



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

March 4, 2019

Mr. Daniel G. Stoddard  
Senior Vice President and  
Chief Nuclear Officer  
Innsbrook Technical Center  
5000 Dominion Blvd  
Glen Allen, VA 23060-6711

SUBJECT: LICENSE RENEWAL ENVIRONMENTAL SITE AUDIT PLAN REGARDING THE  
SURRY POWER STATION, UNITS 1 AND 2, SUBSEQUENT LICENSE  
RENEWAL APPLICATION (EPID NO. L-2018-RNW-0024)

Dear Mr. Stoddard:

The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing the Dominion Energy Virginia Company's subsequent license renewal application for Surry Power Station, Units 1 and 2 (Surry). The environmental site audit will be conducted at Surry during the week of March 11, 2019, by NRC staff. The environmental audit activities will be conducted in accordance with the environmental audit plan (Enclosure 1).

To develop the Supplemental Environmental Impact Statement, the NRC staff requests the information described in the environmental audit needs list (Enclosure 2) be made available on the Surry online reference portal (ML18319A252), to the extent possible, prior to the environmental site audit. A draft schedule of tours and meetings for the audit is also provided (Enclosure 3).

The NRC staff transmitted the draft environmental needs to Tony Banks of your staff by e-mail on February 22, 2019.

If you have any questions, please contact me by e-mail at [Tam.Tran@nrc.gov](mailto:Tam.Tran@nrc.gov).

Sincerely,

*/RA/*

Tam Tran, Project Manager  
License Renewal Projects Branch  
Division of Materials and License Renewal  
Office of Nuclear Reactor Regulation

Docket Nos. 50-280 and 50-281

Enclosures:  
As stated

cc w/encls: Listserv

SUBJECT: LICENSE RENEWAL ENVIRONMENTAL SITE AUDIT PLAN REGARDING THE SURRY POWER STATION, UNITS 1 AND 2, SUBSEQUENT LICENSE RENEWAL APPLICATION (EPID NO. L-2018-RNW-0024) DATED March 4 2019.

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**ADAMS Accession No.:ML19044A556**

**\*concurrence via email**

OFFICE	PM:MRPB:DMLR	LA:MRPB:DMLR	BC:MENB:DMLR	BC:MRPB:DMLR
NAME	TTran	YEdmonds	BBeasley	EOesterle
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## **LICENSE RENEWAL ENVIRONMENTAL AUDIT PLAN SURRY POWER STATION, UNITS 1 AND 2**

### **1. Background**

By letter dated October 15, 2018 (Agencywide Documents Access and Management Systems (ADAMS) Package Accession No. ML18291A842), Dominion Energy Virginia (Dominion Energy or the applicant), submitted to the U.S. Nuclear Regulatory Commission (NRC or staff) an application to renew the Surry Power Station, Units 1 and 2 (Surry), renewed facility operating licenses DPR-32 and DPR-37. The staff is reviewing the information contained in the environmental report (ER) of the license renewal application (LRA) per Title 10 of the *Code of Federal Regulations* Part 51 (10 CFR Part 51).

During the staff's review, an environmental audit is conducted at the Surry site. This audit is conducted to improve understanding, to verify information, and to identify information that will require docketing to support the preparation of an environmental impact statement. Specifically, the NRC staff will identify pertinent environmental data, review the facility and area, and obtain clarifications regarding information provided in the ER.

### **2. Environmental Audit Bases**

License renewal requirements are specified in 10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants." Licensees are required by 10 CFR 54.23 to submit an ER that complies with the requirements in 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," as part of the LRA. Review guidance for the staff is provided in NUREG-1555, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Supplement 1 – Operating License Renewal."

The NRC staff is required to prepare a site-specific supplement to NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants." During the scoping process required in 10 CFR Part 51, NRC staff is required to define the proposed action, identify significant issues which must be studied in depth, and to identify those issues that can be eliminated from further study.

### **3. Environmental Audit Scope**

The scope of this environmental audit for the Surry subsequent license renewal review is to identify those issues which are new and significant and those issues which can be eliminated from further study and to identify the environmental resources that must be adequately described and evaluated in the site-specific Supplemental Environmental Impact Statement. Audit team members will focus on reviewing the documents and requested information listed in the Surry Environmental Audit Needs List (Enclosure 2) and discussing the information with the applicant's subject matter experts.

### **4. Information and Other Material Necessary for the Environmental Audit**

As described in the Site Audit Needs List (Enclosure 2).

## 5. Environmental Audit Team Members and Resource Assignments

The environmental audit team members and their specific discipline assignments are shown in the table below.

<b>Discipline</b>	<b>Team Members</b>
Environmental Review Supervisor	Benjamin Beasley, NRC
Environmental Project Manager	Tam Tran, NRC
Air Quality/Meteorology and Alternatives	Robert Hoffman, NRC
Terrestrial Ecology	Peyton Doub, NRC
Geologic Environment and Groundwater	William Ford, NRC
Land Use and Visual, Noise, and Cumulative Impacts	Kevin Folk, NRC
Human Health, Postulated Accidents, and Spent Nuclear Fuel	William Rautzen, NRC
Waste Management and Uranium Fuel Cycle	Phyllis Clark, NRC
Surface Water	Nancy Martinez, NRC
Aquatic Ecology and Special Status Species and Habitats	Briana Grange, NRC

## 6. Logistics

The environmental audit will be conducted at Surry from March 12-14, 2019. An entrance meeting will be held with plant management at the beginning of the audit. An exit meeting will be held at the end of this audit.

## 7. Special Requests

The staff requests that the applicant make available on the Surry online reference portal, the information identified on the Environmental Audit Needs List (Enclosure 2). Plant staff who are subject matter experts in the disciplines listed on the Environmental Site Audit Needs List should be available for interviews and to provide tours. As a part of the NRC international cooperation program, the staff is accompanied by two members of the Mexican nuclear regulatory body: Mr. Leticia Cruz and Mr. Jesus Martinez.

