ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE

and

DOMINION TRANSMISSION, INC.
SUPPLY HEADER PROJECT

Supplemental Filing
January 10, 2017

APPENDIX J

Correspondence for the Atlantic Coast Pipeline

APPENDIX J

Supplemental Summary of Public Agency Correspondence for the Atlantic Coast Pipeline

Agency/Contact Name(s)	Date of Correspondence	Format	Description
FEDERAL AGENCIES			
U.S. Fish and Wildlife Service			
Sarah McRae	11/08/16	Email	Chowanoke crayfish and green floater inclusion in BA.
Kimberly Smith	11/10/16	Email	Rusty patched bumble bee inclusion in BA.
Pete Benjamin	11/16/16	Letter	Review of rare, threatened, and endangered aquatic species survey report for North Carolina.
John Ellis	12/01/16	Email	Sensitive HUC 12s in North Carolina.
Kimberly Smith	12/07/16	Email	Virginia sensitive stream crossings.
Sumalee Hoskin	12/07/16	Email	Request for qualifications of bat survey staff.
Kimberly Smith	12/09/16	Email	Virginia sensitive stream crossings.
Elizabeth Stout	1/04/17	Email	Bats discussion in BA.
U.S. Forest Service – Monongahela and George Washington National Forests			
Fred Huber, Carol Croy, Meg McElveen, Mike Donahue, Jennifer Adams [a]	9/10/15	Call Log	Small mammal surveys within the GWNF.
Catherine Johnson	11/22/16	Email	Habitat on Gibson Knob.
Clyde Thompson	11/23/16	Letter	Transmittal of an updated preliminary draft Biological Evaluation.
Clyde Thompson	12/5/16	Letter	Response to comments on the Order 1 soil survey report.
Clyde Thompson	12/5/16	Letter	Response to comments on the Geohazard Analysis Program reports.
Clyde Thompson	12/12/16	Letter	Response to comments on Order 1 soil survey report.
Clyde Thompson	12/13/16	Letter	Response to request for site-specific design of stabilization measures.
National Oceanic Atmospheric Administration			
Andrew Herndon	1/04/17	Email	Agency contacts.
STATE/COMMONWEALTH AGENCIES			
West Virginia Division of Culture and History			
Susan Pierce	11/17/16	Letter	Review of site testing plan.
Susan Pierce	12/7/16	Letter	Comments on survey report.
Susan Pierce	1/09/17	Letter	Transmittal of addendum aboveground structures report.
Susan Pierce	1/09/17	Letter	Transmittal of cemetery delineation report.
West Virginia Division of Natural Resources			
Janet Clayton	11/09/16	Email	West Fork River Phase II mussel report.

APPENDIX J (CONTINUED)

Supplemental Summary of Public Agency Correspondence for the Atlantic Coast Pipeline

Agency/Contact Name(s)	Date of Correspondence	Format	Description
Virginia Department of Environmental Quality			
Bettina Sullivan	1/09/17	Letter	Federal consistency certification; staty of six month review period.
Virginia Department of Game and Inland Fisheries			
Amy Ewing	1/03/17	Email	Bat survey data for Virginia.
Virginia Department of Historic Resources			
Roger Kirchen	1/09/17	Letter	Transmittal of addendum aboveground structures report.
Roger Kirchen	1/09/17	Letter	Transmittal of cemetery delineation report.
Roger Kirchen	1/09/17	Letter	Transmittal of geomorphological investigations report for archaeological sites in Virginia.
Roger Kirchen	1/09/17	Letter	Transmittal of site testing report.
North Carolina Department of Environmental Quality			
William Miller	11/23/16	Letter	Submittal of stream buffer determination package.
North Carolina Wildlife Resources Commission			
Gabriela Garrison	11/14/16	Email	Forest GIS data layers.
Gabriela Garrison and Vann Stancil	1/04/17	Letter	Transmittal of Fish and Aquatics Collection and Relocation Protocol.
North Carolina Department of Natural and Cultural Resources			
Ramona Bartos	11/22/16	Letter	Review of updated archaeological survey report.
Renee Gledhill-Earley	12/2/16	Letter	Request to review survey report.
Ramona Bartos	12/12/16	Letter	Comments on survey report.
Renee Gledhill-Early	1/09/17	Letter	Transmittal of addendum aboveground structures report.
Renee Gledhill-Early	1/09/17	Letter	Transmittal of cemetery delineation report.
Renee Gledhill-Early	1/09/17	Letter	Transmittal of site testing report.
North Carolina Division of Mitigation Services			
Tim Baumgartner	11/23/16	Letter	Request to cross mitigation sites.

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[a] Inadvertently omitted from previous filings.

Federal Agencies

U.S. Fish and Wildlife Service

Steve Holden

From: McRae, Sarah <sarah_mcrae@fws.gov>
Sent: Tuesday, November 08, 2016 2:04 PM
To: Sara Throndson
Cc: John Ellis
Subject: Re: ACP - green floater and Chowanoke crayfish?

Hi Sara.
Just wanted to follow up on this - we made similar comments to FERC on our call yesterday.
Yes, you should include the Chowanoke Crayfish and Green Floater in your BA analysis.

Thanks,
Sarah McRae

On Fri, Nov 4, 2016 at 3:59 PM, Sara Throndson <Sara.Throndson@erm.com> wrote:

Good afternoon FWS offices. I am following up on an email I sent last Thursday.

Thanks and have a good weekend! Sara

Sara Throndson

Office 612-347-7113 | Cell 612-716-7812

From: Sara Throndson
Sent: Thursday, October 27, 2016 2:50 PM
To: elizabeth_stout@fws.gov; Kimberly Smith; Tracy Brunner; troy_andersen@fws.gov; Ellis, John; sarah_mcrae@fws.gov
Subject: ACP - green floater and Chowanoke crayfish?

Good afternoon FWS offices!

ACP has received a data request from FERC. One of the questions indicates that the green floater and Chowanoke crayfish, species currently under review for federal listing, should be included in the Biological Assessment per a request from the FWS.

Previous meetings with your offices have briefly discussed these species, as well as four other species under review (Atlantic pigtoe, yellow lance, Neuse River waterdog, Carolina madtom). The four mentioned species have been included in the BA filed October 20th per a FWS comment received on a previous draft of the BA, however your comments on the draft BA did not request that green floater and Chowanoke crayfish be included.

Can you please provide confirmation that the Chowanoke crayfish and green floater should (or should not) also be included in the BA for the same reasons as the other under review species? Additionally, please confirm the schedule for a listing decision is scheduled to occur on or before April 1, 2017; if it is warranted for listing, a determination of listing status will be made 12 months later. If they are not, it would be appreciated if you could provide an estimated schedule for the listing decisions for the Chowanoke crayfish and green floater.

Thank you! Sara

Sara Throndson

Senior Scientist

ERM
1000 IDS Center, 80 S. 8th Street l Minneapolis l MN l 55402
Office 612-347-7113 l Cell 612-716-7812
sara.throndson@erm.com l www.erm.com

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Sarah McRae
Aquatic Endangered Species Biologist
US Fish and Wildlife Service
PO Box 33726
Raleigh, NC 27636-3726

office phone: 919-856-4520x16 (Mon, Wed)
telework phone: 919-400-5533 (Tues, Thurs, Fri)
fax: 919-856-4556
email: sarah_mcrae@fws.gov
web: fws.gov/raleigh

Steve Holden

From: Smith, Kimberly <kimberly_smith@fws.gov>
Sent: Thursday, November 10, 2016 11:37 AM
To: Sara Throndson
Cc: Troy Andersen
Subject: Re: ACP and Rusty Patched Bumble Bee

I recommend that you do because a listing decision will occur before your project is complete. Again, we will try to provide you with more guidance shortly.

On Thu, Nov 10, 2016 at 11:34 AM, Sara Throndson <Sara.Throndson@erm.com> wrote:

Hi Kim, Do we need to address this species in our Biological Assessment?

Sara

Sara Throndson

Office 612-347-7113 | Cell 612-716-7812

From: Smith, Kimberly [mailto:kimberly_smith@fws.gov]
Sent: Thursday, November 10, 2016 10:12 AM
To: Sara Throndson
Cc: Troy Andersen
Subject: Re: ACP and Rusty Patched Bumble Bee

Hi Sara,

We are currently developing our guidance on this species for Virginia. Recommendations will be made to avoid or minimize impacts to this species in extant counties and also within the historic range. Because ACP intersects counties with historic records, recommendations will be provided. Hopefully I will be able to provide you with our specific recommendations by our November 29 meeting.

Kim

On Mon, Oct 3, 2016 at 5:09 PM, Sara Throndson <Sara.Throndson@erm.com> wrote:

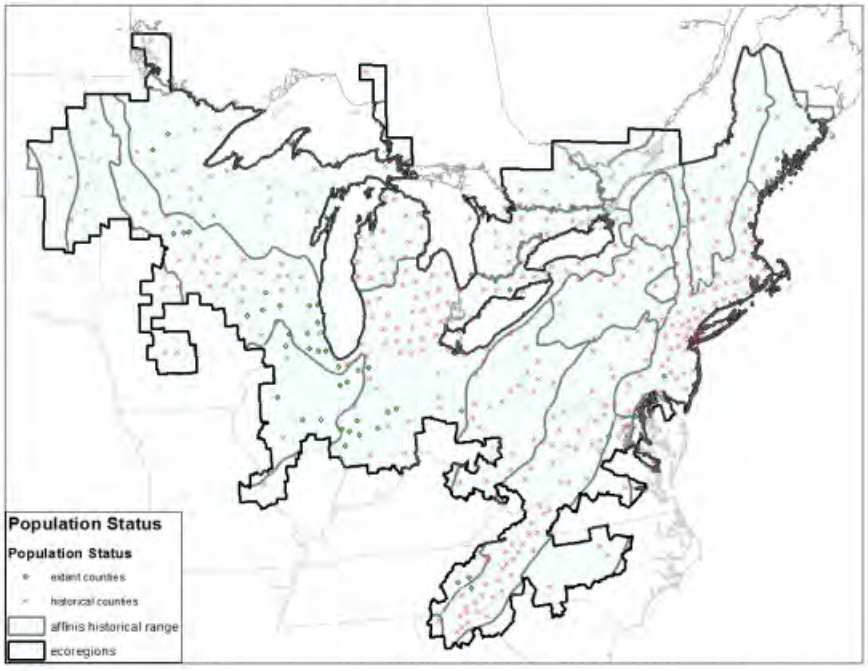
Good afternoon FWS field offices. The ACP team is requesting verification that the ACP Project does not need to address Rusty Patched Bumble Bee in our Biological Assessment. The Federal Register published a proposed rule for this species on September 22.

Based on the range map from the Species Status Assessment dated June 2016 the Project passes through entirely historic range for this species and there are no known occurrences in the counties crossed by the Project.

The map from the Species Status Assessment is below and a map of the ACP current proposed route overlain on the species range is attached.

Thank you, Sara

Figure 7.6. *Bombus affinis* range map showing current distribution. Dots represent counties with *B. affinis* at least 1 record since 2000, and Xs represent counties with historical occurrences only (*i.e.*, no *B. affinis* records since 2000).



Sara Throndson

Senior Scientist

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

16 November 2016

Mr. Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, VA 23060

RE: Review of Dominion Transmission, Inc., Atlantic Coast Pipeline submittal of Rare, Threatened, and Endangered (RTE) Aquatic Species Survey Draft Report for the alignment through North Carolina

Dear Mr. Gangle:

The US Fish and Wildlife Service (Service) received a request by Dominion on 13 October 2016 to review the Rare, Threatened, and Endangered (RTE) Aquatic Species Survey Report for the Atlantic Coast Pipeline (ACP) alignment through North Carolina. This plan was prepared by Environmental Solutions and Innovations, Inc. (ESI) out of Cincinnati, OH for Dominion Transmission, Inc. (DTI), which has been contracted by Atlantic Coast Pipeline, LLC to permit, build, and operate the ACP. The ACP will be regulated by the Federal Energy Regulatory Commission (FERC) under Section 7(c) of the Natural Gas Act, and will be subject to review under the National Environmental Policy Act (NEPA). Our comments are submitted pursuant to, and in accordance with, provisions of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (ESA).

The plan, titled "Draft Report: Rare, Threatened, and Endangered Aquatic Species Studies for the Proposed Atlantic Coast Pipeline North Carolina," describes the methods and results of surveys done to date for RTE Aquatic Species in streams traversed by the ACP Rev11a in North Carolina. Surveys were not completed at seven crossings due to land access restrictions and are planned to be finalized in 2017; an amended report will be submitted upon completion of those future survey efforts. Seven of the proposed crossings (Roanoke River, Swift Creek, Fishing Creek, Tar River, Contentnea Creek, Little River, and Cape Fear River) plan to use an HDD crossing method, and the remainder of crossings will involve an open-trench construction method (i.e., open/wet cut or dam/flume). Of those open-trench crossings, relocation efforts for freshwater mussels and other aquatic species are anticipated at 10 stream locations.

As mentioned in previous correspondence, the Service is concerned about potential impacts to listed and at-risk aquatic species and their habitats that will be traversed by the ACP. The following is a list of stream crossings where the species listed should be presumed present (note: not finding the species during the 2015-2016 surveys is not sufficient for assuming probable absence):

- Roanoke River – Atlantic Pigtoe, Green Floater
- Rocky Swamp – Dwarf Wedgemussel

- Fishing Creek – Tar River Spinymussel, Atlantic Pigtoe, Carolina Madtom, Neuse River Waterdog
- Swift Creek (Tar) – Tar River Spinymussel, Atlantic Pigtoe, Yellow Lance, Carolina Madtom, Neuse River Waterdog
- Tar River – Neuse River Waterdog
- Contentnea Creek – Carolina Madtom, Neuse River Waterdog
- Little River – Tar River Spinymussel, Dwarf Wedgemussel, Atlantic Pigtoe, Yellow Lance, Carolina Madtom, Neuse River Waterdog

As also mentioned in prior correspondence, the Service has been petitioned to list several aquatic species as threatened or endangered, including the Atlantic Pigtoe, Yellow Lance, Green Floater, Carolina Madtom, Neuse River Waterdog, and Chowanoke Crayfish. Please note that listing determinations will be made for the Yellow Lance, Atlantic Pigtoe, Carolina Madtom, and Neuse River Waterdog in 2017.

Section 7.0 (p.43) of the reports details six items for agency concurrence. Below are our responses:

1. The Service concurs that no additional survey efforts are necessary at the following 24 crossings:
   - Roanoke River
   - Tar River
   - Little River
   - Swift Creek
   - Fishing Creek
   - Contentnea Creek
   - Cape Fear River
   - Jacks Swamp 1 & 2
   - Cypress Creek 1, 2 & 3
   - Little Quankey Creek
   - Marsh Swamp (Tar)
   - Burnt Coat Swamp
   - Rocky Swamp
   - Black Swamp
   - Little Buffalo Creek
   - Polecat Branch
   - Polecat Branch AR
   - Hannah Creek
   - Whiteoak Branch
   - Stone Creek
   - Johnson Swamp
2. The Service concurs that no additional survey efforts are necessary prior to relocation at the following 11 crossings:
   - Quankey Creek
   - Flat Rock Branch 1 & 2
   - Pig Basket Creek
   - Stony Creek
   - Toisnot Swamp
   - Millstone Creek
   - Marsh Swamp (Neuse)
   - UNT to Marsh Swamp
   - Neuse River
   - UNT to Johnson Swamp
3. The Service concurs that additional surveys are needed prior to potential relocation (if any aquatic species are documented) at the following six crossings:
   - Beaverdam Swamp
   - Jacket Swamp
   - Little Sapony Creek
   - Sapony Creek
   - Little Creek
   - John K Swamp
4. The Service concurs that inaccessible streams or new streams added by route modifications will be surveyed prior to construction.

5. The Service acknowledges that site-specific mussel survey results are valid for two years from the date of survey, and we add that no additional surveys are needed at locations where no mussels were located.
6. The Service concurs that relocations will occur prior to open-trench construction of each crossing of streams known to have aquatic species presence, pending relocation plan approval.

The Service seeks clarification on a discrepancy between Table 1 (p.13) and Section 5.5.4 "Contentnea Creek" (p.32), where the Table indicates "0" Carolina Madtoms were observed, yet the text under Section 5.5.4 indicates "multiple Carolina Madtom individuals were observed within the DS buffer." The Service was informed that a Carolina Madtom Survey Report has been prepared on a recent call with FERC (Nov 7, 2016), and we request the opportunity to review this report as soon as it is available.

The Service would also like to point out that in Figure 2 (pp.7-10) and throughout the Survey Report document, the yellow dots indicate that the HDD crossings are "avoidance" locations; these should be changed to "minimization" locations, as there is the potential for a frack-out or inadvertent return, which could result in impacts to the species.

The Service appreciates the opportunity to review the draft RTE Aquatic Species Survey Report, and we encourage additional discussion about conservation measures that can be included to minimize impacts to listed and at-risk species. If you have any questions about our comments on the report, please contact Sarah McRae at 919-856-4520x16 or at sarah_mcrae@fws.gov.

Sincerely,

for Pete Benjamin
Field Supervisor
Raleigh, NC Ecological Services

ec: Gabriela Garrison, NCWRC
Vann Stancil, NCWRC
Tyler Black, NCWRC
Jeff Hall, NCWRC
Judy Ratcliffe, NCNHP

Steve Holden

From: Ellis, John <john_ellis@fws.gov>
Sent: Thursday, December 01, 2016 1:25 PM
To: Sara Throndson; Spencer Trichell; Elizabeth Stout; Kimberly Smith; William Hartwig; McRae, Sarah; Emily Jernigan
Subject: sensitive 12 digit HUCs NC
Attachments: acp12digithucs.zip

The attached file contains the shapefiles for the 12 digit HUCs in which we would like to see additional information re: the access roads and stream crossings. Please include in the draft BA what additional measures you will utilize to control erosion and sedimentation in these sensitive areas. We'll be mentioning this in our comments. As we discussed on Tuesday, timing may not allow another review of the whole document but we are willing to work closely with you on sections that need beefing up.

Thanks,
John

Steve Holden

From: Smith, Kimberly <kimberly_smith@fws.gov>
Sent: Wednesday, December 07, 2016 9:26 AM
To: Sara Throndson
Cc: Sumalee Hoskin; Troy Andersen
Subject: ACP - Virginia Sensitive Stream crossings and Areas where we recommend a 3rd party monitor during the construction plase
Attachments: 080216-karst-report-Table 4 MCI sensitive areas.pdf

Sara,

As discussed at the November 29, 2016 meeting.

Cowpasture River - James spinymussel

Butterwood Creek - Roanoke logperch

Nottoway River - Roanoke logperch, Dwarf wedgemussel, Atlantic pigtoe, yellow lance

Waqua Creek - Roanoke logperch

Sturgeon Creek - Roanoke logperch, Atlantic pigtoe

The areas highlighted in the attached table and Cochran's Cave No. 2 and No. 3. - Madison Cave Isopod

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Kimberly Smith
Fish and Wildlife Biologist
U.S. Fish & Wildlife Service
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TABLE 4. Area Features (Field Survey)

Feature ID	easting	northing	Area	Risk_Rank	Karst_ID	Map Unit	Formation	Geologic Period	State	County
A131-1	2178853.65	13846885.71	24893	High	Sinkhole	Ob	Beekmantown Group	Ordovician	VA	Augusta
A132-2	2179221.71	13846325.10	4851	High	Sinkhole	Ob	Beekmantown Group	Ordovician	VA	Augusta
C009-1	2003453.40	13899874.21	69	High	Sinkhole	Ols	Mocassin Formation, Bays Formation, Unit C, Unit B, Unit A	Ordovician	VA	Highland
C010-1	2003628.31	13899613.92	2526	High	Sinkhole	Ols	Mocassin Formation, Bays Formation, Unit C, Unit B, Unit A	Ordovician	VA	Highland
C010-2	2003793.38	13899452.49	1101	Moderate	Sinkhole	Ols	Mocassin Formation, Bays Formation, Unit C, Unit B, Unit A	Ordovician	VA	Highland
C010-3	2003594.33	13899321.74	1135	High	Cave	Ols	Mocassin Formation, Bays Formation, Unit C, Unit B, Unit A	Ordovician	VA	Highland
C010-5	2003746.03	13899360.73	2370	High	Sinkhole	Ols	Mocassin Formation, Bays Formation, Unit C, Unit B, Unit A	Ordovician	VA	Highland
C010-6	2003917.16	13899368.21	6768	High	Sinkhole	Ols	Mocassin Formation, Bays Formation, Unit C, Unit B, Unit A	Ordovician	VA	Highland
C010-9	2003891.64	13899155.63	4558	High	Sinkhole	Ols	Mocassin Formation, Bays Formation, Unit C, Unit B, Unit A	Ordovician	VA	Highland
C010-10	2003956.55	13899261.10	832	Moderate	Sinkhole	Ols	Mocassin Formation, Bays Formation, Unit C, Unit B, Unit A	Ordovician	VA	Highland
C010-11	2003789.34	13899010.95	1096	Moderate	Sinkhole	Ols	Mocassin Formation, Bays Formation, Unit C, Unit B, Unit A	Ordovician	VA	Highland
C010-12	2004025.45	13898946.27	1338	High	Sinkhole	Ols	Mocassin Formation, Bays Formation, Unit C, Unit B, Unit A	Ordovician	VA	Highland
C011-6	2004557.41	13898418.50	737	High	Sinkhole	Ols	Mocassin Formation, Bays Formation, Unit C, Unit B, Unit A	Ordovician	VA	Highland
C028-1	2007797.65	13892539.50	206	High	Sinkhole	Skrt	Keefer Sandstone, Rose Hill and Tuscarora Formations	Silurian	VA	Highland
C025-2	2007973.29	13892344.99	716	High	Sinkhole	Skrt	Keefer Sandstone, Rose Hill and Tuscarora Formations	Silurian	VA	Highland
C025-1	2007902.85	13892345.18	277	High	Sinkhole	Skrt	Keefer Sandstone, Rose Hill and Tuscarora Formations	Silurian	VA	Highland
C028-4	2007865.34	13892306.19	436	High	Sinkhole	Skrt	Keefer Sandstone, Rose Hill and Tuscarora Formations	Silurian	VA	Highland
C028-5	2008072.91	13892145.78	1246	High	Sinkhole	Skrt	Keefer Sandstone, Rose Hill and Tuscarora Formations	Silurian	VA	Highland
C028-6	2008090.06	13892086.66	773	High	Sinkhole	Skrt	Keefer Sandstone, Rose Hill and Tuscarora Formations	Silurian	VA	Highland
C030-2	2010671.80	13890561.13	791	High	Sinkhole	Skrt	Keefer Sandstone, Rose Hill and Tuscarora Formations	Silurian	VA	Highland
C030-1	2011317.06	13889600.53	43	High	Sinkhole	DSu	Ridgeley Sandstone, Helderber and Cayuga Groups	Lower Devonian - Upper Silurian	VA	Highland
A106-1	2172337.05	13860247.54	2573	High	Sinkhole	Ob	Beekmantown Group	Ordovician	VA	Augusta
A033-2	2225210.44	13800926.78	3579	Moderate	Sinkhole	€wb	Waynesboro Formation	Cambrian	VA	Augusta
A033-3	2225306.53	13801022.33	34442	Low	Sinkhole	€wb	Waynesboro Formation	Cambrian	VA	Augusta
A162-1	2210936.57	13817641.23	698	High	Sinkhole	O€co	Conococheague Formation	Ordovician - Cambrian	VA	Augusta
A162-2	2211059.84	13817441.55	656	Moderate	Sinkhole	O€co	Conococheague Formation	Ordovician - Cambrian	VA	Augusta
A162-3	2211386.25	13817042.79	1476	Moderate	Sinkhole	O€co	Conococheague Formation	Ordovician - Cambrian	VA	Augusta
A165-1	2211813.52	13816398.29	159	High	Sinkhole	€e	Elbrook Formation	Cambrian	VA	Augusta
A165-2	2211722.85	13816685.96	103	Moderate	Sinkhole	O€co	Conococheague Formation	Ordovician - Cambrian	VA	Augusta
D006-1	2213304.81	13814867.99	136	Moderate	Sinkhole	€e	Elbrook Formation	Cambrian	VA	Augusta
A148-1	2192273.40	13833374.62	78	High	Sinkhole	Oeln	Edinburg Formation, Lincholnshire and New Market Limestones	Ordovician	VA	Augusta
A148-2	2192543.50	13833041.26	8569	High	Sinkhole	Oeln	Edinburg Formation, Lincholnshire and New Market Limestones	Ordovician	VA	Augusta
E058-1	1962032.02	13911802.60	2295	High	Sinkhole	Stw	Tonoloway, Wills Creek, Williamsport	Silurian	WV	Pocahontas
E058-3	1962044.09	13911907.14	565	High	Sinkhole	Stw	Tonoloway, Wills Creek, Williamsport	Silurian	WV	Pocahontas
E057-2	1962105.47	13912062.96	519	Moderate	Sinkhole	Stw	Tonoloway, Wills Creek, Williamsport	Silurian	WV	Pocahontas
E057-1	1962165.88	13911968.25	334	Moderate	Sinkhole	Stw	Tonoloway, Wills Creek, Williamsport	Silurian	WV	Pocahontas
E051-4	1960367.71	13912915.15	856	High	Sinkhole	St	Tuscarora Sandstone	Silurian	WV	Pocahontas
E023-2	1913593.98	13951026.95	202	High	Sinkhole	Mg	Greenbrier	Mississippian	WV	Pocahontas
E033-2	1924310.82	13924730.82	1558	High	Sinkhole	Mg	Greenbrier	Mississippian	WV	Pocahontas
E033-3	1924118.84	13924695.27	1773	High	Sinkhole	Mg	Greenbrier	Mississippian	WV	Pocahontas
E033-4	1924462.99	13923326.25	12970	High	Sinkhole	Mg	Greenbrier	Mississippian	WV	Pocahontas
E033-5	1924717.36	13923309.61	7166	High	Sinkhole	Mg	Greenbrier	Mississippian	WV	Pocahontas
E032-2	1923232.38	13925878.76	2416	High	Sinkhole	Mg	Greenbrier	Mississippian	WV	Pocahontas
E031-1	1921971.30	13925822.78	243	High	Sinkhole	Mg	Greenbrier	Mississippian	WV	Pocahontas
E031-2	1921950.93	13925876.46	397	Moderate	Sinkhole	Mg	Greenbrier	Mississippian	WV	Pocahontas
E028-3	1911982.64	13930729.45	342	High	Sinkhole	Mg	Greenbrier	Mississippian	WV	Pocahontas
B074-2	1888034.30	13993663.22	1097	Moderate	Sinkhole	Mh	Hinton	Mississippian	WV	Randolph
B074-3	1888001.46	13993593.12	2107	High	Sinkhole	Mh	Hinton	Mississippian	WV	Randolph
B074-4	1887934.32	13993557.65	247	High	Sinkhole	Mh	Hinton	Mississippian	WV	Randolph
Note: Coordinate System = UTM 17N, US Feet										

Steve Holden

From: Sumalee Hoskin <sumalee_hoskin@fws.gov>
Sent: Wednesday, December 07, 2016 10:57 AM
To: Sara Throndson; Elizabeth Stout; Kimberly Smith; Morris, Troy - FS
Cc: Tracy Brunner; Maggie Voth; Kathleen O'Connor; Spencer Trichell
Subject: RE: ACP - gray bat vetting

Sara,
Please include the person who vetted the calls and their qualifications when you update the BA.
Thanks,
Sumalee

****

Sumalee Hoskin
US Fish & Wildlife Service
6669 Short Lane
Gloucester, VA 23061

Tel: 804-693-6694 ex. 2414
Fax: 804-693-9032
Cell: 804-654-1824
Visit us at http://www.fws.gov/northeast/virginiafield/

From: Sara Throndson [mailto:Sara.Throndson@erm.com]
Sent: Tuesday, December 06, 2016 4:30 PM
To: elizabeth_stout@fws.gov; Sumalee Hoskin; Kimberly Smith; Morris, Troy - FS
Cc: Tracy Brunner; Maggie Voth; Kathleen O'Connor; Spencer Trichell (spencer.trichell@dom.com)
Subject: ACP - gray bat vetting

Good afternoon Liz and Sumalee,

I wanted to send a clarification note on the acoustic detections of gray bats on the ACP project in West Virginia and Virginia.

The 2016 reports submitted to your offices describe a number of sites (10 in WV and 6 sites in VA) where gray bats were detected by Kaleidoscope Pro (the automated program to analyze acoustic files). At the time of the report, these files had not been reviewed by a biologist and so the output from the program was presented as the most conservative result. However, since the accuracy of automated programs is not always ideal, it was our intention to have these files qualitatively reviewed by an experienced manual vetter and to get you that information in short order.

These files have now been qualitatively reviewed and no files were identified as likely gray bat calls. The potential gray bat calls identified by the automated program were found to be false positives created by low quality call recordings or non-search phase behavior by red bats, tricolored bats, or little brown bats.

This result will be discussed in the next draft of the BA.

Thank you, Sara

Sara Throndson
Senior Scientist

ERM
1000 IDS Center, 80 S. 8th Street l Minneapolis l MN l 55402
Office 612-347-7113 l Cell 612-716-7812
sara.throndson@erm.com l www.erm.com

Steve Holden

From: Smith, Kimberly <kimberly_smith@fws.gov>
Sent: Friday, December 09, 2016 11:46 AM
To: Sara Throndson
Cc: Sumalee Hoskin; Troy Andersen; Spencer Trichell (spencer.trichell@dom.com); Tracy Brunner; Laurid Broughton
Subject: Re: ACP - Virginia Sensitive Stream crossings and Areas where we recommend a 3rd party monitor during the construction plase

Sara,

No federally listed species are a concern for the James River crossing, however, the James River is potential habitat for the green floater, a state listed species, I believe you are addressing the green floater in your BA. Correct?

Kim

On Fri, Dec 9, 2016 at 10:24 AM, Sara Throndson <Sara.Throndson@erm.com> wrote:

Hi Kim,

We noticed that the James River is not included in your list below. In a previous email from you dated September 2, 2016 (*see attached*) you concurred with the Projects decision not to survey and to assume presence of federally listed mussels in the James River and Nottoway River.

Could you clarify that there is potential for federally listed mussels in the James River? We want to be sure we have this correct in the BA and do not want to assume presence for a species unnecessarily.

Thank you, Sara

Sara Throndson

Office 612-347-7113 l Cell 612-716-7812

From: Smith, Kimberly [mailto:kimberly_smith@fws.gov]
Sent: Wednesday, December 07, 2016 8:26 AM
To: Sara Throndson
Cc: Sumalee Hoskin; Troy Andersen

Subject: ACP - Virginia Sensitive Stream crossings and Areas where we recommend a 3rd party monitor during the construction plase

Sara,

As discussed at the November 29, 2016 meeting.

Cowpasture River - James spinymussel

Butterwood Creek - Roanoke logperch

Nottoway River - Roanoke logperch, Dwarf wedgemussel, Atlantic pigtoe, yellow lance

Waqua Creek - Roanoke logperch

Sturgeon Creek - Roanoke logperch, Atlantic pigtoe

The areas highlighted in the attached table and Cochran's Cave No. 2 and No. 3. - Madison Cave Isopod

--

Kimberly Smith

Fish and Wildlife Biologist

U.S. Fish & Wildlife Service

6669 Short Lane

Gloucester, VA 23061

Kimberly_Smith@fws.gov

804-824-2410

http://www.fws.gov/northeast/virginiafield/

---------- Forwarded message ----------
From: "Smith, Kimberly" <kimberly_smith@fws.gov>
To: "Spencer Trichell (Services - 6)" <Spencer.Trichell@dom.com>
Cc: "Richard B Gangle (Services - 6)" <richard.b.gangle@dom.com>, Sara Throndson <Sara.Throndson@erm.com>, Troy Andersen <troy_andersen@fws.gov>
Date: Fri, 2 Sep 2016 18:25:09 +0000
Subject: Re: VA - ESA Mussel Surveys

Spencer,

We have reviewed the engineering report provided in the August 1, 2016 filing indicating the risk for inadvertent returns for the James and Nottoway Rivers HDD crossings. Based on this report, we concur with your plan to not survey these HDD crossing locations, but assume presence of federally listed mussels.

Kim

On Tue, Aug 2, 2016 at 3:13 PM, Spencer Trichell (Services - 6) <Spencer.Trichell@dom.com> wrote:

Mr. Anderson and Ms. Smith,

In response to our conversation on July 18, 2016 regarding the need to survey for federally listed mussels in rivers proposed for HDD, we have received the engineering report indicating the risk for inadvertent returns. The two rivers where we are not proposing to survey at HDD crossing locations, but will assume presence of federally listed mussels, are the Nottoway and James Rivers in Virginia.

Geotechnical investigations have been completed where access has been granted by landowners. The geotechnical studies determine the suitability of the geology to support the pressures associated with HDD in terms of risk of hydrofracturing (i.e., likelihood of soils failing, resulting in a possible inadvertent return of drilling mud to the surface). (Note, not all hydrofracturing results in surface returns and not all surface returns are the result of hydrofracturing as other fissures/anomalies in the geology can act as conduits to the surface and these are generally not identified through geotechnical studies unless encountered at the actual geotechnical boring path.)

The James River and the Nottoway River findings indicate a "low" risk of soil hydrofracturing, thus no concerns of inadvertent returns were identified. The HDD design engineer has recommended one additional bore location at the James River crossing and that will be conducted once land access is granted by the landowner. The lack of land access resulted in the ability to only conduct borings on one side of the James River. Should the results of that investigation yield a different opinion of the likelihood of risk of inadvertent return, we would have further discussions with you regarding the need to survey. No additional borings were recommended at the Nottoway River crossing.

With the results of the geotechnical investigation and engineering opinion on hydrofracture risk being low for these two crossings, Atlantic believes that assuming presence of federally listed mussels (per previous coordination) and not conducting presence/probable absence surveys is appropriate. We respectfully request your concurrence in this matter.

Regards,

Spencer Trichell

Environmental Consultant - Atlantic Coast Pipeline

Dominion Resources Services, Inc.

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spencer.trichell@dom.com

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Steve Holden

From: Stout, Elizabeth <elizabeth_stout@fws.gov>
Sent: Wednesday, January 04, 2017 3:43 PM
To: Sara Throndson
Subject: Re: ACP - couple bat questions

See emboldened below.

On Wed, Jan 4, 2017 at 3:34 PM, Sara Throndson <Sara.Throndson@erm.com> wrote:
Hi Liz,

We had a couple of questions come up during our updates to the BA content for bats in West Virginia. Please take a look below. If you'd prefer a quick call to talk through our questions and give you some additional context, Maggie or I will be available.

1. Can you confirm that the Indiana bat protection areas should include both summer (capture and/or roost) and winter (hibernacula) buffers? **Yes, they should include summer and winter known-use buffers.**

2. The bat reports summarized known Indiana bat habitats, including a single Indiana capture location buffer on SHP and several P3/4 hibernacula buffers in Randolph and Pocahontas Counties. To the best of your knowledge, are those the only Indiana bat occurrences in West Virginia (i.e, are our agency datasets for that species complete)? **Correct. Those are all we currently know of within the vicinity of your project.**

3. Since the 4d rule is in effect for northern long-eared bats, can you confirm whether potential roost tree surveys should still identify primary and/or secondary roosts for this species? **As long as the 4d rule remains in effect, you do not need to look at primary and secondary trees for NLEB. Take of these bats is exempted under the 4d rule for most instances.**

4. Should northern long-eared bat potential roost trees be included in the effects analysis for northern long-eared bats, even though they're no longer protected? Should the mitigation ratios for bats (e.g., artificial roosts, girdling) still consider primary and/or secondary northern long-eared bat potential roost trees? **If you have gathered the data about the trees, then including it will help better note (qualitatively and quantitatively) the type of habitat available in and around the project area. Due to the 4d rule, mitigation ratios are not required to consider them.**

Thanks,
Sara and Maggie

Maggie Voth
Project Scientist

Environmental Resources Management (ERM)
1000 IDS Center
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[Signature logo]
The business of sustainability

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U.S. Forest Service

ATLANTIC COAST PIPELINE

PROJECT CALL LOG

CALL TO/FROM WHOM:	PHONE NO.:
Fred Huber	540-265-5157
Carol Croy	540-265-5136
Meg McElveen	540-432-8236
Mike Donahue	
Jennifer Adams	540-265-5114

COMPANY:
U.S. Forest Service (USFS), George Washington National Forest (GWNF)

PROJECT CONTACT:	PHONE NO.:
Maggie Voth, NRG	612-347-7869
Sara Throndson, NRG	612-347-7113

DATE:	TIME OF CONVERSATION:
9-10-15	1:30 pm (EDT)

RE:
Small Mammal Surveys within the GWNF

LOG OF CONVERSATION:

Small Mammal Surveys

Maggie Voth of National Resource Group (NRG) initially contacted Meg McElveen to discuss small mammal survey and specific habitat criteria with the GWNF, and was referred to a larger group to include additional species experts.

Sara kicked off the meeting by explaining that NRG set up the meeting to receive confirmation regarding the GWNF's OAR-list small mammal species, including the West Virginia northern flying squirrel (*Glaucomys sabrinus fuscus*), Carolina northern flying squirrel (*Glaucomys sabrinus coloratus*), southern rock vole (*Microtus chrotorrhinus carolinensis*), and southern water shrew (*Sorex palustris punctulatus*). In previous correspondence with the GWNF staff, each of these four OAR species was determined to fall outside of the ACP project area of the current proposed route. These species have been assigned an OAR Code "1"and no survey would be required for these species on the current proposed route.

While this was confirmed for the current proposed route, GWNF staff did clarify that suitable habitat for the southern rock vole and southern water shrew is likely present on the MNF-5 alternative. (Note – the southern water shrew is considered the same species as the American water shrew, *Sorex palustris*, which is state-listed as endangered in Virginia.) Carol noted that these species prefer rocky, rapidly flowing streams above 2000 feet in elevation and adjacent northern hardwood forests. The GWNF recommended surveys at the Erwin Draft stream crossing on the MNF-5 route, which meets these habitat criteria.

The following small mammal species from the GWNF's "Locally Rare" list species were also discussed: snowshoe hare, northern river otter, fisher, least weasel, and Allegheny woodrat. Of these species, only the Allegheny woodrat was identified as requiring survey on the current proposed route.

Notes on suitable habitat and potential habitat in the project area from the GWNF are below:

- No snowshoe hare habitat is crossed by the current proposed route or MNF-5.
- The northern river otters prefer main-stem streams, which may be found on private lands within the project area and outside the GWNF lands. No potential survey areas for this species fall within GWNF lands.
- Fishers use a wide range of habitats, including northern hardwoods, but at high elevations. No such areas are crossed by the current proposed route or MNF-5.
- Least weasels may be possible, but are not currently documented within the project area.
- Allegheny woodrats are definitely possible on both the current proposed route and MNF-5 alternative. They prefer open or forested rocky outcrops, caves, and boulder fields.

NRG described the methodology for the Allegheny woodrat surveys completed within the Monongahela National Forest in West Virginia, which included initial reconnaissance surveys conducted by botanical surveyors, followed by detailed habitat assessments and species sign surveys conducted by woodrat specialists. Carol offered to provide additional species descriptions and information on the southern water shrew, southern rock vole, and Allegheny woodrat for review by the ACP wildlife biologists.

Carol and Jennifer asked about the contractor who would be completing the small mammal surveys and the survey methodologies, and were not familiar with the names of the biologists contracted to complete this work. They requested resumes for the wildlife biologist to ensure they meet the GWNF's criteria. The GWNF requested that any proposed small mammal survey methodologies be provided to Carol in writing for approval.

The risk of individual mortality while using trapping surveys was discussed and NRG would prefer to avoid the use of trapping surveys for species presence/absence determinations. If field survey indicates suitable habitat for a species, NRG's preference would be to assume presence, rather than move to a second phase of trapping in order to eliminate the risk of mortality. If trapping is deemed to be necessary at a later date it will be discussed. GWNF staff indicated that this was acceptable, particularly given that temperatures will be dropping at night in the mountains and would likely increase small mammal mortality. They stated that if presence were assumed, then the species write-ups would need to include a full analysis of impacts to each species.

Locally Rare Species and Additional Surveys

GWNF staff asked about survey progress to date, on both the current proposed route and the MNF-5 alternative. Sara responded that acoustic bat surveys on the mainline were complete and cow knob salamander surveys would begin again when they emerged from mid-summer dormancy due to hot dry weather. Maggie mentioned that plant surveys on the mainline, including all the locally rare species, were very close to completion. Sara also stated that no surveys had been conducted on the VA portion of MNF-5 to date, but that habitat mapping for other GWNF species were underway on the mainline, and that this included vegetation mapping intended to identify potential locally rare species habitats. Jennifer responded that the GWNF will require survey information on all project alternatives in order to make project recommendations to FERC. She also indicated that this included survey of locally rare species within the project area.

Carol asked about locally rare bird surveys, which NRG will not be completing this year because it is outside of nesting season however a review of habitat data collected during vegetation surveys will be used to assess these species. Carol also asked about methodologies for bald and golden eagle surveys, which will be conducted this winter. Sara mentioned that ACP plans to conduct bald eagle surveys by helicopter and that we are in the process of obtaining and reviewing the FWS data. Carol suggested that camera trapping may be more cost-effective and provide better results due to roosting locations for wintering bald and golden eagles, and requested that she be included in bald and golden eagle survey correspondence and methodology discussions. Jennifer requested that the methods be sent to Carol for her review and approval, due to Carol's experience and expertise based on prior work on a cooperative golden eagle project.

Sara asked about whether the insect species on the locally rare species list typically receive field surveys, and Carol responded that they do. Assuming presence for these species is an option, but GWNF staff did state that each species would need a write-up and analysis if we assumed presence. They recommended habitat assessments by well-rounded biologists, who could assess the crossed habitats in the field simultaneously for all insect, bird, and other species on the locally rare lists.

Jennifer asked about timber rattlesnake surveys in the Monongahela National Forest, and responded that she was familiar with and approved of Marty Martin as the surveyor.

ACTION ITEMS

ACTION REQUIRED:	BY WHOM:
Send VHB resumes for USFS review	NRG
Send survey methodology	NRG
Provide habitat information	Carol Croy

cc: Project Files

Steve Holden

From: Johnson, Catherine M -FS <catherinejohnson@fs.fed.us>
Sent: Tuesday, November 22, 2016 1:58 PM
To: Maggie Voth; Sara Throndson
Cc: Stevens, Karen L -FS; Karriker, Kent S -FS; Adams, Jennifer - FS; Tanner, Cheryl L -FS
Subject: Gibson Knob - access road through MP 4.1/NFS habitat

Importance: High

Hi Maggie,
When we met in the field up on Gibson Knob on November 4th to discuss NFS habitat, RCB and woodrats habitat, it is my recollection that the engineer/construction folks said that the alignment in that area had been revised since the last shapefile we had been sent (for Rev 11a last summer). As a result of that, the impacts were supposedly going to be lessened in that section (where the existing access road is to connect to the pipeline corridor near Gibson Knob) and I thought that the temporary workspace was all shifting to adjacent private lands.

Can you please send us the latest shapefile for that and the overall latest alignment, including the most recent changes, as soon as possible. We are attempting to address things in that area and, without the latest information, will be required to make impact assumptions which may not be true at this point.

Thanks in advance for your assistance!
Cathy

Cathy Johnson, PhD
Forest Wildlife Biologist
Forest Service
Monongahela National Forest
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Caring for the land and serving people

Dominion Resources Services, Inc.
5000 Dominion Boulevard,
Glen Allen, VA 23060

November 23, 2016

BY OVERNIGHT (OR EXPRESS) MAIL

Mr. Clyde Thompson
Forest Supervisor
U.S. Forest Service
Monongahela National Forest
200 Sycamore Street
Elkins, WV 26241

Re: Dominion Transmission, Inc., Atlantic Coast Pipeline:
Submittal of Updated Preliminary Draft Biological Evaluation
Public Version

Dear Mr. Thompson,

Atlantic Coast Pipeline, LLC (Atlantic) is a company formed by four major U.S. energy companies – Dominion, Duke Energy, Piedmont Natural Gas, and Southern Company Gas. The company was created to develop, own, and operate the proposed Atlantic Coast Pipeline (ACP), an approximately 600-mile-long, interstate natural gas transmission pipeline system designed to meet growing energy needs in Virginia and North Carolina. For more information about the ACP, visit the company's website at www.dom.com/acpipeline. Atlantic has contracted with Dominion Transmission, Inc. (DTI), a subsidiary of Dominion, to permit, build, and operate the ACP on behalf of Atlantic.

As you are aware, Atlantic has been conducting field routing, environmental/biological, cultural resources, and civil surveys along the proposed pipeline route to collect information needed by the Federal Energy Regulatory Commission (FERC) and other regulatory and land managing agencies to review and permit the ACP. On November 22, 2016 Atlantic submitted to the U.S. Forest Service an updated Preliminary Draft Biological Evaluation based on additional field work and analysis, U.S. Forest Service comments dated September 30, 2016 on the Preliminary Draft Biological Evaluation, and a data request from FERC dated October 26, 2016. Our November 22nd submittal contains privileged information and may not be released.

Attached is a public version of the updated Preliminary Draft Biological Evaluation. The privileged information has been redacted in this version.

If you have any questions regarding this submittal please contact Richard B. Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com, if there are questions regarding this report. Please direct written responses to:

Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Sincerely,

FOR RICHARD GANGLE
Robert M. Bisha
Technical Advisor, Atlantic Coast Pipeline

cc: Jennifer Adams, George Washington National Forest
Troy Morris, George Washington National Forest
Kent Karriker, Monongahela National Forest
Richard B. Gangle, Dominion

Attachments: Atlantic Coast Pipeline - Updated Draft Biological Evaluation (Public Version)

Dominion Resources Services, Inc.
5000 Dominion Boulevard,
Glen Allen, VA 23060

December 5, 2016

BY: OVERNIGHT OR EXPRESS MAIL

Clyde Thompson
Forest Supervisor
Monongahela National Forest
200 Sycamore Street
Elkins, WV 26241

RE: Atlantic Coast Pipeline, LLC, Atlantic Coast Pipeline Project
Response to U.S. Forest Service Comments on the Order 1 Soil Survey Report for the Monongahela National Forest and George Washington National Forest

Dear Mr. Thompson:

Atlantic Coast Pipeline, LLC (Atlantic) provides the following responses to the comments of the U.S. Forest Service (USFS) in the letter submitted to the Federal Energy Regulatory Commission (FERC) dated September 22, 2016. Atlantic appreciates the thorough review and input provided by the USFS, and looks forward to completing the Order 1 Soil Survey.

Items Incomplete
Comment: Soil survey information for points associated with phase 2 Archeology clearance to be delivered – proposed test pit locations P-315 to P332

Response: Soil test pits located in the GWNF (P-315 to P-332) were completed in October 2016 in accordance with the approved soil survey protocol.

Slope Class
Comment: Slope classes selected for map units in the Order 1 Soil Survey report do not provide information that could be used to inform the environmental analysis or develop interpretations for the implementation and maintenance of the proposed ACP pipeline. Slope phases need to be re-evaluated and redistributed so that relevant interpretations can be done to identify critical risk points on the landscape. Slope classes addressed in the soil assessment and the geohazard assessment should be consistent.

Response: Slope class discussed in the Order 1 Soil Survey report is intended for reference only. The Order 1 Soil Survey is one element of the Geohazard Analysis Program. Slope classification is addressed in the Geohazard Analysis Program, Phase 2 Report submitted August 2, 2016. Section 4.3 of this report discusses the slope angles used to define the slope thresholds. The resulting hazard rankings are listed in Appendix 6-1 of this report.

Methods used to determine slopes are described in the Geohazard Analysis Program report. Slope inclination was calculated from existing digital elevation models (DEMs). Slope inclination analysis has also been established as one of the fundamental criteria guiding Atlantic's Best-in-Class (BIC) slope hazard management program.

The Geohazard Report provides the following slope classifications:

- Gentle slopes are inclined at <30% (<17°)
- Moderately steep slopes are inclined at 30% to 40% (17° to 22°)
- Very steep slopes are inclined at 40% to 58% (22° to 30°)
- Extremely steep slopes are inclined steeper than 58% (>30°)

Atlantic and their soil scientist(s) anticipate consulting with the USFS Soil Scientists and staff during the continued development of the COM Plan, which will incorporate elements of the Geohazard Analysis Program.

Comment: The Forest Service is concerned that with so many of the soil test pits missing depth of bedrock information, depth to bedrock cannot be accurately determined throughout the pipeline right-of-way (ROW). The Forest Service requires that this information be provided as part of the soil survey data.

Response: Test pit excavation was conducted per the USFS-approved Soil Survey Protocols (April 2016, Updated May 23, 2016, Addendum 1, June 30, 2106) which as noted in Section 2.3.3 was to bedrock, water table or 50-inches, whichever was encountered first. The soil scientist describing the individual test pit had the discretion to determine which of the three criteria was encountered. Test pit excavations halted at 50-inches were done in accordance with the approved survey protocols. A table summarizing the depth of each test pit and the rationale for total depth will be provided for every test pit in the updated Soil Survey Report.

Atlantic appreciates the need to determine the depth of bedrock on the steep slopes and proposes to determine this through seismic refraction surveys as part of the Geohazard Analysis Program. Atlantic is currently proposing additional geotechnical investigations of two sites in the George Washington National Forest and will perform the seismic refraction surveys in conjunction with this effort. Atlantic will provide the remaining 15 percent of the depth to bedrock information for inclusion in the Order 1 Soil Survey report.

Comment: The concern for knowing the depth to bedrock is heightened due to the many instances where ACP references how depth to bedrock can influence the need for and extent of blasting required for pipeline installation. As noted above, an accurate depth to bedrock was not obtained for 15 percent of the pits. It is critical that ACP display for the DEIS how it will determine the structure of the material from 50 to 90 inches. The Forest Service is concerned that more blasting than indicated by the current soil survey and COM Plan will be necessary for installation of the pipeline. This raises concerns that the current analysis may be understating the risks to slope stability during construction and long-term maintenance of the proposed pipeline.

Response: The depth to restrictive layer and/or bedrock is addressed in the response to Depth Class and Depth to Bedrock. Atlantic will determine the depth to restrictive layer and depth of bedrock by conducting seismic refraction surveys as part of the Geohazard Analysis Program. This information along with the Order 1 Soil Survey will be used to define the structure of the material from 50 to 90-inches.

Comment:
Missing Data or Deliverables:

a. **Photographic Documentation**:

   Comment: Order 1 Soil Survey protocol stipulated that photographic documentation of excavations be provided.

   Response: Atlantic provided the requested original photographic documentation on November 1, 2016.

b. **Missing Test Pit Information**:

   Comment: Please provide information for the following pits:

   For pits P-168, P-169, P-194 and P-198 (GWNF) Tom Bailey, GWNF Forest Service Soil Scientist gave ACP verbal permission (June 8, 2016 field review) to alter the proposed pit locations. ACP did not seek permission from the GWNF in writing, and ACP did not seek permission either verbally or in writing, to eliminate any pits on the MNF. The Forest Service requires that ACP submit a variance request for the omitted test pits on the GWNF (P-168, P-169, P-194 and P-198) and the MNF (P-103 through P-21). Explain the rational for the requested omissions, and include maps and shape files depicting the locations of the pits.

Response: USFS and Atlantic agreed that the Certified Professional Soil Scientist had the discretion in the field to determine the test pit location based upon site specific needs. Test pits were eliminated, added and adjusted accordingly. The communication with Mr. Tom Bailey, Soil Scientist with the GWNF, focused on the need for excavation of test pit locations specifically where the boundary of the Forest was within the 300-ft study corridor, but was clearly outside the limits of any land disturbing activities.

Atlantic will provide the requested variances along with maps and shape files with the revised Order 1 Soil Survey report in December 2016.

c. **Documentation from the Technical Advisors**:

Comment: The Order 1 Soil Survey Protocol states that all notes and documentation generated by the Technical Review will be provided to the Forest Service.

- Please provide copies of all notes and assessments of the 10%, 50%, and 100% Technical Reviews.

Response: The survey protocol states the USFS will be provided access to all information shared with the Technical Advisor and the Nicholas Putnam Group.

Atlantic will provide the Quality Assurance/Quality Control information as requested with the revised Order 1 Soil Survey report in December 2016.

Comments on Specific Data Collection Related to Chapter 7 Soil Resource Report:

Comment: The data collected as part of the Order 1 Soil Survey project will result in an update of interpretations that either verifies or changes the numbers (acres) provided for each section.

Response: Atlantic will review the information included in Resource Report 7 and provide applicable updates following completion of the Order 1 Soil Survey.

Additional Comments to be Addressed:

PDF Page #	Section #	Comment

4	Executive Summary	"An Order 1 level soil survey was performed…along the available sections of the route" Please explain what is meant by 'available sections of the route'. From this wording it appears that some sections of the route on MNF lands were not sampled per Order 1 level soil survey protocol. **RESPONSE:** This statement is in regards to the southern-most 1.2 mile segment of the Atlantic Coast Pipeline (ACP) corridor in the GWNF (proposed test pit I.D.'s P-315 to P-332) that required additional archeological clearance before the soil survey could commence. This remaining section was completed in October 2016. The updated Soil Survey Report will present the soil survey data for the 1.2 mile segment in the GWNF.
5		"Restrictive layers….and 7 soils containing fragipans or fragic properties" Does this mean that 7 soil types with fragipans or fragic properties were mapped? Or does this mean that 7 pits had fragipans or fragic properties? It is unclear because in the beginning of the sentence the units are 'test pits'. **RESPONSE:** Seven test pits had fragipans or fragic properties. The Soil Survey Report will be updated to provide clarification on this item.
5		"Evidence of slope failures…..were observed in potential slide areas." Does this mean that there is current evidence of slope failures? Or does this mean that there is historic evidence (pedogenic evidence) of slope failures? **RESPONSE:** Most evidence of slope failures was historic through pedological observations. The bent trees that were observed could potentially be evidence of more current slope failures/creeps. Active movement of material was observed at P-347 which had surface sloughing. The Soil Survey Report will be updated to provide clarification.
5		"The nutrient analysis revealed that the soils are mildly acidic…" Delete this reference to soil being "mildly acidic." Delete the discussion of an average soil pH. Replace with the soil pH range. Also remove this discussion from the soil chemistry section. **RESPONSE:** The sentence and discussion related to "The nutrient analysis revealed that the soils are mildly acidic…" will be removed from the Executive Summary, Section 6.3 and Section 7 of the updated Soil Survey Report. The text will be modified to provide the soil pH range.

6	1.0 Introduction	"The purpose of the Order 1 survey was to provide more site specific soil data for the pipeline corridor to support construction." The purpose of the Order 1 soil survey was to provide more site specific soil data for the pipeline corridor to develop meaningful interpretations and to inform/update the information being provided for the Draft EIS and for management during construction and maintenance of the pipeline. **RESPONSE:** The Introduction of the Soil Survey Report will be updated to clarify that one purpose of the Order 1 Soil Survey was to provide more-specific soil data for the pipeline corridor support construction.
8	3.4 Field Investigation	"Access to 18 of the proposed test pit locations (P-315 to P-332) is currently restricted pending cultural clearance" Once clearance is granted, these pits will need to be dug, sampled and described per the requirements set aside in the Order 1 level soil survey. See comment in section above of this report for Data Deficiencies. **RESPONSE:** The soil survey in the vicinity of GWNF test pit locations (P-315 to P-332) was completed in October 2016. This work was delayed to allow archeological field investigations.
13	6.1 Observations	"This colluvium likely moved only short distances resultant of minor erosion/deposition events or slow creep…" Colluvial movement is difficult to categorize on the landscape. It often takes a landscape view to assess this. If there was evidence observed in the soil pits, please elaborate on what led you to make this conclusion. If not, please omit it as it is merely speculation and suggests that any soil movement would be over short distances and is minor when this is not the case. There are multiple examples within the NFS lands where landslides have deposited colluvial material in recent events. The scale of such occurrences can be known by observing active events. **RESPONSE:** This statement will be removed from the updated Soil Survey Report.
15	6.3 Soil Chemical Observations	"Three test pits were observed to have contained spodic horizons" Is this based on the Soil Taxonomy lab requirements or merely ocular observations? **RESPONSE:** Spodic horizons were identified through field observations of color, pH, and the greasy feel of the organic and aluminum/iron complexes. The Soil Survey Report will be updated to provide this description.

16	6.3 Soil Chemical Observations	"Based on estimated bulk density (not measured during survey)…" Please provide references for where the average bulk density measurements were obtained for use in carbon calculations. Also demonstrate through calculations how the total carbon values were obtained. **RESPONSE:** Bulk densities were compiled from a number of studies in reputable journals. References as well as a demonstration of calculations will be provided in the updated Soil Survey Report.
16	6.3 Soil Chemical Observations	"The lowest and highest pH….particularly in pines" Instead of pines, the term conifers should be used. **RESPONSE:** The text will be updated to refer to conifers instead of pine in the updated Soil Survey Report.
N/A	GIS Metadata Attribute Table	Soil chemistry is not included in the map unit design. This is a major criterion for soil interpretation for this project. Soil pH is highly variable on this central Appalachian landscape. Design a component of the map unit to include nutrient status to inform revegetation criteria. **RESPONSE:** The soil map units will be updated to provide pH for post construction restoration. Nutrient data will be included in the test pit attribute data for test pits for which analyses were conducted in the updated Soil Survey Report.

We look forward to continuing to work with you on the Atlantic Coast Pipeline Project. Please contact Richard B. Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com if there are questions regarding this letter. Please direct written responses to:

Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Sincerely,

Carole A. McCoy

Carole A. McCoy
Director of Engineering Services, Atlantic Coast Pipeline

Cc: Jennifer Adams, Special Projects Coordinator, U.S. Forest Service
Richard B. Gangle, Dominion

Dominion Transmission, Inc.
707 E. Main Street, Richmond, VA 23219
dom.com

December 5, 2016

BY: OVERNIGHT OR EXPRESS MAIL

Clyde Thompson
Forest Supervisor
Monongahela National Forest
200 Sycamore Street
Elkins, WV 26241

RE: Atlantic Coast Pipeline, LLC, Atlantic Coast Pipeline Project
Response to U.S. Forest Service Comments on the Geohazard Analysis Program Phase 1 and 2 Reports for the Monongahela National Forest and George Washington National Forest

Dear Mr. Thompson:

Atlantic Coast Pipeline, LLC (Atlantic) provides the following responses to the comments of the U.S. Forest Service (USFS) in the letter submitted to the Federal Energy Regulatory Commission (FERC) dated September 30, 2016. Atlantic appreciates the thorough review and input provided by the USFS.

