drop down to approximately \$42 million.³¹⁷ Of course, there are issues that could arise during plugging operations that could exponentially raise the cost—such as the inability to locate known wells. This would represent not just a financial issue but also another potential environmental hazard.

The JCHA Report noted that the estimate by the outside consultant may be high. For wells that have been identified and only need to be plugged, the cost of plugging each well may be closer to \$25,000.³¹⁸ The JCHA Report conducted its own analysis and suggested that the total cost for plugging all known wells on the site would be around \$33 million.³¹⁹ The important point is that each site is unique, and until a thorough in-person investigation is performed, there will be considerable uncertainty.

In addition, nearby operating oil and gas facilities may need to cease operation and be properly closed prior to the operation of the Exelon Plant. Nearby oil and gas operations

³¹⁴ Ex. D-2, JCHA Report, at 83.

³¹⁵ Ex. D-2, JCHA Report, at 83.

³¹⁶ Ex. D-2, JCHA Report, at 83.

³¹⁷ Ex. D-2, JCHA Report, at 83.

³¹⁸ Ex. D-2, JCHA Report, at 84.

³¹⁹ Ex. D-2, JCHA Report, at 84.

represent a \$7 million net present value of ongoing operations.³²⁰ Due to the current oil and gas activity on and around the VCS site, Exelon would have to come to an agreement with the operators and owners of the oil and gas interests in order to proceed with their construction. In its application, Exelon proposes to acquire any mineral rights necessary for operation of the plant. An outside consultant, Michael R. Walls and Company, performed a valuation of the Katy Creek and McFaddin Fields. The preliminary estimate of the net present value of the operations is approximately \$7 million.³²¹

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

This is a contention of omission. Under the section on site land use impacts, Exelon's ER discusses possible purchase or condemnation of mineral rights as necessary, but does not include any details.³²² Exelon does not address the socioeconomic costs of plugging abandoned wells. The ER does not discuss or evaluate any of these socioeconomic costs.³²³

TSEP-ENV-16 – OBVIOUSLY SUPERIOR ALTERNATIVE SITE AT MATAGORDA COUNTY

A Statement of the Contention Itself

The Exelon ER does not comply with 10 C.F.R. § 51.50(b)(1) because it fails to rigorously explore and objectively evaluate all alternative sites. A comparison of the Matagorda County site and the Victoria County Station site shows that the Matagorda County site presents an obviously superior site for the construction and operation of a nuclear power plant. The alternative Matagorda County site considered by Exelon does not have the serious problems and large impacts identified at the Victoria site.

³²⁰ Ex. D-2, JCHA Report, at 138.

³²¹ Ex. D-2, JCHA Report, at 138.

³²² ER at 5.1-1 (deferring some details to the COL stage).

³²³ See ER § 5.8.

A brief summary of the basis for the contention

Exelon has not adequately evaluated the alternatives and has, therefore, arrived at the wrong conclusion with respect to the feasibility of the Victoria Site. An adequate evaluation of the impacts makes clear that the Matagorda County site is obviously superior. For example, the aquatic impacts of the Victoria site are large. The impacts to the endangered Whooping Crane are large. The Victoria County site is obviously inferior from a geology/seismology standpoint, due to the presence of growth faults and hundreds of oil and gas wells. Finally, with respect to oil and gas pipelines and power transmission lines, the Matagorda County site presents an obviously superior site.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue of whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with applicable NRC regulations. According to 10 C.F.R. § 51.50(b)(1), “The environmental report [of the Early Site Permit] must include an evaluation of alternative sites to determine whether there is any obviously superior alternative to the site proposed.” According to the NRC regulatory guide, “Preferred sites are those with a minimal likelihood of surface or near-surface deformation and a minimal likelihood of earthquakes on faults in the site vicinity (within a radius of 8 km (5 miles)). Because of the uncertainties and difficulties in mitigating the effects of permanent ground displacement phenomena such as surface faulting or folding, fault creep, subsidence or

collapse, the NRC staff considers it prudent to select an alternative site when the potential for permanent ground displacement exists at the site.” NRC Regulatory Guide 4.7, at 11.

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

The following discussion demonstrates that there are large negative impacts associated with the Victoria County site.³²⁴ By contrast, the characteristics of the Matagorda County site are obviously superior for Exelon’s purposes. Additionally, TSEP incorporates by reference its contentions relating to water, TSEP-ENV-2, 3, 4, and 5; aquatic impacts, TSEP-ENV-10, 11, and 12; whooping cranes, TSEP-ENV-7, 8, and 9; because Exelon’s alternative analysis relies on information that is itself the subject of contentions. The following six discussion topics are the most salient comparison points for TSEP’s contention:

With respect to water availability, the Matagorda County site presents an obviously superior location. The ESP identifies the source of the plant’s make up water as the Guadalupe River,³²⁵ and states that the expected impacts from withdrawing from the Guadalupe River are “small.”³²⁶ However, for waters of the Guadalupe River, “there will be many months in the future, as there have been in the past, in which there is not enough water available for cooling the power plant.”³²⁷ Additionally, the diversion of water from the Guadalupe River, which is already over-appropriated, will result in no water being available for future population growth or to provide for new industrial growth in the Guadalupe River basin using surface water.³²⁸

³²⁴ See Ex. D-2, JCHA Report, at 94 (stating that the Victoria County site is likely to have the most significant environmental impact of any of the five sites considered in Exelon’s environmental report).