## 8. Deliverables

An audit summary report is scheduled to be issued by NRC staff within 90 days from the end of the environmental audit.

**SURRY POWER STATION, UNITS 1 AND 2  
LICENSE RENEWAL ENVIRONMENTAL SITE AUDIT NEEDS LIST**

Please be prepared to discuss the following issues and make the following available during the environmental site audit.

**Tours**

Please provide subject matter experts to lead the following tours:

Title or Number	Features Observed	Essential Participants	Optional Participants
1. General site tour	<ul style="list-style-type: none"> <li>a. Exterior grounds</li> <li>b. Met tower</li> <li>c. Transmission lines</li> <li>d. DMMA</li> <li>e. Future DMMA</li> <li>f. Historic and cultural sites</li> <li>g. possible alternative power generation locations</li> <li>h. ISFSI</li> </ul>	All	
2. Plant intake and discharge tour	<ul style="list-style-type: none"> <li>a. low-level intake structure</li> <li>b. high-level intake canal</li> <li>c. high-level intake structure</li> <li>d. trash racks, traveling screens with low-pressure spray wash, and fish return sluice</li> <li>e. discharge canal and discharge weirs</li> <li>f. VPDES outfalls</li> </ul>	Nancy Martinez Bill Ford Briana Grange Peyton Doub	Ben Beasley Caroline Hsu
3. Ecology tour	<ul style="list-style-type: none"> <li>a. representative forested and undeveloped areas on the site and adjacent to the site</li> <li>b. James River and surrounding riparian habitat</li> <li>c. Hog Island Wildlife Management Area</li> <li>d. freshwater ponds and lakes</li> <li>e. onsite drainage that hydrologically connects the site to the Hog Island WMA</li> </ul>	Briana Grange Peyton Doub Kevin Folk Nancy Martinez Caroline Hsu	Ben Beasley
4. Radwaste tour	<ul style="list-style-type: none"> <li>a. Liquid radwaste system</li> <li>b. Gaseous radwaste system</li> <li>c. Low level waste storage and processing, including mixed waste</li> </ul>	Phyllis Clark Bill Rautzen Leticia Cruz Jesus Martinez	
5. REMP tour	A small sample of monitoring stations (e.g., air monitoring stations, thermoluminescent dosimetry stations, drinking water, silt, shoreline sediment, aquatic biota, food products, and vegetation, including monitoring stations co-located with State monitoring locations	Phyllis Clark Bill Rautzen Leticia Cruz Jesus Martinez	Caroline Hsu

6. Groundwater tour	Wells Piez-05, 06, 07, 29, 42, 43, 44, 45, 47, 49, and 51 Water supply well 190-00028(CS) USGS wells 57F 16 and 57F 24	Bill Ford Bill Rautzen	Tam Tran
7. Plant tour	Major air emission sources	Bob Hoffman	

### **Audit Meetings**

Please provide for breakout meetings with the subject matter expert(s) and/or the contractor(s) responsible for the following topics who can also discuss the corresponding information requests as described in the Questions and Documents Needs section below. These meetings will be used as needed to resolve or clarify any outstanding data needs or questions arising from the environmental audit.

- Aquatic Resources
- Replacement Power Alternatives
- Air quality, particularly air permits and emission inventories associated with facility operations, and stationary and mobile sources of air pollutants.
- Groundwater Hydrology, quality, and impact assessment portions of the ER and the plant's groundwater protection program and affected groundwater resources. Please also discuss the location(s) of any ground water seeps, yard drain sumps, or their sampling locations that are not reasonably accessible for a walk down.
- Radiological Environmental Monitoring Program (REMP), liquid (radiological and non-radiological) and gaseous effluent release programs, and waste management (radiological and non-radiological) programs
- Historical and Cultural Resources
- Socioeconomics
- Special Status Species and Habitats
- Terrestrial Resources
- Status of Federal CZMA consistency certification (can be combined with ecology meetings) [meeting is a placeholder dependent on adequacy of data need responses.]

### **Questions and Document Needs**

Specific questions, requests, and document needs are provided below by resource area.

#### **Alternatives**

ALT-1 Identify the available location(s) on or near the Surry site that would be suitable for siting replacement power generation.

ALT-2 ER Section E7.2.1.1 identifies that the proposed NGCC replacement power plant would be designed to generate approximately 1,743 MWe with an 87% capacity factor to replace Surry's 1,676 MWe. However, ER Section E7.2.3.1 identifies that the same

facility would be designed to generate approximately 1,710 MWe, and ER Table E8.0-2 identifies that the facility would be designed to generate a total of 1,926 MWe. Please explain (reconcile) these differences.

ALT-3 Land requirements for a replacement NGCC plant are stated to be 66 acres in ER Sections E7.2.3.1.1 and E7.2.3.3, but 83 acres in ER Table E8.0-2. Explain (reconcile) these differences.

ALT-4 Please clarify how the design capacity and assumed capacity factor of each component of Dominion's proposed combination alternative contribute to replacing the 1,676 MWe generated by Surry. Confirm whether the 1,676 MWe is a gross or net value, and what, if any, capacity factor has been applied.

