

**Biological Assessment**

**North Anna Power Station  
Combined License Application**

**U.S. Nuclear Regulatory Commission**  
Docket No. 52-017

Louisa County, Virginia

April 2016

## 1.0 Introduction

The U.S. Nuclear Regulatory Commission (NRC) is reviewing an application submitted by Dominion Virginia Power (Dominion) in November 2007 for a combined license (COL) under the provisions of Title 10 of the *Code of Federal Regulations* Part 52 (10 CFR Part 52) to construct and operate a third nuclear unit (Unit 3) at its North Anna Power Station (NAPS) in Louisa County, Virginia (Dominion 2007). The proposed Federal action in this application is the NRC issuance of a COL for construction and operation of a third nuclear unit at NAPS.

No species listed by the National Marine Fisheries Service (NMFS) as threatened or endangered are found in Dominion owned/controlled property at or near the site that is associated with the project or along the associated transmission line corridor. One species, the Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*) has been identified as being present in the Mattaponi River and in the vicinity of the Walkerton barge roll-off location along the Mattaponi River that will be used intermittently for unloading large components. The Atlantic Sturgeon may also be present at the location of a temporary bridge crossing over the North Anna River that is part of the proposed large component transport route. Dominion received a permit dated September 28, 2011, from the U.S. Army Corps of Engineers (USACE) for certain activities associated with the construction and operation of the proposed nuclear unit including the roll-off facility on the Mattaponi River (USACE 2011b). This permit and the accompanying Environmental Assessment (EA) (USACE 2011a) were completed before the listing of the Atlantic Sturgeon in 2012 (77 FR 5880). The NRC is the lead agency for the COL environmental review and is coordinating with USACE regarding the Atlantic Sturgeon.

The NRC has prepared this biological assessment (BA) to support consultation with NMFS in accordance with the Endangered Species Act of 1973, as amended (ESA; 16 USC 1531 et seq.) Pursuant to Section 7(c) of the ESA, this BA examines whether the Atlantic Sturgeon is likely to be affected by the NAPS Unit 3 construction and operation activities.

## 2.0 Consultation History

The NRC granted an Early Site Permit (ESP) to Dominion in 2007 (NRC 2007). An ESP is the NRC's approval of a site for one or more nuclear power facilities. As part of the ESP application review process, the staff developed an Environmental Impact Statement for an ESP (ESP EIS), which was published in December 2006 as NUREG-1811 (NRC 2006). The ESP EIS evaluated the environmental impacts that would result from building and operating two additional nuclear units at the NAPS site except for those issues deferred to the COL review.

In order to construct and operate a nuclear power plant, Dominion, as an ESP holder must also obtain a COL for the proposed nuclear unit. Issuance of a COL constitutes a separate major Federal action and requires that the NRC prepare a supplement to the ESP EIS. In February 2010, the NRC published the *Final Supplemental Environmental Impact Statement for the Combined License (COL) for North Anna Power Station Unit 3* as NUREG-1917 (NRC 2010). This COL SEIS documented the NRC staff's environmental review for the NAPS Unit 3 COL and was a supplement to the ESP EIS (NRC 2006).

As part of its environmental review for the ESP EIS, the NRC communicated with the NMFS Northeast Regional Office and with the U.S. Fish and Wildlife Service (USFWS) Chesapeake Bay Field Office in 2004 regarding the presence of protected, proposed, and candidate species and critical habitat in the vicinity of the North Anna Site. NMFS responded that no Federally listed or proposed threatened or endangered species under the jurisdiction of NMFS were known to exist in the vicinity of the existing NAPS site (NMFS 2004). Because several species under the jurisdiction of the USFWS were identified at the North Anna site, the NRC prepared a BA (NRC 2005) for USFWS evaluating the impacts of ESP-authorized activities on Federally listed threatened and endangered species under Section 7 of the Endangered Species Act (ESA) and received concurrence from USFWS in 2005 (USFWS 2005). A list of related correspondence between NRC and NMFS to date is found in Appendix A of this BA.

Since the BA to USFWS was issued in 2005, Dominion has (1) acquired approximately 96 additional acres of land adjacent to the NAPS site (hereafter referred to as the Route 700 parcels) that would be used for construction-related activities, (2) determined the need for a new transmission line (routed entirely within an existing corridor), (3) proposed a site to offload oversized and/or overweight reactor components transported up the Mattaponi River by barge (hereafter referred to as the Walkerton roll-off location), and (4) identified a large component transport route for transporting large components from the Walkerton roll-off location to the NAPS site during construction. Acquisition of the Route 700 parcels and the determination of the need for a large component transport route and a new transmission line were evaluated in the COL SEIS (NRC 2010). The Walkerton roll-off location and additional details related to the large component transport route were not evaluated in the COL SEIS.

In September 2010, Dominion submitted a joint application to the USACE and the Commonwealth of Virginia agencies for Federal and State water/wetland permits. The joint application described the proposed routing of the large component transport route and identified the site of the roll-off location at Walkerton Landing (Figure 1). The USACE issued its public notice in January 2011 and completed its environmental review in September 2011 with the issuance of an EA (USACE 2011a). This environmental review resulted in a Finding of No Significant Impact. As part of this environmental review, the "... USACE made a 'no effect' determination for the project". USACE subsequently (September 29, 2011) issued the required Department of the Army permit to Dominion pursuant to Section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 USC 403) and Section 404 of the Clean Water Act (33 USC 1344) (USACE 2011b). The NRC coordinated with the USACE during their review of the proposed project. A description of the USACE's review, related surveys, findings and resulting permit are presented in further detail in the Supplemental BA to USFWS (NRC 2013). The Chesapeake Bay Atlantic Sturgeon distinct population was listed by NMFS on February 6, 2012 (77 FR 5880).

NRC developed a draft supplement to the BA for the USFWS that included information regarding the effect of construction and operation on Federally protected species for the Route 700 parcels, the proposed new transmission line, the large component transport route, and the Walkerton roll-off location. The BA was sent to the USFWS as a draft on November 27, 2013. Two species of mussels and three vascular plants were identified as potentially occurring in the vicinity of the project. However, no listed species were found in the survey areas and a "no effect" determination was made on all five species. At that time, no Federally endangered species under the jurisdiction of the NMFS were identified.

As NRC began closeout of the information for the license and revision of the BA, conversations with the Virginia Department of Game and Inland Fisheries (VDGIF) indicated Atlantic Sturgeon may be present in the Mattaponi River. NRC verified this with NMFS staff on August 19, 2014 (NRC 2014).

This assessment serves to update and supplement the project information previously provided to the NMFS in 2004. Based on recommendations during a telephone conference call with NMFS staff on August 19, 2014 (NRC 2014), the NRC staff has divided the remaining sections of this BA into two parts. The first part addresses potential impacts associated with the new nuclear unit, the Route 700 parcels, and the proposed new transmission line. The second part considers potential impacts at the Walkerton roll-off location and the large component transport route.



### 3.0 Description of Proposed Action

This section presents a description of the proposed project. Dominion proposes to construct and operate a new nuclear unit, Unit 3, at the existing NAPS site in Louisa County in north-central Virginia<sup>1</sup>. Figure 1 shows the proposed locations for the project, including the location of the NAPS site (and associated Route 700 parcels), the transmission line corridor, large component transport route, and Walkerton roll-off location. Figure 2 shows the Route 700 parcels and the site. The disturbance footprint of the proposed Unit 3 project and adjacent Route 700 parcels are shown in Figure 3. The only area that will have in-water work and that would have the potential to impact Federally listed threatened or endangered species under the jurisdiction of NMFS is the Walkerton roll-off location. A temporary clear span bridge associated with the large component transport route is proposed over the North Anna River. No in-water work is proposed in the North Anna River, therefore no impacts would be anticipated for Federally listed, threatened, or endangered species. As a result, the project at the North Anna site (originally discussed in a BA for the USFWS in 2005), the Route 700 parcels, and the transmission line corridor (described in a draft supplemental BA provided to USFWS [NRC 2013]) are briefly described in this BA and the Walkerton roll-off location and the large component transport route are discussed separately from the remainder of the updated project.