³²⁵ ER at 2.3-133; ER at 5.2-11-12.

³²⁶ ER at 5.11-5.

³²⁷ Ex. D-2, JCHA Report, at 94.

³²⁸ Ex. D-2, JCHA Report, at 89.

Moreover, climate models predict decreasing precipitation and less surface water in the Guadalupe River basin over the next decades.³²⁹

By contrast, the proposed cooling water supply for the Matagorda site would be salt water pumped from the Gulf Intracoastal Waterway.³³⁰ Merely the fact that this site would be using seawater as its makeup water makes it a superior alternative.³³¹ If Exelon does not use water from the Guadalupe River, then more surface water would be available for population growth.³³² Furthermore, ocean water is abundant, and is not dependent on day-to-day precipitation and the resulting runoff, which is unpredictable.³³³ Availability of seawater for cooling will remain the same if climate in the region changes.

With respect the downstream impacts, including those on endangered species, the Matagorda County site presents an obviously superior location. Exelon states that the impacts to the endangered Whooping Crane are “small.”³³⁴ However, should the plant’s water be diverted from the Guadalupe River, there will be significantly less water available for instream flows to reach the downstream bays and estuaries. The endangered Whooping Crane winters at the Aransas National Wildlife Refuge, and its vitality is dependent upon a healthy bay and estuary system.³³⁵ With less water to nourish its habitat, the endangered Whooping Crane will be in “peril.”³³⁶ The flock that winters at the Refuge is the only naturally occurring wild

³²⁹ Ex. F-1, Sass Report, at 21-25 (conclusion at 25); Sass Report, Table 1, at 35.

³³⁰ ER at 9.3-17.

³³¹ Ex. D-2, JCHA Report, at 89.

³³² Ex. D-2, JCHA Report, at 90.

³³³ Ex. D-2, JCHA Report, at 89.

³³⁴ ER at 5.11-8.

³³⁵ Ex. D-2, JCHA Report, at 44.

³³⁶ Ex. D-2, JCHA Report, at 92.

population.³³⁷ The withdrawal of additional water from the Guadalupe may have a significant impact on the continued existence of the species.³³⁸

Because the Matagorda site will be using salt water from the Gulf Intracoastal Waterway, the operation of the plant does not affect fresh water inflows into the estuaries. The water being returned to Tres Palacios Bay will be cooled in natural draft cooling towers prior to release, which minimizes the impact of temperature rise.³³⁹ Many of the plants using salt water and once-through cooling systems find that the slight rise in temperature of the receiving water has improved the aquatic productivity in the vicinity of the discharges.³⁴⁰ Exelon states that the impacts to endangered species at Matagorda would be “small.”³⁴¹

With respect to the presence of growth faults, the Matagorda County site presents an obviously superior location. Exelon states that the Victoria County site scored better than the Matagorda County site in the area of geology/seismology.³⁴² However, this assessment is erroneous because there are at least two, and perhaps as many as four, growth faults present or adjacent to the Victoria site.³⁴³ These growth faults pass near the power block and cross the recirculating cooling pond. According to the JCHA Report, these faults pose a risk of movement which could result in instability and failure of the cooling pond dam.³⁴⁴ By contrast, no growth faults in the vicinity of the Matagorda site have been noted in any of the publicly available studies.³⁴⁵

³³⁷ Ex. D-2, JCHA Report, at 44.

³³⁸ Ex. D-2, JCHA Report, at 44, 92.

³³⁹ ER at 9.3-17.

³⁴⁰ Ex. D-2, JCHA Report, at 92.

³⁴¹ ER at 9.3-19.

³⁴² ER at 9.3-11.

³⁴³ Ex. D-2, JCHA Report, at 93.

³⁴⁴ Ex. D-2, JCHA Report, at 93.

³⁴⁵ Ex. D-2, JCHA Report, at 93.

With respect to the risks associated with oil and gas wells, the Matagorda County site presents an obviously superior location. Exelon states that the Victoria County site ranks higher than the alternative sites for various criteria, including health and safety.³⁴⁶ However, according to the Texas Railroad Commission database, there are nearly 300 active or abandoned oil and gas wells in or immediately surrounding the proposed Victoria Site.³⁴⁷ This is unprecedented oil and gas activity for the location of a proposed nuclear reactor, and it presents health and safety concerns. The JCHA Report reviewed site conditions at 65 nuclear sites, which contained 104 licensed, operating, commercial nuclear reactors.³⁴⁸ Of these 65 sites, only one, the South Texas Project site, reported any oil and gas wells on site (just two wells). By stark contrast, the Victoria Site has 27 operating wells and over 100 inactive wells within the actual site boundary.³⁴⁹ The site is a veritable “Swiss cheese” and inappropriate as a location of a future nuclear power plant.