### **Aquatic Resources**

- A-1 Since the issuance of the NRC renewed operating licenses in 2003, has Dominion undertaken any changes to Surry's cooling water intake system that would affect how fish and other aquatic organisms interact with the system?
- A-2 The ER (p. E-3-130) states that the Surry cooling system includes a low-pressure spray wash and return sluice through which impinged fish are returned to the river. Does Dominion perform any regular or periodic monitoring of biota in the return sluice, such as recording the numbers, total weight, condition, or species present in the sluice?
- A-3 The ER (Section E3.7.1.3) summarizes information on James River benthic macroinvertebrates surveys conducted in the 1970s and incidental benthic macroinvertebrate information from ichthyoplankton trawl surveys performed by the Virginia Institute of Marine Science from 1996 through 2000. Is Dominion aware of any more recent surveys of the benthic community in the vicinity of Surry?
- A-4 The ER (p. E-4-33) states that the Virginia Department of Environmental Quality will use data from Dominion's recent impingement and entrainment studies to determine if current operational methods are sufficient to meet the requirements of the final Clean Water Act §316(b) rule. What is the timeline for such a determination and what additional data does Dominion plan to gather and/or submit to the State to support such a determination?
- A-5 In the ER (Section E4.6.2), the analysis of thermal impacts on aquatic organisms largely relies upon thermal studies conducted in the 1970s. Explain how the results of these studies apply to current thermal conditions in light of the additional thermal load being discharged to the James River as a result of the 2010 measurement uncertainty recapture uprate.
- A-6 Dominion's January 29, 2019, Supplement to the ER, Enclosure 1, Attachment 1 (p. 16-17) states that Dominion is in the initial stages of conducting updated Clean Water Act §316(a) thermal studies. When does Dominion anticipate completing data collection for these studies, and when will Dominion issue the associated study reports?
- A-7 In Dominion's annual radioactive effluent release reports, Dominion states that fish and invertebrate samples are of those "[c]ommercially or recreational important species permitted for sampling by the Virginia Marine Resources" (for instance, see Note 3 on

page 62 of the 2017 report (ML18128A193)). What species are permitted for sampling by the Virginia Marine Resources Commission? What species does Dominion typically collect during such sampling?

- A-8 In a January 16, 2019, letter from the Virginia Department of Conservation and Recreation to the NRC (ADAMS Accession No. ML19017A013), the Department states that the Ohio River shrimp (*Macrobrachium ohione*), a Virginia Wildlife Action Plan Tier IV ("Moderate Conservation Need") species, has been documented near the site. Is Dominion aware of the occurrence of this species near the site? Was this species collected during the most recent impingement, entrainment, or ambient river sampling in 2015-2017?
- A-9 The ER (Section E3.7.5.1 and E3.7.5.2) identifies several species of invasive aquatic plants and animals. Do these species occur on the Surry site? If so, does Dominion perform any specific environmental management or maintenance activities related to these species?
- A-10 Is Dominion aware of any fish kills in the James River in the vicinity of Surry in the past 10 years? Please include both fish kills either related or unrelated to plant operations.

#### *Document Needs*

1. CH2MHill. 2006. Draft Comprehensive Demonstration Study. Surry Power Station. Revision 1. November 17, 2006.
2. Dominion. 2009a. Guidance Document: Migratory Birds. September 17, 2009.
3. Dominion. 2013c. Flora and Fauna Habitat Management on Transmission and Distribution Rights-of-Way in Virginia. Guidance Document. August 26, 2013.
4. Dominion. 2014d. Environmental Policy Statement, Dominion Policies and Procedures. June 2014.
5. EA Engineering, Science, and Technology, Inc. 2006. Entrainment Characterization Report; Surry Power Station, June 2005–May 2006. Draft Report. September 2006. (NOTE: If the final version of this report is available, please provide the final rather than the draft report.)
6. Dominion 2016l. Guidance Document: Invasive Species Management. October 3, 2016.
7. HDR. 2016a. Draft Entrainment Characterization Study Plan. Prepared for Dominion Services. Inc. May 29, 2016.
8. HDR. 2016b. Draft Impingement Characterization Study Plan. Prepared for Dominion Services. Inc. May 29, 2016.
9. HDR. 2017. 2015-2016 Impingement Characterization Study Report, Draft Final. Surry Power Station, VPDES Permit VA0004090. April 3, 2017.
10. Olney J. 2001. Table 1. Pooled catch data (1996 - 2000) by the VIMS trawl survey in the James River near Surry Nuclear Power Plant. Virginia Institute of Marine Sciences, provided by electronic mail to Tony Banks, Dominion. April 3, 2001.
11. SPS. 2008. Modification of Virginia Pollutant Discharge Elimination System (VPDES) Permit Number VA0004090. Surry Power Station. January 7, 2008.



12. USACE. 2016. Surry Power Station Dredge Permit. Number NAO-2008-1451/VMRC#16-V0710. June 20, 2016.
13. USFWS. 2015c. Email correspondence from S. Hoskin, USFWS, to M. Overton, Dominion Energy. December 9, 2015.
14. VDEQ. 2016b. Correspondence from Pamela F. Faggert, Dominion, Dominion-Surry Power Station and Gravel Neck VPDES Permit No. VA000-4090 Response to Oct. 4, 2016 Warning Letter. October 20, 2016.
15. VDEQ. n.d. VPDES Permit Fact Sheet. VA0004090. Surry Power Station & Gravel Neck. No date.
16. VEPCo. 1977. Section 316(a) Demonstration (Type L); Surry Power Station – Units 1 and 2. Submitted to the Virginia State Water Control Board. Richmond, Virginia
17. The ER reference “HDR. 2017” is a draft final impingement characterization study report. Has HDR Engineering finalized this report? If so, please provide a copy of the final report. If not, when will the final report be available?
18. The ER (p. E-3-138) states that HDR Engineering, Inc. collected entrainment samples at Surry from August 1, 2015 through July 13, 2017. Has HDR Engineering completed an entrainment characterization study report associated with this sampling? If so, please provide a copy of this report. If not, when will such a report be available?
19. Dominion’s January 29, 2019, supplement to the ER, Enclosure 1, Attachment 1 (p. 20 and 21) references “IR-HDR 2018.” However, the full citation for this reference is not included in the reference list. Please provide the full citation for this reference as well as a copy for NRC staff review.