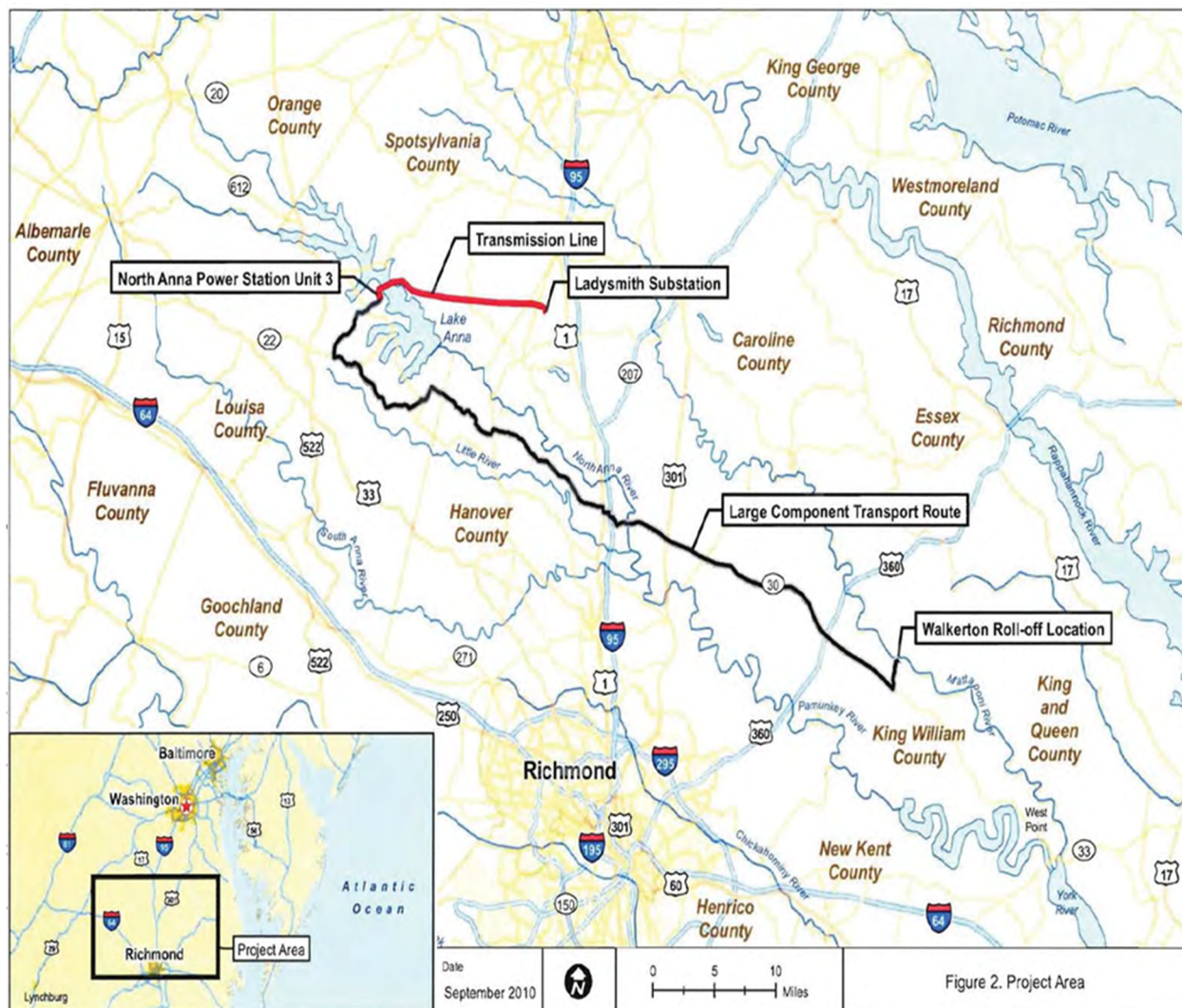
#### **North Anna site, Route 700 parcels, and transmission line corridor**

The proposed NAPS Unit 3 will have a rated thermal power level of 4500 megawatts thermal (MW(t)) with an estimated net electrical power output between approximately 1425 and 1510 megawatts electric (MW(e)). Much of the construction site for proposed NAPS Unit 3 consists of dirt and paved roads, cleared areas, parking lots, buildings, and other areas recovering from prior disturbances. Approximately 128 acres on the NAPS site will be permanently affected from constructing and operating the onsite facilities.

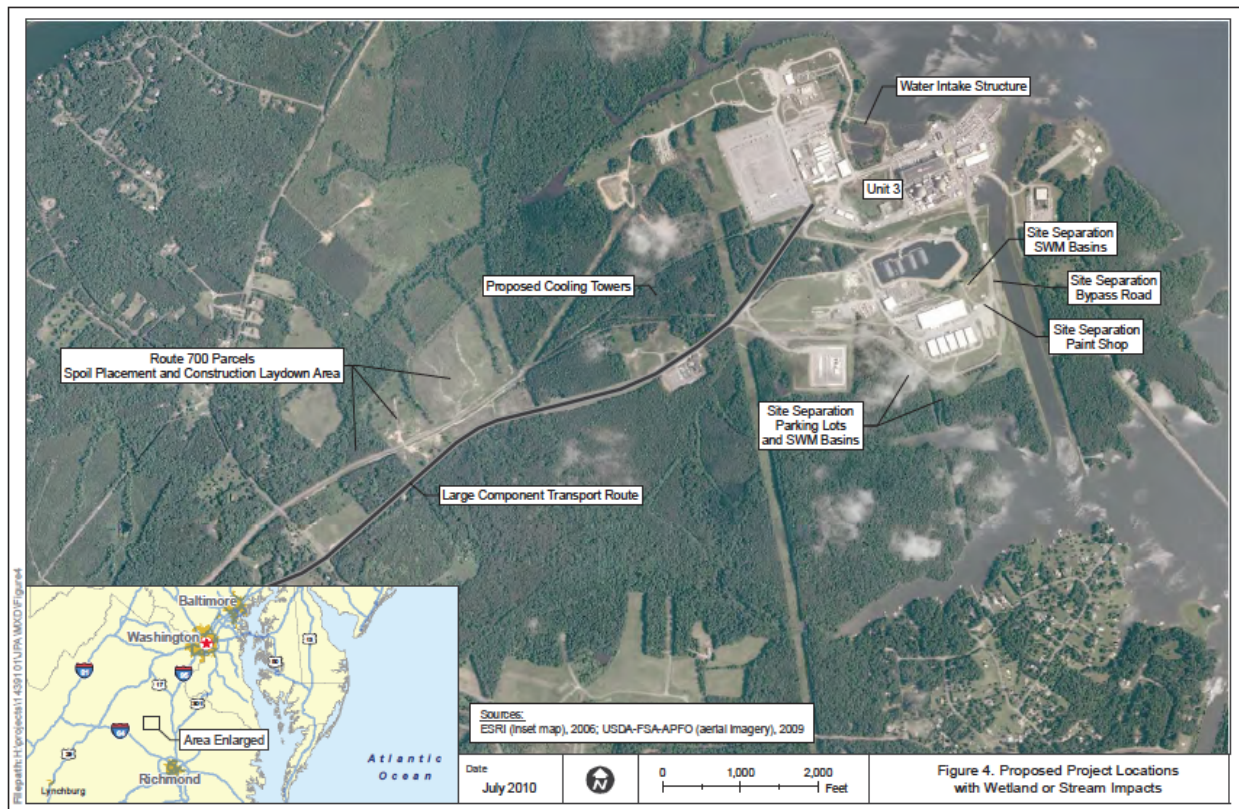
The cooling system for the proposed Unit 3 was described in the COL SEIS (NRC 2010). Makeup water from Lake Anna would be provided to the proposed unit through a new intake structure located just west of the existing Units 1 and 2 intake. The intake would be a concrete structure set into the shoreline, 21.9 m (72 ft) long and extending approximately 18 m (60 ft) back into the shoreline. The proposed cooling towers for Unit 3 will be located to the west of Units 1 and 2. The footprint for the cooling tower complex is approximately 15.4 ha (38 ac), and the grading required for construction of the complex, along with two road crossings through the portion of the facility near the towers, will result in permanent impacts to 384 linear m (2572 linear ft) of stream and 0.348 ha (0.86 ac) of palustrine forested wetlands (USACE 2011a).