There are numerous risks associated with oil and gas wells, including dangers of explosion due to methane seepage, or the leaking of poisonous gases such as hydrogen sulfide.³⁵⁰ Other dangers include the upward migration of liquid hydrocarbons, leading to stability problems.³⁵¹ At Matagorda, the Texas Railroad Commission database indicates that there are three oil and gas wells in the immediate vicinity of the Matagorda site.³⁵² This represents a much lower hazard for explosion, for gas leakage, or for aquifer contamination from improperly abandoned oil and gas wells.

³⁴⁶ ER at 9.3-12.

³⁴⁷ Ex. D-2, JCHA Report, at 90.

³⁴⁸ Ex. D-2, JCHA Report, at 72.

³⁴⁹ Ex. D-2, JCHA Report, at 73.

³⁵⁰ Ex. D-2, JCHA Report, at 74, 76.

³⁵¹ Ex. D-2, JCHA Report, at 78.

³⁵² Ex. D-2, JCHA Report, at 90.

With respect to oil and gas pipelines, the Matagorda County site presents an obviously superior location. There are 13 pipelines which cross the Victoria site.³⁵³ The pipelines primarily carry natural gas, although gasoline and diesel fuel are transported in one of the pipelines. Three of the pipelines are gathering lines for local wells and are 4.5 inches in diameter. The other pipelines are part of intercontinental and trans-Texas system and range from 24 inches to 30 inches in diameter. Many of these pipelines cross the area designated for the cooling pond.³⁵⁴ Exelon plans to relocate pipelines passing through the power block area, but they plan to leave the pipelines under the cooling pond in place.³⁵⁵ This may present obvious safety issues.

By contrast, the Matagorda site has no pipelines in its immediate vicinity.³⁵⁶

With respect to power transmission lines, the Matagorda County site presents an obviously superior location. According to the ESP, eight 345 kilovolt (kV) transmission lines would be required for the VCS site.³⁵⁷ Four of these lines would be new, totaling approximately 180 miles of new power transmission lines.³⁵⁸ The two new installations with double circuit towers will require a right-of-way 300 feet wide for the entire length of the lines. The other lines will require 150 feet wide rights-of-way. In total, these new installations will occupy 4,700 acres. Transmission lines represent a major hazard to migrating birds, including the Whooping Crane.³⁵⁹ As a result, the proximity of this site to the Aransas National Wildlife Refuge is cause for further concern.³⁶⁰

³⁵³ Ex. D-2, JCHA Report, at 90.

³⁵⁴ Ex. D-2, JCHA Report, at 90.

³⁵⁵ Ex. D-2, JCHA Report, at 90.

³⁵⁶ Ex. D-2, JCHA Report, at 90.

³⁵⁷ ER at 2.2-3; JCHA Report, at 92.

³⁵⁸ Ex. D-2, JCHA Report, at 92.

³⁵⁹ Ex. D-2, JCHA Report, at 93.

³⁶⁰ Ex. D-2, JCHA Report, at 93.

For Matagorda, one new 400-foot-wide transmission right-of-way containing all four lines would run from the Matagorda County Site to the South Texas Nuclear Project (“STNP”) nuclear plant about 11.5 miles to the northeast.³⁶¹ Rights-of-way from the STNP would be utilized for the rest of the additional lines from that point. This single new right-of-way would require approximately 560 acres of land.³⁶² Given that this site would require less than one-tenth of the new power line construction required by the VCS, this represents a much lower danger to the migrating birds.

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

Exelon reviewed a total of 22 sites for initial suitability.³⁶³ Various criteria were used to narrow the selection of sites, including minimum water availability; no known significant geologic, seismic, or subsidence hazards; and transmission access, among others. Four sites, in addition to the Victoria County site, were ultimately evaluated in detail: the so-called Matagorda County site; the Buckeye site (also in Matagorda County); the Alpha site (in Austin County); and the Bravo site (in Henderson County).³⁶⁴

Exelon erroneously concluded: “A comparison of projected construction and operational impacts at the proposed and alternative sites demonstrates that there is no significant difference in environmental impact among the five candidate sites. For these reasons, there is no alternative site that is ‘environmentally preferable’ to the Victoria County site.... This site-by-site comparison did not result in identification of a site environmentally preferable to the proposed

³⁶¹ ER at 9.3-14.

³⁶² ER at 9.3-14.

³⁶³ ER at 9.2-5.

³⁶⁴ See ER at 9.3-93; Table 9.3-3.

VCS site. Therefore, no additional analysis is required to determine whether the candidate sites are “obviously superior” to the proposed VCS site.”³⁶⁵

As described above, TSEP disagrees. The impacts of construction and operation of the Victoria County site on water use and endangered species are clearly not “small.”³⁶⁶ Exelon states that “health and safety” were part of its review; these criteria did not make it into the evaluation Table 9.2-2 and Table 9.2-3, but Petitioners dispute the implied conclusion that the Victoria County site presents small impacts in terms of health and safety.³⁶⁷ As stated, the Victoria County site has as many as four growth faults and hundreds of oil and gas wells, presenting unprecedented health and safety concerns for construction and operation of a nuclear power plant.