### **Cumulative Impacts**

- CI-1 Section E4.12 of the ER contains Dominion’s analysis of cumulative impacts. If Dominion has identified any additional past, present, or reasonably foreseeable projects or actions since the ER was prepared, provide the name, description, location, and status of any such projects.
- CI-2 As referenced in the ER (e.g., Sections E2.2.7.2, E3.6.2.5, E3.7.2.6, and E4.1.2.4), Dominion is developing an offsite dredge material management area (DMMA) as a replacement for Surry’s current onsite facility, once the existing facility reaches capacity. Provide the following information regarding this project:
- a. The projected remaining capacity and/or lifespan of the existing dredge material pond,
  - b. A brief summary description of general design and operational features of the new offsite DMMA, dimensions of completed facility, and disposal capacity. Include specifics on surface water and groundwater interactions.
  - c. The status of construction and permitting and when the new DMMA is expected to be available to receive dredged materials,
  - d. Area to be disturbed during construction of the DMMA, the quality of the soils that will be disturbed and stock piled, and acreage of habitat types affected,

- e. A listing and brief summary of any resource studies that have been performed of the DMMA site, and
  - f. A listing and brief summary of the permits required for construction and operation of the DMMA and their receipt status; include copies of all permits received to date.
- CI-3 Section E2.2.6 of the ER references Dominion's plans to develop a fifth spent fuel storage pad. Provide an update, if any is available, of Dominion's plans for the pad including dimensions and the schedule for siting and constructing the facility. If a site has been selected, identify the location.
- CI-4 Section E2.3 of the ER states in part that Dominion does not anticipate that continued operations of SPS would adversely affect the environment and further does not anticipate the need for any refurbishment for purposes of subsequent license renewal. Provide a brief description of any anticipated operation and maintenance activities with the potential to result in new ground disturbance during the second license renewal term, including any plans to demolish existing buildings or related facilities or plans to construct new facilities.

### **Hydrology and Water Quality – Groundwater**

- GW-1 Information on Radiological water quality data from the onsite water supply wells (i.e. is tritium also found in the water from these wells?): Well 190-00028(CS), Well 190-00052(C), Well 190-00051 (B), Well ER DEQ 190-137, Well JR DEQ 190-138, Well 190-00106 (H), Well 190-00050(A).
- GW-2 What is the quality of the groundwater in the sands where radionuclides have been detected? Is it fresh or brackish? Is it generally the same as James River water quality?
- GW-3 Why are the sands containing radionuclides considered to be under water table and not artesian conditions?
- GW-4 What is the lateral and vertical extent of radionuclides (i.e. tritium) within the groundwater?
- GW-5 In what directions do the radionuclides in the groundwater appear to be moving both vertically and horizontally?
- GW-6 How does the elevation of water in the discharge canal effect the movement of radionuclides that have been detected within the groundwater?
- GW-7 How do the tides in the James River impact the movement of radionuclides that have been detected within the groundwater?
- GW-8 What is the potential for radionuclides to move down to the Potomac aquifer? What evidence supports the conclusion?
- GW-9 Could radionuclides reach the water supply wells either from poor well completion, compromised casing or stratigraphic interconnection? What evidence supports the conclusion?

GW-10 What is the perceived source of the radionuclides detected in the groundwater? If the source is not known, what is being done to locate the source?

GW-11 Are there any plans to restore the groundwater?

GW-12 The Environmental reports says that subsurface drain pumps prevent the infiltration of groundwater into subsurface structures and capture tritium. What levels of tritium in drain pumps are being detected and where is the water containing tritium being captured?

GW-13 What is the average depth to the bottom of the intake and discharge canals? Are the canals unlined and if they are lined what are they lined with?

#### *Document Needs*

1. A map showing the locations of the following water supply wells with respect to surface structures (i.e. the map in the environmental report is too large in scale to determine where the wells are located): Well 190-00028(CS), Well 190-00052(C), Well 190-00051 (B), Well ER DEQ 190-137, Well JR DEQ 190-138, Well 190-00106 (H), Well 190-00050(A)
2. Initial and periodic updates to Groundwater Protection Initiative reports (these are reports that describe the groundwater system and the groundwater protection initiative monitoring program).
3. A well log from an onsite well that is representative of the stratigraphy from the surface down to the top of the Potomac aquifer.

#### **Hydrology and Water Quality – Surface Water**

SW-1 The ER identifies that Dominion has been notified by VDEQ that it will require a separate 401 certification for this renewal and that Dominion is coordinating with VDEQ on that process. Relevant to 10 CFR 51.45(d) and as further specified under the Clean Water Act, Section 401, the NRC cannot issue a renewed operating license unless the applicant provides the NRC with a water quality certification from the State or other appropriate documentation.

Provide copies of letters and other communication documents to and from VDEQ pertaining to 401 certification (What is the status of SPS's 401 certification?)

SW-2 Table E9.1-1 of the ER identifies that USACE Regional Permit (13-RP-02) expired 08/14/2018 and that the reissuance application is in progress. Regional Permit (18-RP-02) was re-issued on September 5, 2018 and expires on September 5, 2023. Has Dominion received a permit verification to continue performing dredging within the existing intake channel under Regional Permit 18-RP-02? If so, provide a copy for review.

SW-3 Section E3.7.3 of the ER identifies that the "maximum James River flow at the site is approximately 420,000 cfs, with a monthly mean range of 857-39,778 cfs." The Clean Water Act 316(b) demonstration for SPS (VEPCO 1980; ADAMS No. ML020230042) provides these values as well and identifies that the data is from 1934 through 1965:

“Based upon data from 1934 through 1965 the minimum monthly mean discharge flow at Hog Point was 857 cfs and the maximum monthly mean discharge was 39,778 cfs (PritchardCarpenter, Consultants, 1966). The maximum flood of record in the James River caused by the downgraded remnants of Tropical Storm Agnes, occurred in June, 1972 and resulted in a flow of approximately 420,000 cfs.” Does Dominion have recent (within the last 5 years) mean monthly discharge range data of the James River near the SPS site? If so, please provide the information.