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<sup>1</sup> The ESP EIS (and the associated BA) evaluated the impacts from two additional units at NAPS; however, Dominion's COL application is for only one new unit.

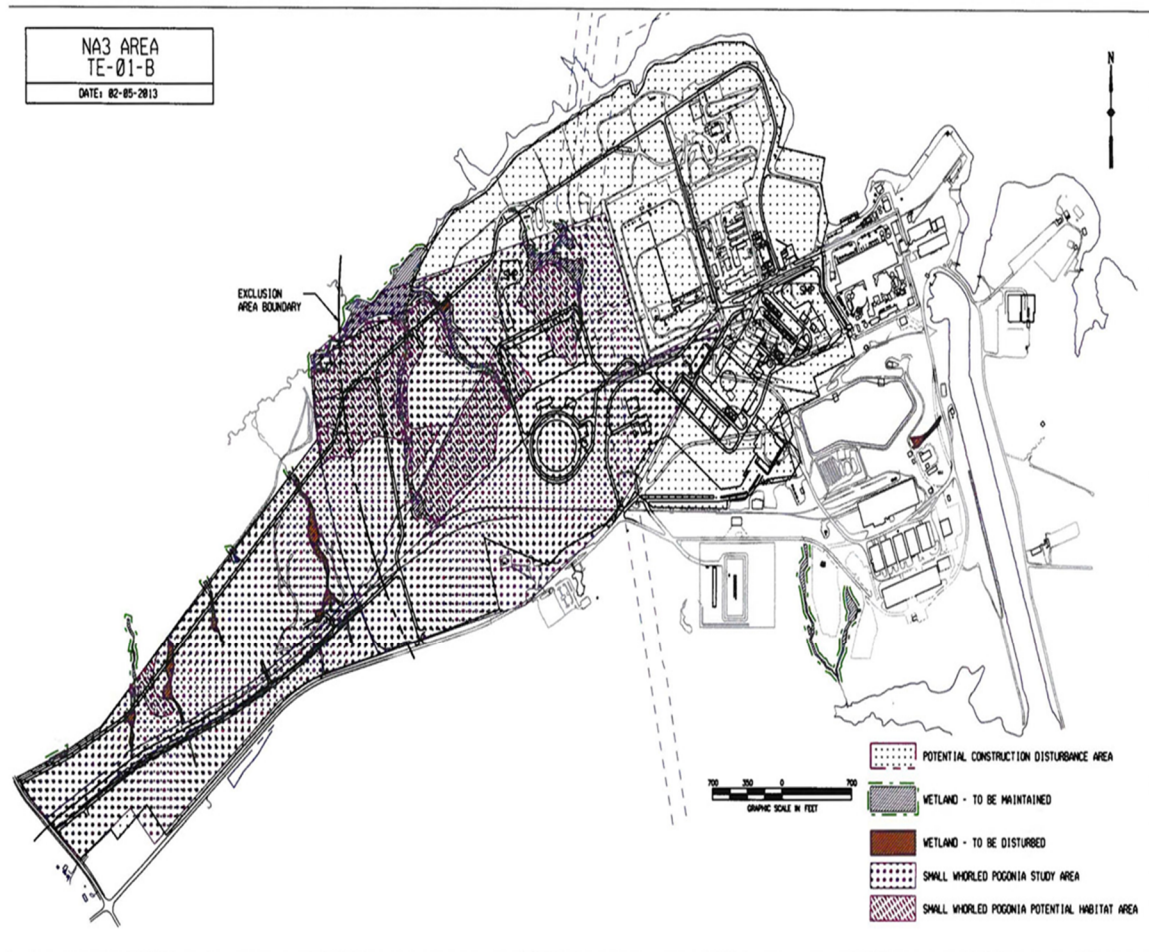


**Figure 1.** Proposed Location for the Project, including the NAPS Site, Transmission Line Corridor, Large Component Transport Route, and the Walkerton Roll-Off Location (Dominion 2010a)



**Figure 2.** NAPS Site including the Adjacent Route 700 Parcels (Dominion 2010a)





**Figure 3** Disturbance Footprint for the NAPS Site and Adjoining Property (Dominion 2013)

The Route 700 parcels, adjacent to the NAPS site, would be used for disposal of spoils and for construction access and support, but would not be part of the permanent NAPS site (USACE 2011a). Impacts to the Route 700 parcels include approximately 1161 linear m (3808 linear ft) of stream, 1.30 ha (3.21 ac) of palustrine forested wetland and 0.016 ha (0.04 ac) of palustrine emergent wetlands (USACE 2011a).

Approximately 24 km (15 mi) of new 500-kV transmission line connecting NAPS to the Ladysmith Substation will be needed to deliver power from the proposed NAPS Unit 3; however, the line would be located entirely within an existing transmission line corridor (NRC 2010). The line would run east from NAPS to the Ladysmith Substation in an existing transmission corridor that is 84 m (275-ft) wide, parallel to the existing line (NRC 2010). No additional clearing of forested vegetation would be required for construction of this transmission line, and existing access roads would be used for inspection and maintenance activities in the right-of-way.

Land clearing would be limited to that necessary to accommodate the new transmission tower foundations, and Dominion would follow established procedures and best management practices (BMPs) to minimize impacts and restore vegetative communities. Only hand-clearing would be used within 30.5 m (100 ft) of streams or creeks, and BMPs for erosion and sedimentation control would be followed (NRC 2010). There would be no impacts to wetlands or streams or the Blanton's Conservation Area from building activities associated with the proposed transmission line (USACE 2011a). Transmission line maintenance activities during station operation would be consistent with current Dominion practices in existing corridors.