Had Exelon adequately considered all of these factors and concerns, the alternatives analysis would have resulted in a different conclusion. Indeed, in its final ranking of alternative sites, the scores of the Matagorda and Victoria sites were very close: 3,839 for Matagorda, and 4,041 for Victoria.³⁶⁸ The Exelon ER does not describe the scoring methodology, but presumably if one or more the impacts at Victoria were elevated from “small” to “moderate” the small difference between the two scores might easily be reversed.

Exelon’s NEPA data on many issues was flawed, and the alternatives analysis was therefore flawed as a result. TSEP submits this contention to show that the correct conclusion is that the Matagorda County Site presents an “obviously superior” alternative to the Victoria County site.

The following table summarizes Petitioners’ contention disputing Exelon’s analysis.

³⁶⁵ ER at 9.3-86; *see also* ER at 9.3-12.

³⁶⁶ ER at 9.2-92 and 93; Table 9.3-2 and 9.3-3.

³⁶⁷ ER at 9.3-12; 9.2-92 and 93; Table 9.3-2 and 9.3-3.

³⁶⁸ ER at 9.3-97, Fig. 9.3.4.

Impact	Victoria Site	Matagorda County Site
Water Availability	Cooling water would be pumped 18.5 miles to the site from the GBRA pumping station. The diversion of water from the Guadalupe River, which is already over appropriated, will result in no water being available for population growth or to provide for new industrial growth in the Guadalupe River basin using surface water.	The Matagorda Site, as originally proposed, would use a once-through cooling water system supplied by salt water, pumped from the Gulf Intracoastal Water Way. Ocean water is abundant, and is not dependent on day-to-day precipitation and the resulting runoff, which is unpredictable.
Downstream Ecological Impacts	The diversion of scarce surface water will have a negative impact on the many species with important habitat downstream of the VCS site. This includes the endangered Whooping Crane. Several studies show that under current conditions, the amount of inflow required to maintain estuary health, and protect the Whooping Crane's food supply, is met only sporadically.	Using ocean water, the plant would not affect fresh water inflows to estuaries.
Presence of Growth Faults	There are at least two, and perhaps as many as four, growth faults present or adjacent to the VCS site which have had significant historic and recent movement. These faults pass near the power block and cross the cooling pond.	No growth faults have been noted in any of the publicly available studies.
Presence of Oil & Gas Wells and Borings	There are nearly 300 active or inactive oil and gas wells in or immediately surrounding the property boundary. This is an unprecedented number for a proposed nuclear power plant. The wells create the risk of explosion, and poisonous gas leakage, among other concerns. Also, active oil and gas wells will need to be discontinued and the mineral estate condemned.	There are only 3 oil and gas wells in the immediate vicinity of the site.

Presence of Oil & Gas Pipelines	There are 13 oil and gas pipelines that cross the site.	There are no oil and gas pipelines in the vicinity.
Connection to Electrical Grid	Construction at the VCS site would require a total of approximately 180 miles of new lines, and would occupy approximately 4,700 acres. Transmission lines represent a major hazard to migrating birds, including the Whooping Crane.	This site would need only one new 400-foot-wide right-of way, running 11.5 miles. This would require only 560 acres of land.

TSEP-ENV-17 -- ER LACKS BASIS FOR RELIANCE ON WASTE CONFIDENCE RULE

A statement of the Contention itself

In Section 5.7.1.6 of the ER, Exelon relies on the Waste Confidence Decision for its assertion that a repository can and likely will be developed at some site that will comply with radiation dose limits imposed by the U.S. Environmental Protection Agency. *Id.* at 5.7-7. Because the assertion is not supported by an EIS, however, the ER is inadequate to comply with NEPA.

A brief summary of the basis for the contention

This contention is based on and incorporates by reference TSEP’s comments on the revisions to the Waste Confidence Rule published by the NRC in 2008: Comments by Texans for a Sound Energy Policy et al Regarding NRC’s Proposed Waste Confidence Decision Update and Proposed Rule Regarding Consideration of Environmental Impacts of Temporary Storage of Spent Fuel After Cessation of Reactor Operations (February 6, 2009) (“TSEP Comments”). TSEP’s comments are posted on the NRC’s Agencywide Document Access and Management System (“ADAMS”) under Accession No. ML090960723. TSEP’s comments include the following supporting documents: Declaration by Dr. Makhijani in Support of Comments of the

Institute for Energy and Environmental Research on the U.S. Nuclear Regulatory Commission's Proposed Waste Confidence Decision Update (February 6, 2009) ("Makhijani Declaration") (ADAMS Accession No. ML 090650716) and Comments of the Institute for Energy and Environmental Research on the U.S. Nuclear Regulatory Commission's Proposed Waste Confidence Rule Update and Proposed Rule Regarding Environmental Impacts of Temporary Spent Fuel Storage (February 6, 2006) ("IEER Report") (ADAMS Accession No. NK090650718).