- SW-4 Section E3.6.3.1 of the ER states that “SPS uses approximately 1,942 MGD of water from the James River for once-through cooling and the auxiliary cooling system.” How was the 1,942 MGD estimated? Identify if this is an average value and the period of record used to calculate this estimate.
- SW-5 Section E3.6.3.1 of the ER states: “After passing through the condensers and the service water system, most of the water is returned to the James River. Less than 22,000 gpm is lost to evaporation, approximately 1% of the initial intake. (VDEQ. 2013a)” According to the ER Reference list, VDEQ. 2013a is Surry’s Groundwater Withdrawal Permit (VDEQ. 2013a. Groundwater Withdrawal Permit, Surry Nuclear Power Station, Surry Co. DEQ Permit #GW0003901. October 18, 2013.). Discuss how 22,000 gpm (approximately 1% of the initial intake) was estimated and provide for review the correct reference that supports this value.
- SW-6 Section E3.6.3.1 of the ER states that in 2017, surface water withdrawal by SPS was reported as 735,023.75 MG. However, Table E3.6-6 identifies that surface water withdrawal for 2017 was 735,282.04. Please identify the most appropriate number to use in the NRC’s independent evaluation.
- SW-7 Section 9.5.3.9 of the ER identifies that Dominion performs maintenance dredging operation of the intake channel under a USACE Regional Permit and that “[no] other current operations at SPS require a Section 404 permit.” However, Table E9.1-1 of the ER identifies that in addition to periodic maintenance dredging of the intake channel in the James River, Dominion conducts debris removal of the low-level intake structure under USACE Nationwide Permit (2012-NWP #3/NAO-2018-00103/VMRC# 18-0069). Please explain:
- (a) Where is the debris stored, placed, or disposed of?
  - (b) What is the frequency of debris removal and quantity (volume) removed? Is this frequency and quantity of debris removal anticipated to remain the same during the proposed license renewal period?
- As a part of the explanation, provide a copy of USACE’s verification to Dominion regarding use of this nationwide permit for removal of debris on the existing intake structure.
- SW-8 Section 9.2 of the ER discusses the status of compliance with various authorizations and Section E3.6.1.2.5 of the ER discusses the compliance history over a six year period (2012-2017) related to SPS wastewater discharges. As a part of the discussion:
- (a) Provide copy of the warning letter from the VDEQ (dated October 4, 2016) Dominion received regarding elevated bi-monthly BOD results from Outfall 101.

- (b) Provide a copy of the January 2017 non-compliance report provided to VDEQ related to Enterococci bacteria exceedance referenced in Section E3.6.1.2.5. Did VDEQ respond to SPS's noncompliance report? If so, provide copies of relevant correspondence.
- (c) Identify and describe any SPS VPDES discharge exceedances, as well as any spills, leaks, and other inadvertent releases (e.g., petroleum products, chemicals) since 2017.
- (d) Identify and describe any Notices of Violation (NOVs); nonconformance notifications; or infractions received from regulatory agencies associated with VPDES permitted discharges, received since 2017. Include self-reported violations. Provide copies of relevant correspondence to and from the responsible regulatory agencies.

SW-9 Section E2.2.3.2 of the ER discusses thermal effluent dispersion for the discharge canal. The ER states: "During a period of high ambient water temperatures (August 6 to September 10, 1975) when SPS was running at 90% or greater capacity, discharge temperatures ranged from 92.8°F to 99.9°F. These temperatures are believed to be typical of those observed in the discharge canal in late summer when both SPS units are operating at or near full power (Reference: SPS. 2001, Section 3.1.2.1). There are no changes since the 2010 uprate. Temperatures immediately outside the discharge canal in the James River are lower, with the effluent losing 1-2°F with every 1,000 feet from the mouth of the discharge canal (Reference: SPS. 2001, Section 3.1.2.1)." Provide a basis for concluding:

- (a) The 1975 high ambient water temperatures recorded are representative of the discharge canal in late summer.

There have been no changes in discharge temperatures (both in the canal and James River) as a result of the additional thermal loading from the approved 2010 measurement uncertainty recapture power uprate.

SW-10 In a Clean Water Act 316(b) demonstration for SPS, the maximum temperature rise of water across the condensers was reported to be 7.8 °C (VEPCO 1980; ML020230042). What is the temperature rise of water across the condensers under current operating conditions (taking into account the 2010 measurement uncertainty recapture power uprate and any other operational changes that could affect heat discharged to cooling water)?

SW-11 Section E4.11.5.4 of the ER states that "GNCTS shares air, wastewater, and groundwater withdrawal permits with SPS Units 1 and 2." Section E3.6.1.2.1 of the ER states "potentially oil-contaminated stormwater runoff from GNCTS is pumped into the SPS settling basin," which is permitted to discharge to the James River via Outfall 001. Clarify if VPDES permit VA0004090 is a SPS and GNCTS shared permit and identify all outfalls and sources that receive discharges as a result of GNCTS operation.

SW-12 The initial license renewal ER (submitted to the NRC in 2001) identifies that typical salinities in the area of the SPS intakes are up to 17.0 parts per thousand, while those in the area of the SPS discharge canal are typically lower at 0.0 to 9.2 parts per thousand. Is the location of these salinity measurements in the river or in the canal? Have there

been changes in salinities in the James River in the area of the SPS's intake and discharge canal since 2001? (As a part of the explanation, provide salinities in the area of the intake and discharge canal under current operating conditions).

SW-13 Section E2.2.3 of the ER states "Cooling water is withdrawn from the James River through a channel dredged in the riverbed between the main river channel and the eastern shore of Gravel Neck Peninsula, a distance of approximately 5,700 feet. Dominion has typically dredged this channel every 3-4 years to maintain a depth of approximately 13 feet (Section E2.2.7.2)." Section E3.6.1.2.4 of the ER states "Dominion regularly performs maintenance dredging of the intake channel. Dredging occurs as needed and is permitted under a USACE 13-RP-02 Regional Permit 2 authorizing the dredging of a 2,000-foot long by 150-foot wide channel." Section E2.2.7.2 further states: "Dominion has dredged approximately 150,000 cubic yards from this channel every 3-4 years. During maintenance dredging within the existing intake channel on the James River (October 2016-January 2017), approximately 41,544 cubic yards were hydraulically dredged to a depth of 12 feet mean lower low water within a 2,000-foot long by 150-foot wide channel." Please provide explanation:

- (a) Regarding the 5,700 ft distance discussed in Section E2.2.3 of the ER, clarify what this distance is referring to.
- (b) Identify and clarify the portion of the intake channel that Dominion conducts maintenance dredging and the elevation that is maintained. During the requested meeting (break-out session) on surface water resources, please be prepared to identify in Figure E2.2-3 of the ER the location of maintenance dredging.