The responses in this letter are categorized as follows:

- **Letter Response** - responses that suggest comments might best be addressed in a separate letter response (primarily related to the ongoing Best in Class (BIC) slope hazard management implementation process);
- **Report Addendum** - responses that suggest comments be addressed in an Addendum to the Phase 2 Report to provide clarification, rectify inadvertent omissions, or convey the results of yet to be completed work; and,
- **Other Studies** - responses that suggest the issues identified were not part of the Phase 1 or Phase 2 Geohazard Analysis scope of work, and either have been, or will be addressed elsewhere by others, or issues that will be addressed as part of subsequent preparation of mitigation designs.

We look forward to continuing to coordinate with the USFS on the Atlantic Coast Pipeline Project. For more information, please contact Richard B. Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com if there are questions regarding this letter. Please direct written responses to:

Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Sincerely,

Carole A. McCoy

Carole A. McCoy
Director of Engineering Services, Atlantic Coast Pipeline

Cc: Jennifer Adams, Special Projects Coordinator, U.S. Forest Service
Richard B. Gangle

Comment #	Report	Page #	Section #	Comment	Geohazard Team Discipline	Response to Comments and Categorization (Letter Response, Report Addendum, Other Studies)
1	Phase 1			General comment: Many of the comments (below) on ACP Geohazard Analysis Program Phase 1 Report reflect issues that were identified in previous Forest Service comments. The Forest Service provided comments on geologic hazards in response to 1) ACP's draft Resource Report 6, and 2) the initial FERC scoping notice. Those comments should be considered along with the comments (below) to provide context and more information on ways to resolve the issues.	Geotech	**Report Addendum** The ACP Geohazard Analysis Program background information and the results of analyses that were contained in the Phase 1 Report (prepared for the ACP Rev 8a Route), relevant to the ACP Rev 11 Route, were included in the Phase 2 Report. The Phase 1 Report was prepared independently of Resource Report 6. Many comments below will be addressed in the Addendum to the Phase 2 Report that will be prepared after all the Phase 2 analysis is complete.

2	Phase 1	i	Table of Contents	ACP's Sept 2015 Resource Report 6 Geological Resources identified each type of geologic hazard in clearly titled sections. However, the Geohazard Analysis Program Phase 1 Report lacks the clarity of Resource Report 6. The terminology and organization of the Phase 1 Report is different and unnecessarily opaque compared with Resource Report 6. Phase 1 Report section has titles and terminology like "hydrotechnical hazard" or "geotechnical hazard" which are too general and vague in specifying geologic hazards, and add a layer of obscurity to the Phase 1 Report. 1. Identify each type of geologic hazard in terms commonly used for the hazard, and title each section of the report accordingly. Revise the Desktop Analysis section 2.2 in Table of Contents in a manner similar to the following: 2.2.1 Compile Available Datasets and Construct the GIS Framework 2.2.2 Earthquake (Seismic) Hazards Desktop Analysis 2.2.3 Landslide Hazards Desktop Analysis 2.2.4 Ground Settlement and Subsidence Hazards Desktop Analysis 2.2.5 Flooding and Stream Hazards Desktop Analysis Revise the titles and discussion in the rest of the Phase 1 report to conform to the revised titles of the Table of Contents (above). In addition, ACP's Sept 2015 Resource Report 6 Geological Resources included two other geohazards 1) Consolidated rock/blasting (Sections 6.2 and 6.6.1), and 2) Acid-producing rocks and soils (Sections 6.4.6 and 6.6.8). Add these geohazards to TOC: 2.2.6 Consolidated Rock/Blasting Hazards Desktop Analysis 2.2.7 Acid-Producing Rocks and Soils Hazards Desktop Analysis Add sections analyzing these geohazards to the Phase 1 report.	Geotech and Hydrotech	**Other Studies** The organization of the Phase 1 Report is different than what was used in Resource Report 6 because it focuses on pipeline integrity hazards from naturally triggered processes for the entire ACP Project length. The Phase 1 Report describes the process followed to identify and characterize naturally triggered geotechnical (landslide) hazards on slopes, hydrotechnical (flooding) hazards at stream crossings (i.e., vertical and lateral migration potential), and tectonic (earthquake/seismic) fault and ground shaking hazards. The following topics were not in the Geohazard Analysis: i) Consolidated Rock/Blasting Hazards Desktop Analysis; and ii) Acid-Producing Rocks and Soils Hazards Desktop Analysis have been addressed in Resource Report 6, sections 6.6.1 and 6.6.8 respectively which was filed September 18, 2015.

3	Phase 1	2-2	2.2.1.1	Datasets sections states: "Table 1 provides a list of the datasets used for Phase 1 of the geohazard study." In Table 1 (p. T-2), the Geology Layer Description states, "Features include dikes, sills, faults boundaries obtained from CEUS database and some geology layers obtained from Geosyntec" and states as Source: "Geological Society of America (Reed et al., 2005) and Geosyntec". 1. The citation "Reed et al., 2005" is not cited in Section 7 References. Add full citation to References. 2. The U.S. Geological Survey (USGS) digitized the geologic unit boundaries for the area depicted in the Geologic Map of North America, published by the Geological Society of America in 2005 (Reed et. al, 2005). The USGS cautions: "Digital data were compiled from source data at a scale of 1:5,000,000 and are not intended to be used at a larger (greater detail) scale." https://catalog.data.gov/dataset/map-service-database-of-the-geologic-map-of-north-america-adapted-from-the-map-by-j-c-reed-2005 3. For sedimentary rocks, the Geologic Map of North America (Reed et. al, 2005) geologic map units are geologic time units, not lithologic units. Use geologic maps that have map units relevant to geologic hazards, such as lithology, geologic structures, surficial deposits, etc. 4. Do not use Geologic Map of North America (Reed et. al, 2005) 1:5,000,000 scale map as a Geology map layer for the site-specific geologic hazards analysis on the National Forests. Do not enlarge the 1:5,000,000 scale geologic map to a more detailed scale such as 1:24,000 and attempt to use it for analysis at 1:24,000 scale or more detailed scale. For desktop study part of Geohazard Analysis Program Phase 1 on National Forests, use the most detailed scale geologic maps available for desktop analysis. Identify the geologic map reference(s) and state the quadrangle name and pipeline mileposts the maps were used for in the desktop study on the National Forest.	Geotech	**Report Addendum** 1. Geologic data and maps have appropriate references (see Figure 3). Figure 3 was updated in the Phase 2 Report as Figure 2-1 and properly cited (Dicken et al., 2005; Nicholson et al. 2005a, 2005b; Hibbard et al., 2006). The map by Reed et al. (2005) was listed in the report as a possible resource, but it was not used to prepare any figures. Geology on Phase 2 map books was cited as "USGS Mineral Resources Program". The Phase 2 map books show geologic mapping from Dicken et al., 2005; Nicholson et al. 2005a, 2005b; Hibbard et al., 2006, which was downloaded from the USGS Mineral Resources Program. The Phase 2 Report maps will be updated with the full citations. 2. The geology from Reed et al. (2005) was not shown on any maps in the Phase 1 or Phase 2 reports. In the Phase 1 Report, no geology is depicted at a larger scale than it was intended. The Phase 2 Report does show geology at a larger scale, which may exceed intended scale. The Phase 2 Report maps will be updated with a note that the depiction of geologic units is presented at a scale larger than originally mapped in the Addendum to the Phase 2 Report. 3. The geology from Reed et al. (2005) was not shown on any maps in the Phase 1 or Phase 2 reports. Figure 3 of the Phase 1 Report and Figure 2-1 of the Phase 2 Report show generalized consolidated geologic units divided by time, from Dicken et al., 2005; Nicholson et al. 2005a, 2005b; Hibbard et al., 2006. These maps are intended to show a generalized distribution of broad geologic units. Appendix B1 of the Phase 1 Report and Appendix 6-2 of the Phase 2 Report list lithostratigraphic geologic units from Dicken et al., 2005; Nicholson et al. 2005a, 2005b; Hibbard et al., 2006. 4. The geology from Reed et al. (2005) was not shown on any maps in the Phase 1 or Phase 2 reports. In the Phase 1 Report, no geology is depicted at a larger scale than it was intended. The Phase 2 Report does show geology at a larger scale, which may exceed intended scale. The Phase 2 Report maps will be updated with a note that the depiction of geologic units is presented at a scale larger than originally mapped in the Addendum to the Phase 2 Report.

4	Phase 1	2-2	2.2.1.1	Datasets sections states: "Table 1 provides a list of the datasets used for Phase 1 of the geohazard study." In Table 1 (p. T-5), the Consolidated Geologic Units Layer Description states, "Integrated database of geologic units and structural features with lithology, age" and states as Source: "USGS mineral resources and LCI". 1. The citation ""USGS mineral resources" is not cited in Section 7 References, and is too vague. Add full citation to References, including the map scale of the USGS map(s). 2. The citation ""LCI" is not cited in Section 7 References, and is too vague. In Section 1.2 Geohazard Analysis Team, "LCI" is identified as Lettis Consultants International, Inc. (LCI) of Walnut Creek, CA. If LCI conducted geologic field investigations and produced a geologic map, then LCI could be cited as a source. However, if LCI is using geologic maps produced by other parties, such as State geological surveys or USGS, then it is the maps produced by these parties that need to be cited as the source(s) and listed in the References with the map scale for each reference. 3. For desktop study part of Geohazard Analysis Program Phase 1 on National Forests, use the most detailed scale geologic maps available for desktop analysis. Identify the geologic map reference(s) by quadrangle name and pipeline mileposts used in the desktop study on the National Forest.	Geotech	**Report Addendum** 1. The proper citation for "USGS Mineral Resources" data will be addressed in the Addendum to the Phase 2 Report. 2. LCI citations refer to data created, compiled, or modified by LCI, who is one of the consultants that prepared this report. We will confirm all citations. 3. The Phase 2 Report contains updated geologic map sources. The most detailed scale, comprehensive map set available was utilized to cover the project area.
5	Phase 1	2-3	2.2.3	The Geotechnical Hazards Desktop Analysis states: "These attributes were utilized to assess potential hazards elsewhere along the route." However, the Phase 1 Report primarily displays and assesses discrete features, not the whole corridor. The Phase 1 Report does not display and assess all the slopes along the pipeline corridor for 1) the potential for landslides to occur and impact the pipeline, 2) the potential for the pipeline and project facilities including access roads to impact slope instability. For more detailed comments, see comments on Results section 4.5.	Geotech	**Report Addendum** The referenced statement in the Phase 1 Report is confusing and will not be included in the Addendum to the Phase 2 Report. The report Addendum would state that "known hazards were identified and additional available data was used to evaluate hazards along the entire corridor".

6	Phase 1	4-1	4.2.1	The Slope Instability section states: "Slope instability that can affect pipeline corridors vary widely in type and size, but because pipelines are typically buried, a large portion of commonly occurring landslides are shallow, and present significantly less threat to pipelines than deep seated slope instability." 1. This statement mischaracterizes the hazard of shallow landslides and underestimates the threat to the pipeline. Shallow landslides include debris slides, debris avalanches, and debris flows resulting from failures of colluvium and weathered bedrock. Shallow landslides in the steep mountains of western Virginia and West Virginia commonly reach depths of 3-feet or more. Pipelines typically buried 3 feet, and in some cases a little deeper, are shallow burial, not deep-seated burial. The shallow burial depth of pipelines is well-within the depth that shallow landslides would pose a hazard and be a risk to the pipeline. Historic debris flows events in western Virginia and West Virginia demonstrate each debris flow event typically has many debris slides and debris flows impacting a wide area. Considering the frequency and widespread occurrence, large numbers, and destructive force of shallow landslides compared with deep seated landslides, the shallow landslides can be considered a threat to pipelines as much or even more than deep seated landslides in western Virginia and West Virginia. Revise the Slope Instability section to properly characterize the hazard of shallow landslides and the risk (threat) to the pipeline.	Geotech	**Letter Response** The Best In Class (BIC) process addresses mitigation of threat/hazard from shallow landslides on the buried pipelines. The details of the BIC process will be addressed in in the construction alignment sheets, E&SC plans and SWPP permits. Atlantic will introduce the BIC program during the November 21, 2016 meeting.
7	Phase 1	4-2	4.3.1	The Data Compilation refers to "Bedrock and surficial geology maps" and "Landslide susceptibility maps and available previously mapped data". Identify the map reference(s) by quadrangle name and mileposts used in the desktop study on the National Forest. For desktop study part of Geohazard Analysis Program Phase 1 on National Forests, use the most detailed scale maps available for desktop analysis.	Geotech	**Report Addendum** The Addendum to the Phase 2 Report will reference the most detailed scale maps available. This comment pertains to the Phase 1 report which has since been superseded by the Phase 2 report. Where readily available, we have obtained and used 1:24,000 scale geologic maps (approximately 12 quadrangles in West Virginia and Virginia). Where 1:24,000 scale geologic maps were not available, we used smaller scale (~1:500,000 to 1:1,000,000) statewide geologic compilations available from state geological surveys or from the USGS National Atlas and USGS Mineral Resources Program (Dicken et al., 2005; Nicholson et al. 2005a, 2005b; Hibbard et al., 2006). If more detailed geologic data is available, we will incorporate that into our analysis and Addendum to the Phase 2 Report. If the Forest Service has such resources, we request access to those data.

8	Phase 1	4-3	4.3.2	The Evaluation of Potential Slope Instability Hazard Phase 1 section states the desktop study "initially identified 211 discrete locations (76 along the TL-635 segment and 135 along the AP-1 segment), or areas, along the pipeline route with the potential for or exhibiting evidence of previous slope instability. These locations (or potential slope instability features) were assigned a semi-quantitative relative threat (Low-1 to High-3) as described below:...". The Low threat level includes "slope instability features that appear to be shallow (slip surface appears to be no deeper than about 3-feet such as surficial slumping – probably passing above the proposed pipeline installation depth)...". 1. Explain how a desktop analysis can be so accurate as to identify the 3-feet depth in order to classify a landslide (slope instability feature) as no deeper than 3-feet in depth. Debris slides and debris flows in the steep mountains of western Virginia and West Virginia commonly reach depths of 3-feet or more (in the rupture depth in zone of initiation of debris slides and/or in scour depth of debris flows bulldozing down slopes). 2. Even if it were possible for desktop study to identify existing landslides no deeper than 3-feet in depth, many landslides have the potential to increase in area as well as depth. A landslide less than 3-feet deep may have potential to grow to 4-feet deep or 6-feet deep or +10 feet deep. 3. An existing landslide less than 3-feet deep may be the early stage of a progressive slope failure of much greater depth. 4. It would be prudent for the desktop study to recognize the "shallow landslide" as a potential hazard and a potential Moderate or High threat to the pipeline. Pipelines typically buried 3 feet, and in some cases a little deeper, are shallow burial, not deep-seated burial. The shallow burial depth of pipelines is well-within the depth that shallow landslides (debris slides, debris avalanches, and debris flows) pose a hazard. These "shallow" slope instability features need to have engineering geologic field investigations along with the other Moderate and High threat level features.	Geotech	**Report Addendum** **Letter Response** 1. Determination was based on geomorphic characteristics and professional judgment. Further evaluation is being conducted in the field and results will be presented in the Addendum to the Phase 2 Report. 2 and 3. The desktop level evaluation was not intended to identify potential for progressive growth of a specific failure (i.e. instability that started as less than 3-feet but if left unimpeded could grow to +10 feet). Instead ranking of the potential hazards was based on observed conditions in their present state. If a "shallow" condition was identified as having a higher hazard ranking at the desktop level, it was identified for further investigation and/or subsequent mitigation. Mitigation of threat/hazard to the pipeline is being addressed through the BIC slope hazard management process. The details of the BIC process will be addressed in a separate letter response. 4. The reference to "shallow" instability was with regard to creep observed in the typical surficial accumulation of unconsolidated material present on slopes which contain near surface bedrock. The reference to "3-feet" was intended to imply near surface conditions that under most conditions will be above the pipeline burial depth. This reference to 3-feet will not be used in the Addendum to the Phase 2 Report to avoid confusion.

9	Phase 1	4-3	4.3.2	The Low threat level states: "More significant slope instability features that were identified adjacent to, or down slope of the proposed centerline were also ranked as a low threat level. In the event of potential future realignments of the proposed centerline, these identified features ranked as low may warrant elevated risk levels." 1. Landslide activity can migrate upslope or downslope, especially on steep slopes. Where "significant slope instability features" are "identified adjacent to, or down slope of" the proposed centerline, then more investigation and justification is needed before assessing it as a Low threat level. These features need to have engineering geologic field investigations along with the Moderate and High threat level features.	Geotech	**Report Addendum** **Letter Response** The Addendum to the Phase 2 Report will acknowledge that slope instability can migrate up slope over time. However, this statement is related to those features that are situated within the study corridor but located a significant distance down slope and adjacent to the proposed centerline in which upward or lateral migration is considered to have a very low potential for impacting the proposed pipeline due to the underlying geology (i.e. presence of stable/resistant units that are unlikely to fail). The purpose of the Phase 1 Report was to focus on pipeline integrity hazard from naturally triggered processes (geohazards). Additional mitigation/management of slope instability hazards are being addressed through the BIC process. The details of the BIC process will be addressed in a separate letter response.
10	Phase 1	4-3	4.3.2	1. A general difficulty with the Evaluation of Potential Slope Instability Hazard section is that its primary product (threat levels) is about risks to the pipeline, not the "Evaluation of Potential Slope Instability Hazard" which is labeled as the section title. The Low, Medium and High threat levels consider landslide hazards but are assessing risks to the pipeline. There is a difference between assessing landslide hazards and assessing risks (threats) to the pipeline. For clarity, the two-step process needs to be discussed with better explanation and displays: 1) identify the landslide hazards, 2) then, identify the risks to the pipeline. In addition, the section title should be revised to: "Evaluation of Potential Slope Instability Hazards and Risks". 2. Explain the relationship of the Low, Medium and High threat levels to the risk matrix in Risk Analysis section 6.6 and Table 18 – Example Risk Matrix.	Geotech	**Report Addendum** **Letter Response** The Phase 2 Report, which incorporates all relevant information and analysis results from the Phase 1 Report, did not use "threat levels" and this term will not be used in the Addendum to the Phase 2 Report. However, the purpose of the Phase 1 Report was to focus on pipeline integrity hazard from naturally triggered processes (geohazards). Additional mitigation/management of slope instability hazards are being addressed through the BIC process. The details of the BIC process will be addressed in a separate letter response.

11	Phase 1	4-3	4.3.2	"Geosyntec prepared a summary table by milepost and coordinates of pre-existing or potential slope instability features, i.e., locations where slopes have the potential to become unstable... This summary table is presented in Appendix B1." 1. The Table in Appendix B1 is titled: POTENTIAL GEOHAZARDS SUMMARY TABLES. One column in the table is titled: Preliminary Hazard Ranking. The titles of the table and the column are not accurate because the table is a mixture of geologic hazards and risks to the pipeline. The Preliminary Hazard Rankings of High, Medium, and Low are not the probability of a hazard to occur but instead are the threat levels of High, Medium, and Low to the pipeline. As discussed in preceding comments, the threat level mixes together geologic hazards vs risks to the pipeline. As a result, the table is not whatits title and hazard column label it to be. Revise the table title and hazard column label for clarity. Provide footnotes to explain the nature of the table and the hazard column. 2. This problematic table provides another reason for the recommendation in the preceding comment: For clarity, the two-step process needs to: 1) identify the landslide hazards, 2) then, identify the risks to the pipeline.	Geotech	**Report Addendum** **Letter Response** 1. The Phase 2 Report updated the hazard ranking in the Phase 1 Report. Clarification of hazard vs. risk is required. Table title and column title will be adjusted and the term "threat" will not be used in the Addendum to the Phase 2 Report. 2. The purpose of the Phase 1 and 2 Reports was to focus on pipeline integrity hazard from naturally triggered processes (geohazards). Additional mitigation/management of slope instability hazards are being addressed through the BIC process. The details of the BIC process will be addressed in a separate letter response.

12	Phase 1	4-5	4.5	In regard to slope instability, the Phase 1 Report including the Results section is focused on existing landslides, which are important but are only a small portion of the pipeline corridor slopes that need to be assessed for potential slope instability. The existing geologic information and elevation data (for slope gradient) available at the desktop stage was sufficient for the Phase 1 report to make an initial assessment of potential slope instability for all the slopes along the pipeline corridor on the National Forests. Unfortunately, the Phase 1 report limited itself to "potential slope instability features" at discrete locations and did not make an initial assessment for all the slopes along the pipeline corridor. The Phase 1 Report (Section 6.3) recommendations for Phase 2 geotechnical hazard analysis appear to include some measures to extend the analysis to slopes beyond the existing landslides. However, the recommendation's focus on a limited number of Phase 2 sites and the recommendation's lack of explicit measures for geologic assessment of landslide potential on all slopes beyond the existing landslides raise concern about whether the scope of work to address slope instability was properly identified, tasked or understood. Two major deficiencies need to be addressed. The first major deficiency is the Phase 1 report addresses some, but not all the slopes along the pipeline corridor on NFS lands for the potential for natural landslides to occur and impact the pipeline and project facilities. 1. Assess all the slopes along the pipeline project for potential for natural landslides to occur and impact the pipeline and project facilities including access roads. Assess all the slopes along the pipeline corridor, not just the slopes on or next to existing landslides (or existing slope instability features). 2. Assess the potential for a variety of landslides, such as debris slides, debris flows, slumps, debris slumps, earth slumps, earth slides, earth flows, debris avalanches, and rockslides including dip slope bedrock rockslides. Cite references relevant to the types, frequency, and magnitude of landslides in the Appalachian Plateau, Valley and Ridge, and Blue Ridge physiographic provinces, such as: Jacobson, R.B., McGeehin, J.P., Cron, E.D., Carr, C.E., Harper, J.M., and Howard, A.D., 1993, Landslides triggered by the storm of November 3-5, 1985, Wills Mountain Anticline, West Virginia and Virginia: in, Jacobson, R.B., editor, 1993, Geomorphic studies of the storm and flood of November 3-5, 1985, in the upper	Geotech	**Report Addendum** The Addendum to the Phase 2 Report will clarify that raw geologic/topographic data was reviewed for the entire corridor to evaluate hazards. The Phase 2 Report specifically uses the generic term, "slope instability" to include a variety of mass movements on slopes, including debris flows. Since analysis of debris flow hazards requires both the geotechnical and hydrotechnical considerations, further discussion will be included in the Addendum to the Phase 2 Report to address this. The additional references identified will be reviewed.

13	Phase 1	4-5	4.5	The second major deficiency is the Phase 1 report does not address the potential for the pipeline and project facilities including access roads to impact slope instability. 1. Assess the potential instability of cut slopes (excavated slopes) for access roads, pipeline trenches, and roads or passageways within the corridor to allow heavy equipment to move along the corridor. Assess potential cut slope instability during construction and in the long-term (during operation of the pipeline and beyond), and assess associated risks to public safety, infrastructure, streams and other resources. 2. Assess the potential instability of fill slopes created by the project (including access road fill slopes, corridor road or "passageway" fill slopes, trench backfill, spoil, excess excavation disposal areas, and restoration backfill). Assess the potential for debris flows caused by failure of fill slopes, spoil piles, and restoration backfill in the short-term (during construction of the pipeline) and in the long-term (during operation of the pipeline and beyond), and assess associated risks to public safety, infrastructure, streams and other resources. See reference: Collins, T. K., 2008, Debris flows caused by failure of fill slopes: early detection, warning, and loss prevention. Landslides. Springer- Verlag. 5:107–120. http://link.springer.com/article/10.1007/s10346-007-0107-y#page-1). 3. Because slope steepness is important in the analysis of slope instability, provide a display and analysis of slope gradients on the National Forest for all ground disturbing sites including pipeline corridor as well as access road construction, reconstruction, and upgrades minor or major. Quantify and classify the slope gradients by using the best DEM or elevation data available. Prepare a slope map covering ground disturbing sites and the areas upslope and downslope of the ground disturbing sites that are relevant to assessing project-induced slope instability and associated risks to public safety, infrastructure, and resources. In classifying slopes on the slope map, include slope breaks relevant to slope stability and/or used in project design. For example, one slope break should be the slope % at which cut-and-fill road construction or reconstruction would change to full bench road construction. The slope map is also needed to assess slope stability of any proposed disposal sites	Geotech	**Other Studies** **Report Addendum** The purpose of the Phase 1 and 2 Reports was to focus on pipeline integrity hazard from naturally triggered processes (geohazards). Layout of facilities, access roads, and other proposed earthwork areas not related to the actual pipeline construction are still in development and will be addressed in the detailed design phase. 1. In a letter dated September 1, 2016 the USFS noted concern with several proposed access roads and recommended consultation. Atlantic will provide analysis of potential instability for access roads following this consultation Cut slopes in pipeline trenches will be temporary, open for limited duration and will be backfilled immediately upon installation of the pipe with implementation of BIC instability mitigation measures to address long-term stability. 2. No permanent fill slopes will remain on the ROW after pipe installation. Restoration work will include pulling back any temporary short-term fill slopes to re-establish original contour and grade along the ROW. The reference by Collins describes experience fill failures located on very steep hill side slopes that are traversed by roadways oriented parallel to the contours. Where the pipeline ROW will be located on very steep hill side slopes, it will ascend and descend these slopes parallel to the fall-line and will not traverse very steep hill side slopes, and no fills will be left after restoration is complete. 3. Slope inclination analysis has been completed for the entire pipeline corridor and was utilized in the Geohazard Analysis. This will be submitted in the Addendum to the Phase 2 Report.

14	Phase 1	6.2	6.3	The Recommendations for Phase 2 Geotechnical Hazard Analysis states: "The potential sites recommended for Phase 2 analysis exhibit strong geomorphic evidence of pre-existing or recent slope movement which could affect the proposed pipeline at the proposed burial depth." The Recommendations section 6.3 reflects the same major deficiencies discussed in comments on the Results section 4.5. The Phase 1 Report did not display an assessment of all the slopes along the pipeline corridor for 1) the potential for landslides to occur and impact the pipeline, and 2) the potential for the pipeline and project facilities including access roads to impact slope instability. For more detailed comments, see comments on Results section 4.5. While the Phase 2 sites identified are a needed part of the analysis, they are insufficient for a comprehensive analysis of the slopes along the pipeline corridor. The Phase 2 sites identified may or may not be representative of the intervening slopes along the pipeline corridor. The Recommendations section 6.3 does not clearly indicate the needed tasks for a comprehensive analysis of slope instability along the whole corridor on NFS lands and raises a concern about whether the scope of work to address slope instability was properly identified. 1. Revise the recommendations for Phase 2 Geotechnical Hazard Analysis to address the deficiencies identified in Forest Service comments on Phase 1 Geotechnical Hazards. 2. Provide an assessment of the suitability of existing geologic information (scale; type of geologic map; etc.) and the need for additional geologic field information in order to assess slope instability along the corridor, not just at the Phase 2 sites. 3. Phase 1 and 2 analysis of slope instability needs to 1) recognize the geologic slope forming processes operating in the Pleistocene as well as the Holocene, 2) identify the resulting landforms and surficial geologic materials (slope-forming materials), and 3) assess potential impact of the project on slope stability of the surficial geologic materials (slope-forming materials). Surficial geology includes talus deposits; landslides deposits; different types of colluvial deposits in hollows, on planar slopes, and on ridge noses; residual regolith; terrace deposits; alluvial fans; debris flow deposits; alluvium, stratified slope deposits, and periglacial deposits such as block fields; block slopes; block streams. Surficial geologic materials include soils but also extend downward to	Geotech	**Report Addendum** The Addendum to the Phase 2 Report will clarify that sites recommended for Phase 2 evaluation were not intended to be representative sites, but are locations of identified hazards that need to be confirmed in the field. Additional clarification will be provided that the approach was not to walk the entire pipeline, but to evaluate data at the desktop level to filter out areas that do not present a significant hazard. Refer to Item 13 response above. 1. Slope inclination analysis was utilized in Phase 2 of the analysis to evaluate all slopes. Clarification will be provided in the Addendum to the Phase 2 Report to reflect this. 2. Related to geologic map comments above. Geologic map data was updated in the Phase 2 Report and this will be clarified in the Addendum to the Phase 2 Report. 3. This will be addressed in more detail in the Addendum to the Phase 2 Report.

15	Phase 1		Appendix A	The Potential Geohazards Map Book is missing long sections of the pipeline corridor on the George Washington National Forest between Sheet 48 and Sheet 49; between Sheet 49 and Sheet 50; between Sheet 51 and Sheet 52; between Sheet 52 and Sheet 53. Provide the missing sheets and include the sheets in an updated Potential Geohazards Map Book.	Geotech	**Report Addendum** Map books were updated in Phase 2 Report, and will be updated again in the Addendum to the Phase 2 Report.
16	Phase 1		Appendix A	In the Potential Geohazards Map Book, the geotechnical hazard rating uses map symbols of green, yellow and red outline with cross-hatching. The cross-hatching obscures the underlying topographic features, especially on Lidar. Delete the cross-hatching from geotechnical hazard rating map symbols.	Geotech	**Report Addendum** Map books were updated in Phase 2 report, and will be updated again in the Addendum to the Phase 2 Report.
17	Phase 1	2-4	2.2.4	PHMSA – is this defined somewhere previously? Did not notice it. If not, please spell out.	Geotech	**Report Addendum** Definition of PHMSA will be clarified in the Addendum to the Phase 2 Report.
18	Phase 1	5-1	5.2	Previously on p 2-4 other structural hazards were described: pipeline stress, static failure, and dynamic failure. Please bring forward and possibly expand on in this section as well.	Hydrotech	**Report Addendum** **Other Studies** The discussion in the Phase 1 Report was expanded with the content provided in the Phase 2 Report. The Addendum to the Phase 2 Report will clarify that design will mitigate the hazard to pipeline integrity from exposure.
19	Phase 1	5-1	5.2	Historical and current land use – especially road density, road proximity to pipeline, location/number of upstream impoundments in the watershed, and land cover types (NLCD) - may be important functions of hazards. Please ensure that these are addressed	Hydrotech	**Report Addendum** The Addendum to the Phase 2 Report will clarify by acknowledging the validity of the factors noted for contributing to hazard at a discrete stream crossing. The historical and current land use was assumed to not change in the future over historical trends and thus the stream hazards identified aggregated the noted factors as they were or weren't present in the watershed.
20	Phase 1	5-1	5.2	The analysis of active floodplain width should include historic widths and 100-year floodplain characteristics, which could be important for certain channel types.	Hydrotech	**Report Addendum** The Addendum to the Phase 2 Report will clarify that active floodplain width was not incorporated in the identification of the hazard. However, the width of the floodplain in the physiographic regions studied will be a function of other factors such as the drainage area which was a factor inventoried for hazard identification. The floodplain width including historical migration of the channel will be explicitly incorporated in hazard mitigation evaluations to define the active belt width of the channel and thus provide burial depth design recommendations for the length of the pipeline within the active floodplain.

21	Phase 1	5-2	5.3	Please define the "design life of the project." Discuss the threat level that would exist if/when the project goes beyond that time period, which could occur with a major infrastructure project such as ACP.	Hydrotech	**Report Addendum** The Addendum to the Phase 2 Report will indicate that the design life of the project is 30 years. The likelihood of a hazard that is affected by temporal environmental conditions, such as discharge, increases with an increase in the exposure period.
22	Phase 1	5-2	5.3	6% manual inspection – were these random, or based on access? How confident are the adjustments for the majority of the crossings that were not inspected?	Hydrotech	**Report Addendum** The Phase 1 Report applied to the ACP Rev. 8a Route. Hazard was reevaluated in its entirety for the ACP Rev 11 Route in the Phase 2 Report. The 6% manual inspection refers to the evaluation that was conducted by fluvial geomorphologist Mr. David Vance, P.G. by looking at available remotely sensed data for ACP Rev 8a Route. As stated in the Phase 2 Report "At each manually inspected crossing, historical satellite photos from Google Earth™ were inspected to identify evidence of stream migration. Stream width, bank material, watershed slope, hydro physiographic region, and a host of other factors were also considered in making the manual determination." For the ACP Rev 11 Route, 30% of the crossings were manually inspected. The Addendum to the Phase 2 Report will clarify the level of confidence in automated assessment for all other stream crossings.

23	Phase 1	5-2	5.3	Provide literature references for regional bankfull regression equations. The best available science and most current and local watershed equations should be used. See *Peak flow Characteristics for Virginia Streams*, 2011 USGS publication found here: https://pubs.er.usgs.gov/publication/sir20115144. Also see: http://pubs.usgs.gov/sir/2010/5033/ for West Virginia as this is similar terrain to the GWJ NF. Bankfull is a measure of routine hazard (i.e. 1-3 year recurrence interval), but unfortunately the majority of hydrotechnical hazards on the GWJ NF are from flash floods and major storm events with mass wasting and debris flows. The Hazard Assessment should address these less predictable events and hazards such as: flood intervals and flood peak flows (25 year, 50 year, 100year+), local flooding history, significant rainfall events, Annual Exceedance Probabilities (AEP) of rainfall, 24- hour AEP, etc. Also, the analysis should address the life of the project under a predicted climate change regime with more extreme events. Please discuss in more detail how flooding and climate change hazards are incorporated in this assessment. In light of the June 23, 2016 flood in WV and VA, which was estimated to have been a 1,000 year flood event in some areas, extreme flooding hazards are real and impacts from similar events should be addressed.	Hydrotech	**Report Addendum** This comment regarding bankfull width is no longer applicable because regional bankfull regression equations were not used in the desktop analysis of the ACP Rev 11 Route. The watershed drainage area for each stream crossing was estimated using USGS's StreamStats (Ries et al. 2008) in VA, PA, and NC and manual evaluation for WV. This will be clarified in the Addendum to the Phase 2 Report. The effects of extreme environmental conditions with high return periods is implicitly addressed in the evaluation of hazard through the following parameters: 1) Drainage Area: as even high return period events rendering high discharge have low likelihood of scour exceeding typical minimum burial depths of 4 feet in watersheds with small area (i.e., less than 4 square miles); 2) Debris Flow: these occur following relatively high return period precipitation events and therefore streams are subject to this hazard regardless of size (but drainage area will influence the debris flow conditions); 3) Mountainous Areas: this parameter further emphasizes the hazard in watersheds within physiographic regions dominated by streams in narrow valley settings.
24	Phase 1	5-3	5.3.1	Across the George Washington and Jefferson National Forests, numerous unnamed and undocumented perennial, intermittent and channeled ephemeral streams exist on the ground that have not been identified by the USGS or NHD maps. In an attempt to document these drainages (often from small spring sources), a USFS watershed model was developed that produced an ArcMap shapefile called "Drainage and Flows". The Pre-Screen effort should utilize this spatial dataset as an additional pre-screening step. The Forest Service can provide this shape file to ACP. Several additional stream crossings may potentially exist that need review or field reconnaissance. For example, in crossing tributaries to the Calfpasture River, there could be 2 additional intermittent channels crossed by the pipeline. Additionally, it is recommended to use infrared imagery overlay, as it appears to be more useful than aerial photography, as a desktop exercise for determining presence/absence of water features.	Hydrotech	**Report Addendum** These streams are being evaluated following receipt of the shape file on 12 October 2016. Results will be presented the Addendum to the Phase 2 Report, which will document the hazard analysis process. In general, small streams are unlikely to pose significant hazard as they are unlikely to produce vertical scour greater than the minimum pipeline burial depth (i.e., > 3 feet). Streams not identified through aerial imagery review, morphological interpretation, and existing databases and that might be identified through the use of infrared imagery are likely to be very small, ephemeral and with little discharge and the potential for such small streams to scour the pipeline ROW will be mitigated during restoration.

25	Phase 1	5-3	5.3.1	This section contains another reference to regional bankfull regression equations without citing the literature source. Please use the regression equations most recently calculated for Virginia.	Hydrotech	**Report Addendum** This comment is no longer applicable (see response to Comment 23 above) because regional bankfull regression equations were not used in the desktop analysis of ACP Rev 11 Route as the watershed drainage area for each stream crossing was estimated using USGS's StreamStats (Ries et al. 2008) in VA, PA, and NC and manual evaluation for WV. This will be clarified in the Addendum to the Phase 2 Report.
26	Phase 1	5-S	5.4.2	Limitations – as currently written this assessment does not appear to address flooding hazards. This is a major limitation that needs to be thoroughly evaluated. A major limitation with the NHD layer is that numerous small springs and headwater drainages are not mapped across the GWJ NF. Supplementing the NHD layer with USFS modeled "drainage and flow" data would produce an assessment that is more accurate at the site-specific level.	Hydrotech	**Report Addendum** The report focuses on hazards capable of producing lateral or vertical migration, including avulsion, of a stream that can cause exposure of the pipeline and lead to product release. Atlantic has received the USFS modeled "Drainage and Flow" data and is reviewing.
27	Phase 1	6-4	6.4.1	Please expand and clarify the discussion of flood peak scour and long-term scour. Indicate the frequency of events that are being described (i.e. 25, 50, 100 + year events).	Hydrotech	**Other Studies** Incorporation of flood peak scour in a deterministic or probabilistic framework will be done as part of the design of hazard mitigation which will be included in the construction alignment sheets and details. In general terms, the vertical scour potential may be analyzed using formulations with the 100-year or 500-year peak flow as input parameter in a deterministic framework. Higher return periods have a low probability of occurrence such that it may not be sensible to incorporate them in a deterministic framework for hazard mitigation.
28	Phase 1	6-4	6.4.1	Depth to bedrock is critical and we recommend geotechnical subsurface exploration to characterize bedrock competency, or what additional construction elements will be necessary. Across the GW, some bedrock formations are highly weathered.	Hydrotech	**Other Studies** Depth to bedrock will be investigated as part of hazard mitigation design as may be necessary. The pipeline burial depth beyond the minimum value will be evaluated using vertical scour evaluations and in some circumstances burial below bedrock will be recommended as part of the mitigation design.
29	Phase 1	6-5	6.4.2	Regarding scour calculations: as noted previously, the most serious hazard is not bankfull scour but major flood flows. – Please explain how the referenced documents (FHWA and TS14B) address major flood flows.	Hydrotech	**Other Studies** The evaluation of vertical scour is not considered part of the Geohazard Analysis scope of work for Phase 1 or Phase 2. However, peak flows with appropriate return periods in a deterministic framework or fully probabilistic analyses will be used for vertical scour evaluations to design appropriate burial depths. The documents that are referenced provide recommendations and equations to calculate vertical scour given input parameters that include: discharge; stream width; stream bed characteristics; stream slope; etc.

30	Phase 1	6-5	6.5.2	As additional mitigation, re-route sections for better location, where possible.	Hydrotech	**Other Studies** Re-route might be considered by Dominion at hazard locations where deeper burial is uneconomical following evaluation of hazard mitigation.
31	Phase 1	7-1	7	Update references to include sources of regional bankfull regression equations.	Hydrotech	**Report Addendum** Regional bankfull regression equations were not used in Phase 1 of Rev 11 pipeline alignment. This comment is not applicable (see response to Comment 23 above). This will be clarified in the Addendum to the Phase 2 Report.
32	Phase 1	Appendix B2		Update based on any additional crossings that may be present upon pre-screening when using the USFS modeled shapefile called "Drainage and Flow." This update may reveal several potential new channel crossings if presence of small springs/seeps do occur. Ground-truthing will be necessary, as the shape file has not been field-verified.	Hydrotech	**Report Addendum** Automated and Manual Hazard evaluations will be conducted upon incorporation of the shapefile into the analysis process. Ground truthing will be conducted as necessary to verify the shape file information. Results will be reported in the Addendum to the Phase 2 Report.

33	Phase 2	i	Table of Contents	ACP's Sept 2015 Resource Report 6 Geological Resources identified each type of geologic hazard in clearly titled sections. However, the Geohazard Analysis Program Phase 1 Report lacks the clarity of Resource Report 6. The terminology and organization of the Phase 1 Report and Phase 2 Reports are different and unnecessarily opaque compared with Resource Report 6. Phase 2 Report section has titles and terminology like "hydrotechnical hazard" or "geotechnical hazard" which are too general and vague in specifying geologic hazards, and add a layer of obscurity to the Phase 2 Report. 1. Identify each type of geologic hazard in terms commonly used for the hazard, and title each section of the report accordingly. In Table of Contents, revise the Phase 1 Desktop Analysis section 3.2 in a manner similar to the following: 3.2.1 Phase 1 Earthquake (Seismic) Hazards Desktop Analysis 3.2.2 Phase 1 Landslide and Ground Subsidence Hazard Desktop Analysis 3.2.3 Phase 1 Flood and Stream Hazards Desktop Analysis 2. In TOC revise main section titles in manner similar to the following: SECTION S PHASE 2 EARTHQUAKE (SEISMIC) HAZARD ANALYSIS SECTION 6 PHASE 2 LANDSLIDE AND GROUND SUBSIDENCE HAZARD ANALYSIS SECTION 7 PHASE 2 FLOOD AND STREAM HAZARD ANALYSIS Revise the titles and discussion in the rest of the Phase 2 report to conform to the revised titles of the Table of Contents (above). In addition, ACP's Sept 201S Resource Report 6 Geological Resources included two other geohazards 1) Consolidated rock/blasting (Sections 6.2 and 6.6.1), and 2) Acid-producing rock and soils (Sections 6.4.6 and 6.6.8). Add these geohazards as "3.2.4 Phase 1 Consolidated Rock/Blasting Hazards Desktop Analysis" and "3.2.5 Phase 1 Acid-Producing Rock and Soils Hazards Desktop Analysis" to the Table of Contents for Section 3.2 (above). Add TOC main section titles: SECTION 8 PHASE 2 CONSOLIDATED ROCK/BLASTING HAZARD ANALYSIS SECTION 9 PHASE 2 ACID-PRODUCING ROCKS AND SOILS HAZARD ANALYSIS Add analysis of these two geohazards to the Phase 2 report. Retitle References as "SECTION 10 REFERENCES."	Geotech and Hydrotech	**Report Addendum** **Other Studies** See response to Comment 2 above.

34	Phase 2	3-1	3	For comments on Section 3 Summary of Phase 1 Study on Rev 8A, refer to Forest Service comments on ACP Geohazard Analysis Program Phase 1 Report which contain numerous comments relevant to Phase 1 and Phase 2.	Geotech and Hydrotech	**Report Addendum** This will be addressed in the Addendum to the Phase 2 Report.
35	Phase 2	3-3	3.2.2.1.1	The Slope Instability section states: "Slope instability that can affect pipeline corridors vary widely in type and size, but because pipelines are typically buried, a large portion of commonly occurring landslides are shallow, and present significantly less threat to pipelines than deep seated slope instability." 1. This statement mischaracterizes the hazard of shallow landslides and underestimates the threat to the pipeline. Shallow landslides include debris slides and debris flows resulting from failures of colluvium and weathered bedrock. Debris slides and debris flows in the steep mountains of western Virginia and West Virginia commonly reach depths of 3-feet or more. Pipelines typically buried 3 feet, and in some cases a little deeper, are shallow burial, not deep-seated burial. The shallow burial depth of pipelines is well-within the depth that shallow landslides (debris slides and debris flows) would pose a hazard and be a risk to the pipeline. Historic debris flows events in western Virginia and West Virginia demonstrate each debris flow event typically has many debris slides and debris flows impacting a wide area. Considering the frequency and widespread occurrence, large numbers, and destructive force of shallow landslides (debris slides and debris flows) compared with deep seated landslides in VA and WV, shallow landslides can be considered a threat to pipelines as much or even more than deep seated landslides. Revise the Slope Instability section to properly characterize the hazard of shallow landslides and the risk (threat) to the pipeline. 2. A common geologic group to this area is Mauch Chunk. This group is comprised of primarily shale with a secondary rock type of sandstone, and it is susceptible to slides during heavy rainfall events. In many exposures of this geologic formation from existing slides, including those that have just recently occurred from the 2016 flood event, exposures are 50 to 100 feet deep. Assess the threat posed by such slides.	Geotech	**Report Addendum** **Other Studies** 1. The reference to "shallow" instability was with regard to creep observed in the typical surficial accumulation of unconsolidated material present on slopes which contain near surface bedrock. The reference to "3-feet" was intended to imply near surface conditions that under most conditions will be above the pipeline burial depth. This reference to 3-feet will not be included in the Addendum to the Phase 2 Report. The desktop level analysis was not intended to identify potential for progressive growth of a specific failure (i.e. instability that started as less than 3-feet but if left unimpeded could grow to +10 feet). Instead ranking of the potential hazards were based on observed conditions in their present state. If a "shallow" condition was identified as having a higher hazard ranking at the desktop level, it was identified for further investigation and or mitigation. 2. The effects of the 2016 heavy rainfall event have not been evaluated. However, if failures are identified that are related to this event, and affect the ACP project, they will be evaluated and investigated and recommendations for mitigation will be developed as necessary.

36	Phase 2	3-4	3.2.2.2.2	The Slope Instability Hazard section states that a semi-quantitative geomorphic approach considered various factors (including underlying geology and soil type) to "identify surface expression that, based on experience and professional judgment, are indicators of potential or pre-existing slope instability. Phase 1 of the study initially identified 211 discrete locations (76 along the Segment TL-635 and 135 along the Segment AP-1), or areas, along the pipeline route with the potential for or exhibiting evidence of previous slope instability. These locations (or potential slope instability features) were assigned a semi-quantitative relative hazard potential ranking..." As we noted in earlier discussions with ACP on protocol for Geohazards Analysis Program (Forest Service comments on meeting notes of November 3, 2015 conference call with ACP), existing landslides or pre-existing slope instability features are important but are only a small portion of the pipeline corridor slopes that need to be assessed for potential slope instability. The existing geologic information and elevation data (for slope gradient) available at the desktop stage was sufficient for the Phase 1 report to make an initial assessment of potential slope instability for all the slopes along the pipeline corridor on the National Forests. The Phase 1 report limited itself to "potential slope instability features" at discrete locations and did not make an initial assessment for all the slopes along the pipeline corridor. Provide an analysis of the Instability Hazard Potential for all the slopes within 600 feet on either side of the pipeline route centerline on NFS lands. Information from the Order 1 Soil Survey must be used given that field data is showing locations of active soil slippage within the ROW. The statement above says "or"...it should read..."and".	Geotech	**Report Addendum** **Letter Response** **Other Studies** Determination was based on geomorphic characteristics and professional judgment. Phase 1 and 2 of the study assessed the entire corridor along the pipeline and existing potential instability features were mapped. Further evaluation of slope instability was also performed by evaluating geology and slope inclination for the entire corridor and additional reconnaissance was conducted in the field. This will be clarified in the Addendum to the Phase 2 Report. Mitigation of hazard resulting from slope instability is being addressed through the BIC slope hazard management process. The details of the BIC process will be presented in the construction alignment sheets, E&SC plans and SWPP permits. Atlantic will introduce the BIC program during the November 21, 2016 meeting. All slopes within 600-ft of the pipeline route were reviewed at a desktop level for potential instability. The BIC program will address the mitigation of any potential instability that exists within, or could affect the final ROW. The results from the Order 1 soil survey are presented in a separate report. Where applicable, information from the Order 1 Soil Survey will be used to inform geotechnical analysis for site specific designs as part of the BIC program.

37	Phase 2	3-4	3.2.2.2.1	Soil type should be based off of Order 1 Soil Survey information. The Data Compilation refers to "Bedrock and surficial geology maps" and "Landslide susceptibility maps and available previously mapped data". Identify the map reference(s) by quadrangle name and mileposts used in the desktop study on the National Forest. For desktop study part of Geohazard Analysis Program Phase 1 on National Forests, use the most detailed scale geologic maps available. If that information was not identified and used in Phase 1, identify and update that information.	Geotech	**Report Addendum** Due to the overall length of the Project, comprehensive map datasets were utilized to the extent possible to allow for consistent descriptions of the various geologic and soil units encountered across the project extent. Soil Survey data was reviewed for consistency but was limited to a very small portion of the overall project within the Forest Service lands. Available geologic mapping was compiled and integrated into Figure 2-1. This mapping is referenced in figures and in Section 8 of the Phase 2 Report. In the map books integrated geologic mapping was used, which included the highest resolution mapping available, however an updated reference to the map books for "USGS Mineral Resources Program" to Nicholson et al. 2005 and Dicken et al. 2005 (or others that are appropriate) will be provided in the Addendum to the Phase 2 Report..
38	Phase 2	3-4	3.2.2.2.1	Resources list LiDAR available at the time of analysis and USGS National Elevation Dataset (NED) data. Please provide such data or where to find it.	Geotech	**Other Studies** **Report Addendum** LiDAR dataset resources collected specifically for the ACP Project are large (35 GB), they are managed by others, and they are not easily transferred. The NED data are freely available online. The Addendum to the Phase 2 Report will provide clarification. Atlantic will provide the LiDAR data for the portion of the alignment within the National Forest boundaries.

39	Phase 2	3-4	3.2.2.2.2	The Slope Instability Hazard section states that a semi-quantitative geomorphic approach considered various factors (including underlying geology and soil type) to "identify surface expression that, based on experience and professional judgment, are indicators of potential or pre-existing slope instability. Phase 1 of the study initially identified 211 discrete locations (76 along the Segment TL-635 and 135 along the Segment AP-1), or areas, along the pipeline route with the potential for or exhibiting evidence of previous slope instability. These locations (or potential slope instability features) were assigned a semi-quantitative relative hazard potential ranking... " As we noted in earlier discussions with ACP on protocol for Geohazards Analysis Program (Forest Service comments on meeting notes of November 3, 2015 conference call with ACP), existing landslides or pre-existing slope instability features are important but are only a small portion of the pipeline corridor slopes that need to be assessed for potential slope instability. The existing geologic information and elevation data (for slope gradient) available at the desktop stage was sufficient for the Phase 1 report to make an initial assessment of potential slope instability for all the slopes along the pipeline corridor on the National Forests. The Phase 1 report limited itself to "potential slope instability features" at discrete locations and did not make an initial assessment for all the slopes along the pipeline corridor. Provide an analysis of the Instability Hazard Potential for all the slopes within 600 feet on either side of the pipeline route centerline on NFS lands. Information from the Order 1 Soil Survey must be used given that field data is showing locations of active soil slippage within the ROW. The statement above says " or"... it should read... " and" . Soil type should be based off of Order 1 Soil Survey information.	Geotech	**Report Addendum** **Letter Response** **Other Studies** See response to comment 36 above.
40	Phase 2	3-4	3.2.2.2.2	The Phase 1 Report did not address potential instability hazards along the access roads on NFS lands. Provide an analysis of the Instability Hazard Potential along the access roads on NFS lands with special attention to any proposed new access road and to any proposed reconstruction or upgraded sections of access roads.	Geotech	**Other Studies** In a letter dated September 1, 2016 the USFS noted concern with several proposed access roads and recommended consultation. Atlantic will provide analysis and ratings following this consultation.

41	Phase 2	3-4	3.2.2.2.2	The Low Hazard Potential includes "slope instability features that appear to be shallow (slip surface appears to be no deeper than about 3-feet such as surficial slumping – probably passing above the proposed pipeline installation depth)...". 1. Explain how a desktop analysis can be so accurate as to identify the 3-feet depth in order to classify a landslide (slope instability feature) as no deeper than 3-feet in depth. Debris slides and debris flows in the steep mountains of western Virginia and West Virginia commonly reach depths of 3-feet or more (in the rupture depth in zone of initiation of debris slides and/or in scour depth of debris flows bulldozing down slopes). 2. Even if it were possible for desktop study to identify existing landslides no deeper than 3-feet in depth, many landslides have the potential to increase in area as well as depth. A landslide less than 3-feet deep may have potential to grow to 4-feet deep or 6-feet deep or +10 feet deep. 3. An existing landslide less than 3-feet deep may be the early stage of a progressive slope failure of much greater depth. 4. It would be prudent for the desktop study to recognize the "shallow landslide" as Moderate or High Hazard Potential. Pipelines typically buried 3 feet, and in some cases a little deeper, are shallow burial, not deep-seated burial. The shallow burial depth of pipelines is well-within the depth that shallow landslides (debris slides and debris flows) pose a hazard. These "shallow" slope instability features need to have engineering geologic field investigations along with the other Moderate and High Hazard Potential features.	Geotech	**Letter Response** **Report Addendum** 1 Determination was based on geomorphic characteristics and professional judgment. Further evaluation was conducted in the field. 2 and 3. The desktop level evaluation was not intended to identify potential for progressive growth of a specific failure (i.e. instability that started as less than 3-feet but if left unimpeded could grow to +10 feet). Instead ranking of the potential hazards were based on observed conditions in their present state. If a "shallow" condition was identified as having a higher hazard ranking at the desktop level, it was identified for further investigation and or mitigation. This will be clarified in the Addendum to the Phase 2 Report Mitigation of threat/hazard to the pipeline is being addressed through the BIC slope hazard management process. The details of the BIC process can be addressed in a separate letter response. 4. The reference to "shallow" instability was with regard to creep observed in the typical surficial accumulation of unconsolidated material present on slopes which contain near surface bedrock. The reference to "3-feet" was intended to imply near surface conditions that under most conditions will be above the pipeline burial depth. This reference to 3-feet will not be included in the Addendum to the Phase 2 Report to avoid confusion.
42	Phase 2	3-4	3.2.2.2.2	The Low Hazard Potential includes "...those features that are judged to be ancient (no movement in over 1,000 years...". Explain how a desktop analysis can assess that a feature has had no movement in over 1,000 years (rather than 200, S00, or 800 years).	Geotech	**Report Addendum** Agreed. The reference to 1,000 years was intended to be a general qualifier of relative age of a feature and not a specific cut off. Desktop analysis alone cannot assess that a feature has had no movement in over 1,000 years, but is used to differentiate between slope instability that has visual characteristics of recent movement versus very old movement (i.e. 1,000 years). Specific reference to 1,000 years will not be included in the Addendum to the Phase 2 Report.

43	Phase 2	3-4	3.2.2.2.2	The Low Hazard Potential states: "More significant slope instability features that were identified adjacent to, or down slope of the proposed centerline were also ranked as a low hazard potential. In the event of potential future realignments of the proposed centerline, these identified features ranked as low may warrant being assigned a moderate or high hazard potential level." 1. Landslide activity can migrate upslope or downslope, especially on steep slopes. Where "significant slope instability features" are identified "adjacent to, or down slope of" the proposed centerline, then more investigation and justification is needed before assessing it as a Low Hazard Potential. These features need to have engineering geologic field investigations along with the Moderate and High threat level features. 2. The statement also illustrates a general difficulty of conflating landslides hazards with risks to pipeline. There is a difference between assessing landslide hazards and assessing risks (threats) to the pipeline. For clarity, the Report needs a two-step process needs to : 1) identify the landslide hazards, 2) then, identify the risks to the pipeline.	Geotech	**Report Addendum** **Letter Response** 1 The Addendum to the Phase 2 Report will acknowledge that slope instability can migrate up slope over time. However, this statement is related to those features that are situated within the study corridor but located a significant distance down slope and adjacent to the proposed centerline in which upward or lateral migration is considered to have a very low potential for impacting the proposed pipeline due to the underlying geology (i.e. presence of stable/resistant units that are unlikely to fail). 2 The purpose of the Phase 2 report is to focus on pipeline integrity hazard from naturally triggered processes (geohazards). Additional mitigation of slope instability hazards are being addressed through the BIC process. The details of the BIC process will be addressed in a separate letter response.

44	Phase 2	3-5	3.2.2.2.2	The Geotechnical Hazards Desktop Analysis states: "These attributes were utilized to assess potential hazards elsewhere along the route." However, the Phase 1 Report primarily displays and assesses discrete instability features, not the whole corridor. Provide an analysis of the Instability Hazard Potential for all the slopes along the pipeline corridor for 1) the potential for landslides to occur and impact the pipeline, 2) the potential for the pipeline and project facilities including access roads to impact slope instability. One reason to assess discrete instability features, such as recent, historic, and ancient landslides, is to learn about the geologic conditions that contributed to the instability and then apply that geologic information to assess the potential instability of the rest of the slopes along the pipeline corridor and access roads. Discuss the site specific geologic conditions of the discrete instability features and then apply that geologic information to assess the potential instability of the rest of the slopes along the pipeline corridor and access roads. Such geologic conditions include: geologic map unit; mass strength of surface and subsurface geologic materials; bedrock structure; slope gradient; surface and groundwater; nature of the contact between bedrock and surficial materials such as colluvium; etc. The pipeline corridor on the National Forests crosses the Appalachian Plateau, Valley and Ridge, and Blue Ridge physiographic provinces. The natural landslides and construction-induced landslides, such as road cut or fill slope failures, in these physiographic provinces reflect a variety of geologic conditions. The pipeline corridor is a very narrow slice of three physiographic provinces, and, by itself, is too small a land base to understand and characterize the potential for natural landslides to affect the pipeline project and the potential for construction-induced landslides to affect public safety, resources, and infrastructure downslope. Broaden the base of slope instability data from the pipeline corridor to a wider area to include a field recon of natural landslides and construction-induced landslides in geologic surface and subsurface materials relevant to the pipeline corridor and access roads. The wider area for field recon of natural landslides and construction-induced landslides includes: 1. Pipeline project access roads (existing and proposed) on NFS lands. 2. Public roads and stream banks on public lands in counties where the pipeline crosses NFS lands. 3. Landslide sites identified by the public in counties where the pipeline crosses NFS lands as part of the FERC scoping and NEPA process	Geotech	**Report Addendum** **Other Studies** Clarification will be provided in the Addendum to the Phase 2 Report to reflect that potential areas of instability were identified within the entire study corridor. Evaluation of access roads will take place upon approval of the proposed roads by the Forest Service. It is agreed that the pipeline corridor only provides a very narrow slice of three physiographic provinces. However, the scope of the Phase 2 study field reconnaissance was properly limited to the study corridor. Impacts from the June 23, 2016 storm have not been investigated. Review of the noted resources will be performed and the noted considerations will be incorporated into the Addendum to the Phase 2 report as appropriate.