As discussed in TSEP's Comments at 13-14, before the NRC may issue an ESP for the Victoria site, it must prepare an EIS that examines the cumulative impacts and costs of the entire amount of radioactive waste that will be generated new reactors, including the environmental impacts and costs of siting, building, and operating each additional repository that may be required to accommodate the spent fuel generated by the new reactors. The EIS must also weigh the relative costs and benefits of licensing individual nuclear power plants – including the costs and benefits of generating and disposing of a significant quantity of radioactive waste – against the costs and benefits of other alternatives that would not involve the creation of that waste. 10 C.F.R. § 51.71(d). And because the evaluation of the environmental impacts of radioactive waste disposal involves predictions far into the future, the generic EIS must address the uncertainty that attends those predictions. 40 C.F.R. § 1508.27(b)(5). *See also* IEER Comments.

TSEP notes that after Exelon filed its ESP application, the NRC published a final update to the Waste Confidence Decision. Waste Confidence Decision Update, 75 Fed. Reg. 81,037 (December 23, 2010). That update did not change the relevant findings regarding the NRC's assertion of confidence in the technical feasibility of spent fuel disposal.

A demonstration that the contention is within the scope of the hearing

This contention is within the scope of the hearing because it relates to the question of whether the ER is adequate to comply with NEPA. The contention is also within the scope of the hearing because the Commission recently refused to prepare an EIS to support its waste confidence findings. 76 Fed. Reg. at 81,040. Having failed to obtain a full environmental analysis of the environmental impacts of spent fuel disposal, TSEP therefore seeks such an analysis in this individual licensing case.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material to the findings NRC must make to issue an ESP for VCS because it relates to the question of whether the ER contains an adequate discussion of the environmental impacts of operating a new reactor at the VCS site or the relative costs and benefits of a new reactor in comparison to other sources of electricity.

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

TSEP's technical criticisms of the Waste Confidence Decision are discussed in detail in the IEER Report. As summarized in the report, the NRC has not taken into account a mountain of data and analyses that show it is far from assured that safe disposal of spent fuel in a geologic repository is technically feasible. *Id.* at 19. While some of the elements of deep geologic disposal have been studied to a sufficient degree that they may be viable elements of a disposal system, an entire thermally and mechanically perturbed system has never been tested. The data on the individual elements of the perturbed and sealed system and for their combined functioning are not yet sufficient to determine the performance of a repository for safe spent fuel disposal with reasonable assurance. The DOE has been pursuing study and characterization of repositories for decades and essential technical questions in relation to performance continue to

be in doubt. Under some circumstances, the impact of disposing of spent fuel in a geologic repository could be significant. Considerable further work remains to be done before there can be reasonable assurance that safe disposal of spent fuel and high-level waste in a deep geologic repository in the U.S. is technically feasible.

Sufficient information to show there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted.

As discussed above, TSEP takes issue with Exelon's statement in Section 5.7.1.6 of the ER (page 5.7-7) that the Waste Confidence Decision supports a conclusion that it is reasonable to conclude that the offsite radiological impacts of spent fuel and high-level waste disposal would not be sufficiently great to preclude construction of new reactor units at VCS. As discussed in TSEP's Comments, the conclusion is not legally supportable because it is not supported by an EIS that analyzes the environmental impacts of spent fuel disposal and compares the cost of the entire uranium fuel cycle to the costs of producing electricity from renewable sources.

TSEP-ENV-18 -- ER LACKS BASIS FOR RELIANCE ON TABLE S-3

The ER lacks an adequate legal or factual basis to rely on Table S-3 for its assessment of the environmental impacts of the uranium fuel cycle because the assumptions on which Table S-3 is based are grossly outdated.

A brief summary of the basis for the contention

This contention is based on and incorporates by reference TSEP's comments on the revisions to the Waste Confidence Rule published by the NRC in 2008: Comments by Texans for a Sound Energy Policy et al Regarding NRC's Proposed Waste Confidence Decision Update and Proposed Rule Regarding Consideration of Environmental Impacts of Temporary Storage of Spent Fuel After Cessation of Reactor Operations (February 6, 2009) ("TSEP Comments")

(ADAMS Accession No. ML090960723). TSEP's comments include the following supporting documents: Declaration by Dr. Makhijani in Support of Comments of the Institute for Energy and Environmental Research on the U.S. Nuclear Regulatory Commission's Proposed Waste Confidence Decision Update (February 6, 2009) ("Makhijani Declaration") (ADAMS Accession No. ML 090650716) and Comments of the Institute for Energy and Environmental Research on the U.S. Nuclear Regulatory Commission's Proposed Waste Confidence Rule Update and Proposed Rule Regarding Environmental Impacts of Temporary Spent Fuel Storage (February 6, 2006) ("IEER Report") (ADAMS Accession No. NK090650718).

In the Waste Confidence Decision Update, 75 Fed. Reg. 81,037 (December 23, 2010), the Commission refused to reconsider Table S-3. 75 Fed. Reg. at 81,043 (December 23, 2010) on the ground that it is not necessary to revisit S-3 as long as the Commission continues to have a basis for confidence in the technical feasibility of a mined geologic repository. 75 Fed. Reg. at 81,043-44. As discussed above in Contention TSEP-ENV-__, TSEP believes that such confidence is unwarranted and that at the very least the NRC should prepare an EIS that addresses the considerable uncertainty which attends the Commission's conclusion.