Clarify if 150,000 cubic yards is the permitted limit and provide the range of typical dredged volumes.

SW-14 Section E2.2.3.5 of the ER identifies that water for firefighting is obtained from 2 300,000-gallon water storage tanks that "are supplied from two wells (SPS. 2016a, Section 9.10.2.2.1)." However, Section E3.6.3.2 of the ER states that there are 3 wells that discharge into a common header that provides water to the two 300,000 gallon fire protection tanks: "Wells B, C, and ER discharge into a common header that provides water to the two 300,000-gallon fire protection tanks (Well E was abandoned and replaced with Well ER in 2015)." Clarify the apparent discrepancy regarding the number of wells that supply the 300,000 gallon water storage tanks

SW-15 Section E2.2.7.2 of the ER identifies that Dominion is developing an offsite dredge material management area that "is planned to be utilized once the onsite dredge material management pond reaches capacity." Additionally, the ER states that the pond is currently undergoing "permitting and evaluation processes, and construction has not yet been completed. (Dominion. 2016c) The offsite DMMA is being developed to support current station operations and is not in scope for SLR." Given that the current onsite dredge material management pond is reaching capacity and that the offsite DMMA is being developed to support current station operations, what will be utilized to support dredging activities during the SLR period?

SW-16 Section E2.2.3.2 of ER states that "[a]t full power, SPS discharges  $11.9 \times 10^9$  British thermal units (Btu) per hour into the James River estuary..." The initial license renewal of the ER (submitted to the NRC in 2001) similarly states that at "full-power operation,

SPS discharges  $11.9 \times 10^9$  British thermal units (Btu)/hr into the James River...” In 2010, however, both units were uprated. Provide the current full power heat rejection to the James River after the increase in power from the approved 2010 measurement uncertainty recapture power uprate.

#### *Document Needs*

1. VDEQ. 2016b. Correspondence from Pamela F. Faggert, Dominion, Dominion-Surry Power Station and Gravel Neck VPDES Permit No. VA000-4090 Response to Oct. 4, 2016 Warning Letter. October 20, 2016.
2. USACE. 2013. CENAO-REG 13-RP-02 Regional Permit. Effective Date: August 14, 2013. Expiration Date: August 14, 2018
3. USACE. 2016. Surry Power Station Dredge Permit. Number NAO-2008-1451/VMRC#16-V0710. June 20, 2016.
4. USACE (U.S. Army Corps of Engineers). 2013. Permit, 2012-NWP #3 NAO-2008-01451/05-V2428, for removal of debris on the existing intake structure.
5. VDEQ. n.d.VPDES Permit Fact Sheet. VA0004090. Surry Power Station & Gravel Neck. No date.
6. Provide copies of VPDES Discharge Monitoring Reports for the last 3 years.
7. Provide a copy of SPS’s Stormwater Pollution Prevention Plan.

#### **Land Use**

- LU-1 Section E2.2.6 of the ER states that Dominion is currently developing a fourth ISFSI pad within the existing ISFSI area and which is scheduled to be completed by the end of 2020. Provide a brief summary description of the project including general design of the pad, area disturbed, footprint of the completed facility, storage capacity, and current project status.
- LU-2 Section E9.5.10 of the ER describes Dominion’s process for obtaining a consistency certification for SPS subsequent license renewal from the Commonwealth of Virginia in accordance with the Federal Coastal Zone Management Act (CZMA). Dominion developed and submitted to VDEQ a CZMA consistency certification package (Appendix E of the ER). Dominion further states in the ER that VDEQ responded with a “conditional concurrence” on February 2, 2018. VDEQ’s February 2nd, 2018 response is contained in Dominion’s SLRA Supplement for Sufficiency Review, dated January 29, 2019, submitted to the NRC. Specifically, VDEQ states that its CZMA concurrence is conditional upon satisfaction of the following: “DGIF [Department of Game and Inland Fisheries] input and concurrence on the intake technology and conditions implemented to minimize impacts to fisheries resources and incidental take of endangered species in accordance with Virginia Code §29.1-100 to §29.1-570.” Given the conditional nature of the CZMA certification, describe the steps that Dominion proposes to undertake to complete the CZMA consistency certification process with VDEQ, including the projected timeframe for completion of all anticipated activities requested by VDEQ.

## **Meteorology and Air Quality**

MET-1 Please clarify why hazardous air pollutant emissions are quantified in ER Table E3.3-12 for 2016 but not for the other years considered. Is more-recently reported emissions data available (e.g. 2017)?

MET-2 Has Dominion received any notices of violation or non-compliances from the Virginia Department of Environmental Quality (VDEQ) regarding Surry Air Permit No. PRO50336 subsequent to the period discussed in ER Section E3.3.3.2 (i.e., 2012-2016)?

## **Microbiological Hazards**

MBH-1 Regulatory Guide 4.2, Supplement 1, Revision 1 states that, "The applicant should consult the State agency responsible environmental health regarding the potential existence and concentration of...microorganisms in the receiving waters for plant cooling water discharge. The applicant should document the results of this consultation in the ER. The ER should include copies of correspondence with the responsible agency indicating concurrence with the applicant's risk assessment and proposed mitigation strategy, if one is required." Please describe Dominion's consultation with the State related to microbiological hazards and the State's views of the environmental health risks to the public from thermal effluent in the James River. Provide for NRC staff review copies of relevant correspondence between Dominion and the State.

MBH-2 The ER (p. E-9-9) states: "An NOV [notice of violation] was also not issued for one Enterococci bacteria sampling result exceeding previous reporting results in January 2017." Please explain this event in more detail, including the sample location, the measured concentration, the likely reason(s) for the elevated result, implications (if any) for James River recreational users or biota, and any documentation between Dominion and the State related to this event.

