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US Army Corps of Engineers
Norfolk District
Regulatory Office
Received by: RLS
Date: May 26, 2017

May 26, 2017

Mr. Randy Steffey
U.S. Army Corps of Engineers - Norfolk District
803 Front Street
Norfolk, Virginia 23510

RE: Surry-Skiffes Creek-Whealton 500 kV Project –
Response to Comments from Mr. Ron Figg

Dear Mr. Steffey:

In your email dated May 23, 2017, the U.S. Army Corps of Engineers (Corps) provided nine emails from Mr. Ron Figg, providing comments on the proposed Surry – Skiffes Creek – Whealton Transmission Line Project (NAO 2012-0080/13-0408). The Corps was seeking confirmation from Virginia Electric and Power Company (Dominion Energy) that comments made by Mr. Figg had been addressed. Mr. Figg had previously submitted comments to the Corps in response to the Public Notice dated October 1, 2015. In his letter to the Corps, Mr. Figg provided comments on visual impacts, several alternatives, and security issues. Dominion Energy addressed these comments in a "Response to Comments Submitted by Interested Parties in Response to the Public Notice Dated October 1, 2015 Concerning the Surry Skiffes Creek-Whealton Project" on January 29, 2016 (Response to Comments). Specifically, Mr. Figg's comments were addressed in Issue Category 3 – Alternatives Other than the Proposed Project, Issue Category 6 – Extreme Weather/Security Issues, and Issue Category 9 – Miscellaneous. Copies of the relevant responses are provided as an attachment to this letter.

The nine emails that the Corps provided Dominion Energy on May 23, 2017, were submitted by Mr. Figg after Dominion Energy submitted the response to the Public Notice Comments. The dates of these emails ranged from January 31, 2016 to January 4, 2017. In these emails, Mr. Figg provides the same or very similar comments to those submitted previously concerning the security of the river crossing, recovery time for repairs in response to damage, and potential alternatives, including underground siting, additional generation, and alternative overhead river crossing alignments. Dominion Energy previously responded to all of these issues in the response to the Public Notice comments dated January 29, 2016. After reviewing Mr. Figg's emails and the information provided with them, Dominion Energy believes that no new information was provided that would require an update or change in its Response to Comments. Attached is a matrix providing a summary of comments contained within each email and where they have been addressed previously by Dominion Energy.

If there are any questions concerning this letter please do not hesitate to contact Rachel Snead by email at rachel.w.snead@dominionenergy.com or phone at 804-221-3523.

Sincerely,

Bob McGuire
Director, Electric Transmission Project Development & Execution

Attachments:

Pages from Reponses to Comments
Matrix of Comments Provided by Mr. Figg

Issue Category 2 – View Shed Impacts				
			Colonial National Historical Park).	
65	Ron Figg	Oppose	1. General opposition for visual impacts.	See response to Issue Category 2.

Issue Category 3 – Alternatives Other than the Proposed Project

General Response:

Numerous alternatives to the Project were offered and extensively evaluated as part of the submitted Joint Permit Application (submitted August 2013), the Alternatives Analysis (received by the Corps November 7, 2014), the revised Alternatives Analysis (received by the Corps January 8, 2015), revised Table 3.1 (received by the Corps January 15, 2015), Stantec's Alternatives Analysis (received by the Corps Nov. 7, 2014 and additional materials provided Dec. 19, 2014 and Jan. 8, 2015), and USACE Preliminary Alternatives Conclusions White Paper (October 1, 2015). Those alternatives did not meet the Project's need or purpose. The analysis also found that the environmental impacts associated with the Chickahominy route are significantly greater than those for the proposed Surry – Skiffes Creek route. *See* Alternatives Analysis (November 6, 2015), Revised Alternatives Analysis (January 1, 2015), including revised Table 3.1, and USACE Preliminary Alternatives Conclusions White Paper (October 1, 2015), which provide an in depth examination of the alternatives analysis.

