




COMMONWEALTH of VIRGINIA

Office of the Governor

Molly Joseph Ward
Secretary of Natural Resources

MEMORANDUM

TO: The Honorable S. Chris Jones, Chairman, House Appropriations Committee
The Honorable Thomas K. Norment, Jr., Co-Chair, Senate Finance Committee
The Honorable Emmett W. Hanger, Jr., Co-Chair, Senate Finance Committee

FROM: The Honorable Molly J. Ward, Secretary of Natural Resources 

DATE: August 3, 2017

SUBJECT: Explanation of the Surry-Skiffes Creek Transmission Line Agreements

SUMMARY:

The U.S. Army Corps of Engineers Norfolk District (the "Corps") facilitated execution of a Memorandum of Agreement ("MOA") among Virginia Electric and Power Company d/b/a Dominion Energy Virginia, the Virginia State Historic Preservation Office ("SHPO"), and the Advisory Council on Historic Preservation in connection with a Corps permit to construct and operate the proposed Surry-Skiffes Creek-Wheaton 500 kV Transmission Line Project (the "Project"). The Corps executed the MOA on May 2, 2017 and issued the permit on July 3, 2017.

Subsequently, the Commonwealth of Virginia entered into Mitigation Project Agreements setting forth the specific obligation of the Commonwealth's agencies. The Mitigation Project Agreement between Dominion and the Virginia Land Conservation Foundation ("VLCF") and the Mitigation Project Agreement between Dominion and the Virginia Department of Historic Resources ("DHR") were executed on July 13, 2017. The Mitigation Project Agreement between Dominion and the Virginia Department of Game and Inland Fisheries ("DGIF") was executed on July 18, 2017. The Mitigation Project Agreement between Dominion and the Virginia Department of Conservation and Recreation ("DCR") was executed on July 26, 2017. This memorandum summarizes the terms of these agreements.

Copies of each of the Mitigation Project Agreements, as well as a copy of the final MOA, are provided as an attachment.

TERMS:

Dominion’s proposed Project implicated Section 106 of the National Historic Preservation Act due to effects on properties included or eligible for inclusion in the National Register of Historic Places. These properties include Jamestown National Historic Site, Colonial National Historic Park, the Captain John Smith Chesapeake National Historic Trail, Carter’s Grove, and other significant historic resources. In concluding the Section 106 process, the MOA provides for mitigation amounting to \$89.5 million dollars to support land conservation, preserve historical assets, and improve water quality.

The funds will be allocated in the following way and managed by the following fund managers:

- \$27.7 million to be managed by the Conservation Fund;
- *\$25 million to be managed by DCR;*
- \$15.595 million to be managed by the Virginia Environmental Endowment;
- *\$12.5 million to be managed by VLCF;*
- \$4.5 million to the Pamunkey Indian Tribe; and
- *\$4.205 million to be managed by DGIF.*

The italicized projects will be managed by divisions of the Commonwealth of Virginia. These divisions entered into the Mitigation Project Agreements described above in order to encapsulate the obligations imposed under the MOA and to provide for the administration of those obligations. The obligations, which are further enumerated in the Mitigation Project Agreements and the underlying MOA, are as follows:

- DCR: Under Stipulation II.a.1.B and Stipulation III.e of the MOA, Dominion shall pay DCR the sum of \$25 million and DCR shall utilize the funds to support projects, including land acquisition, visitor interpretation facilities, archeological investigation and preservation associated with Werowocomoco; and land acquisition, preservation of sites, and expanded facilities that serve as a visitors gateway to understanding the Virginia Indian cultures at Werowocomoco.
- VLCF: Under Stipulation II.a.1.E and Stipulation III.h of the MOA, Dominion shall pay VLCF the sum of \$12.5 million and VLCF shall utilize the funds to support projects, including enhancement and/or preservation of battlefields: landscape

preservation within the James River watershed; and landscape scale conservation within the Project's Area of Potential Effects.

- DGIF: Under Stipulation II.a.1.C and Stipulation III.f of the MOA, Dominion shall pay VLCF the sum of \$4.205 million and DGIF shall utilize the funds to support projects, including enhancement of marsh at Hog Island Wildlife Management Area ("WMA"); living shoreline and shoreline restoration in Surry County; acquisition of marsh adjacent to the Chickahominy WMA; history and remote viewing and interpretation at Hog Island WMA; and archaeological identification at Hog Island WMA.

In addition, the MOA places certain obligations upon DHR, including coordinating to avoid and minimize impacts of the Project and coordinating on the creation and operation of the mitigation compensation fund set forth in the MOA. As such, DHR also entered into a Mitigation Project Agreement encapsulating the obligations and providing for the administration of those obligations.

Dominion is currently working through the project timelines with the fund managers that are responsible for executing the projects under the MOA. Attached for your review is a presentation from Dominion setting forth the preliminary description of these timelines, which Dominion provided to the fund managers during a meeting on August 1, 2017.

MITIGATION PROJECT AGREEMENT

THIS MITIGATION PROJECT AGREEMENT (“Agreement”) is made and entered into this ___ day of July, 2017, by and between the **COMMONWEALTH OF VIRGINIA, DEPARTMENT OF CONSERVATION AND RECREATION**, an agency of the Commonwealth of Virginia (“DCR”) and **VIRGINIA ELECTRIC AND POWER COMPANY d/b/a DOMINION ENERGY VIRGINIA (“DEV”)**, a Virginia public service corporation.

WITNESSETH:

WHEREAS, DEV has entered into that certain Memorandum of Agreement (“MOA”) among DEV, the Virginia State Historic Preservation Office (“SHPO”), the U.S. Army Corps of Engineers Norfolk District (the “Corps”) and the Advisory Council on Historic Preservation (“ACHP”) dated April 24, 2017 and executed on May 2, 2017 in connection with the construction and operation of the proposed Surry-Skiffes Creek-Wheaton 500 kV transmission line (the “Project”); and

WHEREAS, the MOA places certain obligations on DEV, including, pursuant to Stipulation II.a.1.B, obligations to create and operate a Mitigation Compensation Fund for Historic Properties (the “Fund”) to be managed by DCR;

WHEREAS, DCR is an agency of the Commonwealth of Virginia that, among other things, protects and provides access to numerous state parks and manages natural area preserves; and

WHEREAS, DCR’s participation in activities to mitigate the environmental effects of the Project is consistent with the agency’s mission to conserve, protect, enhance and advocate wise use of the Commonwealth’s unique natural, historical, recreational, scenic, and cultural resources.

NOW, THEREFORE, in consideration of the foregoing premises and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, DEV and DCR (together, the “Parties”) agree as follows:

1) Payment by DEV. In accordance with Stipulation II.a.1.B of the MOA, DEV shall pay to DCR the sum of Twenty Five Million and No/100 Dollars (\$25,000,000.00) in the form of cash and/or land identified by DCR to be acquired by DEV and donated to DCR. The cash, shall be held by DCR in a segregated, uniquely identifiable account and invested in accordance with cash management procedures of the Virginia Treasurer and Va. Code § 2.2-1806 (the “Fund”). The purchase price of any land acquired by DEV following an appraisal by a licensed third party and donated to DCR in support of Stipulation III.e of the MOA and adhering to Items 1), 2), and 3) of this agreement will be recognized as obligations against this \$25,000,000 payment.

2) Disbursement of Funds by DCR. DCR shall utilize the Fund to support projects, including acquisition, design, construction and long-term maintenance of the same, within the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and thematically related areas consistent with Stipulation III.e of the MOA.

3) USACE and SHPO Plan Approval. Disbursement of funds by DCR for a project shall be consistent with and shall not occur until final approval of the Plans as set forth in Stipulation III.e.3. The foregoing notwithstanding, DCR may disburse limited funds to support design work necessary to meet the requirements of Stipulation III.e.1.B prior to Plan approval.

4) Project Implementation; Unobligated Funds. The parties acknowledge and agree time is of the essence in carrying out the completion of the Project and the mitigation requirements of the MOA. DCR shall use its best efforts to obligate fifty percent (50%) of the Fund within five (5) years of the effective date of the MOA, and the balance within ten (10) years of the same. Any unobligated funds remaining after twelve (12) years of the effective date of the MOA shall be transferred to a mitigation compensation fund administered by the Virginia Land Conservation Foundation for purposes associated with the Project as set forth in the MOA. "Unobligated" funds are any portion of the Fund that are not, by a separate grant agreement signed by DCR and approved by DEV, pledged for disbursement to accomplish the goals of the Fund. Funds that are identified for obligation in a comprehensive plan for long-term maintenance, or similar activities, shall be considered obligated.

5) Reporting. DCR shall provide an annual report on its activities in administering the Fund by January 31 of each year. The information provided in each report shall be sufficient to meet DEV's annual reporting requirements under Stipulation II.a.3 of the MOA.

6) Termination. This Agreement shall terminate when: (i) DCR has obligated and disbursed the Fund in accordance with this Agreement and managed the projects and activities developed pursuant thereto for the life of the Project; (ii) DEV elects to terminate in the event the Corp's Permit for the project is stayed, revoked or vacated; or (iii) when DEV and DCR mutually agree to its termination. If this Agreement terminates while funds remain unobligated and undisbursed, DCR shall deliver such funds to such entity as may be mutually identified by DEV and the Corps.

7) Compensation and expenses. DEV shall pay DCR a one-time fee equal to five (5%) of the Fund (\$1,250,000.00) to defray DCR's administrative costs and expenses in supporting projects and establishing the funding mechanism created hereby.

8) Miscellaneous. The terms of this Agreement may be enforced only by DEV and DCR. No third parties have been provided, nor shall they have, any rights under this Agreement, including a right of enforcement. This Agreement does not create any rights, responsibilities or liabilities for DCR under the MOA. The parties hereto will take whatever reasonable steps are necessary to carry out the transactions contemplated herein. This Agreement represents the entire agreement between DEV and DCR with respect to the Fund, and this Agreement may be amended only with the written consent of both parties. The following lists the primary points of the contact between DEV and DCR regarding the implementation of the Fund as set forth under this Agreement:

DEV

Rachel W. Snead
Electric T&D Project Manager II
Dominion Energy Transmission, Inc.
701 East Cary Street
Richmond, VA 23219
804-221-3523
rachel.w.snead@dominionenergy.com

DCR

Tom Smith
Deputy Director of Operations
Virginia Department of Conservation and Recreation
600 East Main Street
Richmond, VA 23219
Telephone: (804) 786-4554
tom.smith@dcr.virginia.gov

IN WITNESS WHEREOF, the parties have executed this Agreement as of the dates set forth below.

DCR:

DEV:

COMMONWEALTH OF VIRGINIA,
DEPARTMENT OF CONSERVATION AND
RECREATION

VIRGINIA ELECTRIC AND POWER
COMPANY d/b/a DOMINION ENERGY
VIRGINIA

By: Clyde E. Cristman
Clyde E. Cristman, Director

By: Robert M. Blue
Robert M. Blue
President and CEO

Date: July 25, 2017

Date: 7/26/17

MITIGATION PROJECT AGREEMENT

THIS MITIGATION PROJECT AGREEMENT (“Agreement”) is made and entered into this ___ day of June, 2017, by and between the **COMMONWEALTH OF VIRGINIA, DEPARTMENT OF GAME AND INLAND FISHERIES (“DGIF”)**, an agency of the Commonwealth of Virginia (“DGIF”) and **VIRGINIA ELECTRIC AND POWER COMPANY d/b/a DOMINION ENERGY VIRGINIA (“DEV”)**, a Virginia public service corporation.

WITNESSETH:

WHEREAS, DEV has entered into that certain Memorandum of Agreement (“MOA”) among DEV, the Virginia State Historic Preservation Office (“SHPO”), the U.S. Army Corps of Engineers Norfolk District (the “Corps”) and the Advisory Council on Historic Preservation (“ACHP”) dated April 24, 2017 and executed on May 2, 2017, in connection with the construction and operation of the proposed Surry-Skiffes Creek-Wheaton 500 kV transmission line (the “Project”); and

WHEREAS, the MOA places certain obligations on DEV, including, pursuant to Stipulation II.a.1.C., obligations to create and operate a Mitigation Compensation Fund for Historic Properties (the “Fund”) to be managed by DGIF;

WHEREAS, DGIF is an agency of the Commonwealth of Virginia that, among other things is responsible for establishing permanent conservation easements and purchases lands for conservation purposes; and

WHEREAS, DGIF’s participation in activities to mitigate the environmental effects of the Project is consistent with the agency’s mission to conserve, protect, enhance and advocate wise use of the Commonwealth’s unique natural resources.

NOW, THEREFORE, in consideration of the foregoing premises and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, DEV and DGIF (together, the “Parties”) agree as follows:

1) Payment by DEV. In accordance with Stipulation II.a.1.C. of the MOA, DEV shall pay to DGIF the sum of Four Million Two Hundred Five Thousand and No/100 Dollars (\$4,205,000.00), which sum shall be held by DGIF in a segregated, uniquely identifiable account and invested in accordance with cash management procedures of the Virginia Treasurer and Va. Code § 2.2-1806 (the “Fund”).

2) Disbursement of Funds by DGIF. DGIF shall utilize the Fund to support projects, including acquisition, planning, design, construction and long-term maintenance of the same, within the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and thematically related areas consistent with Stipulation III.f. of the MOA.

3) Plan Development and Review. Disbursement of funds by DGIF for a project shall be consistent with the Plans drafted as set forth in Stipulation III.f.1.B. and subjected to review for 30 days under Stipulation III.f.1.C. The foregoing to the contrary notwithstanding, DGIF may disburse limited funds to support design work necessary to meet the requirements of Stipulation III.f.1.

4) Project Implementation; Unobligated Funds. The parties acknowledge and agree time is of the essence in carrying out the commencement and completion of the Project and the mitigation requirements of the MOA. DGIF shall use its best efforts to obligate fifty percent (50%) of the Fund within five (5) years of the effective date of the MOA, and the balance within ten (10) years of the same. Any unobligated funds remaining after twelve (12) years of the effective date of the MOA shall be transferred to a mitigation compensation fund administered by the Virginia Land Conservation Foundation for purposes associated with the Project as set forth in the MOA. "Unobligated" funds are any portion of the Fund that are not, by a separate grant agreement signed by DGIF and approved by DEV, pledged for disbursement to accomplish the goals of the Fund. Funds that are identified for obligation in a comprehensive plan for long-term maintenance, or similar activities, shall be considered obligated.

5) Reporting. DGIF shall provide an annual report on its activities in administering the Fund by January 31 of each year. The information provided in each report shall be sufficient to meet DEV's annual reporting requirements under Stipulation II.a.3 of the MOA.

6) Termination. This Agreement shall terminate when: (i) DGIF has obligated and disbursed the Fund in accordance with this Agreement and managed the projects and activities developed pursuant thereto for the life of the Project; (ii) DEV elects to terminate in the event the Corp's Permit for the project is stayed, revoked or vacated; or (iii) when DEV and DGIF mutually agree to its termination. If this Agreement terminates while funds remain unobligated and undisbursed, DGIF shall deliver such funds to such entity as may be mutually identified by DEV and the Corps.

7) Compensation and expenses. DEV shall pay DGIF a one-time fee equal to five (5%) of the Fund (\$210,250.00) to defray DGIF's administrative costs and expenses in supporting projects and establishing the funding mechanism created hereby.

8) Miscellaneous. The terms of this Agreement may be enforced only by DEV and DGIF. No third parties have been provided, nor shall they have, any rights under this Agreement, including a right of enforcement. This Agreement does not create any rights, responsibilities or liabilities for DGIF under the MOA. The parties hereto will take whatever reasonable steps are necessary to carry out the transactions contemplated herein. This Agreement represents the entire agreement between DEV and DGIF with respect to the Fund, and this Agreement may be amended only with the written consent of both parties. The following lists the primary points of the contact between DEV and DGIF regarding the implementation of the Fund as set forth under this Agreement:

DEV

Rachel W. Snead
Electric T&D Project Manager II
Dominion Energy Transmission, Inc.
701 East Cary Street
Richmond, VA 23219
804-771-3970
rachel.w.snead@dominionenergy.com

DGIF

Gary Martel
Deputy Director
Commonwealth of Virginia, Department of
Game and Inland Fisheries
7870 Villa Park Drive, Suite 400
Henrico, VA 23228
804-367-1004
gary.martel@dgif.virginia.gov

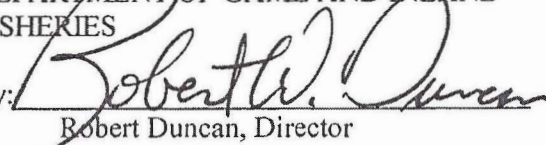
IN WITNESS WHEREOF, the parties have executed this Agreement as of the dates set forth below.

DGIF:

DEV:

COMMONWEALTH OF VIRGINIA,
DEPARTMENT OF GAME AND INLAND
FISHERIES

VIRGINIA ELECTRIC AND POWER
COMPANY d/b/a DOMINION ENERGY
VIRGINIA

By: 
Robert Duncan, Director

By: 
Robert M. Blue
President and CEO

Date: 07-18-2017

Date: 7/18/17

MITIGATION PROJECT AGREEMENT

THIS MITIGATION PROJECT AGREEMENT (“Agreement”) is made and entered into this 13 day of July, 2017, by and between the **COMMONWEALTH OF VIRGINIA, DEPARTMENT OF HISTORIC RESOURCES (“DHR”)**, an agency of the Commonwealth of Virginia and **VIRGINIA ELECTRIC AND POWER COMPANY d/b/a DOMINION ENERGY VIRGINIA (“DEV”)**, a Virginia public service corporation.

WITNESSETH:

WHEREAS, DEV has entered into that certain Memorandum of Agreement (“MOA”) among DEV, the Virginia State Historic Preservation Office (“SHPO”), the U.S. Army Corps of Engineers Norfolk District (the “Corps”) and the Advisory Council on Historic Preservation (“ACHP”) dated April 24, 2017 and executed on May 2, 2017, in connection with the construction and operation of the proposed Surry-Skiffes Creek-Wheaton 500 kV transmission line (the “Project”); and

WHEREAS, the MOA places certain obligations on DEV, including coordinating with the DHR to avoid and minimize impacts of the Project and coordinating with SHPO to create and operate a Mitigation Compensation Fund for Historic Properties (the “Fund”); and

WHEREAS, DHR is an agency of the Commonwealth of Virginia that, among other things, serves as the SHPO in Virginia; and

WHEREAS, DHR’s participation in activities to mitigate the environmental effects of the Project is consistent with the agency’s mission to foster, encourage, and support the stewardship of Virginia’s significant historic architectural, archaeological, and cultural resources.

NOW, THEREFORE, in consideration of the foregoing premises and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, DEV and DHR (together, the “Parties”) agree as follows:

1) Payment by DEV. DEV shall pay to DHR the sum of Four Hundred Thousand and No/100 Dollars (\$400,000.00) (“DHR Funds”), which sum shall be held by DHR in a segregated, uniquely identifiable account and invested in accordance with cash management procedures of the Virginia Treasurer and Va. Code § 2.2-1806.

2) Disbursement of Funds by DHR. DHR shall utilize the Fund to defray DHR’s administrative costs and expenses to develop, review, and/or approve plans, reports, surveys, studies, and any other documents necessary to execute the terms of the MOA.

3) Reporting. DHR shall provide an annual report on its activities in administering the DHR Funds by January 31 of each year.

4) Termination. This Agreement shall terminate when: (i) DHR has completed its responsibilities under the MOA; (ii) DEV elects to terminate in the event the Corp’s Permit for

the project is stayed, revoked or vacated; or (iii) when DEV and DHR mutually agree to its termination. If this Agreement terminates while funds remain unobligated and undisbursed, DHR shall deliver such funds, less an amount equivalent to ninety (90) days' costs of any employee(s) retained specifically to carry out its obligations under this Agreement whose compensation is provided for out of the DHR Funds (it being acknowledged such funds are needed to allow for the orderly termination of such employee(s)), to such entity as may be mutually identified by DEV and the Corps.

5) Miscellaneous. The terms of this Agreement may be enforced only by DEV and DHR. No third parties have been provided, nor shall they have, any rights under this Agreement, including a right of enforcement. This Agreement does not create any rights, responsibilities or liabilities for DHR under the MOA. The parties hereto will take whatever reasonable steps are necessary to carry out the transactions contemplated herein. This Agreement represents the entire agreement between DEV and DHR with respect to the Fund, and this Agreement may be amended only with the written consent of both parties. The following lists the primary points of the contact between DEV and DHR regarding the implementation of the Fund as set forth under this Agreement:

DEV

Rachel W. Snead
Electric T&D Project Manager II
Dominion Energy Transmission, Inc.
701 East Cary Street
Richmond, VA 23219
804-221-3523
rachel.w.snead@dominionenergy.com

DHR

Julie Langan
Director/State Historic Preservation Officer
Commonwealth of Virginia, Department of
Historic Resources
2801 Kensington Ave
Richmond, VA 23221
804-482-6087
Julie.Langan@dhr.virginia.gov

IN WITNESS WHEREOF, the parties have executed this Agreement as of the dates set forth below.

DHR:

COMMONWEALTH OF VIRGINIA,
DEPARTMENT OF HISTORIC
RESOURCES

By: 
Julie Langan, Director

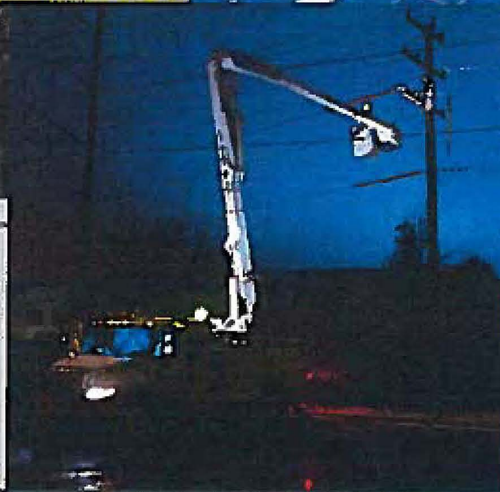
Date: 7-13-17

DEV:

VIRGINIA ELECTRIC AND POWER
COMPANY d/b/a DOMINION ENERGY
VIRGINIA

By: 
Robert M. Blue, CEO and President

Date: 7/13/17



**Dominion
Energy**™

Surry-Skiffes Creek MOA
Meeting of Fund Managers

AGENDA

August 1, 2017
12 p.m. – 2 p.m.

- Welcome
- Introductions
- MOA Review & Discussion
- Information Sharing
- Open Forum to Discuss Projects
- Next Steps
- Questions



SKIFFES MITIGATION

Memorandum of Agreement (MOA)

Memorandum of Agreement:

- Mitigation projects including land acquisition, natural and cultural resource restoration or preservation, property or landscape enhancements that:
 - Address direct, indirect, and cumulative adverse effects
 - Enhance and/or contribute to the preservation of the setting and feeling of sites associated with Colonial, African-American and Native American cultures

CONSULTING PARTY REVIEW

Frequently Referenced Stipulation

Stipulation VII Process:

- Signatories & Consulting Parties review and comment on draft plans, reports, and other documents
- Projects undergo a 30-day review and comment period
- Response to comments provided to all parties
- Submit final document to Corps for review and approval
- After written approval by Corps, copies of the final plan to be submitted to the Corps, SHPO, and others as requested

THE CONSERVATION FUND

Stipulation III.a. – III.c.

Participants: Carter's Grove, National Park Service (NPS), & Preservation Virginia (PV)

Requirements:

- Identify the location & type of shoreline stabilization and protection activities
- Draft list of projects that enhance the character or viewshed and preserve the setting and feeling
- Four projects specific to PV & NPS
- Stipulation VII approval process
- Annual report providing detailed updates and future plans for each project

Timeline:

- Submit draft project list & project narratives for review by August 7, 2017

Approval Process

- Draft project list & project narratives submitted for review
- Incorporate & respond to received comments
- Receive approval of final project list and project narratives from SHPO
- Receive written Corps approval of final project list and project narratives

Fund Manager/Recipient: Virginia Department of Conservation & Recreation

Requirements:

- Identify projects that enhance the visitor experience and setting and feeling of sites along the Captain John Smith Chesapeake National Historic Trail (NHT)
- Work with the Commonwealth of Virginia, Pamunkey Indian Tribe, & Chickahominy Indian Tribe to develop draft plans
- Stipulation VII approval process
- Annual report providing detailed updates and future plans for each project

Timeline:

- Submit draft project list for Stipulation VII review by August 7, 2017

Approval Process

- Draft plans submitted for review
- Incorporate & respond to received comments
- Receive approval of updated plans from SHPO
- Receive Corps written approval

Fund Manager/Recipient: Virginia Department of Game & Inland Fisheries

Requirements:

- Develop draft plans for five specific projects
- Work with the Commonwealth of Virginia, Pamunkey Indian Tribe, & Chickahominy Indian Tribe to develop draft plans
- Stipulation VII approval process
- Annual report providing detailed updates and future plans for each project

Timeline:

- Submit draft project list for review by August 7, 2017

Approval Process

- Draft plans submitted for review
- Incorporate & respond to received comments
- Receive approval of updated plans from SHPO
- Receive Corps written approval

Fund Manager/Recipient: Virginia Environmental Endowment

Requirements:

- Develop draft list of criteria to guide the selection of water quality improvement projects
- Work with the Commonwealth of Virginia to develop draft list of criteria
- Stipulation VII approval process
- Annual report providing detailed updates and future plans for each project

Timeline:

- Submit draft project list for Stipulation VII review by August 7, 2017

Approval Process

- Draft criteria submitted for review
- Incorporate & respond to received comments
- Submit final list of criteria to Signatories including an anticipated schedule for requesting, reviewing, and approving funding proposals
- Receive Corps written approval of final criteria

Fund Manager/Recipient: Virginia Land Conservation Foundation

Requirements:

- Develop draft list of criteria to guide the selection of land conservation and open space easement projects focused on three items
- Work with the Commonwealth of Virginia to develop draft list of criteria
- Stipulation VII approval process
- Annual report providing detailed updates and future plans for each project

Timeline:

- Submit draft project list for Stipulation VII review by August 7, 2017

Approval Process

- Draft criteria submitted for review
- Incorporate & respond to received comments
- Receive approval of updated criteria from SHPO
- Receive Corps written approval

INFORMATION SHARING

Organizations & Presenters:

- Virginia Environmental Endowment, Joe Maroon
- Commonwealth of Virginia, Angela Navarro
- The Conservation Fund, Heather Richards

Topics:

- Typical Work & Projects
- Role & Responsibilities of the Organization
- If Available, MOA Project-Specific Information

Project Ideas

Project Priorities

Information Sharing

**OPEN FORM TO
DISCUSS PROJECTS**

All

NEXT STEPS

- Work with required parties to develop and finalize draft plans/criteria according to each requirement in Stipulation III
- Submit for Stipulation VII review by August 7, 2017
- While awaiting the conclusion of the 30-day review period:
 - Finalize detailed plans, project narratives, & timelines
 - Incorporate comments as they are received
 - Begin obtaining all necessary access and permissions



QUESTIONS?

MITIGATION PROJECT AGREEMENT

THIS MITIGATION PROJECT AGREEMENT (“Agreement”) is made and entered into this 13 day of July, 2017, by and between the **COMMONWEALTH OF VIRGINIA, VIRGINIA LAND CONSERVATION FOUNDATION**, an agency of the Commonwealth of Virginia (“VLCF”) and **VIRGINIA ELECTRIC AND POWER COMPANY d/b/a DOMINION ENERGY VIRGINIA (“DEV”)**, a Virginia public service corporation.

WITNESSETH:

WHEREAS, DEV has entered into that certain Memorandum of Agreement (“MOA”) among DEV, the Virginia State Historic Preservation Office (“SHPO”), the U.S. Army Corps of Engineers Norfolk District (the “Corps”) and the Advisory Council on Historic Preservation (“ACHP”) dated April 24, 2017 and executed on May 2, 2017 in connection with the construction and operation of the proposed Surry-Skiffes Creek-Whealton 500 kV transmission line (the “Project”); and

WHEREAS, the MOA places certain obligations on DEV, including, pursuant to Stipulation II.a.1.E., obligations to create and operate a Mitigation Compensation Fund for Historic Properties (the “Fund”) to be managed by VLCF;

WHEREAS, VLCF is an agency of the Commonwealth of Virginia that, among other things is responsible for establishing permanent conservation easements and purchasing lands for conservation purposes; and

WHEREAS, VLCF’s participation in activities to mitigate the environmental effects of the Project is consistent with the agency’s mission to conserve, protect, enhance and advocate wise use of the Commonwealth’s unique natural resources.

NOW, THEREFORE, in consideration of the foregoing premises and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, DEV and VLCF (together, the “Parties”) agree as follows:

1) Payment by DEV. In accordance with Stipulation II.a.1.E. of the MOA, DEV shall pay to VLCF the sum of Twelve Million Five Hundred thousand and No/100 Dollars (\$12,500,000.00), which sum shall be held by VLCF in a segregated, uniquely identifiable account and invested in accordance with cash management procedures of the Virginia Treasurer and Va. Code § 2.2-1806 (the “Fund”).

2) Disbursement of Funds by VLCF. VLCF shall utilize the Fund to support projects, including acquisition, planning, design, construction and long-term maintenance of the same, within the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and thematically related areas consistent with Stipulation III.h. of the MOA.

3) Plan Development and Review. Disbursement of funds by VLCF for a project shall be consistent with the Plans drafted and reviewed as set forth in Stipulation III.h.1. and

approved under Stipulation III.h.2. The foregoing to the contrary notwithstanding, VLCF may disburse limited funds to support design work necessary to meet the requirements of Stipulation III.h.1. and 2.

4) Project Implementation; Unobligated Funds. The parties acknowledge and agree time is of the essence in carrying out the commencement and completion of the Project and the mitigation requirements of the MOA. VLCF shall use its best efforts to obligate fifty percent (50%) of the Fund within five (5) years of the effective date of the MOA, and the balance within ten (10) years of the same. Any unobligated funds remaining after twelve (12) years of the effective date of the MOA shall be transferred to a mitigation compensation fund administered by the Virginia Land Conservation Foundation for purposes associated with the Project as set forth in the MOA. “Unobligated” funds are any portion of the Fund that are not, by a separate grant agreement signed by VLCF and approved by DEV, pledged for disbursement to accomplish the goals of the Fund. Funds that are identified for obligation in a comprehensive plan for long-term maintenance, or similar activities, shall be considered obligated.

5) Reporting. VLCF shall provide an annual report on its activities in administering the Fund by January 31 of each year. The information provided in each report shall be sufficient to meet DEV’s annual reporting requirements under Stipulation II.a.3 of the MOA.

6) Termination. This Agreement shall terminate when: (i) VLCF has obligated and disbursed the Fund in accordance with this Agreement and managed the projects and activities developed pursuant thereto for the life of the Project; (ii) DEV elects to terminate in the event the Corp’s Permit for the project is stayed, revoked or vacated; or (iii) when DEV and VLCF mutually agree to its termination. If this Agreement terminates while funds remain unobligated and undisbursed, VLCF shall deliver such funds to such entity as may be mutually identified by DEV and the Corps.

7) Compensation and expenses. DEV shall pay VLCF a one-time fee equal to five (5%) of the Fund (\$625,000.00) to defray VLCF’s administrative costs and expenses in supporting projects and establishing the funding mechanism created hereby.

8) Miscellaneous. The terms of this Agreement may be enforced only by DEV and VLCF. No third parties have been provided, nor shall they have, any rights under this Agreement, including a right of enforcement. This Agreement does not create any rights, responsibilities or liabilities for VLCF under the MOA. The parties hereto will take whatever reasonable steps are necessary to carry out the transactions contemplated herein. This Agreement represents the entire agreement between DEV and VLCF with respect to the Fund, and this Agreement may be amended only with the written consent of both parties. The following lists the primary points of the contact between DEV and VLCF regarding the implementation of the Fund as set forth under this Agreement:

DEV

Rachel W. Snead
Electric T&D Project Manager II
Dominion Energy Transmission, Inc.
701 East Cary Street
Richmond, VA 23219
804-771-3970
rachel.w.snead@dominionenergy.com

VLCF

Tom Smith
Deputy Director of Operations
Virginia Department of Conservation and Recreation
600 East Main Street
Richmond, VA 23219
Telephone: (804) 786-4554
tom.smith@dcr.virginia.gov

IN WITNESS WHEREOF, the parties have executed this Agreement as of the dates set forth below.

VLCF:

DEV:

COMMONWEALTH OF VIRGINIA,
VIRGINIA LAND CONSERVATION
FOUNDATION

VIRGINIA ELECTRIC AND POWER
COMPANY d/b/a DOMINION ENERGY
VIRGINIA

By: Molly Ward
Molly Ward, Chair

By: Robert M. Blue
Robert M. Blue
President and CEO

Date: 7-13-17

Date: 7/13/17

**MEMORANDUM OF AGREEMENT
AMONG
VIRGINIA ELECTRIC AND POWER COMPANY,
THE VIRGINIA STATE HISTORIC PRESERVATION OFFICE,
U.S. ARMY CORPS OF ENGINEERS NORFOLK DISTRICT, AND
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION**

**SUBJECT: ISSUANCE OF U.S. ARMY CORPS OF ENGINEERS' PERMITS
FOR THE PROPOSED SURRY-SKIFFES CREEK-WHEALTON
TRANSMISSION LINE PROJECT, SURRY COUNTY, JAMES CITY COUNTY,
YORK COUNTY, CITIES OF NEWPORT NEWS AND HAMPTON, VIRGINIA**

APRIL 24, 2017

WHEREAS, pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended, 54 U.S.C. § 306108, and 33 CFR Part 325, Appendix C, Processing of Department of the Army Permits: Procedures for Protection of Historic Places, the US Army Corps of Engineers Norfolk District (Corps) is required to take into account the effects of federally permitted undertakings on properties included in or eligible for inclusion in the National Register of Historic Places (NRHP) prior to the issuance of permits for the undertaking and to consult with the Virginia State Historic Preservation Office (SHPO); and with the Advisory Council on Historic Preservation (ACHP) where historic properties are adversely affected; and

WHEREAS, Virginia Electric and Power Company (Dominion), proposes to construct new electrical transmission line infrastructure in the Hampton Roads area of Virginia. The project is intended to provide sufficient and reliable electricity to residents, businesses, and government agencies located on the Virginia Peninsula, and to meet mandatory federal North American Electric Reliability Corporation Reliability Standards. The project is collectively known as the Surry – Skiffes Creek – Whealton project, located in Surry, James City, and York Counties and the Cities of Newport News and Hampton, Virginia (the Project); and

WHEREAS, the Project involves construction of a new high voltage aerial electrical transmission line that consists of three components; (1) Surry – Skiffes Creek 500 kilovolt (kV) aerial transmission line, (2) Skiffes Creek 500 kV – 230 kV – 115 kV Switching Station, and (3) Skiffes Creek – Whealton 230 kV aerial transmission line. The proposed project will permanently impact 2,712 square feet (0.06 acres) of subaqueous river bottom and 281 square feet (0.01 acres) of non-tidal wetlands, and convert 0.56 acres of palustrine forested wetlands to scrub shrub non-tidal wetlands. The transmission lines will cross portions of the James River, Woods Creek, and Skiffes Creek. In addition to structures being built within the James River, structural discharges are proposed in non-tidal wetlands. The proposed activities will require a Corps permit pursuant to Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act; and

WHEREAS, the Corps, in consultation with the Department of Historic Resources (DHR), which serves as the SHPO in Virginia, has determined that this Project's Area of Potential Effects (APE) includes a Direct APE and an Indirect APE; and

WHEREAS, the Direct APE is defined to include those areas where physical land disturbing activities may occur. The limits of the Direct APE consist of the limits of the Project right of way (ROW) and identified construction access areas. For construction access areas, a 25-foot width was used along the centerline of field located paths and roads outside of the Project ROW; and

WHEREAS, the Indirect APE is defined to include those areas which may experience visual effects. The Indirect APE extends approximately 10 miles upstream and 13 miles downstream from the proposed river crossing and includes a buffer of approximately 0.5-miles inland from the shoreline within this area. The Indirect APE for areas where there are existing towers, and the proposed work will not result in a change in structure height greater than 10% or 20 feet is defined by the adjacent parcel boundaries or a 0.5 mile buffer, whichever is less. The limits of the Direct and Indirect APEs are shown on Attachment A; and

WHEREAS, the SHPO, finds that the documents listed in Attachment B satisfy the Secretary of the Interior's *Standards and Guidelines for Archaeological Documentation* (48 FR 44734-37, September 29, 1983) and the SHPO's *Guidelines for Conducting Historic Resources Survey in Virginia (2011)* and the SHPO's "Assessing Visual Effects on Historical Properties;" and

WHEREAS, the Corps, in consultation with the SHPO, has determined that 57 resources, as described in the attached table (Attachment C) and depicted on the maps in Attachment A, are listed, eligible for listing, or treated as eligible for listing in the NRHP for the purposes of Section 106 compliance and are considered historic properties for purposes of the Project. One additional resource, the Jamestown Island-Hog Island Cultural Landscape Historic District, was considered potentially eligible and also was included for consideration, and it also is listed on Attachment C; and

WHEREAS, the Corps requested a formal determination of eligibility (DOE) for the Captain John Smith Chesapeake National Historic Trail (Captain John Smith Chesapeake NHT) from the Keeper of the National Register (Keeper) on July 2, 2015; and, the Keeper issued a formal DOE to the Corps on August 14, 2015 (Attachment D) and concluded that the entire Indirect APE, excluding the inland portions, is eligible for the NRHP as a historic district under Criteria A, B, C, and D, because it contains a significant cultural landscape and that the Captain John Smith Chesapeake NHT within the APE is a contributing element of that district; and

WHEREAS, the Corps refers to the eligible historic district identified by the Keeper in its letter of August 14, 2015 as the “Historic District (formally Jamestown Island-Hog Island Cultural Landscape) including CAJO (No VDHR#)” and for the purposes of this Memorandum of Agreement (MOA) shall refer to this property as the “Jamestown Island-Hog Island-Captain John Smith Trail Historic District” (No VDHR#)¹; and

WHEREAS, the Corps, in consultation with the SHPO, ACHP, and Consulting Parties, has determined that the undertaking will have an adverse effect on archaeological site 44JC0662, the Jamestown Island-Hog Island-Captain John Smith Trail Historic District, which includes the contributing section of the Captain John Smith Chesapeake NHT within the APE, Carter’s Grove National Historic Landmark (VDHR #047-0001)², Colonial National Historical Park/Colonial Parkway Historic District (VDHR #047-0002), Hog Island Wildlife Management Area (VDHR #090-0121), Jamestown National Historic Site/Jamestown Island/Jamestown Island Historic District (VDHR #047-0009), the Battle of Yorktown (VDHR #099-5283), and Fort Crafford (VDHR #121-0027) (Attachment C); and

WHEREAS, the Corps initiated consultation with the Virginia SHPO, which is a Signatory, as that term is further defined in Stipulation XVIII.e herein, and the SHPO has elected to participate; and

WHEREAS, the Corps notified the ACHP, which has chosen to participate in the consultation and is a Signatory, as that term is further defined in Stipulation XVIII.e herein; and

WHEREAS, the Corps has invited Dominion to participate in this consultation and to sign this MOA as an Invited Signatory, as that term is further defined in Stipulation XVIII.d herein, and Dominion has elected to participate; and

WHEREAS, the Commonwealth of Virginia participated in the development of this MOA and identification of the mitigation projects described herein, and the Corps has invited the Commonwealth to sign the MOA as an Invited Signatory, as that term is further defined in Stipulation XVIII.d herein; and

¹ In its determination of eligibility the Keeper of the National Register did not establish a formal name for this historic property, which has been referred to by the Corps as Historic District (formally Jamestown Island-Hog Island Cultural Landscape) including CAJO (No VDHR#). The SHPO has referred to this property as the Captain John Smith Trail Historic District. The Corps’ name for the historic property is used here and later simplified to Jamestown Island-Hog Island-Captain John Smith Trail Historic District for reference purposes in this MOA only.

² The Virginia Department of Historic Resources and Virginia Outdoors Foundation are the current holders of historic preservation and open space easements on the Carter’s Grove property.

WHEREAS, the Corps has invited the following Federally Recognized Tribes: Catawba Indian Nation, the Delaware Tribe of Indians, the Delaware Nation, and the Pamunkey Indian Tribe to participate in this consultation. The Catawba Indian Nation and the Delaware Nation declined. The Delaware Tribe of Indians and the Pamunkey Indian Tribe have elected to participate and the Corps has invited them to concur with this MOA; and

WHEREAS, the Corps has invited the following Virginia State Recognized Tribes: the Cheroenhaka (Nottoway), the Chickahominy, the Eastern Chickahominy, the Mattaponi, the Upper Mattaponi, the Nansemond Tribal Association, the Nottoway Tribe of Virginia, and the Rappahannock to participate in this consultation. Only the Chickahominy have elected to participate and the Corps has invited them to concur with this MOA; and

WHEREAS, the Corps has invited James City County, Surry County, the City of Newport News, York County, the City of Williamsburg, and the City of Hampton to participate in this consultation. Only James City County has elected to participate and the Corps has invited them to concur with this MOA; and

WHEREAS, the Corps has invited the Kingsmill Community Services Association, the Southern Environmental Law Center and the steward of Carter's Grove National Historic Landmark, to participate in this consultation and they all have declined to participate; and

WHEREAS, the Corps invited the following Consulting Parties, upon their request, and they all have elected to participate: The National Parks and Conservation Association (NPCA), the Save the James Alliance, the Chesapeake Conservancy, United States Department of the Interior (National Park Service, Colonial National Historic Park) (NPS), United States Department of the Interior (National Park Service, Northeast Region) (NPS), the Colonial Williamsburg Foundation, Preservation Virginia, Scenic Virginia, The National Trust for Historic Preservation, BASF, the James River Association, the NPS American Battlefield Protection Program, First California Company Jamestowne Society, Margaret Fowler, citizen, and the Council of Virginia Archaeologists. The Corps has invited each of these Consulting Parties to concur with this MOA; and

WHEREAS, by letter of March 16, 2017, Escalante Kingsmill Resort LLC, as new owner of Kingsmill Resort, asked to participate as a Consulting Party and by letter dated March 28, 2017, the Corps accepted that request. The Corps has invited Kingsmill Resort to concur with this MOA; and

WHEREAS, the Corps has involved the public in the Section 106 process by seeking public comment at the following stages of consultation: the initiation of consultation under Section 106 (August 28, 2013), identification of historic properties (November 13, 2014), and assessment and resolution of adverse effects (May 21, 2015); and

WHEREAS, the Corps, ACHP, SHPO, Dominion, and the Consulting Parties have held five official Consulting Party meetings (September 25, 2014; December 9, 2014; June 24, 2015; October 15, 2015; and, February 2, 2016), which also were open to the public, as well as numerous informal meetings, correspondence, and conferences/teleconferences (Attachment E); and

WHEREAS, the Corps issued a separate public notice (October 1, 2015) (Attachment E), which announced that the Corps would hold a public hearing and which the Corps advertised electronically; and

WHEREAS, the Corps conducted a Public Hearing for the Project on October 30, 2015, to solicit public comments and held the Public Comment Period open until November 13, 2015 (Attachment E); and

WHEREAS, the Corps has completed its identification of historic properties and its evaluation of the Project's potential adverse effects thereon under 36 C.F.R. §§ 800.4 & 800.5, and the SHPO concurred with the Corps' conclusions; and

WHEREAS, Dominion has identified several "Initial Avoidance, Minimization, and Mitigation Measures" (as set forth in Stipulation I) that it will commence and complete, as further described herein; and

WHEREAS, Dominion has also identified several properties (the Identified Properties) where it proposes to fund additional mitigation projects (e.g., land acquisition, natural and cultural resource restoration or preservation, property or landscape enhancements, etc.) that the Signatories conclude will contribute to or improve the overall integrity, most notably the setting and feeling, of the Identified Properties and the broader historic district, as set forth in Stipulations II and III below; and

WHEREAS, Dominion has provided, in the document entitled "Basis for Proposed Memorandum of Agreement to Resolve Adverse Effects to Historic Properties" included as Attachment F to this MOA, background information and rationale for its selection of the Identified Properties as the focus of the mitigation projects described in this MOA; and

WHEREAS, the SHPO's guidance document titled "*Assessing Visual Effects on Historical Properties*" (SHPO Visual Effects Guidance) outlines its recommended approach to evaluating and mitigating visual effects on historic properties; and

WHEREAS, the SHPO Visual Effects Guidance advises, among other things, that mitigation should take into account the views of the property owner, community, and other interested members of the public; and

WHEREAS, Dominion worked with the Commonwealth of Virginia in considering the concerns expressed by regional preservation advocates to develop the range of projects to mitigate adverse effects to historic properties, their setting, and context, as set forth in the following Stipulations; and

WHEREAS, the MOA defines a series of mitigation initiatives that are intended to enhance the affected values and integrity of the historic properties and the cultural landscape, and strengthen the general public and visitor's understanding of and experience at important places within and related to this landscape through enhanced heritage tourism opportunities including development of additional interpretive and orientation facilities. Proposed mitigation seeks to promote preservation of existing above-ground cultural landscape features, such as natural resources and systems, vegetation, landform and topography, land uses, circulation, buildings and structures, Native American settlements, views, and small-scale features through land acquisition, and acquisition of historic preservation and open space easements; and

WHEREAS, the Signatories agree to the proposed mitigation measures that this MOA employs, as the resolution of the Project's adverse effects on the historic properties identified in Attachment C in compliance with Section 106 of the NHPA and 36 C.F.R. § 800.6; and

WHEREAS, by signing this MOA, Dominion indicates its commitment to foster, through the projects proposed as mitigation of adverse effects, long-term working relationships with the NPS and other preservation advocates who have participated in this Section 106 review as consulting parties and regional preservation experts; and

NOW THEREFORE, in order to satisfy the Corp's Section 106 responsibilities to take into account and resolve the effects of the undertaking requiring Corps permits on historic properties, the Signatories here acknowledge that compliance with this MOA shall be made a condition of any permit issued by the Corps for the work described; thereby effectively incorporating all terms, provisions and stipulations of this MOA as conditions to the permit such that if any provision or stipulation herein is not fulfilled, such failure will constitute noncompliance with the permit, and the Corps may pursue enforcement and may seek all available remedies.

STIPULATIONS

The Corps will ensure that compliance with this MOA is made a condition of any permit issued by the Corps for the Project:

I INITIAL AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

a. TREATMENT OF ARCHEOLOGICAL SITE 44JC0662 (Switching Station)

- 1** Prior to any construction at the Skiffes Creek Switching Station, Dominion in consultation with Signatories and Consulting Parties to this MOA shall develop an approved Treatment Plan for site 44JC0662. The Treatment Plan shall be consistent with the Secretary of the Interior's *Standards and Guidelines for Archaeological*

Documentation (48 FR 44734-37, September 29, 1983) and the SHPO's *Guidelines for Historic Resources Survey in Virginia* (2011) and shall take into account the ACHP's publications, *Recommended Approach for Consultation on Recovery of Significant Information from Archeological Sites* (1999; updated September 30, 2010) and *Section 106 Archaeology Guidance* (April 2009). The plan shall specify at a minimum, the following:

- A. the property, properties, or portions of properties where site specific data recovery plans will be carried out;
 - B. the portion(s) of the site(s) to be preserved in place, if any, as well as the measures to be taken to ensure continued preservation;
 - C. any property, properties, or portions of properties that will be destroyed or altered without data recovery;
 - D. the research questions to be addressed through data recovery, with an explanation of their relevance and importance;
 - E. the methods to be used in analysis, and data management with an explanation of their relevance to the research questions;
 - F. the proposed disposition of recovered materials and records;
 - G. proposed methods of disseminating the results of the work to the interested public and/or organizations who have expressed an interest in the data recovery, *subject to revision based on the results of the data recovery proceeds*; and
 - H. a schedule for the submission of progress reports to the Signatories and Consulting Parties to this MOA.
- 2 To facilitate plan approval, Dominion will provide a draft plan to the Signatories and Consulting Parties to this MOA for review and comment in accordance with the process in Stipulation VII. Dominion shall consider all timely comments received and submit the final Treatment Plan to the Corps for approval. The final Treatment Plan will be considered "approved" upon the Corps written approval.
 - 3 Prior to commencing construction activities at the Switching Station Site that could affect archaeological site 44JC0662. Dominion shall ensure that the approved Treatment Plan is implemented.
 - 4 Dominion shall notify the Corps in writing no later than fifteen (15) days after completion of the fieldwork portion of the Treatment Plan. Notification shall include a brief management summary. If so requested by the Corps, Dominion shall facilitate any site visit.

- 5 Project activities may proceed following this notification while the technical report is in preparation. The Corps may approve construction activities and/or construction related ground disturbing activities in the area and within the boundary of the affected archaeological site while the technical report is in preparation.
- 6 Dominion and/or its assignees shall photograph the work and artifacts, and display in an appropriate place in the Project vicinity on a temporary or permanent basis, artifacts or images, with the exception of human remains, funerary objects, or sacred items.
- 7 Within one (1) year of the notification that fieldwork has been completed, Dominion shall submit to the Corps a report (following the requirements for preparation and review of draft and final reports in Stipulation VII) of the results of the Treatment Plan investigations. Once the Corps has approved the final report, Dominion shall provide two (2) copies of that document, bound and on acid-free paper and one electronic copy in Adobe® Portable Document Format (.pdf) to the SHPO and one (1) copy to the ACHP and any other Signatory or Consulting Party that requests a copy.

**b. AVOIDANCE OF UNDERWATER AND TERRESTRIAL
ARCHAEOLOGICAL SITES**

- 1 Prior to any construction that could impact archeological resources within the Direct APE, Dominion in consultation with the Signatories and Consulting Parties to this MOA shall develop an approved Avoidance Plan for all archaeological sites listed in Attachment C. The Avoidance Plan shall include:
 - A. Project plans showing the location of the cultural anomalies and all archaeological sites identified in Attachment C located within the direct APE;
 - B. Boundaries of the buffered anomalies and archaeological sites identified in Attachment C within the direct APE, relative to all proposed project elements including but not limited to coffer dams, tower footers, fenders, and mooring/anchoring locations, access roads, construction staging and equipment and materials storage area;
 - C. Detailed steps and construction protocols for ensuring avoidance of buffered areas and the handling of any unanticipated project activity that may inadvertently affect the underwater anomalies or terrestrial archaeological sites during construction;
 - D. Dominion shall fund an independent archeologist (Archaeological Monitor) who meets the professional qualifications established in

Stipulation VI below and who is approved by the SHPO to observe and monitor ground disturbances associated with construction to ensure the protection of all archaeological sites identified in Attachment C. The Archaeological Monitor shall also be responsible for ensuring that the requirements of Stipulation IX for unanticipated discoveries are carried out as appropriate; and

- E.** The Pamunkey Indian Tribe and the Chickahominy Indian Tribe may have a member or representative present to observe and monitor ground disturbances associated with construction to ensure the protection of Native American Artifacts. Dominion will coordinate with the Pamunkey Indian Tribe and the Chickahominy Indian Tribe regarding scheduling and any safety training requirements for tribal monitors.
- 2** To facilitate plan approval, Dominion will provide a draft plan to the Signatories and Consulting Parties to this MOA for review and comment in accordance with the process in Stipulation VII. Dominion shall consider all timely comments received and submit the final Avoidance Plan to the Corps for approval. The plan will be considered “approved” upon the Corps written approval.
- 3** Prior to any construction activities that could affect archeological sites identified in Attachment C, Dominion shall ensure the approved Avoidance Plan has been fully implemented.
- 4** Dominion shall notify the Corps in writing no later than fifteen (15) days after plan implementation. Notification shall include a brief management summary. If so requested by the Corps, Dominion shall facilitate any site visit.
- c. INTERPRETIVE SIGNAGE (ON PUBLICALLY ACCESSIBLE LANDS IN JAMESTOWN ISLAND-HOG ISLAND-CAPTAIN JOHN SMITH TRAIL HISTORIC DISTRICT AND OTHER THEMATICALLY RELATED LOCATIONS)**

 - 1** Prior to “Limited Construction Within the James River,” activities as defined in Stipulation XVIII.f, Dominion in consultation with the Signatories and Consulting Parties to this MOA shall develop an approved Signage Plan. In developing the Signage Plan Dominion shall:

 - A.** Identify locations on publically accessible lands, including recreational and heritage tourism destinations, for a minimum of ten (10) interpretive signs,
 - B.** Ensure that signs are designed to enhance visitor experience by informing visitors about the historic significance and character of

the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other thematically related locations,

- C. Review and evaluate existing and any planned signage and other interpretive media currently serving the historic properties at issue so as to develop signage that is complementary,
 - D. Include proposed signage text, images and other materials, and
 - E. Include proposed signage locations and confirm any necessary authorizations and/or permissions to allow sign placement.
- 2 To facilitate plan development, Dominion will provide a draft Signage Plan to the Signatories and Consulting Parties to this MOA for review and comment in accordance with the process in Stipulation VII. Dominion shall consider all timely comments received and submit the final Signage Plan to the Corps for approval. The plan will be considered “approved” upon the Corps written approval.
 - 3 Prior to “Construction Above the James River” activities as defined in Stipulation XVIII.g, Dominion shall complete fabrication and installation of all signage in accordance with the approved Signage Plan.
 - 4 Interpretive signage or any other mitigation under this Memorandum of Agreement (MOA) shall not contain any information about Dominion or its business.
 - 5 Dominion shall pay for the fabrication and installation of all interpretive signs and notify the Signatories in writing of the installation within thirty (30) days of their completion.
 - 6 Dominion shall secure an agreement between corresponding landowners outlining long term maintenance responsibilities and obligations; otherwise Dominion shall be responsible for any required maintenance for the life of the MOA.

d. LANDSCAPE DOCUMENTATION OF JAMES RIVER

- 1 Prior to “Limited Construction Within the James River,” Dominion shall develop a Historic American Landscapes (HALS) Survey of the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and all other adversely effected properties identified in Attachment C. Dominion shall comply with NPS Heritage Documentation Program Standards and Guidelines. Development shall include completion of all required photography and preparation of all necessary illustrations, maps and line drawings in accordance with the most recent SHPO archival guidelines.

- 2 Prior to “Limited Construction of the Project Within the James River” Dominion shall submit the completed HALS survey to the NPS Heritage Documentation Program and provide copies to the Signatories and Consulting Parties to this MOA.
- 3 Following acceptance of the HALS Survey by NPS, Dominion shall arrange for the submittal of the required documentation to the Library of Congress and to the SHPO so it is available for researchers in the region.
- 4 Consistent with NPS guidance, the completed HALS Survey and photo-documentation will be made available by Dominion so that it may, among other things, inform the mitigation projects under this MOA, as well as to aid in educational, investigative, preservation, and interpretive activities that enhance, directly or indirectly, the relevant historic properties.

e. SURRY – SKIFFES CREEK TOWER COATINGS

- 1 Dominion shall examine all available and feasible tower coating and finishing materials and methods that will further minimize and/or maintain the visual intensity of the transmission line infrastructure crossing the river, above and beyond the visibility reduction achieved by standard weathered galvanized steel coatings, that meet and comply with all applicable state and federal law.
- 2 Prior to “Limited Construction Within the James River”, Dominion shall submit its analysis of potential tower coatings, finishing materials, and maintenance methods along with its recommendation to the Signatories and Consulting Parties to this MOA for review and comment in accordance with the process in Stipulation VII.
- 3 Considering all comments as appropriate, Dominion shall identify suitable tower finishing and coating materials that most minimize visibility of the transmission line infrastructure. Dominion shall apply the identified coating or finishing material or method to the towers as soon as conditions allow for effective application but no later than one (1) year after energization of the line.
- 4 Dominion shall ensure that all towers are maintained over their lifespan such that their visual contrast and intensity remains at levels consistent or less than when originally installed.

II ADDITIONAL COMPENSATORY MITIGATION PROJECT FUNDING, REPORTING, AND STUDIES

a. Project Funding and Annual Reports:

- 1** Prior to “Limited Construction Within the James River,” Dominion shall provide to the Signatories documentation demonstrating that Dominion has made funding available in accordance with the following:
 - A.** A fund in the amount of \$27,700,000.00 to be managed by the Conservation Fund (TCF) or the appropriate entities of the Commonwealth of Virginia if Alternative Mitigation Projects are pursued, for the resolution of adverse effects. In the establishing documentation, Dominion shall ensure that the funds are used exclusively to implement the projects outlined in Stipulations III.a, III.b, III.c, and III.d of this MOA.
 - B.** A fund in the amount of \$25,000,000.00 to be managed by the Virginia Department of Conservation and Recreation (DCR) for the resolution of adverse effects. In the establishing documentation, Dominion shall ensure that this fund is used exclusively to implement the projects outlined in Stipulation III.e of this MOA.
 - C.** A fund in the amount of \$4,205,000.00 to be managed by the Virginia Department of Game and Inland Fisheries (DGIF) for the resolution of adverse effects. In the establishing documentation, Dominion shall ensure that this fund is used exclusively to implement the projects outlined in Section III.f of this MOA.
 - D.** A fund in the amount of \$15,595,000.00 to be managed by the Virginia Environmental Endowment (VEE) for the resolution of adverse effects. In the establishing documentation, Dominion shall ensure that this fund is used exclusively to implement and execute projects in accordance with Stipulation III.g of this MOA.
 - E.** A fund in the amount of \$12,500,000.00 to be managed by the Virginia Land Conservation Foundation (VLCF) for the resolution of adverse effects. In the establishing documentation, Dominion shall ensure that this fund is used exclusively to implement and execute projects in accordance with Stipulation III.h of this MOA.
- 2** All projects funded by the accounts created in accordance with Stipulation II.a.1 above shall comply with all applicable local, Commonwealth, and federal laws and regulations. Execution of this MOA shall not permit Dominion to proceed with any project before obtaining all necessary permits and permissions.

- 3** Dominion shall provide an annual report due by January 30 each year, beginning in 2018, summarizing disbursement of funds from the accounts created in accordance with Stipulation II.a.1 and progress for each project for the preceding year. The annual report shall also identify project changes or challenges experienced during the reporting year, as well as anticipated challenges or changes expected in the coming reporting year. Dominion will submit the annual report to the Signatories and Consulting Parties. Any disputes regarding dispensing and use of funds shall be handled in accordance with Stipulation XI below.
- 4** All funds shall be obligated within ten (10) years of the effective date of this MOA; however, nothing herein shall require that funded projects be completed within that time frame, unless otherwise noted.
- 5** Dominion shall use reasonable efforts to obligate 50 percent of the funds within five years; and, 100 percent of the funds within ten years of the effective date of this MOA.
- 6** Notwithstanding Stipulations II.a.4-5, a failure to have all funds obligated within ten years after the mitigation fund is established does not constitute a breach of the terms of this MOA, but instead triggers Stipulation II.a.7.
- 7** Any mitigation compensation funds that are not obligated or committed to a project within twelve years after the effective date of this MOA shall be transferred to a legally separate mitigation compensation fund administered by the VLCF for expenditure on projects, programs, and activities at historic properties and associated historic landscapes within or related to the indirect APE that were adversely affected by this Project.
- 8** The funds described in Stipulation II.a.1 shall be used exclusively for projects selected in accordance with Stipulation III, or in accordance with Stipulation II.a.7 in appropriate circumstances. Dominion shall separately provide necessary additional funds to complete any mitigation projects required under Stipulations I.a to I.e and to complete the Heritage Tourism and Visitor Experience Study required under Stipulation II.b.
- 9** The projects selected under Stipulation III shall be scaled, planned, designed, procured, constructed, and operated at funding levels consistent with the allocations set out in Stipulation II.a.1 respectively. If additional funds are required beyond those allocated in Stipulation II.a.1 Dominion shall promptly provide the minimum additional funding necessary to complete the specific mitigation project.

- 10** In the event the Corps revokes the permit for the Project for any reason, or the permit is invalidated for any reason, all unexpended mitigation funds identified in Stipulation II.a.1. above shall be returned to Dominion within 90 days of receipt of notice from the Corps that the Project has been cancelled or terminated. Specific mitigation projects in the process of implementation at the time of notice shall be completed and documented in accordance with the terms of the MOA.

b. Heritage Tourism and Visitor Experience Study and Enhancement:

- 1** Prior to “Limited Construction Within the James River,” Dominion, in consultation with the Signatories, shall initiate a Heritage Tourism and Visitor Experience study (which includes ecotourism) for publically accessible, publically owned, and actively marketed historic properties (heritage tourism sites) and ecotourism activities located within the Indirect APE). Dominion will invite and coordinate collaboration in this study by regional and national preservation advocates and experts, including the Consulting Parties, in order to benefit from their expertise. The purpose of the study is to evaluate current heritage tourism and visitor experience within the Indirect APE in order to inform mitigation activities required by this MOA and to develop a marketing and visitation program to promote and enhance heritage tourism sites (which includes the historic properties addressed by this MOA) and visitor experiences within the Indirect APE.
- 2** Dominion shall undertake the Heritage Tourism and Visitor Experience study in collaboration with landowners and/or managers of heritage tourism sites within the Indirect APE. Dominion shall take appropriate effort to seek the participation of the landowners of Jamestown Island and Historic Jamestowne, Hog Island Wildlife Management Area (WMA), Jamestown Settlement, Colonial Parkway and elements of Colonial National Historical Park, and elements of the Captain John Smith Chesapeake NHT. Should any of the invited landowners or managers elect not to participate, Dominion shall proceed with the study using otherwise available information.
- 3** Dominion shall complete the draft Heritage Tourism and Visitor Experience study within eight (8) months of initiation.
- 4** To the extent possible, the Heritage Tourism and Visitor Experience study should include data from shoulder and peak visitation seasons. Shoulder months include March, April, May, September, October or November. Peak months include June, July and August.
- 5** Upon completion, Dominion shall provide the draft study to the Signatories and Consulting Parties to this MOA for review and comment in accordance with the process in Stipulation VII. Dominion

shall consider all timely comments received and submit the study for approval to the Signatories of the MOA. The Heritage Tourism and Visitor Experience study will be considered “final” upon the Corps written approval.

- 6 The implementation of projects in Stipulations III may proceed in advance of the final Heritage Tourism and Visitor Experience study recommendations. However, as the study progresses, Dominion shall use the study’s findings to inform its mitigation efforts.
- 7 No more than thirty (30) days after Corps approval of the final Heritage Tourism and Visitor Experience study, Dominion shall initiate consultation with the Signatories, Consulting Parties and regional and national preservation advocates and experts, and participating management entities of impacted heritage tourism sites, to develop a marketing and visitation program (Program) to promote and enhance the impacted heritage tourism sites and visitor experience within the indirect APE.
- 8 No more than one (1) year following Corps approval of the final Heritage Tourism and Visitor Experience study Dominion shall provide the draft Program to the Signatories and Consulting Parties to this MOA for review and comment in accordance with the process in Stipulation VII. Dominion shall consider all timely comments received and submit the final marketing and visitation program to the Signatories of the MOA. The marketing and visitation program will be considered “approved” upon the Corps written approval.
- 9 No more than thirty (30) days after approval of the Program Dominion shall proceed to partner with the approved implementing organizations identified in the approved Program to implement the Program. Dominion’s funding responsibilities shall be limited to the average annual budget for the preceding two years for marketing programs implemented by the management entities of publicly accessible sites within the Indirect APE.

III ADDITIONAL COMPENSATORY MITIGATION PROJECTS - Dominion shall fulfill the following actions as mitigation for the Project’s direct, indirect, and cumulative adverse effects to historic properties and the related cultural and natural landscapes contributing to their significance. Dominion shall undertake projects that will enhance and/or contribute to preservation of the setting and feeling of sites associated with early Colonial, African-American and Native American cultures of this area. All mitigation actions shall be designed, operated and maintained to provide these benefits for at least the life of this Memorandum of Agreement (MOA).

- a. Within the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and the thematically related areas Dominion shall complete the following projects related to protecting and/or enhancing the early Colonial agricultural landscape and setting. Dominion will make all effort to complete Stipulations III.a.1 - III.a.5 below. Should Dominion be unable to obtain cooperation of the Carters Grove landowner, Dominion shall complete Stipulations III.a.6 – III.a.11.**
- 1** Prior to “Limited Construction Within the James River,” Dominion shall:
 - A.** Submit to the Signatories of this MOA written confirmation that Dominion has requested access to property and cooperation from the Landowner of Carters Grove to identify specific landscape and viewshed enhancement, shoreline protection, and other projects that enhance the affected setting and feeling of Carter’s Grove.
 - B.** Working with the landowner of Carters Grove, identify and submit to the Signatories and Consulting Parties of this MOA the location and type of shoreline stabilization activities proposed to address approximately 6,000 linear feet of shoreline.
 - C.** Working with the landowner of Carters Grove, submit to the Signatories and Consulting Parties, for review and comment in accordance with the process in Stipulation VII, a draft list of projects to be carried out at Carters Grove and a Project Narrative describing projects to be carried out that will preserve and/or enhance the character or viewshed of Carter’s Grove. This draft Project Narrative shall identify specific projects, list tasks necessary to execute each project, provide a timeline for accomplishment of each project and describe how each project enhances the historic value of the resource.
 - 2** Before beginning “Limited Construction within the James River” Dominion must receive approval of the list of projects to be carried out at Carters Grove. The project list will be considered “approved” once the SHPO has confirmed that the projects will enhance the historic setting and feeling of Carters Grove and the Corps has provided written approval.
 - 3** Dominion may not proceed with “Construction Above the James River” until the Corps has approved the final Project Narrative for projects to be carried out at Carters Grove. To facilitate this approval, Dominion shall consider all comments and submit to the Signatories of this MOA a final Project Narrative describing projects to be carried out at Carters Grove. This final Project Narrative shall include confirmation that the Dominion and/or all appropriate parties have all access and

permissions necessary to complete all identified mitigation work. This final Project Narrative will be considered “approved” once the SHPO has confirmed that the projects as proposed will enhance the affected setting and feeling of Carter’s Grove and the Corps has provided written approval.