MBH-3 Has Dominion ever sampled for or detected Legionella bacteria at Surry? If so, please describe the circumstances and sampling results.

## **Socioeconomics**

SOC-1 Besides property tax payments, describe any other sizeable annual support payments (e.g., emergency preparedness fees and payments or fees because of the independent spent fuel storage installation), one-time payments, or other forms of non-tax compensation (if any) provided to local governments, agencies, communities, and other jurisdictions, on behalf of SPS.

### *Document Needs*

1. Provide updated property tax information, similar to the data provided in Table E3.9-2 of the ER. Include data for years 2017 and 2018, if available.

## **Special Status Species and Habitats**

SSH-1 Table E9.1-1 in the ER lists several permits related to in-water work, including permits authorizing periodic maintenance dredging of the intake channel and debris removal and maintenance of the low-level intake structure. Additionally, page 14 of Dominion's



January 29, 2019, Supplement to the ER, Enclosure 1, Attachment 1 states: "The potential for dredging operations, shoreline modification, and water pollution to have detrimental effects to [Atlantic sturgeon critical] habitat is controlled and mitigated by regulatory processes and permits."

- (a) Provide a copy for NRC staff review of the currently effective U.S. Army Corps of Engineers permit authorizing Dominion to perform maintenance dredging in the James River (Permit No. NAO-2008-1451/VMRC#16-V0710).
- (b) The ER (Section E9.5.3.9) states that Dominion performs maintenance dredging operations of the intake channel every 3-4 years. How frequently does Dominion anticipate performing dredging of the intake canal during the proposed license renewal period?
- (c) How often does Dominion anticipate removing debris from the low-level intake structure between now and the end of the proposed license renewal term? Is this activity typically undertaken at the same time as maintenance dredging?
- (d) Does Dominion plan to perform activities that would result in "shoreline modification" (other than intake channel maintenance dredging or low-level intake structure debris removal) between now and the end of the proposed license renewal period? If so, please provide information to describe such activities, their purpose, and anticipated frequency.

Please provide information to describe how federally listed species, designated critical habitats, and essential fish habitats have been considered during maintenance dredging permitting by both Dominion, the U.S. Army Corps of Engineers, and/or other relevant permitting agencies (e.g., has Dominion participated in consultation or otherwise coordinated with the National Marine Fisheries Service related to the impacts of dredging or debris removal on federally protected species and habitats?)

SSH-2 In the ER (p. E-4-42), Dominion states that "[a]ctions requiring the removal of trees by Dominion would require adherence to the USFWS 4(d) rule which sets guidelines for incidental take, and consultation with federal wildlife agencies, to ensure that no impacts to this species occur from any future activities." Please explain how Dominion ensures that these guidelines are considered prior to performing work that could affect bat roost trees or habitat and how Dominion ensures that its personnel are aware of the northern long-eared bat 4(d) guidelines specifically.

SSH-3 Is Dominion aware of the discovery of injured or dead bats (of any species) on the Surry site? If so, please explain these incidents (as a part of the explanation, please provide copies of any associated reports or documents. Please consider at least the past 10 years of operation in the response. If information is available since Surry began operating in 1972, please include this information as well).

SSH-4 Would any activities during the proposed subsequent license renewal term cause increased site noise or vibration levels compared to current operations? If so, please explain the activities that would cause such changes and the potential impacts of increased noise and vibration associated with such activities on bats.

SSH-5 In connection with the most recent renewal of the Surry VPDES permit:

- (a) Explain how federally listed species and critical habitats were considered during the permit renewal process.
- (b) Explain/describe any coordination with the National Marine Fisheries Service (NMFS), applicable State resource agencies, or other entities related to federally listed species and critical habitats.

As a part of the explanation, provide copies of any monitoring or assessments of impacts to federally listed species and critical habitats resulting from operation of the Surry cooling system that Dominion, the NMFS, the State, or other entities performed in connection with the VPDES permit or its renewal.

#### *Document Needs*

1. ER Table E3.7-4, "Federally and State Listed Threatened and Endangered Species..." lists as its references several Federal and State websites and databases that were last accessed in 2016. Please provide an updated table based on currently available information.
2. In Attachment C to the ER, Dominion includes letters to several Federal and State agencies concerning threatened and endangered species and other protected or sensitive ecological resources. Did the following agencies respond to Dominion's letters? If so, provide copies of the responses for NRC staff review:
  - *U.S. Fish and Wildlife Service*
  - *Virginia Department of Conservation and Recreation*
  - *Virginia Department of Game and Inland Fisheries*
  - *Virginia Marine Resource Commission*
3. The Virginia Natural Heritage Program website (<http://www.dcr.virginia.gov/natural-heritage/infoservices>) directs project proponents to submit a Project Review Request through its website because its online Natural Heritage Data Explorer is not site-specific and should not be substituted for a project review or for on-site survey records. Has Dominion requested such a review in connection with the subsequent license renewal application? If so, please provide the results of the State's project review.
4. Has Dominion performed any bird or bat collision injury/mortality studies at the Surry site? If so, please provide copies of any associated reports.
5. Virginia Pollutant Discharge Elimination System (VPDES) permit no. VA0004090, with effective dates March 1, 2016, through February 28, 2021, requires Dominion to prepare and submit to the Virginia Department of Environmental Quality an annual report that evaluates the efficiency/effectiveness of the facility's control measures for minimizing impingement and entrainment and other effects to federally listed and fragile species and designated critical habitat, including prey base. The report must also include a compilation of all federally listed threatened or endangered species found to have been impinged or entrained during the reporting year, including the total number and type of organisms (listed by taxa), and life stage (egg, larva, juvenile, adult) impacted by injury or death (see VPDES permit, p. 35, Condition 6). Please provide copies of these reports for NRC staff review. If the previously effective VPDES permit required similar reporting, provide copies of those reports for calendar years 2008 forward.