Regarding comments suggesting the Yorktown Units generate energy using natural gas, the Corps White Paper (Oct. 1, 2015), Stantec's Alternative Analysis (received by the Corps Nov. 7, 2014 and additional materials provided Dec. 19, 2014 and Jan. 8, 2015) Revised Table 3.1 (received by the Corps Jan. 15, 2015), and Letter from S. Miller, Dominion, to L. Rhodes, USACE , Attachment 1, Response to Comment E (July 2, 2015), explained that there is currently not a sufficient gas supply to support year-round operation of gas-fired generation at Yorktown and significant expansion of the regional gas supply would be required. Currently, the region does not have adequate infrastructure to support this expansion and there is no certainty when this infrastructure may be in place. Also, retrofitting the Yorktown units would only temporarily delay the need for transmission upgrades within the region to 2019 but at a cost of over $1 billion to the Virginia customer. Furthermore, the retrofitted facilities would still be less efficient than newer generation facilities and burn more fuel to achieve the required capacities.

With regards to burying the transmission lines under the river, as discussed in the alternatives analyses noted above, that alternative presents reliability and operational concerns. For example, locating and repairing damaged underground lines is significantly more

Issue Category 3 – Alternatives Other than the Proposed Project

difficult, timing consuming, expensive, and environmentally damaging than locating and repairing overhead lines. In order to replace a cable in a pipe type cable system any cable splices in the circuit will need to be removed first in order to remove the old cable. Splices are larger in diameter than the pipe and prevent pulling the cable through the pipe. A splice in the riverbed will need to be retrieved by multiple cranes on barges to bring the pipe type cable to a splicing platform. The splicing platform is constructed in the river first before the pipe is retrieved. The pipe is secured to other piles driven in the river and on the platform. A controlled environment room is built on the platform surrounding splice to prevent contaminants and moisture from entering the pipe after it is opened. This room is critical to splicing a cable. Once the new splice is completed, the pipe is welded around the splice and lowered back into the riverbed. The riverbed is prepared by dredging or water jetting the river bottom in order to install the pipe to its proper depth. This process does not take into account the time and effort to remove and install new cables (which would need to be manufactured, causing further delay) in the pipe all of which requires specialized work crews and equipment. This process is extraordinarily expensive and time consuming. In addition, the necessary permits needed to perform dredging work in the river would need to be obtained, which would further increase expenses and delay. In short, this process is neither reasonable nor practicable and does not meet the project's purpose and need. Other issues concerning this alternative include routing and siting constraints, land acquisition requirements, costs, increased environmental and cultural impacts, and time constraints. While some commenters have provided examples of transmission lines that have been buried underwater under different factual circumstances for different projects, as the discussion above suggests, those facts are not analogous here. This option was analyzed fully in the Corps White Paper as an alternative, and ultimately did not meet the projects need and purpose.

Regarding alternative energy solutions as an alternative, the materials found that standalone generation solutions to be $633 million to satisfy 2016 North American Electric Reliability Corporation ("NERC") reliability criteria. An additional $722 million would be required to provide sufficient generation by 2021, bringing the total cost of a standalone generation solution to an estimated $1.3 billion. Stand-alone generation would also face siting, permitting, and construction timeline constraints.

Regarding running the line under the James River Bridge, the Corps White Paper, Revised Alternatives Analysis and the revised Table 3.1 evaluated this alternative and concluded that this alternative does not meet the Project's purpose or need due to the significant cost, electrical violations likely to occur and inability to construct the transmission plus generation alternative within the required timeframe. *See* Letter from S. Miller, Dominion, to L. Rhodes, USACE , Attachment 1, Response to Comment C (July 2, 2015).

The Corps White Paper also addressed reconfiguring the existing network with High Tension Low Sag ("HTLS") conductors and found that the use of HTLS conductors would require the majority of 230kV-115kV systems in the NHRLA to be upgraded. Use of HTLS conductors on the Surry-Skiffes Creek-Whealton 500 kV Overhead (Dominion's Preferred Alternative) pose no reduction in the number of towers needed to cross the James River.