- 4** Within one (1) year of initiating “Limited Construction within the James River,” not counting any Corps-approved tolling periods, Dominion must receive approval of the final Project Narrative or must remove all structures and/or fill placed within the James River in association with the line installation as approved by this permit action and restore the area to pre-disturbed conditions.
- 5** No more than one (1) year following the initiation of “Construction Above the James River”, and annually thereafter, Dominion shall provide to the Signatories of this MOA, a report containing detailed plans for each project to be accomplished within the next year according to the timeline in the approved Project Narrative and confirmation that appropriate projects have commenced or are under contract to commence. With this annual report, Dominion may also request modification to the project list or narratives to address changes in circumstances over the previous year. A requested modification will be considered “approved” once the SHPO has confirmed that the projects will enhance the affected setting and feeling of Carter’s Grove and the Corps has provided written approval.
- 6** In the event that the Landowner of Carters Grove fails to provide the requisite property access or cooperation as required in Stipulation III.a.1.A to complete the work required in Stipulation III.a.1-5, Dominion shall provide to the Signatories evidence that Dominion has made good faith effort to secure access and cooperation. Such evidence may include Dominion’s written request for such access and cooperation and the Landowner’s denial or failure to reach a written agreement within 45 days of that written request. In the event that (i) the landowner of Carters Grove and Dominion fail to reach agreement on the requisite property access or cooperation as required in Stipulation III.a.1.A within 45 days of Dominions written request; (ii) the Landowner of Carters Grove and Dominion fail to agree upon the list of projects required in III.a.1.B and III.a.1.C within 30 days of reaching agreement on property access and cooperation; or (iii) the Landowner of Carters Grove and Dominion fail to agree upon the Project Narratives required by III.a.1.C within 60 days of reaching agreement on property access and cooperation, Dominion may request approval from the Corps to pursue Alternative Measures as defined in Stipulations III.a.7 – III.a.11.

- 7** Once the Corps has approved pursuit of Alternative Measures and prior to Limited Construction Within the James River, Dominion shall:

 - A.** Submit to the Signatories of this MOA written confirmation that Dominion is working in cooperation with the (DCR to identify specific landscape and viewshed enhancement, shoreline protection, and other projects that enhance the affected setting and feeling of Chippokes Plantation State Park.
 - B.** Working with the SHPO, identify and submit to the Signatories and Consulting Parties, for review and comment in accordance with the process in Stipulation VII, of this MOA the location and type of shoreline stabilization activities proposed to address approximately 8,000 linear feet of shoreline at Chippokes State Park.
 - C.** Working with the SHPO, submit to the other Signatories and Consulting Parties, for review and comment in accordance with the process in Stipulation VII, a draft list of projects to be carried out at Chippokes Plantation State Park and a Project Narrative describing projects to be carried out that will preserve and/or enhance the historic character or viewshed of Chippokes Plantation State Park. This draft Project Narrative shall identify specific projects related to enhancement of visitor facilities, development of 17th Century agricultural techniques and colonial life and preservation of Chippokes Mansion. This draft Project Narrative shall also list tasks necessary to execute each project, provide a timeline for accomplishment of each project and describe how each project enhances the historic value of the resource.
- 8** Before beginning “Limited Construction within the James River” Dominion must receive approval of the list of projects to be carried out at Chippokes Plantation State Park. The project list will be considered “approved” once the SHPO has confirmed that the projects will enhance the historic setting and feeling of Chippokes Plantation State Park and the Corps has provided written approval.
- 9** Dominion may not proceed with “Construction Above the James River” until the Corps has approved the final Project Narrative for projects to be carried out at Chippokes Plantation State Park. To facilitate this approval, Dominion shall consider all comments and submit to the Signatories of this MOA a final Project Narrative describing projects to be carried out at Chippokes Plantation State Park. This final Project Narrative shall include confirmation that Dominion and/or all appropriate parties have all access and permissions necessary to complete all identified mitigation work. This final Project Narrative will be considered “approved” once the SHPO has confirmed that the

projects will enhance the historic setting and feeling of Chippokes Plantation State Park and the Corps has provided written approval.

- 10 Within one (1) year of initiating “Limited Construction within the James River,” not counting any Corps-approved tolling periods, Dominion must receive approval of the final Project Narrative or must remove all structures and/or fill placed within the James River in association with the line installation as approved by this permit action and restore the area to pre-disturbed conditions.
- 11 No more than one (1) year following the initiation of “Construction Above the James River”, and annually thereafter, Dominion shall provide to the Signatories of this MOA, a report containing detailed plans for each project to be accomplished within the next year according to the timeline in the approved Project Narrative and confirmation that appropriate projects have commenced or are under contract to commence. With this annual report, Dominion may also request modification to the project list or narratives to address changes in circumstances over the previous year. A requested modification will be considered “approved” once the SHPO has confirmed that the projects will enhance the historic setting and feeling of Chippokes Plantation State Park and the Corps has provided written approval.

b. Within the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and the thematically related areas Dominion shall complete the following projects related to preserving and/or enhancing the overall landscape. Dominion will make all effort to complete Stipulations III.b.1 - III.b.5 below. Should Dominion be unable to obtain cooperation of the NPS, Dominion shall complete Stipulations III.b.6 – III.b.11.

- 1 Prior to “Limited Construction Within the James River,” Dominion shall:
 - A. Submit to the Signatories of this MOA written confirmation that Dominion has requested property access and cooperation from the NPS, Colonial National Historical Park to identify specific landscape enhancement and shoreline protection or viewshed enhancement projects that preserve the setting and feeling of the Colonial Parkway unit consistent with its design, open and forested areas, other natural elements, and interpretive areas as documented in the National Park Service’s Cultural Landscape Inventory (2008).
 - B. Working with the NPS, submit to the Signatories and Consulting Parties, for review and comment in accordance with the process in Stipulation VII, a draft list of projects to be carried out at Colonial Parkway unit and a Project Narrative describing projects to be carried out that will preserve and/or enhance the character or

viewshed of the Colonial Parkway unit. This draft Project Narrative shall identify specific projects, list tasks necessary to execute each project, provide a timeline for accomplishment of each project and describe how each project enhances the historic value of the resource.

- 2** Before beginning “Limited Construction within the James River” Dominion must receive approval of the list of projects to be carried out at Colonial Parkway unit. The project list will be considered “approved” once the SHPO has confirmed that the projects will enhance the historic setting and feeling of Colonial Parkway unit and the Corps has provided written approval.
- 3** Dominion may not proceed with “Construction Above the James River” until the Corps has approved the final Project Narrative for projects to be carried out at the Colonial Parkway unit. To facilitate this approval, Dominion shall consider all comments and submit to the Signatories of this MOA a final Project Narrative describing projects to be carried out at the Colonial Parkway unit. This final Project Narrative shall include confirmation that Dominion and/or all appropriate parties have all access and permissions necessary to complete all identified mitigation work. This final Project Narrative will be considered “approved” once the SHPO has confirmed that the projects will enhance the affected setting and feeling of the Colonial Parkway unit and the Corps has provided written approval.
- 4** Within one (1) year of initiating “Limited Construction within the James River,” not counting any Corps-approved tolling periods, Dominion must receive approval of the final Project Narrative or must remove all structures and/or fill placed within the James River in association with the line installation as approved by this permit action and restore the area to pre-disturbed conditions.
- 5** No more than one (1) year following the initiation of “Construction Above the James River”, and annually thereafter, Dominion shall provide to the Signatories and Consulting Parties of this MOA, a report containing detailed plans for each project to be accomplished within the next year according to the timeline in the approved Project Narrative and confirmation that appropriate projects have commenced or are under contract to commence. With this annual report, Dominion may also request modification to the project list or narratives to address changes in circumstances over the previous year. A requested modification will be considered “approved” once the SHPO have confirmed that the projects will enhance the affected setting and feeling of the Colonial Parkway unit and the Corps has provided written approval.

- 6** In the event that the NPS fails to provide the requisite property access or cooperation as required in Stipulation III.b.1.A to complete the work required in Stipulation III.b.1-5, Dominion shall provide to the Signatories, evidence that Dominion has made good faith effort to secure property access and cooperation. Such evidence may include Dominion's written request for such property access and cooperation and the NPS' denial or failure to reach a written agreement on property access and cooperation within 45 days of that written request. In the event that (i) NPS and Dominion fail to reach agreement on property access or cooperation as required in Stipulation III.b.1.A within 45 days of Dominion's written request to NPS for property access and cooperation; (ii) the NPS and Dominion fail to agree upon the list of projects required in III.b.1.B within 30 days of reaching written agreement on property access and cooperation; or (iii) the NPS and Dominion fail to agree upon the Project Narratives required by III.b.1.B within 60 days of reaching written agreement on property access and cooperation, Dominion may request approval from the Corps to pursue Alternative Measures as defined in Stipulations III.b.7 – III.b.11.
- 7** Once the Corps has approved pursuit of Alternative Measures and prior to Limited Construction Within the James River, Dominion shall:

 - A.** Submit to the Signatories of this MOA written confirmation that Dominion is working in cooperation with the Commonwealth of Virginia to identify specific landscape and viewshed enhancement, shoreline protection, and other projects that preserve and/or enhance the setting, feeling and/or overall understanding of the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and thematically related areas.
 - B.** Working with the Commonwealth of Virginia, submit to the Signatories and Consulting Parties, for review and comment in accordance with the process in Stipulation VII, a draft list of projects that will support, preserve and/or enhance the historic character or viewshed of Jamestown Settlement and a Project Narrative describing projects to be carried out that will support, preserve and/or enhance the historic character or viewshed of Jamestown Settlement. This draft Project Narrative shall identify specific projects related to educational exhibits and interpretive programs at Jamestown Settlement that focus on the area's landscape and watershed, before during and after European contact, as well as on the movement of colonists and Native Americans throughout the area, including those areas covered by the Colonial Parkway and Colonial National Historic Park. This draft Project Narrative shall also identify specific projects related to development of exhibits and interpretive programs at Fort Monroe that examine the convergence of three cultures - Virginia Indians, European, and African - related

to the Hampton Roads region at the time of exploration and discovery. This draft Project Narrative shall also list tasks necessary to execute each project, provide a timeline for accomplishment of each project and describe how each project enhances the historic value of the resource.

- 8** Before beginning “Limited Construction within the James River” Dominion must receive approval of the list of projects that will support, preserve and/or enhance the historic character or viewshed of Jamestown Settlement described in III.b.7 above. The project list will be considered “approved” once the SHPO has confirmed that the projects will enhance and preserve the historic landscape within APE and the Corps has provided written approval.
- 9** Dominion may not proceed with “Construction Above the James River” until the Corps has approved the final Project Narrative for projects as identified in Stipulation III.b.7 above. To facilitate this approval, Dominion shall consider all comments and submit to the Signatories of this MOA a final Project Narrative describing projects as identified in Stipulation III.b.7 above. This final Project Narrative shall include confirmation that Dominion and/or all appropriate parties have all access and permissions necessary to complete all identified mitigation work. This final Project Narrative will be considered “approved” once the SHPO has confirmed that the projects will support, preserve and/or enhance the historic character or viewshed of Jamestown Settlement and the Corps has provided written approval.
- 10** Within one (1) year of initiating “Limited Construction within the James River,” not counting any Corps-approved tolling periods, Dominion must receive approval of the final Project Narrative or must remove all structures and/or fill placed within the James River in association with the line installation as approved by this permit action and restore the area to pre-disturbed conditions.
- 11** No more than one (1) year following the initiation of “Construction Above the James River”, and annually thereafter, Dominion shall provide to the Signatories and the Consulting Parties of this MOA, a report containing detailed plans for each project to be accomplished within the next year according to the timeline in the approved Project Narrative and confirmation that appropriate projects have commenced or are under contract to commence. With this annual report, Dominion may also request modification to the project list or narratives to address changes in circumstances over the previous year. A requested modification will be considered “approved” once the SHPO has confirmed that the projects will support, preserve and/or enhance the historic character or viewshed of Jamestown Settlement and the Corps has provided written approval.

- c. Within the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and the thematically related areas Dominion shall complete the following projects that preserve and enhance Historic Jamestown and Jamestown Island and promote heritage tourism. Dominion will make all effort to complete Stipulations III.c.1 - III.c.5 below. Should Dominion be unable to obtain cooperation of the NPS and/or Preservation Virginia (PV), Dominion shall complete Stipulations III.c.6 – III.c.11.**

1 Prior to “Limited Construction Within the James River,” Dominion shall:

- A.** Submit to the Signatories of this MOA written confirmation that Dominion has requested property access and cooperation from the NPS and/or PV to identify specific landscape and viewshed enhancement, shoreline protection, and other projects that preserve and enhance Historic Jamestowne and Jamestown Island’s existing setting (i.e., topography, vegetation, and other defining physical features) and feeling gained from the presence its defining physical features that help convey its historic character
- B.** Working with the NPS and/or PV, submit to the Signatories and Consulting Parties of this MOA draft plans for:
- i.** Rehabilitation or replacement of the seawall at Historic Jamestowne potentially including additional breakwaters, sills and revetments to provide protection from erosion and sea level rise.
 - ii.** Restoration of Back Creek at Historic Jamestowne.
 - iii.** Archaeological investigation and identification at Historic Jamestowne to support ongoing and future investigations including emergency excavation of threatened archaeological sites, excavations around Memorial Church, cooperative excavations with the NPS, excavation of areas east and west of the Fort site with a focus on discovering the early churches that stood on the site of the 1617 church, the site of the nation’s first representative government, as well as any other archaeological investigations associated with the early occupation and settlement of Jamestown Island, and other areas related to the early settlement.
 - iv.** Captain John Smith Chesapeake NHT landscape enhancement, visitor engagement, and visitor interpretation programs and projects at the NPS’ visitor center on Jamestown Island as well as enhancement of the NPS’ Neck-O-Land facility including the

establishment of infrastructure to study and interpret climate change.

- C.** Working with appropriate curators submit to the Signatories and Consulting Parties of this MOA a draft plan for conservation, preservation, and study of artifact collections from previously excavated archaeological sites throughout the APE which shall include Jamestown, Martin’s Hundred, Carter’s Grove, and Kingsmill, as well as partnership projects with a focus on understanding and interpreting the colony’s first settlers and their human response to the new environment and climate.
- D.** In accordance with the process for review and comment in Stipulation VII, all parties will be given thirty (30) days to review and provide comment on the draft plans identified in Stipulation III.c.1.B and Stipulation III.c.1.C.
- 2** Before beginning “Limited Construction within the James River” Dominion must allow for the conclusion of the 30-day comment period specified in Stipulation III.c.1.D.
- 3** Dominion may not proceed with “Construction Above the James River” until the Corps has approved the final Plans for all activities described in Stipulation III.c.1.B and Stipulation III.c.1.C. To facilitate this approval, Dominion shall consider all comments and submit to the Signatories of this MOA final Plans that describe specific activities to be carried out and provide a timeline for accomplishment of each. The final Plans shall include confirmation that the Dominion and/or all appropriate parties have all access and permissions necessary to complete all identified mitigation work. The final Plans will be considered “approved” once the SHPO has confirmed that the projects will preserve and enhance Historic Jamestowne and Jamestown Island resources and the Corps has provided written approval.
- 4** Within one (1) year of initiating “Limited Construction within the James River,” not counting any Corps-approved tolling periods, Dominion must receive approval of the final Plans or must remove all structures and/or fill placed within the James River in association with the line installation as approved by this permit action and restore the area to pre-disturbed conditions.
- 5** No more than one (1) year following the initiation of “Construction Above the James River”, and annually thereafter, Dominion shall provide to the Signatories and Consulting Parties of this MOA, a report containing detailed activities to be accomplished within the next year according to the timeline in the approved Plans and confirmation that appropriate projects have commenced or are under contract to

commence. With this annual report, Dominion may also request modification to the final plans to address changes in circumstances over the previous year. A requested modification will be considered “approved” once the SHPO has confirmed that the projects will preserve and enhance Historic Jamestowne and Jamestown Island resources and the Corps has provided written approval.

- 6** In the event that the NPS and/or PV fails to provide property access or cooperation as required in Stipulation III.c.1.A to complete the work required in Stipulation III.c.1-5, Dominion shall provide to the Signatories, evidence that Dominion has made good faith effort to secure property access and cooperation. Such evidence may include Dominion’s written request for such property access and cooperation and the NPS’ and/or PV’s denial or failure to reach written agreement on property access and cooperation within 45 days of that written request. In the event that (i) NPS and/or PV and Dominion fail to reach written agreement on property access or cooperation as required in Stipulation III.c.1.A within 45 days of Dominion’s written request to NPS and/or PV for property access and cooperation; (ii) the NPS and/or PV and Dominion fail to agree upon the Draft Plans required by III.c.1.B within 60 days of reaching written agreement on property access and cooperation, Dominion may request approval from the Corps to pursue Alternative Measures as defined in Stipulations III.c.7 – III.c.11.
- 7** Once the Corps has approved pursuit of Alternative Measures and Prior to any Limited Construction Within the James River, Dominion shall:

 - A.** Submit to the Signatories of this MOA written confirmation that Dominion is working in cooperation with the Commonwealth of Virginia to identify specific landscape and viewshed enhancement, shoreline protection, and other projects that preserve and/or enhance the setting, feeling and/or overall understanding of the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and thematically related areas.
 - B.** Working with the Commonwealth of Virginia, submit to the Signatories and Consulting Parties of this MOA draft plans for:

 - i.** Development of a public boat launch and kayak launch areas with associated interpretive trails and educational exhibits related to the Captain John Smith Chesapeake NHT at Fort Monroe and/or Chippokes State Park; and
 - ii.** Erosion and sea level rise protection projects at Fort Monroe and/or Chippokes State Park.

Smith Trail Historic District and thematically related areas and the Corps has provided written approval.

d. Dominion shall fund the following initiatives that will preserve and enhance the Chickahominy Indian Tribe's cultural values and way of life.

- 1 Prior to "Limited Constructions Within the James River", Dominion shall submit to the Signatories of this MOA, written confirmation that Dominion has made a one-time donation of \$1,500,000.00, from the amounts available in Stipulation II.a.1.A, to the Chickahominy Indian Tribe for the following initiatives:
 - i. The expansion, operation, and maintenance of the Chickahominy Tribal Cultural Center to ensure the preservation of tribal history, native customs, traditional dance, and craftsmanship.
 - ii. The preservation of tribal historical documents and artifacts.
 - iii. The undertaking of scholarly research in Virginia and at the Ashmolean Museum in England related to the ancestry, genealogy, and role of the Chickahominy Tribe in Virginia's shared history.
- 2 The provisions in Stipulations II.a.2 through II.a.10 are not applicable to the funding of the three initiatives listed above.
- 3 Prior to "Limited Construction Within the James River," Dominion shall provide all Signatories of this MOA proof of appropriate assurance, obtained from the Chickahominy Tribe, acknowledging their agreement that funding will be allocated among the three initiatives at the discretion of the Tribe, with no less than \$20,000.00 being given to any single initiative.

e. Within the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and the thematically related areas Dominion shall complete the following projects related to enhancement of the visitor experience and the setting and feeling of sites along the Captain John Smith Chesapeake National Historic Trail. These measures will present the natural and cultural values on the York River in the area of Werowocomoco to provide the visitor with an undisturbed landscape and vista that evokes the setting and feeling of the rivers during the period of Captain John Smith's exploration.

- 1** Prior to “Limited Construction Within the James River,” Dominion shall:
 - A.** Submit to the Signatories of this MOA written confirmation that Dominion is working in cooperation with the Commonwealth of Virginia to identify specific projects that enhance the visitor experience and the setting and feeling of sites along the Captain John Smith Chesapeake National Historic Trail.
 - B.** Working with the Commonwealth of Virginia, the Pamunkey Indian Tribe, and the Chickahominy Indian Tribe submit to the Signatories and Consulting Parties of this MOA draft plans for:
 - i.** Land acquisition, visitor interpretation facilities, archeological investigation and preservation associated with Werowocomoco; and
 - ii.** Land acquisition and preservation of sites and expanded facilities at York River State Park which shall serve as a visitors’ gateway to understanding the Virginia Indian cultures at Werowocomoco.
 - C.** In accordance with the process for review and comment in Stipulation VII, all parties will be given thirty (30) days to review and provide comment on the draft plans identified in Stipulation III.e.1.B.
- 2** Before beginning “Limited Construction within the James River” Dominion must allow for the conclusion of the 30-day comment period specified in Stipulation III.e.1.C.
- 3** Dominion may not proceed with “Construction Above the James River” until the Corps has approved the final Plans for all activities described in Stipulation III.e.1.B. To facilitate this approval, Dominion shall consider all comments and submit to the Signatories of this MOA final Plans that describe specific activities to be carried out and provide a timeline for accomplishment of each. The final Plans shall include confirmation that Dominion and/or all appropriate parties have all access and permissions necessary to complete all identified mitigation work. The final Plans will be considered “approved” once the SHPO has confirmed that the projects will enhance the visitor experience and the setting and feeling of sites along the Captain John Smith Chesapeake National Historic Trail and the Corps has provided written approval.
- 4** Within one (1) year of initiating “Limited Construction within the James River,” not counting any Corps-approved tolling periods, Dominion must receive approval of the final Plans or must remove all structures and/or fill placed within the James River in association with the line

installation as approved by this permit action and restore the area to pre-disturbed conditions.

- 5 No more than one (1) year following the initiation of “Construction Above the James River”, and annually thereafter, Dominion shall provide to the Signatories and Consulting Parties of this MOA, a report containing detailed activities to be accomplished within the next year according to the timeline in the approved Plans and confirmation that appropriate projects have commenced or are under contract to commence. With this annual report, Dominion may also request modification to the final plans to address changes in circumstances over the previous year. A requested modification will be considered “approved” once the SHPO has confirmed that the projects will enhance the visitor experience and the setting and feeling of sites along the Captain John Smith Chesapeake National Historic Trail and the Corps has provided written approval.
- f. Within the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and the thematically related areas Dominion shall complete the following projects related to natural resource enhancement and cultural resource identification and interpretation at Hog Island WMA.**
- 1 Prior to “Limited Construction Within the James River,” Dominion shall:
 - A. Submit to the Signatories of this MOA written confirmation that Dominion is working in cooperation with the Virginia Department of Game and Inland Fisheries (VDGIF), the Pamunkey Indian Tribe and the Chickahominy Indian Tribe to identify specific projects that preserve and/or enhance the setting, feeling and/or overall understanding of the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and thematically related areas.
 - B. Working with the Commonwealth of Virginia, the Pamunkey Indian Tribe and the Chickahominy Indian Tribe, submit to the Signatories and Consulting Parties draft plans for:
 - i. Enhancement of 1,100 acres of palustrine emergent marsh at Hog Island WMA;
 - ii. Living shoreline and shoreline restoration in Surry County, with priority given to projects within the APE or projects outside the APE that would benefit natural and cultural resource enhancement within the APE;
 - iii. Acquisition of 400 acres of upland/emergent marsh adjacent to the Chickahominy Wildlife Management Area located in, Charles City County, Virginia to improve water quality within the

APE, subject to the approval by the Board of Game and Inland Fisheries;

- iv. History and remote viewing and interpretation facility at Hog Island WMA that recognizes Hog Island's connection and contributions to the Jamestown Island-Hog Island-John Smith Trail Historic District, and the individual significance to the Captain John Smith Chesapeake NHT; and
- v. Comprehensive archaeological identification survey of Hog Island WMA.

C. In accordance with the process for review and comment in Stipulation VII, all parties will be given thirty (30) days to review and provide comment on the draft plans identified in Stipulation III.f.1.B.

- 2** Before beginning "Limited Construction within the James River" Dominion must allow for the conclusion of the 30-day comment period specified in Stipulation III.f.1.C.
- 3** Dominion may not proceed with "Construction Above the James River" until the Corps has approved the final Plans for all activities described in Stipulation III.f.1.B. To facilitate this approval, Dominion shall consider all comments and submit to the Signatories of this MOA final Plans that describe specific activities to be carried out and provide a timeline for accomplishment of each. The final Plans shall include confirmation that the Dominion and/or all appropriate parties have all access and permissions necessary to complete all identified mitigation work. The final Plans will be considered "approved" once the SHPO has confirmed that the projects will preserve and/or enhance the setting, feeling and/or overall understanding of the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and thematically related areas and the Corps has provided written approval.
- 4** Within one (1) year of initiating "Limited Construction within the James River," not counting any Corps-approved tolling periods, Dominion must receive approval of the final Plans or must remove all structures and/or fill placed within the James River in association with the line installation as approved by this permit action and restore the area to pre-disturbed conditions.
- 5** No more than one (1) year following the initiation of "Construction Above the James River", and annually thereafter, Dominion shall provide to the Signatories and Consulting Parties of this MOA, a report containing detailed activities to be accomplished within the next year according to the timeline in the approved Plans and confirmation that appropriate projects have commenced or are under contract to

commence. With this annual report, Dominion may also request modification to the final plans to address changes in circumstances over the previous year. A requested modification will be considered “approved” once the SHPO has confirmed that the projects will preserve and/or enhance the setting, feeling and/or overall understanding of the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and thematically related areas and the Corps has provided written approval.

g. Dominion shall complete the following related to water quality improvements. Such projects will maintain and improve the setting and feeling of the river as a key component of the Jamestown Island-Hog Island-Captain John Smith Trail Historic District, as well as the other character-defining features of the historic district.

- 1** Dominion shall work with the Commonwealth of Virginia and the Virginia Environmental Endowment (VEE) to develop and submit to the Signatories and Consulting Parties, for review and comment in accordance with the process in Stipulation VII, a draft list of criteria to guide the selection of water quality improvement projects. Efforts should focus on riparian buffer creation, replacement or enhancement and erosion and sediment control, and the projects shall provide water quality improvements benefitting the James River watershed with consideration given to projects located within the indirect APE.
- 2** Before beginning “Limited Construction Within the James River,” Dominion must receive Corps approval of the final list of criteria to be used in project selection. To facilitate this approval, Dominion shall consider all comments and submit to the Signatories of this MOA a final list of criteria that includes an anticipated schedule for requesting, reviewing and approving funding proposals. This final criteria will be considered “approved” once Corps has provided written approval.
- 3** No more than one (1) year following the initiation of “Construction Above the James River”, and annually thereafter, Dominion shall provide to the Signatories and Consulting Parties of this MOA, a report containing detailed activities to be accomplished within the next year according to the approved criteria and anticipated schedule for making grant awards to demonstrate annual progress on the implementation of the water quality improvement mitigation. With this annual report, Dominion may also request modification to the approved criteria to address changes in circumstances over the previous year. A requested modification will be considered “approved” once the Corps has confirmed that the adjusted criteria includes water quality improvement grant criteria benefitting the James River watershed with consideration given to projects located within the indirect APE and the Corps has provided written approval.

- h. Within the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and the thematically related areas, Dominion shall complete the following projects related to Landscape and Battlefield Conservation.**
- 1** Dominion shall work with the Commonwealth of Virginia and the VLCF to develop and submit to the Signatories and Consulting Parties, for review and comment in accordance with the process in Stipulation VII, a draft list of criteria to guide the selection of land conservation and open space easement projects that are focused on:
 - A.** The enhancement and/or preservation of the setting and feeling for the Battle of Yorktown and Fort Crafford or Development of public interpretive programs, signage, and exhibits focusing on the Peninsula Campaign including the Battle of Hampton Roads, the Battle of Yorktown, the Battle of Williamsburg, and the strategic importance of Fort Monroe in each, and development of a 3D Laser Scan of Fort Crafford and an earthwork preservation plan to include a landscape management plan.
 - B.** Landscape preservation with an emphasis on projects within the James River watershed benefitting the historic properties and district.
 - C.** Landscape scale conservation that may lead to permanently protecting lands necessary to preclude future river crossings and non-compatible shoreline development within the APE, to the greatest extent possible.
 - 2** Before beginning “Limited Construction Within the James River,” Dominion must receive Corps approval of the final framework to be used in the selection of projects as identified in Stipulation III.h.1. To facilitate this approval, Dominion shall consider all comments and submit to the Signatories of this MOA a final framework that includes a schedule for requesting, reviewing and approving funding proposals. This final framework will be considered “approved” once the SHPO has confirmed that the framework will promote landscape and battlefield conservation and the Corps has provided written approval.
 - 3** No more than one (1) year following the initiation of “Construction Above the James River”, and annually thereafter, Dominion shall provide to the Signatories and Consulting Parties of this MOA, a report containing detailed activities to be accomplished within the next year according to the timeline in the approved framework and confirmation that appropriate projects have commenced or are under contract to

commence. With this annual report, Dominion may also request modification to the final framework to address changes in circumstances over the previous year. A requested modification will be considered “approved” once the Corps has confirmed that the adjusted framework promotes landscape and battlefield conservation projects and the Corps has provided written approval.

- i. Dominion shall complete and fund the following initiatives that will preserve and enhance the Pamunkey Indian Tribe’s cultural values and way of life.**
 1. Prior to “Limited Construction Within the James River,” Dominion shall submit to the Signatories of this MOA, written confirmation that Dominion has made a one-time donation of \$4,500,000.00 to the Pamunkey Indian Tribe for three initiatives:
 - i. expansion and operation of the Pamunkey Cultural Center;
 - ii. establishment of a Tribal Historic Preservation Office; and
 - iii. expansion and operation of the Pamunkey Indian Tribe’s shad hatchery facility.
 2. Prior to “Limited Construction Within the James River,” Dominion shall provide all Signatories of this MOA proof of appropriate assurance, obtained from the Tribe, acknowledging their agreement that funding will be allocated among the three initiatives at the discretion of the Tribe, with no less than \$100,000.00 being given to any single initiative.
 3. Assuming there is a willing seller, Dominion shall initiate immediate action to acquire the parcel of land containing Uttamusack (44KW0072).
 - i. Dominion shall pay as much as 125% of the fair market value if required, to acquire the parcel.
 - ii. Dominion shall also fund acquisition a permanent easement for an access road from the public right-of-way (Route 30) to the parcel of land containing Uttamusack (44KW0072).
 - iii. Following acquisition of the property containing Uttamusack (44KW0072), Dominion shall donate the parcel and easement free and clear of any encumbrances to the Pamunkey Indian Tribe along with a one-time donation of \$500,000.00 for the tribe’s use to protect, maintain, and interpret the site.

- iv. Dominion shall also provide funding up to \$400,000.00 for the construction of an access road up to but not crossing the railroad on the parcel of land containing Uttamusack (44KW0072).

IV AVOIDANCE AND MINIMIZATION OF POTENTIAL FUTURE AND CUMULATIVE EFFECTS WITHIN THE DIRECT AND INDIRECT APE OF THE RIVER CROSSING

- 1 From the date construction is completed until the towers are dismantled, Dominion shall coordinate all project maintenance and repair operations that have the potential to cause or result in ground or underwater disturbance within the project's direct APE, with the SHPO and other regulatory agencies, consistent with the terms of the avoidance plan. Such coordination shall not prohibit the repair of the project required in response to emergency events; however, Dominion shall advise the SHPO and other regulatory agencies, as appropriate, of the completed emergency repair work as soon as practicable.
- 2 From the date construction is completed until the towers are dismantled, Dominion shall not construct or place any new or additional transmission line infrastructure, or increase the height or otherwise scale of the existing tower infrastructure within the project's defined indirect APE for the river crossing. Nothing in this commitment, however, shall preclude or otherwise prevent Dominion from adding additional lines or replacing lines to the existing tower infrastructure.
- 3 From the date construction is completed, Dominion shall examine the ongoing need for the river crossing at ten (10) year increments, taking into account the most current PJM Interconnection load forecast data.
- 4 If, at any time prior to the conclusion of the project's life span of fifty (50) years from energizing, Dominion determines that the river crossing is no longer needed, Dominion shall remove all river crossing and associated terrestrial based infrastructure and return the land-side area within the indirect APE of the river crossing to its pre-project condition.
- 5 If, at the conclusion of the project's life span of fifty (50) years from energizing, Dominion determines that the project is still needed, Dominion shall examine the viability and feasibility of a submerged river crossing. If, at that time, industry accepted technology is available and required regulatory approvals are received, Dominion will replace the overhead river crossing with a submerged crossing.

V STATUS UPDATE REQUIREMENTS

Upon the completion of each requirement to this MOA, Dominion shall provide the Signatories and Consulting Parties to this MOA with a signed memorandum documenting that Dominion has fulfilled such requirement. At the completion of all of the requirements, Dominion shall notify such parties that it has satisfied all its responsibilities under this MOA.

VI PROFESSIONAL QUALIFICATIONS

All archaeological and/or architectural work carried out pursuant to this MOA shall be conducted by or under the direct supervision of an individual or individuals who meet the Secretary of the Interior's *Professional Qualifications Standards* (48 FR 44738-9, September 29, 1983) in the appropriate discipline. Individuals designated by federally and state recognized tribes as qualified regarding properties of religious and cultural significance to them are not required to meet the referenced Professional Qualification Standards.

VII PREPARATION AND REVIEW OF DOCUMENTS

- 1 All technical reports prepared by Dominion pursuant to this MOA will be consistent with the federal standards entitled *Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* (48 FR 44716-44742, September 29, 1983) and the SHPO's *Guidelines for Conducting Historic Resources Survey in Virginia* (2011), or any subsequent revisions or replacements of these documents.
- 2 All architectural and landscape studies resulting from this MOA shall be consistent with pertinent standards and guidelines of the Secretary of the Interior, including as applicable the Secretary's *Standards and Guidelines for Historical Documentation* (48 FR 44728-30) and for *Architectural and Engineering Documentation* (48 FR 44730-34).
- 3 Whenever this MOA gives Signatories and/or Consulting Parties an opportunity to review and comment on Dominion's draft plans, reports, or other documents, the review process shall be carried out as follows:
 - A. Dominion shall submit for a thirty-day review and comment period, the draft plan, report, or other document, to the SHPO (two (2) hard copies and one electronic copy in Adobe® Portable Document Format (.pdf)), other Signatories (one (1) copy), and Consulting Parties (one (1) Copy).
 - B. If no timely comments are received within the thirty (30) day review period, Dominion may assume the non-responding party

has no comments. If the Corps is unable to respond or provide approvals as appropriate within the thirty (30) day review period, the Corps shall notify Dominion of the delay and provide an anticipated comment or approval date.

- C. Dominion shall ensure that copies of all Consulting Party comments are provided to each Signatory.
- D. Concurrent with preparing its final version of the plan, report, or other document, Dominion shall prepare a response to comments that includes each comment received and how those comments were considered in the development of the final version. Dominion shall provide this Response to Comments to all Signatories and Consulting Parties concurrent with the submission of the final version to the Corps.
- E. Dominion shall consider all comments received within the thirty-day comment period during preparation of the final plan, report, or other document. The final plan, report, or other document shall be submitted to the Corps for review and approval.
- F. Following written approval by the Corps, Dominion shall provide two (2) copies of all final plans, reports, or other documents, bound and on acid-free paper, and one electronic copy in Adobe® Portable Document Format (.pdf) to the SHPO, and one (1) copy (.pdf or hardcopy) to both the Corps and ACHP, and any other Consulting Party to the MOA which requests a copy.

VIII CURATION

Within thirty (30) days of the Corps' approval of the final technical report, Dominion shall deposit all archaeological materials and appropriate field and research notes, maps, drawings and photographic records collected as a result of archeological investigations arising from this MOA (with the exception of human skeletal remains and associated funerary objects) for permanent curation with the DHR, which meets the requirements in 36 CFR 79, *Curation of Federally Owned and Administered Archeological Collections*. Dominion shall be responsible for all DHR curation fees associated with materials recovered during the project. Dominion shall provide the Corps with a copy of the curation agreement as evidence of its compliance with this stipulation. All such items shall be made available to educational institutions and individual scholars for appropriate exhibit and/or research under the operating policies of DHR.

IX POST-REVIEW DISCOVERIES

- 1** Dominion shall ensure that the following provision is included in all construction contracts: “If previously unidentified historic properties or unanticipated adverse effects to historic properties are discovered during construction, the construction contractor shall immediately halt all activity within a one hundred (100) foot radius of the discovery, notify Dominion of the discovery and implement interim measures to protect the discovery from looting and vandalism.”

- 2** Immediately upon receipt of the notification required in Stipulation IX.1 above, Dominion shall:
 - A.** Inspect the construction site to determine the extent of the discovery and ensure that construction activities have halted;

 - B.** Mark clearly the area of the discovery;

 - C.** Implement additional measures, as appropriate, to protect the discovery from looting and vandalism;

 - D.** Engage a professional archeologist to inspect the construction site to determine the extent of the discovery and provide recommendations regarding its NRHP eligibility and treatment; and

 - E.** Notify the Corps, SHPO, and ACHP of the discovery describing the measures that have been implemented to comply with this stipulation.

 - F.** Notify the Pamunkey Indian Tribe and Chickahominy Indian Tribe of any materials resembling Native American Artifacts including burials, human skeleton remains, and funerary artifacts.

- 3** Upon receipt of the information required in the above stipulation, the Corps shall provide Dominion, SHPO, and Consulting Parties with its assessment of the NRHP eligibility of the discovery and the measures proposed to resolve adverse effects. In making its evaluation, the Corps, in consultation with the SHPO, may assume the discovery to be NRHP eligible for the purposes of Section 106 pursuant to 36 CFR § 800.13(c). Dominion, SHPO, and Consulting Parties shall respond to the Corps’ assessment within forty-eight (48) hours of receipt.

- 4** The Corps will take into account the SHPO recommendations on eligibility and treatment of the discovery and any comments from Consulting Parties and will notify Dominion of any appropriate required actions. Dominion must comply with the required actions and provide the Corps, SHPO, and Consulting Parties with a report on the actions when implemented. Any actions that the Corps deems appropriate for

Dominion to take with regard to such discovery will automatically become additional stipulations to this MOA and thereby will be incorporated in the permit and become conditions to the permit. If Dominion fails to comply with such actions, such failure will constitute a breach of this MOA and noncompliance with the permit.

- 5 Construction may proceed in the area of the discovery when the Corps has determined that implementation of the actions undertaken to address the discovery pursuant to this stipulation are complete.

X HUMAN REMAINS

- 1 Dominion shall make all reasonable efforts to avoid disturbing gravesites, including those containing Native American human remains and associated funerary artifacts. Dominion shall treat all human remains in a manner consistent with applicable federal and state law [and to the extent such laws do not apply, the ACHP's *Policy Statement Regarding Treatment of Burial Sites, Human Remains and Funerary Objects* (February 23, 2007; <http://www.achp.gov/docs/hrpolicy0207.pdf>)].
- 2 Dominion shall ensure that human skeletal remains and associated funerary objects encountered during the course of actions taken as a result of this MOA shall be treated in accordance with the Regulations Governing Permits for the Archaeological Removal of Human Remains (Virginia Register 390-01-02) found in the *Code of Virginia* (10.1-2305, et seq., Virginia Antiquities Act). If removal is proposed, Dominion shall apply for a permit from the SHPO for the removal of human remains in accordance with the regulations stated above.
- 3 Dominion shall make a good faith effort to ensure that the general public is excluded from viewing any Native American burial site or associated funerary artifacts. The Consulting Parties to this MOA shall make no photographs of any Native American burial site or associated funerary artifacts. The Corps shall notify the Delaware Tribe of Indians, the Pamunkey Indian Tribe, and other appropriate federally-recognized Tribe(s) when Native American burials, human skeletal remains, or funerary artifacts are encountered on the Project, prior to any analysis or recovery of remains or associated artifacts, and implement appropriate measures based on these consultations. Dominion shall deliver any Native American human skeletal remains and associated funerary artifacts recovered pursuant to this MOA to the appropriate tribe to be reinterred. The disposition of any other human skeletal remains and associated funerary artifacts shall be governed as specified in any permit issued by the SHPO or any order of the local court authorizing their removal. Dominion will be

responsible for all reasonable costs associated with treatment of human remains and associated funerary objects.

XI DISPUTE RESOLUTION

- 1** Should any Signatory to this MOA object in writing to the Corps regarding any action carried out or proposed with respect to any undertakings covered by this MOA or to implementation of this MOA, the Corps shall consult with the objecting party to resolve the objection.
- 2** If after initiating such consultation, the Corps determines that the objection cannot be resolved through consultation, the Corps shall forward all documentation relevant to the objection to the ACHP, including the proposed response to the objection.
- 3** The ACHP shall provide the Corps with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the Corps shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, Signatories, and Concurring Parties, and provide them with a copy of this written response. The Corps will then proceed according to its final decision.
- 4** If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, the Corps may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, the Corps shall prepare a written response that takes into account any timely comments regarding the dispute from the Signatories and Concurring Parties to the MOA, and provide them and the ACHP with a copy of such written response.
- 5** The Corps shall take into account any ACHP recommendation or comment provided in accordance with this stipulation with reference only to the subject of the objection; the Corps' responsibility to carry out all the actions under this MOA that are not the subjects of the objections shall remain unchanged.
- 6** At any time during implementation of the measures stipulated in this MOA, should a written objection pertaining to this MOA be raised by a member of the public, the Corps shall notify the Signatories to this MOA and take the objection into account, consulting with the objector and, should the objector so request, with any of the Signatories to this MOA to resolve the objection.

XII AMENDMENTS

- 1** If Dominion determines that it cannot implement the terms of this MOA, or if a Signatory determines that the MOA is not being properly implemented, Dominion or the Signatory may propose to the other Signatories to this MOA that it be amended.
- 2** Any Signatory to this MOA may propose to the Corps that the MOA be amended, whereupon the Corps will consult with the other Signatories to this MOA to consider such an amendment. All Signatories to the MOA must agree to the proposed amendment.
- 3** Consideration of amendments shall not interrupt or delay any actions taken pursuant to the existing MOA.
- 4** If Dominion decides it will not proceed with the undertaking prior to its initiation, it shall so notify the Signatories and Consulting Parties and this MOA shall become null and void.

XIII TERMINATION

If any Signatory determines that the terms of this MOA cannot be or are not being carried out, the Signatories shall consult to seek amendment of this MOA consistent with the provisions of 36 C.F.R. § 800.6(c)(7). If the agreement is not amended, any Signatory may terminate it in accordance with the procedures described in 800.6(c)(8). Termination shall include the submission of a technical report or other documentation by Dominion on any work done up to and including the date of termination. If the Corps is unable to execute another MOA following termination, the Corps shall request, consider, and respond to the ACHP's comments per 36 C.F.R § 800.7 prior to deciding whether to modify, suspend, or revoke the Department of the Army permit as provided by 33 C.F.R §325.7.

XIV ANNUAL REPORTING AND MEETING

- 1** Dominion shall provide an annual status report within six (6) months of the execution of this MOA, and every twelve (12) months thereafter, to the Signatories and Consulting Parties until Dominion's obligations under this MOA are complete.
- 2** Dominion shall conduct an annual meeting with the Signatories and Consulting Parties within twelve (12) months of the execution of this Agreement and every twelve (12) months thereafter until Dominion's obligations under this Agreement are complete. The purpose of the annual meeting is to review implementation and achieved outcomes of the terms of this MOA and to determine whether amendments are needed.

XV COORDINATION WITH OTHER FEDERAL REVIEWS

In the event that Dominion or other agency applies for additional federal funding or approvals for the Project and the undertaking remains unchanged, such funding or approving agency may comply with Section 106 by agreeing in writing to the terms of this MOA and notifying and consulting with SHPO and ACHP. Any necessary modifications will be considered in accordance with Stipulation XII, Amendments.

XVI DURATION OF MOA

This MOA will continue in full force and effect until fifty (50) years after the effective date of the MOA. Dominion shall fulfill the requirements of this MOA prior to and in conjunction with the work authorized by the Corps permit. All obligations under this MOA must be complete before expiration of this MOA. If any obligation is not complete, the party responsible for such obligation is in violation of this MOA; such violation may also constitute a violation of the Corps permit. Failure of the Corps to pursue such violation is NOT a waiver. At any time in the six-month period prior to such date, the Corps may request the Signatories to consider an extension or modification of this MOA. No extension or modification will be effective unless all parties to the MOA have agreed with it in writing.

XVII ANTI-DEFICIENCY ACT

The Corps' obligations under this MOA are subject to the availability of appropriated funds, and the stipulations of this MOA are subject to the provisions of the Anti-Deficiency Act. The Corps shall make reasonable and good faith efforts to secure the necessary funds to implement this MOA in its entirety. If compliance with the Anti-Deficiency Act alters or impairs the Corps' ability to implement the stipulations of this MOA, the Corps shall consult in accordance with the amendment procedures found at Stipulation XII of this MOA.

XVIII DEFINITIONS

- a. The term "Concurring Parties" means each Consulting Party signing the Memorandum of Agreement as a Concurring Party.
- b. The term "Consulting Parties" means the following organizations: The National Parks and Conservation Association; The Save the James Alliance; The Chesapeake Conservancy; United States Department of Interior (National Park Service, Colonial National Historic Park); United States Department of Interior (National Park Service, Northeast Region); James City County; The Colonial Williamsburg Foundation; Preservation Virginia; Scenic Virginia; The National Trust for Historic Preservation;

Christian & Barton, LLP (on behalf of BASF Corp); James River Association; United States Department of Interior (National Park Service, American Battlefield Protection Program); First California Company Jamestowne Society; Delaware Tribe of Indians; Chickahominy Indian Tribe; Council of Virginia Archaeologists; Margaret Nelson Fowler; Pamunkey Indian Tribe; and Escalante Kingsmill Resort LLC.

- c. The term “enhancement” shall mean an increase or improvement in quality, value, or extent.
- d. The term “Invited Signatory” shall mean Dominion and the Commonwealth of Virginia.
- e. The term “Signatories” shall mean the Corps, SHPO, and ACHP.
- f. The phrase “Limited Construction Within the James River” shall only mean construction activities within the James River associated with tower foundations and fender protection systems, This term does not include the construction of any steel lattice transmission towers atop the foundations.
- g. The phrase “Construction Above the James River” shall mean any remaining construction activities atop the foundations within the James River described above in Stipulation XVIII.f.
- h. The term “Project Narrative” shall mean a document that identifies specific projects, lists tasks necessary to execute each project, provides a timeline for accomplishment of each project and describes how each project enhances the historic value of the resource. A Project Narrative is not a detailed engineering plan and need not include drawings or other technical information.

XIX STATUS OF NON-SIGNATORIES

The Concurring Parties, Consulting Parties, and cooperative management entities referenced in this MOA are not Signatories as set forth in 36 C.F.R. § 800.6(c)(1), and are not an Invited Signatories under 36 C.F.R. § 800.6(c)(2), and instead are parties who have been consulted in the negotiation of this MOA, as well as invited to concur in the MOA.

XX EXECUTION OF MOA

- 1 This MOA may be executed in counterparts, with a separate page for each Signatory and shall be effective from the date of the issuance of the Department of the Army Standard permit for the Project. The Corps will ensure that each party is provided with a copy of the fully executed MOA.
- 2 Execution of this MOA by the Corps, the ACHP, and the SHPO, shall, pursuant to 36 CFR 800.6(c), be considered to be an agreement pursuant

to the regulations issued by the ACHP for the purposes of Section 110(l) of the NHPA. Execution and submission of this MOA, and implementation of its terms, evidence that the Corps has afforded the ACHP an opportunity to comment on the proposed undertaking and its effect on historic properties, and that the Corps has taken into account the effect of the undertaking on historic properties.

SIGNATORIES:

NORFOLK DISTRICT, U. S. ARMY CORPS OF ENGINEERS

By: _____ Date: _____
William T. Walker
Chief, Regulatory Branch

VIRGINIA STATE HISTORIC PRESERVATION OFFICER

By: _____ Date: _____
Julie V. Langan
Director, Virginia Department of Historic Resources

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: _____ Date: _____
John M. Fowler
Executive Director, Advisory Council on Historic Preservation

INVITED SIGNATORIES:

DOMINION

By: _____ Date: _____
Robert M. Blue
President and CEO, Virginia Electric and Power Company

COMMONWEALTH OF VIRGINIA

By: _____ Date: _____
Molly J. Ward
Secretary, Natural Resources

April 24, 2017

CONCURRING PARTY:

NATIONAL PARKS CONSERVATION ASSOCIATION

By: _____ Date: _____

April 24, 2017

CONCURRING PARTY:

SAVE THE JAMES ALLIANCE

By: _____ Date: _____

April 24, 2017

CONCURRING PARTY:

CHESAPEAKE CONSERVANCY

By: _____ Date: _____

April 24, 2017

CONCURRING PARTY:

UNITED STATES DEPARTMENT OF INTERIOR (NATIONAL PARK SERVICE,
COLONIAL NATIONAL HISTORIC PARK)

By:_____ Date:_____

April 24, 2017

CONCURRING PARTY:

UNITED STATES DEPARTMENT OF INTERIOR (NATIONAL PARK SERVICE,
NORTHEAST REGION)

By:_____ Date:_____

April 24, 2017

CONCURRING PARTY:

JAMES CITY COUNTY

By: _____ Date: _____

April 24, 2017

CONCURRING PARTY:

THE COLONIAL WILLIAMSBURG FOUNDATION

By: _____ Date: _____

April 24, 2017

CONCURRING PARTY:

PRESERVATION VIRGINIA

By: _____ Date: _____

April 24, 2017

CONCURRING PARTY:

SCENIC VIRGINIA

By: _____ Date: _____

April 24, 2017

CONCURRING PARTY:

NATIONAL TRUST FOR HISTORIC PRESERVATION

By: _____ Date: _____

April 24, 2017

CONCURRING PARTY:

CHRISTIAN & BARTON, LLP (ON BEHALF OF BASF CORP)

By: _____ Date: _____

April 24, 2017

CONCURRING PARTY:

JAMES RIVER ASSOCIATION

By: _____ Date: _____

April 24, 2017

CONCURRING PARTY:

UNITED STATES DEPARTMENT OF INTERIOR (NATIONAL PARK SERVICE,
AMERICAN BATTLEFIELD PROTECTION PROGRAM)

By: _____ Date: _____

April 24, 2017

CONCURRING PARTY:

FIRST CALIFORNIA COMPANY JAMESTOWNE SOCIETY

By: _____ Date: _____

April 24, 2017

CONCURRING PARTY:

DELAWARE TRIBE OF INDIANS

By: _____ Date: _____

April 24, 2017

CONCURRING PARTY:

CHICKAHOMINY TRIBE

By: _____ Date: _____

April 24, 2017

CONCURRING PARTY:

COUNCIL OF VIRGINIA ARCHAEOLOGISTS

By:_____ Date:_____

April 24, 2017

CONCURRING PARTY:

MARGARET NELSON FOWLER

By: _____ Date: _____

April 24, 2017

CONCURRING PARTY:

PAMUNKEY INDIAN TRIBE

By: _____ Date: _____

April 24, 2017

CONCURRING PARTY:

Escalante Kingsmill Resort LLC

By: _____ Date: _____

ATTACHMENT A: DIRECT AND INDIRECT PROJECT APE MAPS

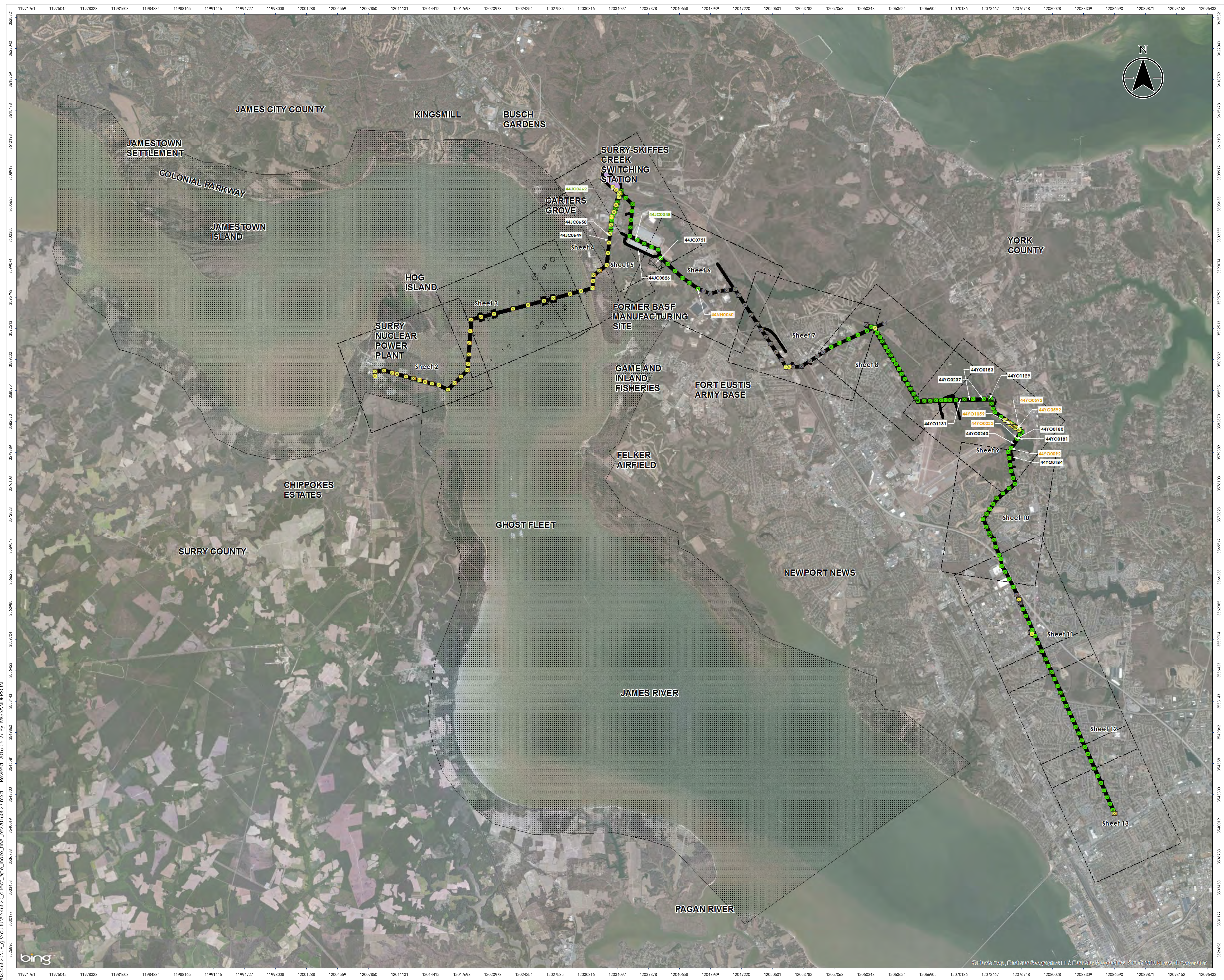
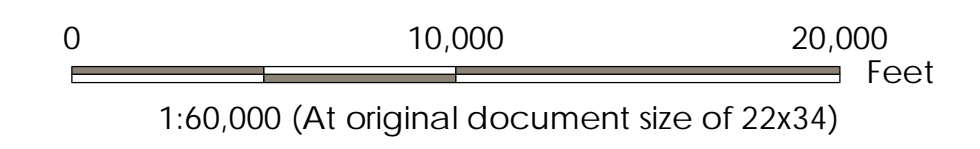


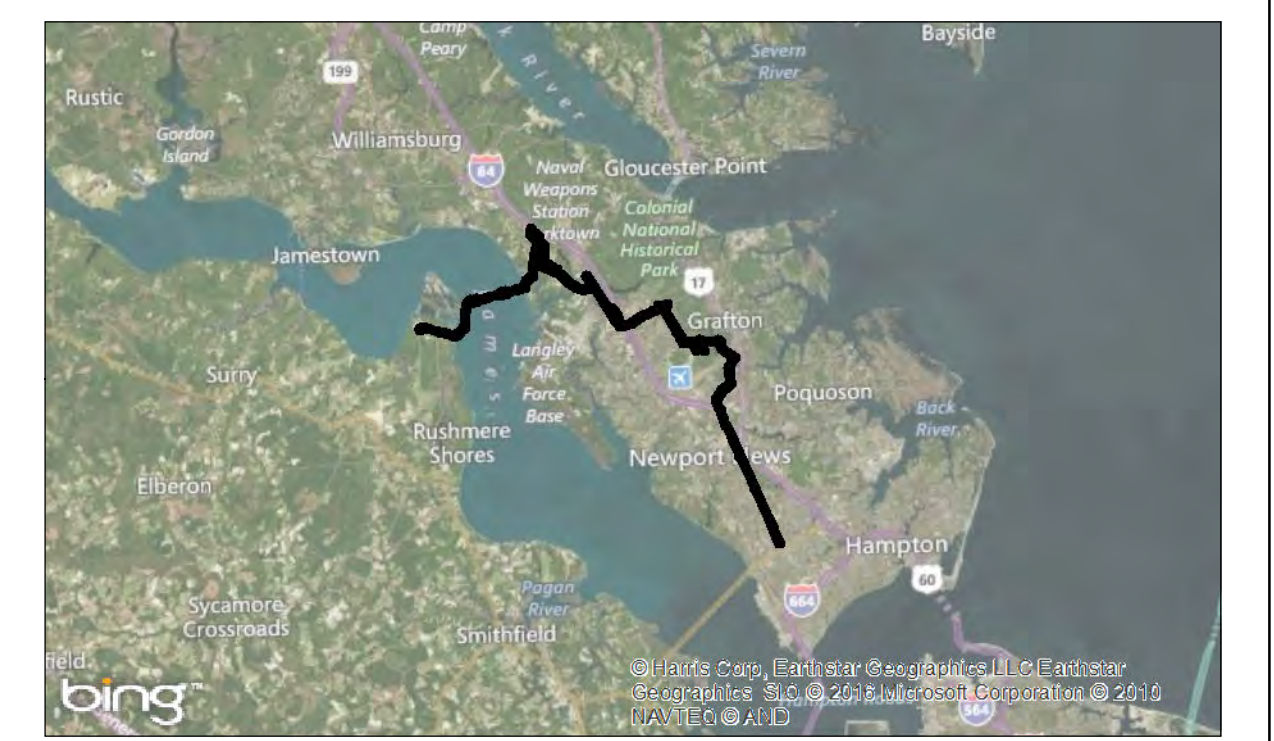
Figure No. 1
 Title: Direct APE Map- Archaeological Resources
 Submitted: 2014-09-08
 Revised: 2015-05-21
 Revised: 2015-07-24
 Revised: 2015-09-10
 Revised: 2016-05-27

Client/Project: Dominion Virginia Power
 Surry-Skiffes Creek-Wheaton
 Proposed 500/230 kV Line
 Project Location: James City County, Surry County, York County, City of Newport News, and City of Hampton, Virginia
 Prepared by MGS on 2015-05-19
 Technical Review by CPG on 2015-05-19
 Independent Review by CFC on 2015-05-19



- Direct APE
- Sheet Index
- Archaeological Resources**
 - Resource to be Managed as Unevaluated for Listing on NRHP
 - Resource Potentially Eligible for Listing on NRHP
 - Resource Eligible for Listing on NRHP
 - Underwater Buffer of Anomalies to be Managed as Unevaluated for Listing on NRHP
 - Eligible Historic District
- Structure Activity**
 - Proposed New Structure
 - Reconstructing Existing Structure
 - Remove and Replace Existing Structure

US Army Corps of Engineers
 Norfolk District Regulatory Office
 Received by: RLS
 Date: June 28, 2016



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Tower Locations and Project Limits provided by Dominion Virginia Power
 3. Orthoimagery © Bing Maps
 4. Only historic properties under the authority of Section 106 are shown. National Register of Historic Places eligibility status provided by the Corps with DHR concurrence on May 1, 2015 and the Keeper of the National Register on August 14, 2015.
 5. Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

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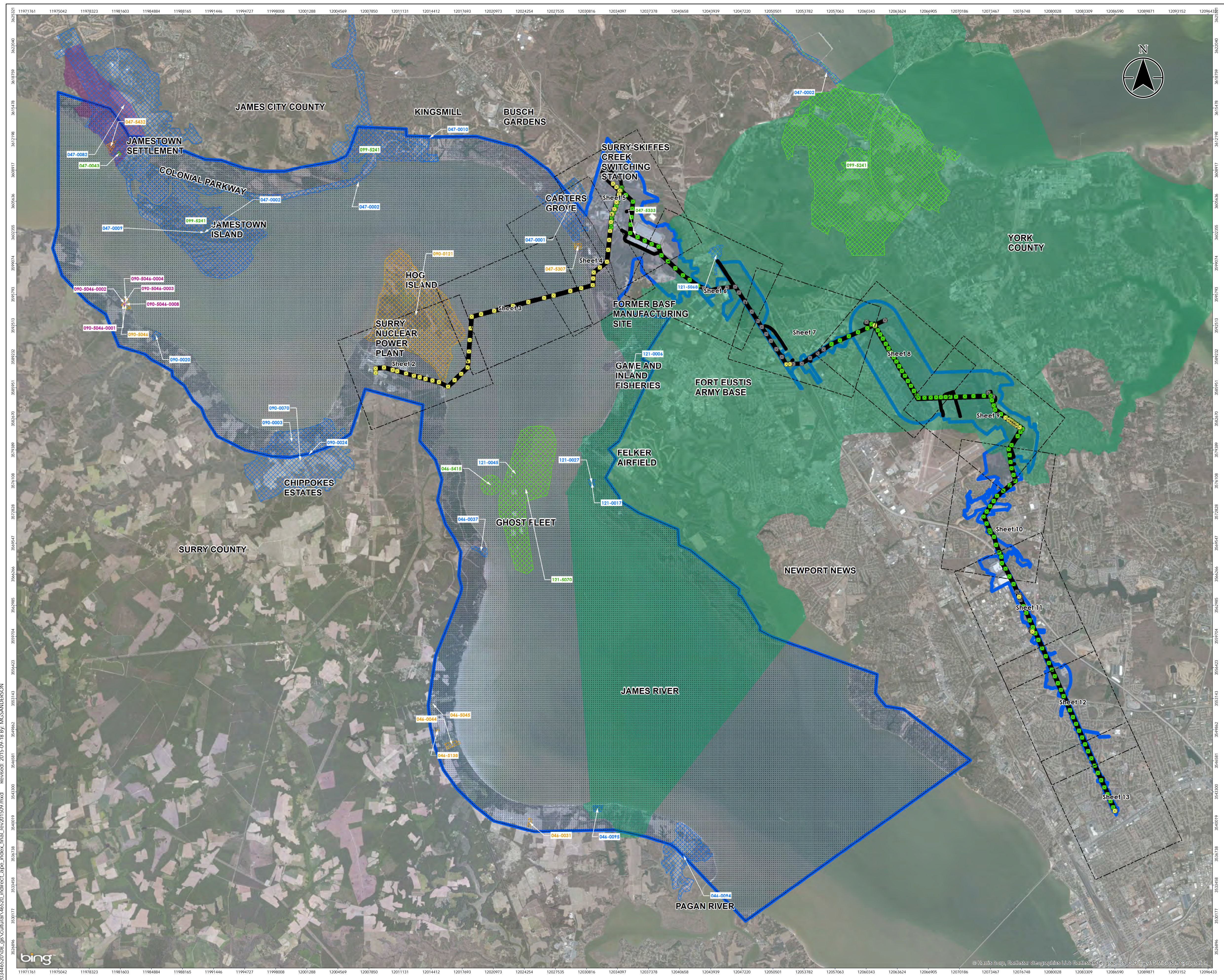
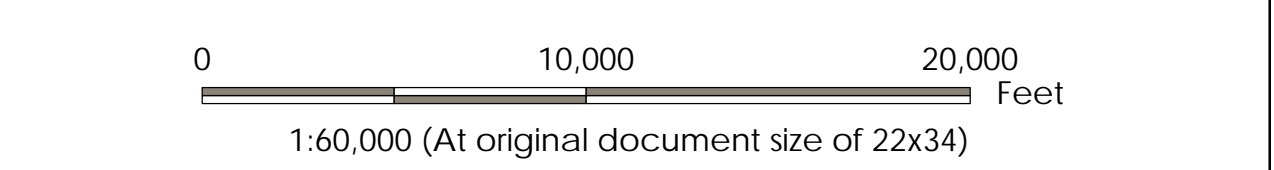


Figure No. 1
 Title: Indirect APE Map - Architectural Resources
 Submitted: 2014-09-08
 Revised: 2015-05-19
 Revised: 2015-07-24
 Revised: 2015-09-10

Client/Project: Dominion Virginia Power
 Surry-Skiffes Creek-Wheaton
 Proposed 500/230 kV Line
 Project Location: James City County, Surry County, York County, City of Newport News, and City of Hampton, Virginia
 203446520
 Prepared by MGS on 2015-05-19
 Technical Review by CPG on 2015-05-19
 Independent Review by CFC on 2015-05-19



- Direct APE
- Indirect APE
- Sheet Index
- Architectural Resources
 - Resource Listed on NRHP
 - Resource Not Individually Eligible, Contributing to Scotland Wharf Historic District
 - Resource Potentially Eligible for Listing on NRHP
 - Resource Eligible for Listing on NRHP
 - Eligible Historic District
 - Battle of Green Spring
 - Battle of Yorktown
- Structure Activity
 - Proposed New Structure
 - Reconductoring Existing Structure
 - Remove and Replace Existing Structure

US Army Corps of Engineers
 Norfolk District Regulatory Office
 Received by: RLS
 Date: Sept 18, 2015



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Tower Locations and Project Limits provided by Dominion Virginia Power
 3. Orthoimagery © Bing Maps
 4. Only historic properties under the authority of Section 106 are shown. National Register of Historic Places eligibility status provided by the Corps with DHR concurrence on May 1, 2015 and May 11, 2015 and the Keeper of the National Register on August 14, 2015.
 5. Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