### **Walkerton Roll-Off Location and Large Component Transport Route**

The barge slip at the Walkerton roll-off location is a proposed temporary structure that is part of the large component transport route and was the location used for the same purpose during construction of NAPS Units 1 and 2 which began operation in 1978 and 1980, respectively. The barge offloading facility would consist of a solid cofferdam constructed of filled sheetpile and a roll-on/roll-off ramp to connect the barge with the onshore roadway (Figure 4). Dominion plans to offload equipment approximately 2 to 3 times a year from the barge onto the cofferdam (EAEST 2010a). The cofferdam would be 36.6 m (120 ft) wide and extend approximately 51.8 m (170 ft) into the river from the shoreline; five mooring dolphins (a total of 15 pilings) would extend the affected area approximately 133 m (435 ft) (measured from mean high water) into the Mattaponi River channel. No in-water work will be performed February 15 through June 30 or August 1 through October 31. Dominion anticipates in-water work to install the cofferdam and dolphins will take two weeks to complete (Dominion 2016). As required by the USACE permit (USACE 2011b), in-water work will be performed to minimize increases in turbidity and minimize disturbance of the river bottom (Dominion 2016). A total of 93.9 m (308 ft) of shoreline would be temporarily affected. Shoreline protection would be used to prevent erosion and protect the river bank (USACE 2011a). Other mitigation measures include the use of full-depth turbidity/silt curtains (Dominion 2016). Dominion expects these facilities to be in

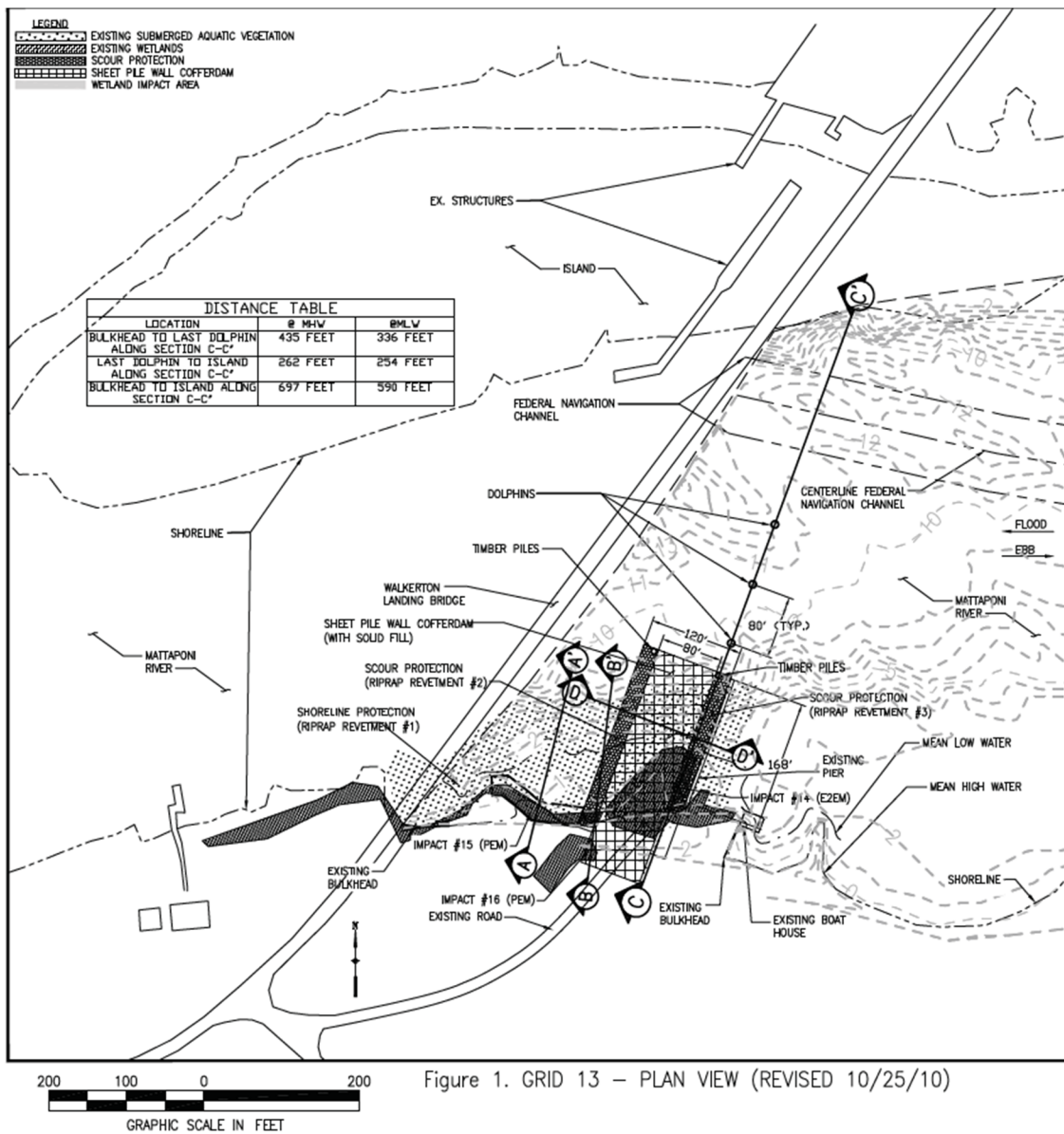


Figure 4. Walkerton Roll-Off Facility Construction Footprint. Source: EAEST 2010b

place for 3 years (USACE 2011a). All fill, pilings, and dolphins will be removed within 90 days of the termination of the facility's use (Dominion 2016; USACE 2011b).

Dominion's permit issued by the USACE (No. 10-V1256/NAO-2008-2534) authorizes both permanent and temporary wetland/stream impacts (USACE 2011b). There will be no permanent impacts to wetlands in the vicinity of the Walkerton roll-off location.

Temporary impacts to wetlands, shorelines and the river at the Walkerton roll-off location include the following:

- 0.024 ha (0.06 ac) of palustrine emergent wetland (installation of cofferdam, shoreline and structure protection, and mooring dolphins)
- 0.073 ha (0.18 ac) of estuarine emergent wetland (installation of cofferdam, shoreline and structure protection, and mooring dolphins)
- 93.9 linear m (308 linear ft) of Mattaponi River shoreline
- 133-m (435-ft) encroachment into the Mattaponi River

Equipment unloaded at the Walkerton roll-off location will be carried overland to the NAPS site approximately 80 km (50 mi) to the northwest (Figure 1). From the Walkerton roll-off location, the large component transport route heads west on Route 30, crosses over Interstate 95 (I-95), travels north on I-95 turning at an emergency crossing and using an existing off ramp at Exit 98 and continues north and west on Route 1, turning east on Doswell Road and following local roads to the NAPS site.

Dominion indicated that surveys and evaluations of roadway culverts and pipes were already completed, and that steel plating or crane mats would be used to provide extra protection or support for existing roadway culverts, rather than replacing or improving the existing culverts and pipes (Dominion 2010b). It is anticipated that a single haul will require approximately 2 weeks to complete (EAEST 2010b).

A temporary bridge would be constructed to span the North Anna River, however no impacts are anticipated to the waters of the North Anna River because the river will be crossed with a clear span (USACE 2011b; EAEST 2010b). No wetlands would be expected to be affected by the proposed large component transport route (Dominion 2010c).

## 4.0 Status of Species/Critical Habitat

### North Anna Site, Route 700 Parcels, and Transmission Line Corridor

No Federally protected species under NMFS jurisdiction have ranges that extend to Lake Anna. Thus, there are no Federally listed threatened or endangered species under the jurisdiction of NMFS that are present at the NAPS site, Route 700 Parcels, or under the transmission lines.

### Walkerton Roll-Off Location and Large Component Transport Route

Table 1 provides information about the only Federally listed species under NMFS jurisdiction with the potential to occur in the vicinity of the project, specifically at the Walkerton roll-off location and large component transport route (NMFS 2015a).

**Table 1.** Federally Listed Species under the Jurisdiction of NMFS Known to Occur in the Vicinity of the Proposed Project.

Scientific Name	Common Name	Occurrence	Status <sup>(a)</sup>
<i>Acipenser oxyrinchus oxyrinchus</i>	Atlantic Sturgeon	York River watershed	FE <sup>(b)</sup>
(a) FE = Federally Endangered			
(b) NMFS 2015a			

### Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*)

Atlantic Sturgeon are found in the western Atlantic from Labrador, Canada through the St. Johns River, Florida, generally occurring in coastal and estuarine areas at water depths ranging from 10 to 50 m. Atlantic Sturgeon can attain an age of at least 60 years, grow to a length of 4.3 m (14 ft), and weigh up to 360 kg (800 lb). An anadromous species, Atlantic Sturgeon generally enter freshwater to spawn in the spring and early summer, and spawning occurs in flowing water between the salt front and the fall line (NMFS 2015a). On the Mattaponi River, the salt front is near the confluence with the Pamunkey River, downstream of the Walkerton roll-off location, while the fall line is upstream of the Walkerton roll-off location, passing through Spotsylvania, Caroline, and Hanover Counties.