A demonstration that the contention is within the scope of the hearing

This contention is not currently within the scope of the hearing because 10 C.F.R. § 51.51(b) permits Exelon to rely on Table S-3. Nevertheless, TSEP submits this contention because the Commission has refused to revisit Table S-3 on a generic basis in the Waste Confidence Decision Update. In order to seek an adequate environmental analysis of the environmental impacts of spent fuel disposal, TSEP is left with no other recourse but to raise the issue in the individual ESP proceeding for the Victoria site.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material to the findings NRC must make to issue an ESP for VCS because it relates to the question of whether the ER contains an adequate discussion of the environmental impacts of operating a new reactor at the VCS site or the relative costs and benefits of a new reactor in comparison to other sources of electricity.

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

TSEP's technical criticisms of Table S-3 are discussed in detail in the IEER Report at pages 30-45.

Sufficient information to show there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted.

As discussed above, TSEP has provided extensive evidence and a detailed technical discussion of the reasons that Table S-3 provides a completely inadequate basis for the ER's assessment of the health impacts of disposing of spent fuel in Section 5.7.1.

C. Miscellaneous Contention

TSEP-MISC-1 – COASTAL ZONE MANAGEMENT ACT CONSISTENCY DETERMINATION

A Statement of the Contention Itself

The Exelon application does not satisfy the requirements of the Coastal Zone Management Act ("CZMA"), 16 U.S.C. § 1456(c)(3)(A), because it does not include the required determination that the proposed activity is consistent with the Texas Coastal Management Program.

A brief summary of the basis for the contention

Exelon's Environmental Report, contained in the ESP application, fails to include a consistency determination issued by the Texas Coastal Coordination Council as mandated by the

Coastal Zone Management Act. The Environmental Report states that the site is not located within the Texas Coastal Management Zone. However, elsewhere the application states clearly that VCS impacts, such as those resulting from the withdrawal of cooling water from the Guadalupe River, do impact the Texas Coastal Management Zone, namely the San Antonio Bay and its ecosystems.

A demonstration that the contention is within the scope of the hearing

This contention raises an issue whether Exelon has complied with the NRC requirements applicable to VCS, and therefore it falls within the scope of the hearing as specified in section I of the Notice of Hearing, 75 Fed. Reg. at 71468.

A demonstration that the contention is material to the findings NRC must make to license VCS

This contention is material because it asserts that Exelon does not comply with federal statutes and regulations applicable to the NRC. The CZMA states: “After final approval by the Secretary of a state’s management program, any applicant for required Federal license or permit to conduct an activity, *in or outside of the coastal zone, affecting any land or water use or natural resource of the coastal zone of that state* shall provide in the application to the licensing or permitting agency a certification that the proposed activity complies with the enforceable policies of the state’s approved program and that such activity will be conducted in a manner consistent with the program. At the same time, the applicant shall furnish to the state or its designated agency a copy of the certification, with all necessary information and data.” 16 U.S.C. § 1456(c)(3)(A) (emphasis added). Requirements regarding consistency certifications are included in 15 C.F.R. § 930.57(a): “Following appropriate coordination and cooperation with the State agency, all applicants for required federal licenses or permits subject to State agency review *shall provide in the application* to the federal licensing or permitting agency a certification that the proposed activity complies with and will be conducted in a manner

consistent with the management program. At the same time, the applicant shall furnish to the State agency a copy of the certification and necessary data and information.” (Emphasis added). NRC regulations require that the ER must identify all permits, licenses, and other approvals that are required from federal, state and local agencies and discuss the status of compliance. 10 C.F.R. § 51.45(d).

A concise statement of the facts or expert opinions supporting the contention, along with appropriate citations to supporting scientific or factual materials

The Exelon application does not include any certification that the proposed activity complies with and will be conducted in a manner consistent with the Texas Coastal Management Program.³⁶⁹ The Exelon application does not include the necessary data and information required by 15 C.F.R. § 930.57(a). The Exelon application does not demonstrate that the activity will be consistent with the enforceable policies of the Texas Coastal Management Program required by 15 C.F.R. § 930.58(a)(3).

Sufficient information to show that there is a genuine dispute with Exelon, along with specific references to the portions of the application being controverted

Exelon states in the ESP application that the “proposed VCS site is not located in the Texas Coastal Management Zone.”³⁷⁰ Exelon states: “Compliance with the CMP is related to applicable projects in the designated coastal zone (portions of all coastal counties).”³⁷¹ In a letter to the Texas General Land Office (“GLO”), dated Dec. 21, 2009, Exelon stated “it does not appear that the issuance of an ESP meets the intent of the requirement for a CZMA/CMP consistency review.... We believe that a CMP consistency review would not be required prior to

³⁶⁹ Ex. D-2, JCHA Report, at 5-9.