Issue Category 3 – Alternatives Other than the Proposed Project

Regarding the cost of another alternative, Letter from S. Miller, Dominion, to L. Rhodes, USACE, Attachment 1, Response to Comment D, specifically states "[c]ontrary to the comments, as the Revised Alternatives Analysis and the revised Table 3.1 demonstrate, the costs associated with the evaluated alternatives are, with one exception, between three and eight times the cost of the proposed project, and that the alternatives have additional environmental, cultural, archeological, logistical, and temporal impacts and/or issues that render them unable to meet the project's purpose and need and/or not practicable. In any event, even assuming the facts were as the comment suggests, high cost alternatives do not meet the project's purpose and need of providing "cost-effective" bulk electric services. As a regulated entity, Dominion is required to provide cost-effective services to its customers, because, among other things, the costs of service are passed on to its customers through electricity rates and fees. Dominion's ability to recover the costs of the project is limited by the fact that the rates it can charge are set by the Federal Energy Regulatory Commission and Virginia State Corporation Commission. Therefore, contrary to the comment, Dominion cannot simply spread out the costs related to a project."

The Corps White Paper (Oct. 1, 2015), Stantec's Alternative Analysis (received by the Corps Nov. 7, 2014 and additional materials provided Dec. 19, 2014 and Jan. 8, 2015) and Revised Table 3.1 (received by the Corps Jan. 15, 2015) examined rerouting the line along existing utility right-of-ways. Those alternatives did not meet the Project's purpose or need. The Chickahominy route met the Project's purpose and need but there are significantly greater environmental impacts than those for the proposed Surry – Skiffes Creek route. The Chickahominy route utilizes an existing ROW owned by Dominion that extends approximately 37.9 miles from the Chickahominy Substation in Charles City County to the proposed Skiffes Creek Switching Station in James City County. 24.9 miles is unimproved ROW that would require clearing for construction of the proposed line. The Chickahominy route crosses 93.32 acres of non-tidal wetlands, 8.64 acres of tidal wetlands and requires the clearing and permanent conversion of 62 acres of palustrine forested wetlands.

1	Society of Architectural Historians	Oppose	1. Requests Corps to recommend alternative routes, burying transmission lines, adapting Yorktown station to a new fuel source, encouraging alternative energy options.	See response to Issue Category 3.
2	Andrew Edward (resident of Williamsburg)	Oppose	1. Wants an alternative project instead of the proposed project and listed putting the switching station on Hog Island and	See response to Issue Category 3.

Issue Category 3 – Alternatives Other than the Proposed Project				
			power issue.	
83	Dale Wheary	Oppose	1. Wants further consideration of alternatives.	See response to Issue Category 3.
84	J. Capozzelli (writing for Historic Jamestown)	Oppose	1. Wants further consideration of alternative routes (underground or pre-existing crossing specifically mentioned).	See response to Issue Category 3.
85	Martin Poole (CTO/Scientist at Wireless Power Technologies)	Oppose	1. Essentially offering a "solution" to have the power lines run under the river using a "patent that is a hundred years old." 2. Noted that he forwarded the idea to Austin Bogues of the Virginia Gazette.	See response to Issue Category 3. Comment acknowledged.
86	Ron Figg	Oppose	1. Yorktown should be upgraded, instead of building the 500 kV lines, and should be run off natural gas coming from "an existing pipelines right of way and underground crossing." 2. Dominion already has plenty of existing oil storage and a pipeline right of way at Yorktown that should be run with natural gas and oil as a back-up. 3. There is enough natural gas in the area to provide Yorktown with a consistent supply	For comments 1, 4, and 5, see Response to Issue Category 3. In addition, the proposed Project route was approved by the SCC, a decision affirmed by the Virginia Supreme Court. Among other things, the SCC considered that Dominion coordinated its line route selection with the Department of Defense and other government agencies, and found many potential routes were "unworkable." SCC Order at 55 (Nov. 26, 2013); *see* SCC, Hearing Officer's Report at 23, 25-27, 35-36 (Aug. 2, 2013) (stating that routing on Fort Eustis was rejected to protect landing approaches to Felker Airfield). In response to comment 2, the MATS rule

Issue Category 3 – Alternatives Other than the Proposed Project				
			(Atlantic Coast Pipeline, Mountain Valley Pipeline, and Western Marcellus Pipeline all specifically mentioned as connecting to Virginia Transco pipeline corridor). 4. Dominion can build an underground route as evidenced by their success in northern VA using XLPE underground cables. 5. Claims a two-mile route using anchor stations at Fort Eustis and Dominion controlled property is cheaper and more secure than the four-mile Surry-Skiffes Creek route.	would require pollution control equipment for oil firing. This option was rejected.
87	Ron Figg	Oppose	1. Multiple sources of local generation is better than dependence on one large powerline due to recovery reasons. 2. Much more difficult to replace/fix river crossings as opposed to transmission structures on the Peninsula or an underground route (mentioned ease of replacing piping for XLPE underground cables).	See response to Issue Category 3.