Atlantic Sturgeon growth and maturity is influenced to a great extent by their location, with faster growth and maturity at southern locations compared to those present at the northern limits of their distribution. For instance, the age of reproductive maturity is 5 to 19 years of age in South Carolina, 11 to 21 years of age in the Hudson River (New York), and 22-34 years of age in the Saint Lawrence River (Canada). Spawning generally occurs in April and May in the mid-Atlantic



region, with spawning intervals ranging from 1 to 5 years for males and 2 to 5 years for females. In the York River system, which includes the Mattaponi River, potential spawning habitats are considered to be located above the upper limits of the saltwater intrusion (Hewitt et al. 2009). There is also recent evidence that fall spawning may occur in the York River watershed (Hager et al. 2014). Fecundity of females is correlated with body size, and ranges from 400,000 to 8 million eggs, with 50 percent of the maximum lifetime egg production reached at 29 years of age. Spawning occurs in cold, clean, moderately flowing water in the deeper reaches of rivers, with adhesive eggs deposited on hard bottom substrate such as cobble (NMFS 2015a). After spawning, males may remain in the lower reaches of the river or estuary until the fall, but females leave the river within four to six weeks (NMFS 2015a). Larvae gradually migrate downstream, and juveniles may remain in estuaries for months to years. As larvae migrate downstream, they make use of gravel and other benthic structure for cover. Preferred habitat for subadults and adults includes nearshore areas dominated by gravel and sand substrates. As described above, subadults and adults generally live in shallow coastal waters in depths ranging from 10 to 50 m (30 to 150 ft) (NMFS 2015a).

As described by NMFS (NMFS 2015a), Atlantic Sturgeon are listed as endangered for the New York Bight, Chesapeake Bay, Carolina, and South Atlantic distinct population segments (DPS). In addition, this species is considered threatened for the Gulf of Maine DPS. Critical habitat has not yet been designated for this species (77 FR 5880). Historically, Atlantic Sturgeon were present in approximately 38 rivers in the United States from Maine to Florida, and 35 rivers were confirmed to have had a historical spawning population. Atlantic Sturgeon are currently present in approximately 32 of the 35 rivers, and spawning has been documented in 20 of them. Reliable population trends are available only for the Hudson River where approximately 4,600 wild juvenile sturgeon are present, and the Altamaha River (in the Southeast) where over 2,000 subadults are present (NMFS 2015a). Within the Chesapeake Bay DPS, approximately 20,000 spawning female sturgeon were believed to be present in Chesapeake Bay prior to 1890, with fewer than 300 spawning adults currently present in the James River per year (NMFS 2015b). No estimates are available for the York River system.

Factors that have historically contributed to the decline of Atlantic Sturgeon include 1) habitat destruction or modification that limits the species range, 2) barriers or in-water activities that affect water quality, 3) overutilization for commercial, recreational, or scientific purposes, 4) disease or predation, and 5) the inadequacy of existing regulatory mechanisms to protect the species (77 FR 5880). In-water activities include dredging such as the previous dredging of the navigation channel. Collisions between sturgeon and vessels are also a known threat to sturgeon (77 FR 5880).

Habitat for Atlantic Sturgeon has also been degraded by human interactions including overfishing, and habitat loss especially as a result of decreased water quality and increased siltation (ASFMC 2012; Musick 2005). Within the Chesapeake Bay DPS, past removal of

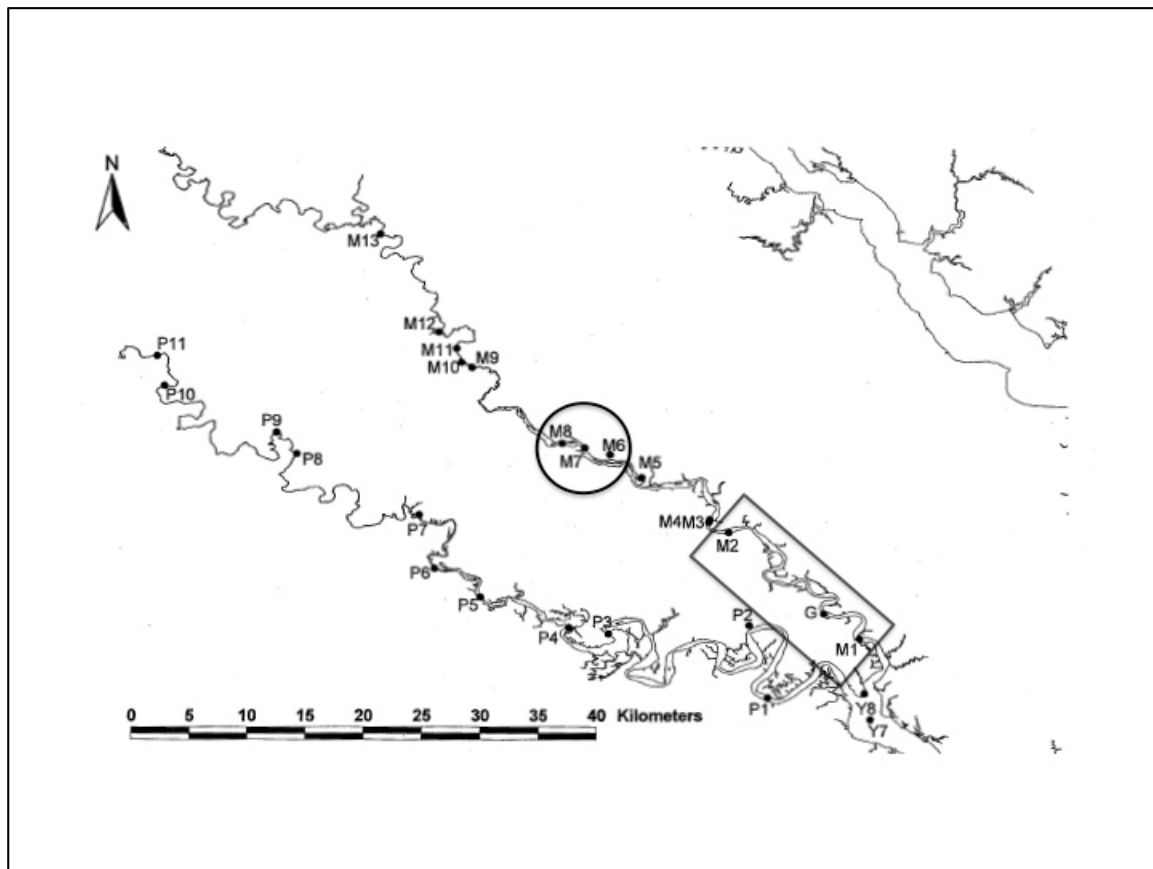
granite outcroppings and dredging in the James River represented the most significant impacts to spawning habitat, and ongoing maintenance dredging has the potential to harm fish. Imposition of a dredging moratorium during anadromous fish spawning season is intended to reduce this impact. Water quality impacts associated with low dissolved oxygen and nutrient loading, and loss of hard substrate for sturgeon egg attachment were believed to contribute to Atlantic Sturgeon population declines in the Chesapeake Bay DPS, and continue to be a concern of regulatory agencies. Changes in water temperature, salinity, dissolved oxygen content, and increased contaminant concentration related to climate change will continue to affect riverine populations of sturgeon, with the most severe effects occurring at the southern extreme of its range, and in areas that already exhibit poor water quality resulting from eutrophication (77 FR 5880).