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 Revised: 2015-09-18 By: MCSANDERSON
 352896 353017 353177 353488 353738 354019 354300 354481 354662 354842 355023 355204 355385 355566 355747 355928 356109 356290 356471 356652 356833 357014 357195 357376 357557 357738 357919 358100 358281 358462 358643 358824 359005 359186 359367 359548 359729 359910 360091 360272 360453 360634 360815 360996 361177 361358 361539 361720 361901 362082 362263 362444 362625 362806 362987 363168 363349 363530 363711 363892 364073 364254 364435 364616 364797 364978 365159 365340 365521 365702 365883 366064 366245 366426 366607 366788 366969 367150 367331 367512 367693 367874 368055 368236 368417 368598 368779 368960 369141 369322 369503 369684 369865 370046 370227 370408 370589 370770 370951 371132 371313 371494 371675 371856 372037 372218 372399 372580 372761 372942 373123 373304 373485 373666 373847 374028 374209 374390 374571 374752 374933 375114 375295 375476 375657 375838 376019 376200 376381 376562 376743 376924 377105 377286 377467 377648 377829 378010 378191 378372 378553 378734 378915 379096 379277 379458 379639 379820 379901 380082 380263 380444 380625 380806 380987 381168 381349 381530 381711 381892 382073 382254 382435 382616 382797 382978 383159 383340 383521 383702 383883 384064 384245 384426 384607 384788 384969 385150 385331 385512 385693 385874 386055 386236 386417 386598 386779 386960 387141 387322 387503 387684 387865 388046 388227 388408 388589 388770 388951 389132 389313 389494 389675 389856 390037 390218 390399 390580 390761 390942 391123 391304 391485 391666 391847 392028 392209 392390 392571 392752 392933 393114 393295 393476 393657 393838 394019 394200 394381 394562 394743 394924 395105 395286 395467 395648 395829 396010 396191 396372 396553 396734 396915 397096 397277 397458 397639 397820 398001 398182 398363 398544 398725 398906 399087 399268 399449 399630 399811 400000

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ATTACHMENT B: LIST OF DOCUMENTS SUBMITTED BY DOMINION IN SUPPORT OF CONSULTATION

- 1) *Phase II Evaluation Site 44JC0662 for the Dominion Virginia Power Skiffes Switching Station, James City County, Virginia (CRI, May 2012).*
- 2) *Phase I Cultural Resources Survey of the Proposed Approximately 20.2-mile Dominion Virginia Power Skiffes Creek to Whealton 230kV Transmission Line in James City and York Counties, and the Cities of Newport News and Hampton, Virginia, Volumes I and II (CRI, July 2012).*
- 3) *Phase I Cultural Resources Survey of the Proposed Dominion Virginia Power Skiffes Creek to Surry 500 kV Transmission Line Alternatives in James City and Surry Counties, Virginia, Volumes I and II, (Stantec, July 2013, Revised April 2014).*
- 4) *Memoranda Titled: Phase IA Walkover and Phase I Archaeological Survey - BASF Corridor Realignment – Surry to Skiffes Creek 500 kV Transmission Line Project (Stantec, July 2014).*
- 5) *Addendum to the Phase I Cultural Resources Survey of the Proposed Dominion Virginia Power Skiffes Creek to Surry 500 kV Transmission Line in James City, Isle of Wight and Surry Counties, Virginia (Stantec, October 2014). (Additional information regarding three properties {i.e. 047-5307; Artillery Site at Trebell's Landing, 090-0121; Hog Island, and 099-5282; Battle of Williamsburg} per VDHR's request was provided in Stantec's letter dated February 2, 2015.)*
- 6) *Addendum to A Phase I Cultural Resources Survey to the Proposed Approximately 20.2-mile Dominion Virginia Power Skiffes Creek to Whealton 230 kV Transmission Line in James City and York Counties, and the Cities of Newport News and Hampton, Virginia, Volumes I: Technical Report (Stantec, July 2015).*
- 7) *Visual Effects Assessment for the Proposed Dominion Virginia Power Surry to Skiffes Creek 500kV Transmission Line Project and Skiffes Creek 500-230-115 kV Switching Station James City, Isle of Wight, and Surry Counties (Stantec, March 2014).*
- 8) *Addendum to the Visual Effects Assessment for the Proposed Dominion Virginia Power Surry to Skiffes Creek 500 kV Transmission Line Project James City, Isle of Wight, and Surry Counties (Stantec, October 2014).*

- 9) *Addendum to the Visual Effects Assessment for the Proposed Dominion Virginia Power Surry to Skiffes Creek 500 kV Transmission Line Green Spring Battlefield (Stantec, November 2014).*
- 10) *Interactive Simulations Surry-Skiffes Creek 500 kV Transmission Line James River Crossing (Dominion/TRUESCAPE, March 2015).*
- 11) *Cultural Resource Affects Assessment, Surry-Skiffes Creek-Wheaton Transmission Line Project, Surry, James City, and York Counties, Cities of Newport News and Hampton, Virginia (Stantec, September 2015).*
- 12) *Photo Simulation Overview Surry-Skiffes Creek-Wheaton Transmission Line Project, Surry, James City and York Counties, Cities of Newport News and Hampton, Virginia. (Dominion/TRUESCAPE, Revised August 2016).*

**ATTACHMENT C: LIST OF AFFECTED HISTORIC PROPERTIES
UNDER CONSIDERATION**

DHR ID#	Resource Name/Address	VLR/NRHP Status	Distance	COE Effect Determination	Proposed Mitigation and Project Oversight
046-0031	Bourne-Turner House at Smith's Beach	Potentially Eligible – Criterion C	8.75	No Adverse Effect	
046-0037	Fort Huger	NRHP-Listed – Criterion D	3.21	No Adverse Effect	
046-0044	Bay Cliff Manor on Burwell's Bay/James C. Sprigg, Jr. House	Potentially Eligible Under Criterion C	7.11	No Adverse Effect	
046-0094	Basses Choice (Days Point Archeological District, Route 673)	NRHP-Listed; Archeological Sites 44IW0003- 44IW0237 – Criterion D	9.85	No Adverse Effect	
046-0095	Fort Boykin Archaeological Site/Herbert T. Greer House and Gardens, ...	NRHP-Listed – Criterion D	8.84	No Adverse Effect	
046-5045	Barlow-Nelson House, 5374 Old Stage Highway	Potentially Eligible Under Criterion C	6.33	No Adverse Effect	
046-5138	Bay View School, 6114 Old Stage Hwy	Potentially Eligible Under Criteria A and C	6.84	No Adverse Effect	
046-5415	USS Sturgis (MH - 1A Sturgis, Nuclear Barge, James River Reserve Fleet)	Eligible	1.92	No Adverse Effect	
047-0001	Carter's Grove	NHL; NRHP-Listed – Criterion C; Potentially Eligible Under Criterion D	0.43	Adverse Effect	<p>1) Landscape enhancement and protection of 6,000 linear feet of shoreline at Carter's Grove. [Stipulation III.a.1.A and 1.B]. Administered through The Conservation Fund. An alternative mitigation project is identifying specific landscape and viewshed enhancement, shoreline protection, and other projects that enhance the affected setting and feeling of Chippokes Plantation State Park.</p> <p>2) The development of interpretive signs to inform visitors about the historic significance and character of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other thematically related locations in and outside the APE. [Stipulation I.c].</p> <p>3) The creation of a HALS photo document of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other adversely affected historic properties. [Stipulation I.d].</p> <p>4) Examination of all available and feasible tower coating and finishing materials and methods that will further minimize and/or maintain the visual intensity of the</p>

DHR ID#	Resource Name/Address	VLR/NRHP Status	Distance	COE Effect Determination	Proposed Mitigation and Project Oversight
					transmission line infrastructure crossing the river, above and beyond the visibility reduction achieved by standard weathered galvanized steel coatings, that meet and comply with all applicable state and federal law. [Stipulation I.e].
047-0002	Colonial National Historic Park; Colonial Parkway Historic District	NRHP-Listed – Criteria A and C	3.16	Adverse Effect	<p>1) Landscape enhancement and shoreline protection to preserve the setting and feeling of the Colonial Parkway unit at the Colonial National Historical Park consistent with the National Park Service's Cultural Landscape Inventory (2008) [Stipulation III.b.1.A]. Administered by the Conservation Fund.</p> <p>2) Visitor interpretation and visitor engagement opportunities at Colonial National Historical Park [Stipulation III.c.1.A.]. Administered through The Conservation Fund.</p> <p>3) An alternative mitigation project is identifying specific landscape and viewshed enhancement, shoreline protection, and other projects that enhance the affected setting, feeling and overall understanding of the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and thematically related areas including Jamestown Settlement and Fort Monroe in Stipulation III.b.7.-11.</p> <p>4) The development of interpretive signs to inform visitors about the historic significance and character of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other thematically related locations in and outside the APE. [Stipulation I.c].</p> <p>5) The creation of a HALS photo document of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other adversely affected historic properties. [Stipulation I.d].</p> <p>6) Examination of all available and feasible tower coating and finishing materials and methods that will further minimize and/or maintain the visual intensity of the transmission line infrastructure crossing the river, above and beyond the visibility reduction achieved by standard weathered galvanized steel coatings, that meet and comply with all applicable state and federal law. [Stipulation I.e].</p>
004-0009	Jamestown National Historic Site / Jamestown Island / Jamestown Island Historic District	NRHP-Listed – Criteria A and D	3.26	Adverse Effect	<p>1) Seawall rehabilitation or replacement at Historic Jamestown to provide protections from erosion and sea level rise and to execute a project that provides further protections through a series of breakwaters, sills and revetments greater than those provided in the 2004 and restoration of Back Creek at Historic Jamestown [Stipulation III.c.1.B.i and B.ii]. Administered through The Conservation Fund.</p> <p>2) Archaeological investigation and identification at Historic Jamestown to support ongoing investigations including excavations around Memorial Church with a focus on discovering the early churches that stood on the site of the 1617 church, the site of the nation's first representative government [Stipulation III.c.1.B.iii]. Administered through The Conservation Fund. Visitor interpretation and visitor engagement opportunities at Historic Jamestown [Stipulation III.c.1.B.iv]. Administered through the Conservation Fund.</p> <p>4) An alternative mitigation fallback project to Stipulations III.c.1.B.i to B.iv is identifying specific landscape and viewshed enhancement, shoreline protection, and</p>

DHR ID#	Resource Name/Address	VLR/NRHP Status	Distance	COE Effect Determination	Proposed Mitigation and Project Oversight
					<p>other projects that enhance the affected setting, feeling and overall understanding of the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and thematically related areas.</p> <p>5) Conservation, preservation, and study of collections from previously excavated archaeological sites throughout the APE, including, but not limited to, at Martin's Hundred, Carter's Grove, and Kingsmill, as well as newly located archaeological sites as a result of this project [Stipulation III.c.1.C.].</p> <p>6) The enhancement and preservation of Werowocomoco with associated supporting facilities at York River State Park will allow visitors there to see the landscape as it existed in pre-colonial days [Stipulation III.e.1.B.].</p> <p>7) The development of interpretive signs to inform visitors about the historic significance and character of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other thematically related locations in and outside the APE. [Stipulation I.c].</p> <p>8) The creation of a HALS photo document of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other adversely affected historic properties. [Stipulation I.d].</p> <p>9) Examination of all available and feasible tower coating and finishing materials and methods that will further minimize and/or maintain the visual intensity of the transmission line infrastructure crossing the river, above and beyond the visibility reduction achieved by standard weathered galvanized steel coatings, that meet and comply with all applicable state and federal law. [Stipulation I.e].</p>
047-0010	Kingsmill Plantation	NRHP-Listed – Criteria A and D	3.16	No Adverse Effect	
047-0043	Amblers (Amblers-on-the-James)	Eligible (Recently NRHP- Listed) – Criterion C	6.64	No Adverse Effect	
047-0082	Governor's Land Archaeological District	NRHP-Listed – Criteria A and D	5.7	No Adverse Effect	
047-5307	Artillery Landing Site at Trebell's Landing	Potentially Eligible – Criterion D	0.52	No Adverse Effect	
047-5333	Martin's Hundred Graveyard (Cemetery)	Eligible – Criteria A and D	0	No Adverse Effect	
047-5432	4H Camp, 4H Club Road	Potentially Eligible – Criteria A and C	9.2	No Adverse Effect	
090-0020	Pleasant Point (Crouches Creek Plantation)	NRHP-Listed – Criteria A and C	4.32	No Adverse Effect	

DHR ID#	Resource Name/Address	VLR/NRHP Status	Distance	COE Effect Determination	Proposed Mitigation and Project Oversight
090-0024	New Chippokes (Jones-Stewart Mansion)	NRHP-Listed; associated with Chippokes Plantation Historic District – Criterion C	2.07	No Adverse Effect	
090-0070/ 090-0003	Chippokes Plantation Historic District (Chippokes State Park)	NRHP-Listed – Criteria A, C, and D	1.26	No Adverse Effect	
090-0121	Hog Island Wildlife Management Area	Potentially Eligible – Criteria A and D for purposes of 106 review	0	Adverse Effect	<p>1) Enhancement of 1,100 acres of palustrine emergent marsh at Hog Island [Stipulation III.f.1.B.i]. Administered through DGIF.</p> <p>2) Living shoreline and shoreline restoration in Surry County [Stipulation III.f.1.B.ii]. Administered through DGIF.</p> <p>3) History and remote viewing and interpretation facility at Hog Island that recognizes Hog Island's connection and contributions to the Jamestown Island-Hog Island-John Smith Trail Historic District, and the individual significance to the Captain John Smith NHT [Stipulation III.f.1.B.iv]. Administered through DGIF.</p> <p>4) Comprehensive archaeological identification survey of Hog Island [Stipulation III.f.1.B.v]. Administered through DGIF.</p> <p>5) The development of interpretive signs to inform visitors about the historic significance and character of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other thematically related locations in and outside the APE. [Stipulation I.c].</p> <p>6) The creation of a HALS photo document of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other adversely affected historic properties. [Stipulation I.d].</p> <p>7) Examination of all available and feasible tower coating and finishing materials and methods that will further minimize and/or maintain the visual intensity of the transmission line infrastructure crossing the river, above and beyond the visibility reduction achieved by standard weathered galvanized steel coatings, that meet and comply with all applicable state and federal law. [Stipulation I.e].</p>
090-5046	Scotland Wharf Historic District	Potentially Eligible – Criteria A and C	5.03	No Adverse Effect	
90-5046-0001	House, 16177 Rolfe Hwy (Rt 31)	Not Individually Eligible; Contributing to Scotland Wharf Historic District	5.16	No Adverse Effect	
90-5046-0002	House, 16223 Rolfe Hwy (Rt 31)	Not Individually Eligible; Contributing to Scotland Wharf Historic District	5.16	No Adverse Effect	
090-5046-0003	House, 16239 Rolfe Hwy	Not Individually Eligible; Contributing to Scotland	5.16	No Adverse Effect	

DHR ID#	Resource Name/Address	VLR/NRHP Status	Distance	COE Effect Determination	Proposed Mitigation and Project Oversight
	(Rt 31)	Wharf Historic District			
090-5046-0004	House, 16271 Rolfe Hwy (Rt 31)	Not Individually Eligible; Contributing to Scotland Wharf Historic District	5.14	No Adverse Effect	
090-5046-0008	House, 16206 Rolfe Hwy (Rt 31)	Not Individually Eligible; Contributing to Scotland Wharf Historic District	5.12	No Adverse Effect	
099-5241	Yorktown and Yorktown Battlefield (Colonial National Monument/Historic al Park)	Listed (as part of Colonial National Historical Park) – Criteria A, C, and D	1.37	No Adverse Effect	
099-5283	Battle-of Yorktown (Civil War)	Eligible – Criteria A and D	0	Adverse Effect	<p>1) Battlefield land conservation on local government or private lands associated with the Battle of Yorktown and Fort Crafford [Stipulations III.h.1.A, III.h.1.B and III.h.1.C]. Administered through the Virginia Land Conservation Foundation.</p> <p>2) Development of public interpretive programs, signage, and exhibits focusing on the Peninsula Campaign including the Battle of Hampton Roads, the Battle of Yorktown, the Battle of Williamsburg, and the strategic importance of Fort Monroe in each. [Stipulation III.h.1.A].</p> <p>3) The development of interpretive signs to inform visitors about the historic significance and character of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other thematically related locations in and outside the APE. [Stipulation I.c].</p> <p>4) The creation of a HALS photo document of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other adversely affected historic properties. [Stipulation I.d].</p> <p>5) Examination of all available and feasible tower coating and finishing materials and methods that will further minimize and/or maintain the visual intensity of the transmission line infrastructure crossing the river, above and beyond the visibility reduction achieved by standard weathered galvanized steel coatings, that meet and comply with all applicable state and federal law. [Stipulation I.e].</p>
121-0006	Matthew Jones House	Listed – Criterion C	1.93	No Adverse Effect	
121-0017	Crafford House Site/ Earthworks (Fort Eustis)	Listed (as part of 121-0027) – Criteria A and D	3.38	No Adverse Effect	
121-0027	Fort Crafford	Listed – Criteria A and D	3.28	Adverse Effect	<p>1) Battlefield land conservation on local government or private lands associated with the Battle of Yorktown and Fort Crafford [Stipulation III.h.1.A, III.h.1.B and III.h.1.C]. Administered through the Virginia Land Conservation Foundation.</p> <p>2) The development of a 3D Laser Scan of Fort Crafford and an earthwork preservation</p>

DHR ID#	Resource Name/Address	VLR/NRHP Status	Distance	COE Effect Determination	Proposed Mitigation and Project Oversight
					<p>plan to include a landscape management plan.</p> <p>3) The development of interpretive signs to inform visitors about the historic significance and character of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other thematically related locations in and outside the APE. [Stipulation I.c].</p> <p>4) The creation of a HALS photo document of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other adversely affected historic properties. [Stipulation I.d].</p> <p>5) Examination of all available and feasible tower coating and finishing materials and methods that will further minimize and/or maintain the visual intensity of the transmission line infrastructure crossing the river, above and beyond the visibility reduction achieved by standard weathered galvanized steel coatings, that meet and comply with all applicable state and federal law. [Stipulation I.e].</p>
121-0045	S.S. John W. Brown	Listed – Criterion A	2.18	No Adverse Effect	
121-5068	Village of Lee Hall Historic District	Eligible – Criteria A and C (Public Notice notes that Lee Hall NRHP- Listed – Criterion C)	0.25	No Adverse Effect	
121-5070	Ghost Fleet (James River Reserve Fleet/ Maritime Admin. Non- Retention Ships)	Eligible – Criterion A	1.64	No Adverse Effect	
N/A	Battle of Green Springs	Eligible – Criterion A	5.7	No Adverse Effect	
N/A	Historic District (formally Jamestown Island-Hog Island Cultural Landscape) including Captain John Smith Chesapeake National Historic Trail (NHT)	Eligible – Criteria A, B, C, and D	0	Adverse Effect	<p>1) Captain John Smith Chesapeake NHT enhanced experiences, land acquisition, visitor interpretation and facilities, archeological investigation and preservation of Werowocomoco, Gloucester County, Virginia (principal residence of Powhatan, paramount chief of Indian Tribes in Virginia's coastal region at the time English colonists arrived in 1607, and located along the Captain John Smith Chesapeake NHT on the York River); and natural and cultural values on the James River and the north and south sides of the York River in the area of Werowocomoco that will preserve and provide the visitor with an undisturbed landscape and vista that evokes the setting and feeling of the river during the period of Captain John Smith's exploration [Stipulation III.e.1.A and 1.B]. Administered through The Conservation Fund.</p> <p>2) Historic resource identification and documentation for the Jamestown Island-Hog Island-Captain John Smith Trail Historic District, including the contributing section of the Captain John Smith Chesapeake NHT. [Stipulation III.c.1.B.iii]. Administered through The Conservation Fund.</p> <p>3) Captain John Smith NHT visitor engagement and visitor interpretation programs and projects at the National Park Service's visitor center on Jamestown Island [Stipulation</p>

DHR ID#	Resource Name/Address	VLR/NRHP Status	Distance	COE Effect Determination	Proposed Mitigation and Project Oversight
					<p>III.c.1.B.iv]. Administered through the Conservation Fund.</p> <p>4) Acquisition of 400 acres of upland/emergent marsh adjacent to the Chickahominy Wildlife Management Area, Charles City County, Virginia to improve water quality within the APE, subject to the approval of the Board of Game and Inland Fisheries [Stipulation III.f.1.B.iii]. Administered through DGIF.</p> <p>5) Riparian buffer creation and replacement projects and erosion and sediment control projects within the James River watershed [Stipulation III.g.1.]. Administered by Virginia Environmental Endowment.</p> <p>6) Landscape preservation to include land and easement acquisition with an emphasis on projects within the Indirect APE. [Stipulation III.h.1].</p> <p>7) Purchase of Uttamusack and fund easement and road construction to site. Donation to Pamunkey Indian Tribe for cultural center, Tribal Historic Preservation Office, and shad hatchery. [Stipulation III.i].</p> <p>8) Donate to the Chickahominy Indian Tribe for cultural center, preservation of tribal historical documents and artifacts, and undertaking of scholarly research in Virginia and at the Ashmolean Museum in England related to ancestry, genealogy, and role of the Chickahominy Indian Tribe in Virginia. [Stipulation III.d]</p> <p>9) The development of interpretive signs to inform visitors about the historic significance and character of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other thematically related locations in and outside the APE. [Stipulation I.c].</p> <p>10) The creation of a HALS photo document of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other adversely affected historic properties. [Stipulation I.d].</p> <p>11) Examination of all available and feasible tower coating and finishing materials and methods that will further minimize and/or maintain the visual intensity of the transmission line infrastructure crossing the river, above and beyond the visibility reduction achieved by standard weathered galvanized steel coatings, that meet and comply with all applicable state and federal law. [Stipulation I.e].</p>
44JC0048	17th Century Cemetery Martin's Hundred	Eligible – Criteria A and D	0	No Adverse Effect	
44JC0649	Indet. Historic	manage as unevaluated	0	No Adverse Effect	
44JC0650	Indet. 18th Cent	manage as unevaluated	0	No Adverse Effect	
44JC0662	18th to 19th Cent Dwelling	Eligible – Criterion D	0	Adverse Effect	Archaeological Data Recovery [Stipulation I.a]. Administered through Dominion.
44JC0751	Prehistoric Camp, 18th to 19th Century Dwelling	Manage as Unevaluated	0	No Adverse Effect	

DHR ID#	Resource Name/Address	VLR/NRHP Status	Distance	COE Effect Determination	Proposed Mitigation and Project Oversight
44JC0826	19th Century Farmstead	Manage as Unevaluated	0	No Adverse Effect	
44NN0060	Indet. Woodland	Potentially Eligible – Criterion D	0	No Adverse Effect	
44YO0092	Civil War Earthworks	Potentially Eligible – Criterion D	0	No Adverse Effect	
44YO0180	Prehistoric Camp	Manage as Unevaluated	0	No Adverse Effect	
44YO0181	Indet. Late Archaic	Manage as Unevaluated	0	No Adverse Effect	
44YO0183	18th Century Domestic	Manage as Unevaluated	0	No Adverse Effect	
44YO0184	Indet. 19th to 20th Century	Manage as Unevaluated	0	No Adverse Effect	
44YO0233	Civil War Military base	Potentially Eligible – Criterion D	0	No Adverse Effect	
44YO0237	Archaic & Woodland Camp	Manage as Unevaluated	0	No Adverse Effect	
44YO0240	Historic Bridge & Road	Manage as Unevaluated	0	No Adverse Effect	
44YO0592	Mid 18th to 19th Century Military Camp	Potentially Eligible – Criterion D	0	No Adverse Effect	
44YO1059	Prehistoric Camp, Early to Mid-18th Century Dwelling	Potentially Eligible – Criterion D	0	No Adverse Effect	
44YO1129	Historic Dwelling	Manage as Unevaluated	0	No Adverse Effect	
44YO1131	19th Century Dwelling	Manage as Unevaluated	0	No Adverse Effect	
N/A	76 submerged anomalies, managed in 23 buffer areas	Potentially Eligible – Criteria A and D	0	No Adverse Effect	

ATTACHMENT D: KEEPER'S DOE LETTER AND MAP



United States Department of the Interior

NATIONAL PARK SERVICE
1849 C Street, N.W.
Washington, DC 20240

AUG 14 2015

H32(2280)

Mr. William T. Walker
Chief, Regulatory Branch
Department of the Army
U.S. Army Corps of Engineers
Norfolk District
Fort Norfolk
803 Front Street
Norfolk, VA 23510-1011

Dear Mr. Walker:

We have received your letter dated July 2, 2015 (arrived at the National Register of Historic Places on July 6, 2015), requesting a determination of eligibility for the National Register for properties located within the vicinity of the Dominion Virginia Power-proposed Surrey-Skiffes Creek-Wheaton aerial transmission line project. The proposed project calls for construction of 7.4 miles of overhead transmission lines from Surry, Virginia, to a proposed switching station in James City County, Virginia. The proposal calls for the transmission line to cross the James River, thus requiring a permit from the U.S. Army Corps of Engineers, which would constitute a Federal undertaking subject to Section 106 of the National Historic Preservation Act.

You have requested that the National Register provide a determination of eligibility for properties located within the project's "Indirect Area of Potential Effect" (Indirect APE) which the Corps of Engineers defines as having both inland land-based and water-based components. The water-based section of the APE extends from just west of Jamestown Island to include portions of the James River downstream to the Pagan River near Smithfield, VA, and its boundary is drawn to include adjacent lands extending several thousand feet from the river's shoreline. The Indirect APE is defined in U.S. Army Corps of Engineers report *Dominion Virginia Power Surry-Skiffes Creek-Wheaton Proposed 500/230kV Line, NAO-2012-00080/13-V0408*, May 7, 2015, p. 1, (hereafter referred to as *Corps of Engineers report*) and is shown as a blue line drawn on the map titled "Indirect APE Map, Surry-Skiffes Creek-Wheaton Proposed 500/230kVline" included as Enclosure 1 with the Determination of Eligibility request.

This request for a determination of eligibility does not extend to the inland, land-based portion of the Indirect APE, which is comprised primarily of an existing overhead utility right-of-way that extends generally from Skiffes Creek south to Hampton, VA (*Corps of Engineers Report*, p. 1).

All further references in this letter to the Indirect APE should be understood to exclude the inland land-based portion referenced above. You have specifically requested a determination of eligibility for the portion of the Captain John Smith Chesapeake National Historic Trail (CAJO) and the Washington-Rochambeau Revolutionary Route National Historic Trail that are located within the Indirect APE.

The Captain John Smith Chesapeake National Historic Trail (CAJO) was established by Congress in 2006, following a feasibility study by the National Park Service and a determination by the National Park System Advisory Board that the trail was nationally significant. The initial trail route extended approximately 3,000 miles along the Chesapeake Bay and the tributaries of the Chesapeake Bay in the States of Virginia, Maryland, and Delaware, and the District of Columbia; it traced the 1607-1609 voyages of Captain John Smith to chart the land and waterways of the Chesapeake Bay. The trail was extended by order of the Secretary of the Interior in 2012 through designation of four rivers as historic components of CAJO. This action extended the trail by 841 miles to include: the Susquehanna River Component Connecting Trail (a 552-mile system of water trails along the main-stem and West Branch of the Susquehanna River in Maryland, Pennsylvania and New York); the Chester River Component Connecting Trail (a 46-mile system of the Chester River and its major tributaries); the Upper Nanticoke River Component Connecting Trail (23-miles of the Nanticoke River, Broad Creek and Deep Creek); and the Upper James River Component Trail (a 220-mile water trail of the James River in Virginia). CAJO, the first designated national historic trail that is composed primarily of a water trail route, now extends along waterways from Cooperstown, New York, to Norfolk, Virginia.

The Washington-Rochambeau Revolutionary Route National Historic Trail (designated in June 2007) includes over 680 miles of land and water trails that follow the route taken by General George Washington and the Continental Army and French General Jean-Baptiste de Rochambeau and the Expédition Particulière to and from the siege of Yorktown, a pivotal event in the American Revolution. The Washington-Rochambeau Revolutionary Route National Historic Trail passes through Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Washington, D.C., and Virginia.

After considering all documentation submitted, we have determined that the entire area encompassed by the Indirect APE is eligible for the National Register of Historic Places as a historic district under National Register Criteria A, B, C, and D, in the areas of significance of Exploration/Settlement, Ethnic Heritage, and Archeology. This historic district forms a significant cultural landscape associated with both the American Indian inhabitants of the area and the later English settlers.

The English colonization of North America was an extraordinary undertaking which had a profound impact on the Old World and the New and much of what was to come had its origins here along the James River: the establishment and growth of the first permanent English settlement in the New World; some of the earliest and most sustained interactions (both cooperative and antagonistic) between the original inhabitants of the area - the American Indians - and the Europeans; the initial English voyages of discovery which took them throughout the Chesapeake Bay and into the interiors following the numerous rivers and led to expanding

contact with the American Indians and the spread of English settlement; the foundation and development of the tobacco economy which would dominate the Chesapeake Bay world; the introduction and firm establishment of chattel slavery; the architectural evolution of buildings in the James River area from the first crude huts built by the English to the flowering of the dominant Georgian architectural style; and the growth of the unique political and social institutions which would lead to the development of representative democracy and the growing impulse of the colonists to gain independence and self-rule from the corporate founders of the colony and later their royal master the King.

The Indirect APE includes numerous significant historic properties already listed in the National Register of Historic Places including all or parts of: Colonial National Historical Park; Jamestown National Historic Site; Colonial Parkway; Yorktown Battlefield; Kingsmill Plantation (which includes a series of important archeological sites); Carter's Grove National Historic Landmark, one of colonial America's most impressive examples of Georgian architecture (built 1750-1755) noted for its exquisite brickwork and finely crafted, fully-paneled interior; the archeological site of Martin's Hundred located at Carter's Grove (established in 1619 as one of the earliest English settlements outside of Jamestown Island, it was destroyed in the American Indian uprising of 1622); and a number of other archeological sites. A significant contributing feature of the district is Hog Island, which was fortified in 1609 to help defend Jamestown Island. In a letter dated March 11, 2015, to the Corps of Engineers, the Virginia State Historic Preservation Office notes that three 17th century archeological sites have been identified on Hog Island and that in their opinion the island is individually eligible for the National Register. In addition to the properties enumerated above, the Virginia State Historic Preservation Office, in letters dated June 12, 2014, and June 19, 2015, to the Corps of Engineers, identify an additional twelve properties within the Indirect APE which are either listed in the National Register or they are considered to be potentially eligible (including the James River National Defense Reserve Fleet, also known as the Ghost Fleet).

The Indirect APE encompasses a portion of the Captain John Smith Chesapeake National Historic Trail (CAJO). The boundary of CAJO extends from shore to shore of the James River. Jamestown Island and Hog Island (an isthmus) are located within the James River and are thus within the boundary of CAJO.

The National Park System Advisory Board in March, 2006, found that the trail was nationally significant for its association with the following historic patterns of events:

- Captain John Smith's Chesapeake Bay voyages are nationally significant because they accelerated the process that destroyed the Powhatan polity and disrupted the native people's world throughout the region.

The Water Trail is significant as:

- a) the route that John Smith followed in his voyages to American Indian towns and territories;
- b) a symbol of the independence of the English colonists from Powhatan's control;
- c) a symbol of the impact on and eventual collapse of the Powhatan polity

and the native peoples' world of the Chesapeake Bay and beyond.

- Captain John Smith's Chesapeake Bay voyages are nationally significant because of their impact on the exploration and settlement of North America.

The Water Trail is significant as:

- a) the route that John Smith followed in his program of exploration and discovery in the Chesapeake Bay and its tributaries;
- b) a symbol of the spirit of adventure and wonder that were important components of Smith's voyages and the English exploration;
- c) the route by which Smith gathered information vital to the survival and growth of the English settlements in North America.

- Captain John Smith's Chesapeake Bay voyages are nationally significant because of their impact on the commerce and trade of North America.

The Water Trail is significant as:

- a) the route by which John Smith surveyed the Bay and explored for gold, silver, copper, and the Northwest Passage, for the benefit of the commerce and trade of the colony and England;
- b) the route by which Smith made contact with American Indian tribes, established trade agreements with them, and increased the chances that the English colony would survive;
- c) a symbol of England's trading power, soon to be increased by the production of tobacco for export from the colony;
- d) a symbol of the long-term impact on the cultural contact between the native peoples and European colonists.

This segment of CAJO is among the most historically significant portions of the overall National Historic Trail's 3,000 plus miles of waterways. Jamestown was the starting and ending point for all of Smith's voyages and was Smith's base of operations and center of political power over the new colony. Properties within and along this segment of the trail are directly associated with the historic patterns of events for which the trail was found to be nationally significant and thus this section of the trail itself is eligible for the National Register of Historic Places as a contributing element in the larger historic district defined by the Indirect APE boundary.

We note that the Virginia State Historic Preservation Office, in a letter to the Corps of Engineers dated May 11, 2015, advised that, in their opinion, what they describe as an eligible cultural landscape within the APE may extend further upstream beyond the boundary of the Indirect APE. We do not have sufficient information to evaluate properties upstream from the district at this time.

As to the Washington-Rochambeau Revolutionary Route National Historic Trail, no information has been provided with this determination of eligibility request regarding the trail section located within the APE, thus we cannot provide a determination of the trail's eligibility.

Please let us know if you have any questions concerning this determination of eligibility.

Sincerely,



Stephanie S. Toothman, Ph.D.
Associate Director, Cultural Resources, Partnerships,
and Science
Keeper, The National Register of Historic Places

Enclosure

IDENTICAL LETTER SENT TO:

Cc: Ms. Julie Langan
State Historic Preservation Officer
Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

Mr. Frank Hays
Acting Associate Regional Director, Stewardship
United States Department of the Interior
National Park Service
Northeast Region
United States Custom House
200 Chestnut Street
Philadelphia, PA 19106

Mr. Charles Hunt
Superintendent
United States Department of the Interior
National Park Service
Chesapeake Bay Office
410 Severn Avenue, Suite 314
Annapolis, MD 21403

Ms. Charlene Dwin Vaughn, AICP
Assistant Director
Federal Permitting, Licensing and Assistance Section
Office of Federal Agency Programs
Advisory Council on Historic Preservation
401 F Street NE, Suite 308
Washington, DC 20001-2637

Ms. Stephanie Meeks
National Trust for Historic Preservation
The Watergate Office Building
2600 Virginia Avenue NW, Suite 1100
Washington, DC 20037

Ms. Sharee Williamson
Associate General Council
National Trust for Historic Preservation
The Watergate Office Building
2600 Virginia Avenue NW, Suite 1100
Washington, DC 20037

Mr. Randy Steffey, Environmental Scientist
US Army Corps of Engineers - Southern Virginia Regulatory Section
803 Front Street
Norfolk, VA 23510

Ms. Courtney R. Fisher
Sr. Siting and Permitting Specialist
Dominion Virginia Power
701 East Cary Street
Richmond, VA 23219

Ms. Pamela Goddard
Senior Manager
Chesapeake & Virginia Program
National Parks Conservation Association
777 6th Street, NW, Suite 700
Washington, DC 20001-3723

Leighton Powell
Executive Director
Scenic Virginia
4 East Main Street, Suite 2A
Richmond, VA 23219

Mr. Edward A. Chappell
Shirley and Richard Roberts Director
of Architecture and Archaeological Research
The Colonial Williamsburg Foundation
P.O. Box 1776
Williamsburg, VA 23187-1776

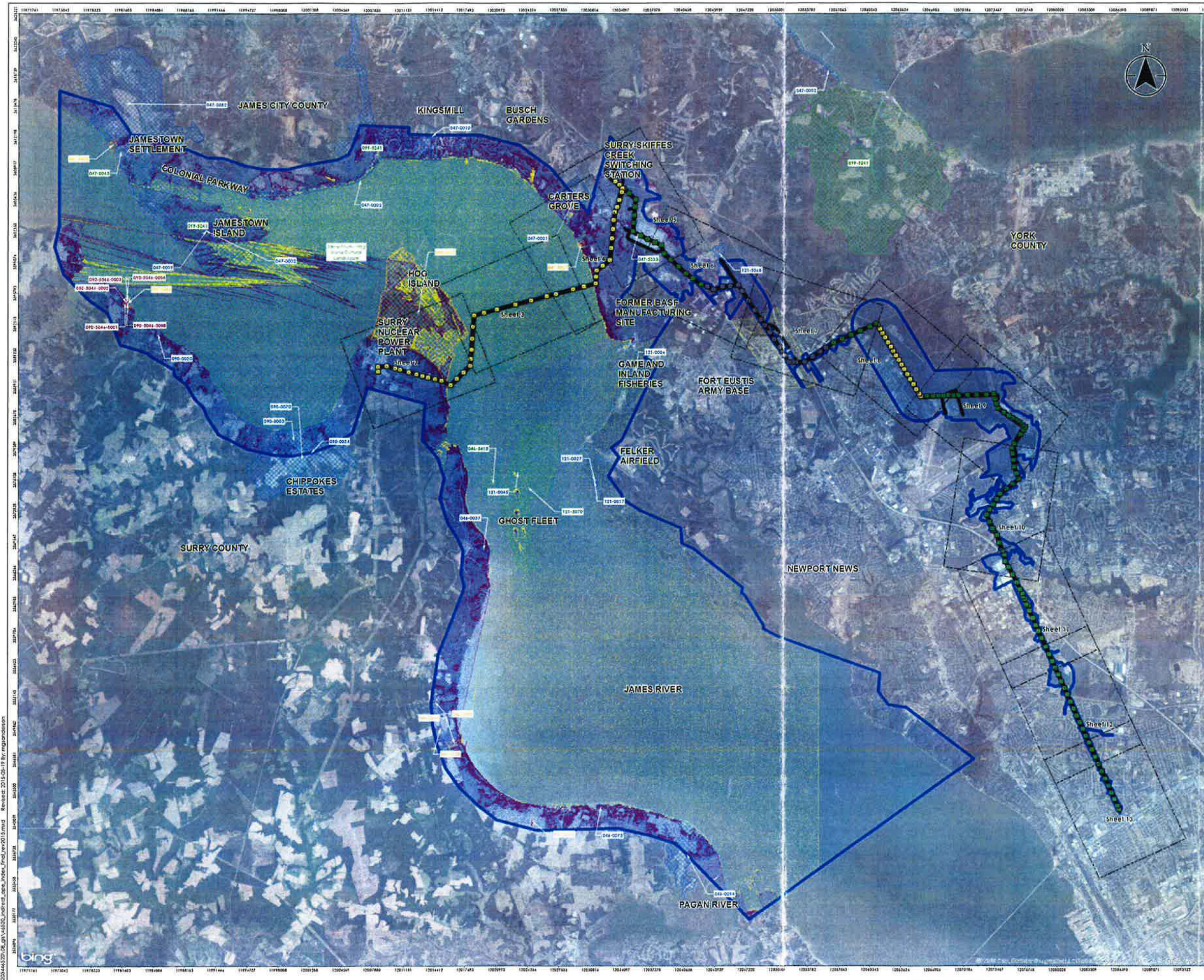
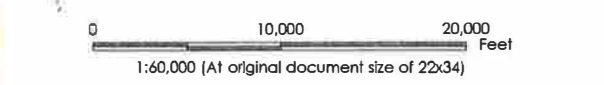


Figure No. **1**
 Title **Indirect APE Map - Architectural Resources**
 Submitted: 2014-09-08
 Revised: 2015-05-19

Client/Project
 Dominion Virginia Power
 Surry-Skiffes Creek-Whealton
 Proposed 500/230 kV Line
 Project Location
 James City County, Surry County,
 York County, City of Newport News,
 and City of Hampton, Virginia
 203445620
 Prepared by MGS on 2015-05-19
 Technical Review by CPG on 2015-05-19
 Independent Review by CFC on 2015-05-19



- Direct APE
 - Indirect APE
 - JRV1 Viewshed Analysis - Not Visible
 - JRV1 Viewshed Analysis - Visible
 - Sheet Index
- Architectural Resources**
- Resource Listed on NRHP
 - Resource Not Individually Eligible, Contributing to Scotland Wharf Historic District
 - Resource Potentially Eligible for Listing on NRHP
 - Resource Eligible for Listing on NRHP
- Structure Activity**
- Replacement with \leq 10% or 20 Feet Change in Height
 - Reconductor Existing Structure
 - New Structure or Replacement with $>$ 10% or 20 Feet Change in Height

US Army Corps of Engineers
 Norfolk District Regulatory Office
 Received by: RLS
 Date: May 20, 2015



- Notes**
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Tower Locations and Project Limits provided by Dominion Virginia Power
 3. Orthoimagery © Bing Maps
 4. Only historic properties under the authority of Section 106 are shown. National Register of Historic Places eligibility status provided by the Corps with DHR concurrence on May 1, 2015 and May 11, 2015.
 5. Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

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Encl 1

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ATTACHMENT E: CORPS' SECTION 106 CONSULTATION AND PUBLIC INVOLVEMENT PLAN

Section 106 Consultation and Public Involvement Plan
Dominion Virginia Power's Surry - Skiffes Creek - Whealton Project
NAO-2012-00080 / 13-V0408

Introduction

Dominion proposes to construct a new high voltage aerial electrical transmission line, known as the Surry-Skiffes Creek -Whealton project. The proposed project consists of three components; (1) Surry – Skiffes Creek 500 kilovolt (kV) aerial transmission line, (2) Skiffes Creek 500 kV – 230 kV – 115 kV Switching Station, and (3) Skiffes Creek – Whealton 230 kV aerial transmission line. In total, the proposed project will permanently impact 2,712 square feet (0.06 acres) of subaqueous river bottom and 281 square feet (0.01 acres) of non-tidal wetlands, and convert 0.56 acres of palustrine forested wetlands to scrub shrub non-tidal wetlands. (See *Exhibit 1*)

Dominion indicates the proposed project is necessary to ensure continued reliable electric services, consistent with North American Electric Reliability Corporation (NERC) Reliability Standards, are provided to its customers in the North Hampton Road Load Area. The NHRLA consist of over 285,000 customers, including Newport News Shipbuilding, Joint Base Langley-Eustis, Yorktown Naval Weapons Station, NASA, Cannon, and Thomas Jefferson National Accelerator Facility.

A permit is required from the Norfolk District Corps of Engineers under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899, and constitutes a Federal undertaking, subject to Section 106 of the National Historic Preservation Act (NHPA). Section 106 of the NHPA requires Federal agencies to take into account the effects of their actions, including permitted actions, on historic properties.

In accordance with Section 106 of the National Historic Preservation Act (36 Code of Federal Regulations [CFR] 800.2), USACE will provide opportunities for consulting parties and the general public to provide comments concerning project effects on properties and districts listed or eligible for listing in the National Register of Historic Places (NRHP).

Key elements of the Section 106 process include USACE's plan to integrate Section 106 with other environmental reviews, in accordance with 36 CFR 800.3(b), and the plan for conducting consultation and public involvement per the requirements of 36 CFR 800.3 (e) and (f). This document provides further detail about how USACE will integrate reviews and conduct consultation and public involvement.

Approach

In accordance with the requirements of National Environmental Policy Act (NEPA) and Section 106, USACE solicited public comments on the undertaking via public notice on August 28, 2013. These comments helped facilitate the initial steps of Section 106

review process and will be considered when preparing an Environmental Assessment (EA) for NEPA compliance. The public notice also provided interested members of the public with an opportunity to comment on the identification of historic properties and potential effects. The Corps intends to use the studies and information generated during the Virginia State Corporation Commission's review of Dominion's proposed project to inform, not to replace, the Section 106 consultation process. USACE will continue to coordinate with agencies and organizations that have demonstrated an interest in cultural resource impacts resulting from the undertaking.

USACE will continue to provide the public with information about the undertaking and its effects on historic properties, and seek their comment and input at various steps of the process. Members of the public may provide views on their own initiative for USACE officials to consider during the decision-making process.

Public Involvement

Opportunities for public comment regarding historic resource identification and potential effects have previously been provided through USACE's August 28, 2013, November 13, 2014, and May 21, 2015 public notices. Requests for a public hearing due to concerns regarding historic resources, in addition to other issues, were acknowledged by USACE. After careful consideration, USACE conducted a hearing on October 30, 2015. During the 106 process, general information has been, and continues to be, available for review at <http://www.nao.usace.army.mil/Missions/Regulatory/SkiffesCreekPowerLine.aspx>. Our website also contains links to the applicant's and consulting party websites, which contain additional project information and perspectives on the project.

Consulting Parties

As a result of the August 2013 Public Notice and the State Corporation Commission review process, USACE, in coordination with the SHPO, identified organizations that have a demonstrated interest in the treatment of historic properties associated with this undertaking. In addition to those requests received in response to the public notice, Kings Mill Community Services Association and Southern Environmental Law Center were also invited to participate as consulting parties in a letter dated March 5, 2014. On June 20, 2014, USACE notified local governments within the limits of the project (Surry County, City of Williamsburg, York County, City of Newport News, and City of Hampton) by mail, inviting their participation as consulting parties. To date, these parties have not responded positively to their participation invitation. A separate invite included First California Company Jamestowne Society who has accepted the invite to participate. On November 25, 2014, written correspondence was received from the new steward of Carter Grove Plantation indicating an inability to participate at this time. Any organization invited to be a consulting party may elect to participate in current and future steps of the process (but not previous steps) at any time.

At the initial stages of the project, when consulting parties were invited (summer, 2014), the Commonwealth of Virginia had no federally recognized tribes within its state

boundaries. However, based on coordination through other projects, the Delaware Tribe of Indians, the Delaware Nation, and the Catawba Indian Nation had expressed an interest in Virginia. In an effort to consider tribal interest, USACE consulted on August 25, 2014 with the aforementioned federally recognized Tribes on a government to government basis. In addition, USACE coordinated with the following state recognized tribes to determine their interest in participating as consulting parties: Cheroenhaka, Chickahominy, Eastern Chickahominy, Mattaponi, Upper Mattaponi, Nansemond, Nottoway, and Rappahannock Tribes. The Pamunkey Tribe, which became federally recognized on January 28, 2016, was consulted on August 25, 2014 when the tribe was state-recognized. Dominion's consultants developed a summary of the historic properties, with an emphasis on those with prehistoric Native American components, which was provided with the August 25, 2014 coordination letters USACE provided to the tribes. On October 5, 2016, Chief Gray with the Pamunkey Indian Tribe reached out to USACE requesting to participate. USACE immediately acknowledged and accepted the Tribes request.

On March 16, 2017, written correspondence was received from Kingsmill Resort requesting participation. USACE has accepted the request and will engage the Resort in any future actions specific to the "Resolution of Adverse Effects".

Throughout the process, USACE has maintained a complete list of active "Consulting Parties" (See Attachment A). Consulting parties have been afforded an opportunity to comment on identification of historic properties, effect recommendations, proposed measures to avoid or minimize effects and suggested mitigation options for historic properties that would be adversely affected.

Meetings

On September 25, 2014, December 9, 2014, June 24, 2015, October 15, 2015, and February 2, 2016 USACE, SHPO, ACHP, and consulting parties have held Section 106/110 National Historic Preservation Act Meeting at Legacy Hall, 4301 New Town Avenue, Williamsburg, VA 23188. General meeting objectives:

September 25th:

- Status of permit evaluation
- Corps jurisdiction
- Project Overview, Purpose & Need, Alternatives, Construction Methods
- Historic Property Identification Efforts
- Potential Effects on historic properties

December 9th:

- General Item Updates
- Historic Property Identification
- Historic Property Eligibility
- Potential Effects
- Potential Mitigation

June 24th:

- General Updates
- Resolution of Adverse Effects
 - Avoidance, Minimization, Mitigation Considerations/Measures
 - Feedback/Ideas

October 15th:

- General Updates
- NPS Visual Effects Analysis
- Stantec Consolidated Effects Report
- Resolution of Adverse Effects

February 2nd:

- General Updates
- Resolution of Adverse Effects

Numerous additional meetings have been held between various consulting parties at various stages in the process.

Resolution of Adverse Effects

MOA development process has included requests for written comments from all consulting parties on draft MOA's that were circulated December 30, 2015, June 13, 2016, and December 7, 2016, including discussions of resolution of adverse effects at several consulting party meetings.

The December 7, 2016 coordination, is believed to be the final opportunity for consulting parties to inform a decision on whether Dominion's proposed mitigation plan adequately avoids, minimizes, and/or mitigates adverse effects to historic properties. A teleconference was held January 19, 2017 with Dominion, SHPO, ACHP, and Consulting Parties to discuss MOA comments and path forward. The Corps will use these coordination opportunities and the input received to inform a decision on whether to fulfill responsibilities under Section 106 of the NHPA through either an executable MOA or termination of consultation.

At this time, it is anticipated that the MOA signatories (including invited signatories) would include USACE, SHPO, ACHP, Commonwealth of Virginia, and Dominion. It is also expected that all other consulting parties would be afforded the opportunity to sign as concurring parties to an MOA.

Milestones and Tracking

A list of major milestones in the Section 106 review of the undertaking is provided as an attachment to this document (*See Attachment B*). The milestones table will be updated throughout the review process and distributed to the SHPO, ACHP, Consulting Parties, and Dominion as deemed necessary by USACE.

USACE's Section 106 consultants will receive, track, and organize the responses received in conjunction to various steps throughout the process.

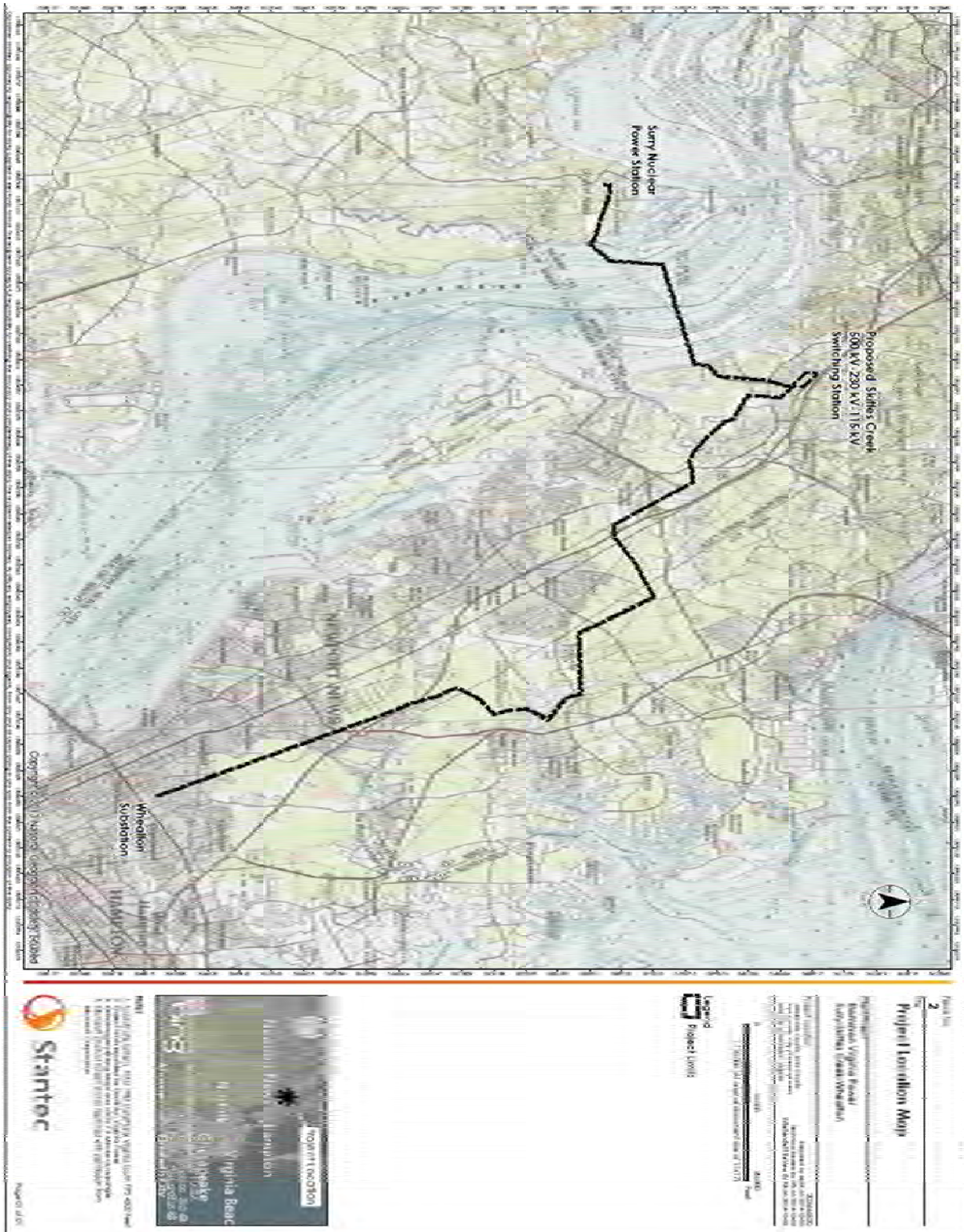


Exhibit 1: Project Location

Attachment A: Section 106 List of POC's (updated as of March 23, 2017)

- USACE; Randy Steffey (Project Manager) – randy.l.steffey@usace.army.mil
- Applicant/Agents;
 1. Dominion (applicant); Courtney Fisher – courtney.r.fisher@dom.com
 2. Stantec (agent); Corey Gray – corey.gray@stantec.com , Dave Ramsey – dave.ramsey@stantec.com , and Ellen Brady – ellen.brady@stantec.com
- VDHR (SHPO); Roger Kirchen – roger.kirchen@dhr.virginia.gov and Andrea Kampinen – andrea.kampinen@dhr.virginia.gov
- ACHP; John Eddins – jeddins@achp.gov
- Other Consulting Parties
 1. National Parks Conservation Association; Pamela E. Goddard & Joy Oakes – pgoddard@npca.org and joakes@npca.org
 2. Save The James Alliance; Wayne Williamson & James Zinn – taskforce@savethejames.com
 3. Chesapeake Conservancy; Joel Dunn – jdunn@chesapeakeconservancy.org
 4. United States Department of the Interior (National Park Service, Colonial National Historic Park); Elaine Leslie – Elaine_leslie@nps.gov
Rebecca Eggleston – becky_eggleston@nps.gov
Jonathan Connolly – jonathan_connolly@nps.gov
Dorothy Geyer – Dorothy_geyer@nps.gov
Kym A. Hall – kym_hall@nps.gov
 5. United States Department of the Interior (National Park Service, North East Region); Mike Caldwell – mike_caldwell@nps.gov - c/o: mary_morrison@nps.gov
Others – Captain Johns Smith National Historic Trail: Charles_hunt@nps.gov
Washington-Rochambeau Revolutionary Route: joe_dibello@nps.gov
Carters Grove National Historic Land Mark: bonnie_halda@nps.gov and NPS_NHL_NEReview@nps.gov
 6. James City County; Bryan J. Hill, County Administrator – c/o: Max Hlavin & Liz Young – Maxwell.Hlavin@jamescitycountyva.gov and Liz.Young@jamescitycountyva.gov
 7. The Colonial Williamsburg Foundation; Hazel Wong – hwong@cwf.org
 8. Preservation Virginia; Elizabeth S. Kostelny – ekostelny@preservationvirginia.org
 9. Scenic Virginia; Leighton Powell – leighton.powell@scenicvirginia.org
 10. National Trust for Historic Preservation; Robert Nieweg – rnieweg@savingplaces.org
 11. Christian & Barton, LLP on behalf of BASF Corp; Michael J. Quinan – mquinan@cblaw.com
 12. James River Association; Jamie Brunkow – jbrunkow@jrava.org
 13. American Battlefield Protection Program (National Park Service); Kristen McMasters – kristen_mcmasters@nps.gov
 14. First California Company Jamestowne Society; James McCall – jhmccall1@gmail.com
 15. Delaware Tribe Historic Preservation Representatives; Susan Bachor – temple@delawaretribe.org
 16. Chickahominy Tribe; Chief Stephen Adkins – stephenradkins@aol.com
 17. Council of Virginia Archaeologist (COVA); Jack Gary – jack@poplarforest.org
 18. Margaret Nelson Fowler (Former POC under STJA) – onthepond1@gmail.com
 19. Pamunkey Indian Tribe; Chief Robert Gray – Rgray58@hughes.net
 20. Kingsmill Resort; John Hilker – John.Hilker@kingsmill.com

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Attachment B: Section 106 Milestones

Milestone	Initiation Date	Description	Completion Date
Initial Public Notice (800.3)	August 28, 2013	<ul style="list-style-type: none"> - Established Undertaking - Identified SHPO (VDHR) - Requested Public Comment - Identified Cultural Resources of Concern 	<ul style="list-style-type: none"> • Comment period closed September 28, 2013
Identify Consulting Parties (800.3)	August 28, 2013	<ul style="list-style-type: none"> - August 28, 2013 Public Notice Issued - Dec 3, 2013 Compiled list based on PN & coordinated w/ SHPO for any add'l parties - Mar 3, 2014 notified all requesting parties of their acceptance - Mar 5, 2015 Add'l Party Invites were sent based on SHPO recommendations - June 20, 2014 sent invites to Local Governments to participate - August 25, 2014 invited Tribes to Participate - November 21, 2014 invited Mr. Menco, new owner of Carters Grove Plantation, to participate. - October 6, 2016 Pamunkey Indian Tribe joined as a Consulting Party. - March 23, 2017 Kingsmill Resort joined as a Consulting Party. 	<ul style="list-style-type: none"> • Process will remain open until the conclusion of the Section 106 process; however any new parties will only be afforded the opportunity to join the process at its present stage moving forward.
Identify Historic Properties (800.4)	August 28, 2013	<ul style="list-style-type: none"> - August 28, 2013 Public Notice - Established APE w/ SHPO <ul style="list-style-type: none"> ➢ Initial APE concurrence Jan 28, 2014 ➢ Refined APE into Direct & Indirect boundaries; rec'd concurrence (verbal) Sept 2014, written Jan 15, 2015 ➢ Minor modification to Direct APE; concurrence Oct 5, 2015 (5 tower locations) ➢ Direct APE Exhibits were refined to accurately depict boundary around proposed fender protection systems; June 28, 2016 - Consulted surveys/data used in part for the VA State Corporation Commission process - May 8, 2014 coordinated w/ SHPO, ACHP, & Consulting Parties on Historic Property Identification, Surveys, and potential effects. - Re-coordinated June 20, 2014 with SHPO, ACHP, & Consulting Parties to finalize Historic Property Identification - Sept 25th & Dec 9th Consulting Party Meetings - November 13, 2014 Public Notice - Comments rec'd were considered in part from the multiple coordination opportunities. - May 1st & May 11, 2015 SHPO provided completion of 800.4. - Sept 4, 2015 SHPO concurrence with Addendum to Phase I Cultural Resources Report for five (5) tower locations not included in previous studies. 	<ul style="list-style-type: none"> • Initially completed May 11, 2015 • Updated Oct 5, 2015 to reflect minor APE expansions due to project modifications • Updated June 28, 2016 to capture Direct APE expansion and additional underwater survey work within the James River.

		<ul style="list-style-type: none"> - June 24, 2016 SHPO concurrence with Revised Phase I Remote Sensing Underwater Archaeological Survey & Phase II assessment for buffer and cluster anomalies located within 200 feet of any construction activities. 	
1 st Agency & Consulting Party Meeting (800.4)	September 25, 2014	<ul style="list-style-type: none"> - Status of permit evaluation - Corps jurisdiction - Project Overview, Purpose & Need, Alternatives, Construction Methods - Historic Property Identification Efforts - Potential Effects on historic properties 	<ul style="list-style-type: none"> • September 25, 2014
2 nd Public Notice (800.4)	November 13, 2014	<ul style="list-style-type: none"> - Requested Public Comment on Historic Property Identification and Alternatives 	<ul style="list-style-type: none"> • Comment Period Closed December 6, 2014
2 nd Agency & Consulting Party Meeting (800.4)	December 9, 2014	<ul style="list-style-type: none"> - General Item Updates - Historic Property Identification - Historic Property Eligibility - Potential Effects - Potential Mitigation ➤ Requested written comments on identification, alternatives, effects, and potential mitigation from meeting participants. 	<ul style="list-style-type: none"> • Comment Period closed January 15, 2015
Evaluate Historic Significance (800.4)	May 8, 2014	<ul style="list-style-type: none"> - Several Historic Properties previously Listed on the National Register or determined Eligible. - June 12, 2014 SHPO provided recommendations of eligibility for certain properties and requested additional information on others. - September 2014- February 2015: Stantec conducted additional cultural resource surveys, submitted reports and other documentation. - May 11, 2015 SHPO provided final concurrence pertaining to individual eligibility for all identified historic resources. - July 2, 2015 Consulted with Keeper of the National Register on eligibility status of Captain John Smith Trail <ul style="list-style-type: none"> ➤ Aug 14, 2015 decision rendered by Keeper. - June 24, 2016 SHPO provided concurrence with additional Underwater Archaeological Survey work; including a Not Eligible determination based on the results of Phase II assessment for buffer and cluster anomalies located within 200 feet of any construction activities. <p>Note: Oct 22, 2015 Letter from NPS indicated satisfaction with USACE that CFR 800.4 was completed.</p>	<ul style="list-style-type: none"> • Initially Completed May 11, 2015 • Updated Aug 14, 2015 upon receipt of Keeper of the NPS Eligibility Determination • Updated June 24, 2016 upon receipt of SHPO Eligibility Concurrence with Phase II Underwater Archaeological Assessments.
Assessment of Adverse Effects (800.5)	May 11, 2015	<ul style="list-style-type: none"> - Applied Criteria of Adverse Effects in consultation with SHPO, considering views of consulting parties and public <ul style="list-style-type: none"> ➤ Dominion's Effects Reports; which included visual assessments (Mar 2014, Oct 29, 2014, & Nov 10, 2014) ➤ Consulting Party Effects Analyses - May 21, 2015 Public Notice determined undertaking will have an Overall Adverse Effect <p>Note: Nov 13, 2015 SHPO concurred with USACE that undertaking will have</p>	<ul style="list-style-type: none"> • Completed May 21, 2015

		an Adverse Effect confirming the process is at 800.6 "resolution of adverse effect"	
3 rd Public Notice (800.6)	May 21, 2015	- Request Public Comments on effects to final list of historic properties and in preparation to moving to resolution of adverse effects.	• Comment Period Closed June 20, 2015
3 rd Agency & Consulting Party Meeting (800.6)	June 24, 2015	- General Updates - Effects to individual historic properties - Resolution of Adverse Effects	• June 24, 2015
4 th Public Notice (800.6)	October 1, 2015	- October 1, 2015 Announced Public Hearing seeking input on views, opinions, and information on the proposed project. - November 5, 2015 Extension of PN comment period	• Comment Period Closed November 13, 2015
Resolve Adverse Effects (800.6)	May 21, 2015; Restated Oct 13, 2015	- May 21, 2015 Public Notice requested comments on Resolution of Adverse Effects. - May 29, 2015 consulted with the Director NPS in accordance with 36 CFR 800.6 and 800.10 re: Carters Grove NHL and adverse effects. (No Response To date) - June 24, 2015 Consulting Party Meeting - October 1, 2015 provided Consulting Parties with Dominion Consolidated Effects Report (CER) dated September 15, 2015 and stamped rec'd by USACE Sept 29, 2015. ➤ CER was developed to address comments from VDHR and Consulting Parties. - October 15, 2015 Consulting Party Meeting - December 30, 2015 consulted with SHPO, ACHP, & Consulting Parties to seek input on Dominion's Draft MOA with Mitigation Stipulations and Context Document - January 6, 2016 Dominion's response to comments regarding the December 30 th MOA coordination were provided to SHPO, ACHP, and Consulting Parties by email. - Feb 2, 2016 Consulting Party Meeting - Feb 17, 2016 SHPO gave their concurrence with the Jan 29 th tables forwarded ahead of Feb 2 nd Consulting Party Meeting that show effect determinations for individual historic properties. - June 13, 2016 consulted with SHPO, ACHP, and Consulting Parties to seek input on Dominion's Draft MOA and Context Document. - July 27, 2016 SHPO confirms the MOA and its mitigation measures sets forth an acceptable framework to resolve adverse effects. - December 7, 2016 consulted with SHPO, ACHP, and Consulting Parties to seek input on Dominion's Draft MOA. - December 12, 2016 Dominion's response to MOA comments regarding the June 13 th coordination were provided by email, along with revised Context document and MOA attachments, to SHPO, ACHP, and Consulting Parties. - January 19, 2017 SHPO, ACHP, and Consulting Party Teleconference	• Ongoing

		<ul style="list-style-type: none"> - January 27, 2017 facilitated meeting between the Pamunkey Indian Tribe and Dominion. - February 12, 2017 Chief Gray with the Pamunkey Indian Tribe confirmed mitigation measures are agreeable to the Tribe. - March 21, 2017 Chairman of ACHP Site Tour of Colonial Parkway and Jamestown Island. - March 24, 2017 coordinated final draft MOA with Signatory Parties for final comment. 	
4 th Agency & Consulting Party Meeting (800.6)	October 15, 2015	<ul style="list-style-type: none"> - General Updates - NPS Visual Effects Analysis - Stantec Consolidated Effects Report - Resolution of Adverse Effects <ul style="list-style-type: none"> ➤ Requested written comments on adverse effects from meeting participants. 	<ul style="list-style-type: none"> • Comment Period Closed November 12, 2015
Public Hearing (800.6)	October 30, 2015	<ul style="list-style-type: none"> - Hearing held for the purpose of seeking input on views, opinions, and information on the proposed project. 	<ul style="list-style-type: none"> • Comment Period Closed November 13, 2015
5 th Consulting Party Meeting (800.6)	February 2, 2016	<ul style="list-style-type: none"> - General Updates - Resolution of Adverse Effects <p>TOPICS:</p> <ul style="list-style-type: none"> ➤ Cumulative Effects ➤ Architectural Viewshed &. Cultural Landscape ➤ Socioeconomic Impacts ➤ Visitor Experience ➤ Tourism Economy Impacts ➤ CAJO Evaluated on its Own Merit ➤ Submerged Cultural Resources ➤ Washington Rochambeau Revolutionary Trail 	<ul style="list-style-type: none"> • February 2, 2016
Consulting Party Teleconference (800.6)	January 19, 2017	<ul style="list-style-type: none"> - Opening Remarks - Discussion Topic <ul style="list-style-type: none"> ➤ Refine MOA & Identify Measures that may more effectively Resolve Adverse Effects ➤ Gather information to inform whether further consultation in the development of an MOA is warranted. 	January 19, 2017

**ATTACHMENT F: BASIS FOR PROPOSED MEMORANDUM OF AGREEMENT OF RESOLVE
ADVERSE EFFECTS TO HISTORIC PROPERTIES**

Surry-Skiffes Creek-Wheaton Transmission Line

NOA-2012-0080/13-V0408

Basis for Proposed Memorandum of Agreement to Resolve Adverse Effects to Historic Properties

April 24, 2017

EXECUTIVE SUMMARY

The Corps has completed the identification and evaluation of historic properties and an assessment of adverse effects to the satisfaction of the Virginia State Historic Preservation Officer (“SHPO”). In an effort to satisfy the remaining requirements under the National Historic Preservation Act (“NHPA”) specific to resolving adverse effects on historic properties (36 C.F.R. § 800.6), the U.S. Army Corps of Engineers (“Corps”) has elected to document resolution of those adverse effects in a memorandum of agreement (“MOA”) rather than a programmatic agreement.¹ Throughout this entire process the Corps has consulted with the Advisory Council on Historic Preservation (“ACHP”), SHPO, Virginia Electric and Power Company (“Dominion”), and the consulting parties to obtain input on all aspects of its compliance with the NHPA, including on multiple draft versions of the MOA that sets forth stipulations and actions to mitigate adverse effects on historic properties. The draft MOAs have been revised a number of times to reflect the consultation and the comments provided, as has this document.