45	Phase 2	3-6 and 3-7	3.2.3	Update this summary section based on the USFS comments from the Geohazard Analysis Program Phase 1 REPORT - Hydrotechnical Hazard Analysis sections.	Hydrotech	**Report Addendum** This will be addressed as appropriate in the Addendum to the Phase 2 Report.
46		3-7	3.2.3 Phase 1 Hydrotechnical Hazards Desktop Analysis	*"For the purposes of this study three qualitative hydrotechnical hazard levels were defined by Geosyntec as follows:* • ***Low Hazard**: the stream has a low likelihood of horizontal or vertical mobility over the design life of the project (i.e., water crossings that can be addressed through standard design rules such as 5 feet of cover, 15 feet of set-back, and nominal bank protection). We anticipate that the vast majority of water crossings will fall into this category.* • ***Medium Hazard**: the stream has a moderate likelihood of horizontal or vertical mobility over the design life of the project (i.e., water crossings that will require additional engineering assessment, design and mitigations such as additional cover and/or bank protection).* • ***High Hazard**: the stream has a high likelihood of horizontal or vertical mobility over the design life of the project (i.e., water crossings that will require specialized engineering assessment and design or specialized construction methods such as directional drilling)."* Describe the criteria and information sources that were used to make these classifications. Based on the rapid field surveys, some crossings that were initially deemed "low hazard" from the desktop analysis did not in fact fall under these design rules. One example is MP 115.81 Barn Lick Branch. The hazard ratings should be an iterative process with what the field work confirms, and therefore not underestimate the number of moderate crossings. Update the final hazard ratings.	Hydrotech	**Report Addendum** **Other Studies** The Addendum to the Phase 2 Report will clarify that hazard to the pipeline caused by streams in the physiographic provinces studied herein will be a function of the streams' likelihood to migrate vertically (i.e., scour) or laterally through meander migration (including avulsion) (note that the Phase 2 hazard analysis focuses only on pipeline integrity). Despite a streams' vertical or horizontal migration potential, exposure hazard and thus release potential, will only exist if the pipeline is not buried sufficiently deep or set back sufficiently from the stream. This was used as a framework for establishing the three qualitative hydrotechnical hazard levels, which were then selected based on stream attributes. Selection of this approach towards hazard is consistent with API recommended Practice 1133 "Guidelines for Onshore Hydrocarbon Pipelines Affecting High Consequence Floodplains", where it is stated that "In selecting a route across a high consequence floodplain, it is very important to address possible hazards to the integrity of the pipeline crossing: erosion of the channel bed, failure of the banks, migration of the thalweg, damage from vessels navigating the water course, dredging and debris carried by currents—particularly during flood conditions." A forthcoming update of this recommended practice (click here) describes three types of hazard method assessments; qualitative, semi-quantitative; and quantitative. The methodology follows a qualitative approach with some quantitative aspects. Regarding Barn Lick Branch (SC_0788), it exhibits low vertical migration hazard, but may have valley-wide lateral migration potential. Its sag bends are advised to extend to valley walls, but given the shallow bedrock the hazard to the pipeline is still considered to be low.

47	Phase 2	3-8	3.2.3.1	Across the George Washington and Jefferson National Forests, numerous unnamed and undocumented perennial, intermittent and channeled ephemeral streams exist on the ground that are not identified by NHD or quads maps. In attempt to document these drainages (often from small spring sources), a USFS watershed model was developed that produced an ArcMap shapefile called "Drainage and Flows". Geosyntec and Tessellations should utilize this spatial dataset as an additional screening step to identify all streams of interest. The Forest Service can provide a copy of this shape file. Several stream crossings may potentially exist that need review and field reconnaissance. For example, in crossing tributaries to the Cowpasture River, there appear be 2 additional channels crossed by the pipeline that intersect with the USFS "Drainage and Flows" shapefile. Additional field verification is advised for tributaries to Campbell Run near MP 96-98 and tributaries to East Branch Dowells Draft near MP 117.	Hydrotech	**Report Addendum** These streams are actively being evaluated following receipt of the shapefile on 12 October 2016. In general, small streams are unlikely to pose significant hazard as they are unlikely to produce vertical scour greater than the minimum pipeline burial depth. Results of this evaluation will be provided in the Addendum to the Phase 2 Report.
48	Phase 2	3-8	3.2.3.1	Update Table 3-1 to show any additional stream crossings identified via pre-screening with USFS shapefile called "Drainage and Flow" and field reconnaissance.	Hydrotech	**Report Addendum** The shapefile is currently being evaluated. Results of this evaluation will be provided in the Addendum to the Phase 2 Report. (See above).

49	Phase 2	3-8	3.2.3.1	Step 2: The selection of the seven watershed parameters were not disclosed fully in the Phase 1 Report. Describe the basis for the selection of these specific parameters and update accordingly. For the Valley and Ridge physiographic region and US Forest Service land in WV and VA, percent sand and swamp areas are not defining factors. Use parameters that are pertinent by physiographic region, such that more of the parameters apply and are more accurately weighted to reflect the hazard rating. Possibly wetlands would provide a more meaningful metric as opposed to swamps areas. Depth to bedrock is only relevant depending on the method used to bury the pipeline. If ACP plans to trench streams to dig up bedrock to bury the pipeline, then the material used to bury the pipeline (i.e., broken up bedrock) will not provide stability or help control hydrology. Bedrock in streams can only serve as a control for energy and hydrology if it is not dug up or disturbed. "Mountainous Area" is not a very descriptive term. The more important factor here is slope.	Hydrotech	**Report Addendum** The justification for the selection of these parameters is provided in Section 3.2.3.1. It is correct that neither Swamp not Sand content has a significant effect in the Valley and Ridge physiographic province. However, the main attributes considered to influence a stream's likelihood to migrate vertically or laterally are the drainage area (which correlates with discharge regardless of the return period), presence of streams in debris-flow prone areas, stream slope, and presence of streams in a mountainous area (i.e., hazard is increased simply because the stream crossing lies within the Valley and Ridge or Blue Ridge physiographic province). Clarification will be provided in the Addendum to the Phase 2 Report. Bedrock upstream and downstream of the trench together with armoring of the trench will mitigate the potential for vertical migration. Slope of the stream at the crossing is an attribute that has been considered. Mountainous Area is considered to be an important attribute that increases the likelihood for vertical or horizontal migration because streams in sloped watersheds (i.e., mountainous) will exhibit different hydrology than streams in non-mountainous watersheds.
50	Phase 2	3-9	.3.1 Hazard Analysis Approach Step 2: Selection of parameters and their Estimation: Drainage Area	*"We assigned a low hazard to watersheds with a drainage area smaller than 4 square miles, a high hazard to watersheds with a drainage area greater than 10 square miles, and a medium hazard to watersheds with a drainage area between 4 and 10 square miles."* Please provide a rationale for the categories.	Hydrotech	**Report Addendum** Streams with small watersheds (in this case < 4 square miles) typically lack the discharge (or power) to migrate vertically or horizontally in a significant fashion. A clarification will be incorporated into the Addendum to the Phase 2 Report.

51	Phase 2	3-9	.3.1 Hazard Analysis Approach Step 2: Selection of parameters and their Estimation: Slope at Crossing	*"Streams in the project area with an average slope less than 2% are considered by Geosyntec to exhibit low hazard, whereas streams with an average slope greater than 4% are considered to exhibit high hazard. Streams with an average slope between 2% and 4% are considered to exhibit moderate hazard. "* Please provide a rationale for the categories.	Hydrotech	**Report Addendum.** The Addendum to the Phase 2 Report will clarify that the slope criteria was introduced since it affects stream power (product of discharge and slope) and thus competence of the stream to carry their bedload. The slope thresholds were selected based on geomorphic relationships of bed slope to bed forms (Rosgen, D.L. 1994. A Classification of Natural Rivers, Catena, v. 22, pp. 169-199.)
S2	Phase 2	3-10	.3.1 Hazard Analysis Approach Step 2: Selection of parameters and their Estimation: Depth to Bedrock	*"Streams in the project area with a depth to bedrock of less than 5 ft (150 cm) are considered by Geosyntec to exhibit low hazard, whereas streams with bedrock depth exceeding 6.6 ft (200 cm) are considered to exhibit high hazard. Streams with bedrock depth between 5 ft and 6.6 ft are considered to exhibit moderate hazard. "* Please provide a rationale for the categories. Depth to bedrock is only relevant depending on the method used to bury the pipeline. If ACP plans to trench streams to dig up bedrock to bury the pipeline, then the material used to bury the pipeline (i.e., broken up bedrock) will not provide stability or help control hydrology. Bedrock in streams can only serve as a control for energy and hydrology if it is not dug up or disturbed.	Hydrotech	**Report Addendum** The Addendum to the Phase 2 Report will clarify that it was assumed that the minimum depth of pipeline burial would be 4 ft to S ft. Hence, a stream crossing with bedrock at a depth less than 4 or 5 ft is unlikely to be exposed. The pipeline diameter along AP-1, where land under the FS purview is located, will have a diameter of 42 inches (3.5 ft). Hence at 6 ft, less than one third of the pipeline would be exposed and it would be unlikely for this to lead to release.
53	Phase 2	3-10	.3.1 Hazard Analysis Approach Step 2: Selection of parameters and their Estimation: Percent Sand	*"Streams in the project area with percent sand less than 40% are considered by Geosyntec to exhibit low hazard, whereas streams with percent sand exceeding 60 % are considered to exhibit high hazard. Streams with percent sand between 40% and 60% are considered to exhibit moderate hazard. "* Please provide a rationale for the ranges listed for the hazards ratings. Percent sand is not a defining channel characteristic across a large portion of the pipeline. Why was this parameter chosen? Rosgen Stream Classification or a similar metric weighted on channel stability or substrate may have been more relevant across the entire pipeline. Identify references that support the assumptions "percent sand less than 40% are considered low hazard, whereas percent sand exceeding 60 % are high hazard".	Hydrotech	**Report Addendum** The Addendum to the Phase 2 Report will clarify that sand content was selected because it is more erodible than other stream bank materials. Streams with less than 40% sand content will be less prone to horizontal migration than stream banks with 60% sand content, which we considered a more dominant amount.

54	Phase 2	3-10	.3.1 hazard Analysis Approach: Step 2 Selection of Parameters and their Estimation: Depth to Bedrock	*"The depth to lithic bedrock for the project area was compiled by Tessellations from the Soil Survey Geographic Database (SSURGO), which contains information collected by the National Cooperative Soil Survey, which is part of the Natural Resources Conservation Service (NRCS) of the United States Department of Agriculture (USDA). The SSURGO database was accessed on 12 May 2015. "* Use the Order 1 Soil Survey results, which should provide more accurate information if pits were excavated to bedrock in locations where the pipeline would intersect areas such as stream crossings. The 55URGO data are coarse-scale and are not appropriate for informing site-specific project design and analysis.	Hydrotech	**Report Addendum** The Addendum to the Phase 2 Report will incorporate depth to bedrock using the Order 1 soil survey data, as appropriate.
55	Phase 2	3-11	3.2.3.1	"...debris flows are common in the project area". This is especially true for the Valley and Ridge physiographic region as illustrated by Figure 3-1, and these flows present major hazards. Therefore, describe the assumptions that were used to create Table 3-2. Further clarify this section on debris flow.	Hydrotech	**Report Addendum** The Addendum to the Phase 2 Report will clarify that the regional geology (i.e., rock types most likely to exhibit weathering), and that past occurrence of debris flow, was evaluated.
56	Phase 2	3-11	3.2.3.1	5wamp Area is not pertinent to a large portion of the pipeline. Describe why was this parameter chosen, versus something more relevant across the entire pipeline. Possibly a more appropriate parameter for this area would be focused on wetlands as opposed to swamps areas.	Hydrotech	**Report Addendum** The Addendum to the Phase 2 Report will explain that swamp was chosen because modification of their balance during construction can lead to instability and horizontal migration hazard. It is understood that there are no swamps in the Valley and Ridge, Blue Ridge, Appalachian Plateaus, and most of the Piedmont physiographic regions. However, the other attributes are appropriate to capture stream hazard in those physiographic regions.
57	Phase 2	3-11	.3.1 Hazard Analysis Approach Step 2: Selection of parameters and their Estimation: Mountainous Areas	*Mountainous Areas Section* This section is very vague as to what is being measured. In summary, the section appears to say that all else being equal, mountainous areas have steeper slopes with short duration, higher peak flows (stream flashiness) than low-lying coastal areas with gentle slopes. As a result, streams in the Appalachian Plateau, Valley and Ridge, and Blue Ridge province are assigned a higher hazard rating (+3) than streams outside these provinces as shown in Table 3-3. However, the section does not provide information on how this characteristic will be measured, and no rationale is provided for the hazard scoring categories. Also, watersheds are treated as if soil, vegetation, and precipitation are uniform throughout, which is not the case. Please explain how the hydrologic risks will be measured, including site-specific variation.	Hydrotech	**Report Addendum** The Addendum to the Phase 2 Report will explain that the combination of Drainage Area (which relates to discharge), stream slope (which with discharge defines power), slope of watershed (through the use of the Mountainous Area attribute), Debris Flow potential, depth to bedrock, and sand content are effective in characterizing the vertical and horizontal migration hazard at the stream crossings in the natural settings within the studied physiographic provinces.

58	Phase 2	3-12 to 3-14	3.2.3.1 Hazard Analysis Approach Step 3, Step 4, and Step 5	*Scaring Classification, Expert Classification, and manual Expert Classification* Please provide justification, documentation, or support for the numbers used for scoring in these analyses, as well as the values for each parameter.	Hydrotech	**Report Addendum** The Addendum to the Phase 2 Report will explain that these values were selected based on an interactive process that ensured appropriate hazard ranking for streams that had been observed during aerial and land-based surveys in November 2015. The numeric thresholds represent appropriate hazard categories based on our evaluation of the histogram for hazard scores.
59	Phase 2	3-15	3.3.2	The "Ground Reconnaissance" section discusses examining a subset of identified hazard sites that are most readily accessible. Discuss or better explain identified hazard sites not easily accessed and whether the closer ones near access are representative of all sites.	Hydrotech	**Report Addendum** The Addendum to the Phase 2 Report will clarify that during Phase 2, high and medium hazard streams were surveyed regardless of their accessibility (i.e., some require hiking long distances through sloped terrain). However, "access" also describes permission by land owners. Sites were not accessed without consent from the land owners.
60	Phase 2	4-3	4.3.1	This Steep Slopes section using slope inclination is a much needed addition to the geohazards analysis. We agree about the importance of slope inclination in assessing slope stability, as we have noted in previous comments. Identify the rationale for the chosen slope breaks.	Geotech	**Report Addendum** The Addendum to the Phase 2 Report will incorporate all the slope categories and rationale, including thosefrom MNF and GWNF Forest Plans.
61	Phase 2	4-4	4.4.2	Table 4-1 shows results of the slope inclination analysis. Provide similar tables for NFS lands in WVA and VA.	Geotech	**Report Addendum** This analysis has been compiled. The Addendum to the Phase 2 Report will include this information in this Table or provide it in a separate table.
62	Phase 2	4-4	4.4.2	"The distribution of steep slopes along the route is illustrated graphically in Figure 4-1." Provide the U.S. Forest Service with a pipeline shapefile coded with the slope classes as in Figure 4-1 and other features in Geologic Hazards Mapbook (Appendix 6-2) for the counties where the pipeline crosses NFS lands.	Geotech	**Report Addendum** Shapefiles coded with the slope classes can be transmitted. Slope inclination classification is already complete and will be included in the Addendum to the Phase 2 Report. We request further clarification as to what is meant by "other features in Geologic Hazard Map book".
63	Phase 2	4-5	4.4.3	The Potential Slope Instability Hazard section states: "For Phase 2 Geosyntec used a similar semi-quantitative geomorphic approach to the assessment of slope instability hazards as was used in Phase 1 and as is described in Section 3.2.2.2.2." The comments we made on the Phase 1 Report and on Section 3.2.2.2.2 of Phase 2 Report also apply here. Address those comments here also.	Geotech	**Report Addendum** Noted similar comments above that will be addressed in the Addendum to the Phase 2 Report.

64	Phase 2	4-5	4.4.3	The Low Hazard Potential includes "...slopes that have no existing instability features, are moderately to very steep, and where conventional steep slope design and construction techniques can likely be used to mitigate the potential for construction induced instability." The Moderate Hazard Potential includes "...slopes that have no existing instability features, are moderately to very steep, but where site-specific design and specialized construction techniques are likely required to stabilize trench backfill and right-of-way slopes." The Low and Moderate Hazard Potential both include moderately to very steep slopes (30-58% slope inclination) with the difference between Low and Moderate based on whether conventional steep slope design and construction techniques would likely be used or whether site-specific design and specialized construction techniques would likely be required. Describe the criteria used to determine whether conventional construction techniques or specialized construction techniques are likely to be used within areas of 30-58% slope inclination. What information other than slope inclination was used to determine conventional vs specialized construction techniques? Explain how the information available in desktop analysis were suitable for applying the criteria to the 30-58% slope inclination. A similar issue is that the Moderate and High Hazard Potential both include very steep slopes (40-58% slope inclination) with the difference between Moderate and High based on whether site-specific design and specialized construction techniques would likely be required to stabilize trench backfill and right-of-way slopes or to address complex geologic and/or hydrologic conditions and potential offsite impacts. These differences do not appear to be mutually exclusive, and there is need to explain how these differences can be understood and applied. Explain how the information available in desktop analysis was suitable and used to divide the 40-58% slopes into Moderate and High Hazard Potential. Another issue is the Hazard Potential classification did not mention slopes less than 30% slope inclination, and classified 30-58% slopes (moderately to very steep) in Low Hazard Potential. One way to address the above issues would be to revise the classification in a manner such as: 1. The Low Hazard Potential is restricted to slopes less than 30% slope inclination; 2. The Moderate Hazard Potential is for 30-40% slope inclination (regardless of whether conventional or specialized construction techniques would be used).	Geotech	**Report Addendum** **Letter Response** Further review and clarification of the criteria for slope hazard classification will be considered and presented in the Addendum to the Phase 2 Report. BIC program is addressing questions of conventional vs. specialized construction. The details of the BIC process will be addressed in a separate letter response.

65	Phase 2	4-6	4.4.5 Phase 2 Geotechnical Field Reconnaissance	*"• Consideration of slope inclination and length;* *• Assessment of slope condition based on evident overlying soil and underlying rock materials and consideration of surface runoff and groundwater flow;"* Assessment of slope condition based on overlying soil should come from Order 1 Soil Survey information.	Geotech	**Report Addendum** Information from the Order 1 Soil Survey applies to a very small portion of the overall ACP Project length; however, the Addendum to the Phase 2 report will incorporate the available soil survey data into the assessment of slope condition.
66	Phase 2	6-2	6.4.1	"Of the 55 potential slope instability hazard and steep slope sites visited during the Phase 2 field reconnaissance, 17 were on the TL-635 segment and 38 were on the AP-1 segment... For these 55 sites new hazard rankings were assigned to reflect both the assessment of existing stability conditions and the anticipated impacts of construction in accordance with the revised hazard potential level category definitions outlined in Section 4.4.3." In Appendix 6-1, the change (or lack of change) from Initial Hazard Ranking to New Hazard Ranking needs more explanation for sites on NFS lands. For example, the Rev 11 Milepost 84.7 to 85.6 site has an Initial Hazard Ranking of >40% and New Hazard Ranking of Low. However, based on the Comments and Recommendations in the Appendix 6-1 Table for this site, it would seem the New Hazard Ranking should be High rather than Low. Another example, the Rev 11 Milepost 120.1 site has an Initial Hazard Ranking of >58% and New Hazard Ranking of Moderate. However, based on the Comments and Recommendations in the Appendix 6-1 Table for this site, the New Hazard Ranking should have remained High and not lowered to Moderate. Review and reassess the Initial Hazard Ranking and New Hazard Ranking for all sites on NFS lands.	Geotech	**Report Addendum** The Addendum to the Phase 2 Report will clarify why classifications were changed. The "initial hazard rank" will be removed (or renamed to "Desktop Rank" or "Phase 1 Rank") to eliminate confusion.

67	Phase 2	6-3	6.4.1	"In spite of the geologic conditions and steep slope inclinations, very few slopes observed along the proposed pipeline route were classified Existing landslides are important but are only a small portion of the pipeline corridor slopes that need to be assessed for potential slope instability. We have made previous comments about the need to assess all the slopes for potential instability, not just existing landslides. When major storm events trigger many landslides, it is often the case that most of the landslides are new landslides rather than reactivation of old landslides. Thus it is important to assess the landslide potential of all slopes based on a variety of geologic conditions including: slope inclination; strength properties of surface and subsurface geologic materials and geologic map units; bedrock structure; surface and groundwater; nature of the contact between bedrock and surficial materials such as colluvium; etc.). as landslides." The addition of slope inclination along the centerline in Phase 2 is a step in the right direction. Provide a slope inclination map covering all the slopes within 600 feet on either side of the pipeline route centerline on NFS lands. Based on the slope inclination and the other geologic conditions, assess the landslide potential for slopes within 600 feet on either side of the pipeline route centerline on NFS lands. Assess the potential for a variety of landslides, such as debris slides, debris flows, slumps, dip slope bedrock rockslides, debris slumps, earth slumps, earth slides, earth flows, and debris avalanches. This landslide potential information is needed even where the centerline is along a ridgetop. In terms of slope instability, a ridgetop pipeline location generally is far preferable to a side slope location. That said, a ridgetop pipeline does have some potential instability issues that need to be analyzed, including the potential to destabilize areas downslope, for example, by concentrating surface and subsurface water flows and discharging water flows downslope into areas that may become destabilized. One side of the ridge may have lesser potential slope instability than the other side of the ridge, and that information can be used in design of drainage discharge along the pipeline corridor. In addition, on narrow ridgetops, there is potential for spoil or fill material to spill down the side slopes and destabilize areas downslope.	Geotech	**Report Addendum** Slope inclination evaluation was performed for the entire corridor as part of potential slope instability assessment. This information will be presented in the Addendum to the Phase 2 Report. The Addendum to the Phase 2 Report will emphasize that "slope instability" includes all mass movements and address the overlap of geotechnical and hydrotechnical assessment of debris flows. The Addendum to the Phase 2 Report will more directly address geotechnical hazards on ridgetops.

68	Phase 2	6-3	6.4.1	"Across most of the steep slopes, some colluvium accumulation (soil material moved by gravity) was observed. This colluvium is generally quite thin, overlying bedrock, and even though it exhibits creep, this type of mass movement is not associated with naturally occurring landslides." On the contrary, colluvium overlying bedrock can be associated with naturally occurring landslides, such as 1) debris slides, 2) debris avalanches, 3) debris flows originating as debris slides or debris avalanches. If the colluvium exhibits creep, then it indicates active slope movement and a need to assess the potential for creep to accelerate into a debris slide or debris avalanche, for example, during a storm event. Thin colluvium overlying bedrock is a common initiation zone for debris slides, debris avalanche, and debris flows. Moreover, creep itself is a potential slope instability hazard, and is one of five basic categories of the flow type of landslide movement (USGS, 2004; Cruden and Varnes, 1996). As noted by Turner, A.T. (1996), "Creep Is a phenomenon of concern when structures are placed on colluvial deposits. It is known that some long-term translation or movement of materials can occur, especially in the near-surface region." While pipelines do have some tolerance for displacement, the differential or cumulative displacement from creep over the decades of pipeline operation is a slope instability hazard and can be a risk to the pipeline. In addition, the potential impact of the pipeline on the rate of creep also needs to be considered. The construction of the pipeline trench and the cut and fill slopes in the R-O-W, and the resulting changes in surface and subsurface water flows, may adversely influence the rate of creep in the years and decades post-construction. The dismissive treatment of thin colluvium overlying bedrock and exhibiting creep raises concern about the adequacy of Potential Instability Hazard analysis. Creep is a well-known hazard to structures on steep slopes. Debris slides, debris avalanches, and debris flows are dominant landslide processes in the physiographic provinces crossed by the ACP project on NFS lands. Many of these landslides originate in thin colluvium overlying bedrock. In contrast to the Potential Instability Hazard's dismissive treatment of potential debris slide and debris flow source areas in thin colluvium in upland areas, the Hydrotechnical Hazards Analysis recognizes the need to consider the potential for debris flows at stream crossings. Revise the Potential Instability Hazard analysis to assess the potential for debris slides, debris avalanches, and debris flows on the slopes within 600 feet on either side of the pipeline route centerline on NFS lands. Revise the desktop analysis and conduct	Geotech	**Report Addendum** **Letter Response** The Addendum to the Phase 2 Report will discuss shallow creep hazards in more detail. The additional references provided will be reviewed and incorporated into the discussion as appropriate. Reference to BIC slope hazard management and mitigation may be appropriate. The details of the BIC process will be addressed in a separate letter response.

69	Phase 2	6-3	6.4.1	"However, the observed creep of the colluvium is indicative the potential for instability to be created by the disturbance that will occur during right-of-way grading and trenching operations and this is the primary slope instability issue that needs to be addressed on the project." In our comments on the draft Resource Report on Geologic Resources, as well as subsequent informal communications during the review of protocol for Geohazards Analysis Program (Forest Service comments on meeting notes of November 3, 2015 conference call with ACP), we stressed the need to assess project-related slope failures in addition to natural landslides. We requested an assessment of potential slope instability of cut slopes and fill slopes during construction and operation of the pipeline, access roads, and associated facilities on NFS lands. The brief quote above recognizing the magnitude of potential slope instability issues related to project slope disturbance is a welcome sign. Another step forward is the recommendations on right-of-way grading and pipeline trench excavation at some sites on NFS lands in the Potential Geotechnical Hazards Summary Table (Appendix 6-1). While this information is a start, more detail is needed to provide a comprehensive analysis of project-related potential slope failure hazards and associated risks to people, infrastructure, and resources. 1. Assess the potential instability of cut slopes (excavated slope) for access roads, pipeline trenches, and roads or passageways within the corridor to allow heavy equipment to move along the corridor. Assess potential cut slope instability during construction and in the long-term (during operation of the pipeline and beyond). 2. Assess the potential instability of fill slopes created by the project (including access road fill slopes, corridor road or "passageway" fill slopes, trench backfill, spoil, excess excavation or excess fill disposal areas, backfill slopes created for reclamation). Assess the potential for debris flows caused by failure of fill slopes, spoil piles, and restoration backfill in the short-term (during construction of the pipeline) and in the long-term (during operation of the pipeline and beyond), and assess associated risks to public safety, infrastructure, streams and other resources: Collins, T. K., 2008, Debris flows caused by failure of fill slopes: early detection, warning, and loss prevention. Landslides. Springer- Verlag. 5:107–120 http://link.springer.com/article/10.1007/s10346-007-	Geotech	**Report Addendum** See comment 12 above.

70	Phase 2	6-3	6.4.1	In order to assess potential impact of the project on slope stability, provide the plans and typical drawings for the location and magnitude of the proposed slope modifications (excavations and fills) on National Forests for: a) access roads to pipeline right-of-way corridor (incudes new construction and reconstruction); b) pipeline right-of-way excavation for trench (ditch); c) pipeline right-of-way excavation for roads (travel area and working area); d) pipeline right-of-way loose material from trench excavation (ditch spoil storage); e) pipeline right-of-way topsoil (topsoil storage); f) pipeline right-of-way loose material from construction road excavation (travel area and working area); g) ATWS; h) contractor yards and equipment staging/storage areas; and i) disposal areas for excess excavation or other materials. The construction typical drawings provided in final Resource Reports are largely for flat land, and are not adequate for the steeper slopes typical of the National Forests. The construction drawing provided in Resources Report Appendix 1D for cut-and-fill construction (pages 1D-17 and 1D-36) lacked specific dimensions needed to assess the magnitude of the proposed slope modifications (excavations and fills) on National Forests. The schematic for ridgetop excavation (Figure 1.4.1-1) in Resource Report 1 was too generalized to assess the magnitude of the proposed slope modifications (excavations and fills) on National Forests. ACP now needs to provide the typical plans and drawings with dimensions needed for the Geohazard Analysis Report to assess the potential impact of the project on slope stability. While additional field information may refine the designs, the slope inclination and other information currently available should allow ACP to provide initial typical drawings with dimensions suitable for assessing the location and magnitude of proposed slope modifications (excavations and fills) on National Forests. Side hill: Provide construction typical drawings with dimensions for each slope class (in 10% increments) where side hill cut- and-fill construction would occur on the National Forests. For example, if cut-and-fill construction is planned on slopes ranging from 10% to 78%, then provide a construction typical drawing for each of these construction slopes: 10%, 20%, 30%, 40%, 50%, 60%, 70%, and 80%. Ridgetop: Provide construction typical drawings with dimensions for each typical ridgetop where construction would occur on the National Forests. For example, if construction would be on six ridgetop with symmetric side-slopes of 10%, 20%, 30%, 40%, 50%, 60%, then provide a typical drawing for these six ridgetops symmetric slope classes. Provide similar construction drawings for each typical ridgetop with asymmetric side-slopes (such as	Geotech	**Other Studies** **Letter Response** The purpose of the Phase 1 and 2 reports was to focus on pipeline integrity hazard from naturally triggered processes (geohazards), as required by the RFP from Dominion. The scope of work did not include construction considerations for access roads, or review of construction typical drawings. However, it is understood that this issue will be addressed in a separate report or in combination with the BIC program. The details of the BIC process will be addressed in a separate letter response.

71	Phase 2	6-6	6.5	Areas where LiDAR is not available and "once available". Explain how these sites will be addressed properly and any time line when LiDAR will be available. Discuss how this will affect the data and results.	Geotech	**Report Addendum** LiDAR topographic data will be reviewed and evaluated along reroutes and where LiDAR data was not previously available. The Addendum to the Phase 2 Report will present results of new LiDAR analysis.
72	Phase 2	7-1	7.1.1	8 of 43 high hazard crossings will be HDD (less than 20 percent). Describe how the rest of the high hazard crossings will be addressed.	Hydrotech	**Other Studies** Detailed design of hazard mitigation measures will be addressed in the construction alignment sheets, E&SC plans and SWPP permits. Atlantic will introduce the BIC program during the November 21, 2016 meeting.
73	Phase 2	7-1	7.1.1	The Valley and Ridge physiographic region in WV and VA does frequently experience major flood events and debris flows. This finding should then direct next steps and mitigation measures in phase 2. For example, within the Valley and Ridge physiographic region in WV and VA, more moderate sites need to be evaluated with the rapid field reconnaissance, and perhaps even a sampling of low hazard rated sites as well. Additional evaluations are needed in Table 7-3.	Hydrotech	**Report Addendum** The Addendum to the Phase 2 Report will clarify that the purpose of the Phase 2 work was to conduct Rapid Stream Reconnaissance at most, if not all, medium hazard sites. Some low hazard streams may be added as well.
74	Phase 2	7-1	7.1.1	Clarify the last sentence. How were "some of the sites with moderate and high hazard" selected? Explain why the following page 7-3 shows 9 locations selected that have low hazard ratings.	Hydrotech	**Report Addendum** The Addendum to the Phase 2 Report will clarify that sites were selected on the basis of their permission to access. The intent of Phase 2 is to conduct Rapid Stream Reconnaissance at most, if not all, of the medium and high hazard stream crossings.
75	Phase 2	7-1	7.1.1	Rapid field surveys were completed for some sites. Explain whether, after processing that collected field data, a final adjustment was made to the hazard rating for those sites. If no adjustments were made, update the hazard ratings according to field parameters and recommendations. Avoid underestimating "low" hazards, particularly in the Valley and Ridge physiographic region.	Hydrotech	**Report Addendum** Recommendations for hazard upgrades or downgrades are provided in Appendix 7-2. Upgraded or downgraded sites will be listed or discussed in detail in the revision to the Phase 2 Report.
76	Phase 2	7-2	7.1.1	Update Table 7-1, if any additional stream crossings were identified via pre-screening with USFS shapefile called "Drainage and Flow" and field reconnaissance.	Hydrotech	**Report Addendum** Addressed above. The shape file was received October 13, 2016 and the results will be reported in the revision to the Phase 2 Report.
77	Phase 2	7-4	7.1.2	"Together with data sets acquired during the automated desktop efforts, additional data collected and assessed during rapid field surveys allowed for the development of recommendations provided in Section 7.4 including the identification of need for additional data to support final erosion depth calculations and recommendations for construction planning."—Describe or direct where this additional data can be found.	Hydrotech	**Report Addendum** Data sets are provided in Appendix 7-2. The report did not include particle size distribution measurements using Wolman Pebble Count, but this will be provided in the Addendum to the Phase 2 Report.

78	Phase 2	7-5	7.3	Table 7-3 lists the remaining potential medium and high hazard stream crossings where a Phase 2 evaluation remains to be conducted—Discuss when such evaluations will be conducted and what effects the current lack of this data will have on the overall assessment.	Hydrotech	**Report Addendum** Some additional Phase 2 evaluations were conducted in September, 2016. Additional evaluations will be conducted when access to the sites is granted. Results will be presented in the Addendum to the Phase 2 Report. The lack of data for those streams not surveyed does not impact the overall assessment as these streams will be evaluated when access is granted.

79	Phase 2	8-1	8	Move References to SECTION 10. Insert a SECTION 8 PHASE 2 CONSOLIDATED ROCK/BLASTING HAZARD ANALYSIS. Assess the excavation characteristics of different bedrock formations on NFS lands in terms of suitability for various non-blast techniques available to excavate bedrock (rock trenchers, rippers, rock impact hammers, hydraulic breakers, rock breaker attachments). Advances in non-blast excavation equipment in recent decades have reduced the areas where blasting is required. Some bedrock formations can be excavated by non-blast techniques, and do not require blasting. Identify by milepost the bedrock formations (or stratigraphic portions of bedrock formations) where blasting is likely needed for excavation in the pipeline corridor and along access roads. Exposures of bedrock (such as in bedrock outcrops, road cuts, or soil survey pits) along the pipeline corridor provide limited information about excavation characteristics of the different bedrock formations. The pipeline corridor is a very narrow slice through many different geologic bedrock formations. However, these bedrock formations extend for many miles to the northeast and southwest from the corridor and are exposed in road cuts, quarries and other excavations along the strike (trend) of the geologic formations outside the project footprint. Supplement the information from limited exposures of bedrock formations in the corridor with information from more extensive exposures of the same bedrock formations outside the project footprint. Conduct engineering geologic Inspections of existing exposures of bedrock (natural or excavated) inside and outside the project footprint sufficient to estimate the excavation characteristics of the geologic formations in the project footprint, and to estimate by mileposts the sections of rippable rock vs non-rippable rock requiring blasting. Evaluate the results of the excavation characteristics assessment (above) and determine whether a seismic velocity survey is warranted to estimate rippable rock vs non-rippable rock and depth to bedrock. A seismic velocity survey would be useful in estimating length and depth of common excavation vs rippable excavation vs blast excavation along the pipeline corridor, and estimating the volumes of bedrock swell and excess excavation needing to be disposed.	Geotech	**Other Studies** The purpose of the Phase 1 and 2 reports was to focus on pipeline integrity hazard from naturally triggered processes (geohazards). Blasting Hazard analysis is not considered to be a geohazard but rather a construction technique and is addressed in Resource Report 6, section 6.6.1. In addition the COM plan addresses blasting and provides a sample site specific blasting plan.

80	Phase 2	9-1	9	Insert a SECTION 9 PHASE 2 ACID-PRODUCING ROCKS AND SOILS HAZARD ANALYSIS. Identify by milepost the location of any acid-producing rocks and soils on NFS lands. Assess the potential for project construction in acid-producing rocks and soils to impact water and other resources.	Geotech/ERM	**Other Studies** Construction Impacts and Mitigation of acid producing rocks is addressed in section 6.6.8 of Resource Report 6 filed September 18, 2015.
81	Phase 2	Appendix 7-1		Appendix is not ordered sequentially by Mile Posts, which creates difficulty in finding stream crossings of particular interest. Reorganize by MP, not SC#, which has not been provided as spatial data.	Hydrotech	**Report Addendum** The list in Appendix 7-1 will be reordered in the Addendum to the Phase 2 Report.
82	Phase 2	Appendix 7-1		Update Appendix 7-1, if any additional stream crossings were identified via USFS shapefile called "Drainage and Flow" and field reconnaissance.	Hydrotech	**Report Addendum** Noted and will be addressed – see response to Comment 76 above.
83	Phase 2	Appendix 7-1	SC_06664	MP 84.98 – stream crossing on National Forest. This is a moderate hazard rating within the Valley and Ridge physiographic region. The cross-section indicates very steep valley slopes on both sides of the crossing. Recommendations include evaluating potential scour depth and burial in bedrock across valley bottom, given potential for debris flow. Consider a route variation to avoid multiple similar crossings in a short distance. MP 84-86 realignment - Utilize the USFS shapefile called "Drainage and Flow" to find the best realignment that will avoid headwater areas.	Hydrotech	**Other Studies** Recommendations for depth of burial and extent of burial to mitigate the hazard at such crossings will be provided as part of mitigation design.
84	Phase 2	Appendix 7-1	SC_0666S	MP 85.11 – stream crossing on National Forest. This is a moderate hazard rating within the Valley and Ridge physiographic region. The cross-section indicates very steep valley slopes on both sides of the crossing. Recommendations include evaluating potential scour depth and burial in bedrock across valley bottom, given potential for debris flow. Consider a route variation to avoid multiple similar crossings in a short distance. MP 84-86 realignment - Utilize the U5FS shapefile called "Drainage and Flow" to find the best realignment that will avoid headwater areas.	Hydrotech	**Other Studies** Same comment as for 83 above.
85	Phase 2	Appendix 7-1	SC_0719	MP 85.44 – stream crossing on National Forest. This is a moderate hazard rating within the Valley and Ridge physiographic region. The cross-section indicates a steep slope on one side of the crossing. Recommendations include evaluating potential scour depth and burial in bedrock across valley bottom, given potential for debris flow. Consider a route variation to avoid multiple similar crossings in a short distance. MP 84-86 realignment - Utilize the USFS shapefile called "Drainage and Flow" to find the best realignment that will avoid headwater areas.	Hydrotech	**Other Studies** Same comment as for 83 above.

86	Phase 2	Appendix 7-1	SC_0788	MP 115.81– stream crossing on National Forest. Barn Lick Branch was initially classified as a low hazard rating according to the desktop analysis. Within the Valley and Ridge physiographic region there is often a higher hazard due to flood/debris flow seasonal events. The rapid field survey of this location indicated meander migration across floodplain. Recommendations include sag bends at each valley edge and pipeline buried in bedrock. According to the definition of "Medium Hazard" on p3-7, it appears that this location should be re-classified as a "medium" hazard. Update final hazard ratings according to field parameters and recommendations, and avoid underestimating "low" hazards, particularly in the Valley and Ridge physiographic region.	Hydrotech	**Report Addendum** Mitigation of hydrotechnical hazard will be designed in the future. Hazard at Barn Lick Branch will be addressed through proper mitigation. The hazard classification will be reviewed and adjusted in appropriate in the Addendum to the Phase 2 Report.
87	Phase 2	Figure 3-1		Debris Flow Affected areas. Describe the criteria that were used to evaluate debris-flows. Figure 3-1 illustrates very large events. The analysis should also address smaller flooding and landslide events that happen more predictably with seasonal thunderstorms. In Appendix 7-1 there are multiple recommendations with regards to presence of debris flow hazards at pipeline/stream crossings. Address how these smaller debris flow events relate to the Phase 2 analysis. In light of the June 23, 2016 flood in WV and VA (predicted 1,000 years event in certain locations), major flood events, in addition to debris flow, appear to be pertinent and should be addressed.	Hydrotech	**Report Addendum** The Addendum to the Phase 2 Report will explain that debris flow affected areas were identified by geology, topographic relief, geomorphology, and visual observations. Figure 3-1 was provided for illustration purposes to show the geographic occurrence of debris flows and flooding from larger events which have been studied. Regardless of the size of debris flow events, hazard mitigation in debris flow areas comprises burial beneath debris (in many cases within bedrock), minimizing the length of pipe within a debris flow prone area, and potential rerouting if warranted. The overall objective is to locate the pipe horizontally and vertically so that future debris flows, whether small or large, will not affect the pipe.

Dominion Resources Services, Inc.
5000 Dominion Boulevard,
Glen Allen, VA 23060

December 12, 2016

BY: OVERNIGHT OR EXPRESS MAIL

Clyde Thompson
Forest Supervisor
Monongahela National Forest
200 Sycamore Street
Elkins, WV 26241

RE: Atlantic Coast Pipeline, LLC, Atlantic Coast Pipeline Project
Response to U.S. Forest Service Comments on the Order 1 Soil Survey Report for the Monongahela National Forest and George Washington National Forest

Dear Mr. Thompson:

Atlantic Coast Pipeline, LLC (Atlantic) provides the following responses to the request for clarification of the U.S. Forest Service (USFS) in the letter submitted to the Federal Energy Regulatory Commission (FERC) dated November 21, 2016. Atlantic appreciates the thorough review and input provided by the USFS, and looks forward to completing the Order 1 Soil Survey.

We look forward to continuing to work with you on the Atlantic Coast Pipeline Project. Please contact Richard B. Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com if there are questions regarding this letter. Please direct written responses to:

Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Sincerely,

Carole G. McCoy

Carole McCoy
Director of Engineering Services, Atlantic Coast Pipeline

cc: Jennifer Adams, Special Projects Coordinator, U.S. Forest Service
Richard B. Gangle, Dominion

Attachment: Responses to request for clarification

ATTACHMENT

Request for Clarification:

1) The Forest Service received a pdf document containing the photos of the soil pits and a separate document identifying each pit with a number (ID) and specifying the date each pit was described. No identifying information (i.e., pit ID, date pit was described, etc.) is embedded in the photographs. The Forest Service would like to receive the raw images, unedited, with all identifying information including the date the pit was described.

Response:

Atlantic has provided the requested photo documentation in two separate submittals. On October 24, 2016, Atlantic supplied a PDF document showing photos of each pit with the ID and date the pit was described. The date of description is the same as the date the photo was taken. On October 31, 2016,electronic (JPG) files of each photo were provided to the MNF and GWNF on DVD. These files were the original, raw and unedited, images with the file name providing the ID number of the pit.

Soil survey test pit logs are included in Attachment 4 of the Order 1 Soil Survey Report submitted to the USFS August 29, 2016.

Request for Clarification:

2) The Forest Service conducted field evaluations to verify the soil pit locations and corresponding information to expand our soil database. Of the 33 pits that were field checked, seven did not show signs of excavation in the field. (The seven pits were not part of the group of pits that were eliminated due to property boundary discrepancies). The 26 pits that were located by the Forest Service exhibited identifying markers that indicated excavation, whereas the seven pit locations in question did not exhibit such markers. Examples of identifying markers include location marked with flagging tape, cut roots, rock staining, surface disturbance, or other indicators that a pit had been dug.

Please provide clarification as to how pits were marked post excavation and some additional clarity to help us track the completion of this project. The clarity would also ensure that all pits were dug and described accurately as agreed upon in the Order 1 Soil Survey protocol and meetings, particularly the March 9th, 2016 meeting, during which it was discussed that the soil survey team will flag and record GPS points of each test pit location and provide to FS.

Following is the list of pits that were evaluated in the field and the list of pits that could not be located due to a lack of field markers such as, flagging, cut roots, rock staining, surface disturbance, or other indicators.

Response:

Each soil survey pit was marked with red/pink flagging tape hung in a nearby tree or, where no tree was in the immediate vicinity, flagging on the ground. Two figures below illustrate the typical marking. Figure 1 demonstrates flagging placed in a nearby tree while figure 2 shows flagging placed on the ground. In addition to the flagging, each pit was GPS located and the coordinates provide in Attachment 2 of the Order 1 Soil Survey Report submitted August 29, 2016.

At the USFS' request Atlantic personnel backfilled each soil test pit immediately upon completion of the classification. This was done the same day each pit was excavated. As directed by the USFS the organic layer was replaced following backfilling. Atlantic is willing to support the USFS and direct the FS to the test pit locations in the field.

The table below provides the date of survey, typical marking, latitude and longitude of each survey pit in question.

	Soil Survey Pit ID	Date of Survey	Typical Marking	Latitude	Longitude
1	P-056-160613-1117-RLL	2016.06.13	Red / Pink Surveyor tape	38.299526	-79.839981
2	P-059-160613-1107-JDF	2016.06.13	Red / Pink Surveyor tape	38.296796	-79.837805
3	P-068-160614-1338-SDD	2016.06.14	Red / Pink Surveyor tape	38.297316	-79.828113
4	P-069-160614-1158-SDD	2016.06.14	Red / Pink Surveyor tape	38.298404	-79.827744
5	P-008-160620-1075-DAT	2016.06.20	Red / Pink Surveyor tape	38.351315	-80.038940
6	P-011-160620-1140-MGW	2016.06.20	Red / Pink Surveyor tape	38.348694	-80.037833
7	P-012-160620-1115-MGW	2016.06.20	Red / Pink Surveyor tape	38.347671	-80.037546

Figure 1 - Flagging Placed in Tree

Figure 2 - Flagging Placed on Ground

Dominion Resources Services, Inc.
5000 Dominion Boulevard,
Glen Allen, VA 23060

December 13, 2016

BY: OVERNIGHT OR EXPRESS MAIL

Clyde Thompson
Forest Supervisor
Monongahela National Forest
200 Sycamore Street
Elkins, WV 26241

RE: Atlantic Coast Pipeline, LLC, Atlantic Coast Pipeline Project
Response to U.S. Forest Service Request for Site-Specific Design of Stabilization Measures in Selected High-Hazard Portions of the proposed Atlantic Coast Pipeline Project in the Monongahela National Forest and George Washington National Forest

Dear Mr. Thompson:

Atlantic Coast Pipeline, LLC (Atlantic) provides the following responses to the request of the U.S. Forest Service (USFS) in the letter submitted to the Federal Energy Regulatory Commission (FERC) dated October 24, 2016.

In its letter, the USFS notes that the ACP Project will cross some very challenging terrain that includes steep slopes, headwaters, geologic formations with high slippage potential, highly erodible soils and high-value natural resources downslope of high hazard areas.

Atlantic has developed and will implement (1) a geohazard program, (2) karst survey program, and (3) a Best in Class (BIC) slope stabilization and erosion and sediment control program to address the hazards listed in the USFS letter.

Both the USFS and Atlantic have agreed that meetings with professional geotechnical engineers and engineering geologists are the appropriate method to address the USFS's design questions and concerns. Although ten sites are referenced in the USFS letter, Atlantic and the USFS have agreed to focus on two of the sites in order to demonstrate the effectiveness of Atlantic's programs. These two sites are referred to as MNF #1 and GWNF #2 in the USFS's letter.

The first of these meetings was held on November 21, 2016 at the North River Ranger District office in Harrisonburg, VA. Atlantic provided preliminary designs and BIC design details for

review and discussion. During this meeting, the USFS and Atlantic agreed to move forward with the appropriate professional engineers and geologists to further the design discussion. A second meeting was held on December 8, 2016, during which updated design drawings and details were provided for review. The parties have agreed to participate in a third meeting to address the specific concerns and comments of the USFS to date.

Atlantic anticipates that several additional meetings will be required to resolve the concerns noted by the USFS in the referenced letter. These discussions will inform Atlantic's site-specific design effort, which is part of the Construction Operations and Maintenance (COM) plan development process.

We look forward to continuing to work with you on the Atlantic Coast Pipeline Project. Please contact Richard B. Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com if there are questions regarding this letter. Please direct written responses to:

Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Sincerely,

Carole A. McCoy

Carole McCoy
Director of Engineering Services, Atlantic Coast Pipeline

Cc: Jennifer Adams, Special Projects Coordinator, U.S. Forest Service
Richard B. Gangle, Dominion

National Oceanic and Atmospheric Administration

Steve Holden

From: Andrew Herndon - NOAA Federal <andrew.herndon@noaa.gov>
Sent: Wednesday, January 04, 2017 11:16 AM
To: Spencer Trichell (Services - 6)
Cc: Sara Throndson; David Bernhart; Cheryl Scannell; Stephania Bolden; Rachel Sweeney - NOAA Federal; Kelly Shotts; Fritz Rohde - NOAA Federal
Subject: Re: [External] Re: Follow-up

Hey Spencer.

Happy New Year. Thanks for reaching out.

Please, include the following people on future correspondence. Some of these folks may choose to not participate, but I think this is a good list to start, each has been cc'd here.

David Bernhart
Stephania Bolden
Rachel Sweeney
Kelly Shotts
Cheryl Scannell
Fritz Rohde

On Wed, Jan 4, 2017 at 10:20 AM, Spencer Trichell (Services - 6) <Spencer.Trichell@dom.com> wrote:

Mr. Herndon,

I am following up on our previous communication. We would like to meet with the appropriate representative with your office to discuss the Atlantic Coast Pipeline Project. Do you know with whom I should coordinate a meeting in your office?

Happy New Year,

Spencer Trichell

Dominion

From: Andrew Herndon - NOAA Federal [mailto:andrew.herndon@noaa.gov]
Sent: Wednesday, November 16, 2016 12:56 PM
To: Spencer Trichell (Services - 6)
Cc: Sara Throndson
Subject: [External] Re: Follow-up

Will do Spencer. Thanks for reaching out. I sent along the email to my leadership that I mentioned. I'll let you know what I hear back.

On Wed, Nov 16, 2016 at 12:52 PM, Spencer Trichell (Services - 6) <Spencer.Trichell@dom.com> wrote:

Mr. Herndon,

I am glad that we got the chance to discuss the ACP project today. Once you have decided who the appropriate people are, we would be glad to come down and discuss the project. I look forward to hearing back from you.

In the meantime, please let me know if you need any additional information.

Regards,

Spencer Trichell

Environmental Consultant - Atlantic Coast Pipeline

Dominion Resources Services, Inc.

O:(804)-273-3472

M:(804)-263-5980

5000 Dominion Blvd, Glen Allen, VA 23060

spencer.trichell@dom.com

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State/Commonwealth Agencies

West Virginia Division of Culture and History

WEST VIRGINIA
Division of Culture and History

The Culture Center
1900 Kanawha Blvd., E.
Charleston, WV 25305-0300
Randall Reid-Smith, Commissioner
Phone 304.558.0220 • www.wvculture.org
Fax 304.558.2779 • TDD 304.558.3562
EEO/AA Employer

November 17, 2016

Mr. Robert Bisha
Technical Advisor, Atlantic Coast Pipeline
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, VA 23060

RE: Atlantic Coast Pipeline; FERC Docket # PF15-6-000
FR#: 15-171-MULTI-20

Dear Mr. Bisha:

We have reviewed the Phase II testing plan for site 46PH775 that was proposed by ERM for the above referenced project to determine potential effects to cultural resources. As required by Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

It is our understanding that site 46PH775 cannot be avoided by the proposed project due to constructability issues. Consequently, the site, which is currently understood to be a prehistoric lithic scatter with known components dating to the Middle Archaic and Late Archaic Periods, will be investigated to determine its eligibility for inclusion in the National Register of Historic Places. A small amount of negligible historic period was also recovered from the site. Although, the artifact assemblage was contained within the plowzone, areas of higher artifact density appear to exist. In addition, the Middle Archaic and Late Archaic components may be spatially discrete. Associated cultural features may exist at the site.

The testing plan proposes to mechanically remove the plowzone from a minimum of twenty 10 x 6 meter blocks and examine the subsoil for evidence of cultural features. Any identified soil anomalies that appear to be cultural in origin will be documented, bisected and excavated, with flotation samples taken from one-half of the feature fill. The focus of the investigation will be to determine whether patterning and temporal information can be obtained from any identified features. Once this information has been obtained from a representative sample, feature excavation will cease and any remaining features will be covered and preserved. All artifacts recovered from the investigation will be analyzed. A report documenting the results of the investigation will be submitted for our review. We concur with the proposed testing plan and look forward to reviewing the results.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please contact Lora A. Lamarre-DeMott, Senior Archaeologist, at (304) 558-0240.*

Sincerely,

Susan M. Pierce
Deputy State Historic Preservation Officer

SMP/LLD

WEST VIRGINIA
Division of Culture and History

The Culture Center
1900 Kanawha Blvd., E.
Charleston, WV 25305-0300
Randall Reid-Smith, Commissioner
Phone 304.558.0220 • www.wvculture.org
Fax 304.558.2779 • TDD 304.558.3562
EEO/AA Employer

December 7, 2016

Mr. Robert Bisha
Project Director Atlantic Coast Pipeline
Dominion Resources Services, Inc.
5000 Dominion Blvd.
Glen Allen, VA 23060

RE: Atlantic Coast Pipeline
FERC Docket #: PF15-6-000
FR#: 15-171-MULTI-21 and 15-171-MULTI-22

Dear Mr. Bisha:

We have reviewed the draft report titled "Phase I Historic Architectural Survey of the Atlantic Coast Pipeline Project, Addendum 3" that ERM prepared for the above-referenced project to determine potential effects to cultural resources. As required by Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

According to submitted information, the route of the proposed Atlantic Coast Pipeline has been significantly modified in comparison to previous reports submitted to our office. It is our understanding ERM will oversee survey and documentation efforts for architectural properties through the remainder of the undertaking. The aforementioned Addendum 3 report does not identify or evaluate all architectural resources located within the new pipeline route's area of potential effect (APE), though it does evaluate a total of thirty-two (32) properties. Future addendum reports will evaluate previously identified and unidentified properties located within the new APE. Subsequent submission of the forthcoming addendum reports, ERM will prepare a supplemental report summarizing survey findings from Dovetail's previous survey work, updating those findings in relation to the pipeline re-route to indicate which resources remain within the APE, supplying additional requested information about particular resources in response to previous comments from our office, and providing assessment of effects for all resources determined eligible for or included in the National Register of Historic Places.

Architectural Resources:
We have reviewed the submitted report in which ERM evaluated thirty-two (32) architectural resources located within the project APE. We concur with ERM's recommendation that twenty-five (25) of these properties are *not eligible* for inclusion in the National Register of Historic Places because they have been significantly modified (e.g., installation of synthetic siding and windows, or construction of various additions) or relocated. They are identified with the following SHPO site numbers: HS-0688, HS-0691, LE-0157, LE-0158, LE-0159, LE-0175, PH-0037-0060, PH-0037-0063, PH-0076, PH-0397, PH-0398, PH-0402, PH-0491, PH-0519, PH-0891, PH-0892, PH-0893, PH-0894, PH-0895, PH-0896, PH-0897, PH-0898, PH-0899, RD-0894, and UP-0831.

We cannot concur with ERM's recommendation that the Grace Episcopal Church (a.k.a., Immanuel Church and Ligon Church) (PH-0037-0062) may be eligible for inclusion in the National Register as a Traditional Cultural Property. Further research would be necessary to corroborate this interpretation, including completion of oral history interviews with local residents regarding the property. Furthermore, given that the church was relocated to the site in question, that it was a religious property, and that a cemetery or graveyard is likely associated with the property, Criteria Considerations A, B, and C may prevent its listing in the National Register. At this time, barring further research of the property, it is our opinion it is *not eligible*.

We concur with ERM's recommendation the Broad Run Church and Cemetery (LE-0004) are *eligible* for inclusion in the National Register under Criterion B for their association with Brigadier General Joseph A. J. Lightburn who served in the Union Army during the Mexican-American conflict and the American Civil War. When he was not serving his country, Lightburn enlisted as a pastor for Broad Run congregation over a number of years between 1859 and his death in the early twentieth century. We also concur the property is not eligible under Criterion C because of two additions made to the church that have significantly reduced its integrity of design. We cannot concur these resources are eligible under Criterion A in the area of religion. Further research and documentation would be necessary to evaluate the church's eligibility under Criterion A while considering Criteria Consideration A as well. (Also, see Cemetery Resources below).

We concur with ERM's recommendation that the Greenbrier River Trail/Chesapeake & Ohio Railroad Bed (PH-0037-0058) is *eligible* for inclusion in the National Register under Criterion A due to its association with transportation and commercial history in the area. Though the railroad ties have been removed, it is our opinion the resource retains sufficient integrity of location, setting, and feeling to be considered eligible.

We concur with ERM's recommendation that the Seneca State Forest Hiking Trail (PH-0092) and Hikers Shelter (PH-0095) *contribute* to the Seneca State Forest Historic District that is *eligible* for inclusion in the National Register under Criterion A because it is associated with the Civilian Conservation Corps of the 1930s. Both the trail and the shelter retain integrity of location, design, setting, materials, workmanship, feeling, and association, and therefore provide substantial historic integrity to the historic district.

We concur with ERM's recommendation that the two-story vernacular Victorian home on Edray Road/Route 1 (PH-0471) is *eligible* for inclusion in the National Register under Criterion C for illustrating the Victorian architectural styles of the late nineteenth century. Though some additions have been made to the structure, they are relegated to the rear of the home and thus permit a passer-by to gain a sense of the style and its setting.

We also concur with ERM's recommendation that the Lewis Flying Field (UP-0830) is *eligible* for inclusion in the National Register under Criteria A and C because it is associated with efforts to train pilots for the World War II conflict and because it illustrates elements of the Moderne architectural style emblematic of the 1920s, 1930s, and 1940s.

Since further survey work, documentation, research, and evaluations will be necessary for the proposed undertaking, we will refrain from concurring with any assessments of effects at this time. We request that the submitted assessments and future ones be submitted together with ERM's final supplemental report for the entire project. We will assess effects of eligible properties at that time. Until then, we look forward to reviewing additional reviews that will be submitted for this undertaking. We will provide further comments upon receipt of that information.

Cemetery Resources:
Three cemetery inventory forms were included with the submitted report: the Broad Run Church Cemetery (46-LE-61); the Mt. Lebanon Baptist Church Cemetery (46-HS-121); and the Big Springs Presbyterian Church Cemetery (46-PH-794). At this time, we request you re-submit the cemetery inventory forms after inserting the corresponding trinomial numbers listed above. Also, please correct the Mt. Lebanon inventory form to indicate that it is located in Harrison, not Lewis, County. Then, we ask that you provide us with PDFs and hard copies of the completed inventory forms as well as GIS shapefiles. We will provide additional comments regarding these cemeteries upon receipt of the updated inventory forms.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please contact Mitchell K. Schaefer, Structural Historian, at (304) 558-0240.*

Sincerely,

Susan M. Pierce
Deputy State Historic Preservation Officer

SMP/MKS

Dominion Resources Services, Inc.
5000 Dominion Boulevard,
Glen Allen, VA 23060

January 9, 2017

Ms. Susan M. Pierce
Deputy State Historic Preservation Officer
West Virginia Division of Culture and History
1900 Kanawha Boulevard, East
Charleston, West Virginia 25305-0300

Subject: Section 106 Review – Phase I Historic Architectural Survey Report Addendum 4
Atlantic Coast Pipeline, LLC, Atlantic Coast Pipeline Project
FR#: 14-928-Multi

Dear Ms. Pierce:

Atlantic Coast Pipeline, LLC (Atlantic) is requesting review and comment on the enclosed addendum architectural survey report on investigations conducted for the proposed Atlantic Coast Pipeline (ACP) in November 2016. The Federal Energy Regulatory Commission (FERC) is the lead Federal agency for this Project. Atlantic's consultant, ERM, conducted the survey and prepared the enclosed report pursuant to the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended.

Atlantic would appreciate your comments on the attached addendum architectural survey report, and we look forward to continuing to work with you on this Project. If you have any questions regarding the enclosed report, please contact Richard B. Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com, or by letter at:

Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Respectfully submitted,

Robert M. Bisha
Technical Advisor, Atlantic Coast Pipeline

cc: Richard Gangle (Dominion)
Enclosure: **Phase I Historic Architectural Survey Report Addendum 4**

Dominion Resources Services, Inc.
5000 Dominion Boulevard,
Glen Allen, VA 23060

January 9, 2017

Ms. Susan M. Pierce
Deputy State Historic Preservation Officer
West Virginia Division of Culture and History
1900 Kanawha Boulevard, East
Charleston, West Virginia 25305-0300

Subject: Section 106 Review – Historic Cemetery Delineation Report
Atlantic Coast Pipeline, LLC, Atlantic Coast Pipeline Project
FR#: 14-928-Multi

Dear Ms. Pierce:

Atlantic Coast Pipeline, LLC (Atlantic) is requesting review and comment on the enclosed historic cemetery report, which reports on delineations conducted for the proposed Atlantic Coast Pipeline (ACP) in October 2016. The Federal Energy Regulatory Commission (FERC) is the lead Federal agency for this Project. Atlantic's consultant, ERM, conducted the delineations and prepared the enclosed report pursuant to the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended.