Issue Category 6 – Extreme Weather / Security Issues

General Response:

Regarding hurricane and storm damage see Letter from S. Miller, Dominion, to L. Rhodes, USACE, Attachment 1, Response to Comment L (July 2, 2015), explaining that the facilities are designed for 100 MPH wind with the worst case exposure over the water. The National Electric Safety Code ("NESC") defines the criteria required for the extreme wind load that apply to transmission facilities. The NESC uses wind speed maps and calculations in the American Society of Civil Engineers (ASCE) standard "Minimum Design Loads for Buildings and Other Structures". The proposed projects design accounts for wind speeds and ice loads higher than the normal for the area. Further, control devices will be installed around the structures to prevent collisions from water vessels harming the integrity of the foundation.

1	Curtis Stoldt and Sharon Marcial (residents of Williamsburg, VA)	Oppose	1. Alleges that above ground lines pose a greater security threat than underwater lines.	See response to Issue Category 6.
2	Gayle Randol (resident of Richmond, VA and former guide at Historic Jamestowne)	Oppose	1. Thinks that the project is vulnerable to terrorist groups such as ISIS.	All infrastructure has these risks of potential cyber or physical attacks. The proposed project meets the NERC Cyber Infrastructure Protection 14 security standard. *See* North American Electric Reliability Corporation CIP-014-2, "Physical Security" (2015).
3	James and Judith Adams	Oppose	1. Vulnerability to shipping and extreme weather events.	See response to Issue Category 6.
4	Kenneth Levine	Oppose	1. The proposed power lines would be susceptible to damage from hurricanes or tornadoes.	See response to Issue Category 6.

Issue Category 6 – Extreme Weather / Security Issues				
5	Randy Randol III (VA Scientists and Engineers for Energy and Environment)	Oppose	1. Thinks the proposed project is vulnerable to grid security (physical or cyber-attacks, specifically notes ISIS).	All infrastructure has these risks of potential cyber or physical attacks. The proposed project meets the NERC Cyber Infrastructure Protection 14 security standard. *See* North American Electric Reliability Corporation CIP-014-2, "Physical Security" (2015).
6	Ron Figg	Oppose	1. The proposed project presents security issues based on NERC and FERC standards (attached NERC's petition outlining increased recommendations for electric utility security). 2. A straight line is less risky, from a security standpoint, than a route across the river with angle structures. 3. The SCC is not interested in the security of the project (citing a weblink).	1. The project meets the applicable Cyber Infrastructure Protection 14 security standard. *See* North American Electric Reliability Corporation CIP-014-2, "Physical Security" (2015). The Corps notes that FERC does not have applicable security standards; FERC delegated those issues to NERC. 2. All infrastructure has risks of potential attacks, and as noted, the project as routed meets NERC's security standards. In addition, the proposed Project route was approved by the SCC, and that decision was affirmed by the Virginia Supreme Court. See also response to comment 7 below. 3. Comment acknowledged (the referenced link was broken).
7	Ron Figg	Oppose	1. Claims that the proposed project is a "risky design" because the crossing design has a large number of structures in the water that are easily accessible and the design has "angle structures" that, if	Comments 1 and 2. The angled route provides additional security to the lines. The angles are substantially reinforced and are designed and constructed to provide additional support for the