This document provides (i) a discussion of considerations for developing mitigation under the applicable NHPA regulations and the general characteristics of the historic properties that will be adversely affected by the Project; and (ii) a description of the specific mitigation, the eight historic properties, the steps taken to avoid and minimize adverse effects and how the mitigation imposed by the MOA will mitigate the unavoidable minimized effects. With this document, Dominion concludes that the MOA will mitigate for the adverse effects to historic properties that will result from the project.

¹ The use of a MOA, as opposed to a programmatic agreement, is appropriate in this case. As discussed herein, in the Corps April 5 Letter, and throughout the record, the Corps has completed the process of identifying historic properties and obtained SHPO concurrence, determining how and the extent to which those properties are adversely effected and obtained SHPO concurrence, and resolved those effects through avoidance, minimization, and mitigation consistent with 36 C.F.R. § 800.6, and SHPO has indicated it concurs in that decision and will execute the MOA. As such, the circumstances that typically would militate in favor of using a programmatic agreement are not present here. 36 C.F.R. § 800.14(b)(1). There are no circumstances that would warrant a departure from the normal Section 106 process; that process worked as intended in this case.

DISCUSSION

1. Project Description

The project at issue is Dominion’s proposed Surry-Skiffes Creek-Wheaton 500 kilovolt (kV) transmission line (“Project”), which contemplates the construction of a new high voltage aerial electrical transmission line that consists of three components: (1) Surry – Skiffes Creek 500 kV aerial transmission line, (2) Skiffes Creek 500 kV – 230 kV – 115 kV Switching Station, and (3) Skiffes Creek – Wheaton 230 kV aerial transmission line.

2. Section 106 Compliance Process

The following is a list of historic properties that the Corps determined were adversely affected by the Project, a decision in which the SHPO concurred:

1. Carter’s Grove;
2. Colonial National Historic Park/Colonial Parkway Historic District;
3. Jamestown National Historic Site;
4. Hog Island Wildlife Management Area (“WMA”);
5. Archeological Site 44JC0662;
6. Jamestown National Historic Site/Jamestown Island/Jamestown Island Historic District (“Historic District”),² including the contributing section of the Captain John Smith Chesapeake National Historic Trail (“Captain John Smith Chesapeake NHT”);
7. Battle of Yorktown; and
8. Fort Crafford.

3. General Considerations

Before discussing the efficacy of the specific mitigation set forth in the MOA, it is important to describe the relevant context, *i.e.*, (a) the general approach to mitigation, (b) the general characteristics of the historic properties, how they relate to one another, and the nature of the adverse effects in a general sense, (c) how mitigation is approached in the context of the historic properties and the Project, and (d) some additional information about the mitigation proposed.

² When the Keeper of the National Register determined this district was eligible for the National Register, it did not establish a formal name for it as a historic property. In the record, it has been referred to as the Eligible Historic District, and, before the Keeper’s determination, was known as the Jamestown Island-Hog Island Cultural Landscape. The SHPO has referred to this property as the Captain John Smith Trail Historic District. In the MOA, the name for this historic property is the Jamestown Island-Hog Island-Captain John Smith Trail Historic District.

a. General Approach to Mitigation

When seeking to resolve adverse effects through avoidance, minimization, and mitigation for certain adverse effects, such as adverse visual effects that affect a historic property's setting, feeling, association, sense of place, essential character, or contribution to a larger landscape or district, it often is not possible, or even feasible or prudent, to develop or think of mitigation in quantitative terms. This is because, as the record reflects in this case, the types of resources at issue have qualities and values that often are not quantifiable in a way that directly reflects those qualities and values, and thus, the effects to those qualities and values often cannot be assessed or measured in a quantifiable way. Instead, as is the case here, these qualities and values and the potential effects thereto can be assessed and measured qualitatively. Thus, because there is no exact science or measure to quantify these types of effects, there also is no exact science or measure in determining the amount of mitigation necessary to resolve an adverse effect.

In such situations, the action agency, in consultation with the consulting parties, and relying on guidance and prior examples of mitigation in similar circumstances, among other things, uses its best judgment to reasonably and conservatively determine the types and extent of mitigation activities needed to adequately compensate for and enhance the affected values and integrity of the historic properties, while also providing added value beyond mitigation.³ This approach is consistent with the National Trust for Historic Preservation's ("NTHP") presentation at the October 15, 2015, consulting parties' meeting, as well as NTHP's January 29, 2016 letter regarding mitigation. There can be no doubt that NTHP's opinions regarding the extent of the adverse effects in this case, and thus, the appropriate amount of compensatory mitigation, differ from other parties' opinions on these subjects. What is clear, however, is that the use of compensatory mitigation to resolve adverse effects is a tried and accepted method to mitigate adverse effects. *Nat'l Parks Conserv. Ass'n v. Jewell*, 965 F. Supp. 2d 67, 75–77 (D.D.C. 2013) (upholding the National Park Service's ("NPS") mitigation decisions, including compensatory mitigation to account for, among other things, effects to historic properties).⁴

³ While the potential visual impacts from a project often are not directly quantifiable, as reflected in comments from the NPS, project proponents and action agencies sometimes use surrogate or indirect methods to attempt to quantify visual impacts and/or monetize the value of the impacted viewshed to assist in determining an appropriate scope/amount of compensatory mitigation. Early in the mitigation development process, Dominion preliminarily evaluated these types of methods to provide it an appropriate starting point regarding the development of compensatory mitigation in this matter. Thereafter, on September 16, 2016, Dominion provided a document titled *Correlating the Scope of the Proposed Compensatory Mitigation to the Adverse Impacts and/or Value of Impacted Resources* that provides an evaluation of several quantitative methods that provide further assistance in correlating the scope of the compensatory mitigation to the adverse effects from the Project, in addition to the qualitative analysis discussed in the text. The evaluation demonstrates that the scope of mitigation proposed in the MOA to resolve adverse effects on historic properties more than mitigates and resolves the adverse effects in this case, and provides substantial added value to the impacted qualities of the resources at issue and the landscape as a whole.

⁴ See also 40 C.F.R. § 1508.20(e) (National Environmental Policy Act regulations saying that mitigation includes "[c]ompensating for the impact by replacing or providing substitute resources or environments").

In such circumstances, as the record reflects in this case, experts consider appropriate mitigation activities that provide benefits to the historic properties by enhancing the values of the historic properties that have been affected, even if the enhancement is not addressing directly the precise aspect of the value adversely affected. Examples of acceptable compensatory mitigation include: the acquisition in fee or by easement lands that would protect or enhance a historic property's values; activities that implement, continue, restore, and enhance a historic property's values; and, activities that implement, continue, restore, and enhance a historic property's surrounding landscape, or ongoing landscape initiatives and historic resource preservation strategies and plans. See, e.g., NPS, Susquehanna to Roseland 500 kV Transmission Line Right-of-Way and Special Use Permit Final Environmental Impact Statement at 72–73 (Aug. 2012) (“NPS FEIS”). In the case of the Susquehanna-Roseland project, NPS also identified data recovery and treatment plans as acceptable mitigation for effects to archeological sites that could not be avoided. NPS FEIS at F-12.

For visual effects to historic properties that could not be avoided or further minimized, NPS also identified the funding or preparation of educational materials to interpret the history and architecture of the study area related to the project for the public, including publishing histories, making National Register of Historic Places (“NRHP” or “National Register”) nominations, and creating informational websites, brochures, exhibits, wayside panels, and driving/walking tours. NPS also identified the funding or completion of improvements to physical aspects of historic properties. *Id.* at F-12 to F-13. The NPS FEIS was upheld against challenge in the *Jewell* case cited above. In other comments in this matter, NPS and the consulting parties also stated a landscape-focused approach, and as such landscape-focused activities, were necessary.

As set out below, the MOA identifies compensatory mitigation that falls directly in line with the compensatory mitigation identified in the NPS FEIS, and approved of in *Jewell*, as well as called for by the consulting parties. The mitigation also is consistent with the SHPO's guidance regarding visual effects. See Virginia Dep't of Historic Resources, *Assessing Visual Effects on Historic Properties* at 6 (2010). The MOA also provides for the additional avoidance or minimization of effects, which lends further credibility and reasonableness to the identification and selection of compensatory mitigation.

b. General Considerations of the Adversely Affected Historic Properties

Many of the individual historic properties located within the APE are distinct and significant enough to be either listed or considered eligible for inclusion in the NRHP by themselves. Moreover, their thematic connections make them significant contributing elements to the broader cultural landscape, and as a whole eligible for designation as a historic district, which documents a continuum of American history up through today from both a cultural and natural perspective. Similarly, the cultural landscape contributes historic context to each individual element.

As recognized by the Keeper of the National Register (“Keeper”) and the consulting parties, the entire river crossing APE, direct and indirect, is located within a historic

district, which is a cultural landscape of national historic significance.⁵ As a cultural landscape, this area illustrates the specific local response of American Indian, European, and African cultures, land use, and activities to the inherent qualities of the underlying environment. The landscape reflects these aspects of our country's origins and development through the natural, relatively unaltered river and segments of undeveloped shoreline, evoking the ways it was used by the early inhabitants and continuing to reveal much about our current evolving relationship with the natural world.

c. The Process of Identifying Appropriate Mitigation that Also Creates Added Value

After the Corps' initial determination of adverse effects, which later was expanded based on comments from the SHPO, ACHP, the consulting parties, and the public, Dominion consulted first with the SHPO, and then the Corps, ACHP, and the consulting parties, on appropriate mitigation projects to address the identified adverse effects, and their scope. This was done by looking at projects and activities within the APE that could enhance the aspects of integrity of the historic properties at issue found to be adversely affected, namely setting and feeling. Dominion also considered projects or activities located outside of the APE that would have beneficial effects on the adversely affected aspects of integrity for the sites at issue. Dominion also recognized that there may be additional, not currently identified projects that could have beneficial effects.

Once the list of potential projects was developed, and due consideration was allowed for potential, future projects not currently identified, Dominion considered potential, conservative funding amounts to allow for the completion of such projects, while allowing for additional funds for projects and activities to add value beyond what is believed to be necessary to adequately mitigate the adverse effects. In so doing, Dominion did not assign a fixed amount to any one potential project. Instead, Dominion believed a more flexible approach was appropriate and therefore determined a total funding amount for each category of project or activity set out in the current MOA that are keyed to specifically affected historic properties (designated as funds in the MOA), and provided guidelines for the timing and use of money from those funds by qualified third-parties to effectuate the mitigation with oversight by the Corps, SHPO, and ACHP, and input from those agencies, Dominion, and the Consulting Parties.

Working with the Corps and SHPO, Dominion has identified a suite of many different types and kinds of projects and activities that are designed to enhance qualitatively the integrity and values of the historic properties at issue, although each in different ways, to resolve the identified adverse effects, nearly all of which are visual effects. In so

⁵ More specifically, the Keeper stated that the Indirect APE was eligible for the National Register as a historic district under The National Register Criteria A, B, C, and D, in the areas of significance of Exploration/Settlement, Ethnic Heritage, and Archeology. "This historic district forms a significant cultural landscape associated with both the American Indian inhabitants of the area and the later English settlers." "This segment of CAJO is among the most historically significant portions of the overall National Historic Trail's 3,000 plus miles of waterways." Letter from the Keeper to W. T. Walker, USACE dated August 14, 2015.

doing, relative mitigatory values were not assigned to individual activities and projects, because, consistent with accepted mitigation practices, those values ultimately are subjective to experts as well as to visitors to historic properties; the numerous types of mitigation that the MOA employs and contemplates (e.g., land acquisition, natural and cultural resource restoration, enhancement, or preservation, cultural interpretation, historical education, etc.) all create acceptable mitigatory value. Dominion has proposed a flexible structure that will implement a diverse suite of mitigation at a scope and level that is conservative and that, based on the parties' experience and expertise, will appropriately mitigate the Project's adverse effects and provide significant additional value to the historic properties and their greater landscape. Notably, in cases in which an initially specified mitigation project cannot be accomplished, for example due to a current property owner's unwillingness to provide access to the relevant property, the MOA provides for specified alternatives in each fund to ensure that historic property-specific mitigation proceeds. Like the primary choices, the alternatives also create acceptable mitigation value keyed to the historic properties at issue.

d. Mitigation in Light of These General Considerations and the Nature of the Project

In light of the situation where there are individual and landscape-scale historic properties that will be adversely affected by the Project, a proposed transmission line over open water, and as recognized by the NPS, assessing effects to historic properties from this Project is especially challenging given the nature of the project and the manner that reflects individual perceptions and interests. As noted in the Cultural Resource Effects Assessment ("CREA"), there are certain direct effects from the project that can be documented and mitigated in the traditional sense. However, direct, indirect, and cumulative effects to the cultural landscape and historic district, as well as some individual contributing elements to that district, are difficult to mitigate in a direct, traditional manner such as landscape screening, documentation, or data recovery. The Section 106 process has resulted in significant agreement among the parties regarding which properties are and are not adversely affected. The Corps, SHPO, ACHP, Dominion, NPS, and consulting party experts could indefinitely debate the merits of various parties' arguments about the adversity and severity of effects to individual properties or the landscape as a whole. In light of this range of perceptions, mitigation of adverse effects to historic properties must be approached more broadly and in a manner that pursues a substantially larger range of more permanent resource documentation, enhancement, and preservation efforts. While the proposed mitigation recognizes that the Project will leave intact the characteristics for which the historical properties have been listed or determined to be eligible for listing, it reflects the effects to setting and feeling of the individual historic properties and the cultural landscape that will result from the Project. The remaining question is whether the current characterization of adversity of effects and the amount of proposed mitigation is sufficient to allow a determination that the proposed mitigation is appropriately targeted and more than adequate to resolve the adverse effects, in full compliance with the requirements 36 C.F.R. § 800.6. The record demonstrates that it is.

e. Additional Information on the Proposed Mitigation

In the selection of the alternative and proposed Stipulations in the MOA, the adverse effects will be avoided and minimized to the greatest extent possible. Thereafter, the MOA defines a series of mitigation initiatives that, in addition to enhancing the affected values and integrity of the historic properties and the cultural landscape, will strengthen the general public and visitors' understanding of and experience at significant places within and related to this landscape through enhanced heritage tourism opportunities including development of additional interpretive and orientation facilities. Proposed mitigation also seeks to ensure future permanent preservation of existing above-ground cultural landscape features, such as natural resources and systems, vegetation, landform and topography, land uses, circulation, buildings and structures, Native American settlements, views, and small-scale features through land acquisition, and acquisition of historic preservation and open space easements.

Mitigation to support water quality improvement of the James River watershed also is provided and will have direct benefits to waters within the APE, which will further enhance visitor experience and enjoyment of the district's cultural and natural features, and otherwise maintain and improve the setting and feeling of the river as a key component of the Jamestown Island-Hog Island Cultural Landscape Historic District, as well as the other historic properties at issue that are within the district and border the river. Lastly, mitigation for shoreline protection at Jamestown Island, the Colonial Parkway, and Carter's Grove is intended to help address expected effects from erosion and sea level rise at these iconic resources, that, along with the Captain John Smith Chesapeake NHT and Hog Island, are the key character-defining elements of the eligible historic district. Other more traditional mitigation (data recovery) is proposed to address direct effects to archaeological site 44JC0662, as well as avoidance of effects to identified underwater cultural anomalies and terrestrial archaeological sites.

The proposed mitigation components are both specific to identified adversely affected resources and broad-based to recognize the landscape attributes of the historic property and the entire historic district. Landscape and viewshed enhancement, shoreline protection and water quality improvement mitigation measures collectively recognize the individual significance and integrity of the segment of the Captain John Smith Chesapeake NHT, as well as its connection to the individual sites of Jamestown, the Colonial Parkway, Hog Island, and Carter's Grove. The proposed mitigation will also ensure that the visitor experience and understanding of Virginia's prehistory and colonial experience is enhanced beyond today's story with additional viewshed preservation of the Captain John Smith Chesapeake National Historic Trail on the York River and the enhancement of Werowocomoco, the seat of Virginia Indian society, culture, and governance during the time of the English settlement at Jamestown. Preservation of this Native American settlement provides a mirror image of the Jamestown site in which a more fulsome understanding of the confluence of cultures is reflected. Mitigation also ensures the preservation of the Pamunkey and Chickahominy Indian tribal artifacts and provides the means to continue tribal traditions and customs. These tribal communities on the Chickahominy and Pamunkey rivers at the time of the arrival of European settlers were integral to the story of Jamestown and the early

European colonial experience. In the event some of the mitigation activities cannot proceed, Dominion shall proceed with mitigation alternatives within the APE, such as at Chippokes Plantation State Park in Surry, Virginia directly across the James River from Jamestown. Chippokes Plantation is the oldest, continuously farmed site in the Nation established in 1619. The site possesses archeology associated with the first wave of settlement for agricultural and other pursuits outside of James Fort, and provides values, experiences, and history similar to that of Carter's Grove. Mitigation alternative activities could also include scholarly exhibits and facilities at the Jamestown-Yorktown Settlement on the landscapes and watershed before, during and after the convergence of the three cultures in the area and their role in understanding the newly defined Jamestown Island-Hog Island-Captain John Smith Trail Historic District. Additional mitigation alternatives could also include projects at Ft. Monroe, which is linked to Virginia's pre-colonial period, Captain John Smith's journeys of exploration of the Chesapeake Bay, and the first landing place of Africans brought forcibly to the colony. These projects enhance the setting and feeling of the Historic District and its component historic properties at issue. In sum, while there are adverse effects that are unavoidable, the proposed mitigation will result in future long-term positive and expanded benefits to the historic district and related properties and visitor experience that are both substantial and meaningful.

Under Stipulation III.h.1, Dominion shall coordinate with the entities identified in therein to ensure that due consideration of a landscape-scale approach to the development and implementation of projects is given and employed to the extent practicable under the circumstances. A landscape-scale approach considers the historic district in its entirety and each historic property at issue within the context of the broader cultures and historic themes to which it relates in a wider geographic area. Among other things, relevant here are the cultures and historic themes related to the Virginia Indian cultures and the early English settlement in the areas within, nearby, and thematically related to the APE, as well as the Virginia river flowing into and through these areas and out to the Chesapeake Bay.

4. How the MOA Mitigates the Adverse Effects to the Historic Properties

The following provides a discussion about how the projects and activities committed to in the MOA are designed to mitigate fully the identified adverse effects on the above listed historic properties, and provide additional value. The Stipulations are first explained, followed by an explanation of how the adverse effects to each historic property are mitigated.

a. Avoidance and Minimization Measures

When Dominion developed and proposed the Project, it incorporated project designs to avoid and minimize the visibility of the transmission line infrastructure, while still meeting state and federal requirements. Avoidance and minimization occurred through selection of the alternative and the specific route of the river crossing, given all of the constraints imposed by conservation easements, land use regulations, and military and aviation restrictions. This minimization helps reduce the unavoidable visual effects discussed

above. Minimization also is achieved through the use of naturally weathered galvanized steel towers, whose color will provide substantial visibility reduction. Further, through the MOA, under Stipulation I.e, Dominion has agreed to reexamine all viable and feasible tower coatings and finishing materials and methods to determine if they can further minimize the visibility of the transmission line infrastructure beyond that achieved by naturally weathered galvanized steel towers, and if they can be applied such that they adhere initially and over the longer term and are consistent with federal and state law. Dominion also has agreed to maintain the visibility reduction obtained by the use of weathered galvanized steel. If Dominion can identify suitable coatings and methods (e.g., that will adhere to the galvanized steel after it weathers sufficiently to accept the coating and that further minimize the visibility of the towers used in the river crossing), it will apply them when conditions allow effective application.

Additional avoidance has been incorporated through the MOA, under Stipulation I.b, where prior to construction, Dominion will develop an avoidance plan for archeological and underwater resources located within the APE. Avoiding potential historic properties (e.g., the underwater resources) and maintaining their integrity preserves and enhances the integrity of the historic properties at issue, particularly the Historic District and Captain John Smith Chesapeake NHT.

b. Additional Mitigation by the Enhancement of Heritage Tourism

According to the NTHP, heritage tourism is “traveling to experience the places, artifacts and activities that authentically represent the stories and people of the past,” which can include cultural, historic and natural resources.⁶ Heritage tourism has a symbiotic relationship with historic preservation. As NTHP states, “[h]eritage tourism helps make historic preservation economically viable by using historic structures and landscapes to attract and serve travelers. . . . [S]tudies have consistently shown that heritage travelers stay longer and spend more money than other kinds of travelers.”⁷ “As an added bonus,” NTHP states, “a good heritage tourism program improves the quality of life for residents as well as serving visitors.”⁸ Information from NPS regarding the number of heritage tourists over the years to certain historic properties in the APE and in the Historic Triangle generally demonstrates that the number of heritage tourists visiting this area varies seasonally throughout the year. It also demonstrates that the overall annual levels of tourism do not appear to be impacted by the construction of industrial facilities (e.g., the Surry Power Plant, BASF facility) nearby or within view of the historic properties or other heritage tourist destinations, as well as with the advent of modern developments and recreation nearby (e.g., Busch Gardens). Similarly, the information shows that heritage tourism levels also do not appear to be impacted significantly by heavily advertised events showcasing one or more historic properties

⁶ NTHP, Heritage Tourism, at <http://www.preservationnation.org/information-center/economics-of-revitalization/heritage-tourism/> (last visited Mar. 14, 2016).

⁷ *Id.*

⁸ *Id.*

(e.g., the 400th Anniversary at Jamestown). Nevertheless, the parties agree that heritage tourism would benefit from further study and targeted enhancement.

Through the MOA, Dominion has agreed to take advantage of the symbiotic link between heritage tourism and historic preservation to enhance the integrity (namely, the setting and feeling) of the historic properties, as well as the visitor experience to those properties. Specifically, under Stipulation II.b., prior to Limited Construction Within the James River (as defined in Stipulation XVIII.f), Dominion, in consultation with the Corps, SHPO, ACHP, and Consulting Parties as appropriate, will initiate a heritage tourism and visitor experience study regarding such tourism within the Indirect APE. The purpose of the study is to evaluate current heritage tourism and visitor experience within the Indirect APE to allow for the development of a marketing and visitation program (Program) to promote and enhance heritage tourism sites and visitor experiences within the Indirect APE. The study will be done in collaboration with the heritage tourism site stakeholders (e.g., historic property site operators and tourist amenity (e.g., hotels, theme park) owners/operators). When completed, the study will recommend a Program to the Corps, SHPO, ACHP, and Consulting Parties as appropriate for review and comment. Following review and comment, Dominion shall address any comments received, and submit the final study and Program to the Corps and SHPO for concurrence. Upon receiving concurrence, Dominion will make a onetime contribution to fund the implementation of the Program.⁹ The results of the study will also be used to inform development of the various visitor experience and interpretation enhancement projects identified in the MOA and these stipulations are cross-referenced in the MOA accordingly.

c. Stipulations that Compensate for Visual and Physical Effects to Historic Properties (aside from Archeological site)

Stipulation I.c contemplates that, prior to Limited Construction Within the James River, Dominion will develop interpretative signage to inform visitors about the historic significance and character of the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other thematically related locations in and outside the APE. No less than ten signs will be developed in consultation with the Corps, ACHP, SHPO, and the Consulting Parties to the MOA, and will be located on publically accessible lands, including recreation and heritage tourism destinations. In developing the interpretive signs, Dominion will review and evaluate existing and any planned signage and other interpretive media currently serving the historic properties at issue so as to develop signage that is complementary. This mitigative measure will enhance and

⁹ The mitigation of adverse effects to historic properties through the enhancement of heritage tourism also would act as mitigation for potential adverse effects to heritage tourism itself as a result of the Project. Based on available information regarding heritage tourism in the Historical Triangle area, specifically including the historic properties at issue here, it does not appear that the Project will have an effect on heritage tourism, adverse or otherwise. Instead, it appears that seasonal weather patterns, large storms and park closures may impact heritage tourism temporarily, while the construction and placement of modern intrusions, including, for example, the Surry Nuclear Power Plant, had no impact on tourism. Indeed, during the time the Surry plant was constructed and thereafter, the evidence shows that tourism numbers increased.

improve the setting and feeling of the Captain John Smith Chesapeake NHT within the historic district, the district itself, and all of the historic properties located therein by establishing and providing for education and recreation missions that focus on supporting the reasons the district was determined to be eligible for the National Register (*i.e.*, for its significance regarding exploration/settlement, ethnic heritage, and archeology).

Stipulation I.d.1. requires that, prior to Limited Construction Within the James River, Dominion will complete the necessary photography, illustrations maps and drawings to complete a Historic American Landscapes (HALS) photo-document for the Jamestown Island-Hog Island-Captain John Smith Trail Historic District, and all of the other adversely affected historic properties identified in Attachment C to the MOA in a manner consistent with NPS Heritage Documentation Program Standards and Guidelines. Dominion will submit the HALS document to the NPS heritage Documentation Program for review. This mitigative measure will provide a permanent visual record of the historic district (and its component historic properties) and its setting as it existed prior to construction of the project. This documentation will be placed in the Library of Congress and available to the general public in perpetuity. Consistent with NPS guidance, the HALS Survey and photo-documentation will be used to inform the mitigation projects under this MOA, as well as to aid in educational, investigative, preservation, and interpretive activities that enhance, directly or indirectly, the historic properties at issues here, including preservation and education missions that focus on supporting the reasons the district and the properties were determined to be eligible for the National Register.

Stipulations II.a.1.A. through II.a.1.E. of the MOA contemplate that Dominion will establish five legally separate mitigation compensation funds. The five funds are focused on effects related to Jamestown Island-Hog Island-Captain John Smith Trail Historic District and the thematically related areas including the Captain John Smith Chesapeake NHT; Hog Island Wildlife Management Area; Water Quality Improvements; and Landscape and Battlefield Conservation. Dominion will provide a total of \$85,000,000 in mitigation funds, to be distributed to the five funds as set forth in Stipulation II.a.1. Stipulation II.a.1.A. allocates \$27,700,000 to projects and activities at and related to Carter's Grove, Colonial National Historic Park/Colonial Parkway Historic District, Jamestown National Historic Site, and Jamestown National Historic Site/Jamestown Island/Jamestown Island Historic District including the contributing section of the Captain John Smith Chesapeake NHT, and alternative projects at Ft. Monroe, Chippokes Plantation and the Jamestown Settlement by the Jamestown-Yorktown Foundation, as specified in Stipulations III.a.to c. Within Stipulation II.a.1.A. funding will be provided directly to the Chickahominy Indian Tribe who will be responsible for the administration and project implementation. Stipulation II.a.1.B. allocates \$25,000,000 for the projects related to the York River and the York River State Park as the gateway to visitor understanding of Werowocomoco) in accordance with Stipulation III.e. Stipulation II.a.1.C. allocates \$4,205,000 for enhancement and improvement projects at and related to Hog Island WMA in accordance with Stipulation III.f. Stipulation II.a.1.D. allocates \$15,595,000 in water quality improvement projects in

accordance with Stipulation III.g. Stipulation II.a.1.E. allocates \$12,500,000 for landscape and battlefield improvement projects associated with, among other things, the Battle of Yorktown, Fort Crafford, and Fort Monroe.

Funding will also be provided for mitigation projects for the Pamunkey Indian Tribe, which are detailed in Stipulation III.i. These funds will be provided directly to the Tribe who will be responsible for their administration and project implementation.

While Dominion ultimately will be responsible for funding these projects and ensuring implementation of agreed upon mitigation, each fund sets out specific projects and activities, along with certain guidelines and requirements, about the allocation of these funds for those projects and activities. Each fund will be operated and administered by a third party along with independent subject matter experts. To ensure the funds are used to mitigate effects as they occur within the Project's life, the funds must be obligated within 10 years of the effective date of the MOA.

The projects and activities contemplated by the funds have been designed to directly enhance and improve the various aspects of integrity of the historic properties that have been identified as adversely affected, as discussed above, as well as otherwise enhance all aspects of the historic properties and increase their value. As discussed above, the visual effects on the historic properties affect their setting and feeling. Physical effects can also affect location. Setting "is the physical environment of a historic property that illustrates the character of the place"; feeling "is the quality that a historic property has in evoking the aesthetic or historic sense of a past period of time. Although it is itself intangible, feeling is dependent upon the significant physical characteristics that convey historic qualities;" and association "is the direct link between a property and the event or person for which the property is significant." CREA § 1.4 (quoting NPS guidance). As the projects below demonstrate, they work to enhance the physical environment and characteristics of the historic properties, as well as their ability to evoke the historic sense of the past through a number of diverse projects, all of which have been recognized as important ways to mitigate unavoidable effects. See *supra* discussion in Section 3, General Considerations.

In light of the foregoing, below is a property-by-property list of the historic properties, along with the characteristics for which they are eligible for listing on the NRHP, how they will be adversely affected by the Project, and an identification of the projects and activities that enhance and improve those properties' values or otherwise mitigate for the unavoidable adverse effects. In reviewing this information, it is important to remember that each property is a contributing element of the historic district, therefore, in reviewing the effects and mitigation, each effect on a property applies to the district and all mitigation for the district applies to each property and vice-versa. While not listed here, but as noted above, the MOA provides for specified alternatives to the mitigation projects listed below that will be implemented if the enumerated projects cannot be accomplished due to, for example, a landowner's unwillingness to provide access to her land for the accomplishment of the project. The alternatives provide like-

kind or similar projects that provide comparable mitigative value for the historic properties at issue.

1. Carter's Grove

- Eligibility: Carter's Grove was listed on the National Register in 1969 and specified as a National Historic Landmark in 1970 for its significance under Criterion C (architecture). Its well-preserved architectural features are indicative of its period of significance dating from the eighteenth century through the early twentieth century. Further, significant archaeological resources are located within the grounds of the property; thus, the property is also eligible for listing under Criterion D for information potential.
- Effects: The Project has avoided any direct effect on Carter's Grove because there will be no ground disturbing or physical effects to the resource's assets or character defining elements, which include the mansion, grounds, archaeological sites, and associated resources. Indirect effects to the property were determined to be visual. At its closest point, the property is approximately 3,000 feet from the Project's switching station, but it is not visible at Carter's Grove. The property is also in close proximity to the Project's river crossing. The photographic simulations indicate that the Project is visible some 1.76 miles from the manor house and 1.49 miles from the shore of the James River at Carter's Grove, which would detract from the resource's characteristics of setting and feeling.
- Mitigation: Stipulation III.a.1.A. – Landscape and viewshed enhancement projects and shoreline protection activities will be the focus of mitigation to ensure the ongoing preservation strategies and efforts and to physically protect the setting and feeling of the National Historic Landmark. An alternative mitigation project is identifying specific landscape and viewshed enhancement, shoreline protection, and other projects that enhance the affected setting and feeling of Chippokes Plantation State Park. Funding will be made available if these alternative projects are pursued.
- Mitigation: Stipulation I.c. – The development of interpretive signs to inform visitors about the historic significance and character of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other thematically related locations in and outside the APE.
- Mitigation: Stipulation I.d. – The creation of a HALS photo document of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other adversely affected historic properties will be submitted to the NPS heritage Documentation Program for acceptance. The HALS document will be placed in the Library of Congress.

- Mitigation: Stipulation I.e. - Dominion will examine all available and feasible tower coating and finishing materials and methods that will further minimize and/or maintain the visual intensity of the transmission line infrastructure crossing the river, above and beyond the visibility reduction achieved by standard weathered galvanized steel coatings, that meet and comply with all applicable state and federal law.

2. Colonial National Historical Park/Colonial Parkway Historic District

- Eligibility: The Colonial National Historical Park is comprised of the Colonial Parkway Historic District, the Jamestown National Historic Site/Jamestown Historic District, and Yorktown and Yorktown Battlefield, each of which are discussed specifically below. The Colonial Parkway Historic District was listed on the National Register in 1966 under Criterion A and C. The Parkway is eligible under criterion A for its association with the early twentieth-century trends of recreation and conservation with respect to the NPS's conservation ethic as applied to historic resources and as an intact example of an early twentieth-century recreational parkway constructed partially in response to the popularity of recreational "motoring" during the period of construction. The Parkway is eligible under Criterion C for landscape architecture as an intact example of Parkway Design and for its architectural features, which reflect the Colonial Revival style utilized during the renovation of Colonial Williamsburg. The parkway exhibits integrity of setting, location, feeling, association, design, materials, and workmanship.
- Effects: The Project has an adverse visual effect on certain portions of the Parkway in the APE adjacent to the James River which area not blocked by vegetation. The Project will detract from the resource's characteristics and integrity qualifying it for listing on the National Register.
- Mitigation: Stipulation III.b.1.A. – Funds shall be allocated for landscape and viewshed enhancement projects and shoreline improvement activities to preserve setting and feeling of the Colonial Parkway in a manner consistent with its design, open and forested areas, other natural elements, and interpretive areas as documented in NPS's Cultural Landscape Inventory (2008), and to physically protect the integrity of the property. An alternative mitigation project is identifying specific landscape and viewshed enhancement, shoreline protection, and other projects that enhance the affected setting, feeling and overall understanding of the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and thematically related areas including Jamestown Settlement and Fort Monroe in Stipulation III.b.7.-11. Funding for these alternative projects will be made available if these projects are pursued.

- Mitigation: Stipulation III.c.1.A. – Funds shall be allocated for heritage tourism enhancement projects for the Colonial National Historic Park that include additional visitor interpretation and visitor engagement opportunities. These projects will enhance and improve the historic properties' setting and feeling and promote their preservation, educational, and recreational missions and strategies. An alternative mitigation project is identifying specific landscape and viewshed enhancement, shoreline protection, and other projects that enhance the affected setting, feeling and overall understanding of the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and thematically related areas, including Fort Monroe and Chippokes Plantation State Park in Stipulation III.c.7.-11.. Funding will be made available if these alternative projects are pursued.
- Mitigation: Stipulation I.c. – The development of interpretive signs to inform visitors about the historic significance and character of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other thematically related locations in and outside the APE.
- Mitigation: Stipulation I.d. – The creation of a HALS photo document of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other adversely affected historic properties will be submitted to the NPS heritage Documentation Program for acceptance. The HALS document will be placed in the Library of Congress.
- Mitigation: Stipulation I.e. – Dominion will examine all available and feasible tower coating and finishing materials and methods that will further minimize and/or maintain the visual intensity of the transmission line infrastructure crossing the river, above and beyond the visibility reduction achieved by standard weathered galvanized steel coatings, that meet and comply with all applicable state and federal law.

3. Jamestown National Historic Site

- Eligibility: Jamestown Island was listed on the National Register in 1966 under Criterion A as the first permanent English settlement and its association with the colonization of Virginia, and under Criterion D for its archaeological potential. This site is part of the larger Colonial National Historical Park. Character defining characteristics of Jamestown Island Historic District include its numerous archaeological resources and its significance in history. The site retains integrity with respect to association, location, setting, feeling, workmanship, materials, and design.
- Effects: The Project would have an adverse effect on Jamestown National Historic Site due to the visual effects from the transmission lines. While the transmission lines will not be visible from the

Jamestown National Historic Site itself, visitors to Black Point, located about a mile down a trail toward the James River, will be able to see the transmission lines about 3.52 miles in the distance. This detracts from the site's characteristics and integrity qualifying it for listing on the National Register.

- Mitigation: Stipulation III.c.1.B.i. – Funds shall be allocated to rehabilitate or replace the seawall at Historic Jamestowne to physically protect the setting and feeling of the larger island property from erosion and sea level rise.
- Mitigation: Stipulation III.c.1.B.i. – Funds shall be allocated to build a series of breakwaters, sills, and revetments to provide greater physical protection to the larger island property than provided by revetments installed in 2004, which will protect its setting and feeling
- Mitigation: Stipulation III.c.1.B.ii. – Funds shall be allocated to restore Back Creek at Historic Jamestowne to enhance and improve an important historic feature to this property, protecting and improving its location, setting, feeling, and association.
- Mitigation: Stipulation III.c.1.b.iii. – Provides for archeological investigations at Historic Jamestowne at specified locations.
- Mitigation: Stipulation III.c.1.B.iv. – Funds shall be allocated for heritage tourism enhancement projects at the NPS visitor center on Jamestown Island that include additional landscape enhancement, visitor interpretation, and visitor engagement opportunities. These projects will enhance and improve the historic properties' setting and feeling and promote their preservation, educational, and recreational missions and strategies.
- Mitigation: An alternative mitigation fallback project to Stipulations III.c.1.B.i, to.iv is identifying specific landscape and viewshed enhancement, shoreline protection, and other projects that enhance the affected setting, feeling and overall understanding of the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and thematically related areas, as described in Stipulations III.c.7.-11. Funding will be made available if these alternative projects are pursued.
- Mitigation: Stipulation III.e.1.B. – The enhancement and preservation of Werowocomoco with associated supporting facilities at York River State Park will allow visitors there to see the landscape as it existed in pre-colonial days.

- Mitigation: Stipulation I.c. – The development of interpretive signs to inform visitors about the historic significance and character of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other thematically related locations in and outside the APE.
- Mitigation: Stipulation I.d. – The creation of a HALS photo document of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other adversely affected historic properties will be submitted to the NPS heritage Documentation Program for acceptance. The HALS document will be placed in the Library of Congress.
- Mitigation: Stipulation I.e. – Dominion will examine all available and feasible tower coating and finishing materials and methods that will further minimize and/or maintain the visual intensity of the transmission line infrastructure crossing the river, above and beyond the visibility reduction achieved by standard weathered galvanized steel coatings, that meet and comply with all applicable state and federal law.

4. Hog Island WMA

- Eligibility: The Hog Island WMA has been determined as potentially eligible for listing in the National Register under Criterion A for Broad Patterns in History as one of the earliest settlements outside of Jamestown and under Criterion D for its archaeological potential to yield important information in prehistory and history. Hog Island WMA exhibits integrity of association, setting, feeling, and location. The extant resources are not individually eligible or outstanding and therefore the aspects of the integrity including workmanship, materials, and design are not applicable.
- Effect: The Project would have an adverse effect on the Hog Island WMA as the visual effects from the transmission lines would detract from the site's characteristics and integrity qualifying it for listing on the National Register. The line-of-sight modeling indicates that the Project's transmission lines would be visible from the site.
- Mitigation: Stipulation III.f. – Funds shall be allocated for natural resource enhancement and cultural resource identification and interpretation for the Hog Island WMA, including for: the enhancement of 1,100 acres of palustrine emergent marsh; shoreline restoration; acquisition of 400 acres of upland/emergent marsh adjacent to the Chickahominy WMA, which is upriver of the Hog Island WMA, to improve water quality in the APE; creating a history and viewing interpretation facility on Hog Island that connects to the Jamestown National Historic Site/Jamestown Island/Jamestown Island Historic District including the contributing section of the Captain John Smith Chesapeake NHT; and a comprehensive archeological identification

survey of Hog Island. These projects will enhance and improve the physical location of Hog Island, as well as its setting and feeling as a historic property, as well as promote its preservation and education missions and strategies. It also will do the same for the historic district and the Captain John Smith Chesapeake NHT.

- Mitigation: Stipulation I.c. – The development of interpretive signs to inform visitors about the historic significance and character of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other thematically related locations in and outside the APE.
- Mitigation: Stipulation I.d. – The creation of a HALS photo document of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other adversely affected historic properties will be submitted to the NPS heritage Documentation Program for acceptance. The HALS document will be placed in the Library of Congress.
- Mitigation: Stipulation I.e. – Dominion will examine all available and feasible tower coating and finishing materials and methods that will further minimize and/or maintain the visual intensity of the transmission line infrastructure crossing the river, above and beyond the visibility reduction achieved by standard weathered galvanized steel coatings, that meet and comply with all applicable state and federal law.

5. Jamestown National Historic Site/Jamestown Island/Jamestown Island Historic District including the contributing section of the Captain John Smith Chesapeake NHT

- Eligibility: Historic Jamestowne is the cultural heritage site that was the location of the 1607 James fort and the later 17th Century City of Jamestown. The site was designated the Jamestown National Historic Site on December 18, 1940 and listed on the National Register in 1966 and the Virginia Landmarks Register in 1983. The island contains both above ground elements as well as archaeological sites related to the first permanent settlement in the New World. This resource is listed on the National Register for its significance as the first permanent English settlement in the New World, and also for its potential to yield significant information about the past related to both English and Native American settlement in the James River region. On August 14, 2015, the Keeper determined that the portion of the Captain John Smith Chesapeake NHT located in the Indirect Area of Potential Effect is a contributing factor to the Eligible Historic District, which is eligible for listing in the National Register and coterminous with the limits of the Indirect Area of Potential Effect. The Eligible Historic District, which encompasses a portion of the Captain John Smith Chesapeake NHT, is eligible for listing on the National Register under Criteria A, B, C, and

D, in the areas of significance of Exploration/Settlement, Ethnic Heritage, and Archeology.

- Effect: The Project would have an adverse effect to the Jamestown National Historic Site/Jamestown Island/Jamestown Island Historic District, including the contributing section of the Captain John Smith Chesapeake NHT, as the visual Effects from the Project's transmission lines would detract from the resource's integrity of feeling and would diminish the character defining elements qualifying the resource for listing on the National Register.
- Mitigation: Stipulation III.e.1.A. – Funds shall be allocated to acquire land and create and develop visitor site interpretation and related facilities to create enhanced visitor experiences for the Captain John Smith Chesapeake NHT. These projects will enhance and improve the setting and feeling of the Captain John Smith Chesapeake NHT within the historic district, as well as to further and continue its preservation, education, and recreation missions and strategies.
- Mitigation: Stipulation III.e.1.B.– Funds shall be allocated for the enhancement and preservation of Werowocomoco, including natural and cultural values on the James River and on the north and south sides of the York River near Werowocomoco. Werowocomoco was the principle residence of Powhatan, who was the paramount chief of the Indian Tribes in Virginia's coastal region at the time the colonists arrived in 1607 along what is now the Captain John Smith Chesapeake NHT. Because of the temporal, physical, social, political, and economic relationships, among others, between Captain John Smith and the colonists and the native tribes, this work will preserve and provide visitors with an undisturbed landscape and vista that evokes the setting and feeling of the rivers during the period of Captain John Smith's exploration. This will enhance and preserve the setting and feeling of the Captain John Smith Chesapeake NHT, as well as further and continue its preservation, education, and recreation missions and strategies.
- Mitigation: Stipulation III.d. – Within 30 days of issuance of the permit, Dominion shall make a one-time donation of \$1,500,000 to the Chickahominy Indian Tribe for the expansion, maintenance and operation of the Chickahominy Tribal Center. Inhabitants of the Chickahominy's ancestral villages along the Chickahominy River within the historic district were among the first native peoples to interact with the European settlers at Jamestown. Expansion of the tribal center will help preserve the Chickahominy's customs and traditions of dance and craftsmanship, as well as, serve as the primary location for preserving and displaying historical artifacts and documents for tribal and public education and enjoyment. In addition, the donation will enable the

Chickahominy, part of the Algonquin speaking people, to partner with the College of William and Mary to conduct scholarly research on their native language.

- **Mitigation:** Stipulation III.i.1.-3. – Upon issuance of the Permit, assuming there is willing seller, Dominion shall acquire the parcel of land containing Uttamusack (44KW0072) along with an access easement and donate the parcel and easement to the Pamunkey Indian Tribe free and clear of any encumbrances. The land donation shall be accompanied with one-time donations to the Tribe of \$500,000.00 to maintain and interpret the site and \$400,000.00 for construction of an access road. Uttamusack is of great spiritual and cultural significance to the Pamunkey Indian Tribe. The site served as a spiritual center for the tribe during the time of Powhatan who was located at Werowocomoco just down river from the site. Uttamusack is recognized on the John Smith Water Trail and its preservation and interpretation by the Pamunkey Indian Tribe will provide critical context for the Powhatan and Werowocomoco stories and their role in the Pamunkey culture at the time of European contact.
- **Mitigation:** Stipulations III.c.1.B.iii. and III.c.1.C. – Funds shall be allocated to support ongoing archeological investigations and identification around Memorial Church at Historic Jamestowne, which are focused on discovering the early churches that stood on the site of the 1617 church, as well as other archaeological investigations associated with the early occupation and settlement of Jamestown Island, Hog Island, and other areas related to the early settlement. In addition, funds will be allocated to support activities related to the conservation, preservation, and study of collections from previously excavated archaeological sites throughout the APE, including, but not limited to, at Martin’s Hundred, Carter’s Grove, and Kingsmill, as well as newly located archaeological sites as a result of this project. These projects will further and enhance ongoing preservation, investigation, and education missions and strategies at this historic property and the others at issue, as well as enhance and improve their respective setting, feeling, location, and workmanship. An alternative mitigation project is identifying specific landscape and viewshed enhancement, shoreline protection, and other projects that enhance the affected setting, feeling and overall understanding of the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and thematically related areas. Funding will be made available if these alternative projects are pursued.
- **Mitigation:** Stipulation III.c.1.B.iv. – Funds shall be allocated for heritage tourism enhancement projects for the Historic District and the Captain John Smith Chesapeake NHT that include landscape enhancement, visitor interpretation, and visitor engagement

opportunities, including at the NPS's visitor center on Jamestown Island. These projects will enhance and improve the historic properties' setting and feeling and promote their preservation, education, and recreation missions and strategies. An alternative mitigation project is identifying specific landscape and viewshed enhancement, shoreline protection, and other projects that enhance the affected setting, feeling and overall understanding of the Jamestown Island-Hog Island-Captain John Smith Trail Historic District and thematically related areas. Funding will be made available if these alternative projects are pursued.

- Mitigation: Stipulation III.i.1. – Prior to Limited Construction Within the James River, Dominion shall make a one-time donation of \$4,500,000.00 to the Pamunkey Indian Tribe for three initiatives: (i) expansion and operation of the Pamunkey Cultural Center, (ii) establishment of a Tribal Historic Preservation Office, and (iii) expansion and operation of the Pamunkey Indian Tribe's shad hatchery facility. These projects will strengthen and enhance the Pamunkey Indian Tribe's ability to tell the story of their culture and relationship with the both the York River and James River landscapes before and at the time of European contact. The Tribe's museum and cultural center are open to the public and chronicle the tribe's existence from early prehistory up to the present. The Tribe's shad hatchery also provides a source of employment for tribal members as well as training in traditional shad fishing. Enhancing the museum's ability to tell the Tribe's story along with strengthening the Tribe's shad hatchery operation will offer visitors a unique opportunity to experience an enhanced interpretive experience on the role of rivers and waterways in the Tribe's history and culture. Assistance to the Tribe with establishing a Tribal Historic Preservation Office will assist the Tribe in its efforts to communicate its views and values and to play a more active role in the preservation of cultural property significant to the Tribe.
- Mitigation: Stipulation III.g.1. – Funds shall be allocated for riparian buffer creation and replacement, and erosion and sediment control projects in the James River watershed with priority given to projects located within the Indirect APE. These projects will protect and enhance the water quality of the James River, including within the historic district and Captain John Smith Chesapeake NHT. The projects will further the preservation and recreation goals of the historic district and the Captain John Smith Chesapeake NHT, as well as promote river health as a symbol of the center of the area's economy and security, as it was during the colonial periods, and thus, enhance and improve the location, association, setting, and feeling of the Historic District and Captain John Smith Chesapeake NHT (as well as Jamestown Island).

- Mitigation: Stipulation III.g.1. – Funds shall be allocated for landscape preservation including through land and easement acquisition to preserve river and shoreline landscapes, as well as to promote water quality and river health for the James River. These projects will enhance these properties' preservation, education, and recreation missions and strategies, as well as strengthen their setting and feeling. They also will provide mitigation for any temporary effects to water quality from the construction of the towers in the river, as well as help compensate for any loss of values from the permanent effects to the river bottom.
- Mitigation: Stipulation III.h.1.C. – Funds shall be allocated for landscape scale conservation that may lead to permanently protecting lands necessary to preclude future river crossings within the APE, to the greatest extent possible. These projects will prevent future impacts to the historic properties.
- Mitigation: Stipulation I.c. – The development of interpretive signs to inform visitors about the historic significance and character of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other thematically related locations in and outside the APE.
- Mitigation: Stipulation I.d. – The creation of a HALS photo document of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other adversely affected historic properties will be submitted to the NPS heritage Documentation Program for acceptance. The HALS document will be placed in the Library of Congress.
- Mitigation: Stipulation I.e. – Dominion will examine all available and feasible tower coating and finishing materials and methods that will further minimize and/or maintain the visual intensity of the transmission line infrastructure crossing the river, above and beyond the visibility reduction achieved by standard weathered galvanized steel coatings, that meet and comply with all applicable state and federal law.
- Mitigation: See also projects and activities for the Hog Island WMA and Underwater Archeological Sites.

6. Battle of Yorktown and Fort Crafford

- Eligibility: The Yorktown Battlefield comprises an area of approximately 63,960 acres. Although portions of this battlefield have been surveyed independently for a variety of undertakings, very little comprehensive survey has been conducted. The site is eligible for listing on the National Register under Criterion A for its association with the Civil War as well as Criterion D for potentially significant archaeological

resources that have the potential to yield significant information about the Civil War. Fort Crafford served as a line of defense for the mouth of the Warwick River and served as the extreme right flank of the Warwick Line of ground defenses working in conjunction with Fort Huger on the opposite bank of the James River. The site is listed in the National Register, and includes the Crafford House, under Criterion A for association with the Civil War and its strategic importance and Criterion D for the potential to yield significant information.

- Effect: While archaeological sites within the Battle of Yorktown battlefield and Fort Crafford will be avoided, the indirect visual effects associated with the Project would have an adverse effect because they would detract from the resources' overall integrity and diminish the character defining element qualifying the resources for listing on the National Register.
- Mitigation: Stipulation III.h.1.A. – funds shall be allocated for land conservation and preservation and open space easement projects on lands associated with the Battle of Yorktown and Fort Crafford to include preservation of landscapes associated with these properties. These projects will enhance these properties' preservation, education, and recreation missions and strategies, as well as strengthen their setting and feeling.
- Mitigation: Stipulation I.c. – The development of interpretive signs to inform visitors about the historic significance and character of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other thematically related locations in and outside the APE.
- Mitigation: Stipulation I.d. – The creation of a HALS photo document of Jamestown Island-Hog Island-Captain John Smith Trail Historic District and other adversely affected historic properties will be submitted to the NPS heritage Documentation Program for acceptance. The HALS document will be placed in the Library of Congress.
- Mitigation: Stipulation I.e. – Dominion will examine all available and feasible tower coating and finishing materials and methods that will further minimize and/or maintain the visual intensity of the transmission line infrastructure crossing the river, above and beyond the visibility reduction achieved by standard weathered galvanized steel coatings, that meet and comply with all applicable state and federal law.

d. Stipulations that Mitigate for Effects to Archeological Site 44JC0662

1. Archeological Site 44JC0662

- **Eligibility:** Archeological Site 44JC0662 is a single dwelling dating from the 18th to the 19th centuries that is associated with the Bailey family, a low- to middle-income, slave-holding family in James City County. This site previously was subject to Phase I and Phase II investigation and data recovery work. This project would stand as a Phase III data recovery work that would record and preserve historic and archeological information related to the site and times, consistent with archeological preservation strategies, prior to any direct effects to the site. The site is eligible for listing on the NRHP under Criterion D for its potential to provide information regarding 18th and 19th century domestic occupation associated with middling farmers in James City County.
- **Effect:** The site would be directly affected by construction activities and the Project would have an adverse effect on the site as it would detract from the resource's characteristics and integrity qualifying it for listing on the National Register.
- **Mitigation:** Stipulation I.a. – Dominion is required to fund, develop, and implement a Treatment Plan in consultation with the Corps, SHPO, ACHP, and other Consulting Parties, consistent with Interior Department, SHPO, and ACHP guidelines for archeological investigations and documentations and data recovery, that specifies, among other things:
 - the areas where data recovery plans will be carried out;
 - the portion(s) of the site(s) to be preserved in place, if any, as well as the measures to be taken to ensure continued preservation;
 - any property, properties, or portions of properties that will be destroyed or altered without data recovery;
 - the research questions to be addressed through data recovery, with an explanation of their relevance and importance;
 - the proposed disposition of recovered materials and records; and
 - proposed methods of disseminating the results of the work to the interested public and/or organizations who have expressed an interest in the data recovery.

Dominion shall finalize the Treatment Plan with input from the Corps, SHPO, ACHP, and the Consulting Parties, and implement a final, Corps-approved plan.

e. Additional, Forward-Looking Stipulations Benefiting Historic Properties within the Direct and Indirect APE at the River Crossing

In Stipulation IV.1., Dominion agrees that from the date of construction until the towers are dismantled, it will coordinate all maintenance and repair operations that have the potential to result in ground or underwater disturbance with the SHPO and other relevant resource agencies to avoid and minimize any additional effects to historic properties. In Stipulation IV.2., Dominion agrees that from the date of construction until the towers are dismantled, it will not construct or place any new or additional transmission line infrastructure, or increase the height or scale of existing tower infrastructure. These covenants ensure that the nature and extent of the adverse effects of the Project on the historic properties will remain constant, and the determination that those effects are mitigated appropriately and effectively in the MOA remains correct.

In Stipulation IV.3., Dominion agrees from the date construction is completed, it will examine the ongoing need for the river crossing at ten year increments, taking into account the most current PJM Interconnection load forecast data. In Stipulation IV.4, Dominion agrees that if, at the conclusion of the Project life span (believed to be 50 years), Dominion determines the river crossing is no longer needed, Dominion will remove the Project and return the area to pre-Project conditions. In Stipulation IV.5, Dominion agrees that if, at the conclusion of the Project life span, Dominion determines the Project remains necessary, it shall evaluate the viability and feasibility of a submerged river crossing, and if at that time such a crossing is accepted and available and approvals are received, Dominion will replace the overhead line with a submerged crossing. These covenants represent a commitment to continue to evaluate the need for the river crossing and to remove the effects to historic properties to the extent possible.

CONCLUSION

Dominion finds that the proposed stipulations set forth in the MOA will resolve those adverse effects consistent with 36 C.F.R. § 800.6.



COMMONWEALTH of VIRGINIA

Office of the Governor

Molly Joseph Ward
Secretary of Natural Resources

MEMORANDUM

TO: The Honorable S. Chris Jones, Chairman, House Appropriations Committee
The Honorable Thomas K. Norment, Jr., Co-Chair, Senate Finance Committee
The Honorable Emmett W. Hanger, Jr., Co-Chair, Senate Finance Committee

FROM: The Honorable Molly J. Ward, Secretary of Natural Resources *MW*

DATE: August 3, 2017

SUBJECT: Explanation of the E.I. du Pont de Nemours and Company Settlement

SUMMARY:

After nearly a decade of work, the Commonwealth of Virginia joined with the U.S. Department of the Interior, acting through the U.S. Fish and Wildlife Service ("FWS"), in late 2016 to settle a longstanding claim against E.I. du Pont de Nemours and Company ("DuPont") for mercury contamination in the South River, South Fork Shenandoah River, and Shenandoah River from the DuPont facility located in Waynesboro, Virginia.

The Commonwealth and FWS, jointly the natural resources Trustees, drafted the Restoration Plan and Environmental Assessment ("RP/EA") for the natural resource damage assessment and restoration ("NRDAR") process. The United States Department of Justice, with the assistance of the Office of the Attorney General of Virginia, lodged the Consent Decree (with the final RP/EA attached as Appendix A) with the United States District Court for the Western District of Virginia, Harrisonburg Division, on December 15, 2016, and moved to enter the Consent Decree on April 20, 2017.

On July 28, 2017, Judge Michael F. Urbanski of the United States District Court for the Western District of Virginia approved and entered the Plaintiffs' Unopposed Motion to Enter the Consent Decree, bringing the case to a close.

TERMS:

The finalized Consent Decree and associated RP/EA provide for a cash payment of just over \$42 million. The Consent Decree also includes in-kind renovations from DuPont to the Front Royal Fish Hatchery owned by the Virginia Department of Game and Inland Fisheries (“DGIF”). The Trustees evaluated a range of restoration alternatives and proposed a preferred restoration alternative that includes projects that best restore the injured resources.

The funding allocations under the settlement are as follows:

- \$10 million for water quality improvement projects;
- \$19.5 million for land protection, acquisition, and enhancement projects, including the Stoney Run/Willets Tracts addition and forest restoration to the Cowbane Prairie Natural Area Preserve;
- \$4 million for mussel propagation and restoration program;
- \$2.5 million for migratory songbird habitat; and
- \$2.5 million for recreational fishing access creation and enhancement.

The Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”), which guides the NRDAR process, and the terms of the Consent Decree provide restrictions on how the settlement funds may be utilized. CERCLA requires that the projects be designed to restore or replace the damaged natural resources. The funds may not be used for cleanup (which is governed by a separate, ongoing process) or for economic development. In addition, projects must comply with the criteria contained in the Consent Decree and must be agreed to by the Trustees.

Within 30 days of the Court’s approval of the Consent Decree, DuPont must make its initial payment to the Trustees, which will be held in a site-specific subaccount within the U.S. Department of the Interior NRDAR Fund, established pursuant to 42 U.S.C. §§ 1474b and 1474b-1. Funds from the Waynesboro NRDAR subaccount will be available to the Trustees to pay for Trustee-approved natural resources restoration projects in accordance with Section VII of the Consent Decree.

The Trustees are currently developing the project selection process for execution of projects under these funding categories. In addition, DGIF is working with DuPont on the execution of the in-kind renovations to the Front Royal Fish Hatchery and the Trustees are

working on the Stoney Run/Willeys Tracts addition. The Trustees also hosted a meeting with the City of Waynesboro on August 2, 2017 to receive further information and provide staff support for project development.

The Trustees expect to hold a stakeholder meeting in the region by the end of August in order to provide stakeholders with more information regarding the project selection process. The Trustees anticipate soliciting project applications and making the first round of funding available to stakeholders by the end of 2017.

7/28/2017

JULIA C. DUDLEY, CLERK
BY: s/ JODY TURNER
DEPUTY CLERK

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF VIRGINIA
HARRISONBURG DIVISION

UNITED STATES OF AMERICA and
COMMONWEALTH OF VIRGINIA,
SECRETARY OF NATURAL
RESOURCES,

Plaintiffs,

v.

E. I. du PONT de NEMOURS AND
COMPANY,

Defendant.

CIVIL ACTION NO. 5:16-CV-00082

ORDER

Upon consideration of the Plaintiffs' Unopposed Motion to Enter the Consent Decree and supporting Memorandum and Exhibits, the Court finds that the Consent Decree is fair, adequate, and reasonable, and not illegal, a product of collusion, or against the public interest, and hereby GRANTS said motion.

It is hereby ORDERED that the Consent Decree between Plaintiffs the United States and the Commonwealth of Virginia, Secretary of Natural Resources, and Defendant E.I. du Pont de Nemours and Company shall be signed and entered as the final judgment in this matter.

SO ORDERED this 28th day of July 2017

Michael F. Urbanski

MICHAEL F. URBANSKI
United States District Judge

7/28/2017

JULIA C. DUDLEY, CLERK
BY: s/ JODY TURNER
DEPUTY CLERK

IN THE UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF VIRGINIA
HARRISONBURG DIVISION

UNITED STATES OF AMERICA, on)
behalf of UNITED STATES)
DEPARTMENT OF THE INTERIOR; and)
COMMONWEALTH OF VIRGINIA,)
SECRETARY OF NATURAL)
RESOURCES,)

Plaintiffs,)

CIVIL ACTION NO. 5:16-CV-00082

v.)

E. I. du PONT de NEMOURS AND)
COMPANY,)

Defendant.)

CONSENT DECREE

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I. BACKGROUND

A. The United States of America (“United States”), on behalf of the United States Department of the Interior (“DOI”), and the Commonwealth of Virginia, acting through its Secretary of Natural Resources (“Virginia”), (collectively, “Plaintiffs”), have filed a Complaint in this action against the defendant, E. I. du Pont de Nemours and Company (“DuPont”) pursuant to Section 107 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (“CERCLA”), 42 U.S.C. § 9607, Section 311 of the Federal Water Pollution Control Law, commonly known as the Clean Water Act (“CWA”), 33 U.S.C. § 1321, and the Virginia State Water Control Law (“SWCL”), Va. Code § 62.1-44.5.

B. The Complaint alleges that DuPont is a responsible or liable party under CERCLA, the CWA, and the SWCL for damages for injury to, destruction of, or loss of natural resources, and costs of natural resource damage assessment and restoration actions that Plaintiffs have incurred or will incur at or in connection with the Waynesboro Facility (as defined below).

C. This Consent Decree (the “Decree”) addresses the claims asserted in the Complaint against DuPont for Natural Resource Damages (as defined below).

D. DOI and Virginia (collectively, the “Trustees” and, individually, a “Trustee”), under the authority of Section 107(f)(2) of CERCLA, 42 U.S.C. § 9607(f)(2), and 40 C.F.R. Part 300, serve as trustees for natural resources for the assessment and recovery of damages for injury to, destruction of, or loss of natural resources under their trusteeship.

E. Investigations conducted by the Trustees and the United States Environmental Protection Agency (“EPA”) have detected elevated mercury levels in sediments, soils, fish, and wildlife at the Waynesboro Facility, downstream from the Waynesboro Facility for about 24 miles of the South River to the South Fork of the Shenandoah River (the “South Fork”), near

Port Republic, Virginia, and downstream for about 100 miles of the South Fork to Front Royal, Virginia.

F. The Trustees and DuPont have engaged cooperatively in natural resource injury studies, damage assessments, and restoration planning related to the Site since 2005. The Trustees and DuPont entered into two funding agreements dated February 16, 2005 and June 15, 2010, by which DuPont agreed to provide funding for the performance of a natural resource assessment by the Trustees. Under these agreements, all Trustee assessment costs were paid in full through fiscal year 2015.

G. The Trustees have undertaken various natural resource damage assessment activities at the Site and in the affected watershed, which informed a Resource Equivalency Analysis (“REA”) and Habitat Equivalency Analyses (“HEA”) that, in combination with other assessment techniques, were used to determine the costs of restoration needed to compensate for natural resource injury and recreational fishing loss due to the release of mercury from the Waynesboro Facility.

H. The Trustees determined that the natural resources, including, but not limited to, sediment, fish, birds, mussels and amphibians, sustained ecological injuries attributable to the release of mercury at the Site, and that recreational fishing trips were lost as a result of the same.

I. The Trustees have determined that the Front Royal Regional Fish Hatchery Project set forth herein is appropriately undertaken towards the restoration of the loss of recreational fishing.

J. By entry into this Decree, DuPont does not admit the allegations in the Complaint and does not admit any liability to Plaintiffs arising out of the transactions or occurrences alleged in the Complaint.

K. Plaintiffs and DuPont agree, and this Court by entering this Decree finds, that this Decree has been negotiated by the Parties in good faith; that settlement of this matter will avoid prolonged and complicated litigation among the Parties; and that this Decree is fair, reasonable and in the public interest.

NOW, THEREFORE, it is hereby ORDERED, ADJUDGED AND DECREED as follows:

II. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action pursuant to Sections 107 and 113(b) of CERCLA, 42 U.S.C. §§ 9607 and 9613(b); Section 311(n) of the CWA, 33 U.S.C. § 1321(n); and 28 U.S.C. §§ 1331, 1345 and 1367(a). The Court has personal jurisdiction over DuPont. Solely for the purposes of this Consent Decree and the underlying Complaint, DuPont waives all objections and defenses that it may have to the jurisdiction of the Court or to venue in this District. DuPont shall not challenge the terms of this Consent Decree or this Court's jurisdiction to enter and enforce this Consent Decree.

2. Venue lies in the Western District of Virginia, Harrisonburg Division, pursuant to Section 113(b) of CERCLA, 42 U.S.C. § 9613(b), and 28 U.S.C. §§ 1391(b) and (c).

III. PARTIES BOUND

3. This Decree is binding upon the United States, Virginia, DuPont and their respective successors and assigns. Any change in ownership or corporate or other legal status of DuPont, including but not limited to any transfer of assets or real or personal property, shall in no way alter the status or responsibility of DuPont under this Decree.

4. DuPont shall be responsible for ensuring that its contractors and subcontractors perform any work required hereunder in accordance with the terms of this Decree. With regard

to the activities undertaken pursuant to this Decree, each contractor and subcontractor shall be deemed to be in a contractual relationship with DuPont within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3).

IV. DEFINITIONS

5. Unless otherwise expressly provided herein, terms used in this Decree that are defined in CERCLA, the CWA or in regulations promulgated under CERCLA or the CWA, have the meanings assigned to them in such law or regulations.