Atlantic would appreciate your comments on the attached historic cemetery delineation report, and we look forward to continuing to work with you on this Project. If you have any questions regarding the enclosed report, please contact Richard B. Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com, or by letter at:

Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Respectfully submitted,

Robert M. Bisha

Robert M. Bisha
Technical Advisor, Atlantic Coast Pipeline

cc: Richard Gangle (Dominion)
Enclosure: **Historic Cemetery Delineation Report**

West Virginia Division of Natural Resources

Steve Holden

From: Clayton, Janet L <Janet.L.Clayton@wv.gov>
Sent: Wednesday, November 09, 2016 1:19 PM
To: Sara Throndson; elizabeth_stout@fws.gov; Sargent, Barbara D; Brown, Clifford L; Stihler, Craig W
Cc: Robert M Bisha (Services - 6); Spencer Trichell (spencer.trichell@dom.com); Jennifer C Broush (Services - 6); Richard B Gangle (Services - 6); Steve Holden; Pat Robblee; Casey Swecker; Kyle McGill
Subject: RE: ACP - West Fork River Phase II Mussel Report

Thanks Casey for the photo clarification.

I have reviewed the Phase 2 mussel survey report for the above project. A relocation effort must be conducted prior to initiating instream activities. It is preferred that this effort be conducted within the same field season as the proposed work. As previously noted any additional activities must also have FWS concurrence.

Janet L. Clayton
Wildlife Diversity Biologist
Mussel Program Leader
WV Division of Natural Resources
Wildlife Resources Section
PO Box 67
Elkins, WV 26241
voice 304-637-0245
cell 304-389-8526
fax 304-637-0250

From: Sara Throndson [mailto:Sara.Throndson@erm.com]
Sent: Tuesday, November 01, 2016 3:26 PM
To: elizabeth_stout@fws.gov; Sargent, Barbara D; Brown, Clifford L; Stihler, Craig W; Clayton, Janet L
Cc: Robert M Bisha (Services - 6); Spencer Trichell (spencer.trichell@dom.com); Jennifer C Broush (Services - 6); Richard B Gangle (Services - 6); Steve Holden; Pat Robblee
Subject: ACP - West Fork River Phase II Mussel Report

Liz and Janet,

On behalf of the Atlantic Coast Pipeline Project please find the attached ACP West Fork River Phase II Mussel Survey Report.

This report was filed with FERC on October 31, 2016.

Atlantic looks forward to continued coordination with you on this project. Please contact Mr. Richard Gangle at (804) 273-2814 or richard.b.gangle@dom.com, or Ms. Sara Throndson at (612) 347-7113 or sara.throndson@erm.com if there are questions.

Thank you, Sara

Sara Throndson
Senior Scientist

ERM
1000 IDS Center, 80 S. 8th Street l Minneapolis l MN l 55402
Office 612-347-7113 l Cell 612-716-7812
sara.throndson@erm.com l www.erm.com

Virginia Department of Environmental Quality

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 1105, Richmond, Virginia 23218
www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

January 9, 2017

Spencer Trichell
Environmental Consultant - Atlantic Coast Pipeline
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

RE: Dominion Transmission Inc.: Atlantic Coast Pipeline
DEQ Project No. 15-161F
Federal Consistency Certification, Stay of Six-Month Review Period

Dear Mr. Trichell,

As you know, DEQ Office of Environmental Impact Review (OEIR) initiated its review of your federal consistency certification for the Atlantic Coast Pipeline project on October 6, 2015. This started a six month review period ending on April 1, 2016. On November 13, 2015, the Federal Energy Regulatory Commission (FERC) issued a request for additional comments on proposed route changes including changes in Virginia's coast management zone resulting in a stay of the federal consistency review starting on December 9, 2015. Since that time, Dominion and DEQ have agreed to seven additional stays, the last through January 12, 2017.

The Federal Consistency Regulations allow the State and the applicant for a federal license or permit to mutually agree to extend the six-month review period (15 CFR Part 930, section 930.60(b).

Dominion and DEQ have mutually agreed to another stay of the consistency time clock to allow adequate time to coordinate and review the additional information. We have agreed that the stay will begin on January 12, 2017 and end on February 13, 2017, with a revised six-month review date of June 8, 2017. Additional stays may be required if adequate information is not received by February 13, 2017 or if additional route changes affecting Virginia's coastal management zone are proposed.

Please sign the attached timeline indicating Dominion's agreement of the dates of the stay and return to me by January 12, 2017. If you have any questions, please feel free to call me at 804-698-4204.

Sincerely,

Bettina Sullivan

Bettina Sullivan, Manager
Office of Environmental Impact Review

CC: Julia Wellman, DEQ OEIR

By signature below, the Virginia Department of Environmental Quality and Dominion Transmission, Inc. mutually agree to a stay in the federal consistency review in accordance with the following dates:

1. Date the state's 6-month review period commenced: October 6, 2015

2. Date the 6-month period was to end: April 1, 2016

3. Date during the 6-month review period that the first stay began: December 9, 2015

4. Date that the first stay ended: January 4, 2016

5. Date during the 6-month review period that the second stay began: January 4, 2016

6. Date that the second stay ended: February 15, 2016

7. Date during the 6-month review period that the third stay began: February 15, 2016

8. Date that the third stay ended: March 31, 2016

9. Date during the 6-month review period that the fourth stay began: March 31, 2016.

10. Date that the fourth stay ended: June 30, 2016.

11. Date during the 6-month review period that the fifth stay began: June 30, 2016.

12. Date that the fifth stay ended: August 28, 2016.

11. Date during the 6-month review period that the sixth stay began: August 28, 2016.

12. Date that the sixth stay ended: October 31, 2016.

13. Date during the 6-month review period that the seventh stay began: October 31, 2016.

14. Date that the seventh stay ended: January 12, 2017.

15. Date during the 6-month review period that the eighth stay begins: January 12, 2017.

16. Date that the eighth stay ends: February 13, 2017.

Bettina Sullivan

Virginia Department of Environmental Quality — Date: 1/9/17

Dominion Transmission, Inc. — Date: 1/9/2017

Virginia Department of Game and Inland Fisheries

Steve Holden

From: Ewing, Amy (DGIF) <Amy.Ewing@dgif.virginia.gov>
Sent: Tuesday, January 03, 2017 3:31 PM
To: Sara Throndson
Subject: RE: ACP - Bat Survey Data for Virginia

Thank you!

FYI…I have developed a comment letter in response to my review of all species surveys, Rev 11a, mig bird plan, invasives plan, etc. It is making the rounds for approval, hopefully we will be sending it along soon. It is pretty big (18 pages), so is taking folks extra time to review.

Thanks!

Amy

Amy M. Ewing

Environmental Services Biologist/FWIS Biologist Supervisor
Chair, Team WILD (Work, Innovate, Lead and Develop)
VA Department of Game and Inland Fisheries
7870 Villa Park Dr., Suite 400, PO Box 90778, Henrico, VA 23228
804-367-2211 ☯ *www.dgif.virginia.gov*

From: Sara Throndson [mailto:Sara.Throndson@erm.com]
Sent: Saturday, December 31, 2016 10:56 AM
To: Hypes, Rene (DCR); Bulluck, Jason (DCR); Ewing, Amy (DGIF); Reynolds, Rick (DGIF); Tracy Brunner; Maggie Voth; Spencer Trichell (spencer.trichell@dom.com)
Subject: ACP - Bat Survey Data for Virginia

Rene and Amy,

I have attached a zipped file of the ACP bat data package for **Virginia**. This includes a geodatabase that contains the report data, including potential hibernacula, acoustic and mist netting sites, and identified roosts.

Layers include the following:

- AcousticSurvey – acoustic detection sites and associated information
- MistNettingSurvey – mist netting survey net locations and associated information
- MN_Roosts – roost locations identified during radio telemetry of captured bats
- PH1_HibernaculaSvy_Sites – phase 1 hibernacula survey results
- Ph2_AcousticSites – phase 2 acoustic detector locations and associated information

Thank you, Sara

Sara Throndson
Office 612-347-7113 I Cell 612-716-7812

Virginia Department of Historic Resources

Dominion Resources Services, Inc.
5000 Dominion Boulevard,
Glen Allen, VA 23060

January 9, 2017

Mr. Roger Kirchen, Director
Review and Compliance Division
Virginia Department of Historic Resources
2801 Kensington Ave.
Richmond, VA 23221

Subject: Section 106 Review –Architectural Survey Report Addendum 4
Atlantic Coast Pipeline, LLC, Atlantic Coast Pipeline Project
DHR File No. 2014-0710

Dear Mr. Kirchen:

Atlantic Coast Pipeline, LLC (Atlantic) is requesting review and comment on the enclosed addendum architectural survey report on investigations conducted for the proposed Atlantic Coast Pipeline (ACP) in November 2016. The Federal Energy Regulatory Commission (FERC) is the lead Federal agency for this Project. Atlantic's consultant, ERM, conducted the survey and prepared the enclosed report pursuant to the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended.

Atlantic would appreciate your comments on the attached addendum architectural survey report, and we look forward to continuing to work with you on this Project. If you have any questions regarding the enclosed report, please contact Richard B. Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com, or by letter at:

Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Respectfully submitted,

Robert M. Bisha

Robert M. Bisha
Technical Advisor, Atlantic Coast Pipeline

cc: Richard Gangle (Dominion)
Enclosure: **Architectural Survey Report Addendum 4**

Dominion Resources Services, Inc.
5000 Dominion Boulevard,
Glen Allen, VA 23060

January 9, 2017

Mr. Roger Kirchen, Director
Review and Compliance Division
Virginia Department of Historic Resources
2801 Kensington Ave.
Richmond, VA 23221

Subject: Section 106 Review –Historic Cemetery Delineation Report
Atlantic Coast Pipeline, LLC, Atlantic Coast Pipeline Project
DHR File No. 2014-0710

Dear Mr. Kirchen:

Atlantic Coast Pipeline, LLC (Atlantic) is requesting review and comment on the enclosed historic cemetery report on delineations conducted for the proposed Atlantic Coast Pipeline (ACP) in October 2016. The Federal Energy Regulatory Commission (FERC) is the lead Federal agency for this Project. Atlantic's consultant, ERM, conducted the delineations and prepared the enclosed report pursuant to the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended.

Atlantic would appreciate your comments on the attached historic cemetery delineation report, and we look forward to continuing to work with you on this Project. If you have any questions regarding the enclosed report, please contact Richard B. Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com, or by letter at:

Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Respectfully submitted,

Robert M. Bisha

Robert M. Bisha
Technical Advisor, Atlantic Coast Pipeline

cc: Richard Gangle (Dominion)
Enclosure: **Historic Cemetery Delineation Report**

Dominion Resources Services, Inc.
5000 Dominion Boulevard,
Glen Allen, VA 23060

January 9, 2017

Mr. Roger Kirchen, Director
Review and Compliance Division
Virginia Department of Historic Resources
2801 Kensington Ave.
Richmond, VA 23221

Subject: Section 106 Review –Phase I Geoarchaeological and Geomorphological Survey
Atlantic Coast Pipeline, LLC, Atlantic Coast Pipeline Project
DHR File No. 2014-0710

Dear Mr. Kirchen:

Atlantic Coast Pipeline, LLC (Atlantic) is requesting review and comment on the enclosed geoarchaeological and geomorphological report on investigations conducted for the proposed Atlantic Coast Pipeline (ACP) in August 2016. The Federal Energy Regulatory Commission (FERC) is the lead Federal agency for this Project. Atlantic's consultant, ERM is submitting it on behalf of GeoArch Research, Inc., who conducted the survey and prepared the enclosed report pursuant to the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended.

Atlantic would appreciate your comments on the attached addendum geoarchaeological and geomorphological report, and we look forward to continuing to work with you on this Project. If you have any questions regarding the enclosed report, please contact Richard B. Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com, or by letter at:

Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Respectfully submitted,

Robert M. Bisha
Technical Advisor, Atlantic Coast Pipeline

cc: Richard Gangle (Dominion)
Enclosure: **Phase I Geoarchaeological and Geomorphological Survey**

Dominion Resources Services, Inc.
5000 Dominion Boulevard,
Glen Allen, VA 23060

January 9, 2017

Mr. Roger Kirchen, Director
Review and Compliance Division
Virginia Department of Historic Resources
2801 Kensington Ave.
Richmond, VA 23221

Subject: **Section 106 Review –Phase II Investigations, Sites 44AU0873, 44AU0907, 44NT0302, 44SN0304, and 44SN0305**
Atlantic Coast Pipeline, LLC, Atlantic Coast Pipeline Project
DHR File No. 2014-0710

Dear Mr. Kirchen:

Atlantic Coast Pipeline, LLC (Atlantic) is requesting review and comment on the enclosed Phase II Report on investigations conducted for the proposed Atlantic Coast Pipeline (ACP) from October 2015 through September 2016. The Federal Energy Regulatory Commission (FERC) is the lead Federal agency for this Project. Atlantic's consultant, ERM, conducted the survey and prepared the enclosed report pursuant to the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended.

Atlantic would appreciate your comments on the attached Phase II report, and we look forward to continuing to work with you on this Project. If you have any questions regarding the enclosed report, please contact Richard B. Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com, or by letter at:

Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Respectfully submitted,

Robert M. Bisha
Technical Advisor Atlantic Coast Pipeline

cc: Richard Gangle (Dominion)
Enclosure: **Phase II Investigations, Sites 44AU0873, 44AU0907, 44NT0302, 44SN0304, and 44SN0305**

North Carolina Department of Environmental Quality

Dominion Resources Services, Inc.
5000 Dominion Boulevard,
Glen Allen, VA 23060

November 23, 2016

BY OVERNIGHT (OR EXPRESS) MAIL

Mr. William Miller
NCDEQ DWR Water Quality Regional Operations Section
3800 Barret Drive
Raleigh, NC 27609

Re: Dominion Transmission, Inc., Atlantic Coast Pipeline
2016 North Carolina Department of Environmental Quality Stream Buffer Determination Package

Dear Mr. Miller:

Atlantic Coast Pipeline, LLC (Atlantic) is a company formed by four major U.S. energy companies – Dominion, Duke Energy, Piedmont Natural Gas, and Southern Company Gas. The company was created to develop, own, and operate the proposed Atlantic Coast Pipeline (ACP), an approximately 603.8-mile-long, interstate natural gas transmission pipeline system designed to meet growing energy needs in Virginia and North Carolina. For more information about the ACP, visit the company's website at www.dom.com/acpipeline. Atlantic has contracted with Dominion Transmission, Inc. (DTI), a subsidiary of Dominion, to seek authorization from the Federal Energy Regulatory Commission under Section 7(c) of the Natural Gas Act to construct, own, operate, and maintain the ACP on behalf of Atlantic. Approximately 42.6 miles of ACP will be located on the Tar-Pamlico River Basin in Halifax and Nash Counties; and approximately 55.7 miles of ACP will be located on the Neuse River Basin in Wilson and Johnson Counties as regulated by the North Carolina Department of Environmental Quality (NCDEQ).

The enclosed 2016 NCDEQ Stream Buffer Determination Package is being submitted to the NCDEQ in order to comply with Rules 15A North Carolina Administrative Code (NCAC) 02B .0259 and 15A NCAC 02B .0233 applicable within the Tar-Pamlico and Neuse River Basins, and according to the State of North Carolina's Nutrient Sensitive Waters Management Strategy (herein referred to as the riparian buffer rules), within intent of "Protection and Maintenance of Existing Riparian Buffers". For the purpose of verifying surface waters subject to the riparian buffer rules along ACP, field determinations took place April 1 through 7, 2015 with James Graham (NCDEQ), and February 25, 2016 with William Miller (NCDEQ). Following the 2015 and 2016 field determinations, Subject: Buffer Determination letters (NBRO #15-285) (Appendix 1) were received confirming the final decision on surface waters subject to the riparian buffer rules in the Tar-Pamlico and Neuse River Basins. The first letter was received on July 16, 2015 from James Graham. A revision to the July 16 letter was received on

September 4, 2015. A third letter to verify findings of field visits was received from William Miller on March 3, 2016, which included verifications of surface water features confirmed during the 2016 field determination meetings.

The purpose of this letter is to summarize previous field verifications and update NCDEQ records with a small number of newly documented features or extensions of previously verified features. Atlantic has enclosed previous verification letters and maps of the water features and previous field determinations or preliminary status (i.e., new water features identified for the first time in this letter).

Additional surveys along the ACP route have documented five new surface water features and three extensions of previously field verified features. Table 1 provides a summary of the newly identified features. Atlantic has provided a preliminary evaluation of subject/not subject for these features based on previous field visits with NCDEQ staff. Atlantic acknowledges that field determinations may be needed, as deemed necessary by NCDEQ, to verify the preliminary determinations of the recently surveyed surface water features. Three previously verified surface waters have been extended in the field during survey for minor route variations. Where previously field verified features have been extended, Atlantic has made a preliminary determination that these features will maintain the same subject/not subject status based on previous determinations made in the field with NCDEQ staff. Table 2 provides a summary of the extended features. Atlantic requests that NCDEQ evaluate the information included in the tables and the attachments of this letter to either verify the preliminary findings or determine if field visits are necessary to confirm the information outlined within this letter.

Table 1. Newly Identified Surface Water Features

Feature	Not Subject[b]	Subject	E/I/P[c]	Soil Survey	USGS Topo	Map Page
sjoo008[a]	X		P	X	X	29
sjoo009[a]	X		I	X	X	29, 30
sjoo010[a]	X		P	X	X	30
sjoq001[a]	X		P	X	X	36
swio017	X		E			20, 21

[a] These features are not subject to a buffer because they fall within a wetland boundary.
[b] Subjectivity of stream buffer was assumed based on previous NCDEQ review. These features are pending concurrence from the NCDEQ.
[c] Ephemeral/Intermittent/Perennial Stream Order

Table 2. Previously Identified Surface Water Features Requiring Extension

Feature	Not Subject	Subject	E/I/P[b]	Soil Survey	USGS Topo	Map Page
snah015[a]		X	P	X	X	11, 12
swio014[a]		X	P	X	X	18
sjop018		X	I	X		28

[a] These are previously reviewed features needing an extension. They do not cross the currently surveyed 11a route.
[b] Ephemeral/Intermittent/Perennial Stream Order

Maps summarizing the previously verified features and supporting the preliminary determinations of newly identified or extended surface water features in the Tar-Pamlico and Neuse River Basin are included in Appendices 2 and 3. Appendix 2 includes a set of two strip maps that illustrates NRCS Soil Survey maps on the top strip and USGS Topographic maps on the bottom strip. The map set also

provides the proposed ACP centerline with mileposts, the Tar-Pamlico and Neuse River Basin Watershed boundaries, proposed access roads, surveyed waterbodies, surveyed wetlands, and surveyed No Points (areas where no physical surface water feature was identified during pedestrian field surveys when desktop signatures were apparent in those areas). Appendix 3 illustrates the surface water features previously verified in the field with NCDEQ staff, and uniquely identifies surface water features that due to recent field surveys have either been added or extended in the Tar-Pamlico and Neuse River Basins.

Atlantic requests that NCDEQ determine if the information provided for new and extended surface water features is sufficient to verify subject/not subject status of these additional features for the ACP project record. If additional field verification visits are required, Atlantic requests that NCDEQ continue to coordinate with appropriate ACP project staff to finalize the field verification process during December 2016, in support of permit submittals anticipated during early 2017.

Please contact Mr. Richard Gangle at (804) 273-2814 or at richard.b.gangle@dom.com, if there are questions about the ACP project. Please direct written responses to:

Richard Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Sincerely,

RICHARD GANGLE

FOR
Robert M. Bisha
Director, Environmental Business Support

cc: Richard Gangle, Dominion

Attachments:

Appendix 1: Previously Recorded NCDEQ Buffer Determination Letters

Appendix 2, Part I: ACP Field Surveyed Water Features Maps within Tar-Pamlico and Neuse Watersheds

Appendix 2, Part II: Table 2.1 – ACP Field Surveyed Data within Tar-Pamlico and Neuse Watersheds Table

Appendix 2, Part III: Datasheets ACP Surface Water Features Subject to Buffer Rules

Appendix 1

Previously Recorded NCDEQ Buffer Determination Letters

NCDENR
North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

July 16, 2015

William Scarpinato, Jr.
Manager, Environmental – Atlantic Coast Pipeline
Dominion Resources Services, Inc.
5000 Dominion Blvd, Glen Allen, VA 23060

Subject: Buffer Determination
NBRRO#15-285
Halifax County

Determination Type:	
Buffer Call	Isolated or EIP Call
☐ Neuse (15A NCAC 2B .0233) ☒ Tar-Pamlico (15A NCAC 2B .0259) ☐ Jordan (15A NCAC 2B .0267)	☐ Ephemeral/Intermittent/Perennial Determination ☐ Isolated Wetland Determination

Project Name: Atlantic Coast Pipeline

Location/Directions: Property is located in and through Halifax County, NC

Subject Stream: Numerous Streams in the Tar Pamlico Basin

Determination Date: April 1-7, 2015 **Staff: James Graham**

Feature /Flag	Not Subject To Buffers	Subject To Buffers	E/I/P*	Start @	Stop@	Soil Survey	USGS Topo	Page #
Whlh023e	X		wetland				X	12
Whlg010f	X		wetland				X	13
SHLB100		X	I			X	X	6
SHLG007	X		I					1
SHLG008	X		E				X	1
SHLG009		X	P			X	X	1
Whlh010f	X		wetland			X		1
Whlh008f	X		wetland			X		2
Ohlg003	X		wetland			X		3

SHLG012		X	P				X	5
SHLH008		X	P			X	X	2
SHLH007		X	I			X		2
Whlg012e	X		wetland				X	2
Whlf032f	X		wetland			X		3
Whlf030f	X		wetland			X	X	3
Whlh014f	X		wetland			X		7
Shlh009		X	P			X	X	7
SHLH010	X		I					8
SHLH011		X	P			X	X	8
Whlh015f	X		wetland			X		8
SHLG011	X		P					12
SHLH012	X		I			X	X	8
Shlg012		X	P			X	X	5
SHLH013	X		ditch				X	12
SHLH014	X		ditch				X	12
SHLH015	X		I					9
SHLH016		X	I				X	4
SHLH017		X	P			X	X	4
Whlg019f	X		wetland			X		4
Whlg016f	X		wetland			X	X	5
SHLH018	X		I					4
SHLH019	X		I					3
SHLH020	X		I					10
SHLH021	X		I					10
SHLH022		X	P			X	X	12
SHLH023		X	I			X	X	2
whlg010f		X	wetland			X	X	12
whlh023e		X	wetland			X	X	12
whlh025f		X	wetland			X	X	10
whlh019f		X	wetland			X		9
whlh018f		X	wetland			X	X	9
whlh017f		X	wetland			X	X	9
whlb101e		X	wetland			X	X	6
whlg016f		X	wetland			X	X	6
whlh030f		X	wetland			X		4
whlh032s		X	wetland			X	X	4

whlg012e		X	wetland			X		2

*E/I/P - Ephemeral/Intermittent/Perennial

Explanation: The feature(s) listed above has or have been located on the Soil Survey of Wake County, North Carolina or the most recent copy of the USGS Topographic map at a 1:24,000 scale. Each feature that is checked "Not Subject" has been determined not to be a stream or is not present on the property. Features that are checked "Subject" have been located on the property and possess characteristics that qualify it to be a stream. There may be other streams located on your property that do not show up on the maps referenced above but, still may be considered jurisdictional according to the US Army Corps of Engineers and/or to the Division of Water Resources (DWR).

This on-site determination shall expire five (5) years from the date of this letter. Landowners or affected parties that dispute a determination made by the DWR or Delegated Local Authority may request a determination by the Director. An appeal request must be made within sixty (60) days of date of this letter or from the date the affected party (including downstream and/or adjacent owners) is notified of this letter. A request for a determination by the Director shall be referred to the Director in writing. ***If sending via US Postal Service*** **c/o** ***Karen Higgins DWR – 401 & Buffer Permitting Unit 1617 Mail Service Center*** **Raleigh, NC 27699-1617.** ***If sending via delivery service (UPS, FedEx, etc.) Karen Higgins DWR – 401 & Buffer Permitting Unit 512 N. Salisbury Street Raleigh, NC 2760.***

This determination is final and binding unless, as detailed above, you ask for a hearing or appeal within sixty (60) days.

The owner/future owners should notify the Division of Water Resources (including any other Local, State, and Federal Agencies) of this decision concerning any future correspondences regarding the subject property (stated above). This project may require a Section 404/401 Permit for the proposed activity. Any inquiries should be directed to the Division of Water Resources (Central Office) at (919)-807-6300, and the US Army Corp of Engineers (Raleigh Regulatory Field Office) at (919)-554-4884.

If you have questions regarding this determination, please feel free to contact James Graham at (919) 791-4256.

Respectfully,

Danny Smith, Supervisor
Water Quality Regional Operation Section
Raleigh Regional Office

cc: RRO/SWP File Copy

NCDENR
North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

July 16, 2015

William Scarpinato, Jr.
Manager, Environmental – Atlantic Coast Pipeline
Dominion Resources Services, Inc.
5000 Dominion Blvd, Glen Allen, VA 23060

Subject: Buffer Determination
NBRRO#15-285
Nash County

Determination Type:	
Buffer Call	Isolated or EIP Call
☒ Neuse (15A NCAC 2B .0233) ☒ Tar-Pamlico (15A NCAC 2B .0259) ☐ Jordan (15A NCAC 2B .0267)	☐ Ephemeral/Intermittent/Perennial Determination ☐ Isolated Wetland Determination

Project Name: Atlantic Coast Pipeline

Location/Directions: Property is located in and through Nash County, NC

Subject Stream: Numerous Streams in the Tar Pamlico Basin and Neuse River Basin

Determination Date: April 1-7, 2015 **Staff: James Graham**

Feature /Flag	Not Subject To Buffers	Subject To Buffers	E/I/P*	Start @	Stop@	Soil Survey	USGS Topo	Page #
Snab100	X		I					16
Snab101		X	P			X		25
Snag002		X	I			X	X	13
Snag003	X		I					13
Snag004	X		I					13
Wnah018f	X					X		16
Wnah019e	X					X	X	14
Wnah006f	X					X		15
Snag005		X	P			X		23

One NorthCarolina Naturally

Snag006		X	P			X	X	23
Snag007	X		I					23
Snag008	X		P					23
Snag009		X	P				X	25
Snag010	X		P					25
Snag011		X	P			X	X	25
Snah001	X		I					16
Snah002		X	P			X		17
Snah003		X	P			X	X	17
Snah004		X	P			X	X	17
Snah005		X	P			X	X	17
Snah006		X	P			X	X	17
Snah007		X	P			X	X	21
Snah008		X	P			X	X	21
Snah009	X		P					21
Snah010		X	I			X	X	21
Snah012		X	P			X	X	21
Snah014		X	P			X	X	23
Snah015		X	P			X	X	23
Snah016	X		P					23
Snag001		X	P			X	X	12
Snah017		X	P			X		23
Snah018		X	P			X	X	29
Snah019		X	I			X	X	29
Snah020		X	P			X	X	27
Snah021		X	P			X	X	25, 27
Snah022		X	P			X	X	29
Snah023	X		P					27
Snah024		X	P			X	X	27
Snah025		X	P			X	X	18
Snah026		X	P			X	X	18
Snah027		X	P			X	X	18
Snah028		X	P			X	X	17
Snao002	X		E					33
Snao003	X		E			X		33
Snap001	X		I					30
Snap002	X		I					30

Snap003	X		I					30
Snap004		X	P			X	X	30
Snoa004		X	P			X		33
Snoa005	X		E					33
Snoa006	X		E			X		33
Snoa007	X		I					32
Snoa008	X		E			X	X	33
Snoa009	X		E					32
Snoa010	X		E					30
Snoa011		X	P			X	X	30
wnao004f	X		wetland			X	X	32
wnao010f	X		wetland			X	X	31
wnap002f	X		wetland			X		31
wnao013f	X		wetland			X		30
wnah028f	X		wetland			X	X	27
wnag007f	X		wetland			X	X	25
wnah022e	X		wetland			X	X	23
wnac003f	X		wetland			X	X	20
wnah001f	X		wetland			X		16
wnah006f	X		wetland				X	16
wnah036f	X		wetland			X		15
wnah015f	X		wetland			X	X	15
wnag002f	X		wetland				X	14

*E/I/P - Ephemeral/Intermittent/Perennial

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If you have questions regarding this determination, please feel free to contact James Graham at (919) 791-4256.

Respectfully,

Danny Smith, Supervisor
Water Quality Regional Operation Section
Raleigh Regional Office

cc: RRO/SWP File Copy

NCDENR
North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

July 16, 2015

William Scarpinato, Jr.
Manager, Environmental – Atlantic Coast Pipeline
Dominion Resources Services, Inc.
5000 Dominion Blvd, Glen Allen, VA 23060

Subject: Buffer Determination
NBRRO#15-285
Wilson County
Sampson County

Determination Type:	
Buffer Call	Isolated or EIP Call
☒ Neuse (15A NCAC 2B .0233) ☐ Tar-Pamlico (15A NCAC 2B .0259) ☐ Jordan (15A NCAC 2B .0267)	☐ Ephemeral/Intermittent/Perennial Determination ☐ Isolated Wetland Determination

Project Name: Atlantic Coast Pipeline

Location/Directions: Property is located in and through Wilson and Sampson County, NC

Subject Stream: Numerous Streams in the Neuse Basin

Determination Date: April 1-7, 2015 **Staff: James Graham**

Feature /Flag	Not Subject To Buffers	Subject To Buffers	E/I/P*	Start @	Stop@	Soil Survey	USGS Topo	Page #
SSAB100	X		E					69
SWIC001		X	I			X		39
SWIO002		X	P			X	X	36
SWIO003	X		I					37
SWIO004		X	P			X	X	37
SWIO005		X	p			X	X	37
SWIO006	X		I					37
SWIO007		X	P			X	X	37

SWIO008		X	P			X	X	38
SWIO009		X	P			X	X	39
SWIO010	X		P					39
SWIO011		X	P			X	X	39
SWIO012		X	I			X	X	39
SWIO013		X	P			X	X	39
SWIO014		X	P			X	X	36
SWIO015		X	P			X	X	35
SWIO016		X	I			X		36
SWIP001	X		E					40
SWIP002	X		E					41
SWIP003	X		E					41
SWIP004	X		E					41
SWIP005	X		I					41
SWIB100		X	I			X	X	41
SWIB101	X		I					41
SWIC002		X	P			X	X	41
SWIC003	X		E			X		41
SWIC004		X	P			X	X	41
wwio014f	X		wetland			X		42
wwip013f	X		wetland			X	X	42
wwia001f	X		wetland				X	42
wwio021f	X		wetland			X	X	35

*E/I/P - Ephemeral/Intermittent/Perennial

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If you have questions regarding this determination, please feel free to contact James Graham at (919) 791-4256.

Respectfully,

Danny Smith, Supervisor
Water Quality Regional Operation Section
Raleigh Regional Office

cc: RRO/SWP File Copy

NCDENR
North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

July 16, 2015

William Scarpinato, Jr.
Manager, Environmental – Atlantic Coast Pipeline
Dominion Resources Services, Inc.
5000 Dominion Blvd, Glen Allen, VA 23060

Subject: Buffer Determination
NBRRO#15-285
Johnston County

Determination Type:	
Buffer Call	Isolated or EIP Call
☒ Neuse (15A NCAC 2B .0233) ☐ Tar-Pamlico (15A NCAC 2B .0259) ☐ Jordan (15A NCAC 2B .0267)	☐ Ephemeral/Intermittent/Perennial Determination ☐ Isolated Wetland Determination

Project Name: Atlantic Coast Pipeline

Location/Directions: Property is located in and through Johnston County, NC

Subject Stream: Numerous Streams in the Neuse River Basin

Determination Date: April 1-7, 2015 **Staff: James Graham**

Feature /Flag	Not Subject To Buffers	Subject To Buffers	E/I/P*	Start @	Stop@	Soil Survey	USGS Topo	Page #
SJOB001		X	P			X	X	64
SJOB002	X					X		62
SJOB003		X	P			X	X	61
SJOB004		X	P				X	61
SJOB005	X		I					60
SJOB006		X	I			X	X	60
SJOB007		X	I			X	X	58
SJOB008		X	P				X	56
SJOB009	X		P					55

One NorthCarolina Naturally

SJOB010	X		I					55
SJOB011		X	I			X	X	54
SJOB100		X	P			X	X	68
SJOB101	X		E					44
SJOB102	X		E					44
SJOB103		X	P			X	X	44
SJOB104		X	P			X	X	44
SJOB105		X	P			X	X	56
SJOB106		X	P			X	X	56
SJOC001	X		I					56
SJOO001	X		I					46
SJOO002		X	P			X	X	45
SJOO003		X	P			X		49
SJOO004		X	P			X	X	49
SJOO005	X		I					49
SJOO006		X	P			X	X	68
SJOP001		X	I			X	X	48
SJOP002	X		I					48
SJOP003	X		I					46
SJOP004		X	I			X	X	51
SJOP005		X	I			X	X	51
SJOP006		X	I				X	51
SJOP007		X	P			X	X	51
SJOP008	X		I					52
SJOP009		X	I			X	X	52
SJOP010		X	P			X	X	52
SJOP011		X	P			X	X	46
SJOP012		X	P			X	X	48
SJOP013	X		I					46
wjOO24f	X		wetland				X	68
wjoo023f	X		wetland			X	X	68
wjob101f	X		wetland			X	X	69
wjop023f	X		wetland				X	68
wjoa005f	X		wetland			X	X	61
wjoa009f	X		wetland			X	X	59
wjoa010f	X		wetland			X	X	59
wjoa011f	X		wetland				X	59

wjoa012f	X		wetland			X	X	59
wjoa015f	X		wetland			X	X	57
nwi_nc_018(a,b)	X		wetland				X	57
wjob18f	X		wetland			X	X	56
wjoa017f	X		wetland				X	56
wjoo021f	X		wetland			X		50
wjop021f	X		wetland			X		46
wjop020f	X		wetland			X		46

*E/I/P - Ephemeral/Intermittent/Perennial

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If you have questions regarding this determination, please feel free to contact James Graham at (919) 791-4256.

Respectfully,

Danny Smith, Supervisor
Water Quality Regional Operation Section
Raleigh Regional Office

cc: RRO/SWP File Copy

North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

September 4, 2015

William Scarpinato, Jr.
Manager, Environmental – Atlantic Coast Pipeline
Dominion Resources Services, Inc.
5000 Dominion Blvd, Glen Allen, VA 23060

Subject: Buffer Determination
Revised September 4, 2015 NBRRO#15-285
Halifax County

Determination Type:	
Buffer Call	Isolated or EIP Call
☐ Neuse (15A NCAC 2B .0233) ☒ Tar-Pamlico (15A NCAC 2B .0259) ☐ Jordan (15A NCAC 2B .0267)	☐ Ephemeral/Intermittent/Perennial Determination ☐ Isolated Wetland Determination

Project Name: Atlantic Coast Pipeline

Location/Directions: Property is located in and through Halifax County, NC

Subject Stream: Numerous Streams in the Tar Pamlico Basin

Determination Date: April 1-7, 2015 **Staff: James Graham**
This letter replaces the letter dated July 16, 2015.

Feature /Flag	Not Subject To Buffers	Subject To Buffers	E/I/P*	Start @	Stop@	Soil Survey	USGS Topo	Page #
Whlh023e	X		wetland				X	12
SHLH024		X	I					71
WHLH020f		X						9
SHLB100		X	I			X	X	6
SHLG007	X		I					1
SHLG008	X		E				X	1
SHLG009		X	P			X	X	1
Whlh010f	X		wetland			X		1

North Carolina Division of Water Resources 1628 Mail Service Center Raleigh, NC 27699-1628 Phone (919) 791-4200
Internet: www.ncwaterquality.org Location: 3800 Barrett Drive Raleigh, NC 27609 Fax (919) 788-7159

Whlh008f	X		wetland			X		2
Ohlg003	X		wetland			X		3
SHLG012		X	P				X	5
SHLH008		X	P			X	X	2
SHLH007		X	I			X		2
Whlg012e	X		wetland				X	2
Whlh030f	X		wetland			X	X	3
Whlh014f	X		wetland			X		7
Shlh009		X	P			X	X	7
SHLH010	X		I					8
SHLH011		X	P			X	X	8
Whlh015f	X		wetland			X		8
SHLG011	X		P					12
SHLH012	X		I			X	X	8
Shlg012		X	P			X	X	5
SHLH013	X		ditch				X	12
SHLH014	X		ditch				X	12
SHLH015	X		I					9
SHLH016		X	I				X	4
SHLH017		X	P			X	X	4
Whlg019f	X		wetland			X		4
Whlg016f	X		wetland			X	X	5
SHLH018	X		I					4
SHLH019	X		I					3
SHLH020	X		I					10
SHLH021	X		I					10
SHLH022		X	P			X	X	12
SHLH023	X		I			X	X	2
whlg010f	X		wetland			X	X	12
whlh023e	X		wetland			X	X	12
whlh025f	X		wetland			X	X	10
whlh019f	X		wetland			X		9
whlh018f	X		wetland			X	X	9
whlh017f	X		wetland			X	X	9
whlb101e	X		wetland			X	X	6
whlh032s	X		wetland			X	X	4

*E/I/P - Ephemeral/Intermittent/Perennial

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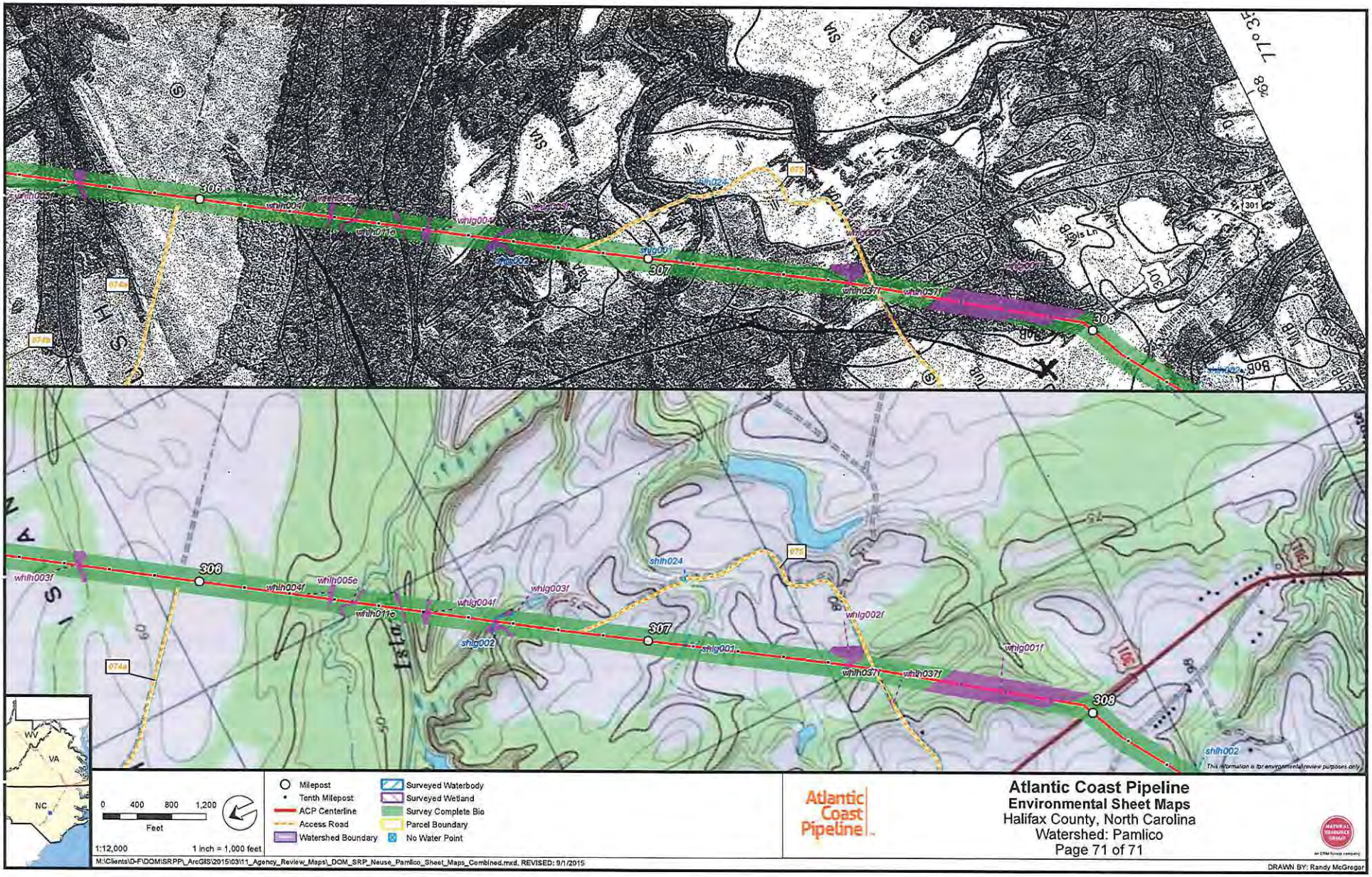
Respectfully,

Danny Smith, Supervisor
Water Quality Regional Operation Section
Raleigh Regional Office

cc: RRO/SWP File Copy



Atlantic Coast Pipeline

Atlantic Coast Pipeline
Environmental Sheet Maps
Halifax County, North Carolina
Watershed: Pamlico
Page 71 of 71

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DRAWN BY: Randy McGregor

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Atlantic Coast Pipeline

Atlantic Coast Pipeline
Environmental Sheet Maps
Sampson County, North Carolina
Watershed: Cape Fear
Page 70 of 71

DRAWN BY: Randy McGregor

NCDENR
North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

September 4, 2015

William Scarpinato, Jr.
Manager, Environmental – Atlantic Coast Pipeline
Dominion Resources Services, Inc.
5000 Dominion Blvd, Glen Allen, VA 23060

Subject: Buffer Determination
Revised September 4, 2015 NBRRO#15-285
Nash County

Determination Type:	
Buffer Call	Isolated or EIP Call
☒ Neuse (15A NCAC 2B .0233) ☒ Tar-Pamlico (15A NCAC 2B .0259) ☐ Jordan (15A NCAC 2B .0267)	☐ Ephemeral/Intermittent/Perennial Determination ☐ Isolated Wetland Determination

Project Name: Atlantic Coast Pipeline

Location/Directions: Property is located in and through Nash County, NC

Subject Stream: Numerous Streams in the Tar Pamlico Basin and Neuse River Basin

Determination Date: April 1-7, 2015 **Staff: James Graham**

Feature /Flag	Not Subject To Buffers	Subject To Buffers	E/I/P*	Start @	Stop@	Soil Survey	USGS Topo	Page #
Snab100	X		I					16
Snab101		X	P			X		25
Snag002		X	I			X	X	13
Snag003	X		I					13
Snag004	X		I					13
Wnah018f	X					X		16
Wnah019e	X					X	X	14
Wnah006f	X					X		15
Snag005		X	P			X		23

One NorthCarolina Naturally

Snag006		X	P			X	X	23
Snag007	X		I					23
Snag008	X		P					23
Snag009		X	P				X	25
Snag010	X		P					25
Snag011		X	P			X	X	25
Snah001	X		I					16
Snah002		X	P			X		17
Snah003		X	P			X	X	17
Snah004		X	P			X	X	17
Snah005		X	P			X	X	17
Snah006		X	P			X	X	17
Snah007		X	P			X	X	21
Snah008		X	P			X	X	21
Snah009	X		P					21
Snah010		X	I			X	X	21
Snah012		X	P			X	X	21
Snah014		X	P			X	X	23
Snah015		X	P			X	X	23
Snah016	X		P					23
Snag001		X	P			X	X	12
Snah017		X	P			X		23
Snah018		X	P			X	X	29
Snah019		X	I			X	X	29
Snah020		X	P			X	X	27
Snah021		X	P			X	X	25, 27
Snah022		X	P			X	X	29
Snah023	X		P					27
Snah024		X	P			X	X	27
Snah025		X	P			X	X	18
Snah026		X	P			X	X	18
Snah027		X	P			X	X	18
Snah028		X	P			X	X	17
Snao002	X		E					33
Snao003	X		E			X		33
Snap001	X		I					30
Snap002	X		I					30

Snap003	X		I					30
Snap004		X	P			X	X	30
Snao004		X	P			X		33
Snao005	X		E					33
Snao006	X		E			X		33
Snao007	X		I					32
Snao008	X		E			X	X	33
Snao009	X		E					32
Snao010	X		E					30
Snao011		X	P			X	X	30
wnao004f	X		wetland			X	X	32
wnao010f	X		wetland			X	X	31
wnap002f	X		wetland			X		31
wnao013f	X		wetland			X		30
wnah028f	X		wetland			X	X	27
wnag007f	X		wetland			X	X	25
wnah022e	X		wetland			X	X	23
wnac003f	X		wetland			X	X	20
wnah001f	X		wetland			X		16
wnah006f	X		wetland				X	16
wnah036f	X		wetland			X		15
wnah015f	X		wetland			X	X	15
wnag002f	X		wetland				X	14

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Danny Smith, Supervisor
Water Quality Regional Operation Section
Raleigh Regional Office

cc: RRO/SWP File Copy

North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

September 4, 2015

William Scarpinato, Jr.
Manager, Environmental – Atlantic Coast Pipeline
Dominion Resources Services, Inc.
5000 Dominion Blvd, Glen Allen, VA 23060

Subject: Buffer Determination
NBRRO#15-285
Revised Wilson County
Sampson County

Determination Type:	
Buffer Call	Isolated or EIP Call
☒ Neuse (15A NCAC 2B .0233) ☐ Tar-Pamlico (15A NCAC 2B .0259) ☐ Jordan (15A NCAC 2B .0267)	☐ Ephemeral/Intermittent/Perennial Determination ☐ Isolated Wetland Determination

Project Name: Atlantic Coast Pipeline

Location/Directions: Property is located in and through Wilson and Sampson County, NC

Subject Stream: Numerous Streams in the Neuse Basin

Determination Date: April 1-7, 2015 **Staff: James Graham**

Feature /Flag	Not Subject To Buffers	Subject To Buffers	E/I/P*	Start @	Stop@	Soil Survey	USGS Topo	Page #
SSAB100	X		E					69
SSAO001		X	E					70
SWIO001	X		E					36
SWIC001		X	I			X		39
SWIO002		X	P			X	X	36
SWIO003	X		I					37
SWIO004		X	P			X	X	37
SWIO005		X	p			X	X	37

SWIO006	X		I					37
SWIO007		X	P			X	X	37
SWIO008		X	P			X	X	38
SWIO009		X	P			X	X	39
SWIO010	X		P					39
SWIO011		X	P			X	X	39
SWIO012		X	I			X	X	39
SWIO013		X	P			X	X	39
SWIO014		X	P			X	X	36
SWIO015		X	P			X	X	35
SWIO016		X	I			X		36
SWIP001	X		E					40
SWIP002	X		E					41
SWIP003	X		E					41
SWIP004	X		E					41
SWIP005	X		I					41
SWIB100		X	I			X	X	41
SWIB101	X		I					41
SWIC002		X	P			X	X	41
SWIC003	X		E			X		41
SWIC004		X	P			X	X	41
wwio014f	X		wetland			X		42
wwip013f	X		wetland			X	X	42
wwia001f	X		wetland				X	42
wwio021f	X		wetland			X	X	35

*E/I/P - Ephemeral/Intermittent/Perennial

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Danny Smith, Supervisor
Water Quality Regional Operation Section
Raleigh Regional Office

cc: RRO/SWP File Copy

○ Milepost	Surveyed Waterbody
• Tenth Milepost	Surveyed Wetland
ACP Centerline	Survey Complete Bio
Access Road	Parcel Boundary
Watershed Boundary	No Water Point

0 400 800 1,200
Feet
1:12,000 1 inch = 1,000 feet

Atlantic Coast Pipeline

Atlantic Coast Pipeline
Environmental Sheet Maps
Sampson County, North Carolina
Watershed: Cape Fear

NATURAL RESOURCE GROUP
an ERM Group company

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DRAWN BY: Randy McGregor

North Carolina Department of Environment and Natural Resources

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Donald R. van der Vaart
Secretary

September 4, 2015

William Scarpinato, Jr.
Manager, Environmental – Atlantic Coast Pipeline
Dominion Resources Services, Inc.
5000 Dominion Blvd, Glen Allen, VA 23060

Subject: Buffer Determination
Revised September 4, 2015 NBRRO#15-285
Johnston County

Determination Type:	
Buffer Call	Isolated or EIP Call
☒ Neuse (15A NCAC 2B .0233) ☐ Tar-Pamlico (15A NCAC 2B .0259) ☐ Jordan (15A NCAC 2B .0267)	☐ Ephemeral/Intermittent/Perennial Determination ☐ Isolated Wetland Determination

Project Name: Atlantic Coast Pipeline

Location/Directions: Property is located in and through Johnston County, NC

Subject Stream: Numerous Streams in the Neuse River Basin

Determination Date: April 1-7, 2015 **Staff: James Graham**

Feature /Flag	Not Subject To Buffers	Subject To Buffers	E/I/P*	Start @	Stop@	Soil Survey	USGS Topo	Page #
SJOB001		X	P			X	X	64
SJOP014		X	P			X	X	47
WJOA003	X		wetland					62
WJOA002	X		wetland					63
SJOB002	X		E			X		62
SJOB003		X	P			X	X	61
SJOB004		X	P				X	61
SJOB005	X		I					60
SJOB006		X	I			X	X	60

North Carolina Division of Water Resources 1628 Mail Service Center Raleigh, NC 27699-1628 Phone (919) 791-4200
Internet: www.ncwaterquality.org Location: 3800 Barrett Drive Raleigh, NC 27609 Fax (919) 788-7159

SJOB007		X	I			X	X	58
SJOB008		X	P				X	56
SJOB009	X		P					55
SJOB010	X		I					55
SJOB011		X	I			X	X	54
SJOB100		X	P			X	X	68
SJOB101	X		E					44
SJOB102	X		E					44
SJOB103		X	P			X	X	44
SJOB104		X	P			X	X	44
SJOB105		X	P			X	X	56
SJOB106		X	P			X	X	56
SJOC001	X		I					56
SJOO001	X		I					46
SJOO002		X	P			X	X	45
SJOO003		X	P			X		49
SJOO004		X	P			X	X	49
SJOO005	X		I					49
SJOO006		X	P			X	X	68
SJOP001		X	I			X	X	48
SJOP002	X		I					48
SJOP003	X		I					46
SJOP004		X	I			X	X	51
SJOP005		X	I			X	X	51
SJOP006		X	I				X	51
SJOP007		X	P			X	X	51
SJOP008	X		I					52
SJOP009		X	I			X	X	52
SJOP010		X	P			X	X	52
SJOP011		X	P			X	X	46
SJOP012		X	P			X	X	48
SJOP013	X		I					46
wjOO24f	X		wetland				X	68
wjoo023f	X		wetland			X	X	68
wjob101f	X		wetland			X	X	69
wjop023f	X		wetland				X	68
wjoa005f	X		wetland			X	X	61

wjoa009f	X		wetland			X	X	59
wjoa010f	X		wetland			X	X	59
wjoa011f	X		wetland				X	59
wjoa012f	X		wetland			X	X	59
wjoa015f	X		wetland			X	X	57
nwi_nc_018(a,b)	X		wetland				X	57
wjob18f	X		wetland			X	X	56
wjoa017f	X		wetland				X	56
wjoo021f	X		wetland			X		50
wjop021f	X		wetland			X		46
wjop020f	X		wetland			X		46

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Respectfully,

Danny Smith, Supervisor
Water Quality Regional Operation Section
Raleigh Regional Office

cc: RRO/SWP File Copy

Water Resources
ENVIRONMENTAL QUALITY

PAT MCCRORY
Governor

DONALD R. VAN DER VAART
Secretary

S. JAY ZIMMERMAN
Director

3/7/2016

William Scarpinato, Jr.
Manager, Environmental – Atlantic Coast Pipeline
Dominion Resources Services, Inc.
5000 Dominion Blvd, Glen Allen VA 23060

Subject: Buffer Determination Letter
Revised March 7, 2016 NBRRO #15-285
Halifax County

Determination Type:	
Buffer	Intermittent/Perennial
☐ Neuse (15A NCAC 2B .0233) ☒ Tar-Pamlico (15A NCAC 2B .0259) ☐ Jordan (15A NCAC 2B .0267) (governmental and/or interjurisdictional projects)	☒ Intermittent/Perennial Determination (where local buffer ordinances apply)

Project Name: Atlantic Coast Pipeline

Address/Location: Throughout Halifax County, NC

Stream(s): Numerous streams in the Tar/Pamlico Basin

Determination Date: February 25th, 2016 Staff: William Miller

Stream	E/I/P*	Not Subject	Subject	Start @	Stop @	Soil Survey	USGS Topo	Page #	Milepost
SHLB050	**P**		**X**			**X**	**X**	**1**	**18.5**
SHLO002	**I**		**X**				**X**	**10**	**31.2**

**E/I/P = Ephemeral/Intermittent/Perennial*

Explanation: The stream(s) listed above has been located on the most recent published NRCS Soil Survey of HALIFAX County, North Carolina and/or the most recent copy of the USGS Topographic map at a 1:24,000 scale. Each stream that is checked "Not Subject" has been determined to not be at least intermittent or is not present. Streams that are checked "Subject" have been located on the property and possess characteristics that qualify it to be at least an intermittent stream. There may be other streams located on the property that do not show up on the maps referenced above but may be considered jurisdictional according to the US Army Corps of Engineers.

This on-site determination shall expire five (5) years from the date of this letter. Landowners or affected parties that dispute a determination made by the DWR may request a determination by the Director. An appeal request must be made within sixty (60) days of date of this letter. A request for a determination by the

Director shall be referred to the Director in writing. ***If sending via US Postal Service:*** **c/o** ***Karen Higgins; DWR – 401 & Buffer Permitting Unit; 1617 Mail Service Center; Raleigh, NC 27699-1617. If sending via delivery service (UPS, FedEx, etc.): Karen Higgins; DWR – 401 & Buffer Permitting Unit; 512 N. Salisbury Street; Raleigh, NC 27604.***

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This project may require a Section 404/401 Permit for the proposed activity. Any inquiries should be directed to the US Army Corp of Engineers (Raleigh Regulatory Field Office) at (919)-554-4884.

If you have questions regarding this determination, please feel free to contact William Miller at (919)791-4241.

Sincerely,

Danny Smith
Supervisor, Water Quality Regional Operations Center

cc: RRO DWR File Copy

Environmental Sheet Maps
Neuse/Tar-Pamlico Watersheds

Atlantic Coast Pipeline℠

North Carolina

Halifax Co.

Wilson Co.

Sampson Co.

Nash Co.

Johnston Co.