³⁷⁰ ER § 2.2-2

³⁷¹ ER Table 1.2-1

NRC issuance of the ESP.”³⁷² Exelon requested that the GLO issue “a determination regarding the need for a CMP consistency review in association with the NRC’s potential issuance of an ESP for the VCS sites.”³⁷³ Exelon asked for a reply “by February 15, 2010, to allow for inclusion with Exelon’s ESP application submittal to NRC.”³⁷⁴ No such reply is found in the Exelon application.

The Exelon application fails to include a determination from the GLO that this federal action by the NRC does not require a federal consistency determination, and the Exelon application does not include a consistency determination. Therefore the Exelon application is deficient because it fails to comply with the CZMA, 16 U.S.C. § 1456(c)(3)(A), and fails to comply with the Texas Coastal Management Program. The NRC cannot issue this ESP until Exelon submits the necessary data and information, and until the NRC makes a consistency determination.

In part, Exelon’s failure to seek a consistency determination from the Texas Coastal Coordination Council may be based on the mistaken belief that the project needs to be located within the Texas coastal zone for the requirements of the CZMA to be applicable. As noted above, the CZMA requires a consistency determination if the federal agency action is located within the coastal zone or if the federal agency action would affect “any land or water use or natural resources of the coastal zone.” 16 U.S.C. § 1456(c)(3)(A).

The Texas Coastal Management Program contains substantive requirements which the NRC must assess during its consistency review. For example, Coastal Coordination Council Rule 501.16 states, “Electric generating facilities shall be constructed at sites selected to have the least

³⁷² ER Appendix A, Letter from Marilyn Kay, Exelon, to Tammy Brooks, Program Specialist, Coastal Resources, Texas General Land Office, *Exelon Victoria County Station Site - Request for Coastal Zone Management Act Consistency Review Applicability Determination* (Dec. 21, 2009).

³⁷³ *Id.*

³⁷⁴ *Id.*

adverse effects practicable on recreational uses of [Coastal natural resource areas] and on areas used for spawning, nesting, and seasonal migrations of terrestrial and aquatic fish and wildlife species.” 16 TEX. ADMIN. CODE § 501.16(a)(3). Both Exelon and NRC must comply with the CZMA and ensure that the proposed action is consistent with the policies of the Texas Coastal Management Program.

IV. CONCLUSION AND PRAYER FOR RELIEF

Based on the foregoing, the Exelon’s Early Site Permit Application should be denied. Alternatively, TSEP respectfully requests that it be granted intervention, and its contentions be admitted for a full hearing.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on this 24th day of January, 2011, copies of the foregoing TEXANS FOR A SOUND ENERGY POLICY'S PETITION TO INTERVENE AND CONTENTIONS has been served upon the following persons by Electronic Information Exchange.

s/ James B. Blackburn, Jr.

James B. Blackburn, Jr.

U.S. Nuclear Regulatory Commission
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EXHIBIT A

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

BEFORE THE SECRETARY

**DECLARATION OF RALPH R. GILSTER, III IN SUPPORT OF
TEXANS FOR A SOUND ENERGY POLICY'S
PETITION TO INTERVENE AND CONTENTIONS**

Under penalty of perjury, I, Ralph R. Gilster, III, declare as follows:

1. I and several of my business entities are members in good standing of Texans for a Sound Energy Policy ("TSEP"). My address is One O'Connor Plaza, Suite 1100, Victoria, Texas 77901-6549.
2. I am the sole owner and manager of RRG3 SM Land LLC, a Texas Limited Liability Company. RRG3 SM Land LLC is the general partner of KOC Land, LP, the owner of a tract of approximately 38,625 acres of land situated in Refugio County, Texas, and known and referred to as the "Thos. O'Connor River Ranch". I spend much of my time on this property and maintain a residence there. Portions of the Thos. O'Connor River Ranch are located within 5 miles of the site of a proposed new nuclear plant for which Exelon Nuclear Texas Holdings, LLC ("Exelon") has submitted an Early Site Permit application ("ESP") to the U.S. Nuclear Regulatory Commission ("NRC" or "Commission"). The Thos. O'Connor River Ranch is more definitively described as all of that tract of land described in a Deed dated effective December 31, 2007, and of record in Volume 210 at Page 454 of the Official Records of Refugio County, Texas. The address is 180 N. Alameda Road, Refugio, TX 78377. This is within 25 miles of Exelon's proposed plant.

The ranch is a source of income for my family and me. Through my business operations on this ranch, we have several employees who both live and work on this land that is adjacent to the proposed nuclear plant. The business address for the ranch is One O'Connor Plaza, Suite 1100, Victoria, Texas 77901-6549.

3. I am concerned that if the NRC grants Exelon's ESP, the construction and operation of the proposed nuclear power plant could adversely affect my health and safety, the integrity of the environment of this land that I deeply care for, and the ability of my family and me to continue to use and enjoy this property. I am particularly concerned about the risk of accidental releases of radioactive material to the environment, and the potential harm to groundwater supplies and local surface waters as well as more general interference with our business operations.
4. My family and I also spend time at a residence located in Port Aransas, Texas. This residence is located at 1018 Private Road D, Port Aransas, TX 78373. Due to the location of this residence, I am concerned about downstream impacts of Exelon's proposed nuclear plant.
5. In order to ensure that the licensing decision for the proposed Victoria nuclear power plant protects my interests in a safe and healthy environment, I have authorized TSEP to represent me in any licensing proceeding and/or related rulemaking proceeding that

concerns the safety and environmental impacts of the proposed nuclear power plant in Victoria. I have also authorized TSEP to take any legal actions that are necessary to ensure that the licensing proceeding and the rulemaking proceeding are conducted fairly, efficiently, and in a manner that provides for the full consideration of all licensing issues that could affect my safety and the health of my environment.