6. Whenever the terms listed below are used in this Decree or in any attached appendix, the following definitions shall apply:

a. “Consent Decree” or “Decree” shall mean this Decree, all attached appendices, and any final approved plans required hereunder. In the event of a conflict between this Decree and any attached appendix or plan, this Decree shall control.

b. “Day” shall mean a calendar day. In computing any period of time under this Decree, where the last day falls on a Saturday, Sunday, or federal holiday, the period of time will run until the close of business the next working day.

c. “DOI” shall mean the United States Department of Interior and any of its successor departments or agencies.

d. “DuPont” shall mean E. I. du Pont de Nemours and Company.

e. “Effective Date” shall be the date upon which the approval of this Decree is recorded on the Court’s docket.

f. “Front Royal Regional Fish Hatchery Project” or “Fish Hatchery Project” shall mean the fish hatchery project designed and implemented pursuant to Section VIII and Appendix C of this Decree to restore loss of recreational fishing.

g. “Interest” shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year. Rates are available online at <https://www.epa.gov/superfund/superfund-interest-rates>.

h. “Natural Resource” or “Natural Resources” shall mean land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States and/or the State.

i. “Natural Resource Damages” shall mean any damages recoverable by the United States or the State for injury to, destruction of, loss of, loss of use of, or impairment of natural resources at the Site as a result of the release of mercury from the Waynesboro Facility including, but not limited to: (i) the costs of assessing injury to, destruction of, loss of, loss of use of, or impairment arising from or relating to such a release; (ii) the costs of restoration, rehabilitation, or replacement of injured or lost natural resources or of acquisition of equivalent resources; (iii) the costs of planning such restoration activities; and (iv) compensation for injury, destruction, loss, loss of use, or impairment of natural resources.

j. “NRDAR Fund” shall mean the DOI Natural Resource Damage Assessment and Restoration Fund established pursuant to 42 U.S.C. §§ 1474b and 1474b-1.

k. “Paragraph” shall mean a portion of this Consent Decree identified by an Arabic numeral or an upper or lower case letter.

l. “Parties” shall mean the United States, the Commonwealth of Virginia,

and DuPont.

- m. “Plaintiffs” shall mean the United States and the Commonwealth of Virginia.
- n. “Restoration Plan” shall mean the plan attached hereto as Appendix B, which sets forth the restoration of injured or lost natural resources to be achieved under this Consent Decree.
- o. “Section” shall mean a portion of this Consent Decree identified by a Roman numeral.
- p. “Site” shall mean the Waynesboro Facility and any area in which mercury released from that Facility may be found.
- q. “State” shall mean the Commonwealth of Virginia, its Secretary of Natural Resources, and the Commonwealth of Virginia, Department of Environmental Quality.
- r. “Trustees” shall mean DOI and the Commonwealth of Virginia, acting through its Secretary of Natural Resources.
- s. “United States” shall mean the United States of America, including all of its departments, agencies, and instrumentalities.
- t. “Waynesboro Facility” shall mean the former DuPont acetate fiber manufacturing facility located along the South River in Waynesboro, Virginia. *See* Appendix A.
- u. “Waynesboro NRDAR Subaccount” shall mean a segregated subaccount within the NRDAR Fund to be managed by DOI for the joint benefit and use of the Trustees to pay for Trustee-sponsored natural resources restoration projects in accordance with Section VII.

V. GENERAL PROVISIONS

- 7. Objectives. The objectives of the Parties entering into this Decree are (i) to

contribute to the restoration, replacement, or acquisition of the equivalent of the natural resources allegedly injured, destroyed or lost as a result of mercury releases at and from the Site; (ii) to reimburse natural resource damage assessment costs incurred by the Trustees; (iii) to resolve DuPont's liability for Natural Resource Damages as provided herein; and (iv) to avoid potentially costly and time consuming litigation.

8. Compliance with Applicable Law. All activities undertaken by DuPont pursuant to this Decree shall be performed in accordance with the requirements of all applicable federal, state and local laws and regulations.

9. Permits. Except as provided in Paragraph 18, where permits or approvals are required, DuPont shall submit timely and complete applications to the appropriate permitting authority and take all other actions necessary to obtain all such permits and approvals. DuPont may seek relief under the provisions of Section XI (Force Majeure) for any delay in the performance of the obligations of Section VIII (Front Royal Regional Fish Hatchery Project) resulting from a failure to obtain, or a delay in obtaining, any federal or state permit or approval required for such performance, provided that DuPont has submitted timely and complete applications and taken all other actions necessary to obtain all such permits and approvals.

10. This Decree is not, and shall not be construed to be, a permit issued pursuant to any federal, state or local law or regulation.

VI. PAYMENTS BY DUPONT

11. Payment for Assessment Costs. DuPont shall pay unreimbursed government assessment costs as described below.

a. *Payment of Assessment Costs Incurred by the United States.* Within 30 Days after the Effective Date, DuPont shall pay a total of \$211,734.77 to the United States for

unreimbursed assessment costs incurred through fiscal year 2016. The total amount paid by DuPont pursuant to this Paragraph shall be deposited in the NRDAR Fund to be applied toward natural resource damage assessment costs incurred by DOI.

b. *Payment of Assessment Costs Incurred by the State.* Within 30 Days after the Effective Date, DuPont shall pay a total of \$2,348.45 to the Commonwealth of Virginia for unreimbursed assessment costs incurred through fiscal year 2016.

12. Payment for Trustee-Sponsored Natural Resource Restoration Projects. DuPont shall pay a total of \$42,069,916.78 to the United States for Trustee-sponsored natural resource restoration projects in two installments as provided in this Paragraph. The total amount paid shall be deposited in the Waynesboro NRDAR Subaccount for use as set forth in Section VII.

a. DuPont shall make the first payment of \$21,034,958.39 within 30 Days after the Effective Date. The first payment, if timely paid, shall include no interest.

b. DuPont shall make the second payment of \$21,034,958.39 within 90 Days of the Effective Date, but no later than December 1, 2017. The second payment shall include an additional sum for interest accrued on \$21,034,958.39 calculated from the date of the first payment until the date of the second payment.

c. If DuPont fails to make either payment required by this Paragraph by the required due date, any remaining payment and all accrued interest shall become due immediately upon such failure. If the first payment is not timely made, interest shall accrue from the Effective Date. Interest shall continue to accrue on any unpaid amounts until the total amount due has been received. Interest required by this Paragraph shall be in addition to any stipulated penalties owed pursuant to Paragraph 25.b.

d. For purposes of this Paragraph only, the applicable rate of interest shall be

the Five Year Treasury Bill Rate in effect on the date that the payment is due.

13. Payment Instructions.

a. *Payments to the United States.* DuPont shall make payments to the United States under this Consent Decree at <https://www.pay.gov> to the United States Department of Justice account, in accordance with instructions provided to DuPont by the Financial Litigation Unit (“FLU”) of the United States Attorney’s Office for the Western District of Virginia after the Effective Date. The payment instructions provided by the FLU will include a Consolidated Debt Collection System (“CDCS”) number, which DuPont shall use to identify all payments required to be made in accordance with this Consent Decree. The FLU will provide the payment instructions to:

Tom Ei
Leader Corporate Remediation Group
E. I. du Pont de Nemours and Company
974 Centre Road - Building 730-3170-5
Wilmington, Delaware 19805

Tom.A.Ei@dupont.com

DuPont may change the individual to receive payment instructions on its behalf by providing written notice of such change to the United States in accordance with Section XXI (Notices and Submissions).

b. *Payments to the State.* DuPont shall make payments to the State under this Consent Decree by Electronic Fund Transfer to the Commonwealth of Virginia, Department of Environmental Quality, in accordance with current EFT procedures and instructions provided to DuPont by the State following lodging of the Decree.

c. *Notice of Payment.* Upon making any payment required under this Consent Decree, DuPont shall send written notice to each Trustee representative in accordance

with Section XXI (Notices and Submissions). Such notice shall reference the CDCS Number and DOJ case number: 90-11-3-09419.

VII. TRUSTEE-SPONSORED NATURAL RESOURCE RESTORATION PROJECTS

14. Management and Application of Funds. All funds deposited in the segregated Waynesboro NRDAR Subaccount under Paragraph 12 shall be managed by DOI for the joint benefit and use of the Trustees to pay for Trustee-sponsored natural resource restoration efforts in accordance with this Decree. All such funds shall be expended by the Trustees in accordance with 42 U.S.C. § 9611(i), for restoration, rehabilitation, replacement, or acquisition of equivalent natural resources pursuant to the Restoration Plan and any amendments thereto.

15. Decisions regarding any use or expenditure of funds from the Waynesboro NRDAR Subaccount shall be made by unanimous agreement of the Trustees, acting through the Trustee Council, pursuant to the Memorandum of Understanding fully executed by the Trustees on April 7, 2008. DuPont shall not be entitled to dispute, in any forum or proceeding, any decision relating to use of funds or restoration efforts.

VIII. FRONT ROYAL REGIONAL FISH HATCHERY PROJECT

16. DuPont shall design and implement the Fish Hatchery Project in accordance with Appendix C (10% Design for Front Royal Regional Fish Hatchery Project), pursuant to the following schedule:

a. Within 60 Days after the Effective Date, DuPont shall submit a 35% design to the Trustees for approval.

b. Within 60 Days after receipt of approval by the Trustees of the 35% design, DuPont shall submit a 65% design to the Trustees for approval.

c. Within 60 Days after receipt of approval by the Trustees of the 65%

design, DuPont shall submit a 95% design to the Trustees for approval.

d. Within 45 Days after receipt of approval by the Trustees of the 95% design, DuPont shall submit a bid package containing the final design to the Trustees for approval.

e. DuPont shall complete the Fish Hatchery Project within 24 months after the later of (i) approval by the Trustees of the final design, or (ii) receipt of all necessary governmental permits or approvals for the projects.

17. DuPont is responsible for all costs of implementation of the Fish Hatchery Project, including the costs of design completion and construction. DuPont is further responsible for timely applying for, submitting all required documentation for, and obtaining, or working with the Virginia Department of Games and Fisheries (“DGIF”) to obtain, as applicable, any permits or approvals required for implementing the Fish Hatchery Project, except as provided in Paragraph 18. The State shall use its best efforts to assist DuPont in the permitting process, including execution as owner of any permit or similar applications or instruments, and delegation of supervision and inspection of the Fish Hatchery Project by the State Building Official to the locality in which the Fish Hatchery Project is located. DGIF shall, following reasonable notice from DuPont, provide access to property and information necessary to implement the Fish Hatchery Project, including communication with other state agencies as may be necessary.

18. DGIF shall be responsible for obtaining all required permits and approvals for the Front Royal Regional Fish Hatchery Project. DuPont shall not be required to begin work on the Fish Hatchery Project until DGIF has obtained all required permits and approvals of the project.

19. DuPont shall consult with the State during the vetting and selecting of contractors and other agents utilized by DuPont in completion of the Fish Hatchery Project. All contractors

and other agents involved in the Fish Hatchery Project must agree to abide by reasonable workplace safety and access rules as may be applicable to the location of the Fish Hatchery Project.

20. Within 90 Days following the completion of construction of the Fish Hatchery Project, DuPont shall prepare and submit to the State a post-construction report. The post-construction report shall include the following: (1) a statement signed and sealed by a registered Virginia engineer confirming that the Fish Hatchery Project was built in accordance with the plans and specifications approved by the Trustees; and (2) a builder's warranty from the contractor who completed the Fish Hatchery Project warranting the completed Fish Hatchery Project for a period of not less than one year against defects in workmanship in a form acceptable to the State. The Trustees shall evaluate the post-construction report and the results of any inspection they may undertake, and if the Trustees agree that the construction criteria have been met, then the State shall issue a Certification of Project Completion of the Fish Hatchery Project in accordance with the Decree within the later of 90 Days after receipt of the post-construction report or any joint inspection of the particular project site. If the Trustees do not agree that the post construction report is adequate, the Trustees will arrange a meeting with DuPont to discuss any additional steps needed to meet the completion criteria.

IX. TRUSTEE APPROVAL OF DELIVERABLES

21. Initial Submissions.

a. After review of any deliverable that is required to be submitted for approval pursuant to this Decree, the Trustees shall: (i) approve, in whole or in part, the submission; (ii) approve the submission upon specified conditions; (iii) disapprove, in whole or in part, the submission; or (iv) any combination of the foregoing.

b. The Trustees also may modify the initial submission to cure deficiencies in the submission if: (i) the Trustees determine that disapproving the submission and awaiting a resubmission would cause substantial disruption to the work required; or (ii) previous submission(s) have been disapproved due to material defects and the deficiencies in the initial submission under consideration indicate a bad faith lack of effort to submit an acceptable deliverable.

22. Resubmissions. Upon receipt of a notice of disapproval under Paragraph 21.a (Initial Submissions), or if required by a notice of approval upon specified conditions under Paragraph 21.a, DuPont shall, within 30 Days or such longer time as specified by the Trustees in such notice, correct the deficiencies and resubmit the deliverable for approval. After review of the resubmitted deliverable, the Trustees may: (a) approve, in whole or in part, the resubmission; (b) approve the resubmission upon specified conditions; (c) modify the resubmission; (d) disapprove, in whole or in part, the resubmission, requiring DuPont to correct the deficiencies; or (e) any combination of the foregoing.

23. Any stipulated penalties applicable to the original submission, as provided in Section X, shall accrue during the 30 Day period or other specified period, but shall not be payable unless the resubmission is untimely or is disapproved in whole or in part; provided that, if the original submission was so deficient as to constitute a material breach of DuPont's obligations under this Decree, the stipulated penalties applicable to the original submission shall be due and payable notwithstanding any subsequent resubmission.

24. Implementation. Upon approval, approval upon conditions, or modification by the Trustees under Paragraph 21.a (Initial Submissions) or Paragraph 22 (Resubmissions), of any deliverable, or any portion thereof: (a) such deliverable, or portion thereof, shall be incorporated

into and enforceable under this Decree; and (b) DuPont shall take any action required by such deliverable, or portion thereof, subject only to their right to invoke the Dispute Resolution procedures set forth in Section XII (Dispute Resolution) with respect to the modifications or conditions made by the Trustees. The implementation of any non-deficient portion of a deliverable submitted or resubmitted under Paragraph 21.a or Paragraph 22 shall not relieve DuPont of any liability for stipulated penalties under Section X (Stipulated Penalties).

X. STIPULATED PENALTIES

25. Non-Compliance with Payment Obligations.

a. *Interest.* If DuPont fails to make any payment required by Paragraph 11 (Payment for Assessment Costs) by the required due date, Interest shall be assessed on the unpaid balance. Interest will continue to accrue on the unpaid balance through the date of payment.

b. *Stipulated Penalties.* In addition to the Interest required to be paid under Paragraph 25.a, if any payment required by Section VI (Payments by DuPont) is not made when due, DuPont shall also pay the following through the date of full payment:

Penalty Per Violation Per Day	Period of Noncompliance
\$500	1st through 14th Day
\$1,000	15th through 30th Day
\$3,000	31st Day and beyond

26. Non-Compliance with Front Royal Regional Fish Hatchery Project obligations.

The following stipulated penalties shall accrue per violation per Day:

a. *Failure to meet project completion deadline in Paragraph 16.e:*

Penalty Per Violation Per Day	Period of Noncompliance
\$1,500	1st through 30th Day
\$3,000	31st Day and beyond

b. *Noncompliance with deliverable requirements in Paragraphs 16 and 20:*

Penalty Per Violation Per Day	Period of Noncompliance
\$1,000	1st through 30th Day
\$2,000	31st Day and beyond

27. Stipulated penalties are due and payable to the Trustees within 30 Days of the date of the demand for payment of the penalties by a Trustee or Trustees, unless DuPont invokes the Dispute Resolution procedures under Section XII (Dispute Resolution) within the 30-Day period.

28. Stipulated penalties shall accrue as provided in this Section regardless of whether the Trustees have notified DuPont of the violation or made a demand for payment, but the stipulated penalties need only be paid upon demand.

29. All stipulated penalties will begin to accrue on the Day after performance or payment is due and will continue to accrue through the date of performance or payment. However, stipulated penalties shall not accrue: (a) with respect to a deficient submission under Section IX (Trustee Approval of Deliverables), during the period, if any, beginning on the 31st Day after Trustees receipt of such submission until the date that the Trustees notify DuPont of any deficiency; or (b) with respect to judicial review by this Court of any dispute under Section XII (Dispute Resolution), during the period, if any, beginning on the 31st Day after the Court's receipt of the final submission regarding the dispute until the date that the Court issues a final decision regarding such dispute.

30. Nothing in this Decree prevents the simultaneous accrual of separate stipulated penalties for separate violations of this Decree.

31. Penalties shall continue to accrue as provided in Paragraph 29 during any dispute resolution period, but need not be paid until the following:

a. If the dispute is resolved by agreement of the parties or by a decision of the Trustees that is not appealed to this Court, accrued penalties determined to be owed shall be paid to the Trustees within 15 Days after the agreement or the receipt of the Trustees' decision or order;

b. If the dispute is appealed to this Court and the Trustees prevail in whole or in part, DuPont shall pay all accrued penalties determined by the Court to be owed to the Trustees within 60 Days after receipt of the Court's decision or order, except as provided in Paragraph 31.c;

c. If the District Court's decision is appealed by any Party, DuPont shall pay all accrued penalties determined by the District Court to be owed to the Trustees into an interest-bearing escrow account, established at a duly chartered bank or trust company that is insured by the FDIC, within 60 Days after receipt of the Court's decision or order. Penalties shall be paid into this account as they continue to accrue, at least every 60 Days. Within 15 Days after receipt of the final appellate court decision, the escrow agent shall be directed to pay the balance of the account to the Trustees or to DuPont to the extent that they prevail.

32. If DuPont fails to pay stipulated penalties when due, DuPont shall pay Interest on the unpaid stipulated penalties as follows: (a) if DuPont has timely invoked dispute resolution such that the obligation to pay stipulated penalties has been stayed pending the outcome of dispute resolution, Interest shall accrue from the date stipulated penalties are due pursuant to Paragraph 31 until the date of payment; and (b) if DuPont fails to timely invoke dispute resolution, Interest shall accrue from the date of demand under Paragraph 27 until the date of payment. If DuPont fails to pay stipulated penalties and Interest when due, then either Trustee may institute proceedings to collect the penalties and Interest.

33. Instructions for Stipulated Penalty Payments.

a. Except as provided in Paragraph 33.b, DuPont shall pay 50% of the total stipulated penalty amount due for violations of this Decree to the United States and 50% to the State.

b. DuPont shall pay all stipulated penalties demanded by the United States for violations of Paragraph 11.a (Payment of Assessment Costs Incurred by the United States) to the United States, and all stipulated penalties demanded by the Commonwealth of Virginia for violations of Paragraph 11.b (Payment of Assessment Costs Incurred by the State) to the State.

c. DuPont shall pay stipulated penalties owed to the United States and the State in the manner set forth and with the confirmation notices required by Paragraph 13, except that the transmittal letter shall indicate that the payments are for stipulated penalties and shall state for which violation(s) the penalties are being paid.

34. If Plaintiffs bring an action to enforce this Decree, DuPont will reimburse Plaintiffs for all costs of such action if Plaintiffs prevail, including, but not limited to, costs of attorney time.

35. Payment of stipulated penalties and Interest by DuPont does not alter any of DuPont's obligations under this Consent Decree.

36. Nothing in this Decree shall be construed as prohibiting, altering, or in any way limiting the ability of the Plaintiffs to seek any other remedies or sanctions available by virtue of DuPont's violation of this Decree or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(l) of CERCLA, 42 U.S.C. § 9622(l), provided, however, that the Plaintiffs shall not seek civil penalties pursuant to Section 122(l) of CERCLA for any violation for which a stipulated penalty is provided in this Decree,

except in the case of a willful violation of this Decree.

37. Notwithstanding any other provision of this Section, either Plaintiff may, in its unreviewable discretion, waive payment of any portion of the stipulated penalties otherwise due it under this Decree. For stipulated penalties accruing for violations of Paragraph 11, the Plaintiff to whom payment is owed may, in its unreviewable discretion, waive payment of any portion of those stipulated penalties that have accrued pursuant to Paragraph 25.

XI. FORCE MAJEURE

38. “Force majeure,” for purposes of this Decree, is defined as any event arising from causes beyond the control of DuPont, of any entity controlled by DuPont, or of DuPont’s contractors that delays or prevents (hereinafter collectively referred to as “delay”) the performance of any obligation under this Decree despite DuPont’s best efforts to fulfill the obligation. The requirement that DuPont exercise “best efforts to fulfill the obligation” includes using best efforts to anticipate any potential force majeure and best efforts to address the effects of any potential force majeure (a) as it is occurring and (b) following the potential force majeure such that the delay and any adverse effects of the delay are minimized to the greatest extent possible. “Force majeure” does not include financial inability to comply with any obligation of this Decree.

39. If any event occurs or has occurred that may delay the performance of any obligation under this Decree for which DuPont intends or may intend to assert a claim of force majeure, DuPont shall orally notify the State Trustee, within three Days of when DuPont first knew that the event might cause a delay. Within 14 Days thereafter, DuPont shall provide in writing to the Trustees an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the

delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; DuPont's rationale for attributing such delay to a force majeure; and a statement as to whether, in the opinion of DuPont, such event may cause or contribute to an endangerment to public health or welfare, or the environment. DuPont shall include with any notice all available documentation supporting their claim that the delay was attributable to a force majeure. DuPont shall be deemed to know of any circumstance of which DuPont, any entity controlled by DuPont, or DuPont's contractors knew or should have known. Failure to comply with the above requirements regarding an event shall preclude DuPont from asserting any claim of force majeure regarding that event, provided, however, that if the Trustees, despite the late or incomplete notice, are able to assess to their satisfaction whether the event is a force majeure under Paragraph 38 and whether DuPont has exercised its best efforts under Paragraph 38, the Trustees may, in their unreviewable discretion, excuse in writing DuPont's failure to submit timely or complete notices under this Paragraph.

40. If the Trustees agree that the delay or anticipated delay is attributable to a force majeure, the time for performance of the obligations under this Decree that are affected by the force majeure will be extended by the Trustees for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure shall not, of itself, extend the time for performance of any other obligation. If the Trustees do not agree that the delay or anticipated delay has been or will be caused by a force majeure, the Trustees will notify DuPont in writing of their decision. If the Trustees agree that the delay is attributable to a force majeure, the Trustees will notify DuPont in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure.

41. If DuPont elects to invoke the dispute resolution procedures set forth in Section

XII (Dispute Resolution) regarding the Trustees' decision, it shall do so no later than 15 Days after receipt of the Trustees' notice. In any such proceeding, DuPont shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that DuPont complied with the requirements of Paragraphs 38 and 39. If DuPont carries this burden, the delay at issue shall be deemed not to be a violation by DuPont of the affected obligations of this Decree.

XII. DISPUTE RESOLUTION

42. Unless otherwise expressly provided for in this Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Decree. The procedures set forth in this Section shall not apply to actions by Trustees to enforce DuPont obligations that have not been disputed in accordance with this Section.

43. Informal Dispute Resolution. Any dispute which arises under or with respect to this Decree shall in the first instance be the subject of informal negotiations between the Trustees and DuPont. The period of informal negotiations shall not exceed 30 Days from the date the dispute arises, unless the Parties agree otherwise in writing. The dispute shall be considered to have arisen when DuPont sends the Trustees a written Notice of Dispute. Such Notice of Dispute shall state clearly the matter in dispute. If the Parties cannot resolve a dispute by informal negotiations, then the position advanced by the Trustees shall be considered binding unless, within 30 Days after the conclusion of the informal negotiation period, DuPont invokes formal dispute resolution procedures as set forth below.

44. Formal Dispute Resolution.

a. DuPont shall invoke formal dispute resolution procedures, within the time period provided in the preceding Paragraph, by serving on the Trustees a written Statement of Position regarding the matter in dispute. The Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting DuPont's position and any supporting documentation relied upon by DuPont.

b. The Trustees shall serve on DuPont their written Statement of Position within 45 Days of receipt of DuPont's Statement of Position. The Trustees' Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by the Trustees.

c. An administrative record of the dispute shall be maintained by the Trustees and shall contain all Statements of Position, including supporting documentation, submitted pursuant to this Section.

d. DuPont and the Trustees each shall identify Formal Dispute Resolution Representatives who shall meet to discuss the matter in dispute at the earliest available opportunity and will work in good faith to resolve the matter in dispute. If the Parties fail to resolve the dispute within 30 Days after the initial meeting of the Formal Dispute Resolution Representatives, then the position advanced by the Trustees in their Statement of Position shall be considered binding upon DuPont, subject to any agreements the Formal Dispute Resolution Representatives may have reached on one or more issues and further subject to DuPont's right to seek judicial review pursuant to Paragraph 45. In such event the Trustees shall within 5 Days of the conclusion of the formal dispute resolution process notify DuPont in writing that the formal dispute resolution process has concluded. DuPont may seek judicial review of the Trustees'

Statement of Position (as modified by any agreements the Formal Dispute Resolution Representatives may have reached) pursuant to Paragraph 45.

45. Judicial Review. DuPont may seek judicial review of the dispute by filing with the Court and serving on the Plaintiffs, in accordance with Section XXI (Notices and Submissions), a motion requesting judicial resolution of the dispute. The motion must be filed within 30 Days of receipt of the Trustees' letter notifying DuPont of the conclusion of the formal dispute resolution process. The motion shall contain a written statement of DuPont's position on the matter in dispute, including any supporting factual data, analysis, opinion, or documentation, and shall set forth the relief requested and any schedule within which the dispute must be resolved for orderly implementation of the Consent Decree.

46. The Plaintiffs shall respond to DuPont's motion within the time period allowed by the Local Rules of this Court. DuPont may file a reply memorandum, to the extent permitted by the Local Rules.

47. Standard of Review.

a. *Disputes Concerning Matters Accorded Record Review.* Except as otherwise provided in this Consent Decree, in any dispute brought under Paragraph 44 pertaining to the adequacy or appropriateness of plans, procedures to implement plans, schedules, or other deliverables requiring Trustee approval under this Consent Decree; the adequacy of the performance of work undertaken pursuant to this Consent Decree; and all other disputes that are accorded review on the administrative record under applicable principles of administrative law, DuPont shall have the burden of demonstrating, based on the administrative record, that the position of the Trustees is arbitrary and capricious or otherwise not in accordance with law.

b. *Other Disputes.* Except as otherwise provided in this Consent Decree, in

any other dispute brought under Paragraph 44, DuPont shall bear the burden of demonstrating that its position better furthers the objectives of the Consent Decree.

48. The invocation of formal dispute resolution procedures under this Section shall not extend, postpone, or affect in any way any obligation of DuPont under this Decree, unless and until final resolution of the dispute so provides. Stipulated penalties with respect to the disputed matter and obligations contingent on the disputed matter shall continue to accrue from the first Day of noncompliance, but payment shall be stayed pending resolution of the dispute as provided in Paragraph 31. If DuPont does not prevail on a disputed issue, stipulated penalties shall be assessed and paid as provided in Section X (Stipulated Penalties).

XIII. COVENANTS NOT TO SUE BY THE PLAINTIFFS

49. Covenant by the United States. Except as specifically provided in Section XIV (Reservation of Rights by the Plaintiffs), the United States covenants not to sue or take administrative action against DuPont for Natural Resource Damages at the Site, known as of the date of the lodging of this Consent Decree with the Court. This covenant not to sue shall take effect upon receipt of DuPont's payments pursuant to Section VI (Payments by DuPont). This covenant not to sue is conditioned upon the satisfactory performance by DuPont of all its obligations under this Decree. This covenant not to sue extends only to DuPont and does not extend to any other person.

50. Covenant by the State. Except as specifically provided in in Section XIV (Reservation of Rights by the Plaintiffs), the State covenants not to sue or take administrative action against DuPont for Natural Resource Damages at the Site, known as of the date of lodging of this Consent Decree with the Court. This covenant not to sue shall take effect upon receipt of DuPont's payments pursuant to Section VI (Payments by DuPont). This covenant not to sue is

conditioned upon the satisfactory performance by DuPont of all its obligations under this Decree. This covenant not to sue extends only to DuPont and does not extend to any other person.

XIV. RESERVATION OF RIGHTS BY THE PLAINTIFFS

51. General Reservations. The United States and the State reserve, and this Decree is without prejudice to, all rights against DuPont and with respect to all matters not expressly included within Section XIII (Covenants Not to Sue by the Plaintiffs). Notwithstanding any other provisions of this Decree, the United States and the State reserve all rights against DuPont with respect to:

- a. liability for failure by DuPont to meet a requirement of this Decree;
- b. liability for injunctive relief or administrative order enforcement under CERCLA Section 106, 42 U.S.C. § 9606;
- c. liability under CERCLA Section 107(a), 42 U.S.C. § 9607(a), for costs of removal or remedial action incurred by the United States or the State;
- d. liability under Section 107(a)(4)(D), 42 U.S.C. § 9607(a)(4)(D), for costs of any health assessment or health effects study carried out under 42 U.S.C. § 9604(I);
- e. liability for any other costs or damages incurred or to be incurred by the United States or the State that are not within the definition of Natural Resource Damages;
- f. liability for damages for injury to, destruction of, or loss of natural resources and for the costs of any natural resource damage assessments resulting from releases or threatened releases of hazardous substances outside of the Site;
- g. liability arising from any disposal of hazardous substances at the Site by DuPont after the lodging of this Decree, except where such disposal is consistent with government approved workplan(s) or permits or is at the direction or under the oversight of the

U.S. Environmental Protection Agency or the Commonwealth of Virginia, Department of Environmental Quality; and

h. criminal liability.

52. Special Reservations Regarding Natural Resource Damages. Notwithstanding any other provision of this Decree, the United States and the State each reserves the right to institute proceedings against DuPont in this action or in a new action seeking recovery of Natural Resource Damages if conditions are discovered or information is received relating to the Site, not known to the Trustees at the time of lodging of this Decree, that, together with any other relevant information, indicates that there is injury to, destruction of, or loss of natural resources of a type unknown, or of a magnitude greater than was known, by the Trustees as of the date of lodging of this Decree. For purposes of this Paragraph, information and conditions known to the Trustees relating to the Site as of the date of lodging of this Decree shall include only the information and conditions set forth in the DOI and State files for the Site as of the date of lodging of this Decree.

XV. COVENANTS BY DUPONT

53. Covenants by DuPont. DuPont covenants not to sue and agrees not to assert any claims or causes of action against the United States or the State, or their contractors or employees, with respect to Natural Resource Damages or this Decree, including but not limited to:

a. any direct or indirect claim for reimbursement of any payment for Natural Resource Damages from the Hazardous Substance Superfund based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;

b. any claim against the United States or the State pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, relating to Natural Resource Damages; and

c. any claim against the United States or the State pursuant to Section 311 of the CWA, 33 U.S.C. 1321.

54. Except as provided in Paragraph 61 (Waiver of Res Judicata and Other Defenses), these covenants not to sue shall not apply in the event that the United States or the State brings a cause of action or issues an order pursuant to the reservations set forth in Section XIV (Reservation of Rights by the Plaintiffs) other than in Paragraph 51.a (claims for failure to meet a requirement of the Consent Decree) or Paragraph 51.h (criminal liability), but only to the extent that DuPont's claims arise from the same response action, response costs, or damages that the United States or the State is seeking pursuant to the applicable reservation.

55. Nothing in this Consent Decree shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

56. Waiver of Certain Claims Against Other Persons. DuPont agrees not to assert any claims and to waive all claims or causes of action that it may have against all other persons for all matters relating to Natural Resource Damages, including for contribution; provided, however, that DuPont reserves the right to assert and pursue all claims, causes of action, and defenses relating to Natural Resource Damages against any person in the event such person first asserts, and for so long as such person pursues, any claim or cause of action against DuPont relating to Natural Resource Damages. Nothing in this Paragraph shall operate to waive or release any claim or action by DuPont under any contract of insurance. Nothing in this Paragraph shall operate to waive or release any claim or action by DuPont for costs it incurred or will incur that

are not within the definition of Natural Resource Damages.

XVI. EFFECT OF SETTLEMENT/CONTRIBUTION PROTECTION

57. Except as provided in Paragraph 56 (Waiver of Certain Claims Against Other Persons), nothing in this Decree shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this Decree. Except as provided in Section XV (Covenants by DuPont) each of the Parties expressly reserves any and all rights (including, but not limited to, any right to contribution), defenses, claims, demands, and causes of action which each Party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a Party hereto.

58. The Parties agree, and by entering this Decree the Court finds, that this settlement constitutes a judicially approved settlement pursuant to which DuPont has, as of the Effective Date, resolved liability alleged in the Plaintiffs' complaint in this action within the meaning of Section 113(f)(2) of CERCLA, 42 U.S.C. § 9613(f)(2), and is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Section 113(f)(2) of CERCLA, or as may be otherwise provided by law, for the "matters addressed" in this Consent Decree. The "matters addressed" in this Consent Decree are Natural Resource Damages; provided, however, that if the United States exercises rights under the reservations set forth in Section XIV (Reservation of Rights by the Plaintiffs) other than in Paragraph 51.a (claims for failure to meet a requirement of the Consent Decree) or Paragraph 51.h (criminal liability), the "matters addressed" in this Consent Decree will no longer include those response costs, response actions, or natural resource damages that are within the scope of the exercised reservation.

59. DuPont shall, with respect to any suit or claim brought by it for matters related to this Consent Decree, notify the United States and the State in writing no later than 60 Days prior

to the initiation of such suit or claim.

60. DuPont shall, with respect to any suit or claim brought against it for matters related to this Decree, notify the United States and the State in writing within 10 Days of service of the complaint or claim upon it. In addition, DuPont shall notify the United States and the State within 10 Days of service or receipt of any Motion for Summary Judgment, and within 10 Days of receipt of any order from a court setting a case for trial, for matters related to this Decree.

61. Waiver of Res Judicata and Other Defenses. In any subsequent administrative or judicial proceeding initiated by the United States or the State for injunctive relief, recovery of response costs or Natural Resource Damages, or other relief relating to the Site, DuPont shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States or the State in the subsequent proceeding were or should have been brought in the instant case; provided, however, that nothing in this Paragraph affects the enforceability of the covenants not to sue set forth in Section XIII (Covenants Not to Sue by the Plaintiffs).

XVII. INDEMNIFICATION AND INSURANCE

62. DuPont's Indemnification of the United States and the State.

a. The United States and the State do not assume any liability by entering into this Decree. DuPont shall indemnify, save and hold harmless the United States and the State and their officials, agents, employees, contractors, subcontractors, or representatives for or from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of DuPont, its officers, directors, employees, agents, contractors,

subcontractors, and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Decree. Further, DuPont agrees to pay the United States and the State all costs they incur including, but not limited to, attorneys' fees and other expenses of litigation and settlement arising from, or on account of, claims made against the United States or the State based on negligent or other wrongful acts or omissions of DuPont, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Decree. Neither the United States nor the State shall be held out as a party to any contract entered into by or on behalf of DuPont in carrying out activities pursuant to this Decree. Neither DuPont nor any such contractor shall be considered an agent of the United States or the State.

b. The United States and the State shall give DuPont notice of any claim for which the United States or the State plans to seek indemnification pursuant to Paragraph 62.a, and shall consult with DuPont prior to settling such claim.

63. DuPont covenants not to sue and agrees not to assert any claims or causes of action against the United States and the State for damages or reimbursement or for set-off of any payments made or to be made to the United States or the State arising from or on account of any contract, agreement, or arrangement between DuPont and any person for performance of work relating to the Site, including, but not limited to, claims on account of construction delays. In addition, DuPont shall indemnify and hold harmless the United States and the State with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between DuPont and any person for performance of work relating to the Site, including, but not limited to, claims on account of construction delays.

64. Insurance. No later than 15 Days before commencing any work, DuPont shall

secure, and shall maintain until termination of this Consent Decree, a comprehensive commercial general liability and automobile liability insurance with limits of two million dollars (\$2,000,000), combined single limit. The United States and State shall be named as additional insureds with respect to all liability arising out of the activities performed by or on behalf of DuPont pursuant to this Decree. In addition, for the duration of this Decree, DuPont shall satisfy, or shall ensure that its contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the work on behalf of DuPont in furtherance of this Decree. Prior to commencement of the work under this Decree, DuPont shall provide to the United States and the State certificates of such insurance and a copy of each insurance policy. DuPont shall resubmit such certificates and copies of policies each year on the anniversary of the Effective Date. If DuPont demonstrates by evidence satisfactory to the United States and the State that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, DuPont need provide only that portion of the insurance described above that is not maintained by the contractor or subcontractor.

XVIII. ACCESS TO PROPERTY

65. If the Site, or any other real property where access is needed for purposes of this Decree, is owned or controlled by DuPont, DuPont shall, commencing on the Effective Date, provide the United States and the State, and their representatives, contractors, and subcontractors, with access at all reasonable times to the Site, or such other real property, to conduct any activity regarding this Decree including, but not limited to, the following activities (to the extent applicable under this Decree):

- a. Monitoring the implementation of the Decree requirements;
- b. Verifying any data or information submitted to the United States or the State under this Decree;
- c. Conducting investigations regarding contamination at or near the Sites;
- d. Obtaining samples;
- e. Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by DuPont or its agents, relating to implementation of this Decree and consistent with Section XIX (Access to Information); and
- f. Assessing DuPont's compliance with the Decree.

66. Notwithstanding any provision of the Decree, the United States and the State retain any access authorities and rights they may have under CERCLA and any other applicable statutes or regulations.

XIX. ACCESS TO INFORMATION

67. DuPont shall provide to the Trustees, upon request, copies of all records, reports, documents, and other information (including records, reports, documents, and other information in electronic form) (hereinafter referred to as "Records") within its possession or control or that of its contractors or agents relating to the implementation of this Decree, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information regarding any work required. DuPont shall also make available to the Trustees, for purposes of investigation, information gathering, or testimony, its employees, agents, or representatives with knowledge of relevant facts concerning the implementation of this Decree.

68. Business Confidential and Privileged Documents.

a. DuPont may assert business confidentiality claims covering part or all of the Records submitted to the Plaintiffs to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). DuPont shall segregate and clearly identify all Records or parts thereof submitted under this Consent Decree for which DuPont asserts business confidentiality claims. Records determined to be confidential by the Trustees will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies Records when they are submitted to the Trustees, or if the Trustees have notified DuPont that the Records are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such Records without further notice to DuPont.

b. DuPont may assert that certain Records are privileged under the attorney-client privilege or any other privilege recognized by federal law. If DuPont asserts such a privilege in lieu of providing Records, it shall provide Plaintiffs with the following: (1) the title of the Record; (2) the date of the Record; (3) the name, title, affiliation (e.g., company or firm), and address of the author of the Record; (4) the name and title of each addressee and recipient; (5) a description of the contents of the Record; and (6) the privilege asserted by DuPont. If a claim of privilege applies only to a portion of a Record, the Record shall be provided to the Trustees in redacted form to mask the privileged portion only. DuPont shall retain all Records that they claim to be privileged until the Trustees have had a reasonable opportunity to dispute the privilege claim and any such dispute has been resolved in DuPont's favor.

c. No Records created or generated pursuant to the requirements of this Decree shall be withheld from the Trustees on the grounds that they are privileged or

confidential.

69. No claim of confidentiality or privilege shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Site. DuPont may redact documents containing information evidencing conditions at or around the Site but only to remove privileged information, as referenced in Paragraph 68.b, other than the data evidencing conditions at or around the Site.

70. Notwithstanding any provision of this Consent Decree, Plaintiffs retain all of their information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901-6992 (“RCRA”), the CWA, and any other applicable statutes or regulations.

XX. RETENTION OF RECORDS

71. Until ten years after DuPont has fully implemented this Decree, DuPont shall preserve and retain all non-identical copies of Records (including Records in electronic form) now in its possession or control or that come into its possession or control that relate in any manner to (i) the claims alleged in the Complaint, (ii) DuPont’s compliance with this Decree, or (iii) potential claims under CERCLA with respect to the Site. In addition, DuPont must retain all Records that relate to the liability of any other person under CERCLA with respect to the Site. DuPont must also retain, and instruct its contractors and agents to preserve, for the same period of time specified above all non-identical copies of the last draft or final version of any Records (including Records in electronic form) now in its possession or control or that come into its possession or control that relate in any manner to implementation of the requirements of this Decree, provided, however, that DuPont (and its contractors and agents) must retain, in addition,

copies of all data generated during the implementation of the requirements of this Decree and not contained in the aforementioned Records required to be retained. Each of the above record retention requirements shall apply regardless of any corporate retention policy to the contrary.

72. At the conclusion of this record retention period, DuPont shall notify the Trustees at least 90 Days prior to the destruction of any such Records, and, upon request by the Trustees, and except as provided in Paragraph 68.b (privileged claims), DuPont shall deliver any such Records to the Trustees.

XXI. NOTICES AND SUBMISSIONS

73. Whenever notice is required to be given or a document is required to be sent by one Party to another under the terms of this Decree, it will be directed to the individuals at the addresses specified below, unless those individuals or their successors give notice of a change to the other Parties in writing. Written notice as specified constitutes complete satisfaction of any written notice requirement of this Decree for Plaintiffs and DuPont.

As to the United States:

Chief, Environmental Enforcement Section
U.S. Department of Justice
DJ #90-11-3-09419
P.O. Box 7611
Washington, D.C. 20044-7611

Mark Barash
Office of the Solicitor
U.S. Department of the Interior
One Gateway Center
Suite 612
Newton, Massachusetts 02458-2802

Wendi Weber
Regional Director
Department of the Interior
U.S. Fish and Wildlife Service
300 Westgate Center Drive

Hadley, MA 01035-9589

As to the Commonwealth of Virginia:

Hon. Molly Ward
Secretary of Natural Resources
Commonwealth of Virginia
1111 East Broad Street
Richmond, Virginia 23219

John W. Daniel, II
Deputy Attorney General
Virginia Office of the Attorney General
202 North 9th Street
Richmond, Virginia 23219

As to the Trustees:

Mark Barash
Office of the Solicitor
U.S. Department of the Interior
One Gateway Center
Suite 612
Newton, Massachusetts 02458-2802

Wendi Weber
Regional Director
Department of the Interior
U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035-9589

Hon. Molly Ward
Secretary of Natural Resources
Commonwealth of Virginia
1111 East Broad Street
Richmond, Virginia 23219

John W. Daniel, II
Deputy Attorney General
Virginia Office of the Attorney General
202 North 9th Street
Richmond, Virginia 23219

As to DuPont:

Tom Ei
Leader Corporate Remediation Group
E. I. du Pont de Nemours and Company
974 Centre Road – Building 730-3170-5
Wilmington, Delaware 19805

Stephen Rahaim
Chief Environmental Counsel
E. I. du Pont de Nemours and Company
974 Centre Road – Building 721/1164
Wilmington, Delaware 19805

74. Each report, plan, or other document submitted by DuPont pursuant to this Consent Decree or Appendices shall be signed by an official of DuPont and include the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

XXII. APPENDICES

75. The following appendices are attached to and incorporated into this Decree:

“Appendix A” is the Waynesboro Facility map

“Appendix B” is the Restoration Plan

“Appendix C” is the 10% Design for the Front Royal Regional Fish Hatchery Project.

XXIII. RETENTION OF JURISDICTION

76. This Court shall retain jurisdiction over this case until termination of this Consent Decree, for the purpose of resolving disputes arising under this Decree or entering orders

modifying this Decree, pursuant to Sections XXIV (Consent Decree Modifications) or XII (Dispute Resolution), or effectuating or enforcing compliance with the terms of the Decree.

XXIV. CONSENT DECREE MODIFICATIONS

77. Any material modification of this Decree shall be made by agreement of the Parties to this Decree and in writing, and shall not take effect unless approved by the Court. Any non-material modification of this Decree, including any schedule extensions, shall be made by agreement of the Parties to this Decree and in writing. Nothing in this Decree shall be deemed to alter the Court's power to enforce, supervise, or approve modifications to this Decree.

XXV. TERMINATION

78. After DuPont has: (a) completed the requirements of Section VIII (Front Royal Regional Fish Hatchery Project) and received a Certification of Project Completion of the Fish Hatchery Project pursuant to Paragraph 20, (b) made all payments required under Section VI (Payments by DuPont), and (c) complied with all other requirements of this Consent Decree, including payment of any accrued stipulated penalties or Interest as required by this Consent Decree, DuPont may serve upon the United States and the State a Request for Termination, stating that DuPont has satisfied those requirements, together with all necessary supporting documentation.

79. Following receipt by the United States and the State of DuPont's Request for Termination, the Parties shall confer informally concerning the Request and any disagreement that the Parties may have as to whether DuPont has satisfied the applicable criteria under Paragraph 78 for termination of this Decree. If the United States and the State agree that the Consent Decree may be terminated, the Parties shall submit, for the Court's approval, a joint stipulation terminating the Decree.

80. If the United States and the State do not agree that the DuPont has satisfied the applicable criteria under Paragraph 78 for termination of this Decree, DuPont may invoke Dispute Resolution under Section XII of this Decree. However, DuPont shall not seek Dispute Resolution of any dispute regarding termination until 60 Days after service of its Request for Termination.

XXVI. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT

81. This Decree shall be lodged with the Court for a period of not less than 30 Days for public notice and comment. The United States reserves the right to withdraw or withhold its consent if comments regarding the Decree disclose facts or considerations which indicate that this Decree is inappropriate, improper, or inadequate. DuPont consents to the entry of this Decree without further notice.

82. If for any reason the Court should decline to approve this Decree in the form presented, or if approval and entry is subsequently vacated on appeal of such approval and entry, this agreement is voidable at the sole discretion of any party and the terms of the agreement may not be used as evidence in any litigation between the Parties.

XXVII. SIGNATORIES/SERVICE

83. The undersigned representatives of DuPont, the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice, and the State each certify that he or she is fully authorized to enter into the terms and conditions of this Decree and to execute and legally bind such party to this document.

84. DuPont hereby agrees not to oppose entry of this Decree by this Court or to challenge any provision of this Decree unless the United States has notified DuPont in writing that it no longer supports entry of this Decree.

85. DuPont shall identify, on the attached signature pages, the name, address and telephone number of an agent who is authorized to accept service of process by mail on behalf of DuPont with respect to all matters arising under or relating to this Decree. DuPont hereby agrees to accept service in that manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable local rules of this Court, including but not limited to service of a summons. DuPont need not file an answer to any complaint in this Action unless and until the Court expressly declines to enter this Decree.

XXVIII. FINAL JUDGMENT

86. This Decree and its appendices constitute the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Decree. The Parties acknowledge that there are no representations, agreements, or understandings relating to the settlement other than those expressly contained in this Decree. It is the intention of DuPont and the Commonwealth of Virginia that nothing contained in this Decree shall alter or amend the Release between the Commonwealth and DuPont dated June 22, 1984.

87. Upon approval and entry of this Decree by the Court, this Decree shall constitute a final judgment between and among the United States, the Commonwealth of Virginia and DuPont. The Court finds that there is no just reason for delay and therefore enters this judgment as a final judgment under Fed. R. Civ. P. 54 and 58.

SO ORDERED THIS 28th DAY OF July, 2017.


1st Michael F. Urlanski
United States District Judge
Western District of Virginia

THE UNDERSIGNED PARTY enters into this Decree in the matter of *United States of America and Commonwealth of Virginia v. E. I. du Pont de Nemours and Company*.


FOR THE UNITED STATES

United States Department of Justice
Environment and Natural Resources Division

Date: 12/14/16


JOHN C. CRUDEN
Assistant Attorney General
Environmental & Natural Resources Division
Washington, D.C. 20530

Date: 12/14/16


LAURA A. THOMS
Senior Attorney
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611

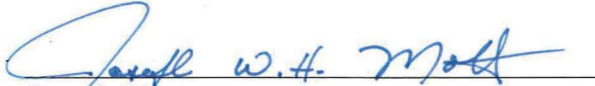
THE UNDERSIGNED PARTY enters into this Decree in the matter of *United States of America and Commonwealth of Virginia v. E. I. du Pont de Nemours and Company*.

FOR THE UNITED STATES

Rick A. Mountcastle
Attorney for the United States
Acting Under Authority Conferred by 28 U.S.C. § 515

Date:

12/14/16



Joseph Mott
Assistant United States Attorney
310 First Street, S.W., Room 906
Roanoke, VA 24011
(540) 857-2909
joseph.mott@usdoj.gov

THE UNDERSIGNED PARTY enters into this Decree in the matter of *United States of America and Commonwealth of Virginia v. E. I. du Pont de Nemours and Company*.

FOR THE COMMONWEALTH OF VIRGINIA

12/6/2016
Date

Mark R. Herring
Mark R. Herring, Attorney General

12/6/16
Date

John W. Daniel, II
John W. Daniel, II, Deputy Attorney General

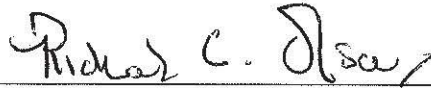
Dec 6 2016
Date

J. Duncan Pitchford
J. Duncan Pitchford, Assistant Attorney General
202 North 9th Street
Richmond, Virginia 23219
Telephone: (804) 371-0977
Facsimile: (804) 786-2650
jpitchford@oag.state.va.us

THE UNDERSIGNED PARTY enters into this Decree in the matter of *United States of America and Commonwealth of Virginia v. E. I. du Pont de Nemours and Company*.

FOR E. I. du PONT de NEMOURS AND COMPANY

December 5, 2017
Date



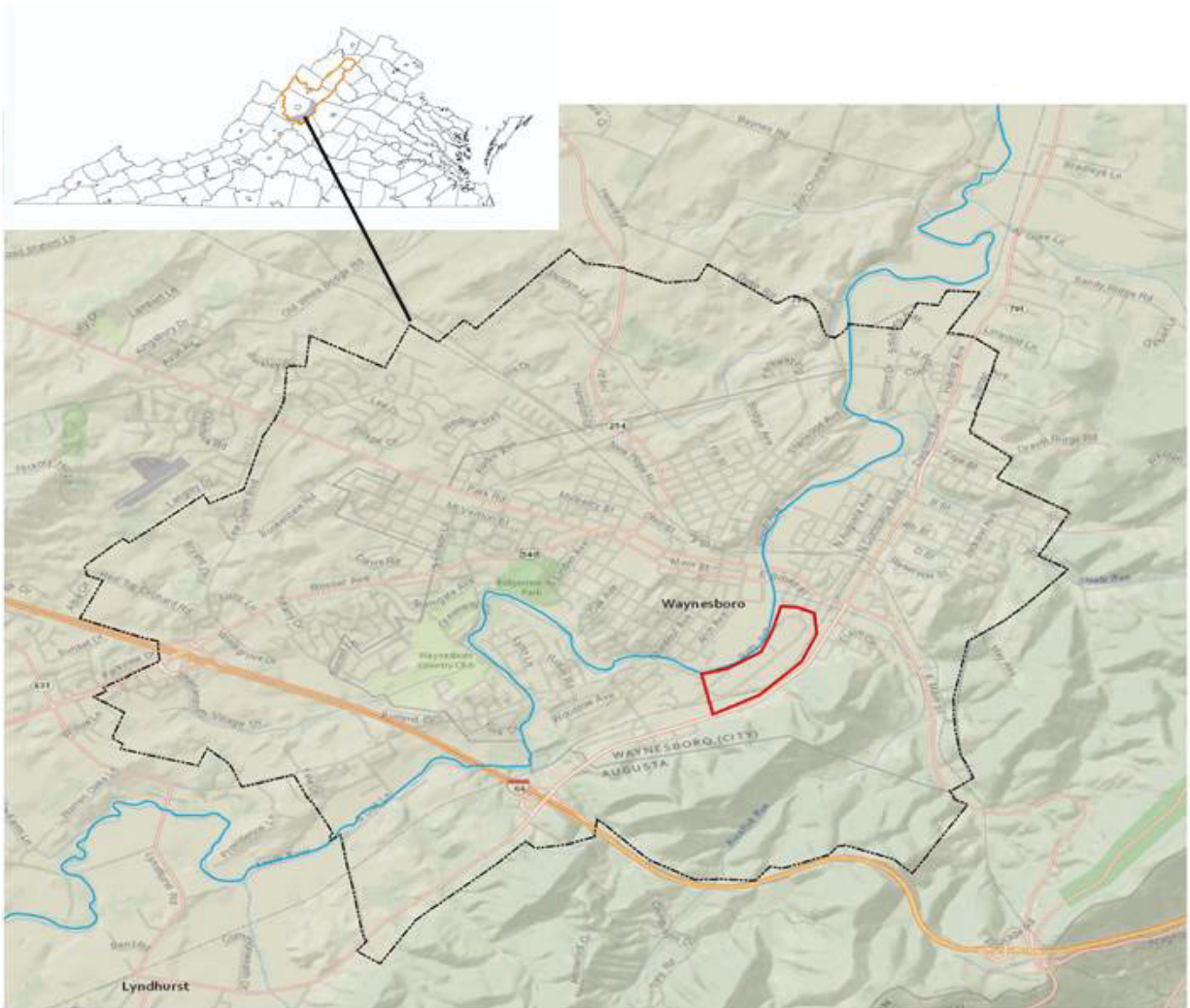
Richard C. Olson
Senior Vice President, Corporate Services
E. I. du Pont de Nemours and Company
974 Centre Road – Building 730
Wilmington, Delaware 19805

Agent Authorized to Accept Service
on Behalf of Above-signed Party:

Stephen Rahaim
Chief Environmental Counsel
E. I. du Pont de Nemours and Company
974 Centre Road – Building 721/1164
Wilmington, Delaware 19805

APPENDIX A: WAYNESBORO FACILITY MAP
United States of America and Commonwealth of Virginia v.
E. I. du Pont de Nemours and Company

Appendix A: Waynesboro Facility



Location of DuPont Facility, outlined in red, encompassing 177 acres adjacent to the South River, in Waynesboro, VA.

APPENDIX B: RESTORATION PLAN
United States of America and Commonwealth of Virginia v.
E. I. du Pont de Nemours and Company

DuPont Waynesboro - South River/South Fork Shenandoah River/Shenandoah River

Natural Resource Damage Assessment and Restoration

Restoration Plan/Environmental Assessment

Draft – October 2016

prepared by:

Natural Resource Trustees:

U.S. Fish and Wildlife Service

Commonwealth of Virginia

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LIST OF ACRONYMS

BMP	Best Management Practice
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
C.F.R.	Federal Code of Regulations
COC	Contaminant of Concern
CWA	Clean Water Act, or Federal Water Pollution Control Act
CWPNAP	Cowbane Wet Prairie State Natural Area Preserve
DOI	U.S. Department of the Interior
DSAY	Discounted Service Acre-Year
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FCA	Fish Consumption Advisory
FONSI	Finding of No Significant Impact
FRFH	Front Royal Fish Hatchery
FWS	U.S. Fish and Wildlife Service
HEA	Habitat Equivalency Analysis
MCI	Madison Cave Isopod
MOA	Memorandum of Agreement
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NFSR	North Fork Shenandoah River
NMFS	National Marine Fisheries Service
NPL	National Priorities List
NRDAR	Natural Resource Damage Assessment and Restoration
NRCS	Natural Resources Conservation Services
NRDC	Natural Resources Defense Council
PRP	Potentially Responsible Party
PV	Present Value
RCRA	Resource Conservation and Recovery Act
REA	Resource Equivalency Analysis
RP/EA	Restoration Plan/Environmental Assessment
SR	South River
SFSR	South Fork Shenandoah River

SRST	South River Science Team
SWMU	Solid Waste Management Units
USACE	U.S. Army Corps of Engineers
U.S.C.	U.S. Code
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VDGIF	Virginia Department of Game and Inland Fisheries
VDH	Virginia Department of Health

EXECUTIVE SUMMARY

From 1929 to 1950, mercury was used in the manufacturing process at the former E.I. du Pont de Nemours and Company (DuPont) plant located in Waynesboro, VA. Mercury releases from the DuPont plant impacted soil and groundwater on-site, and storm sewers transported mercury to the South River, which continued downstream to the South Fork Shenandoah River and Shenandoah River. Natural resources (*e.g.*, sediments, invertebrates, fish, amphibians, reptiles, birds, and mammals) have been exposed to and adversely affected by the mercury release. Remedial activities are ongoing under the direction of the U.S. Environmental Protection Agency (EPA) and the Virginia Department of Environmental Quality (VDEQ).

Under federal law, through the Natural Resource Damage Assessment and Restoration (NRDAR) process, natural resource Trustees are authorized to assess and recover damages resulting from injuries to natural resources attributable to hazardous substance releases. The Trustees then utilize these recovered damages to plan and implement actions to restore, replace, rehabilitate, and/or acquire the equivalent of injured natural resources and the services they provide. Trustees in this case, the Commonwealth of Virginia, acting through VDEQ and the United States Department of the Interior acting through U.S. Fish and Wildlife Service, developed this Draft Restoration Plan and Environmental Assessment (Draft RP/EA) in accordance with 43 C.F.R. § 11.93 to inform the public as to the types and amount of restoration that are expected to compensate for injuries to natural resources and the services they provide associated with the mercury release from the former DuPont plant.

Under the National Environmental Policy Act, federal agencies must identify and evaluate environmental impacts that may result from federal actions. In this Draft RP/EA, the Trustees describe the purpose and need for action, identify potential restoration alternatives, including a No Action alternative, summarize the affected environment, and describe the potential environmental consequences of proposed restoration activities. The Trustees are soliciting comments on this Draft RP/EA, and will address comments in preparing a final RP/EA wherein the Trustees will identify the Selected Restoration Alternative.

CHAPTER 1 INTRODUCTION AND SUMMARY

1.1 Purpose and Need for Restoration

This Draft RP/EA has been prepared by the Trustees to address natural resources injured and ecological services lost due to releases of mercury from the former DuPont plant located in Waynesboro, VA (the Facility). The purpose of this Draft RP/EA is to present the “Preferred Alternative” restoration project or projects that will accomplish the goal of restoring, rehabilitating, replacing and/or acquiring the equivalent of those natural resources, and the services those resources provide, that have been injured from the mercury release.

For decades, mercury was released into the South River (SR), and transported downstream into the South Fork Shenandoah River (SFSR), Shenandoah River, and associated floodplain and upland habitat. A number of natural resources, including sediments, mussels, fish, amphibians, reptiles, birds, and mammals have been exposed to and adversely affected by mercury released from the Facility. The proposed remedial actions to reduce mercury in the system include stabilizing banks to prevent erosion and re-suspension of contaminated particles in the river (Anchor QEA *et al.* 2013). This strategy will be implemented in stages, likely over a period of more than 10 years. The effectiveness of this technique is unknown and will take many years of monitoring to determine whether there is a reduction in mercury is due to remedial activities. Impacts from mercury exposure are expected to continue into the future, as remedial efforts are not likely to remove all mercury from the system.

The Trustees developed this Draft RP/EA in accordance with 43 C.F.R. § 11.93 to inform the public as to the types and scale of restoration to be undertaken towards compensating for injuries to natural resources. Consistent with the U.S. Department of the Interior (DOI) NRDAR regulations, this Draft RP/EA includes a reasonable number of restoration alternatives and identifies a preferred alternative. Public comments are being sought on this Draft RP/EA and will be considered and incorporated in the final RP/EA as appropriate.

1.2 Trustee Authority and Natural Resource Damage Assessment and Restoration

Under federal law, the Trustees are authorized to act on behalf of the public to assess injuries to natural resources and services resulting from the release of hazardous substances into the environment. The NRDAR process, formalized in the DOI regulations (43 C.F.R. § 11), allows Trustees to pursue claims against responsible parties for monetary damages based on these injuries in order to compensate the public. The goal of this process is to plan and implement actions to restore, replace, or rehabilitate the natural resources that were injured or lost as a result of the release of a hazardous substance, or to acquire the equivalent resources or the services

they provide (Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601 *et seq.*; 43 C.F.R. § 11).

The following authorities authorize federal, state and tribal governments to act on behalf of the public as Trustees of natural resources:

- CERCLA, as amended (42 U.S.C. § 9601 *et seq.*)
- Federal Water Pollution Control Act, 33 U.S.C. § 1251, *et seq.* (more commonly known as the Clean Water Act or CWA)
- The Oil Pollution Act of 1990 (33 U.S.C. § 2701-2761 *et seq.*)
- Executive Order 12580 (52 Federal Register (FR) 2923 (January 23, 1987)), as amended by Executive Order 12777 (56 FR 54757 (October 19, 1991))
- National Contingency Plan (40 C.F.R. §§ 300.600 *et seq.*)

As noted previously, the Trustees for the DuPont Waynesboro NRDAR are the Commonwealth of Virginia, represented by VDEQ, and DOI, represented by the U.S. Fish and Wildlife Service (FWS). A Trustee Memorandum of Agreement (MOA) was executed in June 2008, formalizing this collaborative process. The Trustee responsibilities outlined in the MOA include, but are not limited to: assessment of injury to natural resources, restoration planning, developing cost of restoration, replacement, rehabilitation, and/or acquisition of the equivalent, and coordination with response actions.

Under CERCLA, the parties responsible for releases of hazardous substances may be invited to participate in a cooperative NRDAR process (43 C.F.R. § 11.32(a)(2)). Although the final authority regarding determinations of injury and restoration rests solely with the Trustees, cooperative assessments can be beneficial to the public by reducing duplication of effort, expediting the assessment, and implementing restoration earlier than might otherwise be the case. Since 2005, DuPont has worked cooperatively with the Trustees to complete injury assessment studies, and a Cooperative Natural Resource Damage Assessment Funding Agreement (Cooperative Agreement) was signed by all parties in 2005 and 2010. Under the Cooperative Agreement, the parties conducted a series of site-specific studies assessing the exposure of natural resources, such as songbirds, amphibians, turtles, and bats, to mercury and potential effects resulting from that exposure. These studies are discussed in more detail in Chapter 3.

DuPont's active involvement in the damage assessment and restoration planning process also included/s the following:

- Providing funding and assistance for assessment activities;
- Providing data and developing a database of contaminant concentration data;
- Participating in the development of injury assessments of ecological and human use

- services,
- Identifying parcels for potential land conservation; and
 - Identifying other potential restoration projects.

The Trustees completed a Damage Assessment Plan in 2011, summarizing existing information on natural resource injuries and describing proposed studies to evaluate past, current, and future impacts to natural resources and the services they provide (Industrial Economics, Inc. (IEc) 2011). In addition, the Damage Assessment Plan outlined how information gathered from the studies would be used to determine the types and scale of restoration needed to address these injuries.

1.3 Summary of Settlement

Based on the results of the natural resource injury determination and other legal considerations associated with the Facility, the Trustees lodged a negotiated proposed consent decree with DuPont in the U.S. District Court for the Western District of Virginia on December 15, 2016 to implement various projects to effectuate restoration, replacement, rehabilitation and/or acquisition of the equivalent of the natural resources injured from mercury released from the Facility and/or the services those resources provide.

The proposed Consent Decree (CD) will allocate the settlement as follows: DuPont, working with the Commonwealth, will complete at its expense certain recreational fishing projects; and DuPont will pay \$42,069,916.78 into the DOI NRDAR Fund to be expended jointly by the state and federal Trustees to complete restoration projects meeting the requirements of this Draft RP/EA designed to address the injury.

1.4 Facility History and Remediation

The Facility is located on approximately 177 acres on the eastern shore of the SR in Waynesboro, VA (Figure 1; U.S. Environmental Protection Agency (EPA) 2016). DuPont began operations at the Facility in 1929, manufacturing acetate flake and yarn, collectively referred to as acetate fibers. It discontinued production of acetate fibers in 1977. Other products historically manufactured on site included: Orlon®, Lycra®, Permasep®, and BCF Nylon; currently only Lycra is produced at the Facility, now owned and operated by INVISTA (EPA 2016). DuPont continues to own the real estate underlying the Facility.

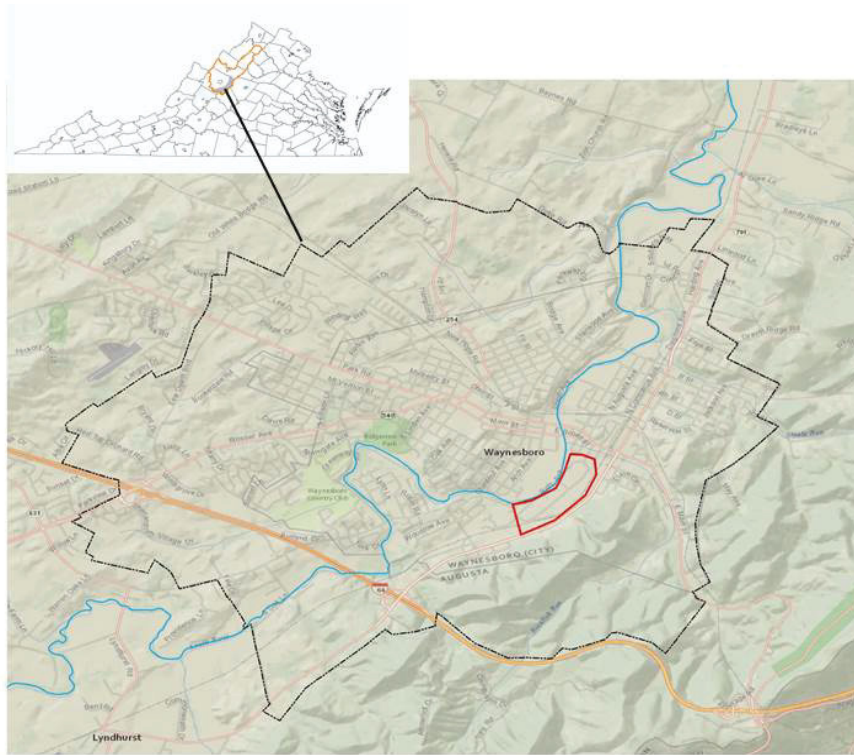


Figure 1. Location of DuPont Facility, outlined in red, encompassing 177 acres adjacent to the SR, in Waynesboro, VA.