Pamlico

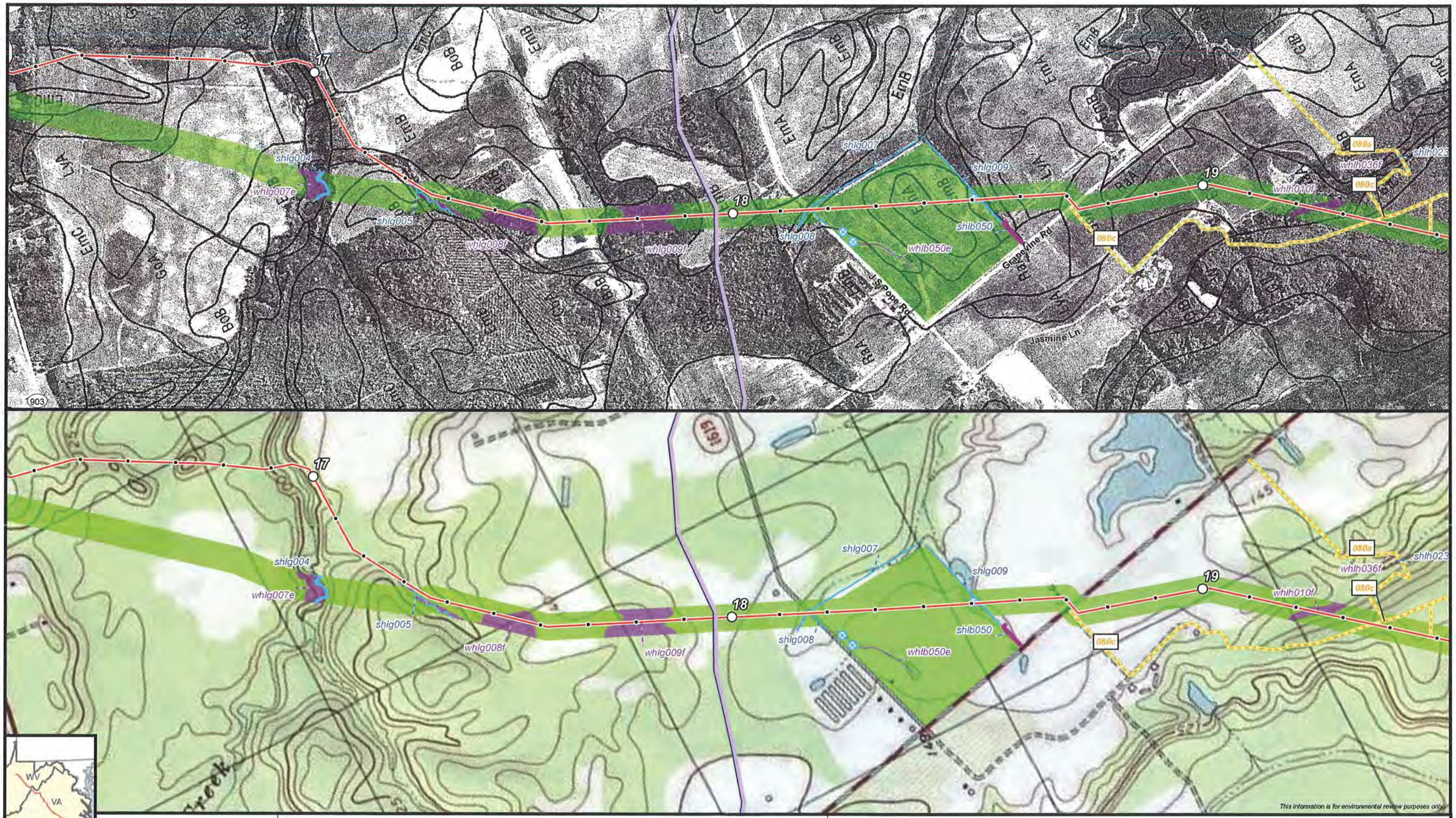
Neuse

Virginia

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68

NATURAL RESOURCE GROUP
an ERM Group company

0 2.5 5 10 Miles



0 400 800 1,200
Feet

1:12,000 1 inch = 1,000 feet

- Milepost
- Tenth Milepost
- ACP Centerline
- Access Road
- Watershed Boundary
- Surveyed Waterbody
- Surveyed Wetland
- Bio Survey Complete
- No Water Point
- Newly Identified Waterbody
- Newly Identified Wetland

Atlantic Coast Pipeline

Atlantic Coast Pipeline
Environmental Sheet Maps
Halifax County, North Carolina
Watershed: Pamlico

Natural Resource Group

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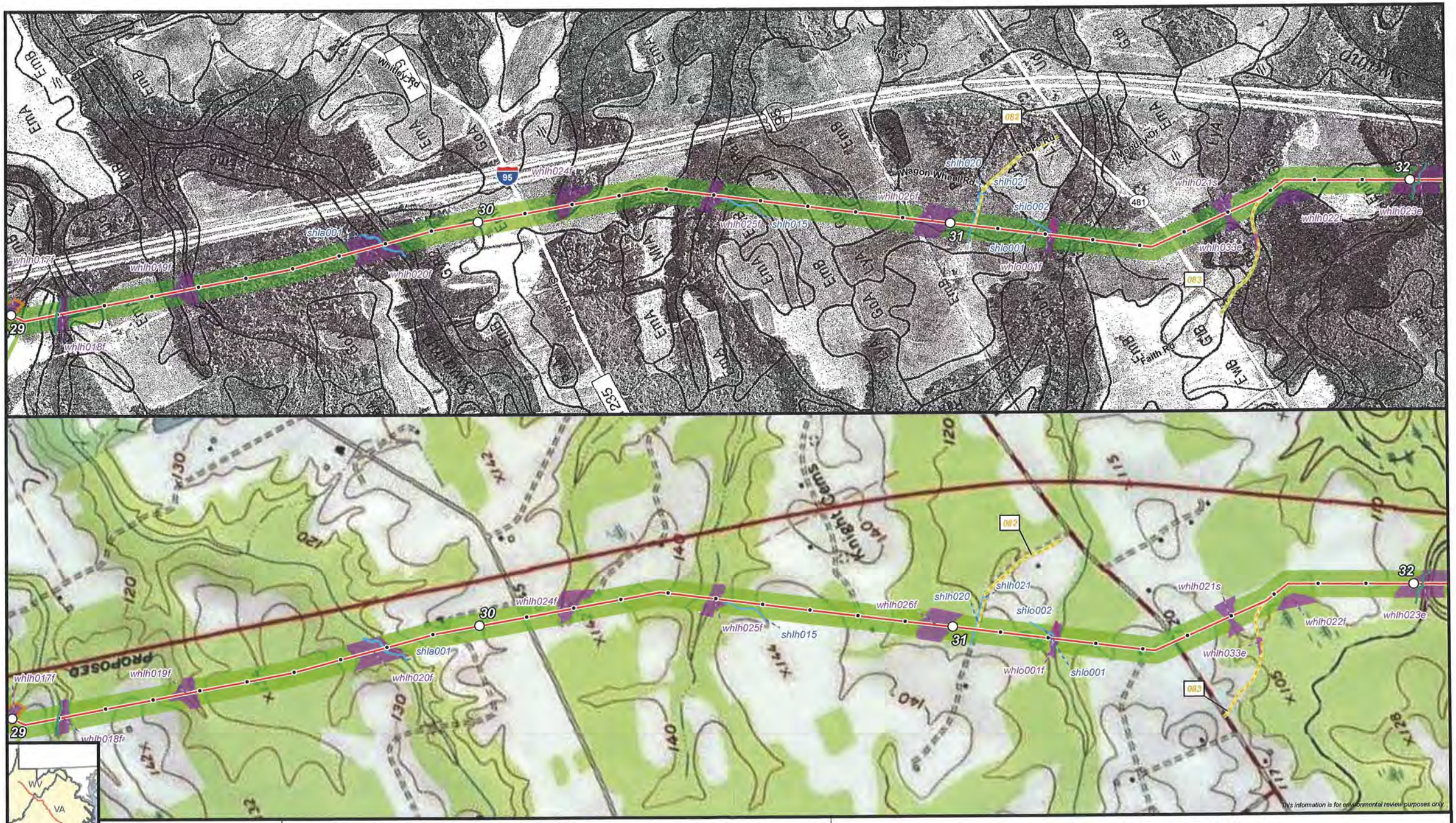

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Atlantic Coast Pipeline

Atlantic Coast Pipeline
Environmental Sheet Maps
Halifax County, North Carolina
Watershed: Pamlico

Natural Resource Group

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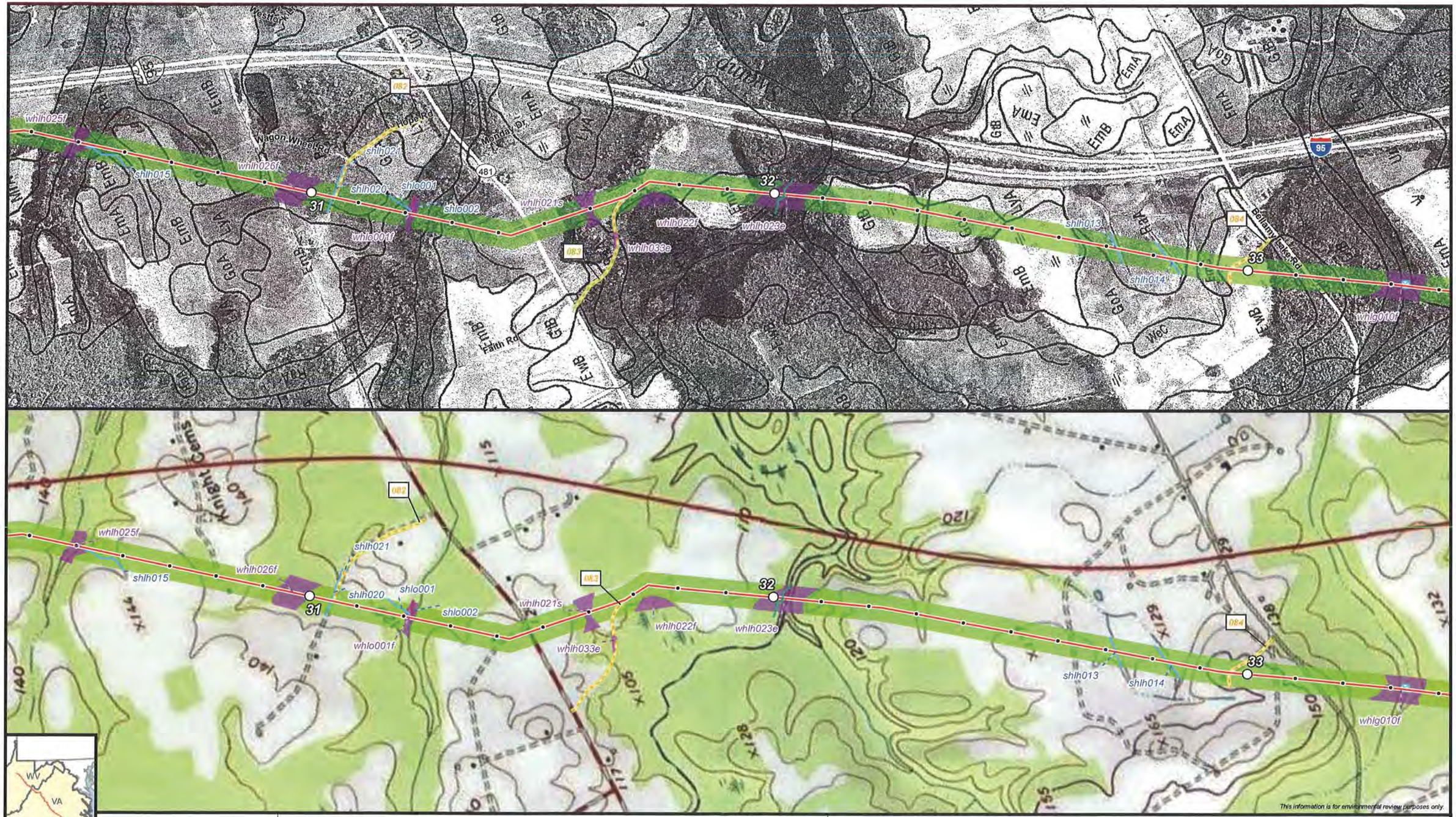

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- Stream within Inundated Wetland

This information is for environmental review purposes only.

Atlantic Coast Pipeline

Atlantic Coast Pipeline

Environmental Sheet Maps

Halifax County, North Carolina

Watershed: Pamlico

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DRAWN BY: EKP

Water Resources
ENVIRONMENTAL QUALITY

PAT MCCRORY
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3/7/2016

William Scarpinato, Jr.
Manager, Environmental – Atlantic Coast Pipeline
Dominion Resources Services, Inc.
5000 Dominion Blvd, Glen Allen VA 23060

Subject: Buffer Determination Letter
Revised March 7, 2016 NBRRO #15-285
Nash County

Determination Type:	
Buffer	Intermittent/Perennial
☒ Neuse (15A NCAC 2B .0233) ☒ Tar-Pamlico (15A NCAC 2B .0259) ☐ Jordan (15A NCAC 2B .0267) (governmental and/or interjurisdictional projects)	☒ Intermittent/Perennial Determination (where local buffer ordinances apply)

Project Name: Atlantic Coast Pipeline

Address/Location: Throughout Nash County, NC

Stream(s): Numerous streams in the Tar/Pamlico and Neuse River Basins

Determination Date: February 25th, 2016 **Staff: William Miller**

Stream	E/I/P*	Not Subject	Subject	Start @	Stop @	Soil Survey	USGS Topo	Page #	Milepost
SNAH029	**I**		**X**			**X**	**X**	**18**	**42.0**
SNAB103	**I**		**X**			**X**	**X**	**18**	**43.0**
SNAB104	**I**		**X**				**X**	**19**	**44.0**
SNAB105	**P**		**X**			**X**	**X**	**19**	**44.4**
SNAC001	**P**		**X**			**X**	**X**	**19**	**44.5**
SNAG012	**P**		**X**			**X**	**X**	**20**	**44.8**
ONAC002	**P**		**X**			**X**		**20**	**45.4**
ONAG002	**P**		**X**			**X**		**25**	**52.0**
SNAH030	**I**	**X**						**34**	**65.2**
SNAH031	**I**	**X**						**34**	**65.2**

**E/I/P = Ephemeral/Intermittent/Perennial*

Division of Water Resources, Raleigh Regional Office, Water Quality Operations Section http://portal.ncdenr.org/web/wq/aps
1628 Mail Service Center, Raleigh, NC 27699-1628 Phone: (919) 791-4200
Location: 3800 Barrett Drive, Raleigh, NC 27609 Fax: (919) 788-7159

Explanation: The stream(s) listed above has been located on the most recent published NRCS Soil Survey of NASH County, North Carolina and/or the most recent copy of the USGS Topographic map at a 1:24,000 scale. Each stream that is checked "Not Subject" has been determined to not be at least intermittent or is not present. Streams that are checked "Subject" have been located on the property and possess characteristics that qualify it to be at least an intermittent stream. There may be other streams located on the property that do not show up on the maps referenced above but may be considered jurisdictional according to the US Army Corps of Engineers.

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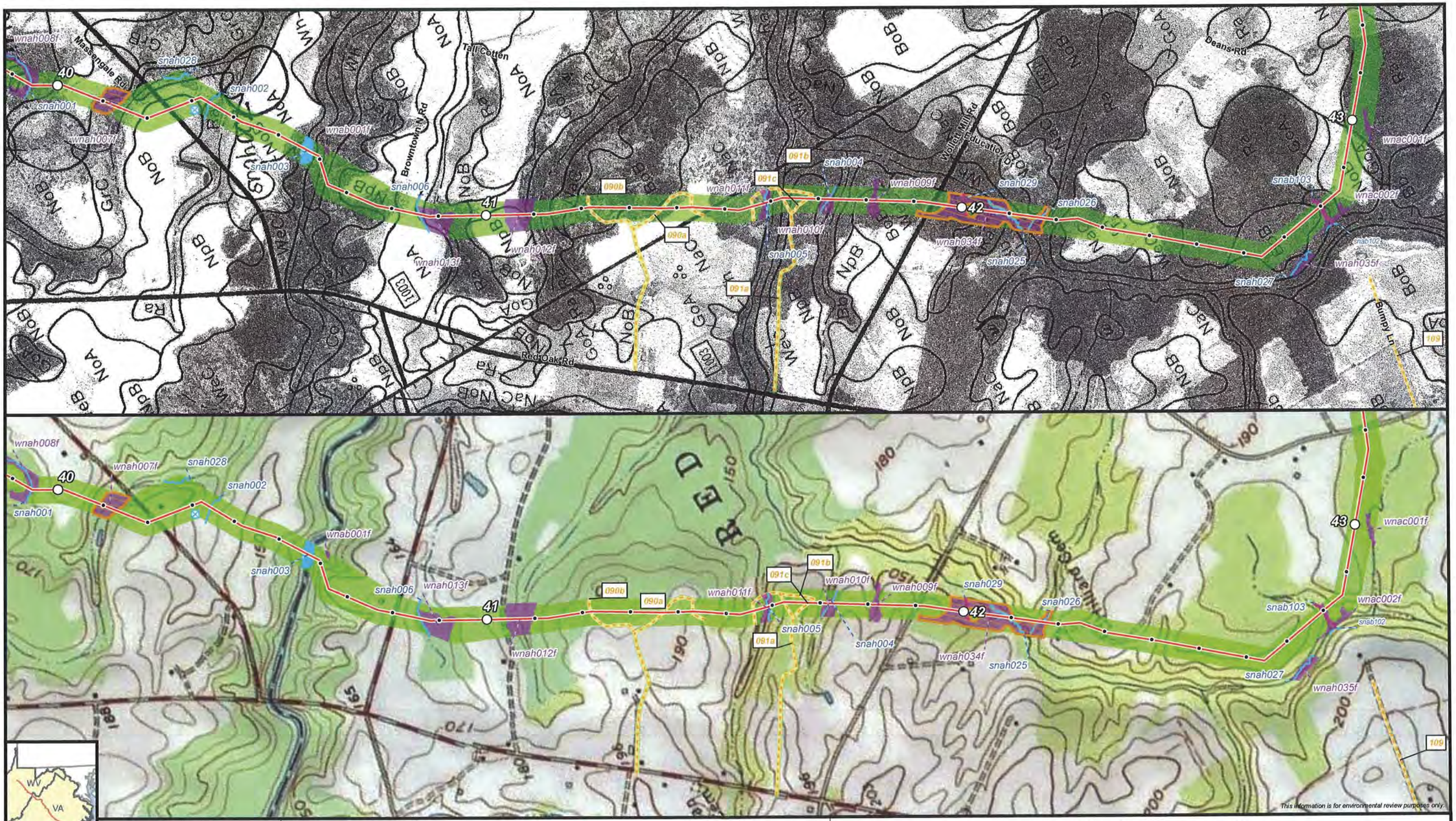
Sincerely,

Danny Smith

Danny Smith
Supervisor, Water Quality Regional Operations Center

cc: RRO DWR File Copy



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- ACP Centerline
- Access Road
- Watershed Boundary
- Surveyed Waterbody
- Surveyed Wetland
- Bio Survey Complete
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- Newly Identified Waterbody
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Atlantic Coast Pipeline

Atlantic Coast Pipeline
Environmental Sheet Maps
Nash County, North Carolina
Watershed: Pamlico

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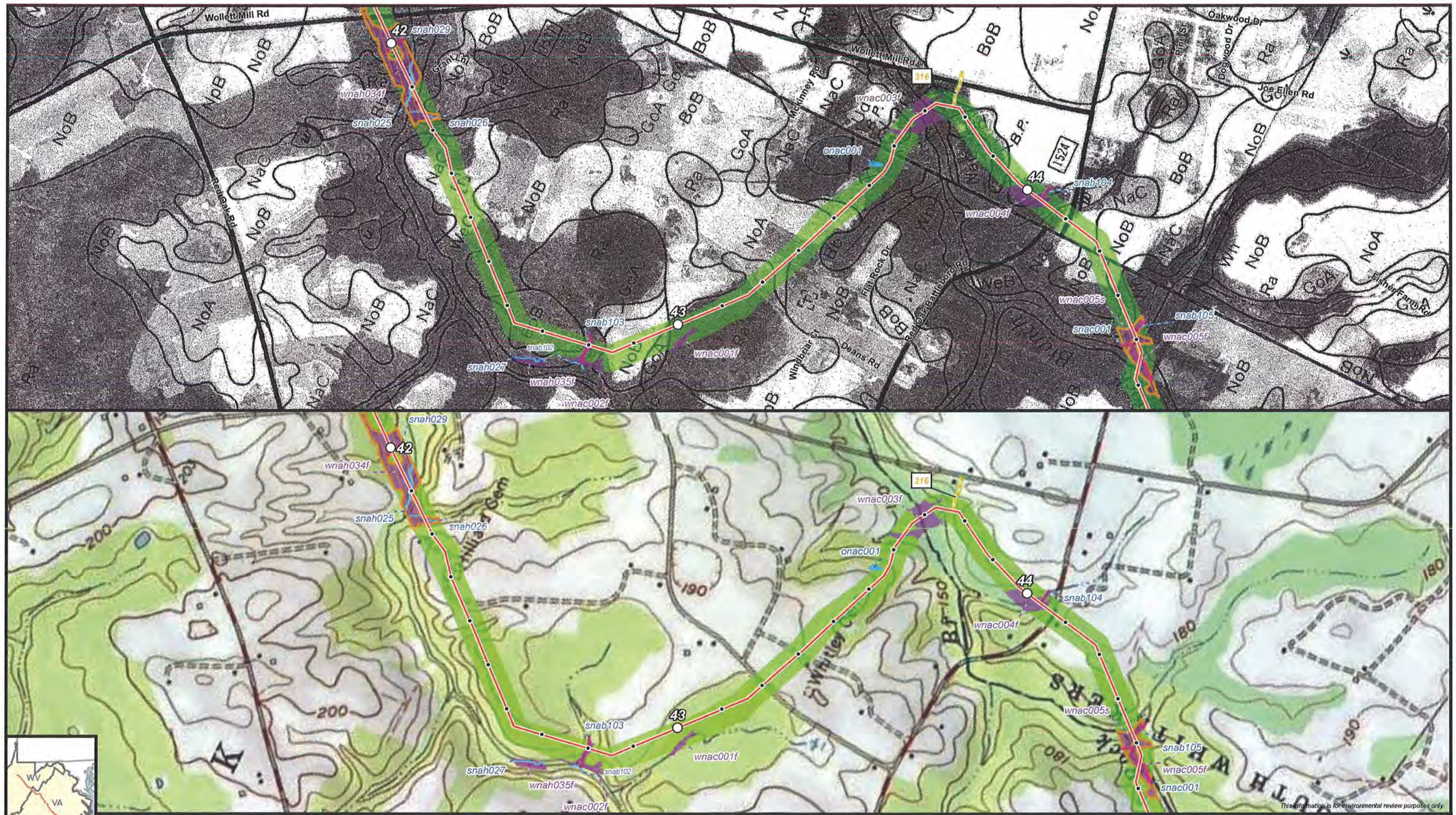

Atlantic Coast Pipeline

Environmental Sheet Maps

Nash County, North Carolina
Watershed: Pamlico

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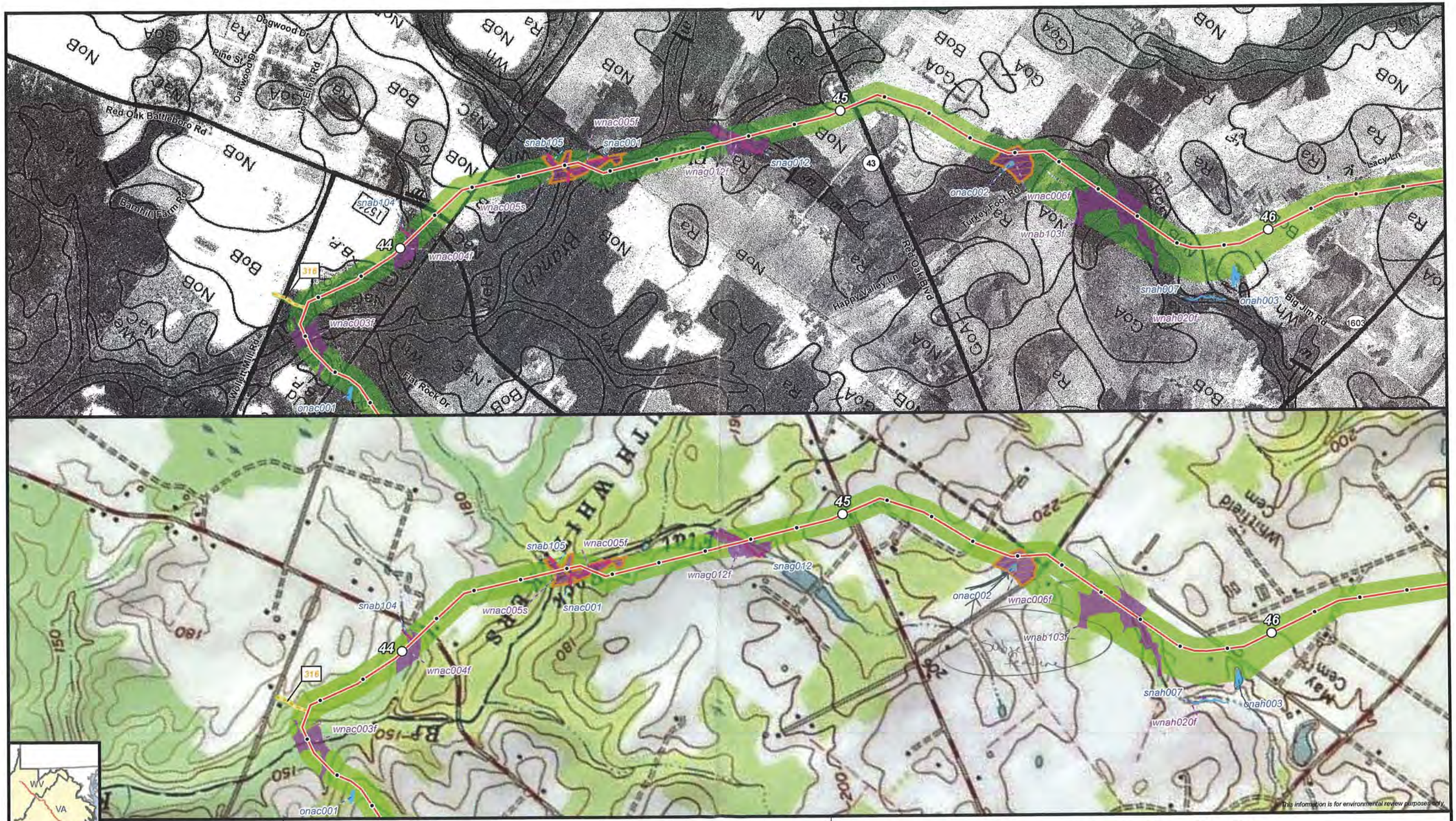

Atlantic Coast Pipeline
Environmental Sheet Maps
Nash County, North Carolina
Watershed: Pamlico

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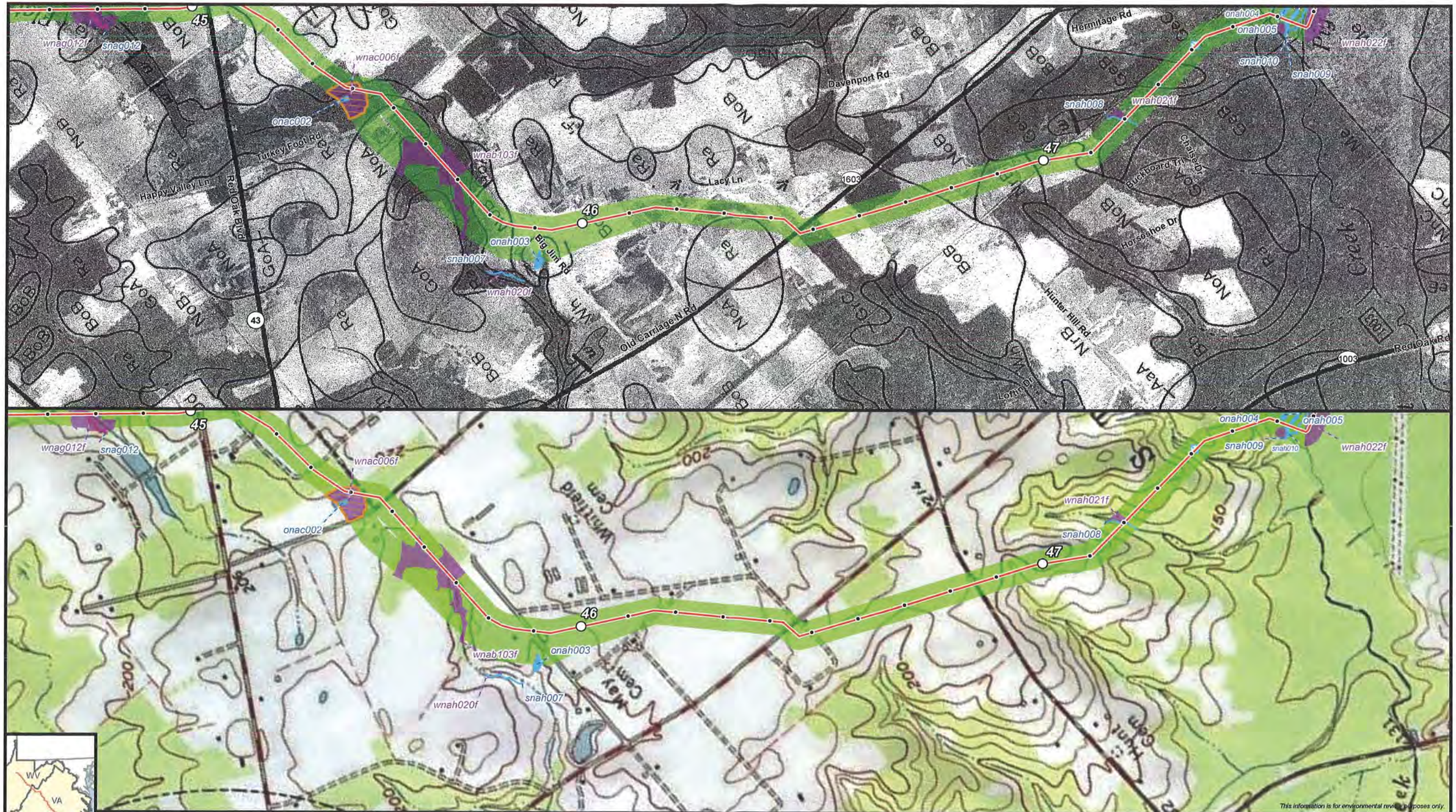

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Atlantic Coast Pipeline

Atlantic Coast Pipeline
Environmental Sheet Maps
Nash County, North Carolina
Watershed: Pamlico

DRAWN BY: EKP

Atlantic Coast Pipeline

Atlantic Coast Pipeline

Environmental Sheet Maps

Nash County, North Carolina
Watershed: Pamlico

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Atlantic Coast Pipeline
Environmental Sheet Maps
Nash County, North Carolina
Watershed: Pamlico

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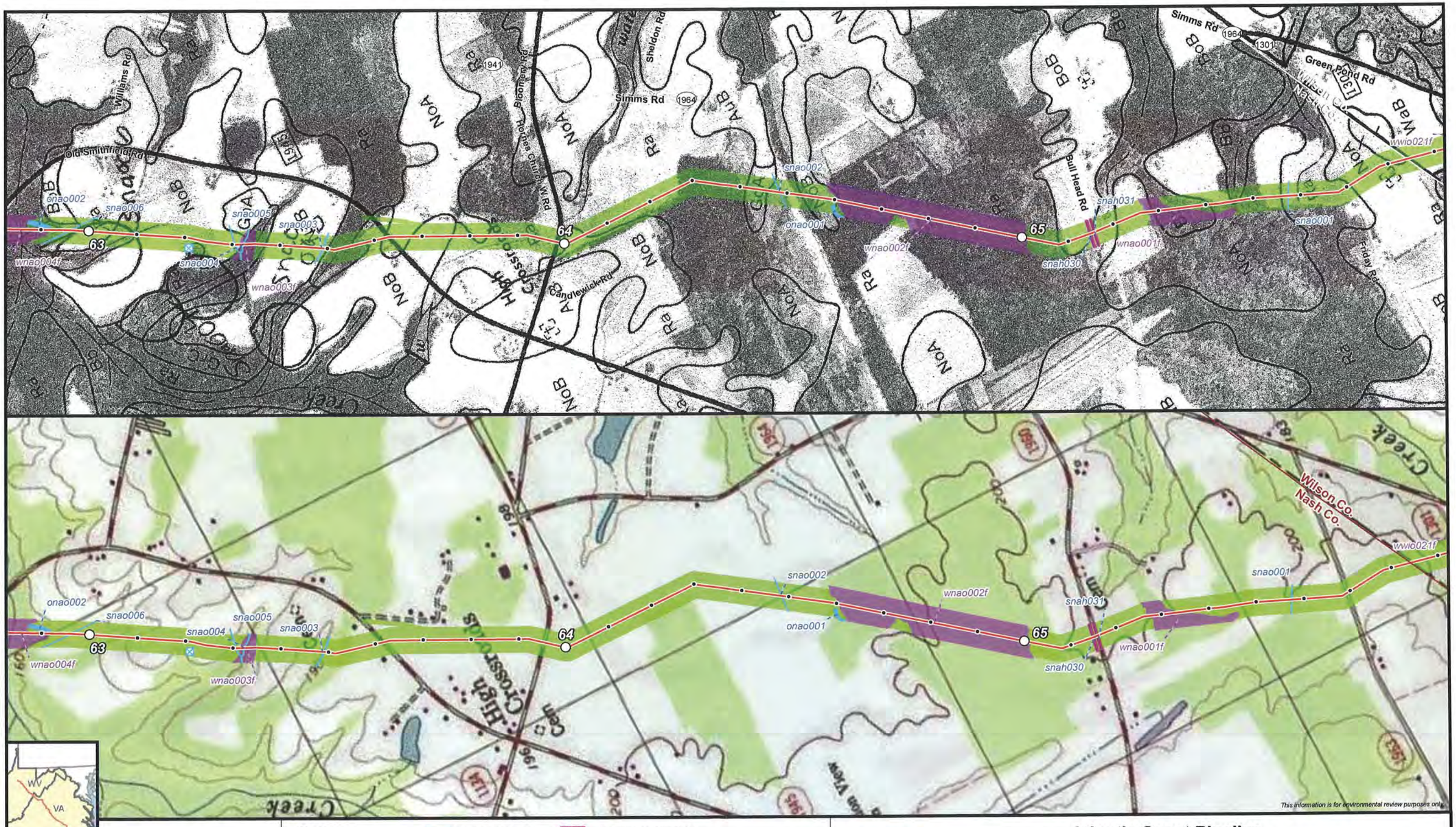

Atlantic Coast Pipeline

Environmental Sheet Maps

Nash County, North Carolina
Watershed: Neuse

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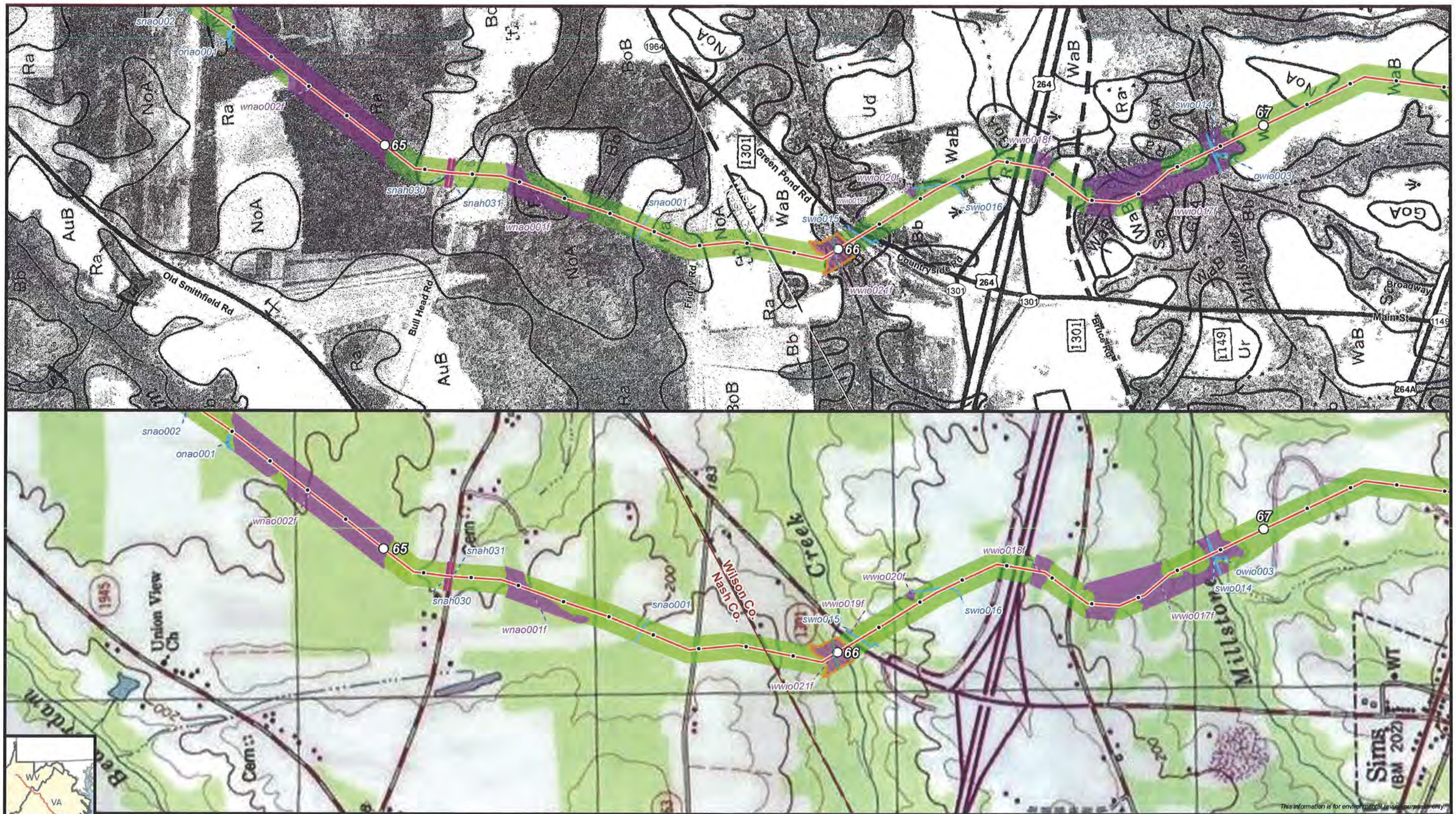

Atlantic Coast Pipeline

Atlantic Coast Pipeline

Environmental Sheet Maps

Nash County, North Carolina
Watershed: Neuse

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Water Resources
ENVIRONMENTAL QUALITY

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3/7/2016

William Scarpinato, Jr.
Manager, Environmental – Atlantic Coast Pipeline
Dominion Resources Services, Inc.
5000 Dominion Blvd, Glen Allen VA 23060

Subject: Buffer Determination Letter
Revised March 7, 2016 NBRRO #15-285
Wilson County

Determination Type:	
Buffer	Intermittent/Perennial
☒ Neuse (15A NCAC 2B .0233) ☐ Tar-Pamlico (15A NCAC 2B .0259) ☐ Jordan (15A NCAC 2B .0267) (governmental and/or interjurisdictional projects)	☒ Intermittent/Perennial Determination (where local buffer ordinances apply)

Project Name: Atlantic Coast Pipeline

Address/Location: Throughout Wilson County, NC

Stream(s): Numerous streams in the Neuse River Basin

Determination Date: February 25th, 2016 Staff: William Miller

Stream	E/I/P*	Not Subject	Subject	Start @	Stop @	Soil Survey	USGS Topo	Page #	Milepost
SWIP015	**I**	**X**						**39**	**71.7**
SWIP016	**I**	**X**						**39**	**71.7**
SWIP008	**I**	**X**						**40**	**73.9**
SWIP006	**I**	**X**						**40**	**74.1**
SWIP007	**I**	**X**						**40**	**74.1**
SWIP017	**P**		**X**			**X**		**42**	**75.8**
SWIP009	**I**		**X**				**X**	**42**	**75.8**

**E/I/P = Ephemeral/Intermittent/Perennial*

Explanation: The stream(s) listed above has been located on the most recent published NRCS Soil Survey of WILSON County, North Carolina and/or the most recent copy of the USGS Topographic map at a 1:24,000 scale. Each stream that is checked "Not Subject" has been determined to not be at least intermittent or is not present. Streams that are checked "Subject" have been located on the property and possess characteristics that qualify it to be

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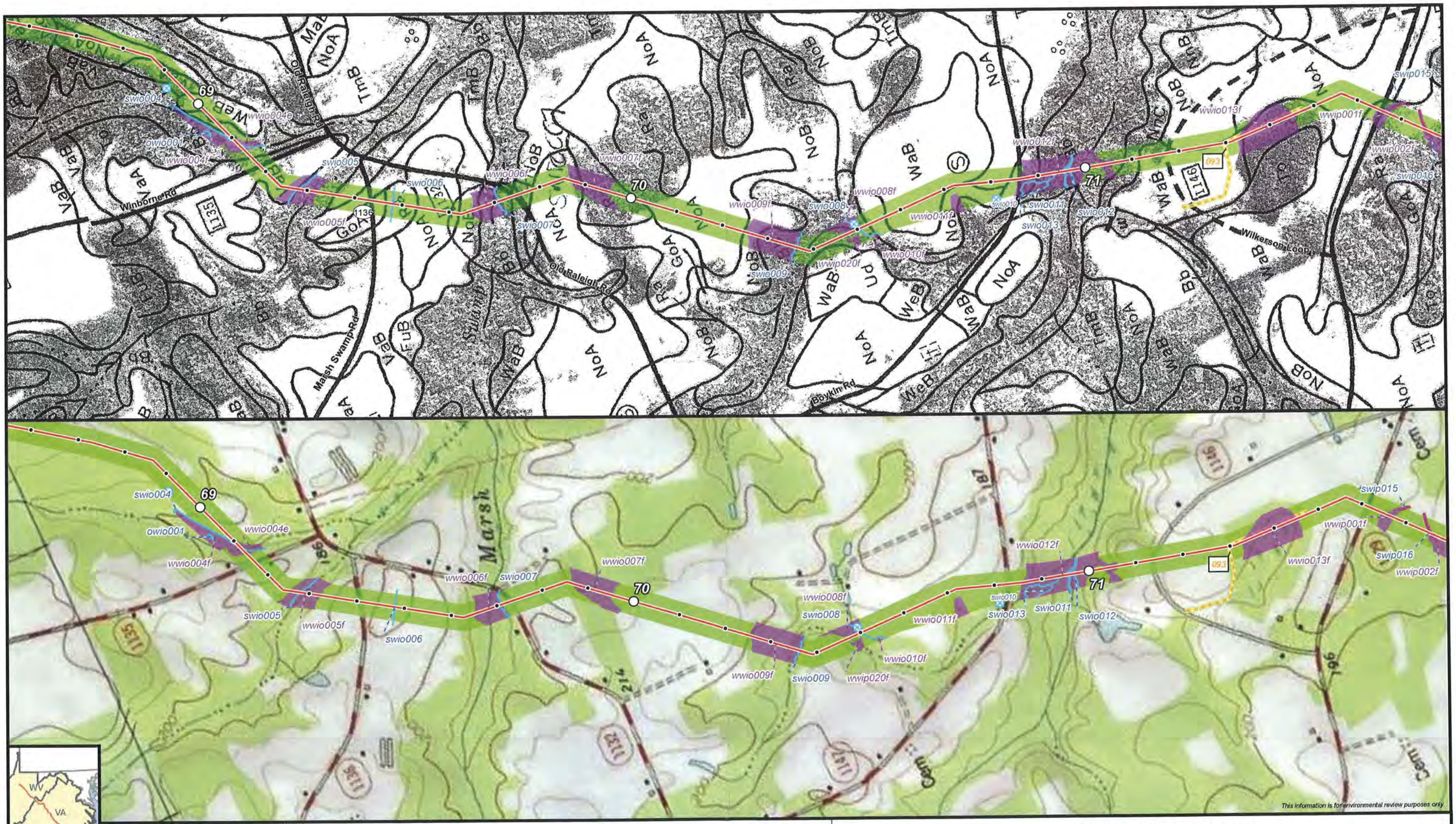

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Atlantic Coast Pipeline

Atlantic Coast Pipeline
Environmental Sheet Maps
Wilson County, North Carolina
Watershed: Neuse

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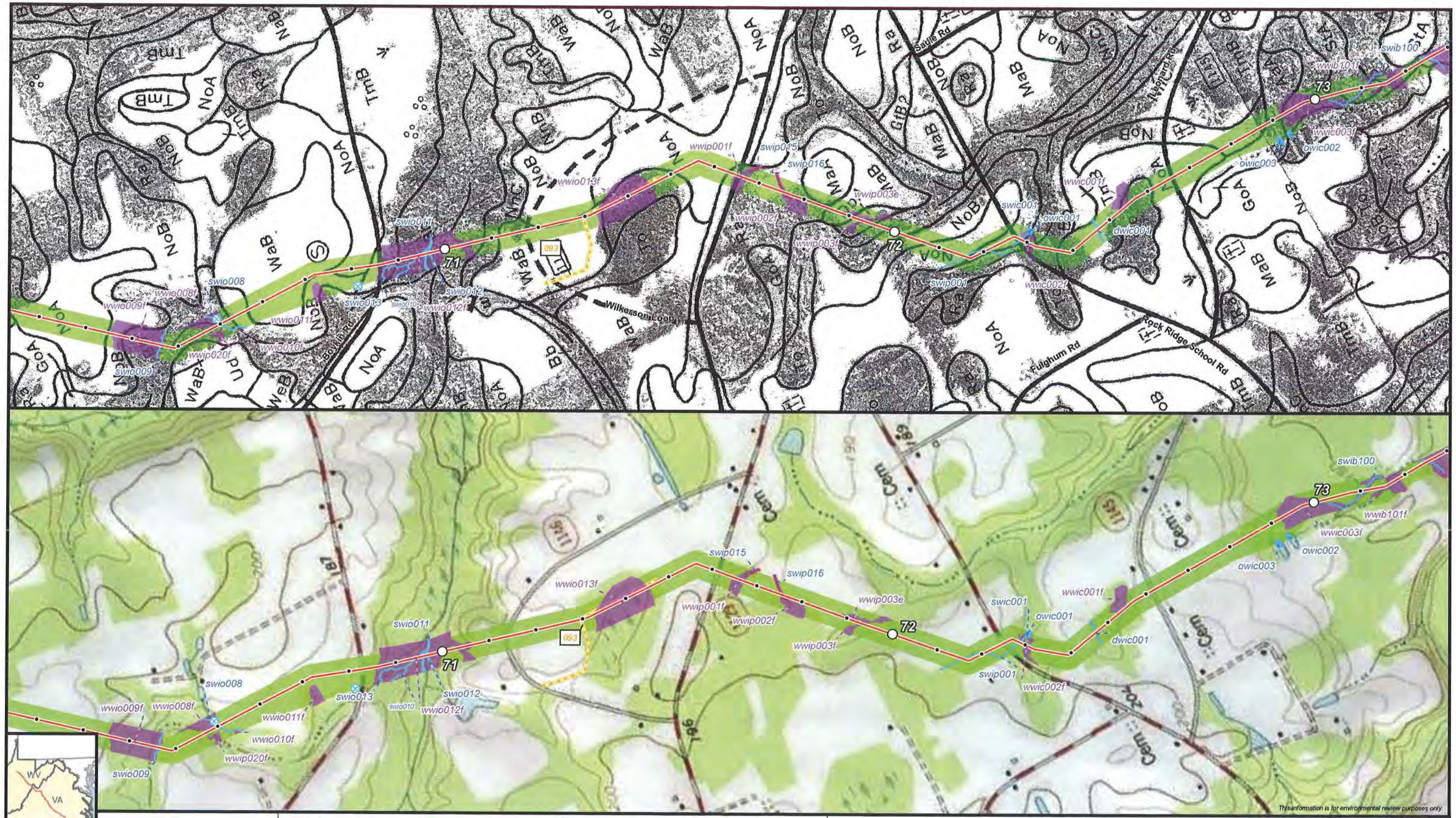

Atlantic Coast Pipeline

Environmental Sheet Maps

Wilson County, North Carolina

Watershed: Neuse

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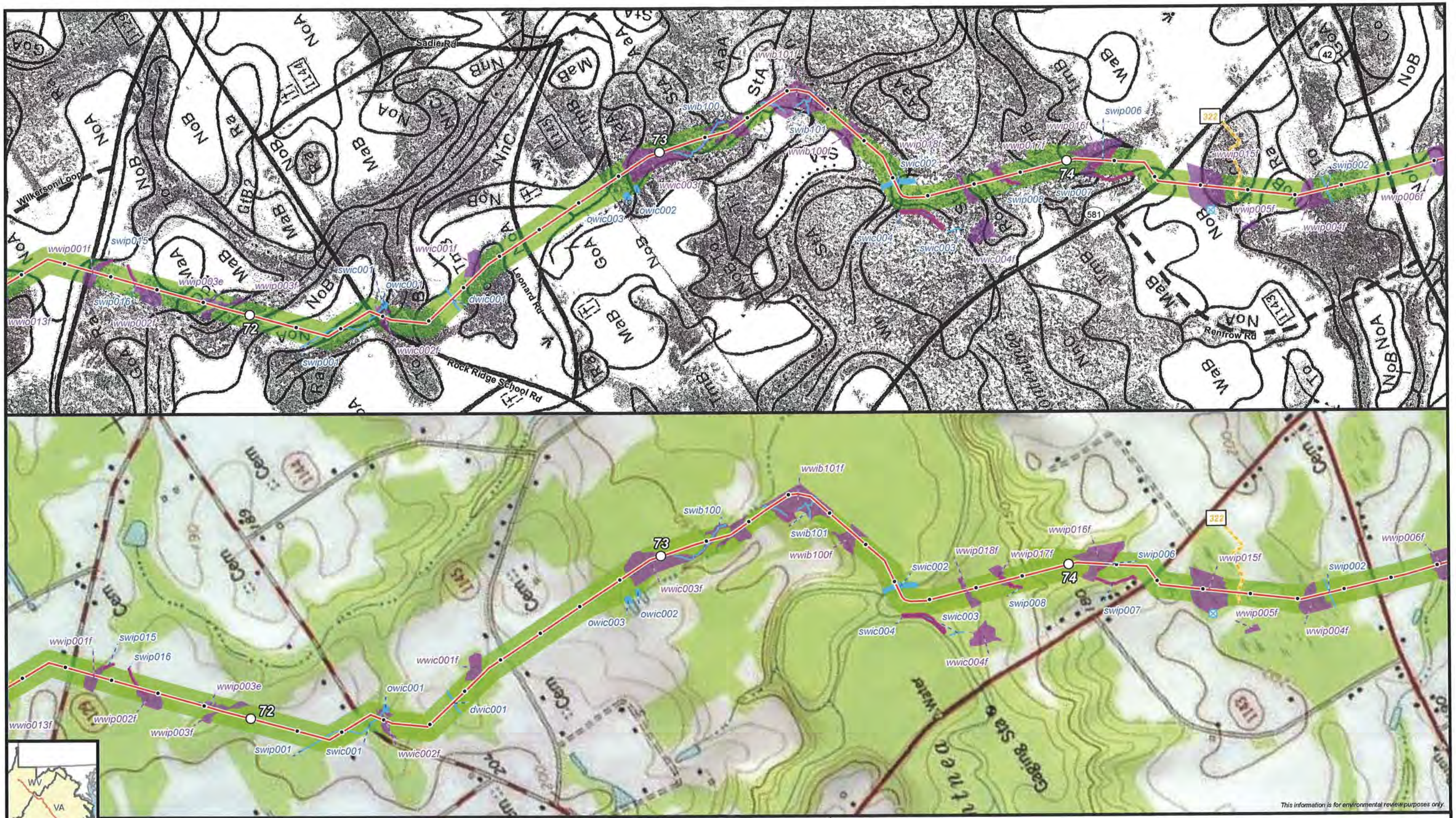

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Atlantic Coast Pipeline

Atlantic Coast Pipeline

Environmental Sheet Maps

Wilson County, North Carolina

Watershed: Neuse

Natural Resource Group

an ERM Group company

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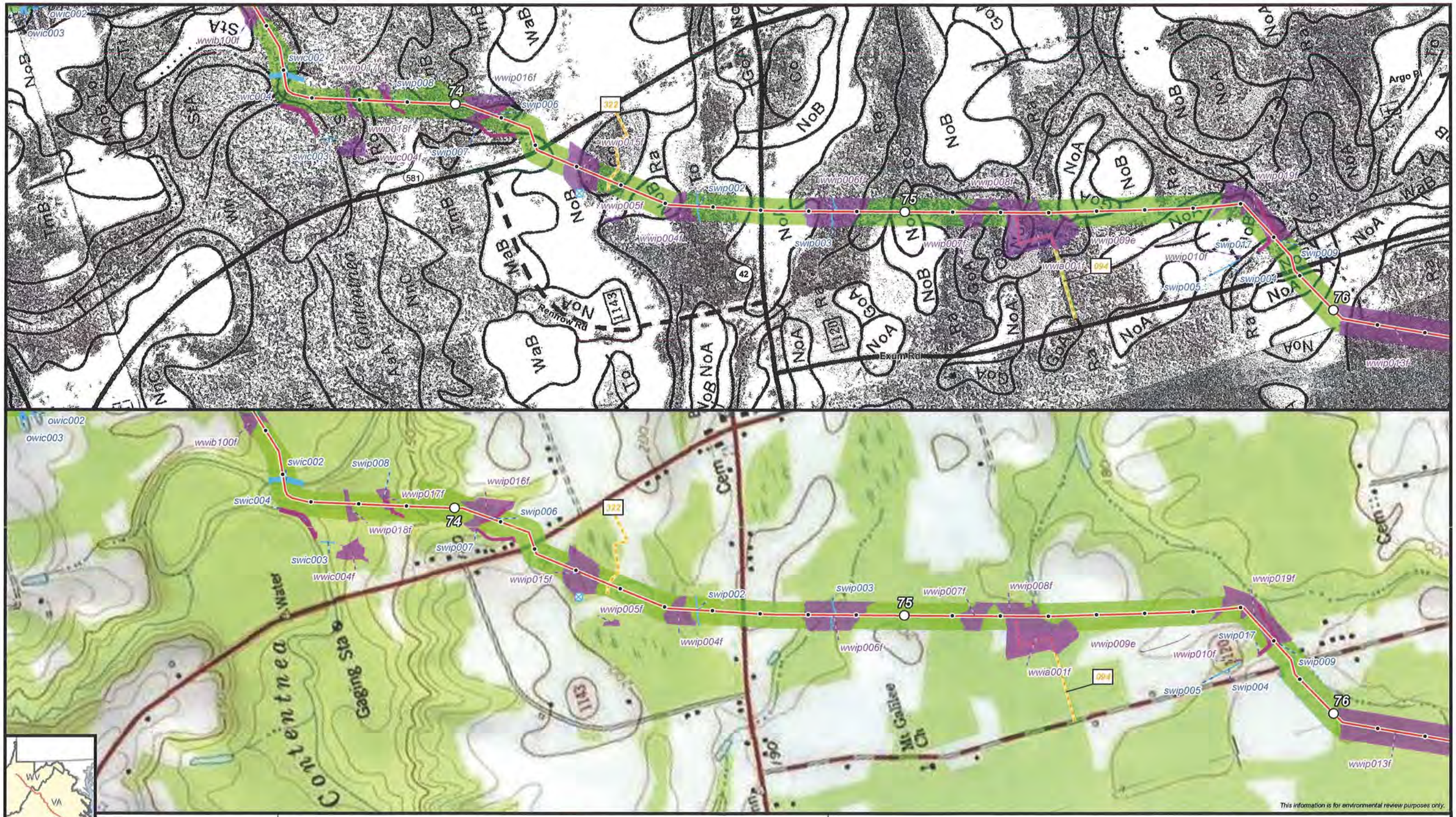

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Atlantic Coast Pipeline

Atlantic Coast Pipeline
Environmental Sheet Maps
Wilson County, North Carolina
Watershed: Neuse

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William Scarpinato, Jr.
Manager, Environmental – Atlantic Coast Pipeline
Dominion Resources Services, Inc.
5000 Dominion Blvd, Glen Allen VA 23060

Subject: Buffer Determination Letter
Revised March 7, 2016 NBRRO #15-285
Johnston County

Determination Type:	
Buffer	Intermittent/Perennial
☒ Neuse (15A NCAC 2B .0233) ☐ Tar-Pamlico (15A NCAC 2B .0259) ☐ Jordan (15A NCAC 2B .0267) (governmental and/or interjurisdictional projects)	☒ Intermittent/Perennial Determination (where local buffer ordinances apply)

Project Name: Atlantic Coast Pipeline

Address/Location: Throughout Johnston County, NC

Stream(s): Numerous streams in the Neuse River Basin

Determination Date: February 25th, 2016 **Staff: William Miller**

Stream	E/I/P*	Not Subject	Subject	Start @	Stop @	Soil Survey	USGS Topo	Page #	Milepost
SJOE001	I	X						46	82.5
SJOE002	P		X			X	X	46	82.5
SJOE003	P	X						46	82.6
SJOE004	I	X						46	82.6
SJOE005	P	X						47	83.4
SJOE006	I		X			X		47	83.5
SJOP015	I	X						53	93.6
SJOP018	I		X				X	55	95.3
SJOP019	P		X			X	X	55	95.3
SJOP017	I		X			X		66	110.3
SJOP016	E	X				X		66	110.5
SJOO007	I		X			X	X	67	113.1
SJOE007	I		X				X	67	113.7

Division of Water Resources, Raleigh Regional Office, Water Quality Operations Section http://portal.ncdenr.org/web/wq/aps
1628 Mail Service Center, Raleigh, NC 27699-1628 Phone: (919) 791-4200
Location: 3800 Barrett Drive, Raleigh, NC 27609 Fax: (919) 788-7159

*E/I/P = Ephemeral/Intermittent/Perennial

Explanation: The stream(s) listed above has been located on the most recent published NRCS Soil Survey of JOHNSTON County, North Carolina and/or the most recent copy of the USGS Topographic map at a 1:24,000 scale. Each stream that is checked "Not Subject" has been determined to not be at least intermittent or is not present. Streams that are checked "Subject" have been located on the property and possess characteristics that qualify it to be at least an intermittent stream. There may be other streams located on the property that do not show up on the maps referenced above but may be considered jurisdictional according to the US Army Corps of Engineers.

This on-site determination shall expire five (5) years from the date of this letter. Landowners or affected parties that dispute a determination made by the DWR may request a determination by the Director. An appeal request must be made within sixty (60) days of date of this letter. A request for a determination by the Director shall be referred to the Director in writing. ***If sending via US Postal Service:*** **c/o** ***Karen Higgins; DWR – 401 & Buffer Permitting Unit; 1617 Mail Service Center; Raleigh, NC 27699-1617. If sending via delivery service (UPS, FedEx, etc.): Karen Higgins; DWR – 401 & Buffer Permitting Unit; 512 N. Salisbury Street; Raleigh, NC 27604.***

This determination is final and binding unless, as detailed above, unless an appeal is requested within sixty (60) days.

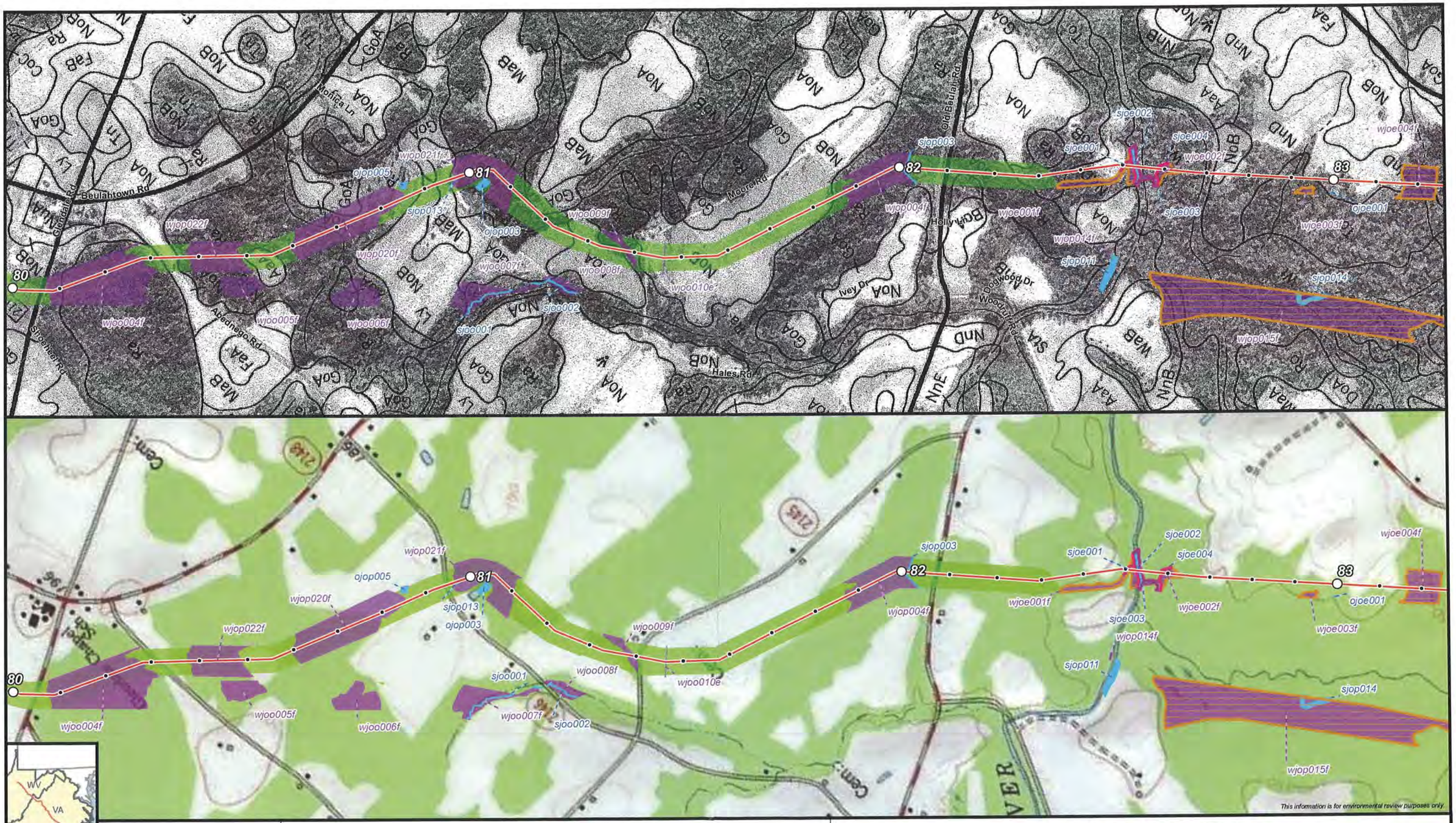
This project may require a Section 404/401 Permit for the proposed activity. Any inquiries should be directed to the US Army Corp of Engineers (Raleigh Regulatory Field Office) at (919)-554-4884.