To reduce fishing pressure on this species, a coastwide moratorium on Atlantic Sturgeon harvest was instituted in 1998 by the Atlantic States Marine Fisheries Commission, followed by a similar moratorium for Federal waters by NOAA Fisheries. These protective measures are intended to remain in place until there are at least 20 protected year classes in each spawning stock, a process that could take 40 or more years (NMFS 2015a). Loss of adult Atlantic Sturgeon related to bycatch in gillnet gear continues to be a concern. As noted in 77 FR 5880, regulatory oversight and coordination among Federal, State, and Provincial governments needs to be strengthened to reduce impacts related to fishing practices and to reduce habitat loss or modification from in-water dredging and related construction projects.

Within the Chesapeake Bay DPS, there was no evidence prior to 2013 that Atlantic Sturgeon spawn in the York River watershed; only the James River (Hager et al. 2014). That changed when researchers sampled the Pamunkey River (a tributary to the York River) in the fall of 2013 and found male sturgeon running milt and one spawned-out female with residual eggs (Hager et al. 2014).

A letter from VDGIF dated April 30, 2014 (VDGIF 2014b), indicated Atlantic Sturgeon were present and spawning in the York River drainage, which includes the Mattaponi River. NRC staff performed a search using the VDGIF geographic search tool and determined that Atlantic Sturgeon are known or likely to occur in the Mattaponi River within a 5-km (3-mi) radius of the Walkerton Bridge (VDGIF 2014a) and in the North Anna River within a 5-km (3-mi) radius of the proposed temporary bridge associated with the large component transport route (VDGIF 2015). The presence of reproductively active male Atlantic Sturgeon and one spawned-out female in the upper Pamunkey River during late August suggests that fall spawning may also occur in the Mattaponi River (Hager et al. 2014). In addition to the 2014 study, an essential fish habitat (EFH) study by Musick (2005) suggested that suitable habitat for Atlantic Sturgeon was present in the Mattaponi River, and that water temperatures were favorable for spawn at all times except July for Station M2 (Figure 5). As a point of reference, Stations M6, M7, and M8 are located near the Walkerton roll-off location, and the salt front is located between Stations M1 and M2.

Gravel substrate was present at only one location, just upstream of Station M1, but the author noted that active and abandoned gravel pits are present along the James, York, Pamunkey, and Mattaponi Rivers (Musick 2005). The presence of these activities may be indicative of coarse sediment or gravel substrates that would support sturgeon spawning. Based on the above information, the NRC staff concludes that the upper reaches of the Mattaponi River near the Walkerton roll-off location may have suitable substrate to support Atlantic Sturgeon spawning, and there is evidence that this distinct population segment may be present in the upper reaches of the York watershed based on recent work by Hager et al. (2014).



**Figure 5.** Locations of EFH assessment sampling stations along the Pamunkey and Mattaponi Rivers. The circle denotes sampling stations near the Walkerton roll-off location; the rectangle indicates where the salt front is located. Adapted from Musick (2005).

## 5.0 Environmental Baseline

In 2004, the NMFS Northeast Regional Office indicated to the NRC that no Federally or proposed threatened or endangered species under the jurisdiction of NMFS were known to exist in the vicinity of the existing NAPS site (NMFS 2004). However, because several species under the jurisdiction of the USFWS were identified at the North Anna site, the NRC prepared a BA (NRC 2005). In September 2010, Dominion submitted a joint application to USACE and the Commonwealth of Virginia agencies for Federal and State water/wetland permits. The NRC coordinated with the USACE during its review of the proposed project. No Federally protected species were identified at any of the survey locations, including the Walkerton roll-off location, and USACE made a “no effect” determination for the project (NRC 2013).

### **North Anna Site, Route 700 Parcels, and Transmission Line Corridor**

Since the 2005 BA was prepared, Dominion has conducted several surveys for Federally listed threatened and endangered species and/or their habitat (NRC 2013).

- 2008 Freshwater Mussel Survey in Lake Anna
- 2009, 2010, and 2012 Small Whorled Pogonia Surveys at the NAPS site, Route 700 parcels, and proposed transmission line corridor

No Federally protected species were identified at any of the survey locations.

### **Walkerton Roll-Off Location and Large Component Transport Route**

Dominion has also conducted the following surveys for Federally listed threatened and endangered species and/or their habitat at the Walkerton roll-off location (NRC 2013).

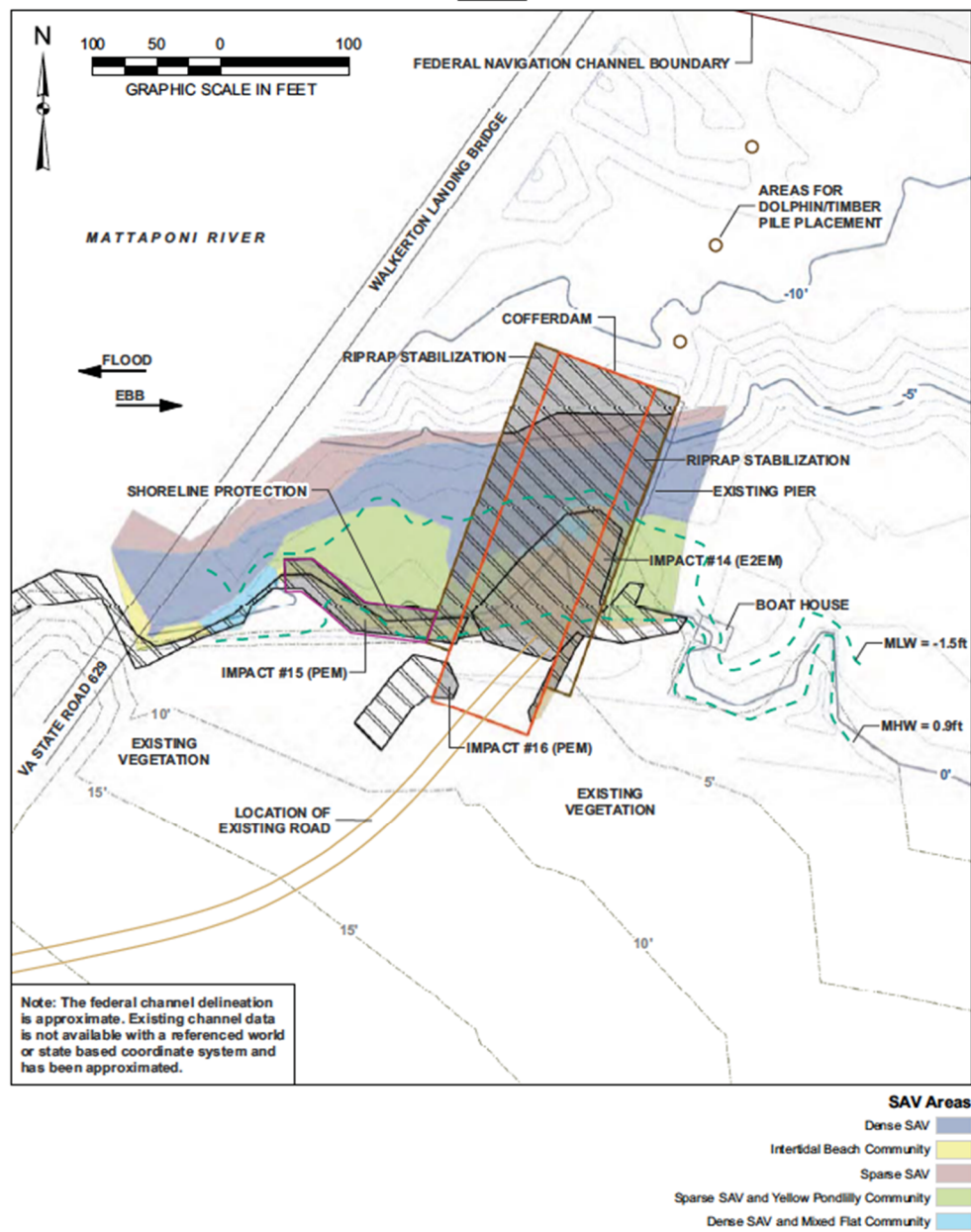
- 2010 (WSSI 2010) and 2012 (EAEST 2012) Submerged Aquatic Vegetation (SAV) Surveys
- 2012 Sensitive Joint Vetch Survey