From 1929 to 1950, mercury was used in the manufacturing process, and waste sludge was conveyed to an on-site retort facility where the mercury was to be recovered. However, mercury releases occurred, impacting soil and groundwater locally on-site, and storm sewers transported mercury from the Facility to the SR. Mercury continues to be encountered during investigations at the Facility and mercury releases to the SR occur via storm water runoff (VDEQ 2009, URS 2012, Anchor QEA *et al.* 2013). Mercury is transported and re-circulated downstream via surface water, sediments, and floodplain soils to the SFSR and Shenandoah River, and a variety of natural resources have been exposed to Facility-related mercury.

The mercury release was discovered in the 1970s, and a fish consumption ban, then advisory, was enacted in 1977 and 1979, respectively. As of 1999, fish tissue mercury levels had not declined since the early 1980s, as predicted, but instead concentrations remained steady or increased (URS 2012). DuPont and VDEQ discussed the need to assess mercury fate and transport in the SR and SFSR, and founded the South River Science Team (SRST) in 2001 to undertake this work. The SRST is a non-regulatory, collaborative group comprised of representatives from industry, state and federal governmental agencies, environmental groups, independent researchers, and other stakeholders. Since 2001, the SRST has met quarterly to coordinate efforts, identify data needs, collaborate, and share results and information concerning the assessment. Often the resulting studies have been used to support regulatory actions.

In 2005, DuPont entered into a consent decree with Natural Resources Defense Council (NRDC) and the Virginia Chapter of the Sierra Club as a result of lawsuit about the high mercury levels in fish and the associated threat to human health and the environment. It required that DuPont conduct a six-year ecosystem study of the SR watershed to delineate the threat and how to eliminate it, as well as fund abatement measures and propose a remedial plan. A revised consent decree was signed in 2014 that settled the matter with NRDC and Sierra Club.

DuPont has also conducted numerous on-site investigations under the Resource Conservation and Recovery Act (RCRA) Corrective Action Permit (VAD003114832; issued in 1998 and renewed in 2009) managed by EPA and VDEQ. EPA has regulatory authority for the investigation and remediation of contamination on Facility property and VDEQ has the regulatory authority for investigation and remediation of contamination of the rivers and floodplain. A RCRA Facility Investigation was conducted in three phases to characterize solid waste management units (SWMUs) where hazardous substances may have impacted the environment; studies included soil and groundwater sampling at 20 identified SWMUs. DuPont is implementing interim measures (*e.g.*, cleaning sewers) until the final remedy is selected. In 2014, VDEQ approved a Class 2 Permit Modification Request to incorporate the SR and parts of the SFSR (including the floodplain) into VAD003114832. Remedial activities for the rivers are ongoing. A remediation proposal was released in 2013 as required by the 2005 consent decree with NRDC/Sierra Club. The proposal found that a primary mechanism for the continued mercury loading to parts of the SR was through the slow erosion of legacy mercury deposits that currently reside in riverbank soils. Approximately 40 to 60% of the mercury that currently cycles through the food web into smallmouth bass tissue likely originates from eroding bank soils (Anchor QEA *et al.* 2013).

1.5 Relationship to Remedial Activities

NRDAR is a process that occurs in addition to the remedial process conducted by regulatory agencies like the EPA. These two processes have different goals. Remedial action objectives are risk-based, and are developed to protect human health and the environment from further unacceptable harm. The goal of NRDAR is the restoration of resources to their baseline condition, or what their condition would be absent the release of a hazardous substance. Losses resulting from natural resource exposure to released hazardous substances are estimated over time until the resource is restored. These losses can extend beyond the date of remedy completion if contaminants will be left in the environment at levels injurious to natural resources.

There are components of NRDAR and remedial actions that overlap. For example, remedial decisions can include consideration of restoration objectives identified by the NRDAR process. Work to remedy a site may partially or completely restore injured natural resources, and

NRDAR estimates take this into account. In addition, remedial actions may cause “collateral injury” to habitat, and quantification and restoration of this remedy-induced injury is evaluated within the NRDAR process.

For the DuPont Waynesboro NRDAR process, the Trustees have interacted and continue to interact with EPA and VDEQ as they evaluate, select, design, and implement remedies. This coordination provides an understanding of the remedial process and helped the Trustees evaluate how each of the remedial decisions affects estimates of natural resource damages.

1.6 Compliance with National Environmental Policy Act and Other Authorities

Restoration alternatives described in this document will be conducted in compliance with all applicable federal, state, and local regulations.

Federal natural resource and environmental laws, orders, and regulations considered during the development of this Draft RP/EA include but are not limited to the: Endangered Species Act (ESA) of 1973; Farmland Protection Policy Act of 1981; Wild and Scenic Rivers Act of 1968; Migratory Bird Treaty Act of 1918; National Historic Preservation Act of 1966; Archeological and Historic Preservation Act of 1974; Fish and Wildlife Coordination Act of 1934; U.S. Fish and Wildlife Mitigation Policy of 1981; Information Quality Act of 2001; Executive Order 11990 on Wetlands of 1977; and Executive Order 11988 on Floodplains of 1977. Explanation of compliance with these and other federal authorities is found in Section 5.5.

The major state environmental statutes and programs considered during the development of this Draft RP/EA include but are not limited to the: Virginia State Water Control Law, Va. Code § 62.1-44.5; Virginia Agricultural Best Management Practices Cost Share Program, Va. Code § 10.1-2128.1; Virginia Natural Area Preserves Act, Va. Code § 10.1-209 *et seq.*; and Virginia Cave Protection Act, Va. Code § 10.1-1000 *et seq.*

Actions undertaken by the Trustees to restore natural resources or services under CERCLA and other federal laws are subject to the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 *et seq.*) and the regulations guiding its implementation at 40 C.F.R. Parts 1500 through 1517. These authorities outline the responsibilities of federal agencies for preparing environmental documentation. In general, federal agencies contemplating implementation of a major federal action must produce an environmental impact statement (EIS) if the action is expected to have significant impacts on the quality of the human environment. When it is uncertain whether a contemplated action is likely to have significant impacts, federal agencies prepare an environmental assessment (EA) to evaluate the need for an EIS. If the EA demonstrates that the proposed action will not significantly impact the quality of the human environment, the agency issues a Finding of No Significant Impact (FONSI), which satisfies the

requirements of NEPA, and no EIS is required. For a proposed RP, if a FONSI determination is made, the Trustees may then issue a final RP describing the selected restoration action(s). In accordance with NEPA and its implementing regulations, this Draft RP/EA summarizes the current environmental setting; describes the purpose and need for restoration actions; identifies alternative actions; assesses their applicability and potential impact on the quality of the physical, biological, and cultural environment; and outlines public participation in the decision-making process.

1.7 Public Participation

Public participation and review is an integral part of the restoration planning process, and is specifically required in the DOI NRDAR regulations (*e.g.*, 43 C.F.R. § 11.81(d)(2)). In addition, NEPA and its implementing regulations require that federal agencies fully consider the environmental impacts of their proposed decisions and that such information is made available to the public. To facilitate public involvement in the ecological and recreational restoration planning process, the Trustees have been meeting with interested stakeholders since 2008 (Appendix A).

To continue the Trustees' dedication to public involvement, this Draft RP/EA is available for public review and comment for a period of 45 days in accordance with 43 C.F.R. § 11.81(d)(2). The Trustees will address public comments and will document responses to those comments as part of the final RP/EA.

Comments may be submitted in writing and are due to the Trustees by January 30, 2017. To submit a comment, request a hard copy of the Draft RP/EA, or for additional information, please contact:

Anne Condon
U.S. Fish and Wildlife Service
6669 Short Lane
Gloucester, VA 23061
anne_condon@fws.gov

Copies of this document are available online at:

<https://www.fws.gov/northeast/virginiafield/news/news.html>

As restoration progresses, the Trustees may amend the RP/EA if significant changes are made to the types, scope, or impact of the projects. In the event of a significant modification to the RP/EA, the Trustees will provide the public with an opportunity to comment on that particular amendment.

1.8 Administrative Record

An administrative record consisting of a catalog of all documents Trustees used to develop and make decisions related to the NRDAR process, including this Draft RP/EA, is maintained by FWS at the Virginia Ecological Services Office in Gloucester, VA.

1.9 Organization of the Draft RP/EA

The remainder of this document is organized as follows:

- Chapter 2 describes the affected environment.
- Chapter 3 describes the injury assessment strategy and evaluation for ecological resources and human use / recreational fishing.
- Chapter 4 describes restoration alternatives.
- Chapter 5 evaluates the restoration alternatives, including the environmental impacts.
- Chapter 6 describes the selection of the preferred alternative for ecological and recreational fishing restoration.

CHAPTER 2 AFFECTED ENVIRONMENT – NATURAL RESOURCES / WATERSHED

This Draft RP/EA evaluates restoration options to compensate the public for the natural resource injuries and associated losses in ecological and recreational services resulting from exposure to Facility-related mercury. As part of the evaluation, the Trustees assessed the current physical, biological, socio-economic, and cultural resources of the area within which restoration is likely to occur (the SR and SFSR watershed). This information will assist the Trustees in planning future restoration activities and ensure that potential restoration projects are designed to both maximize ecological and human use benefits while minimizing or eliminating project-related adverse environmental consequences.

This chapter presents a description of the physical, biological, and cultural environment for the waterways and ecosystems adjacent to and in the vicinity of the Facility as required by NEPA (42 U.S.C. § 4321, *et seq.*). The assessment area, the area impacted by the mercury releases and the focus of the injury assessment studies, is contained within the larger affected environment (Figure 2). The majority of restoration activities under this Draft RP/EA would occur in proximity to the same areas.

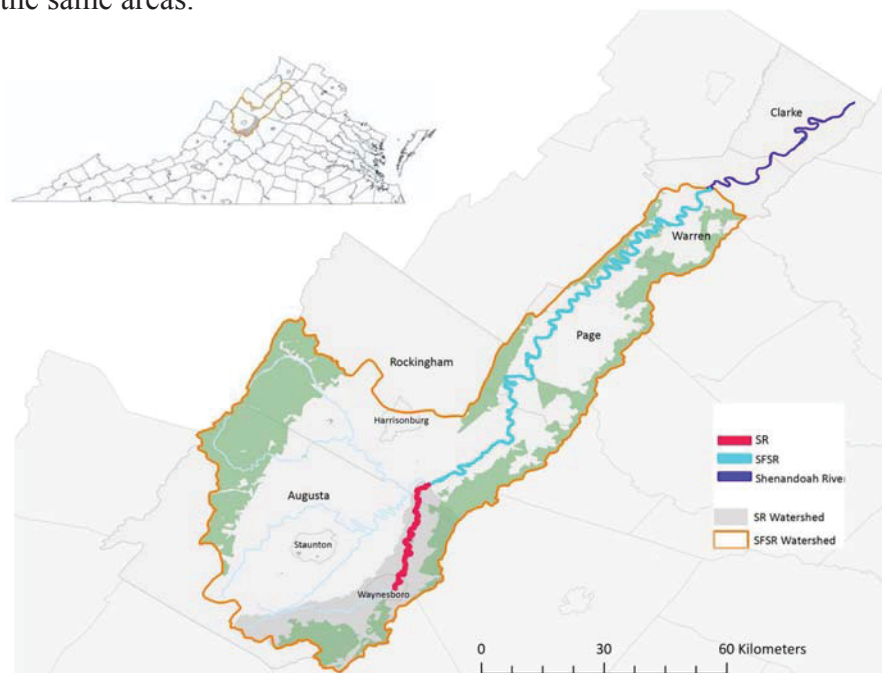


Figure 2. Assessment area includes the aquatic habitat of the SR downstream of Waynesboro, VA (pink), the SFSR (light blue), and for some analyses, the Shenandoah River (dark blue), plus the floodplain and upland habitat within a 300 m buffer around the SR and a 300 ft buffer around the SFSR. The remaining area within the SR and SFSR watershed is considered the affected environment and the area in which restoration is likely to occur. Green shading indicates conservation lands (National Forest, National Park, State Park, or State Natural Area Preserve).

2.1 Watershed

From its headwaters southwest of the City of Waynesboro, the SR flows in a northerly direction for approximately 50.8 miles to the town of Port Republic in Rockingham County. The drainage area of the SR is 235 square miles, with 89% in Augusta County, 6% in the City of Waynesboro, and 5% in Rockingham County (VDEQ 2009). As the SR approaches Waynesboro, large natural springs cool the water and increase flow.

In Port Republic, the SR merges with the North River to form the SFSR, which flows north through Rockingham, Page, and Warren Counties for approximately 100 miles. The SFSR drains approximately 1,700 square miles, and other major tributaries include the Middle River and Christians Creek (VDEQ 2009). There are 20 public access points along the SFSR offering recreational opportunities; the SFSR is a popular destination for canoeing and fishing, attracting thousands of users each year (VDGIF 2016). The majority of the land bordering the SFSR is private property, with the exception of the public access points, the Virginia-owned Andy Guest Shenandoah River State Park, and small sections of the George Washington National Forest on the west bank of the river.

At Front Royal, the SFSR merges with the North Fork Shenandoah River (NFSR) to form the Shenandoah River. This river continues to flow approximately 57 miles through Virginia and West Virginia, joining the Potomac River in Harper's Ferry, WV, and ultimately draining into the Chesapeake Bay. The main stem Shenandoah River is one of the top smallmouth bass rivers in the eastern United States, and the section that runs through Clarke County, VA, is designated as a component of the Virginia Scenic River System (Va. Code § 10.1-417). Most of the land adjacent to the Shenandoah River is privately owned. Numerous anthropogenic and natural barriers exist between the headwaters of the Shenandoah drainage and the Chesapeake Bay; for example, the SFSR has three run-of-river hydropower dams and the Shenandoah River has one (VDGIF 2016a, b).

The SFSR watershed (which contains the smaller SR watershed, hereafter collectively referred to as the SR/SFSR watershed) is within the Valley and Ridge physiographic region. To the southeast of the watershed are the Blue Ridge Mountains and to the west is Massanutten Mountain (Krstolic and Ramey 2012). The area surrounding the SR and the SFSR is mostly forested (55%) and agricultural (30% grass/pasture, 4% row-crop agriculture), interspersed with small urban populations (11%) including the City of Waynesboro and the towns of Grottoes and Elkton (Krstolic and Ramey 2012). The SFSR watershed receives many visitors annually to enjoy river-related activities.

The area enjoys significant natural heritage resources. For example, 17% of Augusta County contains natural heritage resources, such as habitat of rare, threatened, or endangered plant or animal species; unique natural communities; and significant geologic formations (Augusta County 2009). The SR/SFSR watershed supports numerous natural resources such as benthic organisms, fish, reptiles, amphibians, birds, and mammals, including state and federally listed species or species of concern. General descriptions of these resources are provided in Section 2.2 below.

2.1.1 *Assessment Area*

The assessment area includes the area within the SR/SFSR watershed that was considered in the NRDAR injury assessment to be impacted by mercury contamination from the Facility. The assessment area includes the 24 miles of the SR from Waynesboro to Port Republic, as well as the full extent of the SFSR (Table 1; Figure 2). Certain injury analyses also included the Shenandoah River within Virginia (*e.g.*, recreational fishing, ecological fish). The assessment area is discussed further in Chapter 3.

Table 1. Within the SR/SFSR watershed, the assessment area is a smaller area considered impacted by mercury contamination from the Facility. Below are the associated river miles, acres of aquatic habitat, and acres of floodplain/upland of the assessment area.

	River Miles	Acres of Aquatic Habitat	Acres of Associated Floodplain/Upland
SR	24	272	5,202
SFSR	101	3236	6,177
Shenandoah River	35	1445	NA
Total	160	4,953	11,379

2.2 *Natural Resources in the SR/SFSR Watershed*

The SR/SFSR watershed hosts a number of natural resources and unique habitats that Trustees considered in the NRDAR injury assessment (see Chapter 3) and when reviewing potential restoration projects.

Aquatic Resources

2.2.1 Mussels

Several species of native freshwater mussels were historically present in the SR, SFSR, Shenandoah River, and tributaries. Mussel surveys of the upper Shenandoah River system, conducted from the early 1900s through the 1970s, recorded nine species (Ortmann 1919, Johnson 1970, Clark 1981, Chazal and Roble 2011). Species composition is quite similar among the forks of the upper Shenandoah River, and also to other major tributaries of the Potomac River basin, like the Cacapon River in West Virginia, and Broad Run near Manassas, VA (Garst *et al.* 2014), indicating that most mussel species are widely distributed throughout the Potomac River basin. However, mussel surveys of the SFSR and NFSR systems conducted in the 1990s, early 2000s, and from 2008-2009 by biologists from the Virginia Department of Conservation and Recreation (VDCR), documented only three live species (triangle floater (*Alasmidonta undulata*), Eastern elliptio (*Elliptio complanata*), and creeper (*Strophitus undulatus*)) and showed that mussel abundance was very low in both the SFSR and NFSR (Chazal and Roble 2011). Surveys conducted in 2013 in the SR identified these same three species at survey locations upstream of Waynesboro (Garst *et al.* 2014).

2.2.2 Fish

The SR/SFSR watershed supports a diverse fishery. The fish assemblage in the Shenandoah drainage comprises 40 native species and subspecies and 18 introduced species (Jenkins and Burkhead 1994). Common taxa in the SR and SFSR rivers include smallmouth and largemouth bass (*Micropterus dolomieu* and *M. salmoides*), redbreast sunfish (*Lepomis auritus*), fallfish (*Semotilus corporalis*), shiners (*Cyprinella* spp. and *Notropis* spp.), dace (*Rhinichthys* spp.), white sucker (*Catostomus commersoni*), northern hogsucker (*Hypentelium nigricans*), darters (*Etheostoma* spp.), and sculpins (*Cottus* spp.). The American eel (*Anguilla rostrata*) migrates up the Potomac and Shenandoah Rivers from the Sargasso Sea and uses the SFSR and SR as elver and adult habitat.

As the SR approaches Waynesboro, several large springs enter the river providing an increase in flow and decrease in temperature. With the removal of the Rife-Loth Dam in 2010, this cold-water area now extends further downstream into the City of Waynesboro, creating suitable habitat for trout. Stocked species include: brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), and brown trout (*Salmo trutta*). A year-round trout fishery now exists several miles upstream of Waynesboro and downstream through most of Waynesboro City limits, creating a destination trout fishery for many anglers. As the SR warms downstream, habitat becomes more suitable for warm-water fish species; community composition varies

between upper and lower reaches of the SR reflecting the changes in habitat and water temperature (URS 2012).

2.2.3 Reptiles and Amphibians

Over 40 species of reptiles and amphibians occur in different areas within the SFSR watershed in wetland, riverine, and upland habitats. Some common reptile species along the SR include: snapping turtle (*Chelydra serpentina*), painted turtle (*Chrysemys picta*), stinkpot (*Sternotherus odoratus*), ratsnake (*Pantherophis alleghaniensis*), and northern watersnake (*Nerodia sipedon*). Common amphibians include: southern two-lined salamander (*Eurycea bislineata*), red-backed salamander (*Plethodon cinereus*), and American toad (*Bufo americanus*). Species of conservation concern found in the watershed include, but are not limited to: tiger salamander (*Ambystoma tigrinum*; state listed endangered), pine snake (*Pituophis melanoleucus*; state species of concern), and Big Levels salamander (*Plethodon sherando*), a woodland salamander endemic to the SR watershed, ranked as globally and state rare, and found in the Big Levels area within the George Washington National Forest/Blue Ridge Parkway.

Floodplain/Upland Resources

2.2.4 Birds

Both resident and migratory birds utilize habitat within the SR/SFSR watershed for breeding, feeding, and roosting. These include waterfowl, waterbirds, raptors, and songbirds. Surveys conducted in 2011 and 2012 in the upper SFSR watershed identified 113 species in various habitat types and elevations (Cristol 2012, unpublished data). Many of these species are neotropical migratory birds, breeding in or migrating through the watershed and wintering in Central or South America or the Caribbean. See Appendix B.

Species in the assessment area that are listed as species of greatest conservation concern (Tier I-IV) on the Virginia 2015 Wildlife Action Plan include, but are not limited to: belted kingfisher (*Megaceryle alcyon*), black and white warbler (*Mniotilta varia*), brown thrasher (*Taxostoma rufum*), Canada warbler (*Cardellina canadensis*), chimney swift (*Chaetura pelagica*), eastern kingbird (*Tyrannus tyrannus*), eastern meadowlark (*Sturnella magna*), eastern towhee (*Pipilo erythrophthalmus*), eastern wood-pewee (*Contopus virens*), field sparrow (*Spizella pusilla*), gray catbird (*Dumetella carolinensis*), and wood thrush (*Hylocichla mustelina*).

2.2.5 Mammals

Several species of mammals have been recorded in the SR/SFSR watersheds utilizing aquatic, floodplain, and terrestrial habitats. For example, muskrats (*Ondatra zibethicus*) forage on

shellfish in the river, and shrews (*Sorex* spp) prey on insects in the floodplain. Other species that use habitat in the watershed for feeding or breeding include river otters (*Lontra canadensis*) and mink (*Neovison vison*). Bats are also present in the watershed, foraging over the SR and SFSR, and roosting in caves, trees, and barns in the area. Bat species found in the watershed include big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), and hoary bat (*Lasiurus cinereus*). Federally listed endangered Virginia big-eared bat (*Corynorhinus townsendii virginianus*) and Indiana bat (*Myotis sodalis*), federally and state listed threatened northern long-eared bat (*Myotis septentrionalis*), and state listed endangered little brown bat (*Myotis lucifugus*) and tri-colored bat (*Perimyotis subflavus*) may also be present in the watershed.

Unique Species and Features

2.2.6 Madison Cave Isopod

The Madison Cave isopod (*Antrolana lira*; MCI) is a federally listed threatened, free-swimming, sightless, subterranean crustacean that lives in karst aquifers. It is endemic to the northern Shenandoah Valley, VA, and Jefferson County, WV, and to date has been found exclusively in Cambrian/Ordovician aged carbonate bedrock (Orndorff and Hobson 2007). Until 1990, this rare isopod was known from only Madison Saltpetre Cave and the adjacent Steger's Fissure at the northeastern end of Cave Hill in Augusta County, VA. MCI abundance at Steger's Fissure is the highest in the species' range, estimated at 2,240-3,420 individuals (Fong 2007). As of 2010, the MCI was known from a total of 16 locations in the Shenandoah Valley from Leetown, WV, to Lexington, VA (FWS 2010).

2.2.7 Wetlands – Sinkhole Ponds

Freshwater emergent, forested, and pond wetland habitat is present throughout the watershed. The SFSR watershed also contains a unique group of depression wetlands, known as the Shenandoah Valley sinkhole ponds (Fleming and Van Alstine 1999). These sinkhole ponds occur on deep alluvial fans in Augusta, Rockingham, and Page Counties that were deposited over carbonate rocks along the foot of the Blue Ridge Mountains during the Pleistocene (see Figure 3 for locations of some of these sinkhole ponds). Solution of the underlying rock and reworking of surficial material by streams resulted in the development of numerous natural ponds varying in size from less than 0.1 acre to more than 3.7 acres. Pollen profiles from bottom sediments in two Augusta County ponds demonstrate the continuous existence of wetlands over the past 15,000 years (Craig 1969). Most ponds in the Shenandoah Valley complex experience seasonally fluctuating water levels. The hydroperiods of many ponds are irregular and unpredictable, varying with the size and depth of the basin, degree of shading, and local groundwater conditions. Three rare and apparently endemic community types occur in the Shenandoah Valley ponds, and their flora is notable for its high percentage of rarities.

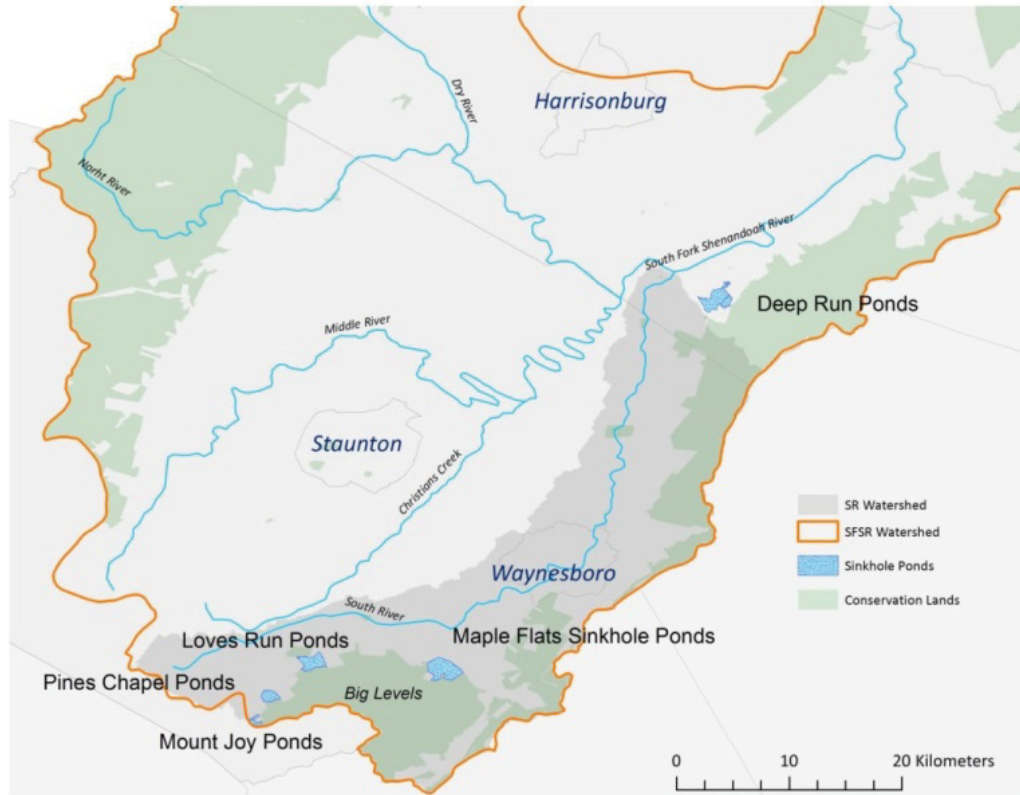


Figure 3. Sinkhole pond areas in Augusta and Rockingham Counties within the SR/SFSR watershed.

2.2.8 *Limestone Cave Habitat*

The SFSR watershed contains a number of historically and geologically significant limestone caves, including Grand Caverns, a National Natural Landmark located along the SR. The karst terrain, a landscape of sinkholes, sinking streams, and caverns, was formed by groundwater dissolving the limestone and dolostone that underlie the Shenandoah Valley floor. Several of the caves in the SFSR watershed are designated as significant under the Virginia Cave Protection Act, and provide habitat for the MCI and bat species (VDCR 2015).

2.3 *Cultural and Historic Resources*

The area contains significant historical and cultural resources, including Civil War battlefields and related historic sites, many of which are protected through Shenandoah Valley Battlefields Foundation (SVBF) and other partners (SVBF 2015).

2.4 *Ecological Stressors*

Ecological stressors in the SR/SFSR watershed include point source pollutants and industrial wastes, inadequately treated sewage, and agricultural and urban run-off and erosion from poor sedimentation control (FOSR 2013). The SFSR was listed as an impaired river in 1998 on Virginia's Section 303(d) Total Maximum Daily Load (TMDL) Priority List and Report, and again in 2002, 2004, 2006 and 2008 (Engineering Concepts, Inc. 2009). The impairment was due to exceedances of fecal coliform and bacteria standards. The SR, SFSR and Shenandoah River are also on the 303(d) list because of the mercury contamination. Many other streams within the watershed are listed as impaired; thirty streams in Augusta County (553.38 miles) have water quality impairments based on TMDLs for pollutants such as fecal coliform, bacteria, pH, and other contaminants (Augusta County 2009).

The SFSR watershed is home to dairy and beef cattle farms, with over 8,000 pairs of beef cattle and almost 3,000 dairy cattle as of 2009, and many have access to streams in the watershed (Engineering Concepts, Inc. 2009). The SFSR watershed also has chicken and turkey operations, and poultry litter is applied to cropland and pasture throughout the watershed. Augusta County, which contains most of the SR and its headwaters, is the second leading agricultural county in Virginia (Augusta County 2009). The county's watersheds, including the SR watershed, are experiencing excessive levels of soil erosion from farmland which can have negative impacts on stream quality and long term agricultural productivity (Augusta County 2009), particularly tributaries to the Middle River such as Christians Creek.

Areas within the watershed are experiencing increased human population growth and development in recent decades. In Augusta County, the growth rate for the decade 1990-2000 was 11.6%, the largest increase since 1960-1970 (Augusta County 2009). The population of Augusta and Rockingham Counties is expected to increase by 3% between 2015 and 2040 and more significant increases are predicted for cities and towns (*e.g.*, 37% expected increase in Waynesboro) (VDEQ 2015).

These stressors are important when evaluating restoration projects and areas – to help identify what projects to prioritize and what areas within the watershed to target – most in need of restoration, areas most at risk, where restoration will be most likely to succeed, etc. The existing stressors are also considered the evaluation of injury when establishing the baseline conditions of the area (see Chapter 3).

CHAPTER 3 INJURY ASSESSMENT

The natural resources listed in Chapter 2 provide a variety of services. Services are “the physical and biological functions performed by the resource, including the human uses of those functions, [that result from the resource’s] physical, chemical, or biological quality” (43 C.F.R. § 11.14 (nn)). For example, ecological services provided by benthic invertebrates and mussels include foraging opportunities for fish and birds, nutrient cycling, and water filtration. Wetland soils provide services by supporting healthy vegetation and diverse plant communities that in turn provide animals with foraging opportunities, nesting or denning areas, and protective cover. Examples of human use services provided by natural resources include opportunities for fishing, boating, and wildlife viewing and appreciation.

Injury has occurred when a resource’s viability or function is impaired such that the type and/or magnitude of services provided by that resource is reduced as a result of contamination (43 C.F.R. § 11.14 (v)). Determination of injury requires documentation that: (1) there is a viable pathway for the released hazardous substance from the point of release to a point at which natural resources are exposed to the released substance, and (2) injury of exposed resources (*e.g.*, surface water, sediment, soil, groundwater, biota) has occurred as defined in 43 C.F.R. § 11.62. The first condition is satisfied based on clear documentation of direct historical discharge of mercury, the contaminant of concern, from the Facility into the SR, and ongoing releases from the banks of the SR (VDEQ 2009, Anchor QEA *et al.* 2013; See Section 3.2). The second condition is satisfied because measured concentrations of mercury in various resources within the assessment area displayed associated effects, or exceeded levels at which the literature reports adverse effects on endpoints such as reproduction, growth, and survival as well as the presence of a fish consumption advisory.

3.1 Contaminant of Concern

The contaminant of concern (COC) in a NRDAR assessment area is a hazardous substance (as defined by Section 101(14) of CERCLA) to which trust resources have been exposed as a result of a release. Mercury is considered to be the primary COC for this assessment, listed in Table 302.4, the List of Hazardous Substances and Reportable Quantities under CERCLA, and as a toxic pollutant pursuant to 40 C.F.R. § 401.15, as amended.

As mercury cycles through the environment, it can be present in several different forms. “Quicksilver,” or mercury-zero, is metallic, elemental mercury (such as the mercury released from the Facility), and is less toxic than other forms. Once released into the environment, elemental mercury is converted to methylmercury, the most common, and most toxic, organic mercury compound, mainly by microscopic organisms in water, soil, and sediment. Methylmercury is lipid soluble, allowing it to cross biological membranes and to enter the food

web, where it is bioaccumulated and biomagnified in upper trophic level organisms such as fish and birds.

Mercury is primarily a neurotoxin, but can also cause biochemical, enzymatic, immunological, genetic, and reproductive effects on biota. For example, in adult mammals, methylmercury can cause ataxia difficulty in locomotion, impairment of hearing or vision, general weakness, and death (Eaton *et al.* 1980; Wren *et al.* 1987a,b). Symptoms of acute mercury poisoning in birds include, but are not limited to, reduced food intake leading to weight loss; progressive weakening in wings and legs; difficulty flying, walking and standing; and death (Wolfe *et al.* 1998). Reductions in egg laying and territorial fidelity are also associated with mercury exposure in birds (Barr 1986).

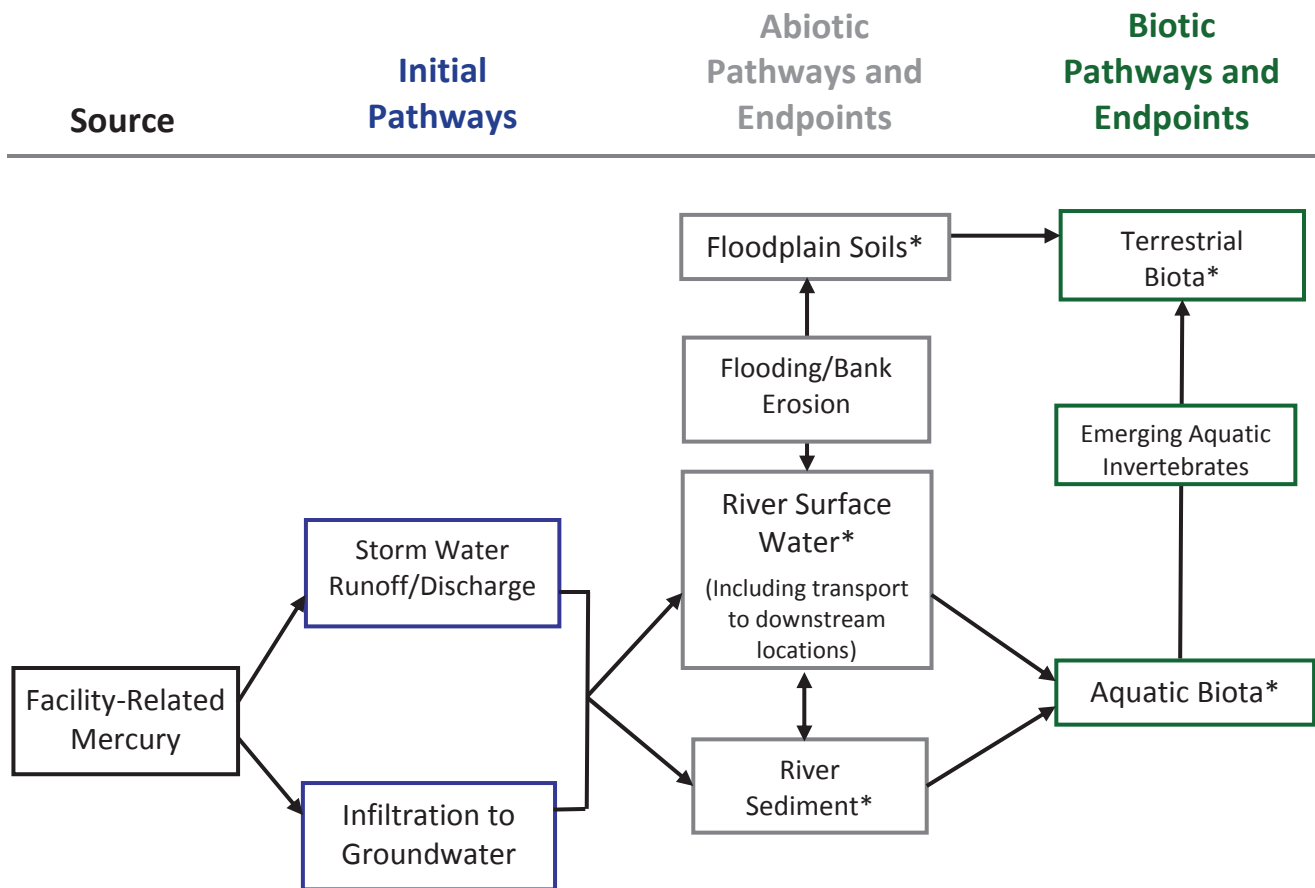
3.2 Pathway

Pursuant to 43 C.F.R. § 11.14 (dd), a pathway is defined as:

The route or medium through which...a hazardous substance is or was transported from the source of the discharge or release to the injured resource.

Facility-related mercury has been identified in on-site storm water outfalls and continues to be discharged to the river via the outfalls (Anchor QEA *et al.* 2013). There are multiple pathways, historic and current, from the Facility to trust resources, including through surface runoff, groundwater, permitted point-source discharges, movement in surface water and abiotic and biotic pathways (Figure 4).

Once mercury has been released to surface water and underlying sediments, it can be transported downstream via surface water flow. During periods of flooding, when heavy rains cause the SR and SFR to overtop their banks, mercury can be deposited on floodplain soils. Furthermore, contaminated floodplain soils in this study area can be transported back into the river via bank erosion processes (Eggleston 2009). Mercury in sediment and floodplain soils can be taken up by biota at the base of the food web and transported to higher trophic organisms via their diet (*e.g.*, snapping turtles and screech owls; Bergeron *et al.* 2007, Cristol *et al.* 2008). As such, aquatic and terrestrial biota may also serve as pathways in addition to being endpoints.



* Indicates a Trust resource being assessed in the DuPont Waynesboro NRDAR process.

Figure 4. Diagram of pathways from Facility-mercury to biological endpoints (adopted from IEC 2011).

3.3 Injury Assessment Strategy

The goal of the injury assessment is to determine the nature and extent of injuries to natural resources and to quantify the resulting resource and service losses, providing a basis for evaluating the need for, type of, and scale of restoration actions. Injury to biological resources has resulted from the release of a hazardous substance if the concentration of that substance is sufficient to:

Cause the biological resource or its offspring to have undergone at least one of the following adverse changes in viability: death, disease, behavioral abnormalities, cancer, genetic

mutations, physiological malfunctions (including malfunctions in reproduction), or physical deformations (43 C.F.R. § 11.62 (f)(1)(i)).

or

Exceed levels for which an appropriate State health agency has issued directives to limit or ban consumption of such organism (43 C.F.R. § 11.62 (f)(1)(iii)).

As described in Chapter 1, this assessment process is guided by the NRDAR regulations under CERCLA. The injury assessment process occurs in two stages: 1) injury evaluation and 2) resource and service loss quantification. To evaluate potential injury to resources, the Trustees reviewed site-specific injury studies, as well as existing information, including remedial investigation data, ecological risk assessments, and scientific literature.

Based on information from all these sources and with an understanding of the function of the terrestrial and aquatic ecosystems at and near the Facility, the Trustees evaluated injury to natural resources and determined the expected magnitude and severity of effects of mercury on trust resources. The Trustees considered several factors throughout injury assessment, including, but not limited to the:

- specific natural resource and ecological services of concern;
- evidence indicating exposure, pathway and injury;
- mechanism by which injury occurred;
- type, degree, spatial and temporal extent of injury; and
- types of restoration actions that are appropriate and feasible.

3.3.1 Geographic Scope

The assessment area is based on the geographic scope within which trust resources have been directly or indirectly affected by the releases of hazardous substances from the Facility (43 C.F.R. §11.14 (c)). For the purposes of this Draft RP/EA, Figure 2 depicts the geographic scope of the assessment area, which includes the:

- SR from the Facility in Waynesboro downstream to Port Republic (24 river miles, 272 acres).
- SFSR from Port Republic downstream to Front Royal (101 river miles, 3,237 acres).
- Shenandoah River to the West Virginia border (35 river miles, 1,446 acres; only applicable for the fish analyses – ecological and recreational injuries).
- Floodplain areas adjacent to the SR and SFSR (11,379 total acres, including 240 acres of wetlands).

3.3.2 *Temporal Scope*

Within the assessment area, natural resource exposure to Facility-related hazardous substances has been documented at least since the 1970s and is expected to continue into the future. Damages are calculated beginning in 1981, in accordance with case law related to the promulgation of CERCLA, and are estimated into perpetuity, unless otherwise specified. Injury and corresponding damages with regard to recreational fishing losses were assumed to persist until 2030.

Recovery scenarios may change with the implementation of additional remedial activities in the assessment area or with long-term environmental recycling of contaminants remaining after remedy implementation (*e.g.*, through resuspension of contaminated sediments). Because remedial activities are ongoing, and because there is a high amount of uncertainty regarding effectiveness and success, Trustees assumed that the injury would remain unchanged for a long period of time.

3.4 *Injury Evaluation / Resource and Service Losses*

Each of the resources impacted by the release of mercury, including surface water, sediment, and the organisms that utilize the riverine and associated wetland and floodplain or upland habitats (*e.g.*, fish, birds, reptiles, amphibians, mammals), is a trust resource. Over the years, these resources have been exposed to mercury from the Facility and have suffered adverse effects. Below are the trust resources likely impacted/exposed to mercury contamination including both aquatic and floodplain resources:

- Surface Water and Sediment
- Soil
- Mussels
- Fish
- Reptiles/Amphibians
- Human Use/Recreational Fishing
- Migratory Songbirds
- Piscivorous Birds/Mammals
- Waterfowl
- Bats
- Madison Cave Isopod

Injured trust resources within the assessment area sustained some loss in ecological services due to contamination. A reduction in the ability of a resource to provide these services, as compared to the baseline level of services or that which existed but for the contamination, is considered a service loss. The severity and magnitude of these potential losses are quantified, where possible, to establish a basis for scaling restoration (*e.g.*, damages). In the sections below, the

methodologies and assumptions used to quantify injury for the representative resources are discussed.

The representative resources for injury to riverine, floodplain, and wetland habitats and resources were **fish, mussels, migratory songbirds, amphibians**; and for the lost human use, **recreational fishing**. The decision to focus the injury assessment on these resources was primarily driven by the amount and type of data available for analysis and the overlapping restoration needs for multiple resources (see Table 2). Data regarding contamination of surface water were limited, or indicated that injury to this resource was unlikely, and therefore the Trustees determined that no further assessment of surface water was necessary. Data for sediment and soil exist and these resources were included in the broader analysis of floodplain and aquatic biological resources.

To address the wide range of service losses at the site, the Trustees developed a multi-pronged approach to damages determination: (1) habitat equivalency analysis for the loss of riverine, floodplain, and wetland resources; (2) resource equivalency analysis for the loss of migratory songbirds; (3) mussel propagation and replacement analysis; (4) recreational fishing losses using trip-equivalency analysis.

Table 2. Major habitat types within the assessment area, associated resources, and the representative resource used in the analysis of injury and scaling of restoration.

Major Habitat Types	Associated Resources	Representative Resource Used in Analysis
Aquatic / Riverine – SR, SFSR, Shenandoah River	Surface Water Sediment Mussels Aquatic Invertebrates Fish Amphibians and Reptiles Migratory Songbirds Piscivorous Birds and Mammals Bats Recreational Fishing	<ul style="list-style-type: none"> • Fish • Mussels
Floodplain / Upland – Habitat adjacent to SR and SFSR	Soil Surface Water Sediment Mussels Aquatic Invertebrates	<ul style="list-style-type: none"> • Migratory Songbirds

	Fish Amphibians and Reptiles Migratory Songbirds Piscivorous Birds and Mammals Bats Recreational Fishing	
Wetlands	Soil Surface Water Sediment Mussels Aquatic Invertebrates Amphibians and Reptiles Migratory Songbirds Piscivorous Birds and Mammals Bats Recreational Fishing	<ul style="list-style-type: none"> • Amphibians

Habitat Equivalency Analysis

Habitat Equivalency Analysis (HEA) is a service-to-service or resource-to-resource approach to natural resource valuation that can account for changes in baseline while estimating interim losses (Unsworth and Bishop 1994, Jones and Pease 1997). The fundamental concept is that compensation for lost ecological services can be provided by restoration projects that provide comparable services (compensatory restoration). HEA responds to the question “What, but for the release, would have happened to the injured area?” In this case, what services would the injured habitats have provided? With HEA, the replacement services are quantified in physical units of measure such as acre-years.¹ The selected projects, or project types, are scaled so that the quantity of replacement services equals the quantity of lost services in present value terms. Potentially responsible parties (PRPs) implement or pay for restoration projects that are sufficient to cover the public’s interim losses. HEA involves three basic steps:

- (1) Assess the present value of lost services (% service losses over time) relative to baseline. This “debit” is measured in discounted services acre-years (DSAYs).
- (2) Select appropriate compensatory restoration projects (% restored services). The “relative productivity” of a proposed restoration project compared to what was injured is measured in the number of DSAYs restored for every acre included in the project.

¹ An acre-year refers to all natural resource services provided by one acre for one year. This measure of natural resource services is specific to the type of land and its associated habitats since different habitats in varying locations provide different services.

- (3) Identify the size of the project (scaling) that will equate the total discounted quantity of lost services to the total discounted quantity of replacement services to compensate the public's losses. The "credit" is measured in acres owed or DSAYs restored by a proposed project of an identified size.

CERCLA (43 C.F.R. § 11.83) explicitly allows consideration of HEA as an economic tool to estimate damages in NRDAR cases. Following the process outline above, the Trustees determined the loss of riverine, floodplain, and wetland resources from mercury. To compensate for this loss, the amount of acquisition and enhancement needed was estimated using HEA. The assessment area is quite large with a variety of habitats. In collaboration with DuPont, Trustees identified the habitat types, reviewed the literature on natural resource injuries, and estimated service losses relative to baseline. Where restoration options were determined to provide multiple ecological services, the Trustees factored these additional service gains into the HEA crediting process.

Resource Equivalency Analysis

When there are injuries to non-marketed species, like migratory songbirds, their value can be difficult to quantify in economic terms. An alternative approach to economic valuation is resource equivalency analysis (REA) (variation of HEA based on Unsworth and Bishop 1994, and Jones and Pease 1997). A REA responds to the question, "What, but for the incident, would have happened to the injured species if it had not been killed by the oil spill or release of hazardous substances?" REA is a resource-to-resource approach that assumes services lost and restored are comparable. Specifically, the losses and replacement services are quantified in physical units of measure such as bird-years.² Restoration projects are scaled so that the quantity of replacement services equals the quantity of lost services in present value (PV) terms.³ PRPs pay for or implement restoration projects sufficient to cover the public's interim losses. Because the services provided by compensatory restoration projects are qualitatively equivalent to the services lost due to the spill or release, REA can avoid valuation altogether. When PRPs are

² A bird-year refers to all services provided by 1 bird for 1 year. This measure of services is specific to the type of bird since different birds provide different services (the replacement services for 20 bird-years could be 20 birds for only one year, one bird over 20 years, or something in between).

³ Services provided in the future are discounted at an appropriate rate to reflect the social rate of time preference, the rate at which society is willing to substitute between present and future consumption of natural resources. The real rate of interest and the government borrowing rate are recommended in the economics literature as the best measures of the social rate of time preference. OMB Circular A-4 and empirical evidence supports a 3% discount rate (*e.g.*, Freeman 1993; NOAA 1999). Federal rulemakings also support a 3% discount rate for lost natural resource use valuation (61 FR 453; 61 FR 20584). The annual discount factor may be calculated as $(1+r)^{P-t}$, where r is the discount rate, P is the present time period, and t is the time period of lost services. In 2016, for example, the discount factor is 1.0, because any number raised to the zero power equals 1.0 ($1.03^{(2016-2016=0)} = 1.0$).

interested in providing a payment rather than performing an in-kind restoration project, the estimated project costs may be used to develop a final claim for damages. The first REA was developed as part of the North Cape oil spill settlement in 1999 (see Sperduto *et al.* 2003).

CERCLA (43 C.F.R. § 11.83) explicitly allows consideration of REA as an economic tool to estimate damages in NRDAR cases. Following the process outline above, the Trustees determined the loss of songbird-years from mercury. To compensate for this loss, the amount of acquisition and enhancement needed was estimated using an understanding of songbird restoration that incorporates the full life-cycle of the bird (*e.g.*, breeding, migration, or wintering habitat protection or enhancement).

3.4.1 Fish (Ecological or Eco-Fish)

Though this analysis was focused specifically on eco-fish, it more broadly represents injury to the aquatic habitat and other resources that use that habitat such as piscivorous birds and mammals. The assessment area for the eco-fish injury analysis included a total of 4,954 acres of the SR (272 acres), SFSR (3,237 acres), and Shenandoah River (1,446 acres). To demonstrate injury due to mercury, site-specific toxicity information was reviewed and contaminant concentrations in fish tissue were compared to literature-based adverse effects thresholds. This analysis was a cooperative effort between the Trustees and DuPont and is summarized in this section.

Fish species reviewed in the analysis include, among others, smallmouth bass, largemouth bass, black crappie (*Pomoxis nigromaculatus*), rock bass (*Ambloplites rupestris*), bluegill (*Lepomis macrochirus*), common carp (*Cyprinus carpio*), and channel catfish (*Ictalurus punctatus*). The final database included over 6,000 whole body fish mercury concentrations from 14 species of fish collected between 1981 and 2007. These species were classified as piscivores, omnivores, or invertivores. Peer-reviewed literature was evaluated, including, but not limited to, studies that examined the effect of mercury (not inorganic mercury); studies that described an effect on growth, reproduction, and/or survival (not short-term exposure); and studies focused on similar species to those found in the assessment area (*e.g.*, studies on saltwater fish or arctic/rainforest species were excluded). Based on these studies, Trustees were able to determine service losses corresponding with a related mercury concentration. For example, at 0.5 parts per million (ppm) whole body mercury concentration, there was an associated 0% service loss, at 1 ppm, 27% service loss, at 2 ppm, 41% service loss and at 5 ppm, 62% service loss (Table 3).

Table 3. Range of the average mercury concentrations throughout the assessment area for the three different categories of fish species and expected associated service loss level.

Category	Range of average mercury concentrations (1981-2009), parts per million (ppm)	Range of associated service losses
Piscivores	0.07 ppm – 2.27 ppm	0% - 43%
Omnivores	0.09 ppm – 0.94 ppm	0% - 26%
Invertivores	0.04 ppm – 1.46 ppm	0% - 34%

HEA (described above) was used to calculate the present value losses in DSAYs. A combination of different restoration project types will compensate for an equivalent amount of DSAYs, such as riparian habitat buffers, agricultural best management practices (BMPs), and urban BMPs.

3.4.2 *Mussels*

Though also an aquatic resource, mussels were analyzed separately from fish due to the specific restoration needs (propagation and reintroduction activities) of these organisms. Mussel injury was analyzed directly and restoration was scaled to that loss. As part of the cooperative assessment, and for settlement purposes, the restoration for mussels is assumed to fully compensate for the other benthic organisms that were likely injured due to mercury contamination of sediment.

Trustees limited the geographic scope of the injury analysis to the SR where there is the most compelling evidence of injury to mussels (*e.g.*, no mussels exist below Waynesboro in the SR). Mussels have likely been extirpated for decades downstream of Waynesboro as no live mussels or fresh-dead shells were collected during the 2013 survey and only a few old, weathered shells were observed, all indicating live mussels have not existed in this reach for decades (Garst *et al.* 2014). Mussel survival and habitat may be impacted by physical stressors such as sedimentation and degradation of water quality from bank erosion, stream channel alteration, and land-use practices such as agriculture and urbanization. Urban areas can also contribute wastewater effluent, with elevated nutrients, ammonia, and heavy metals, to a river system. Research has shown reduced or absent mussel populations below urban areas (Gangloff *et al.* 2009). Chemical stressors, such as mercury, also impact mussel survival and habitat quality. Mercury can bioaccumulate in freshwater mussel tissue and may cause hormonal changes and shifts in energy allocation (Naimo 1995).

Trustees did not conduct studies to determine the precise cause of the lack of mussels below Waynesboro in the SR and SFSR. However, through literature review and expert consultation,

Trustees determined the likely proportion of injury expected from urban inputs (Waynesboro) and the proportion from mercury contamination (service loss attributable to mercury released from the Facility). In 2013, mean mussel density across sites sampled in the Cacapon River (WV), Broad Run (VA), and SR upstream of Waynesboro, was 2.26 mussel per square meter (m²) – a reasonable expected density for suitable habitat throughout the SR watershed, including downstream of Waynesboro. Trustees expected a lower density of 1.0 mussels/m² below Waynesboro given the urban inputs and considering the mix of habitat types (*e.g.*, unsuitable, such as bedrock, and suitable, such as cobble) that exist in the SR below Waynesboro. Using these density estimates, Trustees were able to parse the difference between the injury expected from urban inputs (56%) and the expected loss due to mercury (44%). Applying this estimated loss of density to the affected area resulted in a loss of up to 650,000 mussels. Therefore, the Trustees concluded a multi-year propagation program is necessary to restore the mussels lost from mercury contamination.

3.4.3 Migratory Songbirds

The assessment area supports many species of songbirds and other migratory birds, including waterfowl, wading birds, and raptors. For the purposes of claim development, Trustees focused on migratory songbirds due to the extensive site-specific data on contaminant concentrations and effects. Trustees also used songbird data to inform the analysis for the floodplain injury (see Section 3.4.4). Because of the specific restoration needs of migratory songbirds throughout their full life cycle and within their migratory flyway, Trustees did a separate analysis to determine injury specifically to neotropical migratory songbirds. Of the 75 species evaluated, 44 species are considered medium- or long-distance migrants, 17 species are considered short-distance migrants or seasonal migrants, and 14 are considered resident species. In consultation with experts, the Trustees determined that the neotropical migratory subset consists of up to 68% of the representative species in the assessment area, a significant proportion of the injured bird population.

Studies on exposure and effects of mercury on birds have been conducted in and around the assessment area and in the laboratory over a period of several years (*e.g.*, Brasso and Cristol 2008; Cristol *et al.* 2008; Hallinger *et al.* 2010; Hallinger *et al.* 2011; Jackson *et al.* 2011a, b; Varian-Ramos *et al.* 2014). These studies examined mercury exposure in multiple species and life stages, contamination of prey items, and geographic extent of elevated mercury levels. Cristol *et al.* (2008) described mercury levels in several songbird species that were as high, or higher, than fish-eating species from the site – illustrating that mercury contamination of the aquatic environment had moved to the terrestrial system and food web. Prey items, specifically spiders, had mercury levels higher than fish prey species. Several site-specific and laboratory studies examined effects to survival, reproduction, immune/endocrine system function, and other sublethal effects, such as song learning (*e.g.*, Brasso and Cristol 2008, Hawley *et al.* 2009, Wada

et al. 2009, Hallinger *et al.* 2010, Hallinger *et al.* 2011, Hallinger and Cristol 2011, Jackson *et al.* 2011a, Bouland *et al.* 2012, Carlson *et al.* 2014, Varian-Ramos *et al.* 2014, Henry *et al.* 2015).

Key findings of these studies link mercury to adverse reproductive effects, most notably in Carolina wren (*Thryothorus ludovicianus*) and tree swallow (*Tachycineta bicolor*). Hallinger and Cristol (2011) showed that mercury levels in tree swallows within the SR assessment area (mean \pm SE: 3.03 \pm 0.15 ppm) were significantly elevated compared to swallows breeding on reference sites (mean \pm SE: 0.16 \pm 0.005 ppm), and that these high levels of mercury were associated with reduced hatching and fledgling success. Contaminated birds produced approximately 1 less fledgling than reference birds, translating to a 20% reduction in nest success. Jackson *et al.* (2011a) used an information-theoretic approach to analyze the Carolina wren reproductive data collected in the assessment area. This model showed that blood mercury concentration of the adult female was a strong predictor of nest success, and enabled Trustees to relate mercury level with a loss in reproduction. Average blood mercury levels were available for the 75 songbird species within the assessment area, ranging from 0.02 to 6.2 ppm on the SR and 0.01 to 1.5 ppm on the SFSR. Based on the model from Jackson *et al.* (2011a), these concentrations translated to a 0.06 – 99.9 % likelihood of nest failure on the SR and 0 – 24.2% on the SFSR, depending on the species.

Because density estimates for each of the 75 species were available within the watershed, the Trustees were able to estimate the population (number of individuals) of songbirds within the 11,379-acre assessment area, and apply the appropriate loss estimates per species. These inputs were used in a REA to generate a number of lost bird-years and to estimate the number of wintering habitat acres necessary to compensate for the injury.

3.4.4 Non-wetland Floodplain (represented by songbirds)

Trustees selected songbirds as a representative resource for the floodplain and upland habitat. Because of the comprehensive songbird studies that support a quantifiable reduction in services (in this case, reproduction), songbirds were elected as the “umbrella” resource to inform the analysis for the floodplain/upland resources.

To quantify injuries, the baseline condition of the affected resources and associated services must be established. Baseline is “the condition or conditions that would have existed at the assessment area had the...release of a hazardous substance...not occurred” (43 C.F.R. § 11.14 (e)), taking into account natural processes and changes resulting from human activities. Baseline conditions include all environmental parameters, not only concentrations of COCs. For example, other impacts to water quality and physical changes to the habitat (the stressors discussed in Section 2.3) are incorporated into the determination of baseline conditions. As described in the

DOI regulations, establishing baseline requires either pre-release data or data from suitable reference locations.

There are multiple landcover types within the assessment area (developed, row crop, pasture/hay, riparian forest, upland forest and early successional), each of which provide different baseline services for songbirds in the assessment area. Based on expert consultation and literature reviews, baseline services were determined for each landcover type (related to songbirds specifically), ranging from 15-100%, and achieving maximum services in the riparian forest landcover type. When determining the baseline levels for each landcover type, Trustees considered the level of urbanization, habitat fragmentation, agricultural practices, use of pesticides or other chemicals, diversity of vegetation type and structure, and other factors that may influence bird use and habitat quality.

Trustees reviewed literature on mercury effects/exposure as weight-of-evidence, but focused on site-specific data to inform the injury quantification. At the time of assessment, the data generated from studies on this site provided more information than existed in the literature. Injury was determined by the reproductive loss expected for different regions of the assessment area such as riparian SR, upland SR, or riparian SFSR, which was determined using site specific studies and Trustee expertise. The maximum level of injury was 20% reproductive loss based on the site-specific studies (see above Section 3.4.3; Hallinger and Cristol 2011). A certain level of impairment was expected from the mercury contamination (5-20%), but some habitat types were already impaired for other reasons (agricultural activities, fragmentation, etc.). The total service loss was calculated by factoring the baseline services into the injury estimate, and service losses ranged from 0-20% for the various landcover types in the assessment area.

HEA was used to calculate DSAYs owed for the injury to floodplain habitat (up to 69,000 DSAYs). Restoration projects that will compensate for this injury amount will include protecting or enhancing habitat in the watershed. The exact amount of acres depends on the type of land (*e.g.*, agricultural, riparian, forested) and quality of habitat (whether, for example, it is contiguous, disturbed, fragmented), and how much active restoration may be required. This analysis was driven by bird data, but more broadly represents injury to floodplain resources, as the types of restoration that will restore floodplain and riparian habitat will have benefits to other resources as discussed in Section 4.3.4.

3.4.5 Wetland Floodplain (Amphibians)

The assessment area supports a variety of amphibian and reptile species. For the purposes of claim development, Trustees focused on amphibians due to their specific habitat requirements of ephemeral ponds for breeding, and because the Trustees had a considerable amount of data on amphibians (toads). To demonstrate injury to amphibians/wetland habitat within the assessment

area, Trustees used site-specific toxicity and effects data, as well as population models developed from these data.

Bergeron *et al.* (2010) collected adults from three amphibian species – red-backed salamander (*Plethodon cinereus*), northern two-lined salamander (*Eurycea bislineata*), and American toad (*Anaxyrus americanus*) – and larvae from the latter two species along a contamination gradient on the SR. Total mercury concentrations in the contaminated area were 3.5 to 22 times higher than in the reference area. Subsequent field and lab studies examined the effects of the elevated mercury levels on amphibian survival, reproduction, and behavior (*e.g.*, Burke *et al.* 2010; Bergeron *et al.* 2011a, b; Todd *et al.* 2012; Willson *et al.* 2012). Multigenerational studies on the impacts of elevated mercury levels in American toad were conducted over several years, generating some of the key findings used in the injury analysis (Bergeron *et al.* 2011a, b; Willson *et al.* 2012; Willson and Hopkins 2013). These studies informed a landscape-scale population model, which showed that in a mercury-contaminated network of wetlands, annual American toad productivity is reduced 68% relative to an uncontaminated network (Willson and Hopkins 2013).

These studies informed the HEA model used to estimate the amount of DSAYs owed for the acres of wetland habitat in the assessment area (up to 6,000 DSAYs). Restoration compensating for the wetland injury will include protecting or enhancing wetland habitat in the watershed, or creating new wetland habitat. The exact number of acres required depends on the quality and expected benefits of the project.

3.4.6 Recreational Fishing

In addition to the ecological services, natural resources within the assessment area provide recreational services. For example, the aquatic habitat and fishery resources of the assessment area provide anglers with extensive opportunities for recreational fishing. The SR and SFSR support a regionally significant recreational fishery, with smallmouth bass being the most sought-after game fish. Though trout fishing occurs in some areas along the SR, trout are stocked and safe for consumption, so the trout fishing was not part of this injury analysis. This section describes the Trustees' approach to quantifying the losses in recreational fishing resulting from contaminant-related Fish Consumption Advisories (FCAs) due to mercury.

FCAs in the assessment area have been in place since 1977, and limit consumption of certain types of fish on the SR, SFSR, and the Shenandoah River (Virginia Department of Health (VDH) 2013). Advisories due to mercury range from “Eat no more than one meal per month – certain species” to “Eat none – all species.” Table 4 provides a summary of the FCAs within the assessment area from 1977 to the present.

The selected approach for quantification of damages was estimation of the total lost and diminished recreational fishing trips in the assessment area during the time period of 1981 through 2030, calculated in “present value trip equivalent losses.” This approach involves first estimating fishing pressure, and the number of “avoided trips,” those that were lost due to anglers who avoid fishing waters with FCAs, and “diminished trips,” those with a diminished experience due to the FCA. The analysis relied upon Virginia fishing license data and site-specific creel surveys (Bowman 1997, Reeser 2011) to provide estimates of the annual fishing pressure. From these data, Trustees estimated the number of trips that occurred in the assessment area between 1981 and 2030 (*e.g.*, baseline trips). To help facilitate settlement, the Trustees accepted a literature-based assumption that 10% of the baseline trips were avoided due to the FCA. Diminished trips were calculated using the results of Jakus *et al.* (1997) to adjust Trustees estimate of fishing trips into lost trip equivalents based on a percentage loss in value due to the presence of contamination. Based upon this review, lost trips were estimated at no more than 1.3 million present value trip-equivalents.

Table 4. Mercury FCAs on the SR, SFSR, and Shenandoah River (adapted from VDH 2013).

Waterbody and Affected Boundaries	Affected Localities	Species	Advisories/Restriction
South River from the footbridge at E. I. DuPont Co. in Waynesboro approximately 24 miles to the confluence with the North River at Port Republic (6/7/77; modified 3/29/01)	Waynesboro City, Augusta Co., and Rockingham Co.	All species except trout	DO NOT EAT. Stocked trout have been tested and are safe for consumption.
South Fork Shenandoah River downstream from Port Republic to the confluence with North Fork Shenandoah River, North Fork Shenandoah River from mouth of the river upstream to Riverton Dam, and Shenandoah River from the confluence of North and South Forks to Warren Power Dam just north of Front Royal. These river segments comprise approximately 105 miles. (6/7/77; modified 3/29/01)	Warren Co., Page Co., Rockingham Co., and Augusta Co.	All species	No more than two meals/months.

CHAPTER 4 PROPOSED RESTORATION ALTERNATIVES – ECOLOGICAL AND RECREATIONAL

To compensate the public for injuries (*e.g.*, service losses) to natural resources resulting from releases of mercury from the Facility, the Trustees are required to develop alternatives for the “restoration, rehabilitation, replacement, and/or acquisition of the equivalent of the natural resources and the services those resources provide” (42 C.F.R. §11.82 (a)). DuPont’s settlement with the Trustees for natural resource damages includes a cash payment of approximately \$42 million to be utilized in funding these types of projects as well as renovation of the Front Royal Fish Hatchery (FRFH) to be performed directly by DuPont (as part of recreational fishing compensation).

This chapter describes the Trustees’ restoration objectives and proposed restoration alternatives to compensate for the ecological and recreational injuries. Several restoration projects were proposed to the Trustees that are: 1) not expected to provide natural resource services similar to injured/lost services, or to provide services in a cost-effective way; 2) already required or funded in non-NRDAR contexts; and/or 3) lacks sufficient detail to permit analysis. These projects are summarized in Appendix C.

Below, the Trustees outline the following restoration alternatives:

Alternative	Description
A	<ul style="list-style-type: none"> No Action, no projects implemented
B	<ul style="list-style-type: none"> Projects to improve water quality and fish habitat Mussel propagation Neotropical migratory songbird full life cycle restoration Land protection, property acquisition, and recreational and wildlife enhancements. Recreational fishing improvement projects
C	<ul style="list-style-type: none"> All components of Alternative B, and Trout stocking and management

Trustees evaluated the alternatives to determine if they provide sufficient type, quality, and quantity of ecological services to compensate for those lost due to contamination in the context of both site-specific and regulatory evaluation criteria (43 C.F.R. §11.82 (d)) and compliance with potentially applicable laws. The Trustees may implement restoration projects that are not specifically identified in this Draft RP/EA, but are similar to those projects identified and consistent with restoration objectives. Any project not reviewed within the Draft RP/EA will be evaluated against the site specific and regulatory criteria, and if a project uses alternative techniques other

than described below, a project-specific NEPA determination will be made and public notice will be given to provide details on the new project proposal.

4.1 Restoration Objectives

The Trustees' overall ecological restoration objective is to compensate the public for past and expected future ecological losses due to Facility-related contamination in the assessment area. DuPont is currently designing and implementing remedial actions along the SR; however, the remedy is expected to take many years to complete and the effectiveness is yet unknown, so losses are expected to continue indefinitely into the future. The release of mercury has impacted the ability of trust resources to provide their baseline level of ecological services. Therefore, the Trustees focused on restoration projects that will compensate the public by providing additional (*e.g.*, above and beyond baseline) ecological services in or near the assessment area.

The Trustees' overall recreational fishing restoration objective is to compensate the public for interim and expected future recreational fishing losses due to mercury contamination in the assessment area. Since 1977, a FCA has been issued for rivers in the assessment area due to mercury contamination, and is expected to continue well into the future. The FCA has impacted recreational anglers by reducing the quality of fishing opportunities in the assessment area. Therefore, the Trustees focused on restoration projects that will compensate recreational anglers by creating new or improving existing fishing opportunities in or near the assessment area.