If you have questions regarding this determination, please feel free to contact William Miller at (919)791-4241.

Sincerely,

Danny Smith
Supervisor, Water Quality Regional Operations Center

cc: RRO DWR File Copy



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Feet

1:12,000 1 inch = 1,000 feet

- Milepost
- Tenth Milepost
- ACP Centerline
- Access Road
- Watershed Boundary
- Surveyed Waterbody
- Surveyed Wetland
- Bio Survey Complete
- No Water Point
- Newly Identified Waterbody
- Newly Identified Wetland

Atlantic Coast Pipeline

Atlantic Coast Pipeline
Environmental Sheet Maps
Johnston County, North Carolina
Watershed: Neuse

NATURAL RESOURCE GROUP
an ERM Group company

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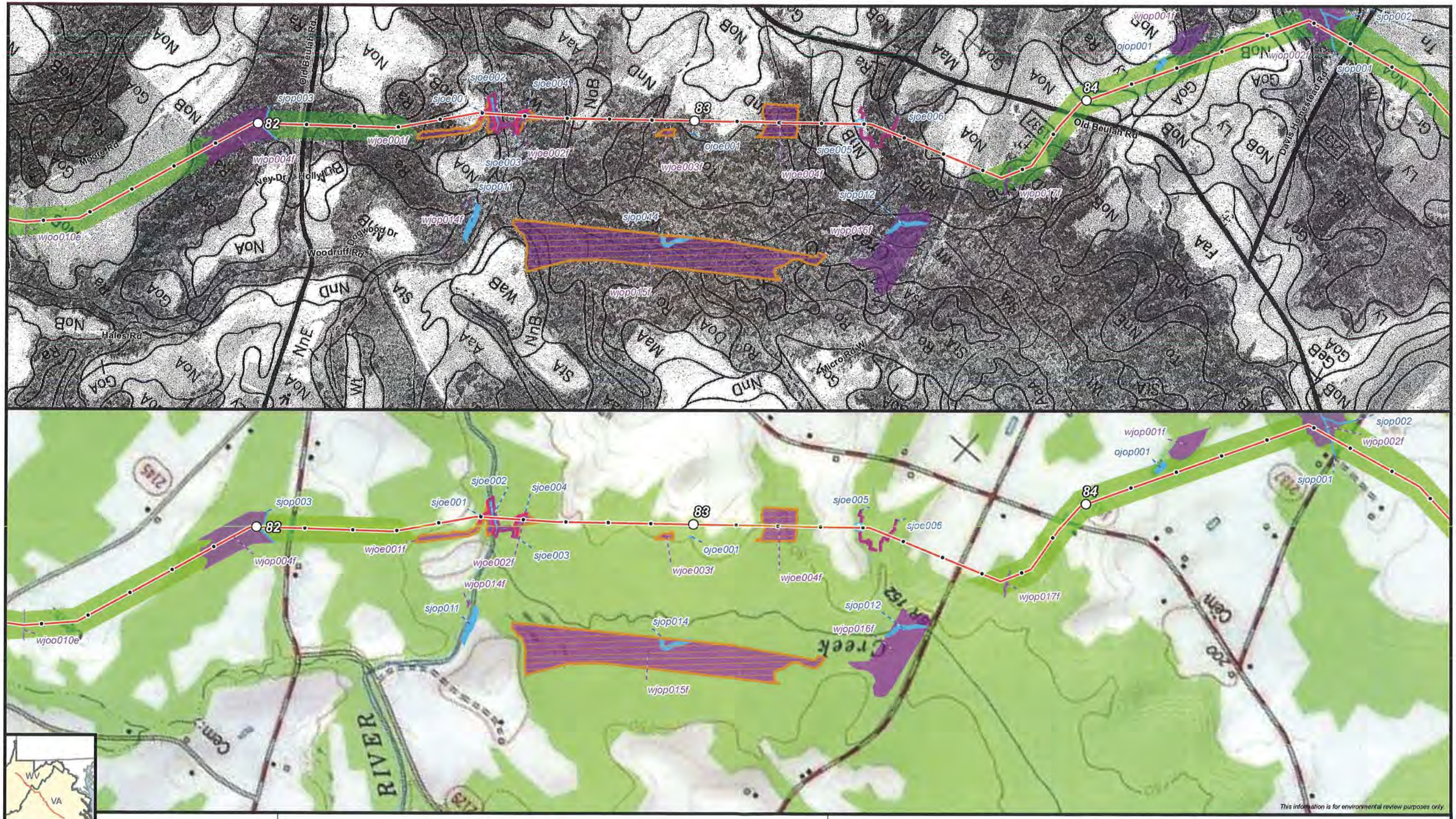

Atlantic Coast Pipeline

Environmental Sheet Maps

Johnston County, North Carolina
Watershed: Neuse

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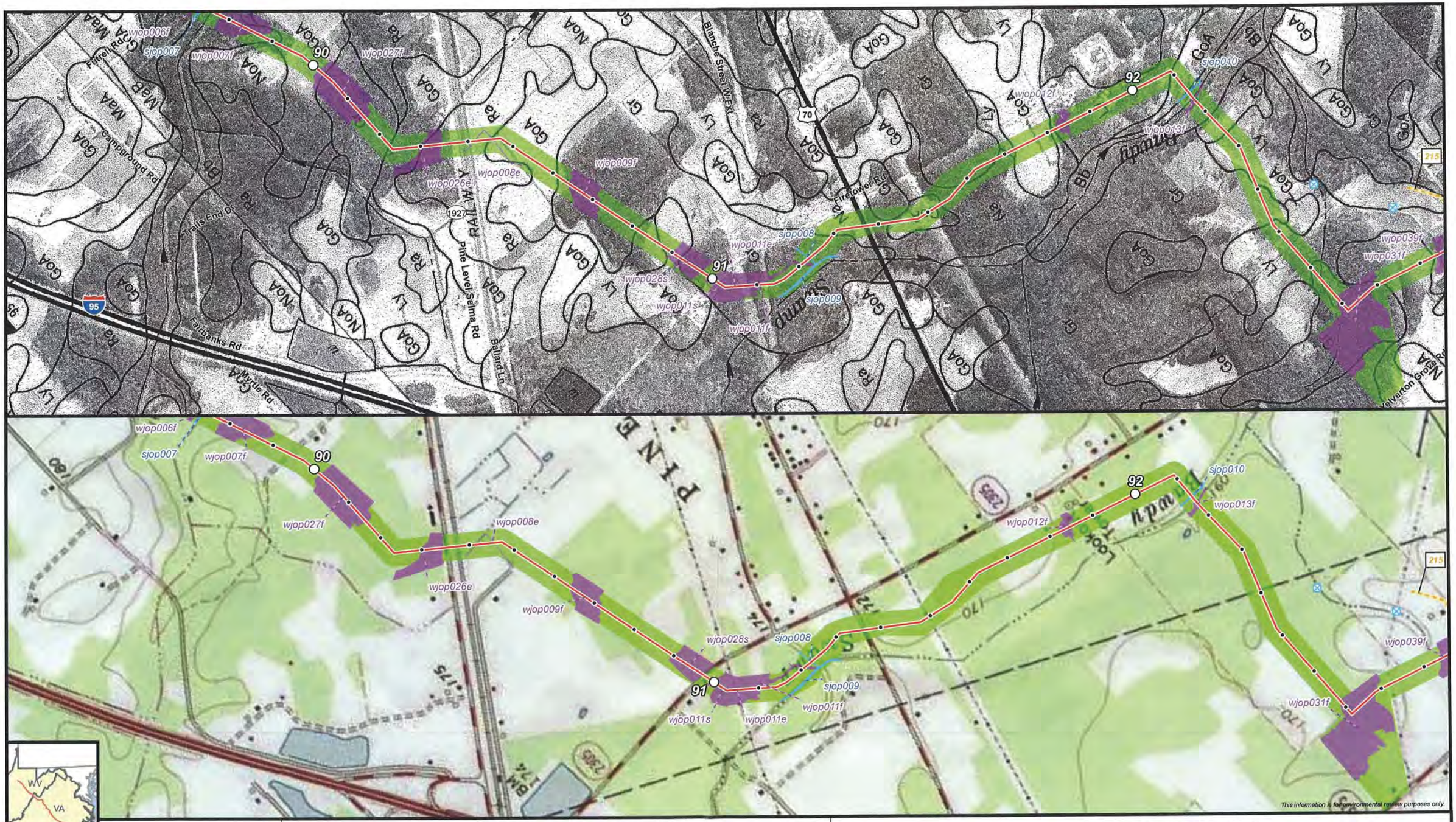

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Environmental Sheet Maps

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Watershed: Neuse

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Johnston County, North Carolina
Watershed: Neuse

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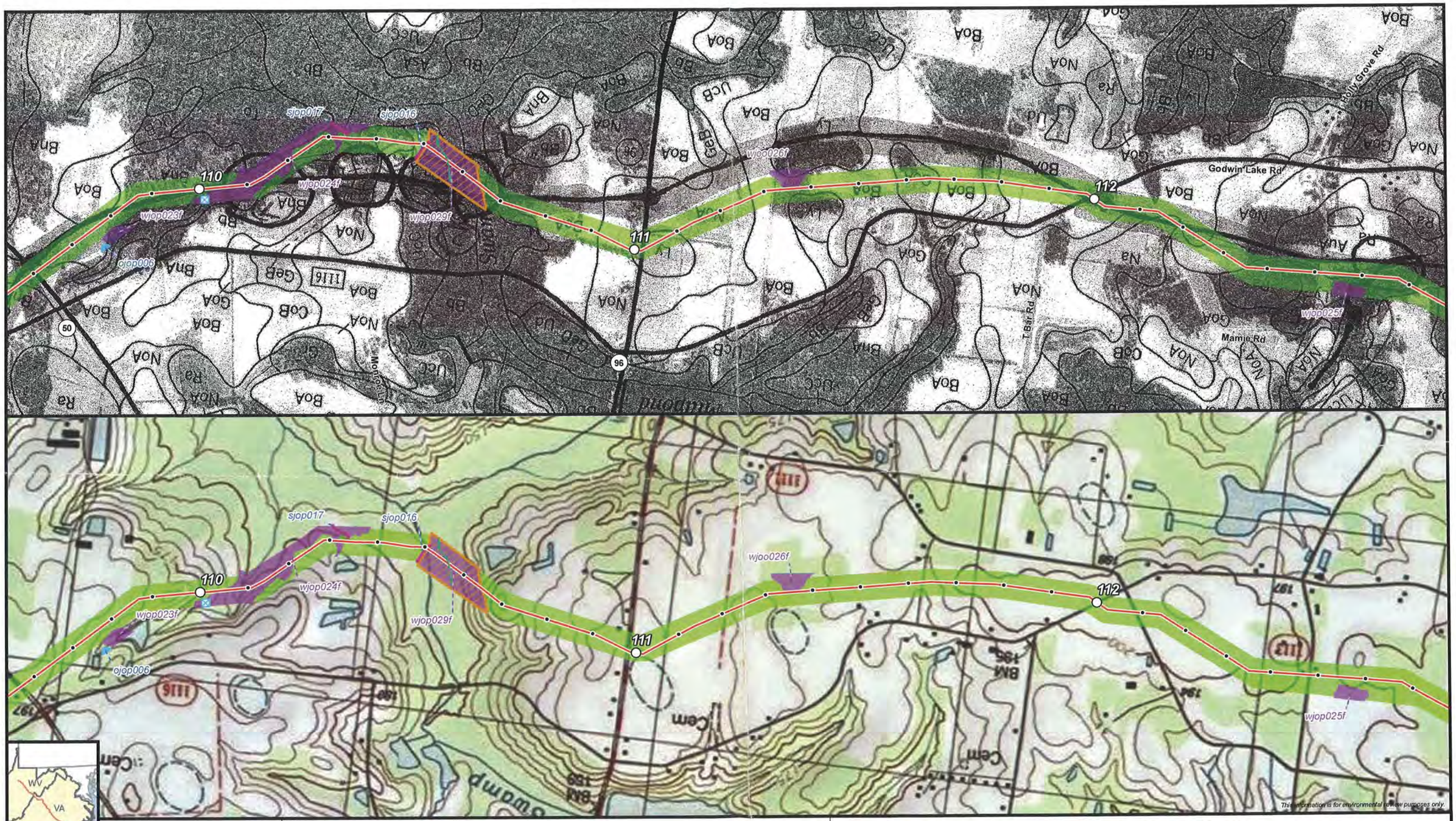

Atlantic Coast Pipeline

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Environmental Sheet Maps

Johnston County, North Carolina
Watershed: Neuse

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Johnston County, North Carolina

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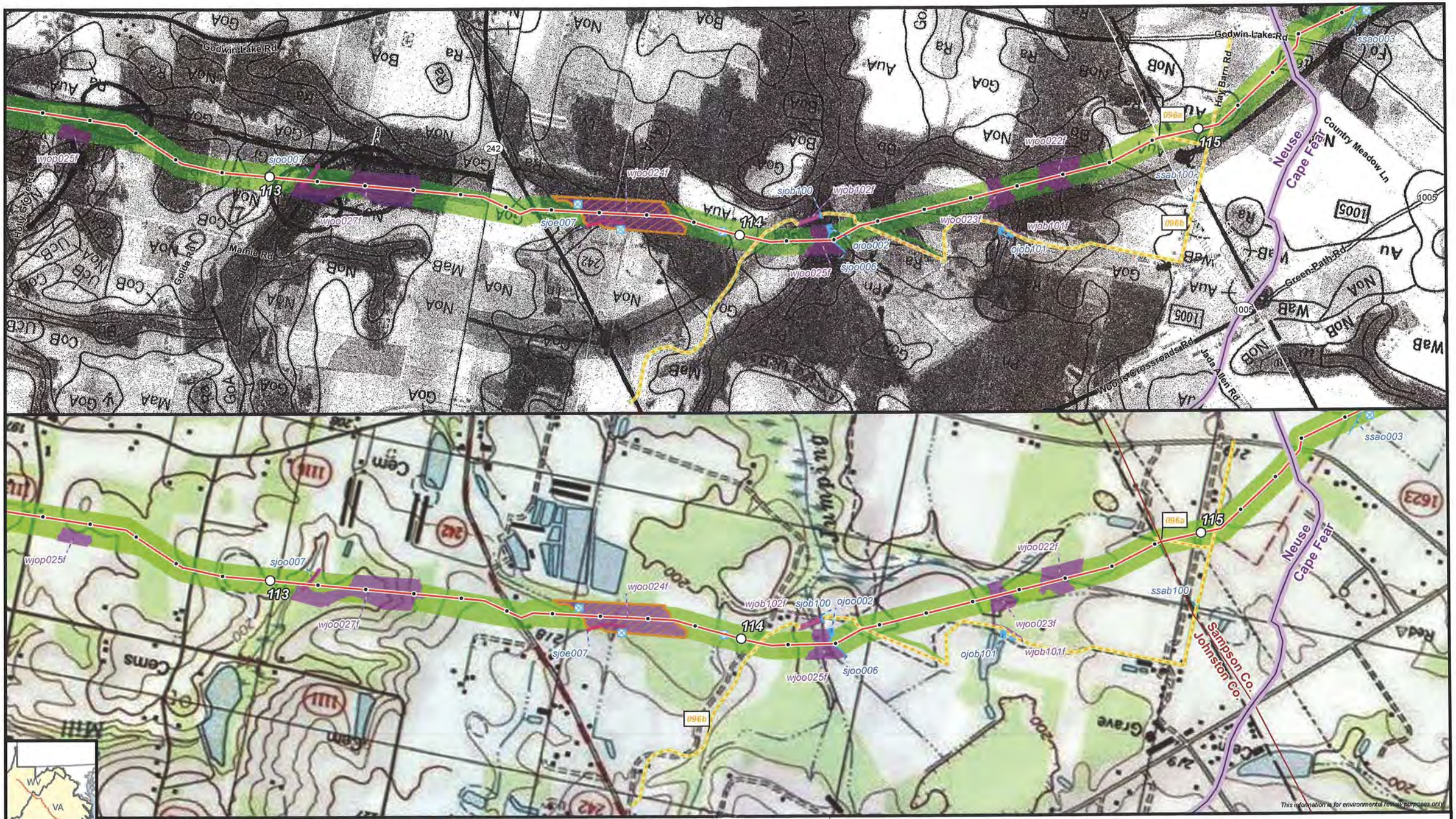

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Watershed: Neuse

NATURAL RESOURCE GROUP
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Appendix 2 – Part I

ACP Field Surveyed Water Features Maps within Tar-Pamlico and Neuse Watersheds

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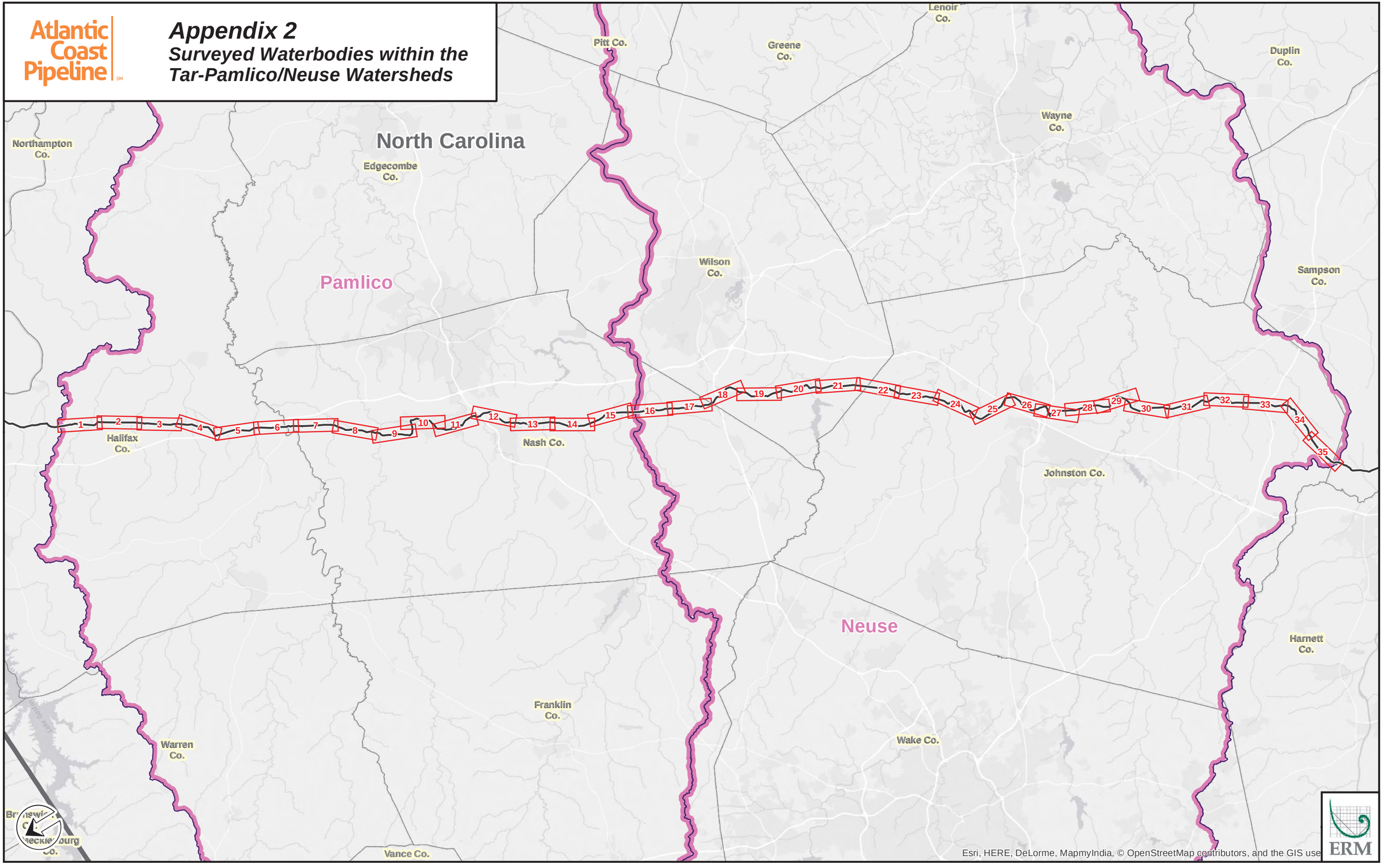
Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds



17-039-AR 1

Pamlico

18
19
20
21

shlg007
shlg008
shlg009
shlb050
shlh008
shlh007
whlg012e
ohlg003
shlh019
whlh032s

Marsh

0 400 800 1,200
Feet

1:15,130 1 inch = 1,261 feet

- Proposed Centerline
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* Subject to change or revision

Atlantic Coast Pipeline SM

Appendix 2
Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds
Halifax, North Carolina
Watershed: Pamlico

ERM

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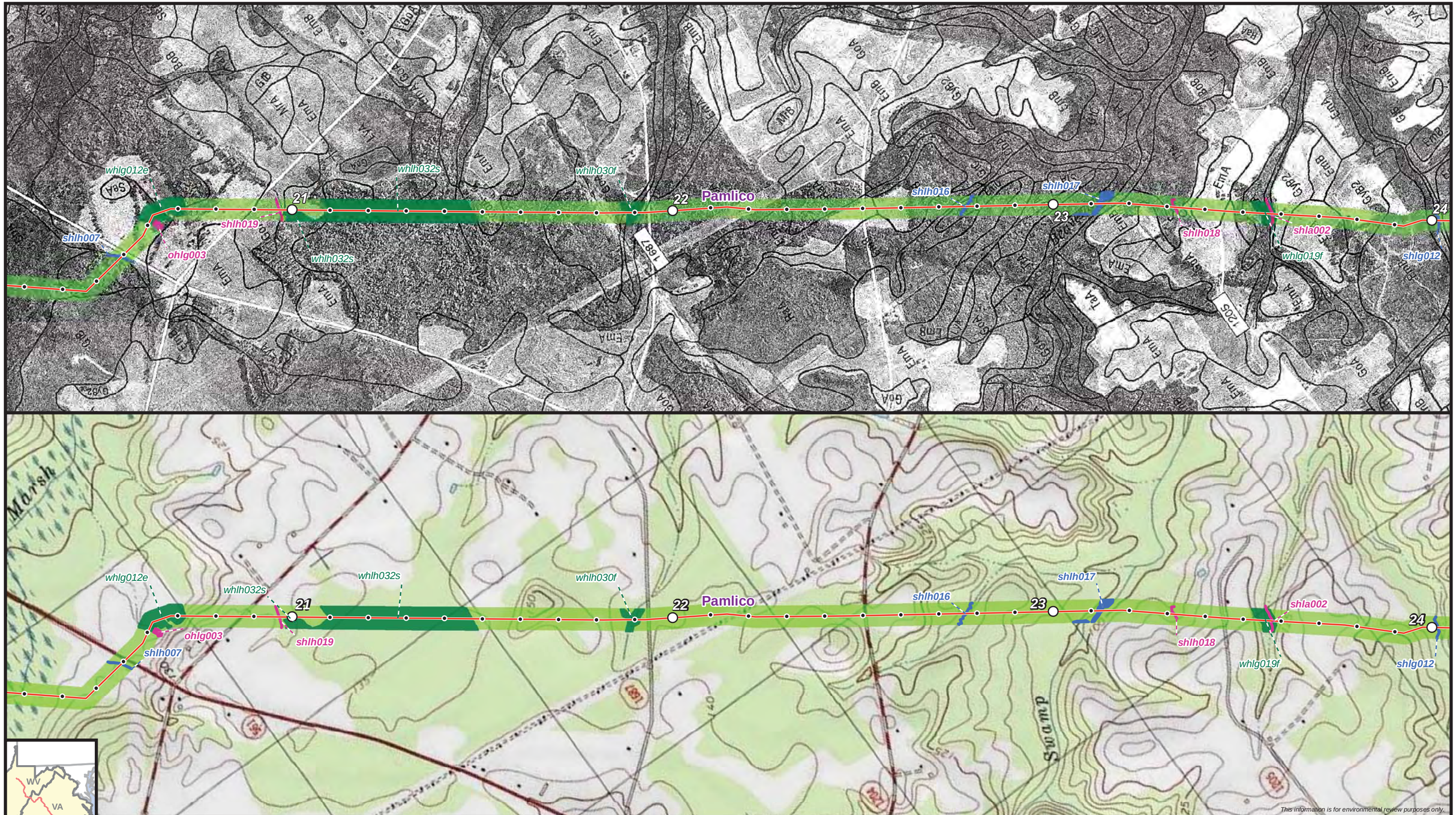

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- Non-Subject Wetland

** Subject to change or revision*

This information is for environmental review purposes only.

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Appendix 2
Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds
Halifax, North Carolina
Watershed: Pamlico

ERM

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Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

Halifax, North Carolina

Watershed: Pamlico

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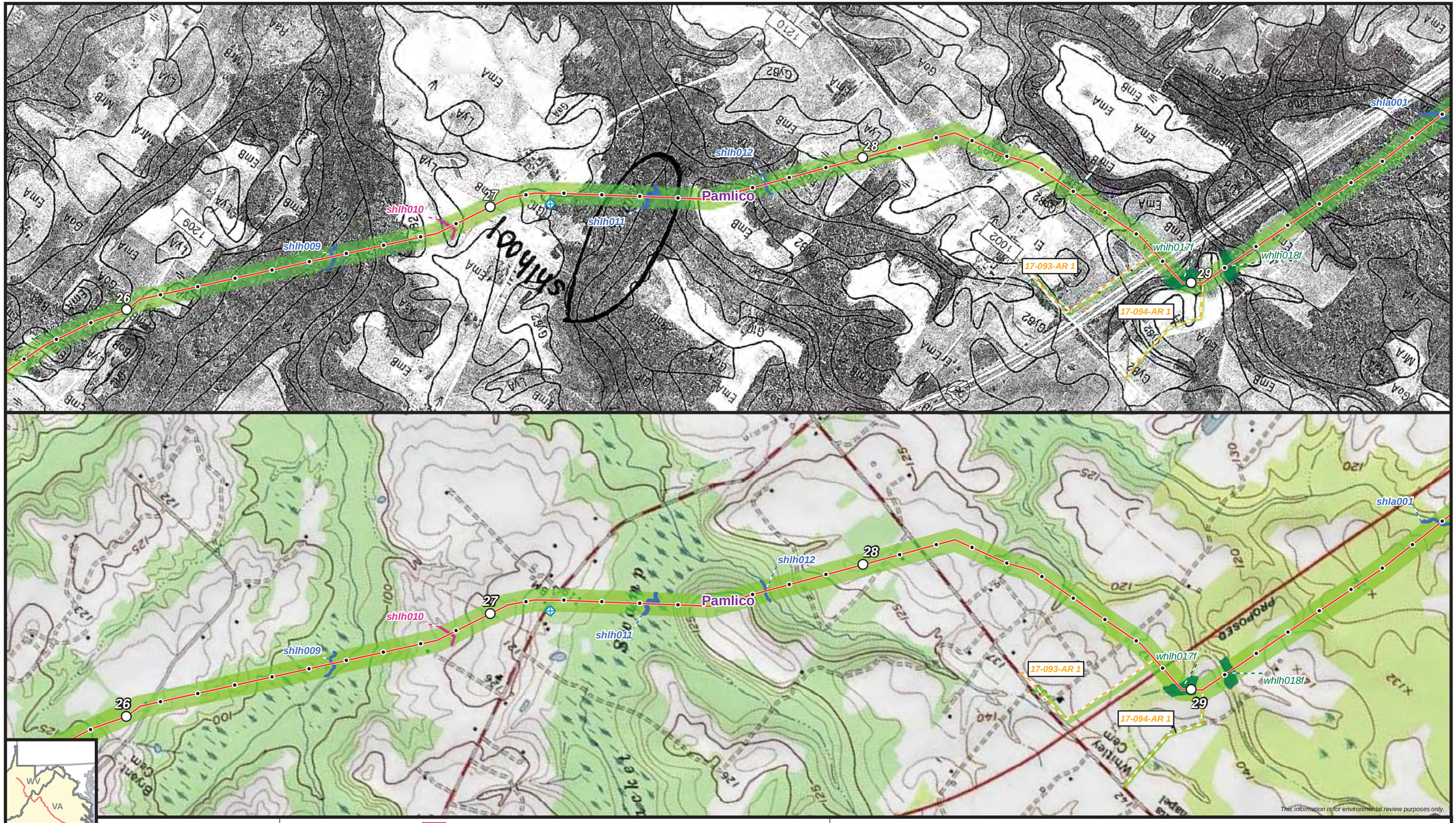

Appendix 2
Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds
Halifax, North Carolina
Watershed: Pamlico

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Pamlico

17-093-AR 1

17-094-AR 1

whlh017f

whlh018f

shla001

whlh025f

shlh015

shlh020

shlo001

shlo002

whlh023e

29

30

31

32

1219

1235

216

Whitley Cem

Swamp

PROPOSED

Knight Cems

This information is for environmental review purposes only.

WV

VA

NC

0 400 800 1,200

Feet

1:15,130

1 inch = 1,261 feet

Proposed Centerline
Milepost
Access Road
Watershed Boundary
Bio Survey Complete*
No Water Point

Non-Subject Waterbody
Subject Waterbody
Non-Subject Wetland

* Subject to change or revision

Atlantic Coast Pipeline

Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

Halifax, North Carolina

Watershed: Pamlico

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Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

Halifax, North Carolina

Watershed: Pamlico

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Appendix 2
Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds
Nash, North Carolina
Watershed: Pamlico

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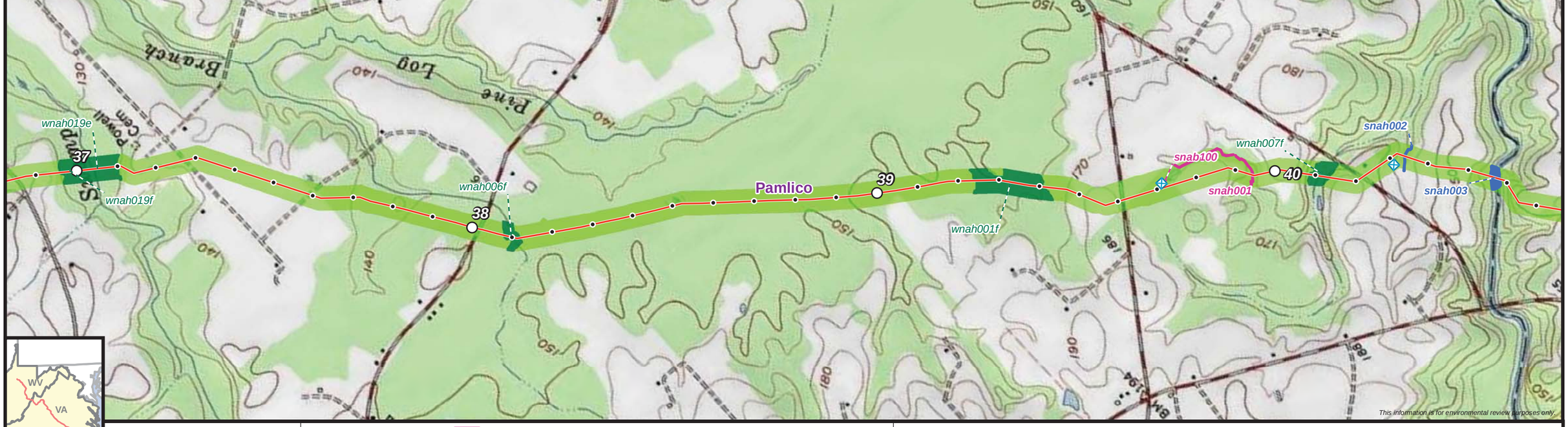
wnah019e
37
wnah019f
wnah006f
38
Pamlico
39
wnah001f
snab100
snah001
40
wnah007f
snah002
snah003



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Appendix 2
Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds
Nash, North Carolina
Watershed: Pamlico

ERM

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wnah007f
snah001
snah002
snah003
wnah012f
snah006
snah004
snah029
snah005
snah026
snah025
snab102
snab103
18-047-AR 1
Pamlico
40
41
42
43

0 400 800 1,200
Feet

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Atlantic Coast Pipeline

Appendix 2
Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds
Nash, North Carolina
Watershed: Pamlico

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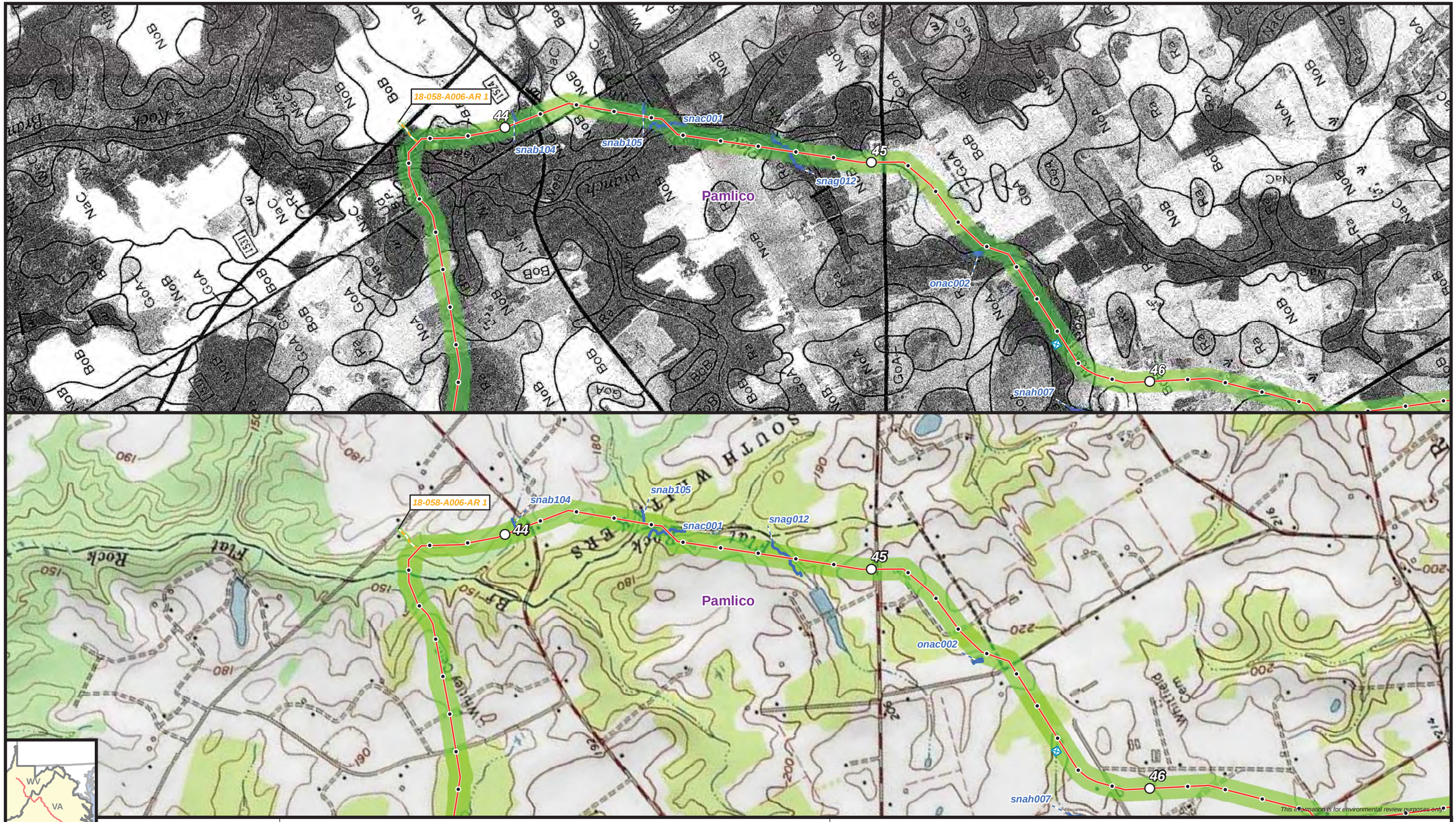

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Atlantic Coast Pipeline

Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

Nash, North Carolina

Watershed: Pamlico

ERM

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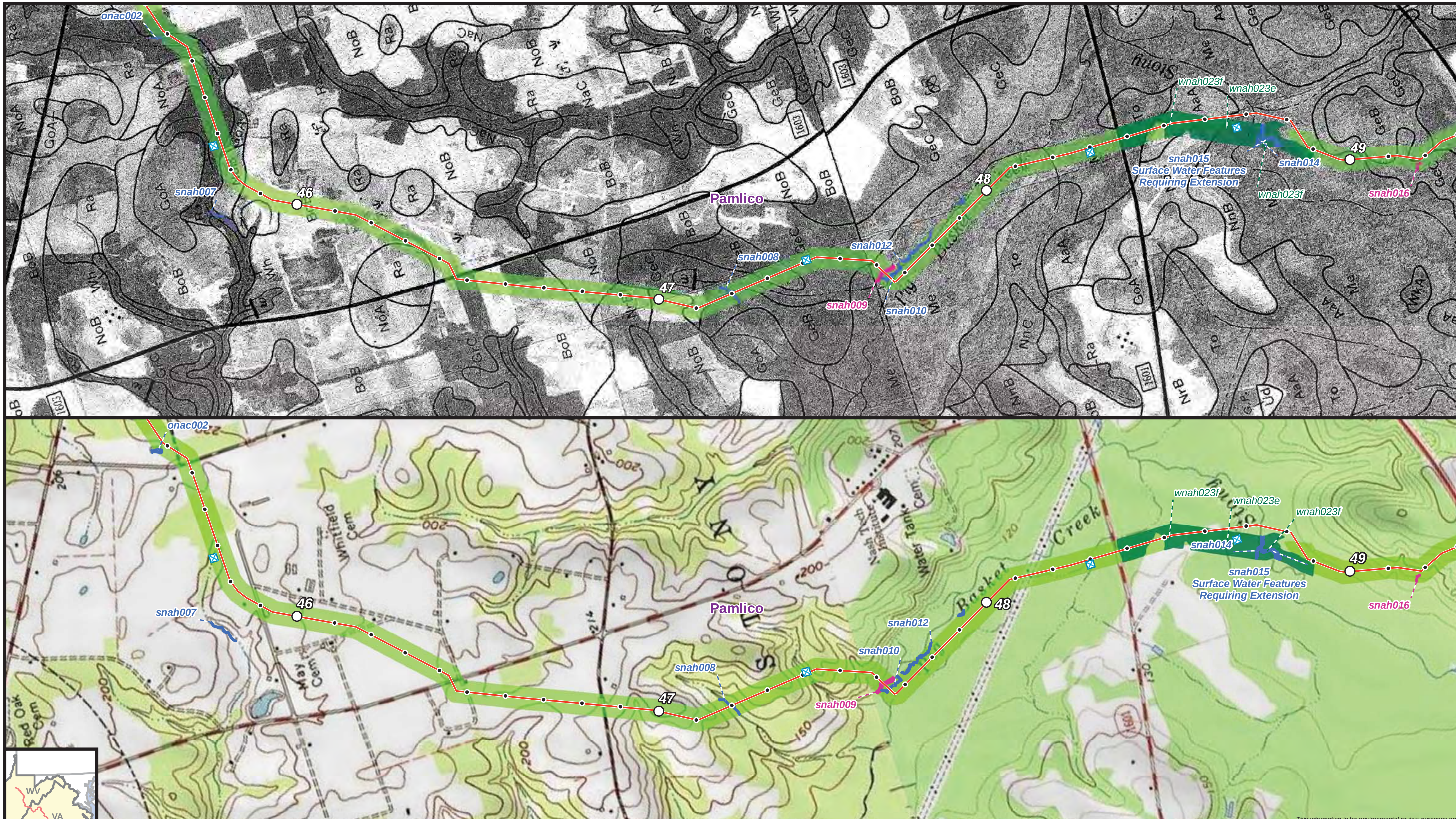

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Atlantic Coast Pipeline

Appendix 2
Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds
Nash, North Carolina
Watershed: Pamlico
Page 11 of 35

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18-101.AR5
18-101.AR3
50
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snag006
snah017
snag007
Pamlico
snag005
51
snah015
Surface Water Features
Requiring Extension
49
snah016
wnah023f
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Atlantic Coast Pipeline

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Nash, North Carolina
Watershed: Pamlico

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Nash, North Carolina
Watershed: Pamlico

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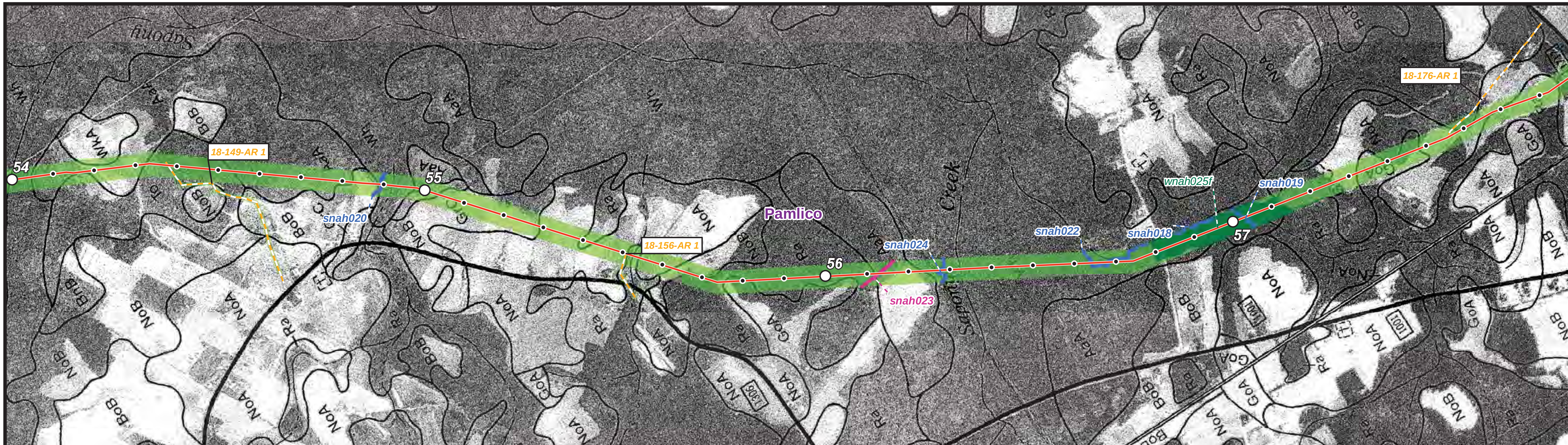

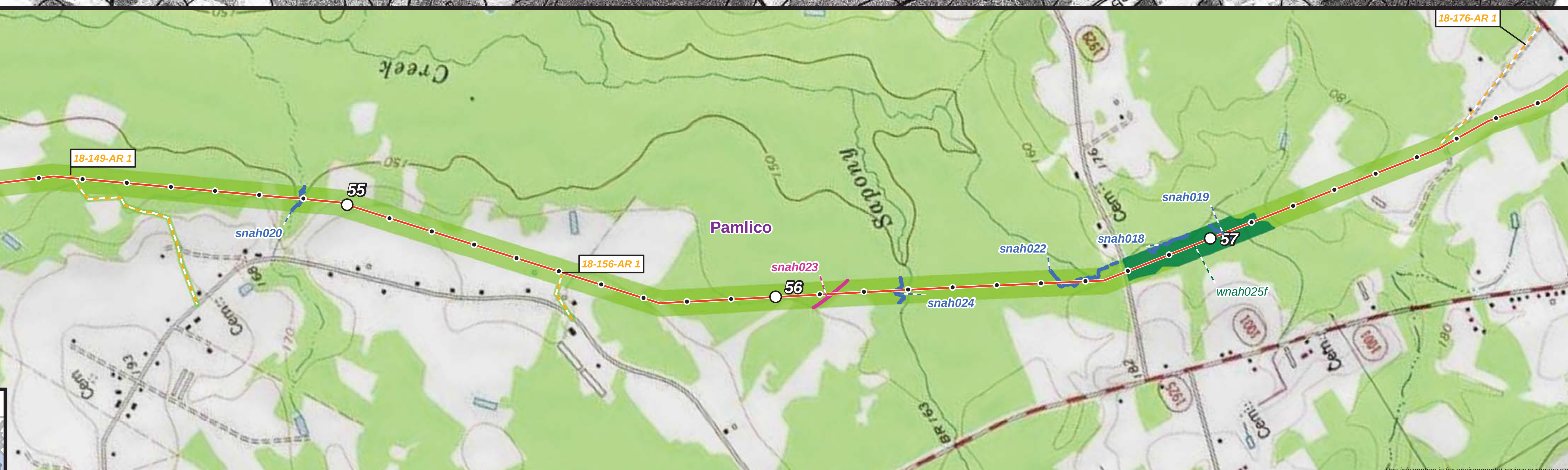

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Atlantic Coast Pipeline

Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

Nash, North Carolina

Watershed: Pamlico

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Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

Nash, North Carolina

Watershed: Pamlico

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Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

Nash, North Carolina

Watershed: Neuse

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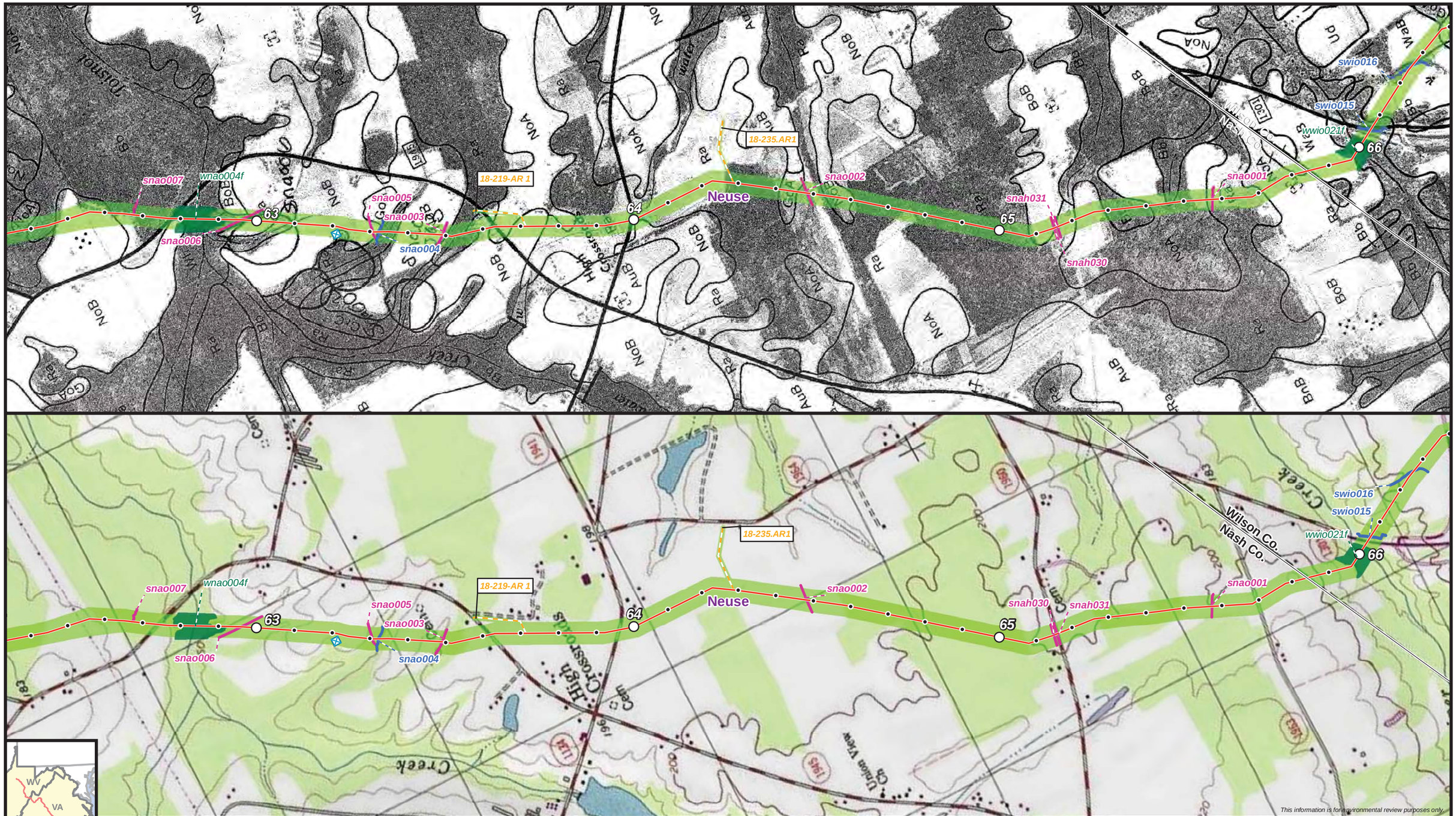

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Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

Nash, North Carolina

Watershed: Neuse

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Appendix 2
Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds
Wilson, North Carolina
Watershed: Neuse

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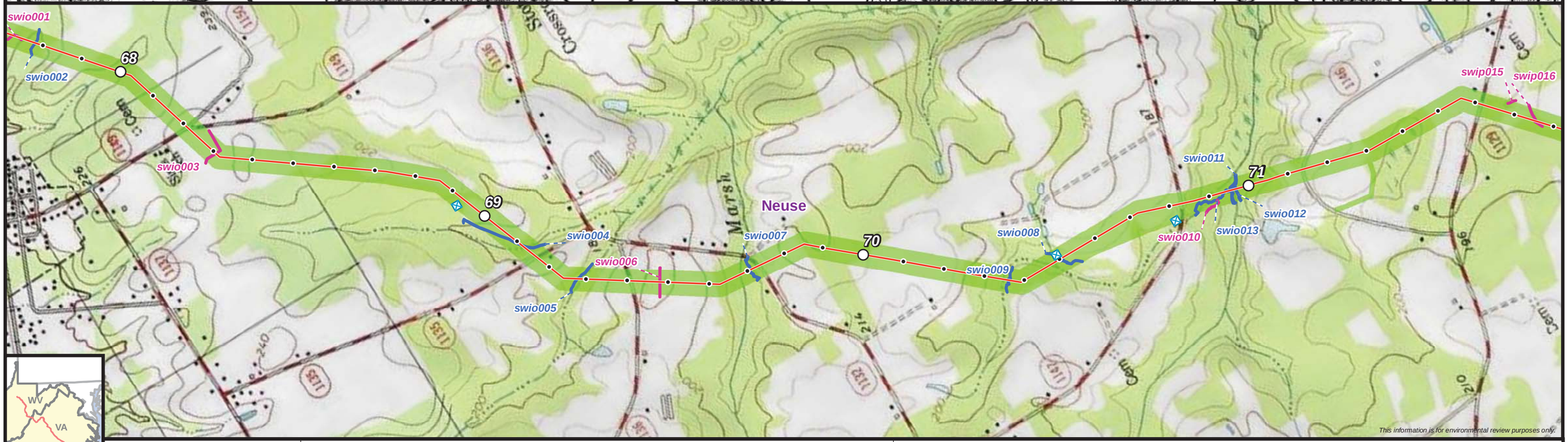
Marsh
Cross
Sims



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Atlantic Coast Pipeline

Appendix 2
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Wilson, North Carolina
Watershed: Neuse

ERM

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Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

Wilson, North Carolina

Watershed: Neuse

M:\Clients\D-F\DOM\SRPP_ArcGIS\2016\09\12_Agency_Review_Maps_TarPamNeuse_DOM_SRP_Neuse_Pamlico_Sheet_Maps_Combined.mxd, **REVISED:** 9/29/2016

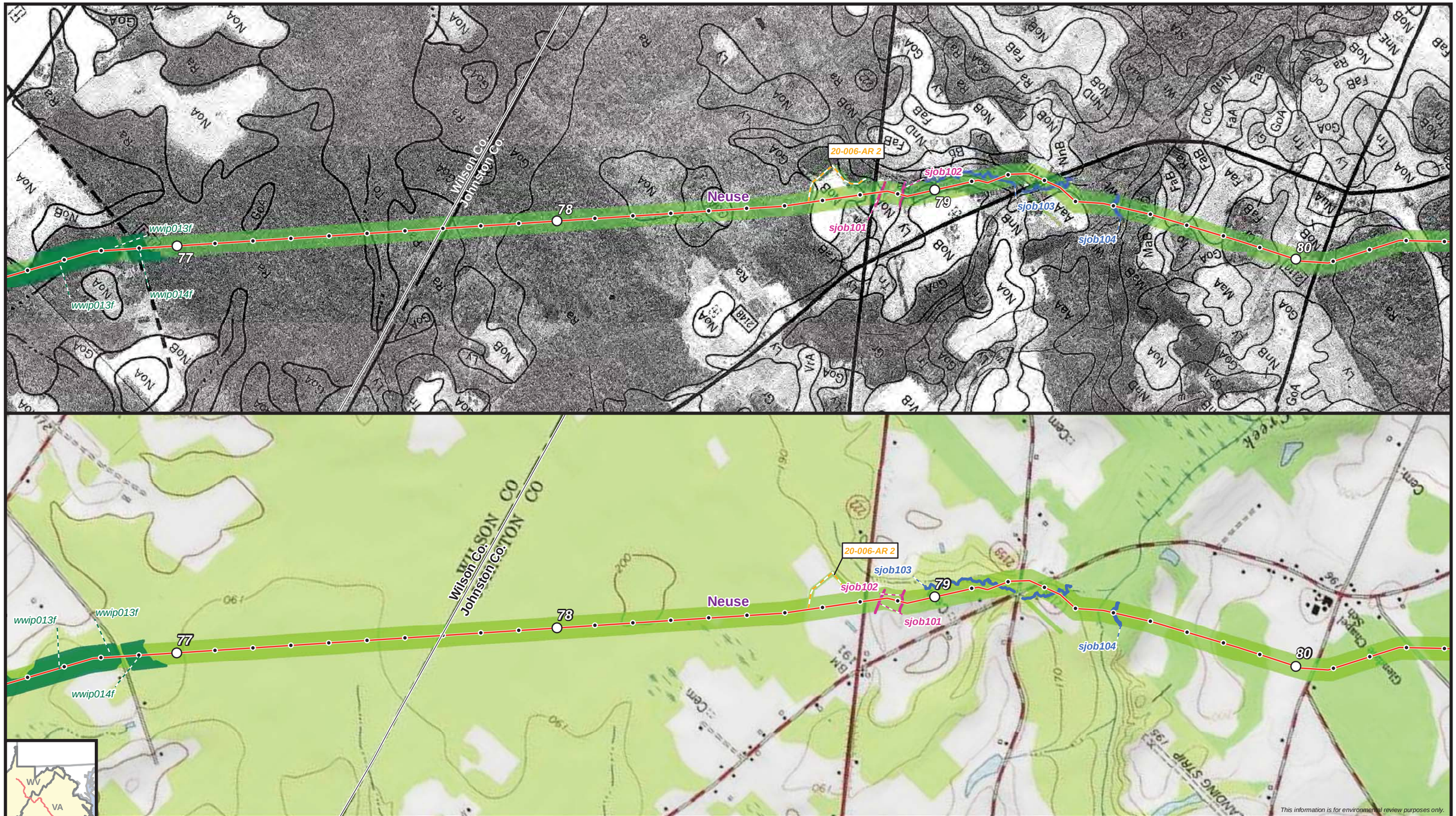
DRAWN BY: TAH

Appendix 2
Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds
Wilson, North Carolina
Watershed: Neuse

Atlantic Coast Pipeline
ERM

M:\Clients\D-F\DOM\SRPP_ArcGIS\2016\09\12_Agency_Review_Maps_TarPamNeuse_DOM_SRP_Neuse_Pamlico_Sheet_Maps_Combined.mxd, **REVISED:** 9/29/2016

DRAWN BY: TAH



0 400 800 1,200

Feet

1:15,130 1 inch = 1,261 feet

- Proposed Centerline
- Milepost
- Access Road
- Watershed Boundary
- Bio Survey Complete*
- No Water Point
- Non-Subject Waterbody
- Subject Waterbody
- Non-Subject Wetland

* *Subject to change or revision*

Atlantic Coast Pipeline

Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

Johnston, North Carolina

Watershed: Neuse

ERM

M:\Clients\D-F\DOM\SRPP_ArcGIS\2016\09\12_Agency_Review_Maps_TarPamNeuse_DOM_SRP_Neuse_Pamlico_Sheet_Maps_Combined.mxd, **REVISED:** 9/29/2016

DRAWN BY: TAH

Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

Johnston, North Carolina

Watershed: Neuse

M:\Clients\D-F\DOM\SRPP_ArcGIS\2016\09\12_Agency_Review_Maps_TarPamNeuse_DOM_SRP_Neuse_Pamlico_Sheet_Maps_Combined.mxd, **REVISED:** 9/29/2016

DRAWN BY: TAH

Atlantic Coast Pipeline

Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

Johnston, North Carolina

Watershed: Neuse

ERM

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DRAWN BY: TAH

0 400 800 1,200

Feet

1:15,130 1 inch = 1,261 feet

- Proposed Centerline
- Milepost
- Access Road
- Watershed Boundary
- Bio Survey Complete*
- No Water Point
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- Subject Waterbody
- Non-Subject Wetland

* *Subject to change or revision*

Atlantic Coast Pipeline

Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

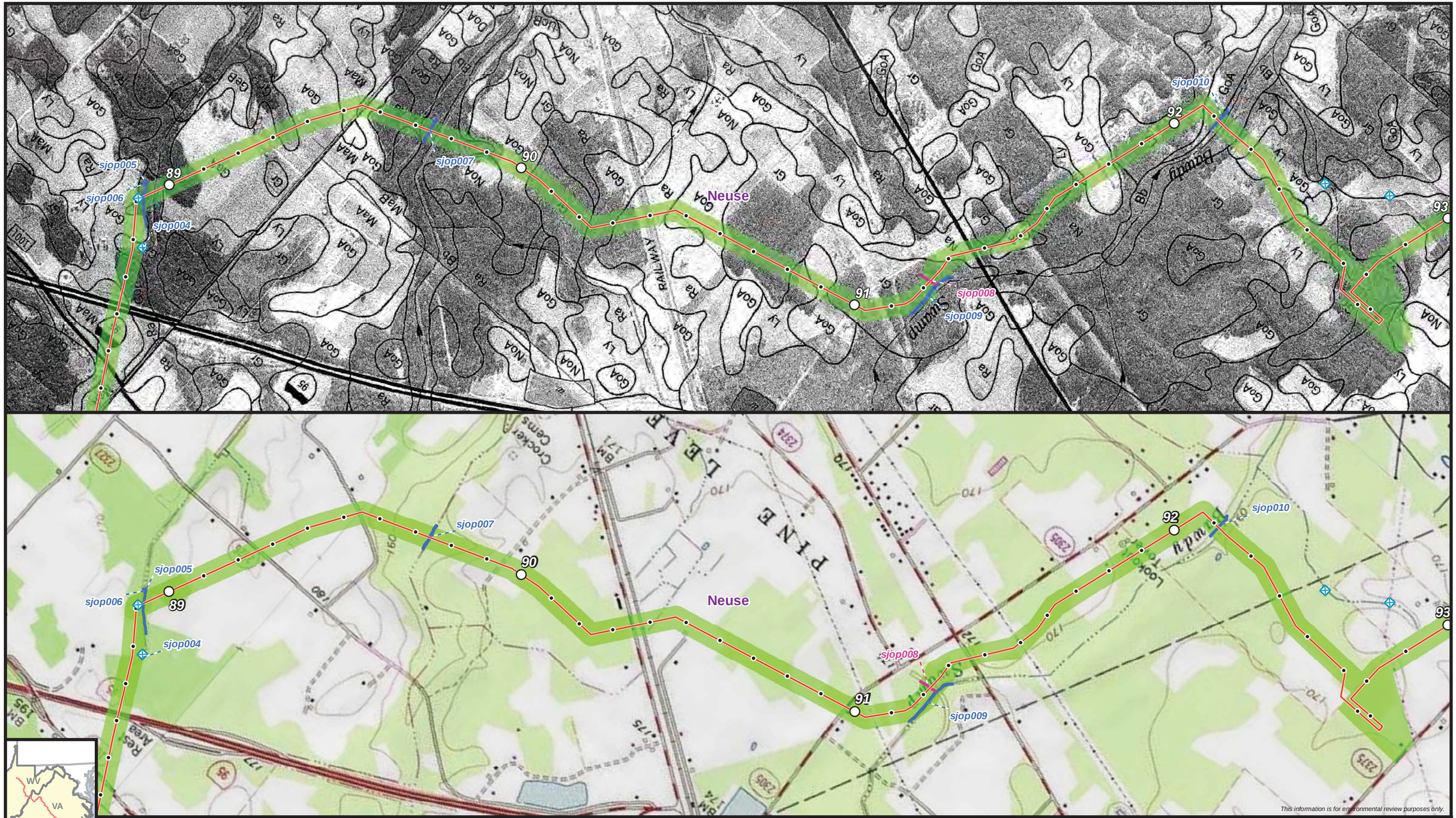
Johnston, North Carolina

Watershed: Neuse

ERM

M:\Clients\D-F\DOM\SRPP_ArcGIS\2016\09\12_Agency_Review_Maps_TarPamNeuse_DOM_SRP_Neuse_Pamlico_Sheet_Maps_Combined.mxd, **REVISED:** 9/29/2016

DRAWN BY: TAH



0 400 800 1,200
Feet

1:15,130 1 inch = 1,261 feet

- Proposed Centerline
- Milepost
- Access Road
- Watershed Boundary
- Bio Survey Complete*
- No Water Point
- Non-Subject Waterbody
- Subject Waterbody
- Non-Subject Wetland

* *Subject to change or revision*

This information is for environmental review purposes only.