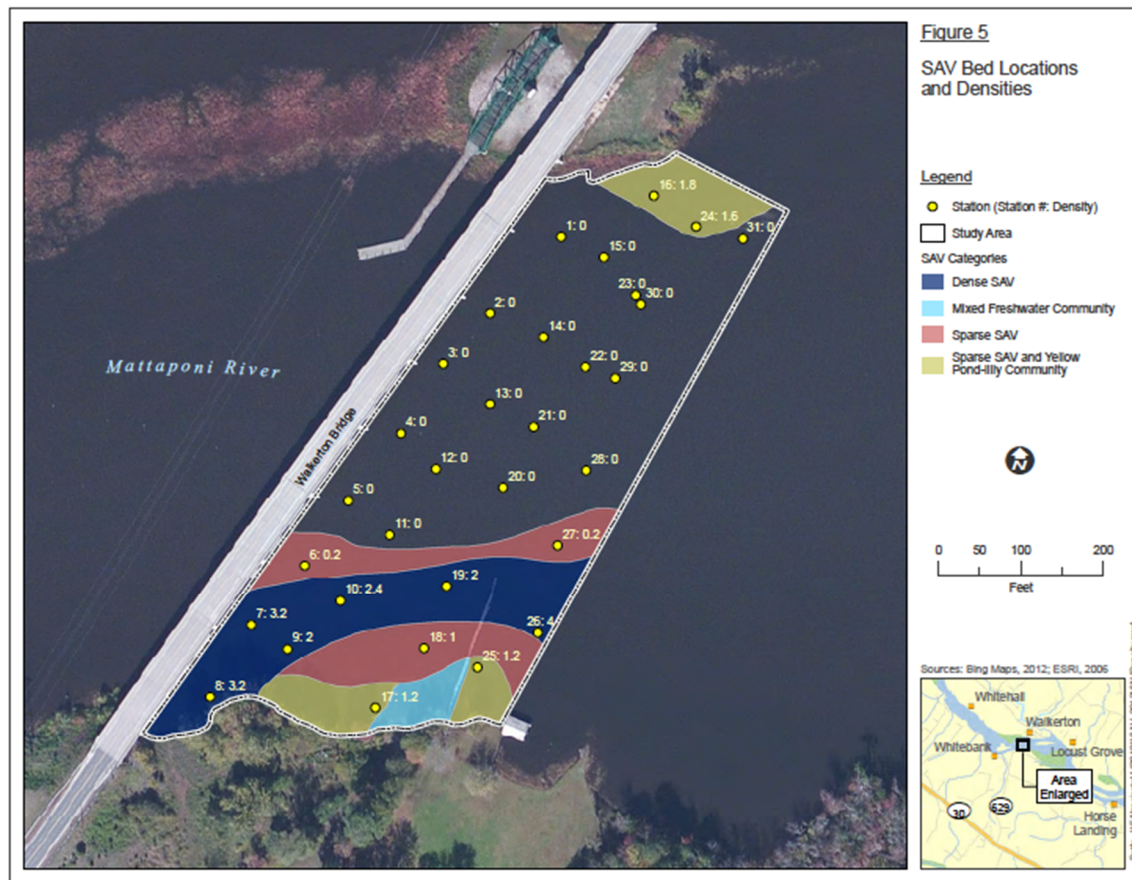
The surveys of SAV and other aquatic habitats in the tidally influenced section of the Mattaponi River where the proposed large component transport route barge slip would be located (i.e., at the Walkerton roll-off location) provide an indication of the habitat in the vicinity (WSSI 2010). The survey area was visually inspected for SAV from a boat, and samples were collected using a double-sided rake that was dragged along the river bottom (WSSI 2010). A total of six SAV habitat types were identified in the study; these types were classified according to the *Virginia Marine Resource Commission Wetland Guidelines* (VMRC 1993). These habitat types included: (1) dense SAV beds, (2) sparse SAV/yellow pond lily (*Nuphar lutea*) community (VMRC type IX), (3) sparse SAV beds, (4) mixed freshwater community (VMRC type XI), (5) intertidal beach community (VMRC type XIII), and (6) dense SAV/mixed flat community (VMRC type XV) (WSSI 2010, VMRC 1993). As noted in EAEST 2010b, the Walkerton roll-off location

component will temporarily impact approximately 65 linear m (210 linear ft) of stream channel to construct a temporary cofferdam and stabilize the adjacent shoreline. The cofferdam itself will temporarily impact approximately 30.5 linear m (100 linear ft) of stream channel and the required shoreline protection will temporarily impact approximately 46 linear m (150 linear ft) of shoreline. These impacts include an overlap of approximately 12 linear m (40 linear ft). Areas of expected SAV disturbance from cofferdam installation are shown in Figure 6.

In the EAEST 2012 SAV survey, transects were set up in the field at approximately 15 m (50 ft) spacings from north to south, and sampling occurred at approximately 30.5 m (100 ft) intervals for a total of 31 stations (EAEST 2012). SAV was observed in 13 of the 31 sampling stations (Figure 7). Habitat types that were found included dense SAV beds, sparse SAV beds, sparse SAV/yellow pond lily community (VMRC IX), and mixed freshwater community (VMRC type XI), and all were dominated by hydrilla (*Hydrilla verticillata*) (EAEST 2012). No threatened or endangered species were found during either of the surveys.

None of the surveys performed by Dominion at the Walkerton roll-off location were designed to identify Atlantic Sturgeon and no Atlantic Sturgeon were reported as being observed during the surveys.





**Figure 7.** Submerged Aquatic Vegetation Results for the 2012 Survey (EAEST 2012).

## **6.0 Effects of Action (Species Determinations)**

### **North Anna Site, Route 700 Parcels, and Transmission Line Corridor**

The “no effect” determinations from ESP activities made by NRC in the 2005 BA prepared for the USFWS still hold true for the proposed action described in the COL application. Likewise, there should be “no effect” to Atlantic Sturgeon associated with construction and operational activities at the North Anna site, the Route 700 parcels or the new transmission line corridor because they are not known to inhabit waters associated with these project areas.

### **Walkerton Roll-Off Location and Large Component Transport Route**

Atlantic Sturgeon spawning has not been documented in the Mattaponi River or North Anna River to date, but there is evidence that fall-spawning adults have visited the upper reaches of the Pamunkey River within the York River watershed. As discussed in Section 4.0, Atlantic Sturgeon are known or likely to occur within 5 km (3 mi) of the Walkerton roll-off location and in the vicinity of the proposed temporary bridge crossing the North Anna River. Spawning adult Atlantic Sturgeon have not been confirmed near either location.