The following sections describe the no action alternative, as well as the characteristics and benefits of restoration alternatives evaluated as part of this process to compensate for both ecological and recreational fishing injuries.

4.2 Alternative A: No Action Alternative (Natural Recovery)

As required under NEPA, the Trustees considered a restoration alternative of no action. Under this alternative, the Trustees would rely on natural recovery and would take no direct action to restore injured natural resources or compensate for interim lost natural resource services. This alternative would include the continuance of ongoing monitoring programs, such as those initiated by VDEQ for fish, but would not include additional activities aimed at reducing contamination, reducing potential exposure to contaminants, or enhancing ecosystem biota or processes. Under this alternative, no compensation would be provided for interim losses in resource services.

Under the no-action alternative, no habitats would be preserved, restored, or enhanced beyond what agencies and organizations are already doing in the area with limited existing resources. Aquatic and riparian habitats would continue to be degraded along the SR and SFSR and in adjacent habitats. Water quality would continue to be impaired. Neotropical migratory birds would continue to decline because of continued contamination and threats to wintering habitat. Fishing and boating recreational opportunities would continue to be limited by access points and impaired fishing stocks. Local citizens would not benefit from improved recreational opportunities and increased education and stewardship.

4.3 Alternative B: Preferred Restoration Alternative

The Trustees considered a broad set of restoration alternatives that could potentially improve ecological services and recreational fishing services relevant to the assessment area. These restoration alternatives are expected to provide natural resource services similar to the services that the injured habitat would have provided but-for the mercury contamination. In addition to those proposed by Trustee agencies, alternatives were solicited from DuPont through cooperative discussion, and from stakeholders through meetings and discussions with local governments, conservation organizations, and academic researchers (see Appendix A).

The broad categories of proposed restoration alternatives are listed below, and are expected to increase habitat quality and quantity, promote habitat connectivity, create new public use opportunities, and benefit trust resources within the SR/SFSR watershed.

4.3.1 Projects to improve water quality and fish habitat

These projects would include agricultural BMPs that would improve 35-foot riparian zones along the SR, SFSR, and tributaries, and could include exclusion fencing, natural channel design projects, as well as urban BMPs such as stormwater pond improvements and impervious cover management. These projects would benefit small mammals, birds, amphibians, reptiles, and fish by providing habitat and improving water quality through reducing erosion and runoff.

4.3.2 Freshwater Mussel Restoration

These projects would focus on improving the mussel community in the SR, SFSR, and tributaries. Projects would focus on mussel propagation and restocking efforts. Because of the depauperate mussel community in the SR and SFSR, propagation efforts are necessary to increase numbers and re-establish stable mussel populations of nine species, which would otherwise not be achieved through habitat improvements alone. Riparian habitat improvement will also benefit mussels, but by itself would not return populations to healthy numbers. Mussel restoration projects have ancillary benefits to fish and wildlife species by improving water

quality, stabilizing sediment, enhancing bottom structure, and increasing food abundance (Vaughn and Hakenkamp 2001, Vaughn *et al.* 2008).

4.3.3 Neotropical Migratory Songbird Full Life Cycle Restoration

These projects would focus on habitat protection, enhancement, and/or restoration specific for migratory songbirds, and may include restoration activities located throughout their full life cycle (*e.g.*, breeding, migration, or wintering habitat protection or enhancement). Because of the importance of wintering habitat on the health, migration, and breeding success of neotropical migrants (*e.g.*, Marra *et al.* 1998, Bearhop *et al.* 2004, Norris *et al.* 2004), the Trustees will give specific consideration to projects that protect wintering habitat.

4.3.4 Land protection, property acquisition, and recreational and wildlife enhancements

This project category focuses on protection, enhancement, and/or restoration of riparian and floodplain habitat within the SR/SFSR watershed. Biologically and/or ecologically important land(s) would be purchased and held in perpetuity for public benefit. Such land(s) should benefit the same natural resources that were injured from Facility releases; reduce habitat fragmentation; directly support or benefit key biological resources, including wildlife and fish habitat, rare species occurrences, natural communities, wetland features, or other sensitive or unique attributes; and will be receive additional consideration if under threat of development, in close proximity to Virginia-owned lands or other protected lands, or of interest to environmental and international organizations. Enhancement activities on the subject parcels may include, but are not limited to: converting row crop and pasture/hay to forest (riparian or upland), invasive species control, wetland restoration and grassland creation (in certain areas). Actions related to habitat creation will maximize the use of low impact techniques as to not create additional disturbances.

Currently, one specific parcel is known to be available for acquisition, Cowbane Wet Prairie State Natural Area Preserve (CWP NAP) – Willets Tract Addition and Forest Restoration. This parcel is evaluated as a potential restoration site in Section 5.3.4. Additional properties are not yet identified; opportunities for land acquisition and protection will be evaluated as they arise, prioritizing those that contain the following features and opportunities:

- *Wetland Acquisition, Enhancement, and/or Restoration.* Protection, enhancement, and/or restoration of wetlands, with specific emphasis on ephemeral/sinkhole pond habitat of amphibians, that would provide benefits to a wide array of birds, amphibians, reptiles, mammals and fish and also serve as floodwater retention and groundwater recharge areas.

This could include planting buffers around existing wetlands or restoring hydrology to impacted wetlands, among other activities.

- *Amphibian and Reptile Habitat Enhancement and/or Restoration.* Habitat protection, enhancement, and/or restoration with specific emphasis on turtle breeding habitat. This may include creating in-stream basking habitat, or planning restoration to include characteristics of desirable breeding habitat.
- *Bat Habitat Enhancement and/or Restoration.* Habitat protection, enhancement, and/or restoration with specific emphasis on bat habitat, such as protecting hibernacula or known breeding habitat, and related activities such as surveys or outreach.
- *Waterfowl Habitat Enhancement and/or Restoration.* Habitat protection, enhancement, and/or restoration with specific emphasis on waterfowl breeding habitat. This may include addition of nest boxes for wood ducks, or targeting properties with existing waterfowl habitat for protection or restoration.
- *Recreational Fishing Access.* These projects include creating new and/or improving existing access to the river for recreational opportunities, specifically fishing.
- *MCI Habitat Protection/Restoration.* These projects would focus on protecting/restoring habitat used by the federally listed threatened MCI.

4.3.5 Recreational Fishing Improvement Projects

Recreational fishing projects will be prioritized that accomplish the following:

- Restore numbers of fishing trips
- Increase the value of individual trips
- Provide alternate fishing experiences with options for safe consumption
- Include outreach and mercury education efforts to inform public of actual risks and provide improved river access and opportunities for high quality water-contact recreation

This category will include the modification and improvement of the Virginia Department of Game and Inland Fisheries (VDGIF) FRFH located in Shenandoah County, VA. The FRFH is currently used to produce a variety of cool-water and warm-water fish species; however, the FRFH is an older facility, and requires modifications and updates to improve its ability to produce warm-water fish such as smallmouth bass, a sport fish highly valued by the public in the SR/SFSR watershed.

This category will also include creation of new or improvement of existing recreational fishing access points. The access point establishment may co-occur with land acquisition opportunities whenever possible, and greatest consideration will be given to those projects that provide significant enhancement of recreational fishing opportunities. However, there may be projects to

create or improve river access on the SR and SFSR that would effectively restore or increase the value of a fishing trip, but would not restore other resources, nor be compatible with the prioritization defined for land acquisition. The Trustees will also evaluate potential fishing access points separately from other land acquisition projects as opportunities are identified along the SR and SFSR.

4.4 Alternative C: Non-preferred Restoration Alternative

Alternative C includes all components of Alternative B (see Section 4.3 for descriptions), as well as enhanced trout management or increased trout stocking in the SR. In this Alternative, funding for projects to improve water quality and fish habitat (*e.g.*, agricultural and urban BMPs in the SR/SFSR watershed) would be reduced to allow funding for the trout management project.

4.4.1 Recreational Fishing Improvement Projects – trout stocking or management

This project will focus on improving trout fishing opportunities in the SR that allow safe consumption, where allowed by regulation, of harvested fish. The SR has well-established seasonal trout fisheries in and around Waynesboro and Grottoes. A special-regulation, year-round trophy section exists on the SR upstream of Waynesboro. This project would aim to expand stocking in the SR, through purchase of more and/or larger fish, or through development and construction of a grow-out and holding facility. This project would provide narrow benefits to trout anglers, or possibly anglers with no preferred target fish, in certain sections of the SR.

CHAPTER 5 EVALUATION OF ALTERNATIVES

The Trustees' primary goal in this chapter is to identify a preferred restoration alternative that compensates the public for natural resource injuries and associated losses resulting from the mercury releases within the assessment area. Trustees assess the environmental consequences of *Alternative A: No Action/Natural Recovery*, *Alternative B: Preferred Restoration Alternative*, and *Alternative C: Non-preferred Restoration Alternative* to determine whether implementation of either of these alternatives may significantly affect the quality of the human environment, particularly with respect to physical, biological, socio-economic, or cultural environments. This chapter also evaluates readily available information on environmental consequences of the preferred restoration alternatives and potential impacts on the quality of the physical, biological and cultural environment, and thus serves as a draft EA for the DuPont Waynesboro NRDAR Preferred Restoration Alternative.

The following definitions will be used to characterize the nature of the various impacts evaluated in this Draft RP/EA:

- *Short-term or long-term impacts.* In general, short-term impacts are those that would occur only with respect to a particular activity or for a finite period. Long-term impacts are those that are more likely to be persistent and chronic.
- *Direct or indirect impacts.* A direct impact is caused by a proposed action and occurs contemporaneously at or near the location of the action. An indirect impact is caused by a proposed action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action.
- *Minor, moderate, or major impacts.* These relative terms are used to characterize the magnitude of an impact. Minor impacts are generally those that might be perceptible but, in their context, are not amenable to measurement because of their relatively inconsequential effect. Moderate impacts are those that are more perceptible and, typically, more amenable to quantification or measurement. Major impacts are those that, in their context and due to their intensity (severity), have the potential to meet the thresholds for significance set forth under NEPA (40 C.F.R. § 1508.27) and, thus, warrant heightened attention and examination for potential means for mitigation to fulfill the requirements of NEPA.

- *Adverse or beneficial impacts.* An adverse impact is one having unfavorable or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having positive outcomes on the man-made or natural environment. A single act might result in adverse impacts on one environmental resource and beneficial impacts on another resource.
- *Cumulative impacts.* Cumulative impacts are defined as the “impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 C.F.R. § 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time within a geographic area.

5.1 Evaluation Criteria

To ensure the appropriateness and acceptability of restoration options addressing ecological losses, the Trustees evaluated each option against site-specific restoration requirements. These site-specific requirements were developed through discussions with natural resource managers at each of the Trustee agencies and with input from DuPont. Projects were also evaluated against the restoration criteria listed in the DOI damage assessment regulations (43 C.F.R. § 11.82).

Below are the criteria used to evaluate potential restoration projects as part of the DuPont Waynesboro NRDAR process. The criteria were developed by the Trustees, and reflect the “factors to consider when selecting the alternative to pursue” (NRDAR factors) as described in 43 C.F.R. § 11.82(d)(1-10).

Primary criteria:

- Relationship to the injuries giving rise to the claim for natural resource damages
 - Similarity in attributes to the injured natural resource, *e.g.*, same type and quality
 - Proximity to the SR/SFSR watershed
 - Scale of benefits (quantitative and qualitative) should be similar to the injured natural resource (*e.g.*, increase in acres/species/services)
- Likelihood of success and technical feasibility
 - Can be accomplished with the available technology
 - Similar projects have succeeded in the past
 - Costs are reasonable related to expected benefits

- Regulatory and policy considerations
 - Federal, state and local law compliance
 - Site ownership and access
 - Not otherwise required by federal, state, or local laws, regulations, permits, or licenses
 - Consistency with Trustee policy, management goals and objectives, as well as local, regional, and national restoration goals and initiatives

- Elimination rationale
 - Benefits are unlikely to result in restoration benefits in advance of the natural recovery period
 - Significant adverse environmental impacts, and such impacts are not adequately mitigated
 - Potential for significant adverse effects to human health and safety, and such effects are not adequately mitigated

Secondary criteria:

- Consistency with local, regional, and national restoration goals and initiatives
- Timeframe of potential benefits
- Self-sustainability
- Integration with existing management programs/leverage potential
- Habitat connectivity (*e.g.*, result is larger individual habitat parcels rather than multiple, smaller, disconnected parcels)
- Proximity to lands with protected status
- Benefits to protected species or sensitive or unique habitats
- Opportunities for education and outreach
- Provides measurable results – monitoring component

Additionally, actions undertaken to restore natural systems are expected to have long-term beneficial and sometimes short-term adverse impacts to the physical, biological, socio-economic, and cultural environments. In the analysis below, the Trustees examine the likely beneficial and adverse impacts of Alternatives A, B, and C on the quality of the human environment. If the Trustees conclude that the actions associated with the preferred alternative will not lead to significant adverse impacts, then the Trustees will issue a FONSI. If significant impacts are anticipated, the Trustees will proceed with an EIS to evaluate a reasonable range of restoration alternatives and the environmental consequences of those alternatives. The Trustees will continue to evaluate environmental impacts as specific projects are identified, designed and implemented. The following sections evaluate anticipated environmental consequences of the restoration alternatives in light of the NRDAR factors listed above.

5.2 *Evaluation of Alternative A: No Action/Natural Recovery*

The No Action/Natural Recovery Alternative would not initiate any restoration action outside of the currently funded remedial program. Instead, the ecosystem would attenuate to background conditions based on natural processes only, with no assistance from active environmental restoration. The Trustees considered the changes in ecological services from natural recovery and found that the No Action/Natural Recover Alternative:

- **Does not restore injured resources to baseline.** Remediation is expected to span many years and include years of monitoring after the bank stabilization actions are completed. Currently there is no guarantee that the remedial actions will reduce the continued inputs of mercury to the SR and SFSR from bank erosion. Lack of restoration beyond remedial actions will reduce the potential for resources to fully recover to baseline conditions.
- **Does not compensate the public for interim losses.** Because remedial activity will not improve the site above baseline conditions, interim losses have and will continue to accrue from continued ecological and human use injury due to mercury.

While the No Action Alternative does not *create* additional adverse impacts to the environment, and is technically feasible and cost-effective, it does not provide the ecological, recreational, and socio-economic benefits described under Alternative B. Given the long time frame until natural attenuation of mercury in the system is achieved, under the No Action Alternative adverse environmental consequences from mercury (*e.g.*, ecological and human use injuries) are expected to continue into the future and would not be mitigated through restoration actions. Otherwise stated, the No Action Alternative may result in adverse impacts to fish and wildlife, as well as reductions in the ecological and human use services, due to the lack of additional habitat functionality provided through restoration and/or preservation actions in the assessment area. Therefore, the No Action Alternative is not a favorable restoration alternative when evaluated against the NRDAR factors. This Alternative serves as a point of comparison to determine the context, duration, and magnitude of environmental consequences resulting from the implementation of Alternative B and C.

5.3 *Evaluation of Alternative B: Preferred Restoration Alternative*

Alternative B includes a suite of restoration projects that compensate for interim ecological losses and satisfy the NRDAR factors listed above (5.1). These projects will be located within the SR/SFSR watershed (Figure 5) when feasible and appropriate and include the following:

Project Category	Potential Locations	Estimated Cost
Projects to improve water quality and fish habitat – <i>Agricultural and urban BMPs in the SR/SFSR watershed (5.3.1)</i>	Headwaters of SR, tributaries to SR or SFSR, sites within the City of Waynesboro	\$ 10 million
Freshwater mussel restoration – <i>Propagation program (5.3.2)</i>	Freshwater Mollusk Conservation Center at Virginia Polytechnic Institute and State University; Virginia Fisheries and Aquatic Wildlife Center at Harrison Lake National Fish Hatchery	\$ 4 million
Neotropical migratory songbird full life cycle restoration – <i>Habitat restoration (5.3.3)</i>	Various locations	\$ 2.5 million
Land protection, property acquisition, and recreational and wildlife enhancements – <i>CWPNAP – Willets Tract addition and forest restoration (5.3.4)</i>	Property adjacent to CWPNAP	\$ 1.3 million
Land protection, property acquisition, and recreational and wildlife enhancements – <i>Additional properties, prioritizing those adjacent to SR or SFSR, creating contiguous protected land corridors (5.3.5)</i>	Locations upstream or within the City of Waynesboro, adjacent to the SR or tributaries to the SR or SFSR	\$ 18.2 million
Recreational fishing improvement projects – <i>Restoration of the VDGIF FRFH (5.3.6)</i>	Front Royal, VA	DuPont fund directly
Recreational fishing improvement projects – <i>Recreational fishing access creation/improvement (5.3.7)</i>	Locations on SR, SFSR, NFSR, or Shenandoah River, or tributaries	\$ 2.5 million

Project attributes, resource benefits, potential environmental impacts, social consequences, and costs are provided in the sections below. These projects provide compensation for the ecological injuries, at a cost of approximately \$38.5 million (the cash settlement for ecological damages). The remaining funds will be used for project restoration planning, oversight, and administration.

Restoration planning will include evaluation of these projects with input and feedback from the public as described in Chapter 1.

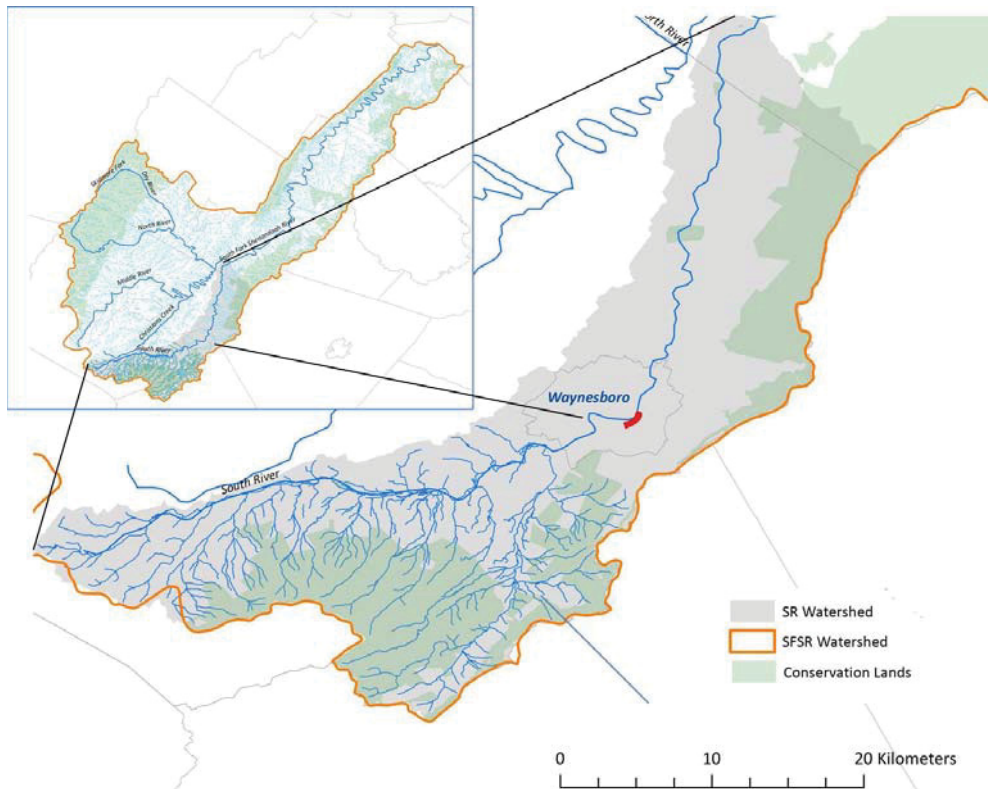


Figure 5. Map of major rivers and tributaries of SR/SFSR watershed (inset), and upstream of Waynesboro in the SR watershed (large map, shaded gray). Restoration may occur within the boundaries of these watersheds in riparian areas. Restoration activities in the headwater areas of the SR watershed (large map) will likely receive prioritization.

5.3.1 Projects to improve water quality and fish habitat - agricultural and urban BMPs in the SR/ SFSR watershed

Projects will be identified that improve water quality and habitat for native fish in the watershed through restoration actions such as planting riparian vegetation, stabilizing eroding banks, sedimentation control devices, improving in-stream habitat, installing alternative watering sources, excluding cattle from accessing the streams and other such agricultural BMPs. Other projects will be identified that improve water quality and habitat for native fish in the watershed through improvements to stormwater ponds and impervious cover management (e.g., urban BMPs).

Location:

Candidate streams for agricultural BMP restoration activities will be those where riparian vegetation is degraded or absent, preferably in the headwaters of the SR (see VDCR 2010). Headwaters will be prioritized because restoration in those areas is likely to have the greatest positive impact on the overall stream and habitat quality. Other locations may include areas along tributaries to the SR or SFSR, including those within the City of Waynesboro. To maximize the effectiveness and coverage of implementing agricultural BMPs, Trustees may partner with existing programs to identify and prioritize locations and projects.

Possible locations for urban BMPs may include any of the towns and cities along the SR and SFSR, especially the City of Waynesboro. Waynesboro has identified potential restoration projects within the city limits, focusing on urban BMPs that are not already required by other laws or regulations.

Project Description:

Possible agricultural BMPs may include erecting livestock exclusion fencing, installing alternative watering sources, planting stream-side buffer vegetation, stabilizing eroding stream banks, sedimentation control structures, natural stream channel design, and/or implementing riparian zone conservation easements. Riparian habitat protection projects provide potential to restore riverine habitats and facilitate the recovery of aquatic fauna, like mussels, within impacted watersheds (Sweeney 1993). Implementation of the habitat protection and enhancement measures can restore the natural riparian structure and function, reduce nutrient and sediment input, provide organic debris as energy source, moderate and restore naturally occurring temperature regimes, and enhance natural recovery of biota (Horwitz *et al.* 2008, Sweeney and Newbold 2014). Projects will follow the Erosion and Sediment Control Handbook (VDEQ 1992) and the Natural Resources Conservation Services (NRCS) Field Office Technical Guidelines when appropriate. Urban BMP projects may include stormwater pond restoration or impervious cover management, such as bioswales, vegetative filter strips or constructed wetlands, or pervious paving techniques.

Improving riparian buffer zones and working with local landowners on implementing agricultural BMPs within the SR/SFSR watershed will provide the benefit of improving water quality and the overall health of the aquatic ecosystem. Urban BMPs will improve water quality in the SR and SFSR as well as quality and quantity of stormwater runoff from urban areas into the rivers. Stormwater runoff may contain soil, sediment, suspended solids, or other contaminants if there is no effective erosion protection in place. Sediment and suspended solids may be detrimental to fish breeding habitat as increased turbidity reduces light penetration, increases water temperature and impacts the level of oxygen in the water. Taking action to improve stormwater runoff will improve water quality and aquatic habitat for fish and other organisms.

For this restoration category, there is flexibility to select from a variety of beneficial and appropriate restoration activities and several potential partners in the watershed to maximize the benefits and scope of these types of activities. Projects may involve establishing landowner agreements for the protection of a buffer area, or may involve easement or fee simple acquisition. The Trustees will prioritize projects with willing landowners who agree to protect the riparian buffer long-term.

Estimated Cost:

The Trustees will allocate approximately \$10 million to implement and monitor agricultural and urban BMP projects.

Expected Impacts:

Intact riparian ecosystems provide many functions, including nutrient uptake, filtering runoff, capturing sediment, canopy and shade, regulation of stream water temperature, bank stability, and input for aquatic food webs. Mature riparian vegetation contributes woody material to the stream system through deadfall, which improves in-stream habitat, reduces stream velocities, and promotes bank and substrate stabilization (Sweeney and Newbold 2014). These functions are essential to maintaining water quality, flood mitigation, aquatic species survival, and biological productivity. Additionally, riparian buffers provide or improve habitat for aquatic and terrestrial species like songbirds and bats. Riparian buffer establishment and restoration is an efficient and cost-effective approach to protect and maintain water quality, and improve aquatic habitat for fish and other organisms. Cattle exclusion provides improvements in water quality through decreased nitrogen and sedimentation, even on a small scale. These activities will replace lost resources or provide additional natural resources and services by protecting and enhancing riparian areas in the upper SR/SFSR watershed, improving recreational fishing as a result. These types of projects have the additional benefit of potential removal from the CWA 303d list if a stream segment is impaired for nutrients and/or fecal coliform. Monitoring data post-project implementation can confirm that benefits are being provided by these activities.

Some restoration activities within this category may cause minor, short-term, direct or indirect impacts, however the long-term benefits listed above are expected to outweigh any of these impacts. For example, riparian planting may cause short-term, localized impacts as existing vegetation is trampled or removed prior to planting, and there may be a period of low ecological value of the area as plants grow to their full maturity. However, long-term impacts to water resources and riparian flora and fauna would occur due to the reduced erosion and increased shelter provided by these plants, and beneficial impacts would span a large geographic area downstream. Most of the riparian restoration activities (*e.g.*, cattle fencing, planting, alternate water sources) are not expected to create potential for causing additional impacts to natural

resources, or human health and safety. Many activities within this category qualify as a categorical exclusion under NEPA (40 C.F.R. § 1508.4), and do not individually or cumulatively have a significant effect on the human environment (*e.g.*, the installation of fences and the planting of seeds or seedlings and other minor re-vegetation actions). If more substantial stream bank stabilization or construction work is required, other short-term, moderate, localized impacts are expected from grading activities, equipment use, and temporary erosion into the river(s). For more substantial stabilization or other construction projects, Trustees would follow appropriate permitting processes and environmental review, and would not pursue a project that would have significant adverse environmental impacts.

Another consequence is that any lands potentially protected by conservation easements will no longer be available for commercial, residential, or economic development (potentially affecting the market value of other properties in the area). Restoration activities and acquisition of property or establishment of conservation easements will be consistent with federal and state policies and laws promoting the conservation and protection of fish and wildlife resources.

Resources Benefited:

Aquatic Resources and Supporting Habitat				Aquatic/Floodplain		Floodplain Resources and Supporting Habitat		
Sediment/ Invertebrates	Madison Cave Isopod	Surface Water	Fish	Amphibians / Reptiles	Piscivorous Birds / Mammals	Migratory Birds	Bats	Soil / Invertebrates
✓	✓	✓	✓	✓	✓	✓	✓	✓

5.3.2 Freshwater Mussel Restoration

This restoration category focuses on restoring the mussel assemblage in the SR and SFSR. Mussel restoration has several expected ecological benefits: improving water quality through filter feeding activity; stabilizing river and stream bottoms and adding to the general biotic integrity and diversity of the river system; enhancing habitat heterogeneity; and providing important substrate and refuge for mussel host fish and sport fish eggs and providing habitat for prey items, such as insect larvae (Vaughn and Hakenkamp 2001, Vaughn *et al.* 2008). These benefits also extend to the sport fish in the river. The restored mussel assemblage will provide vital aquatic ecosystem functions such as nutrient cycling, conversion of food resources into forms readily assimilated by other organisms, and long-term storage and release of important elements such as calcium, phosphorous, and nitrogen (Nedeau *et al.* 2000).

Project Location:

Propagation activities will take place at the Freshwater Mollusk Conservation Center at Virginia Polytechnic Institute and State University as well as the Virginia Fisheries and Aquatic Wildlife

Center at Harrison Lake National Fish Hatchery. The Trustees will focus augmentation efforts within the SR and SFSR and their tributaries where habitat is suitable.

Project Description:

Because of the depauperate mussel community in the SR and SFSR, propagation is necessary to increase and establish mussel populations at multiple sites throughout the watershed. Between the two facilities, a plan will be developed to produce, release, and monitor target mussel species, and suitable sites will be identified in the SR and SFSR for introducing the propagated mussels into the rivers. Target species may include those listed in Table 5. The process for propagating listed and non-listed mussels has been developed and refined over the past two decades and is currently at a state where most mussel species can be propagated (O'Beirn *et al.* 1998, Henley *et al.* 2001, Jones *et al.* 2005, Barnhart 2006). Propagation and culture technology has greatly improved for mussels in the last 5 years, making population restoration at a large-scale possible (Carey *et al.* 2015). Each of the facilities can produce thousands of mussels per year for stocking. Propagation efforts will include collecting gravid females from the wild, artificially infecting host fish with mussel larvae in the laboratory, then collecting and holding transformed juvenile mussels. Mussels and host fish are held in the laboratory in recirculating systems for the majority of this process. Juvenile mussels are held in captivity for 1-3 years to improve the survival rate of the released cohort.

In addition to propagation, adult mussels of several species may be translocated from other areas within the watershed to facilitate restoration of the mussel assemblage. Mussel translocation by itself is not considered to be a viable option for mussel population restoration as it does not produce a net gain in mussels in the river. However, translocation of some species could potentially enhance the rate at which mussel restoration is achieved by creating conditions that are supportive of a stable mussel assemblage. Several issues must be considered in a restoration plan before any mussel translocation could take place. Surveys would be required to identify appropriate source populations. These surveys must include baseline information such as size/age structure and sex ratios to assess possible impacts of removing adult mussels from donor sites (*e.g.*, Cacapon River). Some work may be required to address concerns about the genetic relatedness, or lack thereof, of certain source populations and mussel populations within the SR/SFSR watershed.

Mussel translocation projects have met with mixed success (Sheehan *et al.* 1989, Cope and Waller 1995, Carey *et al.* 2015), therefore, a translocation plan would have to be developed that includes protocols for yearly monitoring to determine success and detect potential problems and provide assurance that those issues would be rectified. It is likely that several years of translocation efforts would be necessary for each species that meets predetermined criteria for translocation.

Table 5. Mussel species targeted for restoration in the Shenandoah River system as part of the DuPont NRDAR, along with a short description of propagation difficulty and notes on distribution and conservation status.

Species	Propagation Difficulty	Notes
Eastern elliptio, <i>Elliptio complanata</i>	Difficult; host fish are poorly understood, especially for juvenile mussel production in a hatchery setting.	This is a keystone species due to its high abundance and filtering capacity.
Northern lance, <i>Elliptio fisheriana</i>	Moderately Difficult; host fish are known for this species, but utilization for juvenile mussel production in a hatchery will need to be improved.	Species is of conservation concern in Virginia, extremely rare in Shenandoah River system, but strong populations occur in other Potomac River tributary streams (e.g. Broad Run)
Triangle floater, <i>Alasmidonta undulata</i>	Moderately Difficult; host fish are known for this species, but culture techniques for juveniles in the Anodontine mussel group needs improvement.	Widely distributed species but generally locally uncommon. Obtaining gravid female mussels may be challenging.
Plain pocketbook, <i>Lampsilis cardium</i>	Easy; host fish are well known and juvenile production capacity is high.	Technically feasible.
Green floater, <i>Lasmigona subviridis</i>	Moderately Difficult; host fish are known, but their utilization for juvenile mussel production in a hatchery will need to be improved. Host fish may not be necessary since glochidia can transform to the juvenile stage directly in gills of the female mussel. However, culture of juveniles in the Anodontine mussel group needs improvement.	Species is of conservation concern in Virginia, extremely rare in Shenandoah River system, but strong populations occur in other Potomac River tributary streams (e.g. Cacapon River).
Brook floater, <i>Alasmidonta varicosa</i>	Moderately Difficult; host fish are known, but culture techniques for juveniles in the Anodontine mussel group needs improvement.	Species is of conservation concern in Virginia, extremely rare in Shenandoah River system, but strong populations occur in other Potomac River tributary streams (e.g., Cacapon River).
Creeper, <i>Strophitus undulatus</i>	Moderately Difficult; host fish are known, but their utilization for juvenile mussel production in a hatchery will need to be improved. Host fish may not be necessary since glochidia can transform to the juvenile stage directly in gills of the female mussel. However, culture of juveniles in the Anodontine mussel group needs to be improvement.	Widely distributed species but generally locally uncommon. Obtaining gravid female mussels may be challenging. However, a population occurs in the SR upstream of Waynesboro, VA.
Yellow lampmussel, <i>Lampsilis cariosa</i>	Moderately Difficult to Easy; host fish are well known and juvenile production capacity is high.	Species is of conservation concern in Virginia, extremely rare in Shenandoah River system, but populations occur outside the Potomac River system (e.g. lower Nottoway River, VA). Obtaining gravid female mussels may be challenging.

Eastern floater, <i>Pyganodon</i> <i>cataracta</i>	Moderately Difficult to Easy; host fish are well known and juvenile production capacity is high. However, culture of juveniles in the Anodontine mussel needs improvement.	Species is extremely rare in Shenandoah River system, but is widely distributed and common in the lower reaches of Atlantic Slope Rivers, including the Potomac and Rappahannock rivers.
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All mussel restoration projects must be monitored during and beyond the propagation phase to document that the mussels reach sexual maturation and to document recruitment—an important indicator of a successful restoration. Monitoring is also needed to ensure that augmented individuals within a population reach ages similar to those found in the watershed. Mortality, recovery, and fitness indicators such as, growth and fecundity, may also be monitored for each species.

Propagation of these species is technically possible; several of them have been propagated successfully at the facilities in Virginia. Expected challenges for those species that have not yet been propagated include locating broodstock, and other standard challenges with propagation. Due to the experience of staff at each of the facilities, there is a high probability of identifying and managing challenges associated with propagation of new species.

Estimated Cost

Anticipated cost is \$4 million for a multi-year propagation program at two mussel facilities.

Expected Impacts:

The environmental consequences of propagating freshwater mussels to restore populations are positive. Augmentation activities provide several benefits in addition to reestablishing substantially extirpated populations. Propagation and release of mussels help to: 1) increase the re-colonization rates of species into suitable habitat, 2) increase the likelihood of recruitment into currently occupied habitat, 3) increase the chance of species’ continued existence in currently occupied river reaches, and 4) stabilize declining populations of non-listed species which in turn may preclude the need for future federal or state listing actions. The reintroduction of native, formerly native, or established species into suitable habitat within their historic or established range, where no or negligible environmental disturbances are anticipated is an activity that qualifies as a categorical exclusion under NEPA (40 C.F.R. § 1508.4), and does not individually or cumulatively have a significant effect on the human environment.

Resources Benefited:

Aquatic Resources and Supporting Habitat				Aquatic/Floodplain		Floodplain Resources and Supporting Habitat		
Sediment / Invertebrates	Madison Cave Isopod	Surface Water	Fish	Amphibians / Reptiles	Piscivorous Birds/ Mammals	Migratory Birds	Bats	Soil / Invertebrates
✓		✓	✓		✓			

5.3.3 Neotropical Migratory Songbird Full Life Cycle Restoration – through Habitat Restoration

Additional land protection that will specifically benefit the habitat of neotropical migratory songbirds impacted in the assessment area, including warblers, flycatchers and thrushes, will be another preferred restoration component. Because these species migrate along the Eastern Flyway and make bi-yearly journeys across the United States, impacts stemming from the DuPont Facility result in reductions throughout the flyway, where they feed and rest and provide enjoyment to numerous bird watchers along the way. To restore these migratory birds for the benefit of both the area where the injury occurred in Virginia and throughout the flyway, the Trustees propose to support restoration activities that would consider their full life cycle (e.g., breeding, migration, or wintering habitat protection or enhancement).

Effective restoration efforts for neotropical songbird migrants should include both breeding and wintering habitats. Protecting wintering habitat is especially important as winter food limitations cause mortality on wintering grounds as well as increase mortality during migration (Holmes 2007). Studies describe measurable carry-over effects that poor quality wintering habitat may have on a songbird’s health and migration timing, breeding success, survival rates, and ultimately population changes (e.g., Marra *et al.* 1998, Sillett *et al.* 2000, DeSante *et al.* 2001, Bearhop *et al.* 2004, Norris *et al.* 2004, Saracco *et al.* 2008), further emphasizing the need for wintering habitat protection to fully restore these species.

Full life cycle habitat restoration supports other DOI efforts to protect migratory birds such as the National Park Service Park Flight Program and FWS Neotropical Migratory Bird Conservation Program, as well as state-led efforts like the Association of Fish and Wildlife Agencies Southern Wings Program.

Project Location:

Trustees will focus on opportunities with demonstrated connectivity of the location(s) with the species that breed in the SR/SFSR watershed.

Project Description:

Projects would focus on protecting habitat for species found in the SR/SFSR watershed during the breeding season. Potential projects will likely include acquisition and long-term protection of existing habitat, with little active restoration needed. Trustees would target those properties with evidence of supporting shared migratory bird species that are adjacent to protected lands, and may be owned by an established organization that will provide oversight and monitoring.

Other projects may include restoration and rehabilitation of degraded tropical forests to improve wintering habitat or working within farming communities to promote sustainable agriculture to provide wildlife habitat. These would involve encouraging agroforestry over intensive clearing and traditional agriculture which provide very limited habitat benefits to migratory birds and require significant quantities of pesticides and fungicides. Extensive monitoring has shown that the abundance, richness, and diversity of neotropical migrant species in agroforestry systems are significantly greater than in agricultural monocultures or pastoral areas (Perfecto *et al.* 1996, Estrada and Coates-Estrada 2005, Harvey and Gonzalez Villalobos 2007), and that agroforestry systems provide important refugia for resident and migrant birds.

Projects in this category will be evaluated with the following considerations:

- an associated U.S. non-profit or organization will manage/oversee transaction and manage/oversee in-country efforts
- property is adjacent to already protected land
- there is high risk of development
- acquisition is cost-effective
- there is a high benefit to species, and documented overlap in species composition
- long-term monitoring is possible

Estimated Cost:

Trustees anticipate that this project will cost no more than \$2.5 million.

Expected Impacts:

For projects that only involve acquisition and protection of existing habitat, beneficial impacts are expected. Land would be protected rather than converted to agriculture or developed, providing high quality wintering habitat for migratory songbirds.

Enhancement activities are likely to include planting of forest (encouraging agroforestry) or invasive species management. These actions are expected to cause minor, short-term, localized impacts to existing resources and resource services, and result in moderate long-term benefits across a broad geographic scope.

Some restoration activities may, depending upon availability and suitability and life cycle needs of the species found in the SR/SFSR, occur outside of Virginia. Any activity will take in to account the nature of the linkage to related species adversely affected by the mercury contamination and potential positive impact to those populations. Bird injury was both a driver of the floodplain analysis, and a significant stand-alone injury requiring focused restoration activities,

5.3.4 CWPNAP - Willets Tract Addition and Forest Restoration

The primary goal of this restoration project is to protect and restore habitat along the SR that will benefit multiple resources and expand the area of already protected Virginia-owned lands. This project is evaluated separately from the category of “Land protection, property acquisition, and recreational and wildlife enhancements” because it is known to be available for acquisition at the time of preparing this Draft RP/EA.

Project Location: Augusta County, VA, along the south bank of the SR and adjacent to CWPNAP (Figure 6)

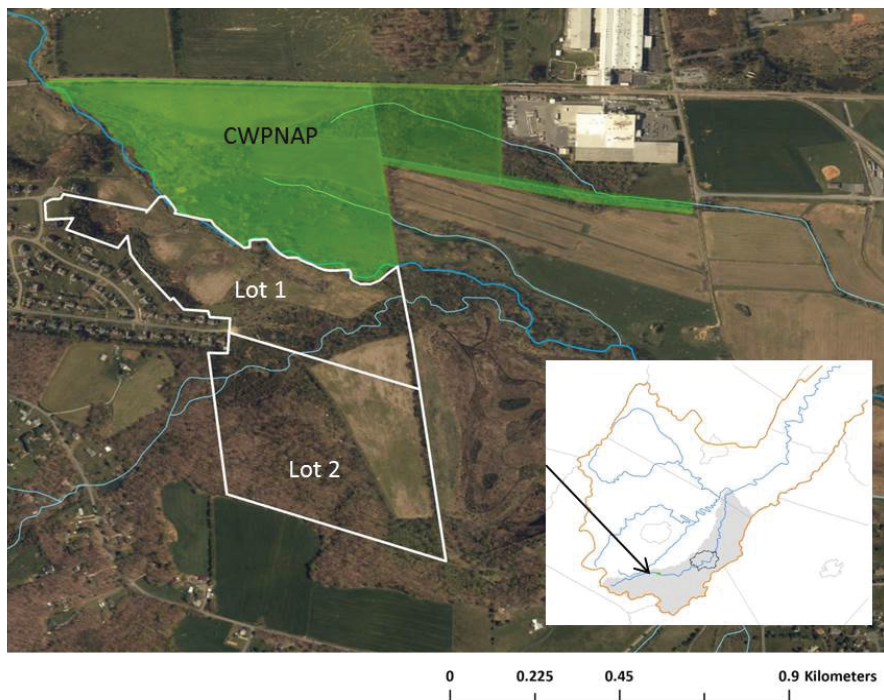


Figure 6. Willets Tract addition and forest restoration outlined in white (Lot 1 and 2), and CWPNAP in green shading.

Project Description:

CWPNAP is a 63-acre property along the north bank of the SR, owned and managed by the Virginia Department of Conservation and Recreation (VDCR) in Augusta County, VA. This property is part of a larger conservation site known as the “South River Wet Prairies” which has been assigned the highest possible biodiversity rank (“B1”) a site can receive in the Commonwealth. This rank stems from the presence of King Rail (*Rallus elegans*), an assemblage of documented rare plants (currently 17 taxa) and four distinct natural communities, including one of the last known examples of fire-maintained Shenandoah Valley natural grassland communities. At least 77 bird species have been recorded from the site (eBird 2016). At least one FWS Focal Species, the King Rail, and an additional bird species, the Grasshopper Sparrow (*Ammodramus savannarum*) considered to have “high regional threats” (Rosenburg 2003), are documented here. This area also overlaps with the potential ranges of federally listed endangered smooth coneflower (*Echinacea laevigata*) and Indiana bat, as well as federally listed threatened species such as swamp pink (*Helonia bullata*), Virginia sneezeweed (*Helenium virginicum*), MCI, and northern long-eared bat. The high quality prairie, wet meadows, and associated open habitats provide benefits for declining species which require such habitats, while wooded riparian forests provide benefits for other species which prefer these habitats.

Adjoining the VDCR owned and managed CWPNAP is an approximately 15 acre preserve managed jointly by VDCR and The Nature Conservancy. Prescribed fire is a critical management tool used across both ownerships to conserve the unique and outstanding biodiversity present. Continued use of prescribed fire at the site will require protecting adjacent parcels to serve as buffers from nearby smoke sensitive residential development. Moreover, a Virginia Conservation Vision Development Vulnerability model maps these adjacent parcels, and the entire perimeter of this conservation site, in the high degree of threat from development (Hazler *et al.* 2016). Thus, acquiring buffer parcels is a timely and critical need for maintaining habitat quality and supporting necessary management activities.

Two tracts are under negotiation and are currently available for acquisition and addition to the CWPNAP. These comprise ~84 acres directly adjacent to the existing state Natural Area Preserve and share approximately ½ mile of common boundary. In addition to providing critical fire management buffers, these parcels would expand habitat connectivity across the SR creating contiguous riparian area protection for approximately 2,037 ft on both sides of the SR, as well as along approximately 2,095 ft of currently unprotected riparian area along both sides of the riparian area along Stony Run, a main tributary of the SR.

The subject parcels have been zoned for residential development, and the current owner has proposed to use the parcels to expand a subdivision which has already been developed immediately to the west. Currently these tracts consist of a mix of active agricultural fields

(approximately 29%), mostly within the floodplain, fallow fields partially reverted to scattered trees/shrubs (approximately 28%), and existing, primarily upland forest (approximately 43%). If acquired, all existing forest would be maintained. Reverting fallow fields would be improved by reducing invasive species presence and all recently cropped fields (approximately 25 acres) would be restored to native hardwood forest. Restored and managed hardwood forests will provide water quality and retention benefits, as well as improved cover, foraging, and nesting habitat for many bird species throughout the year. Taken together, this project would expand opportunity for ecological restoration, increase riparian area protection, buffer the core Natural Area Preserve from external threats, and expand protection for at least one bird species of special concern as well as the other significant natural heritage resources present.

Parcels to be acquired include Lot 1 and 2, identified on Figure 6 above.

Estimated Cost:

Cost for acquisition: \$1,053,000 for Lot 1, Parcel ID 083C2 1 (34 acres) plus Lot 2, Parcel ID 083C2 1B (50 acres). Cost for restoration and monitoring activities: \$265,779.

These costs include acquisition of the parcel, plus purchase and establishment of oak and walnut seedlings and tree shelter, weed control activities prior to planting, and invasive plant monitoring and control.

Expected Impacts:

The acquisition of real property is an activity that qualifies as a categorical exclusion under NEPA (40 C.F.R. § 1508.4), and does not individually or cumulatively have a significant effect on the human environment. The restoration activities will result in direct and indirect, short-term, localized minor impacts on natural resources such as soil, sediment and vegetation. Impacts will be primarily related to weed control and elimination of agricultural crops prior to converting to forested habitat, *e.g.*, a short period of limited or no vegetation cover, some impacts from machinery, and temporary soil erosion in construction areas. The potential adverse effects are outweighed by the potential long-term direct and indirect benefits of creating riparian forested habitat adjacent to CWP NAP as discussed above. In summary, restoring riparian habitat from fallow fields to forest will improve water quality and retention, provide habitat for many bird species throughout the year, and provide protection for a significant natural heritage site long-term. No cultural resources are expected to be impacted; no soil disturbing activities are planned for the CWP NAP addition. Table 6 and 7 contain additional analysis of the anticipated beneficial impacts of the proposed acquisition.

Resources Benefited:

Aquatic Resources and Supporting Habitat				Aquatic/Floodplain		Floodplain Resources and Supporting Habitat		
Sediment / Invertebrates	Madison Cave Isopod	Surface Water	Fish	Amphibians / Reptiles	Piscivorous Birds/ Mammals	Migratory Birds	Bats	Soil / Invertebrates
✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 6. Evaluation Criteria for CWP NAP restoration/addition.

RELATIONSHIP TO THE INJURIES (giving rise to the claim for natural resource damages)

<ol style="list-style-type: none"> 1. SIMILARITY IN ATTRIBUTES TO THE INJURED NATURAL RESOURCE, same type and quality 2. LOCATION - proximity to SR/SFSR watershed 3. SCALE OF BENEFITS OF THE PROPOSED PROJECT - quality/quantity benefits provided by project (increase in acres, species, etc.) 	<p>Similar, or more diverse, natural resources to those that were injured in the assessment area. Location within the same watershed, upstream on SR. Project would create an increase of acres of highly valued, protected area.</p>
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LIKELIHOOD OF SUCCESS AND TECHNICAL FEASIBILITY

<ol style="list-style-type: none"> 4. PROVEN TECHNOLOGY - can project be accomplished with available technology? 5. DOCUMENTED SUCCESS - has a similar project succeeded in the past? 6. COST EFFECTIVENESS - are costs reasonable related to expected benefits? 	<p>No advanced technology required for restoration activities. Standard restoration methods would apply. Similar projects have been successful, e.g., regular restoration activities at CWP NAP. Cost effective, as VDCR will provide in-kind contributions.</p>
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REGULATORY AND POLICY CONSIDERATIONS

<ol style="list-style-type: none"> 7. FEDERAL, STATE AND LOCAL LAW COMPLIANCE 8. SITE OWNERSHIP AND ACCESS - do we have permission for the project? 9. PROPOSED PROJECT IS NOT "OTHERWISE REQUIRED" - by federal, state, local laws, regulations, permits, licenses 10. CONSISTENCY WITH TRUSTEE POLICY, MANAGEMENT GOALS, AND OBJECTIVES 	<p>No violation of any laws, and not required as part of any other law. Site is for sale, "shovel-ready", property owner has been cooperative.</p>
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GROUND FORS FOR PROJECT ELIMINATION

<ol style="list-style-type: none"> 1. BENEFITS OF PROJECT ARE UNLIKELY TO RESULT IN RESTORATION BENEFITS IN ADVANCE OF THE NATURAL RECOVERY PERIOD 2. PROJECT HAS SIGNIFICANT ADVERSE ENVIRONMENTAL IMPACTS 3. POTENTIAL FOR SIGNIFICANT ADVERSE EFFECTS TO HUMAN HEALTH AND SAFETY 4. POTENTIAL FOR SIGNIFICANT ADVERSE SOCIOECONOMIC EFFECTS 	<p>Benefits would not accrue if this land is not protected/restored, as this site would be developed otherwise. Short-term environmental impacts may be expected during restoration, but nothing of lasting significance. No anticipated adverse effects to health or safety. No adverse socioeconomic effects are anticipated.</p>
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SECONDARY CRITERIA

<p>1. CONSISTENCY WITH LOCAL, REGIONAL, AND NATIONAL RESTORATION GOALS AND INITIATIVES</p> <p>2. TIME FRAME OF POTENTIAL BENEFITS</p> <p>3. SELF-SUSTAINABILITY OF THE RESTORATION PROJECT</p> <p>4. INTEGRATION WITH EXISTING MANAGEMENT PROGRAMS / LEVERAGE POTENTIAL</p> <p>5. HABITAT CONNECTIVITY (e.g., creating contiguous habitat)</p> <p>6. PROXIMITY TO LANDS WITH PROTECTED STATUS.</p> <p>7. BENEFITS TO PROTECTED SPECIES / SENSITIVE OR UNIQUE HABITATS</p> <p>8. EDUCATION AND OUTREACH OPPORTUNITIES</p>	<p>This is consistent with state priorities (VDCR). The potential benefits are expected to start immediately for some of the restoration (protection of existing forest) and will increase over time for other (e.g., conversion of crop fields to forest), which otherwise would not happen. Because of the proximity to CWP NAP, this project will become part of that existing management program. This project will not only increase acreage of contiguous habitat, but will also provide a buffer between CWP NAP and neighboring residential areas, allowing for fire management to continue at the prairie without impacts. Education opportunities may be combined with existing programs using CWP NAP.</p>
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MONITORING

<p>1. MONITORING - will there be measurable results?</p>	<p>Monitoring/control of invasive species activities will be part of project, and will be undertaken by VDCR.</p>
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Table 7. Additional evaluation of CWP NAP restoration/addition, using acquisition-specific criteria.

SURROUNDING LAND USE AND LAND PROTECTION STATUS

<p>Does the parcel provide opportunity to avoid habitat fragmentation or protect a corridor?</p> <p>Does surrounding land use threaten the resource value of a parcel?</p> <p>Nature and likelihood of development threats</p>	<p>Acquisition of this parcel will increase the size and contiguous area of CWP NAP and provide critical buffer from development. If developed, opportunity for riparian forest restoration will be lost, existing mature forest will be converted, and habitat fragmentation will increase. In addition, development will threaten continued prescribed burning practices at CWNAP. Prescribed burning is a critical part of maintaining the unique habitat at CWP NAP, and implementation will be severely hampered by development of a residential area due to the smoke dispersal.</p>
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PRIORITY

<p>Has the parcel been identified as high priority for protection in existing local/regional land-use planning docs?</p>	<p>Long-standing VDCR priority due to rare species and natural communities, and designation as a high threat to development per the VDCR Conservation Vision Development Vulnerability model.</p>
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TYPES AND CONDITION OF NATURAL RESOURCES BENEFITED

<p>Is there evidence of rare species or habitat? Are there exemplary natural communities? Does it protect warm-water fisheries?</p>	<p>Tracts are part of a conservation site with outstanding (highest ranking) biodiversity significance, based on a large collection of rare plants, natural communities, and at least two bird species of conservation concern. Riparian buffer for more than 4,100 ft of the SR and a main tributary, Stony Run, will be protected.</p>
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COST OF PROTECTION

<p>Would this be acquisition, land transfer? Can the parcel be protected at a fair price for size and location? Is there opportunity for leveraging additional resources</p>	<p>Tracts will be acquired by VDCR at fair market value. The restoration costs will be leveraged with greater than 30% of the costs provided by VDCR matching funds. If successful acquisition is completed, it is likely that the owner of an adjacent 'Phase 2' high priority parcel will agree to work with VDCR as well.</p>
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LONG-TERM MAINTENANCE AND MANAGEMENT NEEDS

<p>Will public access be allowed? If so, is the management and degree of public access consistent with resource protection? What is potential for future management problems and costs? Are there on-site resources that need to be preserved (cultural, archaeological)?</p>	<p>Public access will be allowed, and will be consistent with VDCR's overall Natural Area Preserve guidelines seeking to balance public access and necessary management for the resources. Considering the management actions underway on existing protected lands, the VDCR and partners will maximize opportunities for efficient and expedited management activities. No cultural or archaeological resources are known on the site.</p>
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5.3.5 Land protection, property acquisition, and recreational and wildlife enhancements – riparian habitat along the SR or SFSR

Additional land acquisition will be targeted adjacent to the SR, SFSR, Shenandoah River and their tributaries to restore, enhance, or create contiguous areas of high-quality habitat for the same types of natural resources that were injured. Parts of the watershed are experiencing development pressure and have high levels of agricultural use, resulting in decreased water quality and habitat fragmentation. The purchase of lands (or conservation easements) may be accompanied by restoration and/or enhancement actions that will improve or increase habitat for a diversity of wildlife, and improve water quality through buffering impacts on sedimentation and run-off. These lands will remain protected in perpetuity.

The Trustees intend to solicit agencies, nonprofit organizations, and private citizens for proposed parcels for acquisition, and will select parcels for acquisition funding based on the priority criteria they established for acquisition and funding limitations. Project sponsors would need to identify the agency or nonprofit organization that would hold the easement or acquire the land in fee title. The Trustees have already identified one candidate parcel, described above (5.3.4).

Project Location:

Specific locations have not been determined, but potential acquisitions (with willing landowners) will be prioritized if they:

- are available for purchase within the desired timeline of the Trustees;
- are adjacent to already protected land;
- are at risk of development;
- are not already contaminated;
- provide habitat for state or federally protected species, or contain rare or unique habitat features;
- provide opportunities for wetland protection, enhancement, or restoration, that would specifically benefit amphibians that use ephemeral pond complexes for breeding;
- provide opportunities to protect or restore turtle breeding habitat, or in-stream basking habitat;
- provide opportunities to protect or restore bat habitat – hibernacula or breeding habitat;
- provide opportunities to restore or enhance waterfowl habitat, such as installation of wood duck box network;
- provide opportunities to protect quality habitat of the federally listed threatened MCI within its range in the northern Shenandoah Valley of Virginia and parts of West Virginia;
- increase public access for anglers or increase water-based recreation opportunities for the public; or
- provide opportunities to engage public in outreach activities.

Additional criteria are set forth in Table 7.

Project Description:

Examples of appropriate projects would include but not be limited to: restoring riparian forest habitat to benefit migratory birds, mammals, and amphibians/reptiles; converting hay/pasture/row crop to forest habitat; restoring or creating wetland habitat; restoring wet prairie habitat; or creating riparian buffer and stream stabilization. In some cases no additional enhancement work will be necessary.

Property acquisition will be targeted to specifically benefit amphibians, reptiles, bats, waterfowl, MCI, and wetland habitat – if these resources do not benefit from a suggested property

acquisition, that property will not be considered. Parcels acquired through this settlement will benefit at least one or all of the listed resources. When possible, river access points may be included in the restoration of a property – either by creating new access or improving existing access. However, river access will also be pursued separately from the land acquisition restoration category to ensure compensation of recreational fishing losses and to allow flexibility to capture unique opportunities that may provide significant additional benefit to recreational fishing.

A monitoring plan must be developed for selected projects to ensure long-term success. Because specific properties have not yet been identified, the evaluation criteria tables (see above Table 6 and 7) are not presented in this Draft RP/EA. Each project will be reviewed in detail as it is identified following these criteria. A general review of impacts/effects is presented below.

Estimated Cost:

Trustees anticipate that the land protection component will cost approximately \$18.2 million.

Expected Impacts:

The acquisition of real property is an activity that qualifies as a categorical exclusion under NEPA (40 C.F.R. § 1508.4), and does not individually or cumulatively have a significant effect on the human environment. Some of the enhancement activities will result in direct and indirect, short-term, localized, or major impacts on natural resources such as soil, sediment, and vegetation. Existing habitat may in some cases be substantially modified to create the hydrology, grade, soil type, and vegetation necessary for the successful development of wetland habitats. This will likely involve the use of heavy machinery and construction equipment, which may result in soil compaction, emissions from heavy equipment, removal or crushing of understory vegetation, and increased soil erosion in the immediate area of construction operations. However, the long-term direct and indirect benefits expected from this type of restoration activity outweigh the potential adverse impacts. The creation of wetland habitat will provide significant benefit to amphibians and reptiles, and other species. For example, ephemeral ponds provide key breeding habitat for amphibians whose tadpoles and larvae are especially vulnerable to fish predation (fish cannot survive in ephemeral ponds). These ephemeral ponds also provide prey for species such as turtles, birds, small mammals, and predatory insects.

Other potential restoration actions may include planting, revegetation of riparian or upland forest, invasive species control, bank restoration, and erosion reduction. These actions are expected to cause minor, short-term, localized impacts to existing resources and resource services, and result in moderate long-term benefits across a broad geographic scope. Wetland, riparian, and upland planting may cause short-term, localized impacts to existing vegetation at the restoration site (*e.g.*, as existing vegetation is trampled or removed). During planting, which

may last for more than one year, the resource services provided by that area are likely to be reduced through physical disturbance over some time period, as the vegetation grows. However, long-term, moderate beneficial impacts to aquatic resources and associated flora and fauna are expected due to the reduced erosion and increased shelter provided by wetland and riparian plantings. Grassland restoration typically involves removal of existing vegetation through physical or mechanical means, replanting native grassland species, and conducting frequent maintenance (e.g., mowing or burning) to ensure the grassland does not convert to a more shrub-dominated or forested habitat type. The adverse impacts of these actions are expected to range from direct, short-term, localized, minor impacts to indirect, long-term, localized, minor impacts. For example, the short-term impacts associated with revegetation are similar to those described above. The long-term minor impacts are associated with the continued maintenance of the habitat such as emissions from equipment or noise from mowing. However, the long-term direct and indirect benefits of grassland restoration outweigh the potential adverse impacts. Grasslands are increasingly threatened by agriculture and development, yet are a crucial habitat for birds and other wildlife. For example, migratory songbirds rely on grassland habitat for foraging and nesting during the summer, and small mammals such as voles and mice make their homes in grassland areas, and are an important food source to many birds of prey.

Incorporating river access as part of these projects may have short-term impacts, due to clearing vegetation, creating vehicle pull-off sites or parking lots, or increased foot traffic along the stream banks. Trustees will prioritize projects with minimal construction needs related to river access. Trustees do not anticipate any adverse impacts to historical or cultural resources, and will complete a full review of anticipated impacts to historic resources as properties are identified and evaluated, in accordance with Section 106 of the National Historic Preservation Act of 1966.

These projects would more likely benefit cultural or historical resources through the long-term protection they will provide. Beneficial ecological impacts are expected for benthic invertebrates/mussels, fish, birds, mammals, amphibians and reptiles.

Resources Benefited:

Aquatic Resources and Supporting Habitat				Aquatic/Floodplain		Floodplain Resources and Supporting Habitat		
Sediment / Invertebrates	Madison Cave Isopod	Surface Water	Fish	Amphibians / Reptiles	Piscivorous Birds/ Mammals	Migratory Birds	Bats	Soil / Invertebrates
✓	✓	✓	✓	✓	✓	✓	✓	✓

5.3.6 Restoration of the VDGIF FRFH – Recreational Fishing Improvement Project

The hatchery was built in the 1930s for the purpose of producing game fish for area rivers. The smallmouth bass is the most sought-after game fish in the Shenandoah River system and reproduces naturally in these waters. The restored hatchery would provide consistent production of smallmouth bass to supplement the river populations during years with poor natural reproduction. Restoration of the hatchery will generate increased numbers of higher quality fishing trips. A restored hatchery could also eventually produce other highly-desirable coolwater game fish for stocking, including walleye and muskellunge.

Project Location:

The FRFH is located near Front Royal, VA in Shenandoah County.

Project Description:

The renovated FRFH would improve consistency of year-class strength for smallmouth bass in area rivers through hatching, rearing, and stocking of fingerlings. A renovated facility could also provide facilities and opportunities for mercury-related environmental education for little additional cost. Effective outreach and education would help communicate potential risks associated with human exposure to mercury as well as safe activities available in the watershed. These would address the stigma associated with mercury contamination, which decreases the appeal of these rivers in the minds of many users. In short, the renovated hatchery could “bring people back to the river” through stocking programs and education.

The FRFH needs major reconstruction – including pond, raceway and building upgrades. Renovations are described in more detail in Appendix C to the proposed CD. Evaluation criteria for the FRFH are presented in Table 8.

Estimated Cost:

DuPont will perform all renovation directly. Initial costs of hatchery renovation have been estimated to be up to \$10 million. Staffing and operation costs will be covered by VDGIF.

Expected Impacts:

This project will renovate existing structures and will not involve any expansion of construction activities to new areas, so the Trustees anticipate minimal adverse impacts. Some short-term, localized, direct and indirect impacts may occur from construction activities and use of heavy machinery, such as soil compaction, emissions from heavy machinery, and potential soil erosion. Trustees do not anticipate any adverse impacts to historical or cultural resources, and will complete a full review of anticipated impacts to historic resources as properties are identified and evaluated, in accordance with Section 106 of the National Historic Preservation Act of 1966.

Expansion of the FRFH will generate additional fishing trips while also increasing the quality of fishing trips taken.

Table 8. Evaluation of the FRFH.

RELATIONSHIP TO THE INJURIES (giving rise to the claim for natural resource damages)	
1. SIMILARITY IN ATTRIBUTES TO THE INJURED NATURAL RESOURCE, same type and quality 2. LOCATION - proximity to SR/SFSR watershed 3. SCALE OF BENEFITS OF THE PROPOSED PROJECT - quality/quantity benefits provided by project (increase in acres, species, etc.)	The project focuses on restoring smallmouth bass, an injured resource in the assessment area. Location is within the same watershed. Project would also benefit smallmouth bass fisheries state-wide
LIKELIHOOD OF SUCCESS AND TECHNICAL FEASIBILITY	
4. PROVEN TECHNOLOGY - can project be accomplished with available technology? 5. DOCUMENTED SUCCESS - has a similar project succeeded in the past? 6. COST EFFECTIVENESS - are costs reasonable related to expected benefits	Proposed renovations are standard and have been used at other Virginia hatcheries with success. Because DuPont is performing activities directly, the costs are expected to be reasonable. VDGIF will provide in-kind contributions of staff salaries.
REGULATORY AND POLICY CONSIDERATIONS	
7. FEDERAL, STATE AND LOCAL LAW compliance 8. SITE OWNERSHIP AND ACCESS - do we have permission for the project? 9. PROPOSED PROJECT IS NOT "OTHERWISE REQUIRED" - by federal, state, local laws, regulations, permits, licenses 10. CONSISTENCY WITH TRUSTEE POLICY, MANAGEMENT GOALS, AND OBJECTIVES	No violation of any laws, and not required as part of any other law. This project is consistent with state priorities.
GROUND FOR PROJECT ELIMINATION	
1. BENEFITS OF PROJECT ARE UNLIKELY TO RESULT IN RESTORATION BENEFITS IN ADVANCE OF THE NATURAL RECOVERY PERIOD 2. PROJECT HAS SIGNIFICANT ADVERSE ENVIRONMENTAL IMPACTS 3. POTENTIAL FOR SIGNIFICANT ADVERSE EFFECTS TO HUMAN HEALTH AND SAFETY 4. POTENTIAL FOR SIGNIFICANT ADVERSE SOCIOECONOMIC EFFECTS	Short-term environmental impacts may be expected during restoration, but nothing of lasting significance. No anticipated adverse effects to health or safety. No adverse socioeconomic effects are anticipated.

SECONDARY CRITERIA

<ol style="list-style-type: none"> 1. CONSISTENCY WITH LOCAL, REGIONAL, AND NATIONAL RESTORATION GOALS AND INITIATIVES 2. TIME FRAME OF POTENTIAL BENEFITS 3. SELF-SUSTAINABILITY OF THE RESTORATION PROJECT 4. INTEGRATION WITH EXISTING MANAGEMENT PROGRAMS / LEVERAGE POTENTIAL 5. HABITAT CONNECTIVITY (e.g., creating contiguous habitat) 6. PROXIMITY TO LANDS WITH PROTECTED STATUS. 7. BENEFITS TO PROTECTED SPECIES / SENSITIVE OR UNIQUE HABITATS. 8. EDUCATION AND OUTREACH OPPORTUNITIES 	<p>This is consistent with state priorities. The potential benefits are expected to start immediately and will increase over time for other. VDGIF will continue to staff this hatchery.</p>
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MONITORING

<ol style="list-style-type: none"> 1. MONITORING - will there be measurable results? 	<p>Monitoring activities will be part of project, and will be undertaken by VDGIF.</p>
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5.3.7 Recreational fishing access creation/improvement

This project would focus on identifying safe and convenient river access for anglers and recreational users within the SR/SFSR watershed. For river float trips, the goal is to have access at intervals of 5-7 miles. Areas that will provide bank fishing and wading access are also desirable.

Project Location:

Various locations along SR, SFSR, NFSR, North River, and Shenandoah River. VDGIF and VDEQ have identified some potential access point needs in the SR/SFSR watershed; however, exact project location(s) will depend upon property suitability and availability.

Project Description:

VDGIF and VDEQ have identified several opportunities to improve or add access within the watershed that would meet the goal of access points every 5-7 river miles, or would provide additional bank fishing or wading access.

Estimated Cost:

Trustees have allocated no more than \$2.5 million to pursue access points either as component of property acquisition that will also benefit other resources, or separately. Costs will be highly variable between sites. Factors include whether ownership is public or private, size of tract, whether lease or purchase, local road access, topography, susceptibility to flooding, and degree of development proposed (canoe launch, boat ramp, walk-in access, etc.).

Expected Impacts:

Adding access points within the SR/SFSR has been identified as a need by Virginia natural resource agencies and stakeholders. Additional access to these rivers can provide more fishing and recreational opportunities and can also enhance trips by providing more conveniently located access, more options and varieties of trip types and lengths, by providing better services (ease of launching, parking, personal safety, nearby conveniences, etc.).