I declare under penalty of perjury that the foregoing facts are true and correct and that any expressions of opinion are based on my best judgment.



RALPH R. GILSTER, III

01/19/11

Date

EXHIBIT B

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

BEFORE THE SECRETARY

**DECLARATION OF MICHAEL S. ANDERSON IN SUPPORT OF
TEXANS FOR A SOUND ENERGY POLICY'S
PETITION TO INTERVENE AND CONTENTIONS**

Under penalty of perjury, I, Michael S. Anderson, declare as follows:

1. I and several of my family's business operations are members in good standing of Texans for a Sound Energy Policy ("TSEP"). My mailing address is P.O. Box 2549, Victoria, TX 77902.
2. I am president of the general partner of Martin O'Connor Ranch, LTD that owns a relatively large parcel of ranchland adjacent to the site of a proposed new nuclear plant for which Exelon Nuclear Texas Holdings, LLC ("Exelon") has submitted an Early Site Permit application ("ESP") to the U.S. Nuclear Regulatory Commission ("NRC" or "Commission"). I spend much of my time on this property and our family maintains several residences there. The address of the ranch and residences is 770 Roger Williams Rd., Tivoli, Texas, 77990. The ranch is a source of income for my family and me. Through our business operations on this ranch, we have twenty ranch employees some of which live on this land that is proximate to the proposed nuclear plant. The business address for the ranch is 101 South Main, Suite 300, Victoria, Texas 77901.
3. I am concerned that if the NRC grants Exelon's ESP, the construction and operation of the proposed nuclear power plant could adversely affect my health and safety, the integrity of the environment of this land that I deeply care for, and the ability of my family and me to continue to use and enjoy this property. I am particularly concerned about the risk of accidental releases of radioactive material to the environment, and the potential harm to groundwater supplies and local surface waters as well as more general interference with our business operations.
4. My family and I also spend time at a residence located in Rockport, Texas. This residence is located within 50 miles of Exelon's proposed nuclear plant. Additionally, due to the location of this residence, I am concerned about downstream impacts of Exelon's proposed nuclear plant.
5. In order to ensure that the licensing decision for the proposed Victoria nuclear power plant protects my interests in a safe and healthful environment, I have authorized TSEP to represent me in any licensing proceeding and/or related rulemaking proceeding that concerns the safety and environmental impacts of the proposed nuclear power plant in Victoria. I have also authorized TSEP to take any legal actions that are necessary to ensure that the licensing proceeding and the rulemaking proceeding are conducted fairly, efficiently, and in a manner that provides for the full consideration of all licensing issues that could affect my safety and the health of my environment.

I declare under penalty of perjury that the foregoing facts are true and correct and that any expressions of opinion are based on my best judgment.



Michael S. Anderson

1-19-11

Date

EXHIBIT C

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**


BEFORE THE SECRETARY

**DECLARATION OF JOE B. BLAND IN SUPPORT OF
TEXANS FOR A SOUND ENERGY POLICY'S
PETITION TO INTERVENE AND CONTENTIONS**

Under penalty of perjury, I, Joe B. Bland, declare as follows:

1. I am a member in good standing of Texans for a Sound Energy Policy ("TSEP").
2. I live and work in Victoria, Texas. My residential address is 203 Westbrook Dr., Victoria, TX 77904. My home is adjacent to (within 20 miles of) the site of a proposed new nuclear plant for which Exelon Nuclear Texas Holdings, LLC ("Exelon") has submitted an Early Site Permit application ("ESP") to the U.S. Nuclear Regulatory Commission ("NRC" or "Commission").
3. I am concerned that if the NRC grants Exelon's ESP, the construction and operation of the proposed nuclear power plant could adversely affect my health and safety, the integrity of the environment of this land that I deeply care for, and my ability to continue to use and enjoy this property. I am particularly concerned about the risk of accidental releases of radioactive material to the environment, and the potential harm to groundwater supplies and local surface waters as well as more general interference with my livelihood.
4. In order to ensure that the licensing decision for the proposed Victoria nuclear power plant protects my interests in a safe and healthy environment, I have authorized TSEP to represent me in any licensing proceeding and/or related rulemaking proceeding that concerns the safety and environmental impacts of the proposed nuclear power plant in Victoria. I have also authorized TSEP to take any legal actions that are necessary to ensure that the licensing proceeding and the rulemaking proceeding are conducted fairly, efficiently, and in a manner that provides for the full consideration of all licensing issues that could affect my safety and the health of my environment.

I declare under penalty of perjury that the foregoing facts are true and correct and that any expressions of opinion are based on my best judgment.



JOE B. BLAND
01/19/11

Date