Issue Category 6 – Extreme Weather / Security Issues				
			destroyed, leads to the entire structure "going down". 2. He worked for a company in the 1960s surveying transmission lines out of Surry and determined that a design using one "anchor structure" on Dominion controlled property and crossing 2 miles of river to another anchor structure on Fort Eustis provided for the greatest security (versus the 4-mile Surry-Skiffes Creek "line dog leg crossing") – anchor structure designs reduce cable sag and structures in the water. 3. Having a connecting substation next to I-64 is risky and not secure – "anyone can drive by and shoot transformer bushing or fire a mortar over the fence." 4. Dominion will not be able to quickly recover if the power lines go down in an emergency event (as opposed to the existing transmission network).	powerlines. The angle towers have "dead"-end conductors meaning that the conductors' end and are attached to the tower and a new conductor begins on that tower. In an inline tower the conductors continue without being dead ended. This configuration prevents excess sag in the lines and the angles also help prevent a "cascade" of the towers in the event that a tower goes down. Regarding placing structures on Fort Eustis, see response to Comment 86 in Issue Category 3. Comment 3. Every major energy facility is vulnerable to some degree from potential threats. Beginning in 2013, after a domestic terror event in California, design standards have been developed and adapted to reduce physical and cyber threats as well as decrease recovery time. Dominion's regular coordination with local, state, and federal officials also helps minimize and security threats. Comment 4. Adding structures and conductors in existing rights of way does not provide true redundancy, in terms of risk assessment and management. Moreover adding such structures in existing corridors increases the risk of coincident failures.

Issue Category 9 – Miscellaneous				
	(resident of Richmond, VA and former guide at Historic Jamestowne)		difference between the Skiffes Creek route and other alternatives is illusory because of the inevitable litigation costs of choosing the Skiffes Creek route and thinks the cost estimates are suspect because there are no ranges.	
21	Ron Figg	Oppose	1. The proposed project is not consistent with past decisions made by Dominion in upgrading coal units to natural gas. 2. Dominion did not properly follow a required Integrated Resource Plan for "long range integrated planning" and therefore Corps shouldn't be "backed into a corner" to approve the project 3. Claims Dominion caused this problem when they changed the power flow by closing generation locations at load center and then got in trouble with NERC and FERC standards trying to connect to remote replacement generation. 4. NERC Reliability Standards require adequacy and security analysis and the SCC testimony	Comment 1. The proposed project and its alternatives were analyzed for each's ability to meet the project's need and purpose. The proposed project was one of only two viable options. For further discussion on why retrofitting facilities was not a viable option, see response to Issue Category 3. Comment 2. See response to Issue Category 8. Regarding comment 3, the retirement of the York Town Units 1 and 2 are required by EPA regulations. The power flow models are required for proper planning to meet NERC reliability standards. Comment 4. The project meets the applicable Cyber Infrastructure Protection 14 security standard. *See* North American Electric Reliability Corporation CIP-014-2, "Physical Security" (2015).

Issue Category 9 – Miscellaneous				
			focuses only on adequacy.	

Matrix of Comments Provided by Mr. Figg and Previous Dominion Energy Responses

Email Date	Summarized Comments	Dominion Response
1/31/2016	1. Security concerns and river crossing structure failure has a long recovery time. 2. Better river crossing route directly across river to Ft. Eustis. Avoids angle structures. 3. Underground options, including 230 kV and 500 kV. Underground has better security. 4. Switching station not in secure location and susceptible to terrorist attack. 5. Propose repowering Yorktown with natural gas.	1. See Response 6, Issue Category 6 in Dominion 1/29/16 Response. Specifically, protective fender systems will be placed around the four structures adjacent to the navigational channels to reduce the potential of damage to the foundations due to vessel strikes. 2. See Response 7, Issue Category 6 in Dominion 1/29/16 Response. 3. See Responses 86 and 87, Issue Category 3 in Dominion 1/29/16 Response. 4. See Response 7, Issue Category 6 in Dominion 1/29/16 Response. Specifically, following an attack on Pacific Gas and Electric's substation in 2013, Dominion Energy analyzed its security risks utilizing an extensive risk assessment, met with various state and federal agencies to develop a protection strategy, and subsequently improved vulnerable areas through increased security standards. 5. See Response 86, Issue Category 3 in Dominion 1/29/16 Response.
2/8/2016	1. General security concerns. 2. Propose natural gas generation alternatives. 3. Use 230 kV double circuit vs. 500 kV alternatives.	1. See Response 6, Issue Category 6 in Dominion 1/29/16 Response. Specifically, protective fender systems will be placed around the four structures adjacent to the navigational channels to reduce the potential of damage to the foundations due to vessel strikes. 2. See Responses 86 and 87, Issue Category 3 in Dominion 1/29/16 Response. 3. See Response to Issue Category 3 in Dominion 1/29/16 Response.
2/19/2016	1. Security concerns and river crossing structure failure has a long recovery time. 2. Provided information on Chino Hills Southern California Edison (SCE) undergrounding of 3.5-mile segment of 500 kV line.	1. See Response 6, Issue Category 6 in Dominion 1/29/16 Response. Specifically, protective fender systems will be placed around the four structures adjacent to the navigational channels to reduce the potential of damage to the foundations due to vessel strikes. 2. Practicability of an underground 500 kV has been addressed in numerous responses including response to Issue Category 3 in Dominion 1/29/16 Response, as well as the Corps Preliminary Alternatives Conclusions White Paper, dated October 1, 2015 and updated March 30, 2017.