Atlantic Coast Pipeline SM

Appendix 2
Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds
Johnston, North Carolina
Watershed: Neuse

ERM

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DRAWN BY: TAH

Atlantic Coast Pipeline

Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

Johnston, North Carolina

Watershed: Neuse

ERM

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DRAWN BY: TAH

Appendix 2
Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds
Johnston, North Carolina
Watershed: Neuse

Atlantic Coast Pipeline SM

ERM

M:\Clients\D-F\DOM\SRPP_ArcGIS\2016\09\12_Agency_Review_Maps_TarPamNeuse_DOM_SRP_Neuse_Pamlico_Sheet_Maps_Combined.mxd, **REVISED:** 9/29/2016

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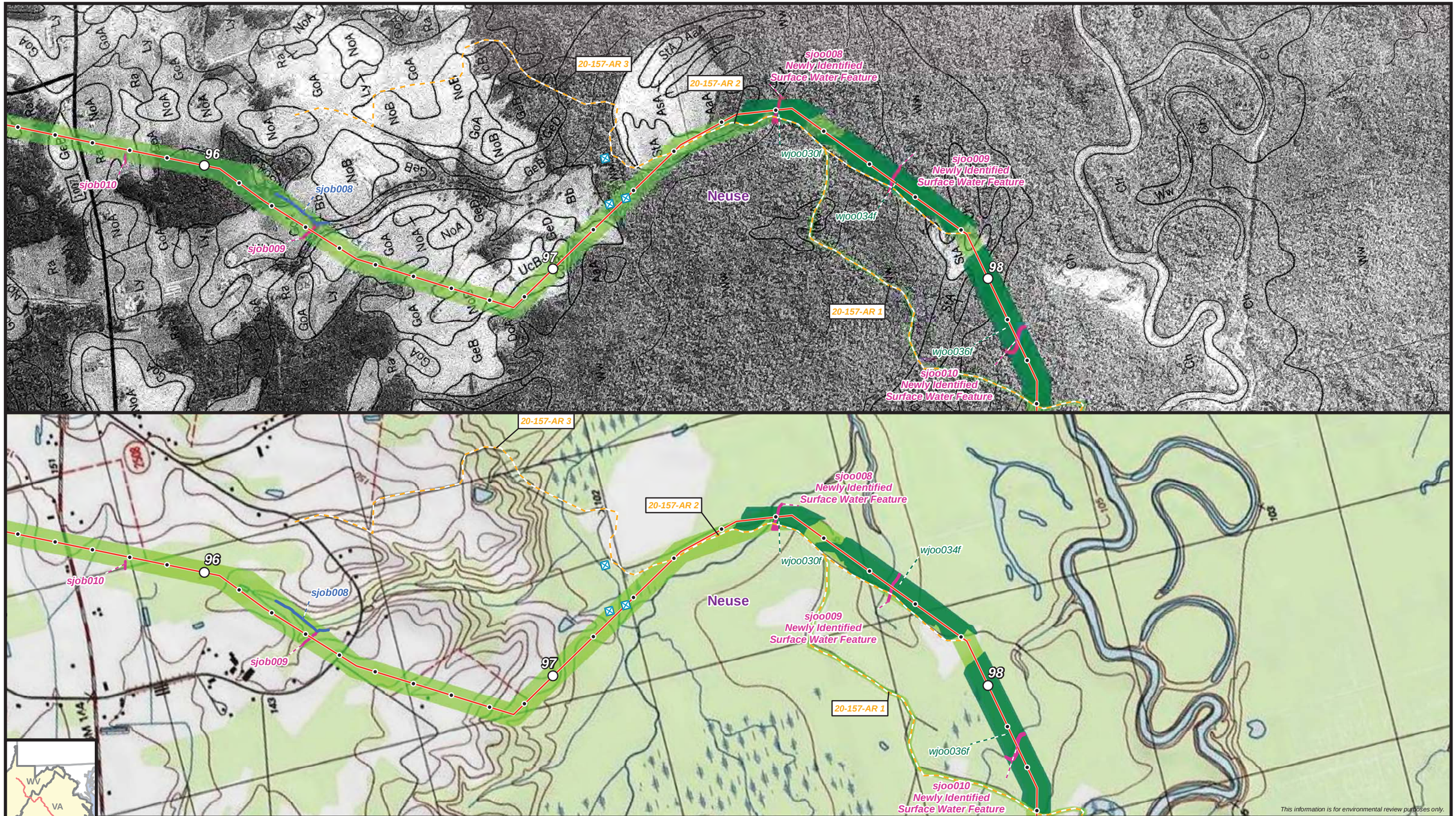

Appendix 2
Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds
Johnston, North Carolina
Watershed: Neuse

M:\Clients\D-F\DOM\SRPP_ArcGIS\2016\09\12_Agency_Review_Maps_TarPamNeuse_DOM_SRP_Neuse_Pamlico_Sheet_Maps_Combined.mxd, **REVISED:** 9/29/2016

DRAWN BY: TAH

20-157-AR 2
wjoo034f
98
sjoo010
Newly Identified
Surface Water Feature
sjoo009
Newly Identified
Surface Water Feature
wjoo036f
20-157-AR 1
sjob105
99
djod001
100
Neuse
wjoa021s
wjob113f
101
wjoa012f
This information is for environmental review purposes only.

WV
VA
NC

0 400 800 1,200
Feet
1:15,130
1 inch = 1,261 feet

Proposed Centerline
Milepost
Access Road
Watershed Boundary
Bio Survey Complete*
No Water Point
Non-Subject Waterbody
Subject Waterbody
Non-Subject Wetland
* Subject to change or revision

Atlantic Coast Pipeline

Appendix 2
Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds
Johnston, North Carolina
Watershed: Neuse

ERM

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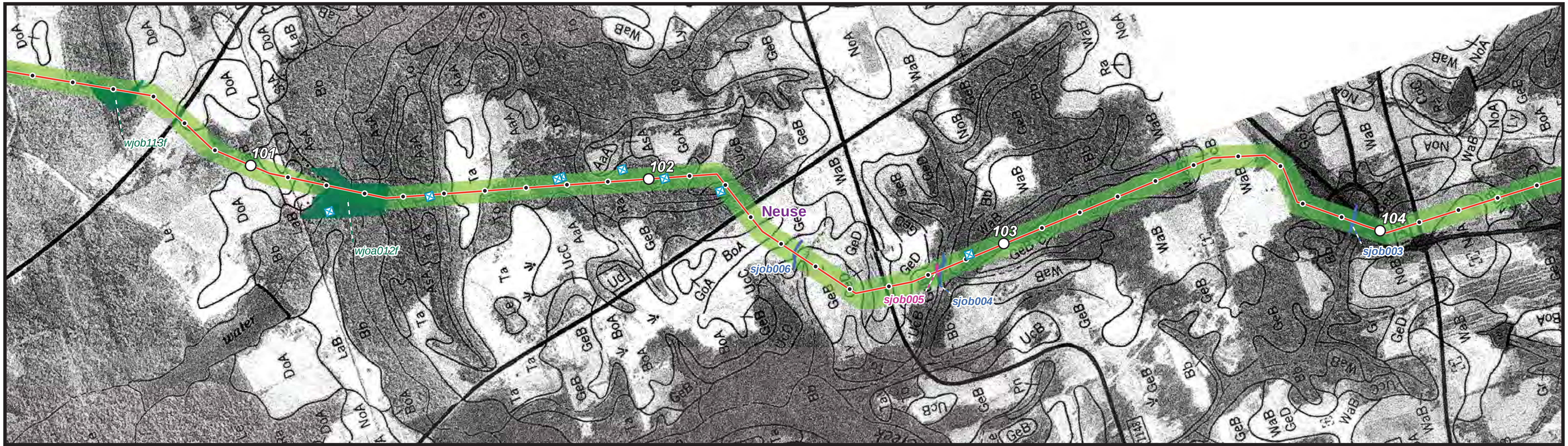

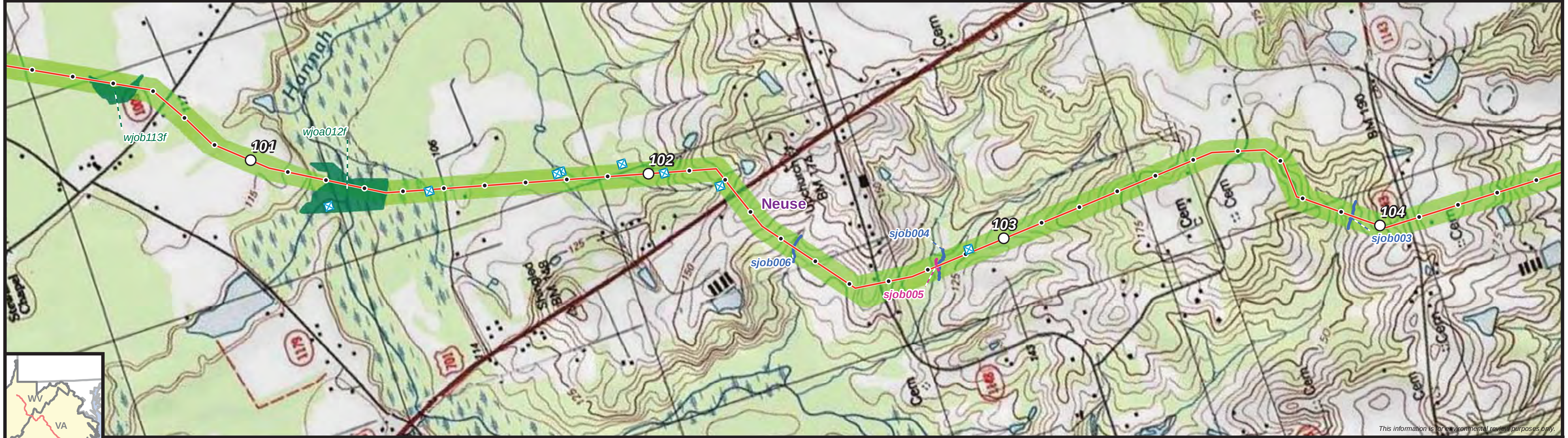

0 400 800 1,200
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- Watershed Boundary
- Bio Survey Complete*
- No Water Point
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- Subject Waterbody
- Non-Subject Wetland

* Subject to change or revision

Atlantic Coast Pipeline

Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

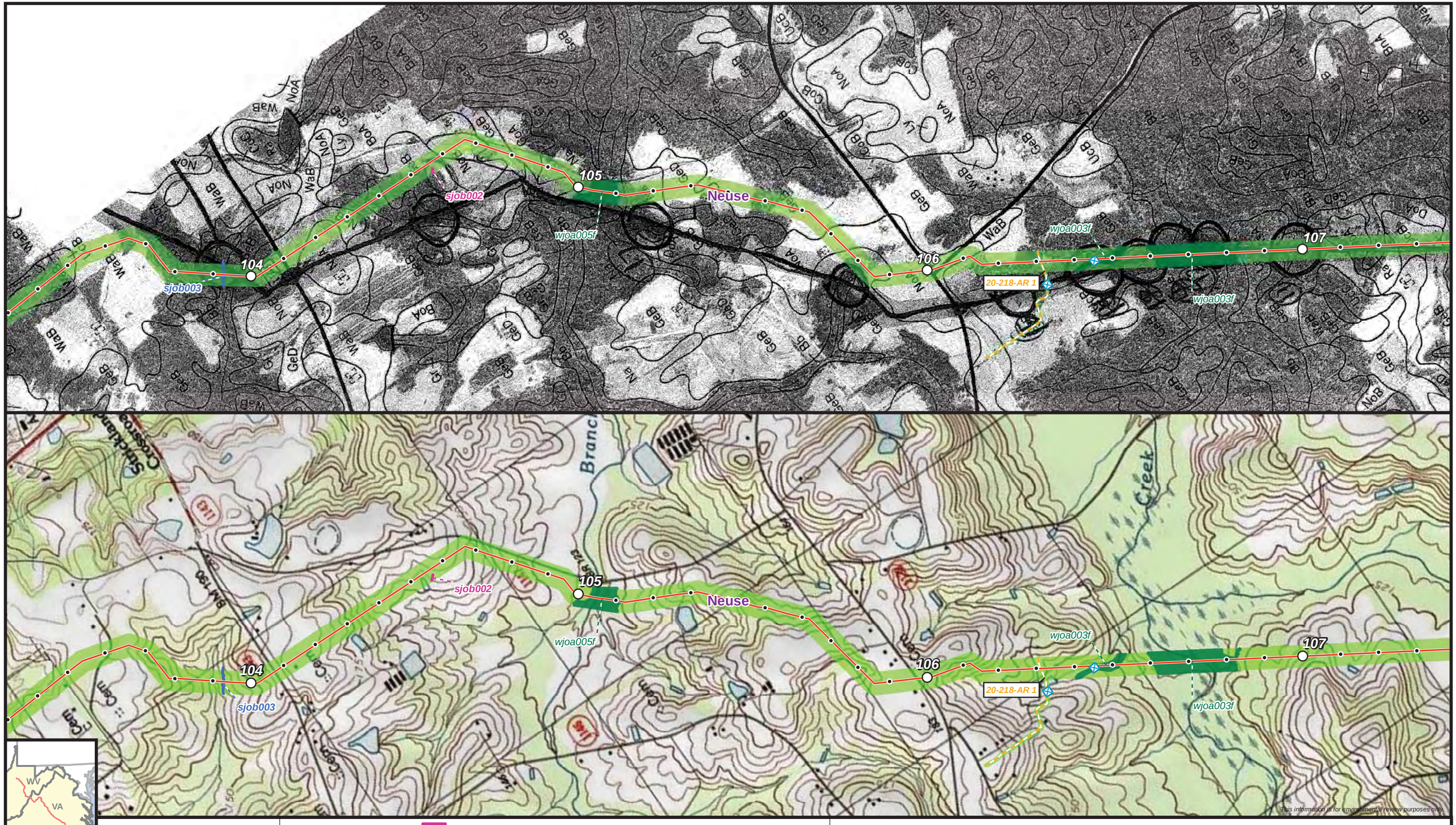
Johnston, North Carolina

Watershed: Neuse

ERM

M:\Clients\D-F\DOM\SRPP_ArcGIS\2016\09\12_Agency_Review_Maps_TarPamNeuse_DOM_SRP_Neuse_Pamlico_Sheet_Maps_Combined.mxd, **REVISED:** 9/29/2016

DRAWN BY: TAH



Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

Johnston, North Carolina

Watershed: Neuse

M:\Clients\D-F\DOM\SRPP_ArcGIS\2016\09\12_Agency_Review_Maps_TarPamNeuse_DOM_SRP_Neuse_Pamlico_Sheet_Maps_Combined.mxd, **REVISED:** 9/29/2016

DRAWN BY: TAH

wjoa002f
20-229-AR 1
20-239-AR 1
wjoa003f
107
108
Neuse
109
110
sjob001
20-218-AR 1
wjoa003f
wjoa001f

0 400 800 1,200
Feet

1:15,130 1 inch = 1,261 feet

- Proposed Centerline
- Milepost
- Access Road
- Watershed Boundary
- Bio Survey Complete*
- No Water Point
- Non-Subject Waterbody
- Subject Waterbody
- Non-Subject Wetland

* Subject to change or revision

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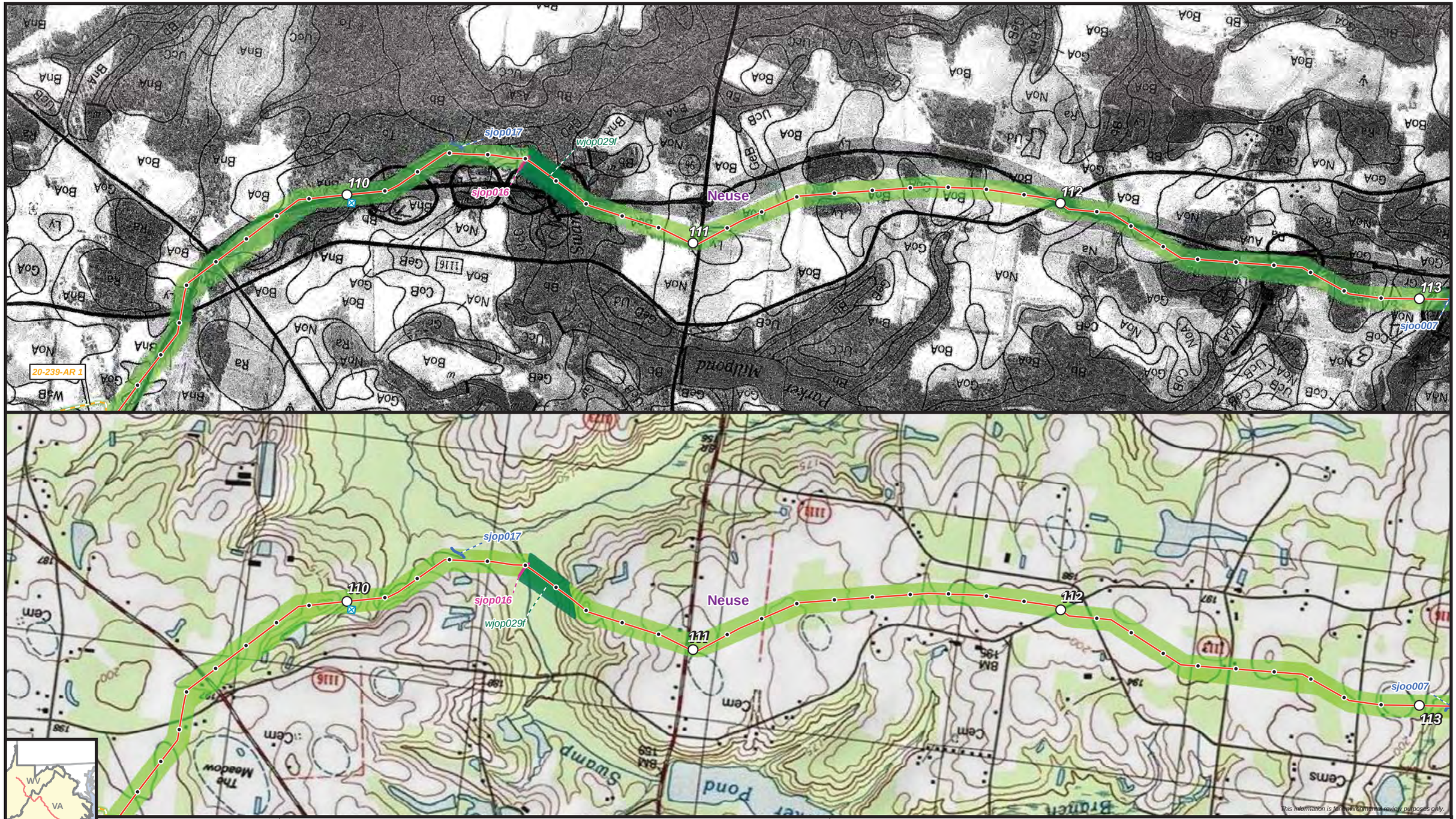
Appendix 2
Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds
Johnston, North Carolina
Watershed: Neuse

M:\Clients\D-F\DOM\SRPP_ArcGIS\2016\09\12_Agency_Review_Maps_TarPamNeuse_DOM_SRP_Neuse_Pamlico_Sheet_Maps_Combined.mxd, **REVISED:** 9/29/2016

DRAWN BY: TAH



Appendix 2

Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds

Johnston, North Carolina

Watershed: Neuse

M:\Clients\D-F\DOM\SRPP_ArcGIS\2016\09\12_Agency_Review_Maps_TarPamNeuse_DOM_SRP_Neuse_Pamlico_Sheet_Maps_Combined.mxd, **REVISED:** 9/29/2016

DRAWN BY: TAH

112
113
114
115
sjoo007
sjoe007
sjob100
sjoq001
Newly Identified
Surface Water Feature
wjoq002f
20-394-AR 1
Neuse
Cape
Fear
Johnston Co.
Sampson Co.
Buffalo Creek
WV
VA
NC
0 400 800 1,200
Feet
1:15,130
1 inch = 1,261 feet
Proposed Centerline
Milepost
Access Road
Watershed Boundary
Bio Survey Complete*
No Water Point
Non-Subject Waterbody
Subject Waterbody
Non-Subject Wetland
* Subject to change or revision
This information is for environmental review purposes only.
Atlantic Coast Pipeline
Appendix 2
Surveyed Waterbodies within the Tar-Pamlico/Neuse Watersheds
Johnston, North Carolina
Watershed: Neuse

ERM
M:\Clients\D-F\DOM\SRPP_ArcGIS\2016\09\12_Agency_Review_Maps_TarPamNeuse_DOM_SRP_Neuse_Pamlico_Sheet_Maps_Combined.mxd, **REVISED:** 9/29/2016
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Appendix 2 – Part II

Table 2-1 – ACP Field Surveyed Data within Tar-Pamlico and Neuse Watersheds

TABLE 2-1

ATLANTIC COAST PIPELINE

Surveyed Waterbodies Along the Tar-Pamlico and Neuse Watersheds

Watershed	County	Waterbody ID	Milepost	Wetland ID	USGS Waterbody Name	SQUA Score	ID Score	Stream Determination	Topo Map	Soils Map	Subject to Buffer Rule	Page Number
Tar-Pam	Halifax	shlg008	18.1	n/a	UNT to Marsh Swamp	21.0	14.8	Ephemeral	n/a	n/a	Not Subject	1
Tar-Pam	Halifax	shlg007	18.2	n/a	UNT to Marsh Swamp	23.0	25.8	Intermittent	n/a	n/a	Not Subject	1
Tar-Pam	Halifax	shlb050	18.5	n/a	UNT to Marsh Swamp	27.0	25.5	Perennial	X	X	Subject	1
Tar-Pam	Halifax	shlg009	18.5	n/a	UNT to Marsh Swamp	30.0	30.0	Perennial	X	X	Subject	1
Tar-Pam	Halifax	shlh008	20.0	n/a	Marsh Swamp	72.0	38.5	Perennial	X	X	Subject	1
Tar-Pam	Halifax	ohlg003	20.5	n/a	Unnamed Pond	n/a	n/a	n/a	X	n/a	Not Subject	1, 2
Tar-Pam	Halifax	shlh007	20.5	n/a	UNT to Marsh Swamp	18.0	23.0	Intermittent	n/a	X	Subject	1, 2
Tar-Pam	Halifax	shlh019	21.0	n/a	UNT to Marsh Swamp	22.2	21.8	Intermittent	n/a	n/a	Not Subject	2
Tar-Pam	Halifax	isdha005*	21.9	WHLH030f	UNT to Marsh Swamp	n/a	n/a	n/a	X	n/a	Not Subject	2
Tar-Pam	Halifax	shlh016	22.8	n/a	UNT to Beaverdam Swamp	47.0	28.8	Intermittent	X	n/a	Subject	2
Tar-Pam	Halifax	shlh017	23.1	n/a	Beaverdam Swamp	72.0	50.5	Perennial	X	X	Subject	2, 3
Tar-Pam	Halifax	shlh018	23.3	n/a	UNT to Beaverdam Swamp	30.0	22.3	Intermittent	n/a	n/a	Not Subject	2, 3
Tar-Pam	Halifax	shla002	23.5	WHLG019f	UNT to Beaverdam Swamp	52.0	28.5	Intermittent	X	X	Not Subject	2, 3
Tar-Pam	Halifax	shlg012	24.0	n/a	UNT to Beaverdam Swamp	78.0	44.5	Perennial	X	n/a	Subject	2, 3
Tar-Pam	Halifax	isdha004*	24.6	WHLG016f	UNT to Burnt Goat Swamp	n/a	n/a	n/a	X	X	Not Subject	3
Tar-Pam	Halifax	shlb100	25.0	n/a	UNT to Beaverdam Creek	36.0	21.8	Intermittent	X	X	Subject	3
Tar-Pam	Halifax	shlh009	26.5	n/a	UNT to Burnt Goat Swamp	82.0	>30.0	Perennial	X	X	Subject	3, 4
Tar-Pam	Halifax	shlh010	26.9	n/a	UNT to Burnt Goat Swamp	15.0	22.0	Intermittent	n/a	n/a	Not Subject	4
Tar-Pam	Halifax	shlh011	27.4	n/a	Jacket Swamp	73.0	45.0	Perennial	X	X	Subject	4
Tar-Pam	Halifax	shlh012	27.7	n/a	UNT to Jacket Swamp	40.0	25.3	Intermittent	X	n/a	Subject	4
Tar-Pam	Halifax	isdha012*	28.9	WHLH017f	UNT to Breeches Swamp	n/a	n/a	n/a	X	X	Not Subject	4, 5
Tar-Pam	Halifax	isdha011*	29.1	WHLH018f	UNT to Breeches Swamp	n/a	n/a	n/a	X	X	Not Subject	4, 5
Tar-Pam	Halifax	shla001	29.8	WHLH020f	Breeches Swamp	54.0	34.5	Perennial	X	X	Subject	4, 5
Tar-Pam	Halifax	shlh015	30.5	n/a	UNT to Rocky Swamp	23.0	20.8	Intermittent	n/a	X	Not Subject	5
Tar-Pam	Halifax	shlh020	31.0	n/a	UNT to Rocky Swamp	31.0	21.3	Intermittent	n/a	n/a	Not Subject	5
Tar-Pam	Halifax	shlo001	31.2	n/a	UNT to Rocky Swamp	44.0	22.5	Intermittent	X	X	Subject	5
Tar-Pam	Halifax	shlo002	31.2	n/a	UNT to Rocky Swamp	43.0	17.0	Intermittent	X	n/a	Subject	5
Tar-Pam	Halifax	isdha001*	32.0	WHLH023e	Rocky Swamp	n/a	n/a	n/a	X	X	Not Subject	5, 6
Tar-Pam	Halifax	shlh013	32.7	n/a	UNT to Rocky Swamp	14.0	21.5	Intermittent	X	n/a	Not Subject	6
Tar-Pam	Halifax	shlh014	32.8	n/a	UNT to Rocky Swamp	14.0	21.5	Intermittent	X	n/a	Not Subject	6
Tar-Pam	Halifax	shlh022	33.4	n/a	UNT to Fishing Creek	73.0	32.5	Perennial	X	X	Subject	6
Tar-Pam	Halifax	shlg011	33.8	n/a	UNT to Fishing Creek	72.0	34.0	Perennial	X	n/a	Subject	6
Tar-Pam	Nash	snag001	34.0	n/a	Fishing Creek	84.0	>30.0	Perennial	X	X	Subject	6
Tar-Pam	Nash	snag003	34.8	n/a	UNT to Fishing Creek	45.0	22.0	Intermittent	n/a	n/a	Not Subject	6, 7
Tar-Pam	Nash	snag002	34.8	n/a	UNT to Fishing Creek	49.0	24.0	Intermittent	X	X	Subject	6, 7
Tar-Pam	Nash	snag004	35.0	n/a	UNT to Fishing Creek	45.0	22.0	Intermittent	n/a	n/a	Not Subject	6, 7
Tar-Pam	Nash	isdna012*	37.0	WNAH019f	Black Swamp	n/a	n/a	n/a	X	X	Not Subject	7, 8
Tar-Pam	Nash	snab100	39.8	n/a	UNT to Swift Creek	30.0	23.0	Intermittent	n/a	n/a	Not Subject	8, 9

TABLE 2-1

ATLANTIC COAST PIPELINE

Surveyed Waterbodies Along the Tar-Pamlico and Neuse Watersheds

Watershed	County	Waterbody ID	Milepost	Wetland ID	USGS Waterbody Name	SQUA Score	ID Score	Stream Determination	Topo Map	Soils Map	Subject to Buffer Rule	Page Number
Tar-Pam	Nash	snah001	40.0	n/a	UNT to Swift Creek	46.0	28.8	Intermittent	n/a	n/a	Not Subject	8, 9
Tar-Pam	Nash	snah002	40.4	n/a	UNT to Swift Creek	28.0	32.5	Perennial	n/a	X	Subject	8, 9
Tar-Pam	Nash	snah003	40.6	n/a	Swift Creek	63.0	60.5	Perennial	X	X	Subject	8, 9
Tar-Pam	Nash	snah006	40.9	n/a	UNT to Flat Rock Branch	33.0	32.3	Perennial	X	X	Subject	9
Tar-Pam	Nash	snah005	41.6	n/a	UNT to Flat Rock Branch	60.0	41.5	Perennial	X	X	Subject	9
Tar-Pam	Nash	snah004	41.7	n/a	UNT to Flat Rock Branch	56.0	33.3	Perennial	X	X	Subject	9
Tar-Pam	Nash	snah025	42.0	WNAH034f	UNT to Flat Rock Branch	75.0	45.0	Perennial	X	X	Subject	9
Tar-Pam	Nash	snah029	42.0	WNAH034f	UNT to Flat Rock Branch	60.0	20.5	Intermittent	X	X	Subject	9
Tar-Pam	Nash	snah026	42.2	n/a	UNT to Flat Rock Branch	59.0	36.0	Perennial	X	X	Subject	9
Tar-Pam	Nash	snab102	42.8	n/a	UNT to Flat Rock Branch	58.0	43.5	Perennial	n/a	n/a	Subject	9
Tar-Pam	Nash	snab103	43.0	n/a	UNT to Flat Rock Branch	45.0	21.3	Intermittent	X	X	Subject	9
Tar-Pam	Nash	snab104	44.0	n/a	UNT to Flat Rock Branch	27.0	19.3	Intermittent	X	n/a	Subject	10
Tar-Pam	Nash	snab105	44.4	WNAC005s	UNT to Flat Rock Branch	54.0	36.0	Perennial	X	X	Subject	10
Tar-Pam	Nash	snac001	44.5	WNAC005f	Flat Rock Branch	78.0	38.8	Perennial	X	X	Subject	10
Tar-Pam	Nash	snag012	44.8	WNAG012f	Flat Rock Branch	83.0	42.0	Perennial	X	X	Subject	10
Tar-Pam	Nash	onac002	45.4	WNAC006f	Unnamed Pond	n/a	n/a	n/a	n/a	X	Subject	10, 11
Tar-Pam	Nash	snah008	47.2	n/a	UNT to Pig Basket Creek	63.0	39.0	Perennial	X	X	Subject	11
Tar-Pam	Nash	snah009	47.6	n/a	Pig Basket Creek	65.0	45.8	Perennial	n/a	n/a	Not Subject	11
Tar-Pam	Nash	snah010	47.6	n/a	UNT to Pig Basket Creek	40.0	26.8	Intermittent	X	X	Subject	11
Tar-Pam	Nash	snah012	47.9	n/a	Pig Basket Creek	58.0	36.0	Perennial	X	X	Subject	11
Tar-Pam	Nash	snah015	48.8	WNAH023f	Stony Creek	68.0	43.0	Perennial	X	X	Subject	11, 12
Tar-Pam	Nash	snah016	49.2	n/a	UNT to Stony Creek	46.0	36.5	Perennial	n/a	n/a	Not Subject	11, 12
Tar-Pam	Nash	snah017	49.5	n/a	UNT to Stony Creek	47.0	39.8	Perennial	n/a	X	Subject	12
Tar-Pam	Nash	snag007	50.2	n/a	UNT to Stony Creek	40.0	25.5	Intermittent	n/a	n/a	Not Subject	12
Tar-Pam	Nash	snag008	50.2	n/a	UNT to Stony Creek	49.0	30.5	Perennial	n/a	n/a	Not Subject	12
Tar-Pam	Nash	snag006	50.3	n/a	UNT to Stony Creek	67.0	31.0	Perennial	X	X	Subject	12
Tar-Pam	Nash	snag005	50.8	n/a	UNT to Stony Creek	82.0	30.0	Perennial	n/a	X	Subject	12
Tar-Pam	Nash	snag011	51.5	n/a	UNT to Stony Creek	54.0	32.8	Perennial	X	X	Subject	12, 13
Tar-Pam	Nash	snag010	51.6	n/a	UNT to Stony Creek	80.0	30.0	Perennial	n/a	n/a	Not Subject	12, 13
Tar-Pam	Nash	snag009	51.6	n/a	UNT to Stony Creek	81.0	40.5	Perennial	n/a	X	Subject	12, 13
Tar-Pam	Nash	onag002	52.0	WNAG007f	UNT to Sapony Creek	n/a	n/a	n/a	n/a	X	Subject	12, 13
Tar-Pam	Nash	snab101	52.0	n/a	UNT to Sapony Creek	48.0	34.5	Perennial	n/a	X	Subject	12, 13
Tar-Pam	Nash	snah021	53.3	n/a	UNT to Sapony Creek	51.0	34.0	Perennial	X	X	Subject	13
Tar-Pam	Nash	snah020	54.8	n/a	UNT to Sapony Creek	76.0	43.5	Perennial	X	X	Subject	13, 14
Tar-Pam	Nash	snah023	56.0	n/a	UNT to Sapony Creek	29.0	32.0	Perennial	n/a	n/a	Not Subject	14
Tar-Pam	Nash	snah024	56.3	n/a	Sapony Creek	71.0	51.0	Perennial	X	X	Subject	14
Tar-Pam	Nash	snah022	56.8	n/a	UNT to Sapony Creek	66.0	47.0	Perennial	X	X	Subject	14, 15
Tar-Pam	Nash	snah018	56.9	n/a	UNT to Sapony Creek	54.0	38.3	Perennial	X	X	Subject	14, 15

TABLE 2-1

ATLANTIC COAST PIPELINE

Surveyed Waterbodies Along the Tar-Pamlico and Neuse Watersheds

Watershed	County	Waterbody ID	Milepost	Wetland ID	USGS Waterbody Name	SQUA Score	ID Score	Stream Determination	Topo Map	Soils Map	Subject to Buffer Rule	Page Number
Tar-Pam	Nash	isdna003*	57.1	WNAH025f	UNT to Sapony Creek	n/a	n/a	n/a	n/a	n/a	Not Subject	14, 15
Tar-Pam	Nash	snah019	57.1	n/a	UNT to Sapony Creek	39.0	27.3	Intermittent	X	X	Subject	14, 15
Tar-Pam	Nash	snap004	58.8	n/a	UNT to Tar River	66.0	30.5	Perennial	X	X	Subject	15
Tar-Pam	Nash	snap001	59.1	n/a	UNT to Tar River	45.0	26.5	Intermittent	n/a	n/a	Not Subject	15
Tar-Pam	Nash	snap002	59.1	n/a	UNT to Tar River	48.0	22.5	Intermittent	n/a	n/a	Not Subject	15
Tar-Pam	Nash	snap003	59.1	n/a	UNT to Tar River	45.0	26.0	Intermittent	n/a	n/a	Not Subject	15
Tar-Pam	Nash	snao011	59.4	n/a	Tar River	77.0	39.5	Perennial	X	X	Subject	15
Tar-Pam	Nash	snao010	59.8	n/a	UNT to Tar River	32.0	10.3	Ephemeral	n/a	n/a	Not Subject	15, 16
Tar-Pam	Nash	snao009	60.4	n/a	UNT to Tar River	30.0	18.0	Ephemeral	n/a	n/a	Not Subject	15, 16
Neuse	Nash	isdna002*	60.8	WNAO010f	Little Swamp	n/a	n/a	n/a	X	X	Not Subject	16
Neuse	Nash	snao008	61.9	n/a	UNT to Toisnot Swamp	17.0	12.0	Ephemeral	X	X	Not Subject	16
Neuse	Nash	snao007	62.7	n/a	UNT to Toisnot Swamp	59.0	25.5	Intermittent	n/a	n/a	Not Subject	16, 17
Neuse	Nash	isdna001*	62.8	WNAO004f	Toisnot Swamp	n/a	n/a	n/a	X	n/a	Not Subject	16, 17
Neuse	Nash	snao006	63.0	n/a	UNT to Toisnot Swamp	25.0	11.5	Ephemeral	n/a	X	Not Subject	16, 17
Neuse	Nash	snao005	63.3	n/a	UNT to Beaverdam Creek	28.0	11.5	Ephemeral	n/a	n/a	Not Subject	16, 17
Neuse	Nash	snao004	63.3	n/a	UNT to Beaverdam Creek	53.0	24.5	Intermittent	n/a	X	Subject	16, 17
Neuse	Nash	snao003	63.5	n/a	UNT to Beaverdam Creek	32.0	13.8	Ephemeral	n/a	X	Not Subject	17
Neuse	Nash	snao002	64.3	n/a	UNT to Bloomers Swamp	23.0	17.0	Ephemeral	n/a	n/a	Not Subject	17
Neuse	Nash	snah030	65.2	n/a	UNT to Bloomery Swamp	24.0	24.5	Intermittent	n/a	n/a	Not Subject	17, 18
Neuse	Nash	snah031	65.2	n/a	UNT to Bloomery Swamp	21.0	23.3	Intermittent	n/a	n/a	Not Subject	17, 18
Neuse	Nash	snao001	65.6	n/a	UNT to Juniper Creek	21.0	14.3	Ephemeral	n/a	n/a	Not Subject	17, 18
Neuse	Wilson	isdwi001*	65.9	WWIO021f	Bloomery Swamp	n/a	n/a	n/a	X	X	Not Subject	17, 18
Neuse	Wilson	swio015	66.0	n/a	UNT to Juniper Creek	49.0	30.3	Perennial	n/a	n/a	Subject	17, 18
Neuse	Wilson	swio016	66.3	n/a	UNT to Juniper Creek	37.0	20.0	Intermittent	n/a	X	Subject	17, 18
Neuse	Wilson	swio014	66.9	WWIO017f	Millstone Creek	64.0	39.0	Perennial	X	X	Subject	18
Neuse	Wilson	swio001	67.7	n/a	UNT to Millstone Creek	39.0	21.5	Intermittent	n/a	n/a	Not Subject	18, 19
Neuse	Wilson	swio002	67.8	n/a	UNT to Millstone Creek	60.0	31.0	Perennial	n/a	X	Subject	18, 19
Neuse	Wilson	swio003	68.3	n/a	UNT to Marsh Swamp	37.0	24.5	Intermittent	n/a	n/a	Not Subject	18, 19
Neuse	Wilson	swio004	69.1	n/a	UNT to Marsh Swamp	54.0	34.0	Perennial	X	X	Subject	19
Neuse	Wilson	swio005	69.3	n/a	UNT to Marsh Swamp	68.0	35.5	Perennial	X	X	Subject	19
Neuse	Wilson	swio006	69.5	n/a	UNT to Marsh Swamp	19.0	20.5	Intermittent	n/a	n/a	Not Subject	19
Neuse	Wilson	swio007	69.7	n/a	Marsh Swamp	86.0	50.0	Perennial	X	X	Subject	19
Neuse	Wilson	swio009	70.4	n/a	UNT to Marsh Swamp	71.0	38.5	Perennial	X	X	Subject	19
Neuse	Wilson	swio008	70.5	n/a	UNT to Marsh Swamp	71.0	42.0	Perennial	X	X	Subject	19
Neuse	Wilson	swio010	70.9	n/a	UNT to Marsh Swamp	73.0	32.5	Perennial	n/a	n/a	Not Subject	19, 20
Neuse	Wilson	swio011	71.0	n/a	UNT to Marsh Swamp	82.0	39.5	Perennial	X	X	Subject	19, 20
Neuse	Wilson	swio012	71.0	n/a	UNT to Marsh Swamp	66.0	19.5	Intermittent	X	X	Subject	19, 20
Neuse	Wilson	swio013	71.0	n/a	UNT to Marsh Swamp	75.0	36.5	Perennial	X	X	Subject	19, 20

TABLE 2-1

ATLANTIC COAST PIPELINE

Surveyed Waterbodies Along the Tar-Pamlico and Neuse Watersheds

Watershed	County	Waterbody ID	Milepost	Wetland ID	USGS Waterbody Name	SQUA Score	ID Score	Stream Determination	Topo Map	Soils Map	Subject to Buffer Rule	Page Number
Neuse	Wilson	swip015	71.7	n/a	UNT to Contentnea Creek	53.0	23.0	Intermittent	n/a	n/a	Not Subject	20
Neuse	Wilson	swip016	71.7	n/a	UNT to Contentnea Creek	48.0	22.5	Intermittent	n/a	n/a	Not Subject	20
Neuse	Wilson	swip001	72.2	n/a	UNT to Contentnea Creek	19.0	15.5	Ephemeral	n/a	n/a	Not Subject	20
Neuse	Wilson	swic001	72.3	n/a	UNT to Contentnea Creek	39.0	26.3	Intermittent	n/a	X	Subject	20
Neuse	Wilson	swib100	73.0	n/a	UNT to Contentnea Creek	44.0	23.3	Intermittent	X	X	Subject	20
Neuse	Wilson	swib101	73.3	WWIB101f	UNT to Contentnea Creek	n/a	n/a	Intermittent	n/a	n/a	Not Subject	20
Neuse	Wilson	swic002	73.6	n/a	Contentnea Creek	69.0	42.8	Perennial	X	X	Subject	20
Neuse	Wilson	swic004	69.1	n/a	Contentnea Creek	69.0	42.8	Perennial	n/a	n/a	Subject	20
Neuse	Wilson	swip008	73.9	n/a	UNT to Contentnea Creek	67.0	25.0	Intermittent	n/a	n/a	Not Subject	20, 21
Neuse	Wilson	swip006	74.1	n/a	UNT to Contentnea Creek	50.0	22.0	Intermittent	n/a	n/a	Not Subject	20, 21
Neuse	Wilson	swip007	74.1	n/a	UNT to Contentnea Creek	33.0	21.0	Intermittent	n/a	n/a	Not Subject	20, 21
Neuse	Wilson	swio017	74.4	n/a	UNT to Buckhorn Branch	27.0	16.5	Ephemeral	n/a	n/a	Not Subject	20, 21
Neuse	Wilson	swip002	74.6	n/a	UNT to Buckhorn Branch	40.0	16.0	Ephemeral	n/a	n/a	Not Subject	20, 21
Neuse	Wilson	swip003	74.9	n/a	UNT to Buckhorn Branch	45.0	17.5	Ephemeral	n/a	n/a	Not Subject	21
Neuse	Wilson	swip009	75.8	n/a	UNT to Buckhorn Branch	53.0	28.5	Intermittent	X	n/a	Subject	21
Neuse	Wilson	swip017	75.8	n/a	UNT to Buckhorn Branch	55.0	31.0	Perennial	n/a	X	Subject	21
Neuse	Johnston	sjob101	78.9	n/a	UNT to Little Buffalo Creek	12.0	12.5	Ephemeral	n/a	n/a	Not Subject	22
Neuse	Johnston	sjob102	78.9	n/a	UNT to Little Buffalo Creek	15.0	15.5	Ephemeral	n/a	n/a	Not Subject	22
Neuse	Johnston	sjob103	79.2	n/a	UNT to Little Buffalo Creek	48.0	34.0	Perennial	X	X	Subject	22, 23
Neuse	Johnston	sjob104	79.5	n/a	Little Buffalo Creek	54.0	37.0	Perennial	X	X	Subject	22, 23
Neuse	Johnston	sjop013	81.0	n/a	UNT to Little River	54.0	22.3	Intermittent	n/a	n/a	Not Subject	23
Neuse	Johnston	sjop003	82.0	n/a	UNT to Little River	35.0	20.5	Intermittent	n/a	n/a	Not Subject	23
Neuse	Johnston	sjoe001	82.5	n/a	UNT to Little River	43.0	18.0	Intermittent	n/a	n/a	Not Subject	23, 24
Neuse	Johnston	sjoe002	82.5	n/a	Little River	62.0	39.5	Perennial	X	X	Subject	23, 24
Neuse	Johnston	sjoe003	82.6	n/a	UNT to Little River	62.0	34.0	Perennial	n/a	n/a	Not Subject	23, 24
Neuse	Johnston	sjoe004	82.6	n/a	UNT to Little River	51.0	22.0	Intermittent	n/a	n/a	Not Subject	23, 24
Neuse	Johnston	sjoe005	83.4	n/a	UNT to Buffalo Creek	51.0	22.0	Intermittent	n/a	n/a	Not Subject	24
Neuse	Johnston	sjoe006	83.5	n/a	UNT to Buffalo Creek	57.0	23.0	Intermittent	n/a	X	Subject	24
Neuse	Johnston	sjop002	84.5	n/a	UNT to Big Branch	58.0	21.5	Intermittent	n/a	n/a	Not Subject	24
Neuse	Johnston	sjop001	84.5	n/a	Big Branch	65.0	22.5	Intermittent	X	X	Subject	24
Neuse	Johnston	sjoo003	85.9	n/a	UNT to Little Creek	49.0	30.5	Perennial	n/a	X	Subject	24, 25
Neuse	Johnston	sjoo004	86.5	n/a	Little Creek	61.0	34.5	Perennial	X	X	Subject	24, 25
Neuse	Johnston	sjoo005	87.4	n/a	UNT to Moccasin Creek	38.0	21.0	Intermittent	n/a	n/a	Not Subject	25
Neuse	Johnston	sjop004	88.8	n/a	UNT to Moccasin Creek	26.0	21.5	Intermittent	X	X	Subject	25, 26
Neuse	Johnston	sjop005	88.9	n/a	UNT to Moccasin Creek	35.0	25.3	Intermittent	X	X	Subject	25, 26
Neuse	Johnston	sjop006	89.0	n/a	UNT to Moccasin Creek	36.0	26.8	Intermittent	X	n/a	Subject	25, 26
Neuse	Johnston	sjop007	89.8	n/a	Moccasin Creek	52.0	42.8	Perennial	X	X	Subject	25, 26
Neuse	Johnston	sjop008	91.2	n/a	UNT to Bawdy Swamp	35.0	20.3	Intermittent	n/a	n/a	Not Subject	26, 27

TABLE 2-1

ATLANTIC COAST PIPELINE

Surveyed Waterbodies Along the Tar-Pamlico and Neuse Watersheds

Watershed	County	Waterbody ID	Milepost	Wetland ID	USGS Waterbody Name	SQUA Score	ID Score	Stream Determination	Topo Map	Soils Map	Subject to Buffer Rule	Page Number
Neuse	Johnston	sjop009	91.2	n/a	Bawdy Swamp	48.0	25.3	Intermittent	X	X	Subject	26, 27
Neuse	Johnston	sjop010	92.1	n/a	Bawdy Swamp	44.0	34.3	Perennial	X	X	Subject	26, 27
Neuse	Johnston	sjop015	93.6	n/a	UNT to Mill Branch	42.0	22.5	Intermittent	n/a	n/a	Not Subject	27, 28
Neuse	Johnston	sjob011	95.1	n/a	UNT to Neuse River	32.0	25.0	Intermittent	X	X	Subject	28
Neuse	Johnston	sjop018	95.3	n/a	UNT to Polecat Branch	28.0	23.5	Intermittent	n/a	n/a	Subject	28
Neuse	Johnston	sjob010	95.8	n/a	UNT to Polecat Branch	18.0	19.0	Intermittent	n/a	n/a	Not Subject	28, 29
Neuse	Johnston	sjob009	96.3	n/a	UNT to Polecat Branch	42.0	32.0	Perennial	n/a	n/a	Not Subject	28, 29
Neuse	Johnston	sjob008	96.3	n/a	UNT to Polecat Branch	41.0	35.5	Perennial	X	n/a	Subject	28, 29
Neuse	Johnston	sjoo008	97.5	WJOO030f	Polecat Branch	67.0	31.0	Perennial	X	X	Not Subject	29
Neuse	Johnston	sjoo009	97.7	WJO0034f	UNT to Polecat Branch	58.0	25.0	Intermittent	X	X	Not Subject	29, 30
Neuse	Johnston	sjoo010	98.1	WJO0036f	UNT to Neuse River	64.0	30.0	Perennial	X	X	Not Subject	29, 30
Neuse	Johnston	sjob105	98.5	n/a	Neuse River	49.0	35.5	Perennial	X	X	Subject	30
Neuse	Johnston	djod001	99.7	WJOA021s	UNT to Neuse River	n/a	n/a	n/a	n/a	X	Not Subject	30
Neuse	Johnston	isdjo001*	101.3	WJOA012f	Hannah Creek	n/a	n/a	n/a	X	X	Not Subject	30, 31
Neuse	Johnston	sjob006	102.4	n/a	UNT to Hannah Creek	n/a	17.3	Intermittent	X	X	Subject	31
Neuse	Johnston	sjob005	102.8	n/a	UNT to Hannah Creek	36.0	20.3	Intermittent	n/a	n/a	Not Subject	31
Neuse	Johnston	sjob004	102.8	n/a	UNT to Hannah Creek	50.0	35.0	Perennial	X	n/a	Subject	31
Neuse	Johnston	sjob003	103.9	n/a	UNT to Hannah Creek	57.0	33.0	Perennial	X	X	Subject	31, .32
Neuse	Johnston	sjob002	104.5	n/a	UNT to Ojoa003	19.0	21.0	Intermittent	n/a	n/a	Not Subject	32
Neuse	Johnston	isdjo002*	105.1	WJOA005f	Whiteoak Branch	n/a	n/a	n/a	n/a	n/a	Not Subject	32
Neuse	Johnston	isdjo004*	106.8	WJOA003f	Stone Creek	n/a	n/a	n/a	n/a	n/a	Not Subject	32, 33
Neuse	Johnston	isdjo005*	107.6	WJOA002f	Johnson Swamp	n/a	n/a	n/a	n/a	n/a	Not Subject	33
Neuse	Johnston	sjob001	107.7	n/a	UNT to Johnson Swamp	57.0	36.0	Perennial	X	X	Subject	33
Neuse	Johnston	sjop017	110.3	n/a	UNT to John K Swamp	59.0	19.5	Intermittent	n/a	X	Subject	34
Neuse	Johnston	sjop016	110.5	n/a	UNT to John K Swamp	42.0	17.5	Ephemeral	n/a	X	Not Subject	34
Neuse	Johnston	isdjo009*	110.5	WJOP029f	John K. Swamp	n/a	n/a	n/a	X	X	Not Subject	34
Neuse	Johnston	sjoo007	113.1	n/a	Mill Branch	52.0	21.5	Intermittent	X	X	Subject	35
Neuse	Johnston	sjoe007	113.7	n/a	UNT to Mill Creek	44.0	26.0	Intermittent	X	X	Subject	35
Neuse	Johnston	sjoq001	114.1	WJOQ002f	UNT to Jumping Run	64.0	33.3	Perennial	X	X	Not Subject	35

*Note: *Delineated stream via desktop photo-interpretation and limited ground truthing. Areas not accessible in field. Channel was not detected during NCDEQ field visit.

Appendix 2 – Part III

Datasheets – ACP Surface Water Features Subject to Buffer Rules

USACE AID#_____ DWQ #_____ Site #____ (indicate on attached map)
1
SJ00008

STREAM QUALITY ASSESSMENT WORKSHEET

Provide the following information for the stream reach under assessment:

1. Applicant's name: Dominion
2. Evaluator's name: L. Roper
3. Date of evaluation: 4/20/16
4. Time of evaluation: 10 am
5. Name of stream: Polecat Branch
6. River basin: Neuse
7. Approximate drainage area: >1000 ac
8. Stream order: 2
9. Length of reach evaluated: 40 ft
10. County: Johnston
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any): none

Latitude (ex. 34.872312): 35.441590 Longitude (ex. -77.55661): -78.31663

Method location determined (circle): (GPS) Topo Sheet Ortho (Aerial) Photo GIS Other GIS Other_____

13. Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location): South of Stevens Sausage Rd.
14. Proposed channel work (if any): Proposed pipeline
15. Recent weather conditions: Warm & dry
16. Site conditions at time of visit: Forested, Access road low water crossing
17. Identify any special waterway classifications known: ___Section 10 ___Tidal Waters ___Essential Fisheries Habitat ___Trout Waters ___Outstanding Resource Waters ✓ Nutrient Sensitive Waters ___Water Supply Watershed ___(I-IV)
18. Is there a pond or lake located upstream of the evaluation point? (YES) NO If yes, estimate the water surface area: >2ac
19. Does channel appear on USGS quad map? (YES) NO
20. Does channel appear on USDA Soil Survey? (YES) NO
21. Estimated watershed land use: ___% Residential ___% Commercial ___% Industrial 20% Agricultural 80% Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 12
23. Bank height (from bed to top of bank): 3 ft
24. Channel slope down center of stream: ✓ Flat (0 to 2%) ___Gentle (2 to 4%) ___Moderate (4 to 10%) ___Steep (>10%)
25. Channel sinuosity: ___Straight ✓ Occasional bends ___Frequent meander ___Very sinuous ___Braided channel

Instructions for completion of worksheet (located on page 2): Begin by determining the most appropriate ecoregion based on location, terrain, vegetation, stream classification, etc. Every characteristic must be scored using the same ecoregion. Assign points to each characteristic within the range shown for the ecoregion. Page 3 provides a brief description of how to review the characteristics identified in the worksheet. Scores should reflect an overall assessment of the stream reach under evaluation. If a characteristic cannot be evaluated due to site or weather conditions, enter 0 in the scoring box and provide an explanation in the comment section. Where there are obvious changes in the character of a stream under review (e.g., the stream flows from a pasture into a forest), the stream may be divided into smaller reaches that display more continuity, and a separate form used to evaluate each reach. The total score assigned to a stream reach must range between 0 and 100, with a score of 100 representing a stream of the highest quality.

Total Score (from reverse): 67 Comments:_____

Evaluator's Signature Laurie Roper Date 4/20/16

This channel evaluation form is intended to be used only as a guide to assist landowners and environmental professionals in gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change – version 06.16. To Comment, please call 919-876-8441 x 26.

STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	**Presence of flow / persistent pools in stream** (no flow or saturation = 0; strong flow = max points)	0 – 5	0 – 4	0 – 5	5
	2	**Evidence of past human alteration** (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	3
	3	**Riparian zone** (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	5
	4	**Evidence of nutrient or chemical discharges** (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	4
	5	**Groundwater discharge** (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	3
	6	**Presence of adjacent floodplain** (no floodplain = 0; extensive floodplain = max points)	0 – 4	0 – 4	0 – 2	4
	7	**Entrenchment / floodplain access** (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0 – 4	0 – 2	4
	8	**Presence of adjacent wetlands** (no wetlands = 0; large adjacent wetlands = max points)	0 – 6	0 – 4	0 – 2	6
	9	**Channel sinuosity** (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	3
	10	**Sediment input** (extensive deposition= 0; little or no sediment = max points)	0 – 5	0 – 4	0 – 4	3
	11	**Size & diversity of channel bed substrate** (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 – 5	—
STABILITY	12	**Evidence of channel incision or widening** (deeply incised = 0; stable bed & banks = max points)	0 – 5	0 – 4	0 – 5	4
	13	**Presence of major bank failures** (severe erosion = 0; no erosion, stable banks = max points)	0 – 5	0 – 5	0 – 5	4
	14	**Root depth and density on banks** (no visible roots = 0; dense roots throughout = max points)	0 – 3	0 – 4	0 – 5	2
	15	**Impact by agriculture, livestock, or timber production** (substantial impact =0; no evidence = max points)	0 – 5	0 – 4	0 – 5	3
HABITAT	16	**Presence of riffle-pool/ripple-pool complexes** (no riffles/ripples or pools = 0; well-developed = max points)	0 – 3	0 – 5	0 – 6	2
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	4
	18	**Canopy coverage over streambed** (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0 – 5	0 – 5	4
	19	**Substrate embeddedness** (deeply embedded = 0; loose structure = max)	NA*	0 – 4	0 – 4	—
BIOLOGY	20	**Presence of stream invertebrates** (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	0
	21	**Presence of amphibians** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	0
	22	**Presence of fish** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	0
	23	**Evidence of wildlife use** (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	4
		Total Points Possible	100	100	100	
		TOTAL SCORE (also enter on first page)				67

* These characteristics are not assessed in coastal streams.