## Terrestrial Resources

- T-1 Page E-3-126 of the ER states that the mammal, reptile and amphibian, and bird populations on the SPS site are “representative of those found in the region.” The same page states that none of the mammal species observed or reported at the SPS site are unusual for the region. The page also states that the applicant does not routinely perform species assessment surveys. Explain the technical basis for these statements.
- T-2 Page E-3-127 of the ER provides descriptive information about the Atlantic flyway and how large natural barriers such as mountains, deserts, and large bodies of water create especially crowded stopovers for migratory birds. Provide an explanation why or why not the SPS site and adjacent lands on the Gravel Neck Peninsula may be such a stopover.
- T-3 Page E-3-141 of the ER states that data from the Center for Conservation Biology at the College of William and Mary indicates that there were three active bald eagle nests on the SPS site in 2017. Provide similar data for 2018 or 2019, if available.
- T-4 Provide copies of any permits or programs for managing bald or golden eagles at the SPS site, if any. Indicate whether there have been any known eagle take events (as defined by the Bald and Golden Eagle Protection Act) at the site during operational years.
- T-5 Indicate whether there are any records or other information regarding migratory bird take events (as defined by the Migratory Bird Treaty Act) at the SPS site during operational years.
- T-6 Indicate the technical basis (e.g., wildlife surveys) for the statement on Page E-3-163 of the ER that no state-listed species have been observed on the SPS site.
- T-7 Provide any information available about the types, quantities, and application methods of herbicides used to maintain the SPS exterior grounds.
- T-8 Provide any available quantitative information concerning operational noise levels at the SPS site.
- T-9 Page E-4-39 of the ER states that administrative controls are in place at the SPS to ensure that operational changes or construction activities are reviewed, and that environmental impacts are minimized through implementation of best management practices (BMPs), permit modifications, or acquisition of new permits as needed. Please indicate the specific BMPs that are in place to reduce potential impacts to terrestrial resources.
- T-10 Page E-4-39 of the ER states that operational and maintenance activities during the renewal term would likely be confined to previously disturbed areas of the SPS site. Is this statement inclusive of the permanent new ISFISs, employee parking areas, access roads, and facilities and temporary project support areas and laydown areas mentioned on Page E-4-38 of the ER? If not, please describe where these projects would likely occur and what habitat or land cover currently exists in those areas.

- T-11 Provide the technical basis for the statement on page E-4-43 of the ER that seven state-listed species may have suitable habitat on the SPS site or otherwise be present.
- T-12 Using Figure E3.2-1, provide estimated overlays indicating the approximate extension of the footprint of disturbance into forested and other naturally vegetated areas on the SPS site for the natural gas combined cycle and solar photovoltaic cells anticipated as part of one or more alternatives addressed in detail in Section E7.2.3 of the ER.

*Document Needs*

1. Provide descriptions for the cover types identified in the legend for Figure E3.2-1.
2. Provide a summary of any wildlife surveys specific to the SPS site, if available.
3. Provide a summary for docketing for Dominion's guidance document on invasive species management, available in the electronic reading room and referenced as Dominion 2016I on page E-3-131 of the ER.

**Waste Management (radioactive and non-radioactive)**

- WM-1 In Section E3.6.4.2.1 of the ER Dominion stated that there were three inadvertent onsite liquid radioactive releases estimated to be greater than 100 gallons each. The last inadvertent release referenced in the ER was September 23, 2012. Provide detailed information on this release and the preventive measures implemented. Are there any more recent reportable releases? If any, provide detailed information on the release.
- WM-2 Surry is subject to the reporting provisions of 40 CFR Part 110 as it relates to the discharge of oil in such quantities as may be harmful pursuant to Section 311(b)(4) of the Federal Water Pollution Control Act. Any discharges of oil in such quantities that may be harmful to the public health or welfare or the environment must be reported to the U.S. Coast Guard (USCG) National Response Center. Also, Surry is subject to the reporting provisions of State Water Control Law Section 62.1-44.34:19 (Article 11). This reporting provision requires that any release of oil in a quantity of 25 gallons or greater to the environment be reported to the VDEQ, the coordinator of emergency services of the locality that could reasonably be expected to be impacted, and appropriate federal authorities. In Sections E3.6.4.2.2, E9.5.3.6, and E9.5.3.7 of the ER, Dominion stated that based on the review of site records from 2012–2017, there was one inadvertent release of approximately eight gallons of glycol-based hydraulic fluid occurred during cleaning of the Unit 2 D service water intake bay. The applicant states that the release was reported to VDEQ and no NOV resulted. Provide detailed information on this release and the preventive measures implemented. Are there any more recent reportable releases? If any, provide detailed information on the release.

*Document Needs*

1. Provide procedures related to the radioactive and non-radioactive Waste Management Program, Waste Minimization Program, Chemical Control Program, General Industrial Safety Requirements and Electrical Safety in the electronic reading room.

## Surry Environmental Site Audit Schedule

### **Tuesday, March 12, 2019**

START	END	ACTIVITY
1:00 pm	2:00 pm	Entrance meeting with Dominion Energy
2:00 pm	4:00 pm	Site tours/meetings between NRC and Dominion Energy subject matter experts (SMEs)
4:00 pm	4:30 pm	Team debrief/planning
4:30 pm	5:00 pm	Daily debrief with Dominion Energy

### **Wednesday, March 13, 2019**

START	END	ACTIVITY
8:00 am	12:00 noon	Tours and Meetings between NRC and Dominion Energy SMEs
12:00 noon	1:00 pm	Lunch
1:00 pm	4:00 pm	Tours and Meetings between NRC and Dominion Energy SMEs
4:00 pm	4:30 pm	Team debrief/planning
4:30 pm	5:00 pm	Daily debrief with Dominion Energy

### **Thursday, March 14, 2019**

START	END	ACTIVITY
8:00 am	12:00 noon	Tours and Meetings between NRC and Dominion Energy SMEs
12:00 noon	1:00 pm	Lunch
1:00 pm	3:00 pm	Tours and Meetings between NRC and Dominion Energy SMEs
3:00 pm	3:30 pm	Team debrief/planning
3:30 pm	4:00 pm	Exit Meeting with Dominion Energy