Matrix of Comments Provided by Mr. Figg and Previous Dominion Energy Responses

Email Date	Summarized Comments	Dominion Response
3/8/2016	1. Security concerns and river crossing structure failure has a long recovery time.	1. See Response 6, Issue Category 6 in Dominion 1/29/16 Response. Specifically, protective fender systems will be placed around the four structures adjacent to the navigational channels to reduce the potential of damage to the foundations due to vessel strikes.
3/25/2016	1. Security concerns and river crossing structure failure has a long recovery time. 2. No SCC testimony addressing security side of FERC/NERC requirements. 3. Alternative to cross river directly to Ft. Eustis. 4. Propose underground alternative, including using other voltages. 5. Propose repowering Yorktown with natural gas or other generation.	1. See Response 6, Issue Category 6 in Dominion 1/29/16 Response. Specifically, protective fender systems will be placed around the four structures adjacent to the navigational channels to reduce the potential of damage to the foundations due to vessel strikes. 2. See Response 21, Issue Category 9 in Dominion 1/29/16 Response. 3. See Response 7, Issue Category 6 in Dominion 1/29/16 Response. 4. See Response to Issue Category 3 in Dominion 1/29/16 Response, as well as the Corps Preliminary Alternatives Conclusions White Paper, dated October 1, 2016 and updated March 30, 2017. 5. See Response 86, Issue Category 3 in Dominion 1/29/16 Response.
4/13/2016	1. Provided additional information about the cost for the 500 kV Chino Hills SCE underground project.	1. Practicability of an underground 500 kV has been addressed in numerous responses, including response to Issue Category 3 in Dominion 1/29/16 Response, as well as the Corps Preliminary Alternatives Conclusions White Paper, dated October 1, 2015 and updated March 30, 2017.
7/13/2016	1. Security concerns and river crossing structure failure has a long recovery time. 2. Use Chickahominy - Skiffes Creek alternative.	1. See Response 6, Issue Category 6 in Dominion 1/29/16 Response. Specifically, protective fender systems will be placed around the four structures adjacent to the navigational channels to reduce the potential of damage to the foundations due to vessel strikes. 2. Chickahominy - Skiffes Creek alternative has greater environmental impacts than the proposed project. See Response to Issue Category 3 in Dominion 1/29/16 Response as well as the Corps Preliminary Alternatives Conclusions White Paper, dated October 1, 2015 and updated March 30, 2017.

May 26, 2017

Matrix of Comments Provided by Mr. Figg and Previous Dominion Energy Responses

Email Date	Summarized Comments	Dominion Response
7/19/2016	1. Propose repowering Yorktown with natural gas or alternative fuels. 2. Security concerns and river crossing structure failure has a long recovery time.	1. See Response 86, Issue Category 3 in Dominion 1/29/16 Response. 2. See Response 6, Issue Category 6 in Dominion 1/29/16 Response. Specifically, protective fender systems will be placed around the four structures adjacent to the navigational channels to reduce the potential of damage to the foundations due to vessel strikes.
1/4/2017	1. Security concerns and river crossing structure failure has a long recovery time. 2. Provided copy of Tabor Caramainis Rudkevich (TCR) alternatives study done by NTHP.	1. See Response 6, Issue Category 6 in Dominion 1/29/16 Response. Specifically, protective fender systems will be placed around the four structures adjacent to the navigational channels to reduce the potential of damage to the foundations due to vessel strikes. 2. Dominion responded to the practicability of the TCR alternatives in a letter dated 11/17/2016. See also the Corps Preliminary Alternatives Conclusions White Paper, dated October 1, 2015 and updated March 30, 2017.