Incorporating river access may have short-term impacts, due to clearing vegetation, creating vehicle pull-off sites or parking lots, and increased foot traffic along the stream banks. Trustees will prioritize projects with minimal construction needs related to river access. Trustees do not anticipate any adverse impacts to historical or cultural resources, and will complete a full review of anticipated impacts to historic resources as properties are identified and evaluated, in accordance with Section 106 of the National Historic Preservation Act of 1966.

5.4 Evaluation of Alternative C: Restoration that Satisfies Site-Specific Criteria

Alternative C includes a suite of restoration projects that compensate for interim ecological losses and satisfy the NRDAR factors listed above (5.1). These projects will be located within the SR/SFSR watershed (Figure 5) when feasible and appropriate and include the following categories:

Project Category	Potential Locations	Estimated Cost
Projects to improve water quality and fish habitat – <i>Agricultural and urban BMPs in the SR/SFSR watershed (refer to 5.3.1)</i>	Headwaters of SR, tributaries to SR or SFSR, sites within the City of Waynesboro	\$ 7.5 million
Freshwater mussel restoration – <i>Propagation program (refer to 5.3.2)</i>	Freshwater Mollusk Conservation Center at Virginia Polytechnic Institute and State University; Virginia Fisheries and Aquatic Wildlife Center at Harrison Lake National Fish Hatchery	\$ 4 million
Neotropical migratory songbird full life cycle restoration – <i>Habitat restoration (refer to 5.3.3)</i>	Various locations	\$ 2.5 million

Land protection, property acquisition, and recreational and wildlife enhancements – <i>CWPNAP – Willets Tract addition and forest restoration (refer to 5.3.4)</i>	Property adjacent to CWPNAP	\$ 1.3 million
Land protection, property acquisition, and recreational and wildlife enhancements – <i>Additional properties, prioritizing those adjacent to SR or SFSR, creating contiguous protected land corridors (refer to 5.3.5)</i>	Locations upstream or within the City of Waynesboro, adjacent to the SR or tributaries to the SR or SFSR	\$ 18.2 million
Recreational fishing improvement projects – <i>Restoration of the VDGIF FRFH (refer to 5.3.6)</i>	Front Royal, VA	DuPont fund directly
Recreational fishing improvement projects – <i>Recreational fishing access creation/improvement (refer to 5.3.7)</i>	Locations on SR, SFSR, NFSR, or Shenandoah River, or tributaries	\$ 2.5 million
Recreational fishing improvement projects – <i>Trout management project (5.4.1)</i>	Appropriate locations within the SR	\$ 2.5 million

Project attributes, resource benefits, potential environmental impacts, social consequences, and costs are provided in the sections above (5.3) and below (5.4.1).

5.4.1 Trout management project

This project would focus on improving and increasing trout fishing opportunities on the SR to allow safe consumption of fish. Trout have been stocked at multiple locations along the SR starting in 1989 (Bugas 2011). Although trout were not an injured resource, and trout anglers were not impacted by the FCA or mercury contamination, stakeholders and state agencies identified this project for consideration due to angler interest in trout fishing on the SR and the opportunity to provide alternative fishing experiences with options for safe consumption.

Project Location:

Appropriate locations along SR, within the existing trout fishery in Waynesboro and Grottoes areas or in new areas with suitable habitat.

Project Description:

The goal of this project is to increase stocking frequency and size of fish and expand the area of trout stocking. Components of this project may include purchasing additional trout at larger

sizes for stocking, and/or constructing a grow-out facility to house trout, allowing them to reach desirable size.

Estimated Cost:

If this Alternative was selected, no more than \$2.5 million would be redirected from “projects to improve water quality and fish habitat,” that may also have potential benefits to trout, in order to complete the trout stocking/management project.

Expected Impacts:

Expanded trout stocking and higher quality fish will attract a greater number of trout anglers to the SR, and will provide greater numbers of safe-to-consume fish for those anglers. Environmental impacts of trout stocking are primarily beneficial, and likely have minimal impact on native fish assemblages. Possible impacts may include some competition with local species and introduction of disease.

If construction of a grow-out or holding facility becomes part of this project, there may be some short-term impacts from construction activities. Trustees do not anticipate any adverse impacts to historical or cultural resources, and will complete a full review of anticipated impacts to historic resources if a construction project is pursued, in accordance with Section 106 of the National Historic Preservation Act of 1966.

5.5 Compliance with NEPA and other potentially applicable laws

Upon completion of the public comment period, and if warranted, an Environmental Action Statement and a FONSI will be circulated for signature by the DOI Authorized Official upon publication of the notice of availability of the final RP/EA in the Federal Register. These documents will remain within the administrative record for this matter.

Coordination and evaluation of required compliance with specific federal acts, executive orders, and other policies for the preferred restoration plan is achieved, in part, through the coordination of this document with appropriate agencies and the public. All ecological restoration projects will be in compliance with all applicable federal statutes, executive orders, and policies, including, but not limited to: NEPA, 42 U.S.C. § 4321 *et seq.*; ESA, 16 U.S.C. § 1531, *et seq.*; the National Historic Preservation Act of 1966, 16 U.S.C. § 470 *et seq.*; the Fish and Wildlife Coordination Act, 16 U.S.C. § 661 *et seq.*; the Rivers and Harbors Act of 1899, 33 U.S.C. § 403 *et seq.*; the Federal Water Pollution Control Act, 33 U.S.C. § 1251 *et seq.*; Executive Order 11990, Protection of Wetlands; and Executive Order 11988, Flood Plain Management. Compliance with the laws cited above, and any necessary permitting, will be undertaken during specific restoration project planning stages, and will be completed early in the project planning

process. See below for descriptions of relevant laws, regulations and policies, and how the proposed restoration alternative is in compliance.

State permits may be required to implement certain activities within the proposed restoration alternatives, depending upon the exact nature of proposed work. Proposed restoration activities in wetland and floodplain habitats would need to meet the requirements of the U.S. Army Corps of Engineers (USACE) Nationwide and/or General Permits. Any restoration work occurring within streambeds would require subaqueous bottom land permits from the Virginia Marine Resources Commission.

Federal Trustees are also required under Executive Order Number 12898, 59 C.F.R. § 7629, to identify and address any policy or planning impacts that disproportionately affect the health and environment in low income and minority populations. Since the restoration alternatives will result in changes that benefit trust resources throughout the SR and SFSR watershed, including in and near Waynesboro, the federal Trustee has concluded that there would be no adverse impacts on low-income or minority communities due to implementation of the restoration alternatives.

Anadromous Fish Conservation Act

The Anadromous Fish Conservation Act (16 U.S.C. § 757a, *et seq.*) provides authority to conserve, develop, and enhance anadromous fishery resources.

Compliance: The proposed restoration would conserve and enhance anadromous fishery resources.

Clean Air Act

The Clean Air Act (42 U.S.C. § 7401, *et seq.*) directs EPA to set limits on air emissions to ensure basic protection of health and the environment. The fundamental goal is the nationwide attainment and maintenance of the National Ambient Air Quality Standards (NAAQS). Primary NAAQS are designed to protect human health. Secondary NAAQS are designed to protect the public welfare (for example, to prevent damage to soils, crops, vegetation, water, visibility and property).

Compliance: All construction activity would be conducted with conventional equipment in compliance with all local ordinances and NAAQS.

Clean Water Act (Federal Water Pollution Control Act)

The Clean Water Act (33 U.S.C. § 1251, *et seq.*) is the principal law governing pollution control and water quality of the Nation's waterways. Section 404 of the law authorizes a permit program for the beneficial uses of dredged or fill material in navigable waters. The USACE administers the program.

Compliance: Coordination with the USACE would be completed pursuant to Section 404 of this Act before any site specific restoration action under this proposed plan could be undertaken. All joint federal/state permits would be obtained prior to the start of any site specific construction activities. All construction activity will be done in compliance with Section 404 of the law.

Endangered Species Act

The ESA (16 U.S.C. § 1531, *et seq.*, 50 C.F.R. Parts 17, 222, 224) directs all federal agencies to work to conserve endangered and threatened species and to use their authorities to further the purposes of the ESA. Under the ESA, National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) and FWS publish lists of endangered and threatened species. Section 7 of the ESA, called "Interagency Cooperation," is the mechanism by which federal agencies ensure the actions they take, including those they fund or authorize, do not jeopardize the existence of any listed species.

Compliance: The Trustees would conduct necessary Section 7 consultations with NMFS and FWS prior to implementation of any future restoration project proposed under this plan. Such consultations would be initiated before selection of a specific project, but may be completed and/or updated during a project's design phase.

Farmland Protection Policy Act

The Farmland Protection Policy Act of 1981 (7 U.S.C. § 4201 *et seq.*) aims to minimize the effect of federal programs on the unnecessary and irreversible conversion of farmland to nonagricultural use.

Compliance: The Trustees would coordinate with NRCS to minimize impacts to farmland if applicable.

Fish and Wildlife Conservation Act

The Fish and Wildlife Conservation Act of 1980 (16 U.S.C. § 2901 and 50 C.F.R. § 83) provides for protection and management of non-game fish and wildlife and their habitats.

Compliance: The intent of the NRDAR process is restore, replace, enhance, and/or acquire equivalent natural resources (fish, wildlife, and their supporting habitats) and resource services as were injured by releases of hazardous substances. The Trustees believe the restoration

activities described in the Draft RP/EA will enhance habitats and fish and wildlife, thereby benefiting natural resources.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 U.S.C. § 661, *et seq.*) states that wildlife conservation shall receive equal consideration with other features of water-resource development. This Act requires federal permitting and licensing agencies to consult with NOAA/NMFS, FWS, and state wildlife agencies before permitting any activity that in any way modifies any body of water to minimize the adverse impacts of such actions on fish and wildlife resources and habitat.

Compliance: For restoration projects to be implemented under this plan, the Trustees would be consulting with agency regulatory staff in the future during the Clean Water Act Section 404 permitting process to minimize any potential impacts to fish and wildlife resources and habitat.

Information Quality Guidelines issued pursuant to Public Law 106-554

Information disseminated by federal agencies to the public after October 1, 2002, is subject to information quality guidelines developed by each agency pursuant to Section 515 of Public Law 106-554 that are intended to ensure and maximize the quality of such information (*e.g.*, the objectivity, utility and integrity of such information).

Compliance: This Draft RP/EA is an information product covered by information quality guidelines established by NOAA and DOI for this purpose. The quality of the information contained herein is consistent with the applicable guidelines.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (16 U.S.C. § 715, *et seq.*) provides for the protection of migratory birds. This statute does not specifically protect the habitat of these birds but may be used to consider time-of-year restrictions for activities on restoration sites where it is likely migratory birds may be nesting and/or to stipulate maintenance schedules that would avoid the nesting seasons of migratory birds.

Compliance: Consultation with the FWS constitutes compliance with this Act. If future restoration activities under this plan are deemed to adversely impact migratory birds, appropriate measures will be implemented to avoid impacts.

National Environmental Policy Act

Congress enacted the National Environmental Policy Act (NEPA; 42 U.S.C. § 4321 *et seq.*) in 1969 to establish a national policy for the protection of the environment. NEPA applies to federal agency actions that affect the human environment. Federal agencies are obligated to comply

with NEPA regulations adopted by the Council on Environmental Quality (CEQ). NEPA requires that an Environmental Assessment be prepared to determine whether the proposed restoration actions will have a significant effect on the quality of the human environment. If an impact is considered significant, then an Environmental Impact Statement (EIS) is prepared. If the impact is considered not significant, then a FONSI is issued.

Compliance: The Trustees have integrated an analysis of the environmental consequences of the Preferred Alternative into this Draft RP/EA to comply with NEPA and CEQ processes and requirements. This integrated process allows the Trustees to meet the public involvement requirements of NEPA and CERCLA concurrently. Further NEPA analysis, tiered to the programmatic analysis herein, will occur when specific restoration activities are identified and proposed. Based on the analysis described in this document, the Trustees do not believe an EIS will be required for any projects within the scope of the Proposed Action.

National Historic Preservation Act

Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. § 470 *et seq.*) requires federal agencies to take into account the effects of its actions on historic properties by identifying historic properties, assessing adverse effects and resolving adverse effects.

Compliance: In the area proposed restoration activities could occur, the Trustees do not expect any restoration project to have an interaction with historic sites, buildings, objects and antiquities of national significance. However, coordination with the Virginia Department of Historic Resources would occur in the future to ensure that specific restoration actions under this plan avoid impacting any such properties.

Preservation of Historic and Archeological Data Act

The purpose of the Preservation of Historic and Archeological Data Act of 1974, as amended, (16 U.S.C. § 469, *et seq.*) is to provide for the preservation of historic American sites, buildings, objects and antiquities of national significance, and for other purposes by specifically providing for the preservation of historical or archeological data which might otherwise be lost or destroyed.

Compliance: In the area proposed restoration activities could occur, the Trustees do not expect any restoration project to have an interaction with historic sites, buildings, objects and antiquities of national significance. However, coordination with the Virginia Department of Historic Resources would occur in the future to ensure that specific restoration actions under this plan avoid impacting any such data.

Rivers and Harbors Act

The federal Rivers and Harbors Act (RHA; 33 U.S.C. § 401, *et seq.*) regulates development and use of the Nation's navigable waterways. Section 10 of this Act prohibits unauthorized obstruction or alteration of navigable waters and vests the USACE with authority to regulate discharges of fill and other materials into such waters.

Compliance: Coordination with the USACE would be completed pursuant to Section 10 of this Act before any site specific restoration action under this proposed plan could be undertaken. Future restoration actions under this plan that require Section 404 Clean Water Act permits are likely to meet the requirements of the USACE's Nationwide and/or General Permits. All joint federal/state permits would be obtained prior to the start of any site-specific restoration activities, including for compliance with Section 10 of the law where applicable.

Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act of 1968 (16 U.S.C. § 1271 *et seq.*) preserves certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition.

Compliance: Trustees do not intend to include dam construction or other instream activities that would harm a river's free-flowing condition, water quality or outstanding resource values, as part of the restoration activities.

Executive Order 11514 Protection and Enhancement of Environmental Quality, as amended by Executive Order 11911 Relating to Protection and Enhancement of Environmental Quality
Executive Orders 11514 and 11911 require that federal agencies monitor, evaluate and control their activities to protect and enhance the quality of the Nation's environment to sustain and enrich human life; inform the public about these activities; share data gathered on existing or potential environmental problems or control methods; and cooperate with other governmental agencies.

Compliance: Releasing this Draft RP/EA, and any subsequent proposed site specific plans, for restoration for public review and comment is consistent with the intent of this Executive Order.

Executive Order 11990 Protection of Wetlands

Executive Order 11990 (40 C.F.R. § 6392 (a) and Appendix A) requires federal agencies to avoid the adverse impacts associated with the destruction or loss of wetlands, to avoid new construction in wetlands if alternatives exist, and to develop mitigative measures if adverse impacts are unavoidable.

Compliance: The Preferred Alternative includes alternatives for restoration that will preserve and enhance existing wetlands and restore wetlands degraded by past logging, forestry,

agricultural, and fire exclusion activities and practices. No long-term, significant adverse impacts to wetlands are anticipated.

Executive Order 11988 Floodplain Management

Executive Order 11988 requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

Compliance: The Preferred Alternative includes alternatives for restoration that will preserve and enhance existing floodplains or restore floodplain habitat degraded by past agricultural activities and practices. No long-term, significant adverse impacts to floodplains are anticipated.

Executive Order 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations and Executive Order 12948

Amendment to Executive Order No. 12898

Executive Orders 12898 and 12948 require each federal agency to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority and low-income populations.

Compliance: The Trustees have concluded that no low-income or ethnic minority communities would be adversely affected by any restoration activities that would occur under the Preferred Alternative.

Executive Order 12962 Recreational Fisheries

Executive Order 12962 requires that federal agencies, to the extent permitted by law and where practicable, and in cooperation with states and tribes, improve the quantity, function, sustainable productivity, and distribution of the Nation's aquatic resources for increased recreational fishing opportunities.

Compliance: The restoration activities that would occur under the Preferred Alternative will benefit fish populations in ways that could improve recreational fisheries.

Executive Order 13112 Invasive Species

The purpose of Executive Order 13112 is to prevent the introduction of invasive species and provide for their control, and to minimize the economic, ecological, and human health impacts that invasive species cause.

Compliance: The Preferred Alternative includes activities for management of invasive species. Surveys for invasive species and actions to control them, should they be present on acquired or state-owned restoration areas, would be performed.

Executive Order 13653 Preparing the United States for the Impacts of Climate Change

The purpose of Executive Order 13653 is to give federal agencies direction to support community-based preparedness and resilience efforts by establishing policies and prioritizing investments that promote preparedness, protect critical infrastructure and public resources, support science and research needed to prepare for climate impacts, and ensure that federal operations and facilities continue to protect and serve citizens in a changing climate. Specifically, Section 3 and 5 of Executive Order 13653 call for federal agencies to manage their lands and waters for climate preparedness and resilience and plan for climate change related risk.

Compliance: Under the Preferred Alternative, the Trustees would consider regional climate information in planning and design of future habitat restoration projects that should allow for more resilient habitats in the face of changing climate.

CHAPTER 6 SELECTION OF PREFERRED ALTERNATIVE

The Trustees evaluated three restoration alternatives. Of these, Alternative B best addresses natural resource injuries and service reductions resulting from the release of mercury within the assessment area, and includes the majority of the project categories originally suggested by stakeholders. Based on the Trustees' evaluation of the environmental consequences of Alternatives A, B, and C, the NRDAR factors described in 43 C.F.R. § 11.82(d), and the potential for greater restoration project opportunities, the Trustees selected **Alternative B** as their Preferred Alternative.

Alternative A provides no restoration options, and is therefore insufficient to compensate for natural resource injuries.

Alternative C provides all of the opportunities for restoration contained in Alternative B, as well as a trout management component. The trout project was considered because it is supported by stakeholders, provides a safe-for-consumption fishing alternative, and benefits a certain portion of the SR angler population. However, the benefits are almost exclusively directed at trout anglers, a population that did not suffer a direct negative impact from the mercury contamination in the watershed.

Redirection of funds to complete a trout-only project would decrease funds available for restoration projects to improve water quality and fish habitat that would benefit all resources impacted by mercury. Those projects, agricultural and urban BMPs in the upper SR, headwater streams, and within the City of Waynesboro, will improve riparian and aquatic habitat, benefitting multiple resources including fish. Alternative B would allow for more funding to be allocated to those types of projects.

Because there are three differently managed stocked fisheries in the SR that are already popular destinations (Bugas 2011), the benefits of additional trout stocking and management are not sufficiently clear. Trout stocking impacts are too narrow, given the more broad benefits expected from the other restoration projects proposed in Alternative B, to devote substantial resources to the proposed trout project. Finally, the recreational fishing access improvement projects contained in Alternative B will provide substantial benefits to anglers of all fish species in the SR and SFSR, including trout anglers.

The Trustees believe that the Preferred Alternative, Alternative B, represents cost-effective and beneficial means by which to restore or replace the injured natural resources and the services they provided. After this Draft RP/EA is finalized, the Trustees will begin to identify and evaluate additional specific project options based on the restoration alternative the Trustees

select in the final RP/EA. Compliance with the laws cited above, and any necessary permitting, will be undertaken during the planning stages of specific restoration projects.

The Trustees may implement restoration project alternatives that are not specifically identified in the Draft RP/EA, but are consistent with our restoration objectives. Each project will be evaluated against the same restoration priorities and factors described above, and, if needed, a further review of environmental consequences will be conducted. Any selected projects that are expected to have non-negligible impacts will be subject to a project-specific NEPA analysis prior to implementation. In addition, Section 7 consultation (under the ESA) will be completed for restoration projects that may affect threatened or endangered species or their designated critical habitat and Section 106 of the National Historic Preservation Act will be followed for each restoration project that will be implemented.

A summary of the injury categories and associated restoration and resource benefits is presented in Table 9.

Table 9. Summary of injury and restoration categories.

Injury Category:	Representative Resource:	Preferred Restoration Categories:	Other Resources That Benefit:
Fish (Aquatic)	Fish (Section 3.4.1)	<ul style="list-style-type: none"> • Land protection, property acquisition, and recreational and wildlife enhancements – riparian habitat along the SR or SFSR • Agricultural and urban BMPS • Fish production (FRFH) • Mussel propagation 	<ul style="list-style-type: none"> • Sediment/Surface Water • Soil • Mussels • Amphibians/Reptiles • Songbirds • Piscivorous Birds and Mammals • Bats • Recreational Fishing
Mussels	Mussels (Section 3.4.2)	<ul style="list-style-type: none"> • Mussel propagation 	<ul style="list-style-type: none"> • Sediment/Surface Water • Fish • Piscivorous Birds and Mammals • Recreational Fishing

Migratory Birds	Songbirds (Section 3.4.3)	<ul style="list-style-type: none"> • Protection of songbird habitat throughout life cycle 	<ul style="list-style-type: none"> • Migratory Songbirds
Non-Wetland Floodplain	Songbirds (Section 3.4.4)	<ul style="list-style-type: none"> • Land protection, property acquisition, and recreational and wildlife enhancements – riparian habitat along the SR or SFSR 	<ul style="list-style-type: none"> • Sediment/Surface Water • Soil • Fish • Mussels • Amphibians/Reptiles • Piscivorous Birds and Mammals • Bats • Recreational Fishing
Wetland Floodplain	Amphibians (Section 3.4.5)	<ul style="list-style-type: none"> • Land protection, property acquisition, and recreational and wildlife enhancements – riparian habitat along the SR or SFSR 	<ul style="list-style-type: none"> • Sediment/Surface Water • Soil • Mussels • Amphibians/Reptiles • Songbirds • Piscivorous Birds and Mammals • Bats • Recreational Fishing
Recreational Fishing	Fishing Trips (Section 3.4.6)	<ul style="list-style-type: none"> • FRFH renovation and fish production • Access point creation/improvement • Agricultural and urban BMPs 	<ul style="list-style-type: none"> • Mussels • Piscivorous Birds and Mammals

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APPENDIX A. SUMMARY OF STAKEHOLDER PARTICIPATION.

From 2008 until the present, Trustees held multiple meetings or calls with federal and state natural resource agencies and other stakeholders to discuss the Natural Resource Damage Assessment and Restoration (NRDAR) process, injury assessment, and restoration ideas. Some of these meetings are listed below.

Date of meeting or call	Stakeholder groups (with Trustees)	Topics covered
September 25, 2008	<ul style="list-style-type: none"> • South River Watershed Steering Committee (multiple groups represented) 	NRDAR overview
April 21, 2009	<ul style="list-style-type: none"> • DuPont • Virginia Department of Conservation and Recreation (VDCR) • The Nature Conservancy (TNC) 	Restoration discussion; site visit to Cowbane Wet Prairie State Natural Area Preserve
April 30, 2010	<ul style="list-style-type: none"> • Virginia Department of Game and Inland Fisheries (VDGIF) 	Restoration discussion
June 1, 2010	<ul style="list-style-type: none"> • Trout Unlimited (TU) 	Restoration discussion
July 1, 2010	<ul style="list-style-type: none"> • TNC • VDCR • VDGIF 	Restoration discussion
August 8, 2011	<ul style="list-style-type: none"> • VDCR • VDGIF 	Restoration discussion – bats, Madison cave isopod
September 21, 2011	<ul style="list-style-type: none"> • VDGIF 	Restoration discussion– recreational fishing
February 15, 2012	<ul style="list-style-type: none"> • VDCR 	Restoration discussion
February 16, 2012	<ul style="list-style-type: none"> • VDGIF • DuPont 	Front Royal Fish Hatchery tour
April 13, 2012	<ul style="list-style-type: none"> • VDGIF • Virginia Tech 	Site visit to sinkhole ponds, emphasis on herpetofauna
April 16, 2012	<ul style="list-style-type: none"> • City of Waynesboro 	NRDAR
May 25, 2012	<ul style="list-style-type: none"> • Shenandoah Riverkeeper • DGIF 	Restoration discussion – recreational fishing
June 19, 2012	<ul style="list-style-type: none"> • Belize Foundation for Research and Environmental Education • Smithsonian Migratory Bird Center • University of North Carolina - Wilmington 	Restoration discussion – migratory songbird

August 10, 2012	<ul style="list-style-type: none"> • VDGIF 	Restoration discussion – recreational fishing
September 6, 2012	<ul style="list-style-type: none"> • VDGIF 	Site visit to properties upstream of Waynesboro
September 24, 2012	<ul style="list-style-type: none"> • VDGIF • VDCR 	Restoration discussion – properties, mussels, bats; and injury discussion
January 29, 2013	<ul style="list-style-type: none"> • Shenandoah Riverkeeper • Friends of the North Fork • VDGIF • TU • James Madison University 	NRDAR overview; and restoration discussion – recreational fishing
February 1, 2013	<ul style="list-style-type: none"> • TNC 	Restoration discussion
March 28, 2013	<ul style="list-style-type: none"> • TNC 	Restoration discussion
April 11, 2013	<ul style="list-style-type: none"> • NRCS • City of Waynesboro 	Restoration discussion
May 15, 2013	<ul style="list-style-type: none"> • Valley Conservation Council (VCC) • VDGIF 	Restoration discussion
June 10, 2013	<ul style="list-style-type: none"> • Augusta County 	NRDAR overview
July 24, 2013	<ul style="list-style-type: none"> • Friends of the Shenandoah River • Friends of the North Fork • TU • VDGIF • City of Waynesboro 	Restoration discussion; and NRDAR update
August 21, 2013	<ul style="list-style-type: none"> • VDGIF • DuPont 	Site visit to Front Royal Fish Hatchery
August 26, 2013	<ul style="list-style-type: none"> • VDGIF 	Restoration discussion – recreational fishing and ecological
August 29, 2013	<ul style="list-style-type: none"> • Friends of the North Fork • Potomac River Smallmouth Club 	Restoration discussion – recreational fishing
January 9, 2014	<ul style="list-style-type: none"> • City of Waynesboro 	NRDAR review
February 5, 2014	<ul style="list-style-type: none"> • VDCR 	Site visit to Cowbane Wet Prairie State Natural Area Preserve and surrounding area
April 21, 2014	<ul style="list-style-type: none"> • VDGIF 	Restoration discussion; and NRDAR update
May 8, 2014	<ul style="list-style-type: none"> • VDGIF 	Site visit to Virginia Fisheries and

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		Aquatic Wildlife Center at Harrison Lake National Fish Hatchery
June 11, 2014	<ul style="list-style-type: none"> • Shenandoah Riverkeeper 	NRDAR update
July 3, 2014	<ul style="list-style-type: none"> • City of Waynesboro 	Restoration discussion
July 16, 2014	<ul style="list-style-type: none"> • Department of Forestry • VCC • Virginia Outdoor Foundation 	NRDAR overview; and restoration discussion
July 24, 2014	<ul style="list-style-type: none"> • City of Waynesboro 	Restoration discussion
August 13, 2014	<ul style="list-style-type: none"> • Whitescarver Natural Resources Management LLC 	NRDAR overview; and restoration discussion
August 21, 2014	<ul style="list-style-type: none"> • Watershed Stewardship Inc. 	Restoration discussion
November 19, 2014	<ul style="list-style-type: none"> • US Forest Service • Appalachian Mountain Joint Venture 	NRDAR overview; and restoration discussion
January 22, 2015	<ul style="list-style-type: none"> • VCC • Virginia Outdoor Foundation 	NRDAR update; and restoration overview
February 9, 2015	<ul style="list-style-type: none"> • Virginia Tech 	Restoration discussion – amphibian/wetlands

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APPENDIX B. BIRDS OBSERVED DURING THE 2011-2012 SURVEYS IN THE SR/SFSR WATERSHED.

Common Name	Scientific name
Acadian Flycatcher	<i>Empidonax virescens</i>
American Crow	<i>Corvus brachyrhynchos</i>
American Goldfinch	<i>Spinus tristis</i>
American Kestrel	<i>Falco sparverius</i>
American Redstart	<i>Setophaga ruticilla</i>
American Robin	<i>Turdus migratorius</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Baltimore Oriole	<i>Icterus galbula</i>
Barn Swallow	<i>Hirundo rustica</i>
Barred Owl	<i>Strix varia</i>
Belted Kingfisher	<i>Megaceryle alcyon</i>
Black Vulture	<i>Coragyps atratus</i>
Black-and-White Warbler	<i>Mniotilta varia</i>
Blackburnian Warbler	<i>Setophaga fusca</i>
Black-capped Chickadee	<i>Poecile atricapillus</i>
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>
Black-throated green warbler	<i>Setophaga virens</i>
Blue Grosbeak	<i>Passerina caerulea</i>
Blue Jay	<i>Cyanocitta cristata</i>
Blue-gray Gnatcatcher	<i>Poliotila caerulea</i>
Blue-headed Vireo	<i>Vireo solitarius</i>
Bobolink	<i>Dolichonyx oryzivorus</i>
Broad-winged Hawk	<i>Buteo platypterus</i>
Brown Thrasher	<i>Toxostoma rufum</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
Canada Goose	<i>Branta canadensis</i>
Canada Warbler	<i>Cardellina canadensis</i>
Carolina Chickadee	<i>Poecile carolinensis</i>
Carolina Wren	<i>Thryothorus ludovicianus</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>
Cerulean Warbler	<i>Setophaga cerulea</i>
Chestnut-sided Warbler	<i>Chaetura pelagica</i>
Chimney Swift	<i>Chaetura pelagica</i>
Chipping Sparrow	<i>Spizella passerina</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
Common Grackle	<i>Quiscalus quiscula</i>

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Common Raven	<i>Corvus corax</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Cooper's Hawk	<i>Accipiter cooperii</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Dickcissel	<i>Spiza americana</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Eastern Bluebird	<i>Sialia sialis</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>
Eastern Meadowlark	<i>Sturnella magna</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
Eastern Towhee	<i>Pipilo erythrophthalmus</i>
Eastern Wood Pewee	<i>Contopus virens</i>
European Starling	<i>Sturnus vulgaris</i>
Field Sparrow	<i>Spizella pusilla</i>
Fish Crow	<i>Corvus ossifragus</i>
Golden-crowned Kinglet	<i>Regulus satrapa</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
Gray Catbird	<i>Dumetella carolinensis</i>
Great Crested Flycatcher	<i>Myiarchus crinitus</i>
Great-blue Heron	<i>Ardea herodias</i>
Great-horned Owl	<i>Bubo virginianus</i>
Green Heron	<i>Butorides virescens</i>
Hairy Woodpecker	<i>Picoides villosus</i>
Hooded Warbler	<i>Setophaga citrina</i>
Horned Lark	<i>Eremophila alpestris</i>
House Finch	<i>Haemorhous mexicanus</i>
House Sparrow	<i>Passer domesticus</i>
House Wren	<i>Troglodytes aedon</i>
Indigo Bunting	<i>Passerina cyanea</i>
Kentucky Warbler	<i>Geothlypis formosa</i>
Killdeer	<i>Charadrius vociferus</i>
Louisiana Waterthrush	<i>Parkesia motacilla</i>
Mallard	<i>Anas platyrhynchos</i>
Mourning Dove	<i>Zenaida macroura</i>
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Northern Bobwhite	<i>Colinus virginianus</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
Northern Flicker	<i>Colaptes auratus</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Northern Parula	<i>Setophaga americana</i>

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Orchard Oriole	<i>Icterus spurius</i>
Ovenbird	<i>Seiurus aurocapilla</i>
Pileated Woodpecker	<i>Dryocopus pileatus</i>
Pine Warbler	<i>Setophaga pinus</i>
Prairie Warbler	<i>Setophaga discolor</i>
Purple Martin	<i>Progne subis</i>
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>
Red-eyed Vireo	<i>Vireo olivaceus</i>
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>
Red-shouldered Hawk	<i>Buteo lineatus</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Rock Pigeon	<i>Columba livia</i>
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>
Ruby-throated Hummingbird	<i>Archilochus colubris</i>
Ruffed Grouse	<i>Bonasa umbellus</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Scarlet Tanager	<i>Piranga olivacea</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>
Song Sparrow	<i>Melospiza melodia</i>
Swainson's Warbler	<i>Limnothlypis swainsonii</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Tufted Titmouse	<i>Baeolophus bicolor</i>
Turkey Vulture	<i>Cathartes aura</i>
Veery	<i>Catharus fuscescens</i>
Vesper Sparrow	<i>Pooecetes gramineus</i>
Warbling Vireo	<i>Vireo gilvus</i>
White-breasted Nuthatch	<i>Sitta carolinensis</i>
Wild Turkey	<i>Meleagris gallopavo</i>
Willow Flycatcher	<i>Empidonax traillii</i>
Wood Duck	<i>Aix sponsa</i>
Wood Thrush	<i>Hylocichla mustelina</i>
Worm-eating Warbler	<i>Helmitheros vermivorum</i>
Yellow Warbler	<i>Setophaga petechia</i>
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>
Yellow-breasted Chat	<i>Icteria virens</i>
Yellow-throated Vireo	<i>Vireo flavifrons</i>

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APPENDIX C. PROJECTS THAT DO NOT SATISFY SITE-SPECIFIC CRITERIA

Trustees did not evaluate these projects, because the actions proposed will not address natural resources injuries in a specifically designed, cost-effective way.

Project	Rationale for Unsuitability
Acquisition of properties located within other watersheds in Virginia	Insufficient information on the nexus to injured resources. Projects within SR/SFSR watershed will be prioritized, especially related to fish restoration. Restoration for migratory birds and other migratory species may occur outside the SR/SFSR watershed.
Acquisition of upland properties (no riparian connection)	Insufficient information on the nexus to injured resources. No nexus to riparian habitat. Projects with a riparian connection within SR/SFSR watershed will be prioritized.
Dam removal in SFSR watershed	Insufficient information is currently available on potential projects and expected benefits. Projects may be considered for future restoration.
South River Greenway Construction	Does not directly restore injured resources or resource services. However, projects under Alternative B may coordinate well with Greenway construction and property acquisition that may include access for greenway construction and recreation.
Education and outreach programs, tools, and facilities	Does not directly restore injured resources or resource services. However, projects under Alternative B are expected to include educational components and outreach opportunities (e.g., signage, outreach programs related to migratory songbirds).
White-nose syndrome research	Does not restore injured resources or resource services.
Aquatic education center and staff	Does not restore injured resources or resource services. Projects under Alternative B are expected to have educational components and outreach opportunities such as signage at access points
Lake Shenandoah renovation (Rockingham County / Harrisonburg area)	Insufficient information currently available on potential projects and expected benefits.
Stocking catchable channel catfish in lower SR	Insufficient information currently available on potential projects and expected benefits.
Angler (creel) surveys – to evaluate long-term success of stocking, fisheries management, and environmental education	Does not directly restore injured resources or resource services. May be incorporated as part of monitoring for options in Alternative B.

Coursey Springs Hatchery improvements	Insufficient information is currently available on potential project. Does not restore injured resources or resource services.
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**APPENDIX C: 10% DESIGN FOR THE FRONT ROYAL
REGIONAL FISH HATCHERY PROJECT**

*United States of America and Commonwealth of Virginia v.
E. I. du Pont de Nemours and Company*

APPENDIX C: 10% DESIGN FOR THE
FRONT ROYAL REGIONAL FISH HATCHERY PROJECT

1.0 INTRODUCTION

The following are initial (10%) design specifications for the modifications and improvements to the Front Royal Fish Hatchery (FRFH), and were developed by HDR Inc. for DuPont. Future refinements to this initial design may be prepared by DuPont or a different contractor; however, DuPont will provide the Trustees with each new and refined design for their review and comment. Detailed design figures and drawings specific to this Plan will be provided in the 35%, 65%, 95% and 100% design documents.

The existing FRFH and proposed improvements are shown, as applicable, in Figures SMB-1, SMB-2, and SMB-3. These figures are incorporated into and made a part of this Appendix C.

Figure SMB-1. Cover Sheet and Location Map.

Figure SMB-2. Front Royal Fish Hatchery Existing Conditions.

Figure SMB-3. Improvements Site Plan.

2.0 INITIAL DESIGN COMPONENTS FOR THE FRONT ROYAL REGIONAL FISH HATCHERY PROJECT

The Front Royal Regional Fish Hatchery Project will be designed to produce from 22,000 to 37,500 small mouth bass (SMB) annually. Smallmouth bass rearing requires several different rearing vessels to accommodate all the life-cycles. The features needed for SMB rearing are presented in the following table.

Life Cycle	Recommended Rearing Unit
Spawning	Harvest Raceways
Incubation	Incubation Jars
Hatching/Swim Up/Marking	Indoor Tanks
Phase 1 (up to 1.5")	Ponds (feed-zooplankton)
Fathead Minnow (FHM)	Ponds (feed for Phase 2 SMB)
Phase 2 (1.5-3")	Ponds (feed-FHM)
Harvest	Harvest Raceways
Broodstock	Ponds or Harvest Raceways

2.1 It is estimated that 18 to 24 months will be required for design and construction of the Front Royal Regional Fish Hatchery Project. The improvements and other design elements required to meet the goal of producing 22,000 – 37,500 SMB per year are listed below and illustrated on Figure SMB-3. Improvements Site Plan:

2.1.1. Pond Renovation

To meet SMB production goals for both Phase 1 and Phase 2 rearing, four acres of ponds are required. Ponds N1-N3 (which shall be created by consolidation and renovation of existing Ponds 1-6 and 13-18) will be used for SMB rearing (3 ponds at a total of 4 acres). In addition, it is assumed that one pond (Pond 20 – 0.86 AC) will be needed for fathead minnow (FHM) production for the Phase 2 rearing. Pond renovation will include reconfiguration of Ponds 1-6 and 13-18 into Ponds N1-N3, and reconfiguration of Pond 20, demolition of existing concrete water supply flumes, regrading, compaction, membrane lining, new water supplies, harvest structures, aeration, and individual outlet structures.

2.1.2. New Pond Water Supply

New pond water supply will be created by trenching, backfilling, and adding bedding for new water supply piping system to provide individual pond filling. Piping will include piping, fittings and interconnection valves.

2.1.3. New Harvest Kettles, Outlet Structures and Drain Piping

Each pond will be equipped with a concrete U-shaped fish harvest kettle, concrete outlet structure, kettle access stairway, and dual offset drain slide gates.

2.1.4. Pond Aeration System

Power will be distributed to a new central low pressure subsurface aeration system. Each pond will be equipped with a colorite floating diffuser connected to a new central air distribution system.

2.1.5. Site Electrical Service Improvements

Three-phase power will be provided to the site and the power distribution will be upgraded. Two diesel engine-generator standby power systems with outdoor enclosures will be installed.

2.1.6. Raw Water Intake Renovation

Raw water intake will be renovated by installing, into the existing concrete intake box, two 1,000 gpm vertical traveling screens with backwash. A slide gate will be added to the dam.

2.1.7. Filtration of Influent River Water

Two drumfilters (150 micron) for further filtration and treatment will be installed, with sumps, piping, and power. The drumfilters will be housed in a metal building. Proposed design flow is 1,000 gpm and the filters will be 50% redundant.

2.1.8. Filtration Backwash Effluent Treatment

Filtration backwash effluent treatment will be provided for by dredging and re-grading existing Pond 28 and installing a new concrete water control structure, fittings and piping. Backwash from the new drumfilter will be connected to the effluent pond.

2.1.9. Fertilizer and Equipment Storage Building

Pre-engineered 40'x30' metal pole barn type building (1 bay) will be constructed, with minimal electrical (lighting and receptacles) supplied throughout.

2.1.10. Alarming and Instrumentation

Auto-dialers will be installed in the Pavilion and at the drum filters to alarm for up to eight abnormal conditions. Dissolved oxygen aerator panels will be provided at the SMB and FHM ponds.

2.1.11. Harvest and Incubation Pavilion

Incubation building will include 900 sf (30'x30') enclosed metal frame structure with metal insulated roof and 2,000 sf open air pavilion to house four 40'x6' fiberglass hatching tanks. The enclosed portion of the building will house 12 McDonald hatching jars, four feed training troughs (10' long), a mechanical/electrical room, low pressure blower, and water treatment using stacked disc filters (assumed 20 micron), UV disinfection (assumed 40 mJ/cm² at 80% UV light transmittance) and water heating (5 degree F. rise, 20 hp heat pump) for flow of 76 gpm. One half of the existing concrete raceway bank will need to be demolished to accommodate this new building.

2.1.12. Smallmouth Bass Spawning Raceways

Utilize remaining harvest raceways (four 40'x6' raceways, see Item 2.1.11) to accommodate both harvesting and SMB spawning functions.

2.2 Summary Design Elements of SMB Rearing

Initial design and specifications are included below. **Note: quantities may be refined as the design progresses.** Detailed drawings and other design specifications will be provided with the 35%, 65%, 95% and 100% designs.

ID	Item Description	No of Units	Unit Meas.
A1	Pond renovation		
	Site Demolition	1	LS
	Clearing and Grubbing, Rock Removal	4.86	AC
	Piping Demolition	1	LS
	Earthwork (Exc.)	3,750	CY
	Earthwork (BF)	3,750	CY

ID	Item Description	No of Units	Unit Meas.
	Road Aggregate and Seeding	4.86	AC
	Regrading and Liner Preparation	4.86	AC
	Underdrain System	4.86	AC
	Sand Liner	4.86	AC
	Geotextile	4.86	AC
	Combine and Divide Ponds	2,000	CY
	Liner (52,000 SF/AC)	4.86	AC
A2	New pond water supply		
	18" C905 DR 25 PVC Pipe bedded & backfilled 4' deep	850	LF
	16" C905 DR 25 PVC Pipe bedded & backfilled 4' deep	35	LF
	Miscellaneous supply main fittings and restraints	1	LS
	Supply pipe leak testing larger than 10" size up to 2000 LF	1	LS
	18" buried Butterfly Valve w/box for flushing main	1	EA
	12" buried Butterfly Valve w/box for flushing main	1	EA
	Shallow End Delivery Piping, Splash Blocks and Fittings	4	EA
A3	New harvest kettles, outlet structures and drain piping		
	Concrete - 27 CY ea	4	EA
	Kettle Supply Plumbing for 1-acre pond	4	EA
	1-acre Drain branch, slide gate, drain valve, wye & wall adapters	4	EA
	Miscellaneous Metals - Screens, Embedments, Grating	4	EA
	21" SDR 35 PVC Drain bedded and buried 10' deep	90	LF
	15" SDR 35 PVC Drain bedded and buried 10' deep	160	LF
	12" SDR 35 PVC Drain bedded and buried 10' deep	800	LF
	Misc. drain pipe fittings & structure adapters	1	LS
	Leak test larger than 10" pipe up to 500' between manholes	1	LS
	Manhole 4' dia. 11' deep with dig, backfill, steps & lid	3	EA
	Manhole 5' dia. 11' deep with dig, backfill, steps & lid	1	EA
A4	Pond aeration system		
	Low Pressure Air Blower (7.5 hp)	2	EA
	LPA Concrete Pad	2	EA
	LPA Manifold	1	EA
	LPA Discharge Hose (2" ID)	100	LF
	Buried Air Pipe	750	LF
	Pond Aeration Units (Double Units)	3	EA
	Pond Aeration Units (Single Units)	1	EA
	Service Entrance Panel, 125A	1	EA
	Grounding	1	EA
	Motor Controls and VFD	2	EA
	100AF, 50AT, 3P Branch Circuit Breaker	2	EA
	Blower Building Electrics	1	LS
	Outdoor Equipment Support Structure	1	LS

ID	Item Description	No of Units	Unit Meas.
	Surge Arrester	1	LS
A5	Site electrical service improvements		
	West Side		
	Rebuild Utility OH Primary Line to 3 Phase	1	MI
	400A, 120/2080V, 3Ph, 4W Utility Service	1	LS
	Feed from Storage Building to Harvest Pavilion, 150 A, 3 PH	50	Lin Ft
	Feed from Storage Building to Hatchery, 400A	40	Lin Ft
	40kW Outdoor Generator w/ Sub-base Fuel Tank	1	EA
	ATS	1	EA
	West Side		
	125A, 120/208V, 3Ph, 4W Utility Service	1	LS
	Outdoor Electrical Equipment Support Structure	1	LS
	40kW Outdoor Generator w/ Sub-base Fuel Tank	1	EA
	ATS: 125A, 120/208V, 3Ph, 4 Pole	1	EA
	Service Ground Field	1	LS
A6	Raw water intake renovation		
	Traveling Screen		
	Traveling Screen & Conveyor with Training	2	EA
	Backwash Pump & Accessories	2	EA
	Backwash Strainers & Accessories	2	EA
	3-Way PVC Ball Valves	2	EA
	Installation of Traveling Screens	1	LS
	O&P for Screen, Conveyor, Backwash & Installation	1	LS
	Freight/Delivery	1	LS
	New Maintenance Valve		
	48" Slide Gate to facilitate sediment removal from dam	1	EA
	Dewatering for slide gate installation	1	LS
	Removal of sediment from dam and intake box	1	EA
	New Electrical to Equipment		
	Power Feeder	1,500	LF
	Handhole	2	EA
	Panelboard: 100A MCB NEMA 4XSS	1	EA
	FVNR Combination Starter, NEMA Sz. 1, NEMA 4XSS	2	EA
	Branch Circuit Conduit & Wire	200	LF
	60AF, 3P Branch Circuit Breaker	2	EA
	100AF, 3P Distribution Circuit Breaker	1	EA
A7	Filtration of influent river water		
	Sump and Foundation	700	SF
	Building	700	SF
	1500 gpm (total, 750 gpm each) 120 micron Drumfilter w/wash for 40 ppm TSS (matl.)	2	EA
	Microscreen installation	2	EA

ID	Item Description	No of Units	Unit Meas.
	Subcontractor Markup	2	LS
	Plumbing	1	LS
	Electrical	1	LS
A8	Filtration backwash effluent treatment		
	Dredge Pond	1,875	CY
	Regrade Pond	1	EA
	Concrete Structure	1	EA
	Outlet Structure slide gate and piping	1	LS
	Shallow End Delivery Piping, Splash Blocks and Fittings	1	EA
	Effluent Drain to Settling Pond for BW	2,100	LF
	Manholes	5	EA
	Miscellaneous Piping	1	LS
A9	Fertilizer and equipment storage		
	New Storage Building (1 bay, 40'x30' ea)	1,200	SF
	Electrical	1,200	SF
A10	Alarming and instrumentation		
	Alarms Auto-Dialer	2	EA
	New telephone service to Drum Filter	1	LS
	Level Switch	3	EA
	Temperature Switch	1	EA
	Diff Pressure Switch	1	EA
	Flow Switch	2	EA
	DO Monitoring	4	EA
	Alarm Conduit & Wire	800	LF
A11	Harvest and Incubation Pavilion		
	New Road - Bituminous Surface	278	SY
	New Road - Base Course	278	SY
	Earthwork	1	LS
	Foundation	2,900	SF
	Building - Pavilion	2,000	SF
	Building - Incubation/Early Rearing	900	SF
	Fence	2,000	LF
	Fiberglass Holding Tanks	4	EA
	Incubation	1	EA
	Incubation Treatment Heat Pump	1	LS
	Incubation Treatment Filtration	1	LS
	Incubation Treatment UV System	1	LS
	Incubation Treatment Pumps and Misc. Piping	1	LS
	Low Pressure Air Pumps and Piping	1	LS
	Plumbing Holding	2,000	SF
	Plumbing Incubation	900	SF

ID	Item Description	No of Units	Unit Meas.
	Drains	2,900	SF
	HVAC	900	SF
	Building Site Drain	150	LF
	Manholes	2	EA
	6" PVC Pipe bedded & backfilled 4' deep, Site gravity supply	120	LF
	Building Electrical	2,900	SF
A12	Demolition of Raceways		
	Fill and Grading	1,000	CY
	Demolish 6 raceways	1	LS

3.0 CONSTRUCTION CRITERIA

Modifications and improvements to the FRFH will utilize current engineering standards and will be constructed utilizing high quality materials.

4.0 PROPOSED SCHEDULE

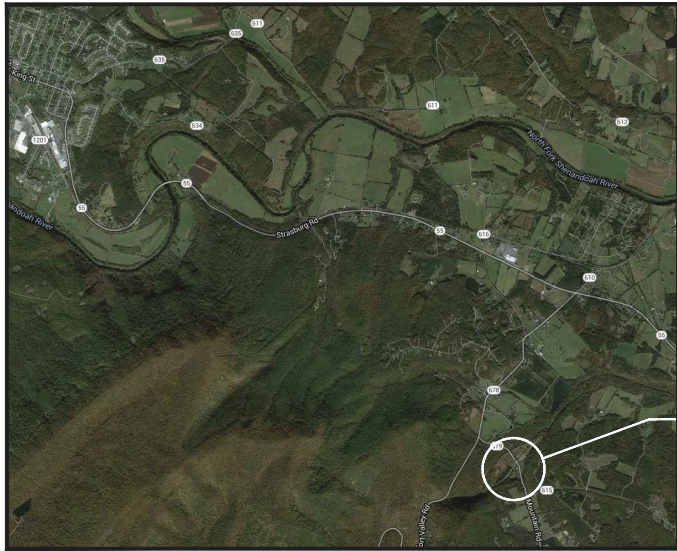
DuPont will provide the Trustees with design submittals according to the schedule outlined in Section VIII of the Consent Decree.

EXPECTED ELEMENTS OF 100% DESIGN FOR
FRONT ROYAL REGIONAL FISH HATCHERY PROJECT

The 100% Design for the Front Royal Regional Fish Hatchery Project is expected to contain the following elements, modified as may be appropriate in light of developments during completion of the Design.

1. Overall Site Plan and Plan Drawing
 - a. Property Usage Description
 - b. Location Map and Design Map
 - c. Overall Facility Layout
 - d. Vehicle Parking, ADA Accessible Parking, Walkways (if required for project)
 - e. Vehicle and Pedestrian Access and Circulation
 - f. Project Materials of Construction and Construction Specifications
 - g. Storm Water Drainage Features
 - h. Identification of Non-typical Site Features Such As Wetlands
2. Site Modification Plan
3. Overall Dimension Plan
4. Overall Site Grading Plan
5. Enlarged Site Grading Plan(s) (if applicable)
6. Hatchery Modifications and Improvements
 - a. Detailed Plans, Sections and Materials Descriptions
 - b. Detailed Plans for New Construction of Buildings or other Infrastructure
 - c. Detailed Plans for Decommissioning of Some Existing Infrastructure
7. Site Pavement and Miscellaneous Site Details (if required for project)
8. Storm Water Management Details (if required for project)
9. Erosion and Sedimentation Control Notes and Details
10. Written technical specifications for all site construction activities.

FRONT ROYAL FISH HATCHERY SMALLMOUTH BASS REARING FRONT ROYAL, VIRGINIA



LOCATION MAP
NOT TO SCALE



SITE MAP
NOT TO SCALE



INDEX OF SHEETS	
SMB-1	COVER SHEET AND LOCATION MAP
SMB-2	FRONT ROYAL EXISTING CONDITIONS
SMB-3	IMPROVEMENTS SITE PLAN



ISSUE	DATE	DESCRIPTION
1	07/21/16	DRAWINGS SUBMITTAL

PROJECT MANAGER	T. McPARLAND
PROJECT BIOLOGIST	T. JOHNSON
STRUCTURAL	B. BRADLEY
ELECTRICAL	G. ROSCETTI
MECHANICAL	T. TALSMAN
CADD DRAFTER	P. DAUGHTON
PROJECT NUMBER	10034375



VIRGINIA DEPARTMENT OF
GAME AND INLAND
FISHERIES

FRONT ROYAL FISH HATCHERY SMALLMOUTH BASS REARING COVER SHEET AND LOCATION MAP		
0 1" 2"	FILENAME: SMB-1.dwg	SHEET
	SCALE: NONE	SMB-1

SYMBOLS

- ? - EXPOSED UTILITY } ? - SEE SERVICE ABBREVIATIONS
- -? - BURIED UTILITY
- | - GATE VALVE
- | - VALVE
- | - CAP OR PLUG
- | - PIPE OPENING
- - - - - DRAINAGE LINE
- - - - - REARING UNIT OR WATER BODY
- - - - - ROADS
- - - - - TREE LINE
- - - - - TREE OR BUSH
- - - - - STRUCTURE
- - - - - FENCE
- ⊙ - POWER POLE
- ⊕ - TRANSFORMER, POLE MOUNTED
- ⊕ - LIGHT FIXTURE
- ⊕ - UTILITY METER
- ⊕ - PANELBOARD
- ⊕ - DUPLEX RECEPTACLE
- ⊕ - AERATOR RECEPTACLE

SERVICE ABBREVIATIONS

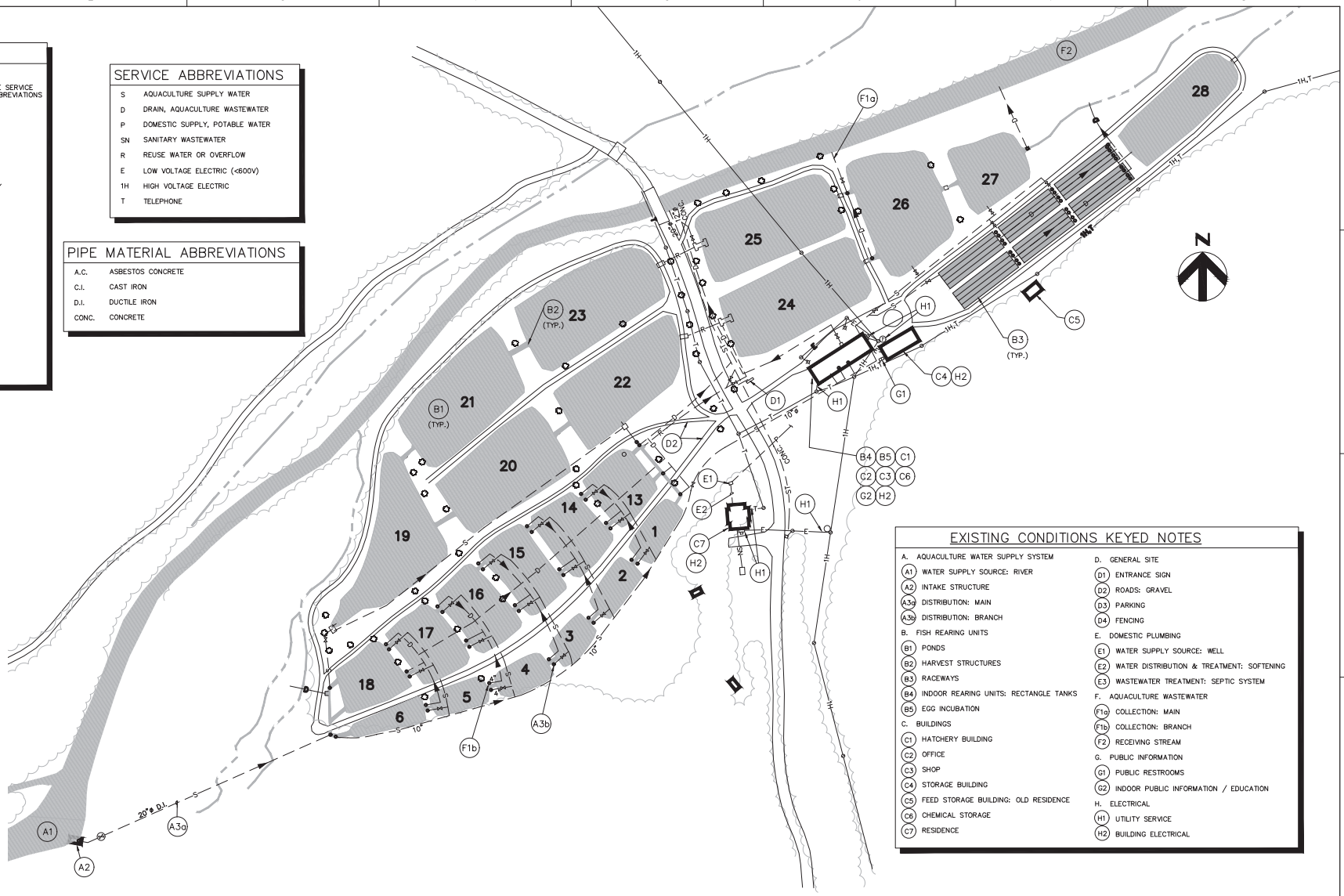
- S AQUACULTURE SUPPLY WATER
- D DRAIN, AQUACULTURE WASTEWATER
- P DOMESTIC SUPPLY, POTABLE WATER
- SN SANITARY WASTEWATER
- R REUSE WATER OR OVERFLOW
- E LOW VOLTAGE ELECTRIC (<600V)
- 1H HIGH VOLTAGE ELECTRIC
- T TELEPHONE

PIPE MATERIAL ABBREVIATIONS

- A.C. ASBESTOS CONCRETE
- C.I. CAST IRON
- D.I. DUCTILE IRON
- CONC. CONCRETE

Existing Pond Sizes

Pond No.	Acreage
1	0.17
2	0.17
3	0.14
4	0.16
5	0.14
6	0.15
13	0.33
14	0.39
15	0.40
16	0.41
17	0.38
18	0.32
19	0.81
20	0.86
21	0.89
22	0.83
23	0.99
24	0.96
25	0.91
26	0.87
27	0.42
Total	10.67
Effluent (28)	0.58



EXISTING CONDITIONS KEYED NOTES

<p>A. AQUACULTURE WATER SUPPLY SYSTEM</p> <ul style="list-style-type: none"> (A1) WATER SUPPLY SOURCE: RIVER (A2) INTAKE STRUCTURE (A3a) DISTRIBUTION: MAIN (A3b) DISTRIBUTION: BRANCH <p>B. FISH REARING UNITS</p> <ul style="list-style-type: none"> (B1) PONDS (B2) HARVEST STRUCTURES (B3) RACEWAYS (B4) INDOOR REARING UNITS: RECTANGLE TANKS (B5) EGG INCUBATION <p>C. BUILDINGS</p> <ul style="list-style-type: none"> (C1) HATCHERY BUILDING (C2) OFFICE (C3) SHOP (C4) STORAGE BUILDING (C5) FEED STORAGE BUILDING: OLD RESIDENCE (C6) CHEMICAL STORAGE (C7) RESIDENCE 	<p>D. GENERAL SITE</p> <ul style="list-style-type: none"> (D1) ENTRANCE SIGN (D2) ROADS: GRAVEL (D3) PARKING (D4) FENCING <p>E. DOMESTIC PLUMBING</p> <ul style="list-style-type: none"> (E1) WATER SUPPLY SOURCE: WELL (E2) WATER DISTRIBUTION & TREATMENT: SOFTENING (E3) WASTEWATER TREATMENT: SEPTIC SYSTEM <p>F. AQUACULTURE WASTEWATER</p> <ul style="list-style-type: none"> (F1a) COLLECTION: MAIN (F1b) COLLECTION: BRANCH (F2) RECEIVING STREAM <p>G. PUBLIC INFORMATION</p> <ul style="list-style-type: none"> (G1) PUBLIC RESTROOMS (G2) INDOOR PUBLIC INFORMATION / EDUCATION <p>H. ELECTRICAL</p> <ul style="list-style-type: none"> (H1) UTILITY SERVICE (H2) BUILDING ELECTRICAL
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HDR
 HDR Engineering, Inc.
 5201 South Sixth Street Road
 Springfield, IL 62783

ISSUE	DATE	DESCRIPTION
1	07/21/16	DRAWINGS SUBMITTAL

PROJECT MANAGER	T. McPARLAND
PROJECT BIOLOGIST	T. JOHNSON
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PROJECT NUMBER	10034375



VIRGINIA DEPARTMENT OF GAME AND INLAND FISHERIES

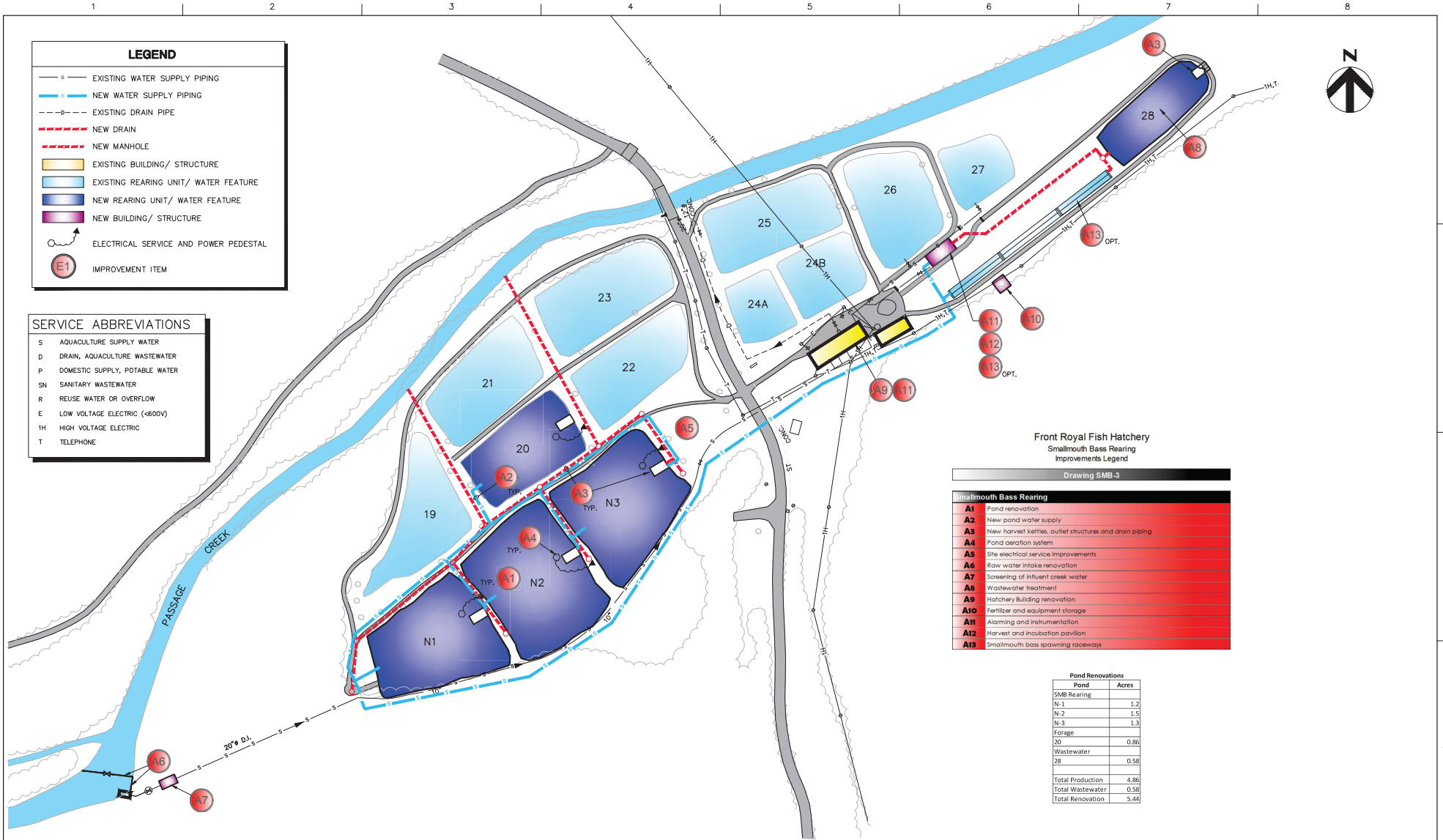
FRONT ROYAL FISH HATCHERY SMALLMOUTH BASS REARING

FRONT ROYAL EXISTING CONDITIONS

0 1" 2"

FILENAME: SMB-2.dwg
 SCALE: 1"=100'

SHEET
SMB-2



LEGEND

- S — EXISTING WATER SUPPLY PIPING
- NEW WATER SUPPLY PIPING
- - - EXISTING DRAIN PIPE
- - - NEW DRAIN
- - - NEW MANHOLE
- EXISTING BUILDING/ STRUCTURE
- EXISTING REARING UNIT/ WATER FEATURE
- NEW REARING UNIT/ WATER FEATURE
- NEW BUILDING/ STRUCTURE
- ELECTRICAL SERVICE AND POWER PEDESTAL
- (E1) IMPROVEMENT ITEM

SERVICE ABBREVIATIONS

- S AQUACULTURE SUPPLY WATER
- D DRAIN, AQUACULTURE WASTEWATER
- P DOMESTIC SUPPLY, POTABLE WATER
- SN SANITARY WASTEWATER
- R REUSE WATER OR OVERFLOW
- E LOW VOLTAGE ELECTRIC (<600V)
- 1H HIGH VOLTAGE ELECTRIC
- T TELEPHONE

**Front Royal Fish Hatchery
Smallmouth Bass Rearing
Improvements Legend**

Drawing SMB-3

Smallmouth Bass Rearing	
A1	Pond renovation
A2	New pond water supply
A3	New harvest kettles, outlet structures and drain piping
A4	Pond aeration system
A5	Site electrical service improvements
A6	Raw water intake renovation
A7	Screening of influent creek water
A8	Wastewater treatment
A9	Hatchery Building renovation
A10	Fertilizer and equipment storage
A11	Alarming and instrumentation
A12	Harvest and incubation pavilion
A13	Smallmouth bass spawning raceways

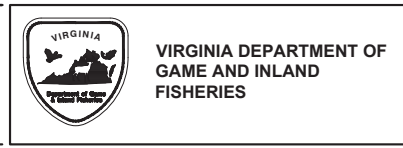
Pond Renovations

Pond	Acres
SMB Rearing	
N-1	1.2
N-2	1.5
N-3	1.3
Forage	
20	0.86
Wastewater	
28	0.58
Total Production	4.86
Total Wastewater	0.58
Total Renovation	5.44



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**FRONT ROYAL FISH HATCHERY
SMALLMOUTH BASS REARING
IMPROVEMENTS SITE PLAN**

SCALE: 1"=100'

FILENAME: SMB-3.dwg

SHEET: **SMB-3**