The NRC staff notes that environmental conditions in the Mattaponi in the vicinity of the Walkerton roll-off location (e.g., salinity, temperature, substrate) may be suitable for spawning. Water temperatures are favorable for spawning during the spring and early fall in this part of the river and there may be suitable spawning substrate near by. If spawning individuals were present in the vicinity of the Walkerton roll-off location, they would likely be found in the deeper portions of the river associated with the Federal navigation channel to the north of the cofferdam based on spawning habitat descriptions (ASMFC 2012; Musick 2005). If Atlantic Sturgeon were present during active construction, they would be temporarily affected by water turbidity, noise, and vibration related to the construction of the cofferdam. As shown in Figures 6 and 7, the presence of the cofferdam would also affect nearshore SAV on the south side of the river, but suitable habitat would be present upstream of the cofferdam and on the opposite side of the river if larval sturgeon chose to use this benthic feature for cover. The potential for fatal or non-fatal collisions near the Walkerton roll-off location is unlikely, but collision risk in other parts of the river could occur during equipment delivery. To protect anadromous species in the Mattaponi River, Dominion has indicated it will comply with Time of Year Restrictions dictated by Virginia Department of Environmental Quality and VDGIF, which prohibit in-river construction between February 15<sup>th</sup> and June 30<sup>th</sup> (EAEST 2010b). Recent work by Hager et al. (2014), suggests additional restrictions in the late summer and early fall may be required to protect spawning Atlantic Sturgeon venturing into the upper reaches of the Mattaponi River near the Walkerton roll-off location. Based on the Hager et al. (2014) research, Dominion has committed to refrain from performing in-water work from August 1 to October 31 (Dominion 2016). Further,



Dominion has committed to use full-depth turbidity/silt curtains and minimize disturbance of the river bottom to limit increases in turbidity (Dominion 2016).

As part of the large component transport route, Dominion has proposed constructing a clear span bridge crossing over the North Anna River just north of the Route 30 bridge (EAEST 2010b). The temporary span will be in place for approximately three years. No instream work will occur at this crossing because no portion of the spanning structure or support structure will be located in the river channel. Even if Atlantic Sturgeon are present in the North Anna River, they should not be affected by the installation, presence, or removal of the temporary span.

Based on the above assessment and the potential to mitigate construction impacts through work windows and/or construction practices, the NRC staff concludes that the construction and operation of the Walkerton roll-off facility on the Mattaponi River and placement of a temporary span over the North Anna River may affect, but is unlikely to adversely affect Atlantic Sturgeon near the Walkerton roll-off location.

## **7.0 Cumulative**

Cumulative effects include those effects of future State or private activities that are reasonably certain to occur within the action area of the Federal action. Other than the activities that were considered as part of the baseline in Section 4.0, no State or private activities that could affect the Atlantic Sturgeon have been identified as being reasonably certain to occur in the vicinity of the Walkerton roll-off location. Accordingly, the NRC has identified no potential effects on the Atlantic Sturgeon that would be cumulative to those described above in Section 6.0.

## 8.0 Conclusions

The Atlantic Sturgeon is the only species under NMFS' jurisdiction that has been identified as potentially being affected by the construction and operation of a third nuclear power plant at the NAPS site. The Atlantic Sturgeon is not known to inhabit waters associated with much of the project, including the NAPS site, the Route 700 parcels, or the transmission line corridor. Therefore, the NRC concludes there should be "no effect" to Atlantic Sturgeon from these project activities.

The Atlantic Sturgeon has recently been observed in the Mattaponi and North Anna Rivers where Dominion proposed to construct a temporary barge slip at the Walkerton roll-off location and a clear span bridge crossing associated with the large component transport route, respectively. Atlantic Sturgeon spawning activity has not been confirmed at either of these two locations. Since the 2005 BA for the USFWS was prepared, Dominion has conducted additional aquatic and terrestrial surveys for listed species and their habitat. No Federally listed species were found in any of the survey areas. Based on information obtained just prior to the discovery of the Atlantic Sturgeon in these waters, the USACE completed an EA for the project and issued a DA permit.

Potential impacts to the Atlantic Sturgeon at the Walkerton roll-off location include increased turbidity, noise, and vibration associated with construction of the cofferdam and placement of the dolphins; collisions with boat traffic supporting construction activities; and a reduction in SAV habitat that would be suitable for larval sturgeon if spawning occurred in the area. Impacts are expected to be minimal and temporary, with in-water work anticipated to last two weeks. If present, spawning activity is most likely to occur in the deeper portions of the river unaffected by construction activities. However, in-water work will not occur between February 15 and June 30 or between August 1 and October 31 of any year, to minimize potential impacts to spawning Atlantic Surgeon (Dominion 2016). Construction of the cofferdam and installation of the dolphins is temporary and, once in place, the increased turbidity, noise, and vibrations would cease. Nearshore SAV on the south side of the river would temporarily be reduced while the cofferdam is in place (approximately three years), but suitable habitat would be present upstream of the cofferdam and on the opposite side of the river. Collisions with boats associated with project construction could occur anywhere sturgeon and project boats are both present, but with the limited number of barge shipments anticipated (two to three a year), this is considered an unlikely event. Impacts to Atlantic Sturgeon are unlikely at the proposed bridge crossing over the North Anna River because installation, use, and removal of the clear span will not require any in-water work.

As required by the special conditions in the USACE's DA permit, "... mitigation for the temporary impacts at Walkerton in the Mattaponi River and the associated shoreline and wetlands shall be accomplished by the removal of all fill and dolphins and the restoration of the impacted areas to pre-construction conditions within 90 days of the termination of the facility's use. The wetland and SAV bed restoration and subsequent monitoring shall be completed in accordance with the plans revised and received in June 2011...." (USACE 2011b).

As compensation for temporary impacts to wetlands, shorelines and the river at the Walkerton roll-off location, Dominion would preserve 3589 linear m (11,775 linear ft) of stream channels with riparian buffers and secure 3.52 ha (8.7 ac) of wetland compensation credits and 5624 stream compensation credits from an approved wetland/stream-mitigation bank (USACE 2011b). In addition, Dominion stated that it would implement construction mitigation measures. These measures would include instituting construction BMPs for erosion and dust control, noise abatement, and proper equipment maintenance; restricting the timing of activities to minimize impacts to resources; and adhering to applicable permit conditions (NRC 2010).

Securing stream and wetland credits will help compensate for the permanent loss of habitat. Employing construction BMPs will minimize impacts to aquatic resources during construction. Construction impacts are temporary, largely reverseable and confined.

As described in Section 6, the NRC staff concludes that the construction and operation of the Walkerton roll-off facility on the Mattaponi River and placement of a temporary span over the North Anna River may affect, but is not likely to adversely affect Atlantic Sturgeon.

## 9.0 References

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## APPENDIX A

### Correspondence between the NRC and NMFS to Date Concerning North Anna Unit 3

December 21, 2003	Letter to NOAA Fisheries Northeast Regional Office from NRC. Subject: Application for an early site permit for the North Anna Power Station site. (NRC Accession No. ML033560365)
January 5, 2004	Letter to NOAA Fisheries Southeast Regional Office from NRC. Subject: Application for an early site permit for the North Anna Power Station site. (NRC Accession No. ML040080759)
January 6, 2004	Letter to NRC from NOAA Fisheries Northeast Regional Office. Subject: List of federally protected species under the jurisdiction of NOAA Fisheries for the North Anna ESP and alternate Surry ESP site. (NRC Accession No. ML040230669)
May 19, 2004	Letter to NRC from NOAA Fisheries Southeast Regional Office. Subject: List of federally protected species under the jurisdiction of NOAA Fisheries for the alternate Savannah River ESP site. (NRC Accession No. ML041800187)
August 19, 2014	Teleconference between NRC and NMFS. Subject: Timing of Atlantic Sturgeon spawning in the York River system and path forward for consultation. (NRC Accession No. ML15110A206)