NC DWQ Stream Identification Form Version 4.11 sjoo008

Date: 4/20/16	Project/Site: ALP	Latitude: 35.441590
Evaluator: L. Roper	County: Johnston	Longitude: -78.31663
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 31	Stream Determination (circle one) Ephemeral Intermittent (Perennial)	Other *e.g. Quad Name:* Four Oaks NC

A. Geomorphology (Subtotal = 15.5)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	0	1	(2)	3
2. Sinuosity of channel along thalweg	0	1	(2)	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	(2)	3
4. Particle size of stream substrate	0	1	(2)	3
5. Active/relict floodplain	0	1	2	(3)
6. Depositional bars or benches	0	(1)	2	3
7. Recent alluvial deposits	(0)	1	2	3
8. Headcuts	(0)	1	2	3
9. Grade control	0	(0.5)	1	1.5
10. Natural valley	0	0.5	1	1.5
11. Second or greater order channel	No = 0		(Yes = 3)	

[a] artificial ditches are not rated; see discussions in manual

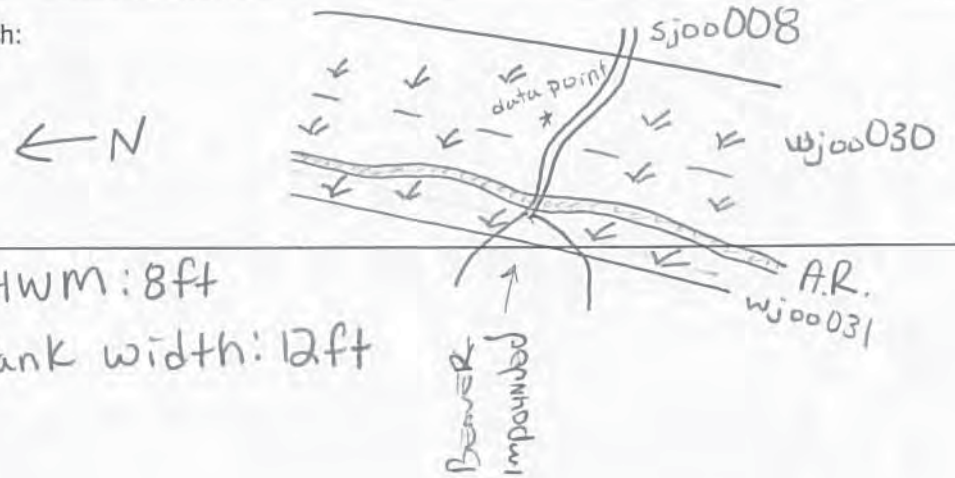
B. Hydrology (Subtotal = 9.5)				
12. Presence of Baseflow	0	1	2	(3)
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	(1.5)	1	0.5	0
15. Sediment on plants or debris	0	0.5	(1)	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		(Yes = 3)	

C. Biology (Subtotal = 6)				
18. Fibrous roots in streambed	(3)	2	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	(0)	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 (Other = 0)			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:



OHWM: 8ft

Bank width: 12ft

Waterbody data point sjoo008 facing northwest upstream.

Waterbody data point sjoo008 facing southeast downstream.

Waterbody data point sjoo008 facing southwest across.

USACE AID#_____ DWQ #_____ Site #____ (indicate on attached map) SJ00009

STREAM QUALITY ASSESSMENT WORKSHEET

Provide the following information for the stream reach under assessment:

1. Applicant's name: Dominion
2. Evaluator's name: ESI (L. Roper, W. Vaughan)
3. Date of evaluation: 4-21-16
4. Time of evaluation: 11:30 am
5. Name of stream: UNT to Polecat Branch
6. River basin: Neuse River basin
7. Approximate drainage area: 109 acres
8. Stream order: 1st
9. Length of reach evaluated: 20ft
10. County: Johnston
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any): none

Latitude (ex. 34.872312): 35.438226 Longitude (ex. -77.556611): -78.321460

Method location determined (circle): (GPS) Topo Sheet Ortho (Aerial) Photo/GIS Other GIS Other_____

13. Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location): North of Neuse River and south of Polecat Branch
14. Proposed channel work (if any): Proposed Pipeline
15. Recent weather conditions: dry, Sunny
16. Site conditions at time of visit: hardwood floodplain
17. Identify any special waterway classifications known: ___Section 10 ___Tidal Waters ___Essential Fisheries Habitat ___Trout Waters ___Outstanding Resource Waters ___Nutrient Sensitive Waters ___Water Supply Watershed ____(I-IV)
18. Is there a pond or lake located upstream of the evaluation point? YES (NO) If yes, estimate the water surface area:_____
19. Does channel appear on USGS quad map? (YES) NO
20. Does channel appear on USDA Soil Survey? (YES) NO
21. Estimated watershed land use: ___% Residential ___% Commercial ___% Industrial ___% Agricultural 90% Forested 10% Cleared / Logged ___% Other (_____)
22. Bankfull width*: 10 ft (* Top of Bank)
23. Bank height (from bed to top of bank): 3 ft
24. Channel slope down center of stream: ___Flat (0 to 2%) ___Gentle (2 to 4%) ✓Moderate (4 to 10%) ___Steep (>10%)
25. Channel sinuosity: ___Straight ✓Occasional bends ___Frequent meander ___Very sinuous ___Braided channel

Instructions for completion of worksheet (located on page 2): Begin by determining the most appropriate ecoregion based on location, terrain, vegetation, stream classification, etc. Every characteristic must be scored using the same ecoregion. Assign points to each characteristic within the range shown for the ecoregion. Page 3 provides a brief description of how to review the characteristics identified in the worksheet. Scores should reflect an overall assessment of the stream reach under evaluation. If a characteristic cannot be evaluated due to site or weather conditions, enter 0 in the scoring box and provide an explanation in the comment section. Where there are obvious changes in the character of a stream under review (e.g., the stream flows from a pasture into a forest), the stream may be divided into smaller reaches that display more continuity, and a separate form used to evaluate each reach. The total score assigned to a stream reach must range between 0 and 100, with a score of 100 representing a stream of the highest quality.

Total Score (from reverse): 58 **Comments:**_____

Evaluator's Signature William E. Vaughan Date 4/21/16

This channel evaluation form is intended to be used only as a guide to assist landowners and environmental professionals in gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change – version 06 03. To Comment, please call 919-876-8441 x 26.

STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	**Presence of flow / persistent pools in stream** (no flow or saturation = 0; strong flow = max points)	0 – 5	0 – 4	0 – 5	5
	2	**Evidence of past human alteration** (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	4
	3	**Riparian zone** (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	5
	4	**Evidence of nutrient or chemical discharges** (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	5
	5	**Groundwater discharge** (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	3
	6	**Presence of adjacent floodplain** (no floodplain = 0; extensive floodplain = max points)	0 – 4	0 – 4	0 – 2	4
	7	**Entrenchment / floodplain access** (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0 – 4	0 – 2	3
	8	**Presence of adjacent wetlands** (no wetlands = 0; large adjacent wetlands = max points)	0 – 6	0 – 4	0 – 2	6
	9	**Channel sinuosity** (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	2
	10	**Sediment input** (extensive deposition= 0; little or no sediment = max points)	0 – 5	0 – 4	0 – 4	3
	11	**Size & diversity of channel bed substrate** (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 – 5	—
STABILITY	12	**Evidence of channel incision or widening** (deeply incised = 0; stable bed & banks = max points)	0 – 5	0 – 4	0 – 5	1
	13	**Presence of major bank failures** (severe erosion = 0; no erosion, stable banks = max points)	0 – 5	0 – 5	0 – 5	2
	14	**Root depth and density on banks** (no visible roots = 0; dense roots throughout = max points)	0 – 3	0 – 4	0 – 5	2
	15	**Impact by agriculture, livestock, or timber production** (substantial impact =0; no evidence = max points)	0 – 5	0 – 4	0 – 5	5
HABITAT	16	**Presence of riffle-pool/ripple-pool complexes** (no riffles/ripples or pools = 0; well-developed = max points)	0 – 3	0 – 5	0 – 6	0
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	2
	18	**Canopy coverage over streambed** (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0 – 5	0 – 5	3
	19	**Substrate embeddedness** (deeply embedded = 0; loose structure = max)	NA*	0 – 4	0 – 4	—
BIOLOGY	20	**Presence of stream invertebrates** (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	0
	21	**Presence of amphibians** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	0
	22	**Presence of fish** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	1
	23	**Evidence of wildlife use** (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	2
		Total Points Possible	100	100	100	
		TOTAL SCORE (also enter on first page)				58

* These characteristics are not assessed in coastal streams.

SJ00009

NC DWQ Stream Identification Form Version 4.11

Date: 4-21-16	Project/Site: ACP	Latitude: 35.438226
Evaluator: ESI (LR, WV)	County: Johnston	Longitude: -78.321460
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 25	Stream Determination (circle one) Ephemeral (Intermittent) Perennial	Other *e.g. Quad Name:* Four Oaks NE

A. Geomorphology (Subtotal = 9)	Absent	Weak	Moderate	Strong
1[a] Continuity of channel bed and bank	0	1	2	(3)
2. Sinuosity of channel along thalweg	0	(1)	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	(0)	1	2	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	0	1	2	(3)
6. Depositional bars or benches	0	(1)	2	3
7. Recent alluvial deposits	(0)	1	2	3
8. Headcuts	(0)	1	2	3
9. Grade control	(0)	0.5	1	1.5
10. Natural valley	(0)	0.5	1	1.5
11. Second or greater order channel	(No = 0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

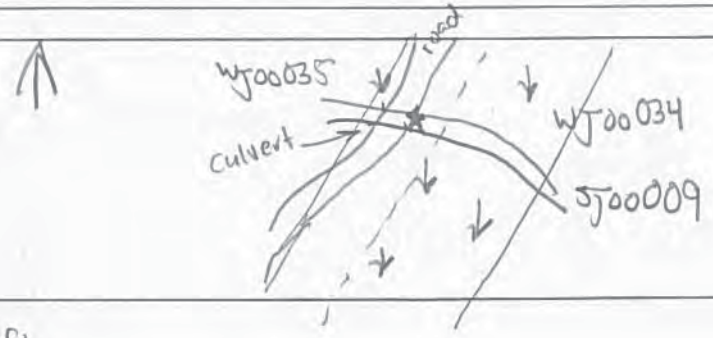
B. Hydrology (Subtotal = 8.5)				
12. Presence of Baseflow	0	1	2	(3)
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	(1.5)	1	0.5	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	0	(0.5)	1	1.5
17. Soil-based evidence of high water table?	No = 0		(Yes = 3)	

C. Biology (Subtotal = 7.5)				
18. Fibrous roots in streambed	(3)	2	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	0	(1)	2	3
22. Fish	0	(0.5)	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	(0)	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 (Other = 0)			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:



BHWM: 10ft

Bank width: 10ft

Waterbody data point sjoo009 facing west upstream.

Waterbody data point sjoo009 facing east downstream.

Waterbody data point sjoo009 facing south across.

USACE AID#_____ DWQ #_____ Site #____ (indicate on attached map) SJ00010

STREAM QUALITY ASSESSMENT WORKSHEET

Provide the following information for the stream reach under assessment:

1. Applicant's name: Dominion
2. Evaluator's name: ESI (W. Vaughn)
3. Date of evaluation: 4-21-16
4. Time of evaluation: 10:30 am
5. Name of stream: UNT to Neuse River
6. River basin: Neuse River
7. Approximate drainage area: 339 acres
8. Stream order: 1st
9. Length of reach evaluated: 20ft
10. County: Johnston
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any): none

Latitude (ex. 34.872312): 35.43513 Longitude (ex. -77.556611): -78.329909

Method location determined (circle): (GPS) Topo Sheet Ortho (Aerial) Photo/GIS Other GIS Other_____

13. Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location): Stream north of Neuse river south of NC 2508

14. Proposed channel work (if any): proposed pipeline

15. Recent weather conditions: dry, sunny

16. Site conditions at time of visit: hardwood floodplain

17. Identify any special waterway classifications known: ___Section 10 ___Tidal Waters ___Essential Fisheries Habitat ___Trout Waters ___Outstanding Resource Waters ___Nutrient Sensitive Waters ___Water Supply Watershed ____(I-IV)

18. Is there a pond or lake located upstream of the evaluation point? YES (NO) If yes, estimate the water surface area:_____

19. Does channel appear on USGS quad map? YES (NO) 20. Does channel appear on USDA Soil Survey? (YES) NO

21. Estimated watershed land use: ___% Residential ___% Commercial ___% Industrial ___% Agricultural 90 % Forested 10 % Cleared / Logged ___% Other (_____)

22. Bankfull width: * (Top of Bank) 27 23. Bank height (from bed to top of bank): 6ft

24. Channel slope down center of stream: ___Flat (0 to 2%) ___Gentle (2 to 4%) ___Moderate (4 to 10%) ✓ Steep (>10%)

25. Channel sinuosity: ___Straight ✓ Occasional bends ___Frequent meander ___Very sinuous ___Braided channel

Instructions for completion of worksheet (located on page 2): Begin by determining the most appropriate ecoregion based on location, terrain, vegetation, stream classification, etc. Every characteristic must be scored using the same ecoregion. Assign points to each characteristic within the range shown for the ecoregion. Page 3 provides a brief description of how to review the characteristics identified in the worksheet. Scores should reflect an overall assessment of the stream reach under evaluation. If a characteristic cannot be evaluated due to site or weather conditions, enter 0 in the scoring box and provide an explanation in the comment section. Where there are obvious changes in the character of a stream under review (e.g., the stream flows from a pasture into a forest), the stream may be divided into smaller reaches that display more continuity, and a separate form used to evaluate each reach. The total score assigned to a stream reach must range between 0 and 100, with a score of 100 representing a stream of the highest quality.

Total Score (from reverse): 64 **Comments:**_____

Evaluator's Signature Willie E Vaughn Date 4/21/16

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STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	**Presence of flow / persistent pools in stream** (no flow or saturation = 0; strong flow = max points)	0 – 5	0 – 4	0 – 5	5
	2	**Evidence of past human alteration** (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	2
	3	**Riparian zone** (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	6
	4	**Evidence of nutrient or chemical discharges** (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	0
	5	**Groundwater discharge** (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	3
	6	**Presence of adjacent floodplain** (no floodplain = 0; extensive floodplain = max points)	0 – 4	0 – 4	0 – 2	4
	7	**Entrenchment / floodplain access** (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0 – 4	0 – 2	3
	8	**Presence of adjacent wetlands** (no wetlands = 0; large adjacent wetlands = max points)	0 – 6	0 – 4	0 – 2	6
	9	**Channel sinuosity** (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	2
	10	**Sediment input** (extensive deposition= 0; little or no sediment = max points)	0 – 5	0 – 4	0 – 4	4
	11	**Size & diversity of channel bed substrate** (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 – 5	—
STABILITY	12	**Evidence of channel incision or widening** (deeply incised = 0; stable bed & banks = max points)	0 – 5	0 – 4	0 – 5	5
	13	**Presence of major bank failures** (severe erosion = 0; no erosion, stable banks = max points)	0 – 5	0 – 5	0 – 5	5
	14	**Root depth and density on banks** (no visible roots = 0; dense roots throughout = max points)	0 – 3	0 – 4	0 – 5	2
	15	**Impact by agriculture, livestock, or timber production** (substantial impact =0; no evidence = max points)	0 – 5	0 – 4	0 – 5	5
HABITAT	16	**Presence of riffle-pool/ripple-pool complexes** (no riffles/ripples or pools = 0; well-developed = max points)	0 – 3	0 – 5	0 – 6	0
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	3
	18	**Canopy coverage over streambed** (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0 – 5	0 – 5	4
	19	**Substrate embeddedness** (deeply embedded = 0; loose structure = max)	NA*	0 – 4	0 – 4	—
BIOLOGY	20	**Presence of stream invertebrates** (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	0
	21	**Presence of amphibians** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	0
	22	**Presence of fish** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	2
	23	**Evidence of wildlife use** (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	3
		Total Points Possible	100	100	100	
		TOTAL SCORE (also enter on first page)				64

* These characteristics are not assessed in coastal streams.

NC DWQ Stream Identification Form Version 4.11 SJ00010

Date: 4/21/16	Project/Site: ACP	Latitude: 35.43513
Evaluator: L. Roper	County: Johnston	Longitude: -78.329909
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 30	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other Four Oaks NE *e.g. Quad Name:*

A. Geomorphology (Subtotal = 13)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	0	1	2	(3)
2. Sinuosity of channel along thalweg	0	1	(2)	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	(0)	1	2	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	0	1	2	(3)
6. Depositional bars or benches	0	(1)	2	3
7. Recent alluvial deposits	(0)	1	2	3
8. Headcuts	(0)	1	2	3
9. Grade control	(0)	0.5	1	1.5
10. Natural valley	(0)	0.5	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

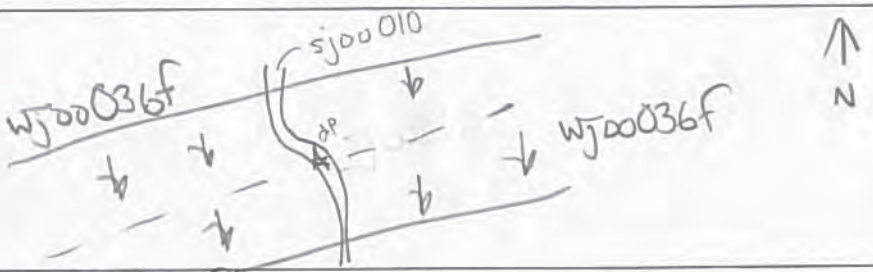
B. Hydrology (Subtotal = 10)				
12. Presence of Baseflow	0	1	2	(3)
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	(1.5)	1	0.5	0
15. Sediment on plants or debris	0	0.5	(1)	1.5
16. Organic debris lines or piles	0	0.5	1	(1.5)
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 7)				
18. Fibrous roots in streambed	(3)	2	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	0	(0.5)	1	1.5
23. Crayfish	0	(0.5)	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	(0)	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:



OHWM: 26 ft

Bankwidth: 27ft.

Waterbody data point sjoo010 facing north upstream.

Waterbody data point sjoo010 facing south downstream.

Waterbody data point sjoo010 facing west across.

USACE AID=_____ DWQ=_____ Site=____ (indicate on attached map)

SJ0q001

STREAM QUALITY ASSESSMENT WORKSHEET

Provide the following information for the stream reach under assessment:

1. Applicant's name: DOMINION
2. Evaluator's name: ESI-M. Smith, K. Murphrey
3. Date of evaluation: 6/9/16
4. Time of evaluation: 11:00AM
5. Name of stream: UNT to Jumping Run
6. River basin: Neuse
7. Approximate drainage area: 40 acres
8. Stream order: 2
9. Length of reach evaluated: 50ft
10. County: Johnston
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any): NA

Latitude (ex. 34.872312): 35.30051 Longitude (ex. -77.556611): -78.51129

Method location determined (circle): (GPS) Topo Sheet Ortho (Aerial) Photo GIS Other GIS Other

13. Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location):
Located North of Godwin Lake Road in Johnston County, NC

14. Proposed channel work (if any): Proposed pipeline

15. Recent weather conditions: No recent rain, sunny

16. Site conditions at time of visit: undisturbed

17. Identify any special waterway classifications known: ___Section 10 ___Tidal Waters ___Essential Fisheries Habitat
___Trout Waters ___Outstanding Resource Waters ✓ Nutrient Sensitive Waters ___Water Supply Watershed ____(I-IV)

18. Is there a pond or lake located upstream of the evaluation point? YES NO If yes, estimate the water surface area:

19. Does channel appear on USGS quad map? (YES) NO
20. Does channel appear on USDA Soil Survey? (YES) NO

21. Estimated watershed land use: 10 % Residential ___% Commercial ___% Industrial 60 % Agricultural
30 % Forested ___% Cleared / Logged ___% Other (_____)

22. Bankfull width: 6ft * (Top of Bank)
23. Bank height (from bed to top of bank): 1ft

24. Channel slope down center of stream: X Flat (0 to 2%) ___Gentle (2 to 4%) ___Moderate (4 to 10%) ___Steep (>10%)

25. Channel sinuosity: ___Straight X Occasional bends ___Frequent meander ___Very sinuous ___Braided channel

Instructions for completion of worksheet (located on page 2): Begin by determining the most appropriate ecoregion based on location, terrain, vegetation, stream classification, etc. Every characteristic must be scored using the same ecoregion. Assign points to each characteristic within the range shown for the ecoregion. Page 3 provides a brief description of how to review the characteristics identified in the worksheet. Scores should reflect an overall assessment of the stream reach under evaluation. If a characteristic cannot be evaluated due to site or weather conditions, enter 0 in the scoring box and provide an explanation in the comment section. Where there are obvious changes in the character of a stream under review (e.g., the stream flows from a pasture into a forest), the stream may be divided into smaller reaches that display more continuity, and a separate form used to evaluate each reach. The total score assigned to a stream reach must range between 0 and 100, with a score of 100 representing a stream of the highest quality.

Total Score (from reverse): 64 **Comments:**

Evaluator's Signature Kevin Murphrey Date 6/9/16

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STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	**Presence of flow / persistent pools in stream** (no flow or saturation = 0; strong flow = max points)	0 – 5	0 – 4	0 – 5	3
	2	**Evidence of past human alteration** (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	6
	3	**Riparian zone** (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	4
	4	**Evidence of nutrient or chemical discharges** (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	4
	5	**Groundwater discharge** (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	4
	6	**Presence of adjacent floodplain** (no floodplain = 0; extensive floodplain = max points)	0 – 4	0 – 4	0 – 2	3
	7	**Entrenchment / floodplain access** (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0 – 4	0 – 2	3
	8	**Presence of adjacent wetlands** (no wetlands = 0; large adjacent wetlands = max points)	0 – 6	0 – 4	0 – 2	4
	9	**Channel sinuosity** (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	2
	10	**Sediment input** (extensive deposition= 0; little or no sediment = max points)	0 – 5	0 – 4	0 – 4	2
	11	**Size & diversity of channel bed substrate** (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 – 5	—
STABILITY	12	**Evidence of channel incision or widening** (deeply incised = 0; stable bed & banks = max points)	0 – 5	0 – 4	0 – 5	3
	13	**Presence of major bank failures** (severe erosion = 0; no erosion, stable banks = max points)	0 – 5	0 – 5	0 – 5	3
	14	**Root depth and density on banks** (no visible roots = 0; dense roots throughout = max points)	0 – 3	0 – 4	0 – 5	1
	15	**Impact by agriculture, livestock, or timber production** (substantial impact =0; no evidence = max points)	0 – 5	0 – 4	0 – 5	3
HABITAT	16	**Presence of riffle-pool/ripple-pool complexes** (no riffles/ripples or pools = 0; well-developed = max points)	0 – 3	0 – 5	0 – 6	2
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	4
	18	**Canopy coverage over streambed** (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0 – 5	0 – 5	5
	19	**Substrate embeddedness** (deeply embedded = 0; loose structure = max)	NA*	0 – 4	0 – 4	—
BIOLOGY	20	**Presence of stream invertebrates** (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	1
	21	**Presence of amphibians** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	3
	22	**Presence of fish** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	1
	23	**Evidence of wildlife use** (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	3
		Total Points Possible	100	100	100	
		TOTAL SCORE (also enter on first page)				64

* These characteristics are not assessed in coastal streams.

sjoq001

NC DWQ Stream Identification Form Version 4.11

Date: 6/9/16	Project/Site: ACP	Latitude: 35.30051
Evaluator: ESI - M.Smith / K. Murphrey	County: Johnston	Longitude: -78.51129
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 33.25	Stream Determination (circle one) Ephemeral Intermittent (Perennial)	Other Dunn, NC *e.g. Quad Name:*

A. Geomorphology (Subtotal = 17.0)	Absent	Weak	Moderate	Strong
1[a] Continuity of channel bed and bank	0	1	(2)	3
2. Sinuosity of channel along thalweg	0	1	(2)	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	(2)	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	0	1	2	(3)
6. Depositional bars or benches	0	(1)	2	3
7. Recent alluvial deposits	0	(1)	2	3
8. Headcuts	(0)	1	2	3
9. Grade control	0	(0.5)	1	1.5
10. Natural valley	0	0.5	1	(1.5)
11. Second or greater order channel	No = 0		Yes = (3)	

[a] artificial ditches are not rated; see discussions in manual

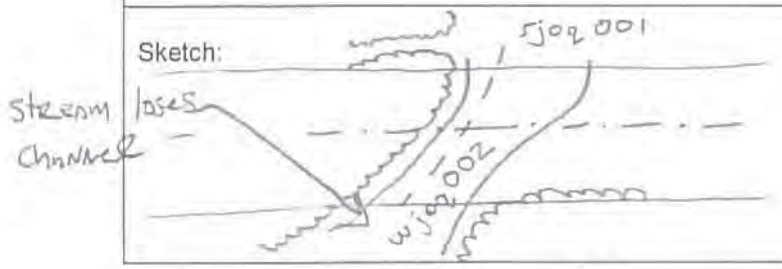
B. Hydrology (Subtotal = 6.0)				
12. Presence of Baseflow	0	1	(2)	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	1.5	1	(0.5)	0
15. Sediment on plants or debris	(0)	0.5	1	1.5
16. Organic debris lines or piles	0	(0.5)	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 10.25)				
18. Fibrous roots in streambed	(3)	2	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	0	(1)	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	0	(0.5)	1	1.5
23. Crayfish	0	(0.5)	1	1.5
24. Amphibians	0	0.5	1	(1.5)
25. Algae	(0)	0.5	1	1.5
26. Wetland plants in streambed	FACW = (0.75) OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:



OHWM: 5 ft Top of Bank: 6ft

Waterbody sjoq001 facing northeast upstream.

Waterbody sjoq001 facing southwest downstream.

Waterbody sjoq001 facing northwest across bank.

USACE AID#_____ DWQ #_____ Site #____ (indicate on attached map)
SW10017

STREAM QUALITY ASSESSMENT WORKSHEET

Provide the following information for the stream reach under assessment:

1. Applicant's name: Dominion
2. Evaluator's name: ESI- Vaughan, Roper
3. Date of evaluation: 6/30/16
4. Time of evaluation: 10am
5. Name of stream: UNT to Buckhorn Branch
6. River basin: Neuse River
7. Approximate drainage area: 25 ac
8. Stream order: 0
9. Length of reach evaluated: 20ft
10. County: Wilson
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any): none

Latitude (ex. 34.872312): 35.682406 Longitude (ex. -77.556611): -78.110316

Method location determined (circle): (GPS) Topo Sheet Ortho (Aerial) Photo/GIS Other GIS Other_____

13. Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location):
West of NC-581 Hwy

14. Proposed channel work (if any): TBD
15. Recent weather conditions: Rain within 48hrs.
16. Site conditions at time of visit: ag. field ditch
17. Identify any special waterway classifications known: ___Section 10 ___Tidal Waters ___Essential Fisheries Habitat ___Trout Waters ___Outstanding Resource Waters ✓ Nutrient Sensitive Waters ___Water Supply Watershed ____(I-IV)
18. Is there a pond or lake located upstream of the evaluation point? YES (NO) If yes, estimate the water surface area:_____
19. Does channel appear on USGS quad map? YES (NO) 20. Does channel appear on USDA Soil Survey? YES (NO)
21. Estimated watershed land use: ___% Residential ___% Commercial ___% Industrial 100 % Agricultural ___% Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 6ft 23. Bank height (from bed to top of bank): 4 ft
24. Channel slope down center of stream: ✓ Flat (0 to 2%) ___Gentle (2 to 4%) ___Moderate (4 to 10%) ___Steep (>10%)
25. Channel sinuosity: ✓ Straight ___Occasional bends ___Frequent meander ___Very sinuous ___Braided channel

Instructions for completion of worksheet (located on page 2): Begin by determining the most appropriate ecoregion based on location, terrain, vegetation, stream classification, etc. Every characteristic must be scored using the same ecoregion. Assign points to each characteristic within the range shown for the ecoregion. Page 3 provides a brief description of how to review the characteristics identified in the worksheet. Scores should reflect an overall assessment of the stream reach under evaluation. If a characteristic cannot be evaluated due to site or weather conditions, enter 0 in the scoring box and provide an explanation in the comment section. Where there are obvious changes in the character of a stream under review (e.g., the stream flows from a pasture into a forest), the stream may be divided into smaller reaches that display more continuity, and a separate form used to evaluate each reach. The total score assigned to a stream reach must range between 0 and 100, with a score of 100 representing a stream of the highest quality.

Total Score (from reverse): 27 **Comments:**_____

Evaluator's Signature _____ **Date** 6/30/16

This channel evaluation form is intended to be used only as a guide to assist landowners and environmental professionals in gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change – version 06.03. To Comment, please call 919-876-8441 x 26.

STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	**Presence of flow / persistent pools in stream** (no flow or saturation = 0; strong flow = max points)	0 – 5	0 – 4	0 – 5	5
	2	**Evidence of past human alteration** (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	0
	3	**Riparian zone** (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	1
	4	**Evidence of nutrient or chemical discharges** (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	2
	5	**Groundwater discharge** (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	1
	6	**Presence of adjacent floodplain** (no floodplain = 0; extensive floodplain = max points)	0 – 4	0 – 4	0 – 2	0
	7	**Entrenchment / floodplain access** (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0 – 4	0 – 2	0
	8	**Presence of adjacent wetlands** (no wetlands = 0; large adjacent wetlands = max points)	0 – 6	0 – 4	0 – 2	0
	9	**Channel sinuosity** (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	0
	10	**Sediment input** (extensive deposition= 0; little or no sediment = max points)	0 – 5	0 – 4	0 – 4	2
	11	**Size & diversity of channel bed substrate** (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 – 5	—
STABILITY	12	**Evidence of channel incision or widening** (deeply incised = 0; stable bed & banks = max points)	0 – 5	0 – 4	0 – 5	4
	13	**Presence of major bank failures** (severe erosion = 0; no erosion, stable banks = max points)	0 – 5	0 – 5	0 – 5	4
	14	**Root depth and density on banks** (no visible roots = 0; dense roots throughout = max points)	0 – 3	0 – 4	0 – 5	1
	15	**Impact by agriculture, livestock, or timber production** (substantial impact =0; no evidence = max points)	0 – 5	0 – 4	0 – 5	0
HABITAT	16	**Presence of riffle-pool/ripple-pool complexes** (no riffles/ripples or pools = 0; well-developed = max points)	0 – 3	0 – 5	0 – 6	0
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	2
	18	**Canopy coverage over streambed** (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0 – 5	0 – 5	1
	19	**Substrate embeddedness** (deeply embedded = 0; loose structure = max)	NA*	0 – 4	0 – 4	—
BIOLOGY	20	**Presence of stream invertebrates** (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	0
	21	**Presence of amphibians** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	3
	22	**Presence of fish** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	0
	23	**Evidence of wildlife use** (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	1
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						27

* These characteristics are not assessed in coastal streams.

NC DWQ Stream Identification Form Version 4.11

SWIO017

Date: 6/30/16	Project/Site: ACP	Latitude: 35.682406
Evaluator: L. Roper (ESI)	County: Wilson	Longitude: -78.110316
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 16.5	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other *e.g. Quad Name:* LUCAMA

A. Geomorphology (Subtotal = 1)	Absent	Weak	Moderate	Strong
1[a] Continuity of channel bed and bank ditch	0	1	2	3
2. Sinuosity of channel along thalweg	(0)	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	(0)	1	2	3
4. Particle size of stream substrate	(0)	1	2	3
5. Active/relict floodplain	(0)	1	2	3
6. Depositional bars or benches	(0)	1	2	3
7. Recent alluvial deposits	(0)	1	2	3
8. Headcuts	(0)	1	2	3
9. Grade control	0	(0.5)	1	1.5
10. Natural valley	0	(0.5)	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

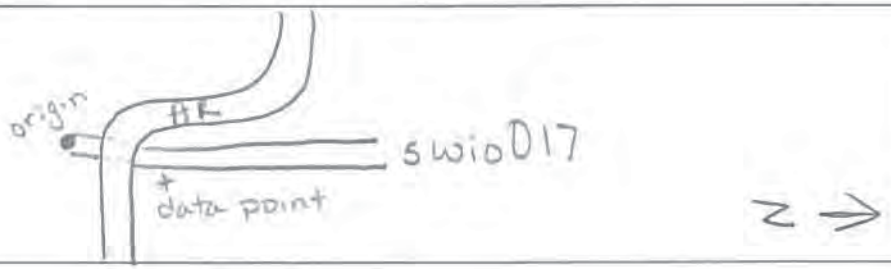
B. Hydrology (Subtotal = 8)				
12. Presence of Baseflow	0	1	2	(3)
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	(1.5)	1	0.5	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	(0)	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 7.5)				
18. Fibrous roots in streambed	(3)	2	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	0	0.5	1	(1.5)
25. Algae	(0)	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes: Rain within 24hrs.

Sketch:



Bank: 6ft
OHWM: 4ft

Waterbody data point swio017 facing west upstream.

Waterbody data point swio017 facing east downstream.

Waterbody data point swio017 facing south across bank.

North Carolina Wildlife Resources Commission

Steve Holden

From: Garrison, Gabriela <gabriela.garrison@ncwildlife.org>
Sent: Monday, November 14, 2016 3:24 PM
To: Tracy Brunner; Ratcliffe, Judith
Cc: Sara Throndson; Stancil, Vann F
Subject: RE: Atlantic Coast Pipeline - Forest GIS Data Layers

Hi Tracy,

I would explore the website for the South Atlantic Landscape Conservation Cooperative (www.southatlanticlcc.org). They have a Conservation Blueprint (downloadable in GIS) that has multiple datasets with information that could be useful to your analysis, including priority and threatened habitats as well as the USGS National Land Cover Database. Here is the link for the blueprint: www.southatlanticlcc.org/blueprint.

Let us know if there is anything else you need,

Thanks!
Gabriela

Gabriela Garrison
Eastern Piedmont Habitat Conservation Coordinator

NC Wildlife Resources Commission
Sandhills Depot, P.O. Box 149
Hoffman, NC 28347
Office and Cell: 910-409-7350
gabriela.garrison@ncwildlife.org

www.ncwildlife.org

From: Tracy Brunner [mailto:Tracy.Brunner@erm.com]
Sent: Monday, November 14, 2016 11:53 AM
To: Garrison, Gabriela <gabriela.garrison@ncwildlife.org>; Ratcliffe, Judith <judith.ratcliffe@ncdcr.gov>
Cc: Sara Throndson <Sara.Throndson@erm.com>
Subject: Atlantic Coast Pipeline - Forest GIS Data Layers

Gabriela and Judith,
In a recent data request received from FERC, we have been asked to re-calculate forest fragmentation impacts for the Atlantic Coast Pipeline Project. Previously we have used the Gap Analysis Program (GAP) vegetation types to delineate forested areas and calculate these impacts. However, I wanted to check if there were any other available GIS data sets for forested areas in North Carolina that may be better to use for this analysis. Please let me know if I should be using a different data set, or if GAP is appropriate for North Carolina.
Thanks, Tracy

Tracy Brunner
Senior Scientist & Biological Field Services Logistics Manager

ERM
80 South 8th Street, Suite 1000 l Minneapolis l MN l 55402
T 612-337-3355 l **M** 612-599-6976
E tracy.brunner@erm.com l **W** www.erm.com

Dominion Resources Services, Inc.
5000 Dominion Boulevard.
Glen Allen, VA 23060

January 4, 2017

BY EMAIL

Gabriela Garrison and Vann Stancil
North Carolina Wildlife Resources Commission
Sandhills Depot, P.O. Box 149
Hoffman, NC 28347

Re: Dominion Transmission, Inc., Atlantic Coast Pipeline Submittal of Draft North Carolina Fish and Aquatics Collection and Relocation Protocol for Instream Construction Activities for the Proposed Atlantic Coast Pipeline in North Carolina

Dear Ms. Garrison and Mr. Stancil:

Atlantic Coast Pipeline, LLC (Atlantic) is pleased to provide the Draft North Carolina Fish and Aquatics Collection and Relocation Protocol for Instream Construction Activities for the Proposed Atlantic Coast Pipeline (attached). The attached plan describes the methods that Atlantic has agreed to implement to remove fish and other aquatics during construction. This plan was developed based on a request from the Wildlife Resources Commission and a FERC data request received on October 26, 2016 and was developed in cooperation with the Wildlife Resources Commission based on calls on November 3 and November 8, 2016, as well as emailed comments received on November 10 and December 22, 2016.

As described in the attached draft protocol, Atlantic proposes to implement collection and relocation in two separate categories of streams. Tier 1 streams are those not likely to support rare, threatened or endangered aquatic species. In Tier 1 streams Atlantic proposes to remove fishes and other aquatics from workspaces *after* the placement of temporary dam structures (e.g., sand bags, sheet piling, etc.). Tier 2 streams are those potentially supporting rare, threatened or endangered fish and other aquatic species. To reduce impacts to these species, Atlantic proposes to remove them from workspaces *prior* to placement of temporary dam structures. Atlantic requests your comments on the attached draft plan. Once any additional comments are received and addressed, a revised plan will be provided to you for your final approval.

Project and Company Background

Atlantic is a company formed by four major U.S. energy companies – Dominion Resources, Inc., Duke Energy Corporation, Piedmont Natural Gas Co., Inc., and Southern Company Gas. Atlantic will own and operate the proposed ACP, an approximately 600-mile-long, interstate natural gas transmission pipeline system designed to meet growing energy needs in Virginia and North Carolina. The ACP will deliver up to 1.5 billion cubic feet per day (bcf/d) of natural gas to be used to generate electricity, heat homes, and run local businesses. The underground pipeline project will facilitate cleaner air, increase reliability and security of natural gas supplies, and provide a significant economic boost in Virginia and North Carolina.

Atlantic has contracted with DTI, a subsidiary of Dominion, to permit, build, and operate the ACP on behalf of Atlantic.

Atlantic looks forward to continuing to work with you on the ACP. Please contact Richard B. Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com if there are questions regarding this protocol.

Please direct written responses to:

Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Sincerely,

Robert M. Bisha

Robert M. Bisha
Technical Advisor, Atlantic Coast Pipeline

Cc: John Ellis, U.S. Fish and Wildlife Service
Sarah McRae, U.S. Fish and Wildlife Service
Judith Ratcliffe, North Carolina Department of Environmental and Natural Resources
Tyler Black, North Carolina Wildlife Resources Commission

Attachments:
Draft North Carolina Fish and Aquatics Collection and Relocation Protocol for Instream Construction Activities

North Carolina Department of Natural and Cultural Resources

North Carolina Department of Natural and Cultural Resources

State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Pat McCrory
Secretary Susan Kluttz

Office of Archives and History
Deputy Secretary Kevin Cherry

November 22, 2016

Richard Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, VA 23060
Richard.B.Gangle@dom.com

Re: Phase I Archaeological Survey for the Atlantic Coast Pipeline Project, North Carolina Addendum Report 3; Cumberland, Halifax, Johnston, and Robeson Counties; ER 14-1475

Dear Mr. Gangle:

We have received Robert M. Bisha's letter of September 29, 2016, forwarding copies of the above-referenced report by Environmental Resource Management (ERM) and would like to comment.

During the course of the survey, thirteen sites (including one isolated find) were located within the project area. Six have been recommended as not eligible for the National Register of Historic Places.

The following properties are determined not eligible for listing in the National Register of Historic Places: 31CD2123, 31CD2125, 31HX477, 31JT488, 31RB572**, and 31RB573. Because of a lack of integrity these sites have no further information value. Mr. William Stanyard of ERM has recommended that no further archaeological investigation be conducted in connection with these sites, allowing work to proceed in their areas. We concur with this recommendation.

One of these sites, 31RB572**, while not eligible for the NRHP, will be avoided because it is a cemetery.

The sites recommended for avoidance or Phase II testing by ERM to determine their eligibility for the NRHP are 31CD2122, 31CD2124, 31CD2126, 31CD2127, 31HX478, 31HX479, and 31JT489. We do not concur with this recommendation.

After careful consideration of the information presented for these sites, we feel sufficient information was gathered at the Phase I level of investigation to evaluate them. It is our opinion that these seven sites, 31CD2122, 31CD2124, 31CD2126, 31CD2127, 31HX478, 31HX479, and 31JT489 are not eligible for the NRHP. They are unlikely to provide additional information on the prehistory or history of the area. We, therefore, recommend no additional archaeological investigation in connection with these sites, allowing work to proceed in their areas.

Please see attached for several editorial comments.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

for Ramona M. Bartos

cc: Bill Stanyard, Natural Resource Group, bill.stanyard@nrg-llc.com

enclosure (editorial comments)

Editorial comments

- In the body of the report the appendix including maps is called Appendix A; on the maps it's called Appendix 1. Please make consistent.
- We request future reports describe isolated finds in the same manner as any other site, providing both a table presenting their information and a sketch map (e.g., afford 31JT488 the same treatment received by 31JT489).
- Include 31JT488 in Table 3.2-1, the summary of archaeological resources in the APE.
- One table listing all sites recorded during the survey, whether isolated finds, not eligible, or unassessed would be very helpful. Include revisits if any and identify them as such.

Dominion Resources Services, Inc.
5000 Dominion Boulevard.
Glen Allen, VA 23060

December 2, 2016

Renee Gledhill-Earley
State Historic Preservation Office
109 East Jones Street, Room 258
Raleigh, NC 27601

Subject: Section 106 Review – Revised Historic Structures Survey Report Addendum 2 Supplemental Information; Atlantic Coast Pipeline, LLC, Atlantic Coast Pipeline Project File No. Multi-County ER 14-1475

Dear Ms. Gledhill-Earley:

Atlantic Coast Pipeline, LLC (Atlantic) submitted the above-referenced report to your agency on October 28, 2016. In an email to Richard Gangle (Dominion) dated December 1, 2016, you indicated that the review could not proceed until you received additional information. The enclosed CD and photo sheets provide the information that was requested. In addition to a pdf version of the report, the CD contains electronic versions of the survey database, GIS shapefiles, survey site forms, and photo sheets.

Atlantic would appreciate your comments on the report, and we look forward to continuing to work with you on this Project. If you have any questions regarding the enclosed material, or need additional information, please contact Richard B. Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com, or by letter at:

Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Respectfully submitted,

Robert M. Bisha
Technical Advisor, Atlantic Coast Pipeline

cc: Richard Gangle (Dominion)
Enclosures: CD and photo sheets

North Carolina Department of Natural and Cultural Resources

State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Pat McCrory
Secretary Susan Kluttz

Office of Archives and History
Deputy Secretary Kevin Cherry

December 12, 2016

Robert M. Bisha, Technical Advisor
Atlantic Coast Pipeline
Dominion Resources Services, INC
5000 Dominion Boulevard
Glen Allen, VA 23060

Re: Revised Historic Structures Survey Report Addendum 2 Supplemental Information: Atlantic Coast Pipeline, Multi County, ER 14-1475

Dear Mr. Bisha:

Thank you for your letter of December 2, 2016, transmitting the above-referenced report. We have reviewed the report and note that is for a previously un-surveyed area that was necessitated by a rerouting of the pipeline and a new Area of Potential Effects.

We agree that the shed, five houses and cemetery shown as properties CD1454 – CD1456 and CD1458 – CD 1461 are not eligible for listing in the National Register of Historic Places for the reasons outlined in the report.

We do not agree that the ca. 1920 dwelling (CD1457) is eligible for listing in the Register under Criterion C. The description of the house noted that it has poor material integrity with the application of asbestos and composite siding, replacement windows and doors, and additions at the rear elevation. A higher level of material integrity as well as an assessment of the interior's material integrity would be necessary to support eligibility under Criterion C. Pending further research into the history of the house and surrounding land, it is possible that the house and outbuildings might be significant under Criterion A for Agriculture, but the material integrity remains an issue.

We are pleased to note in the Introduction that subsequent to this current report, ERM will prepare a supplemental report that:

- Summarizes findings from Dovetail's previous survey work
- Updates those findings in relation to project changes to note which properties remain in the APE
- Supplies additional information requested by us
- Provides an assessment of effects for eligible properties.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

for Ramona M. Bartos

cc: Richard B. Gangle, Dominion Resources, Richard.B.Gangle@dom.com

Dominion Resources Services, Inc.
5000 Dominion Boulevard,
Glen Allen, VA 23060

January 9, 2017

Renee Gledhill-Earley
State Historic Preservation Office
109 East Jones Street, Room 258
Raleigh, NC 27601

Subject: Section 106 Review –Phase I Historic Architecture Survey Report Addendum 3
Atlantic Coast Pipeline, LLC, Atlantic Coast Pipeline Project
File No. Multi-County ER 14-1475

Dear Ms. Gledhill-Earley:

Atlantic Coast Pipeline, LLC (Atlantic) is requesting review and comment on the enclosed addendum architecture survey report, which reports on investigations conducted for the proposed Atlantic Coast Pipeline (ACP) in November 2016. The Federal Energy Regulatory Commission (FERC) is the lead Federal agency for this Project. Atlantic's consultant, ERM, conducted the survey and prepared the enclosed report pursuant to the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended.

Atlantic would appreciate your comments on the attached addendum architecture survey report, and we look forward to continuing to work with you on this Project. If you have any questions regarding the enclosed report, please contact Richard B. Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com, or by letter at:

Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Respectfully submitted,

Robert M. Bisha
Technical Advisor, Atlantic Coast Pipeline

cc: Richard Gangle (Dominion)
Enclosure: **Phase I Historic Architecture Survey Report Addendum 3**

Dominion Resources Services, Inc.
5000 Dominion Boulevard,
Glen Allen, VA 23060

January 9, 2017

Renee Gledhill-Earley
State Historic Preservation Office
109 East Jones Street, Room 258
Raleigh, NC 27601

Subject: Section 106 Review –Historic Cemetery Delineation Report
Atlantic Coast Pipeline, LLC, Atlantic Coast Pipeline Project
File No. Multi-County ER 14-1475

Dear Ms. Gledhill-Earley:

Atlantic Coast Pipeline, LLC (Atlantic) is requesting review and comment on the enclosed historic cemetery report on delineations conducted for the proposed Atlantic Coast Pipeline (ACP) October 2016. The Federal Energy Regulatory Commission (FERC) is the lead Federal agency for this Project. Atlantic's consultant, ERM, conducted the delineations and prepared the enclosed report pursuant to the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended.

Atlantic would appreciate your comments on the attached historic cemetery delineation, and we look forward to continuing to work with you on this Project. If you have any questions regarding the enclosed report, please contact Richard B. Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com, or by letter at:

Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Respectfully submitted,

Robert M. Bisha

Robert M. Bisha
Technical Advisor, Atlantic Coast Pipeline

cc: Richard Gangle (Dominion)
Enclosure: **Historic Cemetery Delineation Report**

Dominion Resources Services, Inc.
5000 Dominion Boulevard,
Glen Allen, VA 23060

January 9, 2017

Renee Gledhill-Earley
State Historic Preservation Office
109 East Jones Street, Room 258
Raleigh, NC 27601

Subject: Section 106 Review –Phase II Investigations Sites 31NP391, 31NP392, 31NS147, 31NS169, and 31RB534
Atlantic Coast Pipeline, LLC, Atlantic Coast Pipeline Project
File No. Multi-County ER 14-1475

Dear Ms. Gledhill-Earley:

Atlantic Coast Pipeline, LLC (Atlantic) is requesting review and comment on the enclosed Phase II report on investigations conducted for the proposed Atlantic Coast Pipeline (ACP) from October 2015 through October 2016. The Federal Energy Regulatory Commission (FERC) is the lead Federal agency for this Project. Atlantic's consultant, ERM, conducted the survey and prepared the enclosed report pursuant to the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended.

Atlantic would appreciate your comments on the attached Phase II report, and we look forward to continuing to work with you on this Project. If you have any questions regarding the enclosed report, please contact Richard B. Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com, or by letter at:

Richard B. Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Respectfully submitted,

Robert M. Bisha
Technical Advisor, Atlantic Coast Pipeline

cc: Richard Gangle (Dominion)
Enclosure: **Phase II Investigations Sites 31NP391, 31NP392, 31NS147, 31NS169, and 31RB534**

North Carolina Division of Mitigation Services

Dominion Resources Services, Inc.
5000 Dominion Boulevard,
Glen Allen, VA 23060

November 23, 2016

BY OVERNIGHT (OR EXPRESS) MAIL

Mr. Tim Baumgartner
North Carolina Division of Mitigation Services
1652 Mail Service Center
Raleigh, NC 27699-1652

Re: Dominion Transmission, Inc., Atlantic Coast Pipeline
Request to Cross Stanley Slough and Stanley Slough II In-Lieu Fee Mitigation Sites

Dear Mr. Baumgartner:

Atlantic Coast Pipeline, LLC (Atlantic) is a company formed by four major U.S. energy companies—Dominion Resources, Inc. (Dominion); Duke Energy Corporation; Piedmont Natural Gas Co., Inc.; and Southern Company Gas. The company was created to develop, own, and operate the proposed Atlantic Coast Pipeline (ACP), an approximately 600-mile-long, interstate natural gas transmission pipeline system designed to meet growing energy needs in Virginia and North Carolina. For more information about the ACP, visit the company's website at www.dom.com/acpipeline. Atlantic has contracted with Dominion Transmission, Inc. (DTI), a subsidiary of Dominion, to seek authorization from the Federal Energy Regulatory Commission under Section 7(c) of the Natural Gas Act to construct, own, operate, and maintain the ACP on behalf of Atlantic.

Atlantic is submitting the enclosed materials as a request to cross a small portion of Stanley Slough and Stanley Slough II, North Carolina Division of Mitigation Services, In-Lieu Fee Wetland Mitigation Bank Sites with the ACP. Atlantic is providing the document for purposes of providing background information about the ACP, including an overview of route selection, avoidance and minimization, and an overview of planned pipeline construction methods. The narrative description and associated figures and appendices will provide the North Carolina Division of Mitigation Services information necessary to evaluate this formal request to cross the Stanley Slough and Stanley Slough II in-lieu fee compensatory stream and wetland mitigation sites.

Dominion looks forward to coordinating with you on this project. Please contact Richard Gangle at (804) 273-2814 or Richard.B.Gangle@dom.com, if there are questions regarding this submittal.

Please direct written responses to:

Richard Gangle
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Sincerely,

Robert M. Bisha
Director, Environmental Business Support

cc: Samantha Dailey, U.S. Army Corps of Engineers (via email)

Attachments: Request to Cross Stanley Slough and Stanley Slough II, North Carolina Division of Mitigation Services, In-Lieu Fee Wetland Mitigation Bank Sites; text narrative, figures, and appendices.

ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE

Request To Cross Stanley Slough & Stanley Slough II North Carolina Division of Mitigation Services In-Lieu Fee Wetland Mitigation Bank Sites

Northampton County, North Carolina

Prepared by

November 2016

ATLANTIC COAST PIPELINE PROJECT
REQUEST TO CROSS NORTH CAROLINA DIVISION OF MITIGATION SERVICES – IN LIEU FEE WETLAND MITIGATION SITES

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APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

ACP	Atlantic Coast Pipeline
AP-3	ACP Lateral Pipeline AP-3
ATWS	Additional Temporary Work Space
Atlantic	Atlantic Coast Pipeline, LLC
CFR	Code of Federal Regulations
Columbia	Columbia Gas Transmission, LLC
Dominion	Dominion Resources, Inc.
DTI	Dominion Transmission, Inc.
FERC	Federal Energy Regulatory Commission
GDS-NWR	Great Dismal Swamp National Wildlife Refuge
HUC	hydrologic unit codes
M&R	metering and regulating
MMDth/d	million dekatherms per day
MP	milepost
NCDMS	North Carolina Division of Mitigation Services
Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
Procedures	Wetland and Waterbody Construction and Mitigation Procedures
Project	Atlantic Coast Pipeline
PSS	palustrine scrub-shrub wetland
SII	Stanley's II Wetland Restoration Site
SPCC Plan	Spill Prevention, Control, and Countermeasures Plan
SSSW	Stanley's Slough Stream and Wetland Restoration Site
TNC	The Nature Conservancy
UNT	Unnamed Tributary
USGS	U.S. Geological Survey

1.0 PURPOSE AND PROJECT OVERVIEW

Atlantic Coast Pipeline, LLC (Atlantic) is a company formed by four major U.S. energy companies—Dominion Resources, Inc. (Dominion); Duke Energy Corporation; Piedmont Natural Gas Co., Inc.; and Southern Company Gas, Inc. Atlantic is providing the following document for purposes of providing background information about the Atlantic Coast Pipeline Project (ACP or Project), including an overview of construction methods proposed and details pertaining to route selection, which will provide the North Carolina Division of Mitigation Services (NCDMS) information necessary to evaluate this formal request to cross a narrow segment of the Stanley Slough and Stanley Slough II in-lieu fee compensatory stream and wetland mitigation sites according to North Carolina General Statute §143-214.8 et seq.

Atlantic was created to develop, own, and operate the ACP, an approximately 603.8-mile-long interstate natural gas transmission pipeline system designed to meet growing energy needs in Virginia and North Carolina (see Appendix A, Figure A-1). The ACP will deliver natural gas that will be used to generate electricity, heat homes, and run local businesses. The Project will facilitate cleaner air, increase the reliability and security of natural gas supplies, and provide a significant economic boost in West Virginia, Virginia, and North Carolina. More information is provided at the company's website at www.dom.com/acpipeline. Atlantic has contracted with Dominion Transmission, Inc. (DTI), a subsidiary of Dominion, to permit, build, and operate the ACP on behalf of Atlantic.

Atlantic is seeking authorization from the Federal Energy Regulatory Commission (FERC) under Section 7(c) of the Natural Gas Act to construct, own, operate, and maintain the following proposed pipeline facilities for the ACP system:

Mainline Pipeline Facilities:

- AP-1: approximately 333.1 miles of underground 42-inch outside diameter natural gas transmission pipeline in Harrison, Lewis, Upshur, Randolph, and Pocahontas Counties, West Virginia; Highland, Bath, Augusta, Nelson, Buckingham, Cumberland, Prince Edward, Nottoway, Dinwiddie, Brunswick, and Greensville Counties, Virginia; and Northampton County, North Carolina.
- AP-2: approximately 186.0 miles of underground 36-inch outside diameter natural gas transmission pipeline in Northampton, Halifax, Nash, Wilson, Johnston, Sampson, Cumberland, and Robeson Counties, North Carolina.

Lateral Pipeline Facilities:

- AP-3: approximately 83.2 miles of underground 20-inch outside diameter natural gas lateral pipeline in Northampton County, North Carolina; and Greensville and Southampton Counties and the Cities of Suffolk and Chesapeake, Virginia.
- AP-4: approximately 0.4 mile of underground 16-inch outside diameter natural gas lateral pipeline in Brunswick County, Virginia.
- AP-5: approximately 1.0 mile of underground 16-inch outside diameter natural gas lateral pipeline in Greensville County, Virginia.

1.1 IN-LIEU FEE BANK SITES AND ACP PROJECT LOCATION SUMMARY

Stanley's Slough Stream and Wetland Restoration Site (SSSW) and Stanley's II Wetland Restoration Site (SII) are wetland mitigation sites in the North Carolina In-Lieu Fee program administered by the NCDMS according to North Carolina General Statute §143-214.8 et seq. These sites have been established to assist private and public entities to comply with state and federal compensatory mitigation for streams, wetlands, riparian buffers, and nutrients. The two sites are located within Northampton County, North Carolina, within the Chowan River Basin, Cataloging Unit 03010204. SSSW consists of approximately 18.09 acres and SII consists of approximately 8.83 acres.

The ACP Lateral Pipeline AP-3 (AP-3), a proposed 20-inch outside diameter natural gas pipeline, would typically require workspace 75 feet in width, and in some locations an additional 50-75 feet of width across agricultural land, to cross streams and wetlands, may also be required (see Appendix B, workspace typical drawings). Workspace consists of permanent workspace (generally the permanent easement utilized for operation of the pipeline), temporary workspace (used only during the construction phase of the project), and additional temporary workspace (25 foot by 100 foot workspace boxes use to store equipment and extra soil at road, wetland, and waterbody crossings). Workspace that would intersect the SSSW and SII sites will cross approximately 0.05 acre of the SSSW and SII sites, consisting of approximately 0.05 acre of permanent workspace. Based on the GIS data utilized to evaluate these impacts, the pipeline trench would remain outside the limits of the SSSW and SSII sites.

During environmental surveys, for purposes of project planning and permitting, one wetland consisting of two wetland community types (i.e., forested and emergent wetlands) has been identified in field reviews within the 0.05 acre of permanent workspace that intersects the mitigation site. Unique identification labels assigned by ACP wetland field crews to the wetland delineated in this area are wnrp016e and wnrp016f; differentiated by the vegetation communities that consist of emergent wetlands along the electrical transmission line corridor and adjacent forested wetland communities (see Appendix A – Figure A-4).

Table 1.1-1 below describes the different types of wetlands that are located within the SSSW and SII sites and their respective acreages.

TABLE 1.1-1

Wetland Acreage in SSSW and SII ILF Bank Sites

Workspace Type	Wetland Type[a]	Unique Wetland ID	Acre
Permanent ROW	Emergent	wnrp016e	0.02
	Forested	wnrp016f	0.03
Grand Total			**0.05**

[a] Wetland type based on the Cowardin classification system, Emergent = PEM; Forested = PFO.

1.2 PURPOSE OF THE DOCUMENT

This document has been prepared to assist the NCDMS in review of ACP's request to cross the SSSW and SII sites. The following sections of the document provide background to explain Atlantic's route evaluation process and route selection, project construction methods, and post construction restoration methods.

2.0 PIPELINE ROUTES AND ALTERNATIVES

Atlantic identified and evaluated a number of alternatives to the proposed Project. The alternatives evaluated included a no-action alternative; alternative energy sources, including traditional and renewable sources; energy conservation measures; and system alternatives as alternatives to the project. Based on a determination submitted to FERC within Resource Report 10 demonstrating the need for the project Atlantic began to evaluate routing alternatives for the Project. The route alternatives included conceptual collocation route alternatives; major route alternatives; minor route variations; minor route adjustments; and alternative aboveground facility sites. The review of route alternatives included an assessment and comparison of a number of factors, including technical and economic feasibility, constructability, environmental impact, ability to meet the purpose and need of the Project, and input from stakeholders, including Federal land managing agencies, Federal and State/Commonwealth resource agencies, and landowners. As a result of desktop analyses and field surveys, Atlantic identified a number of route alternatives and variations along the proposed pipeline routes to avoid or minimize crossings of sensitive environmental features, address engineering constraints, consider public and agency input, and balance many competing constraints to determine a constructible route.

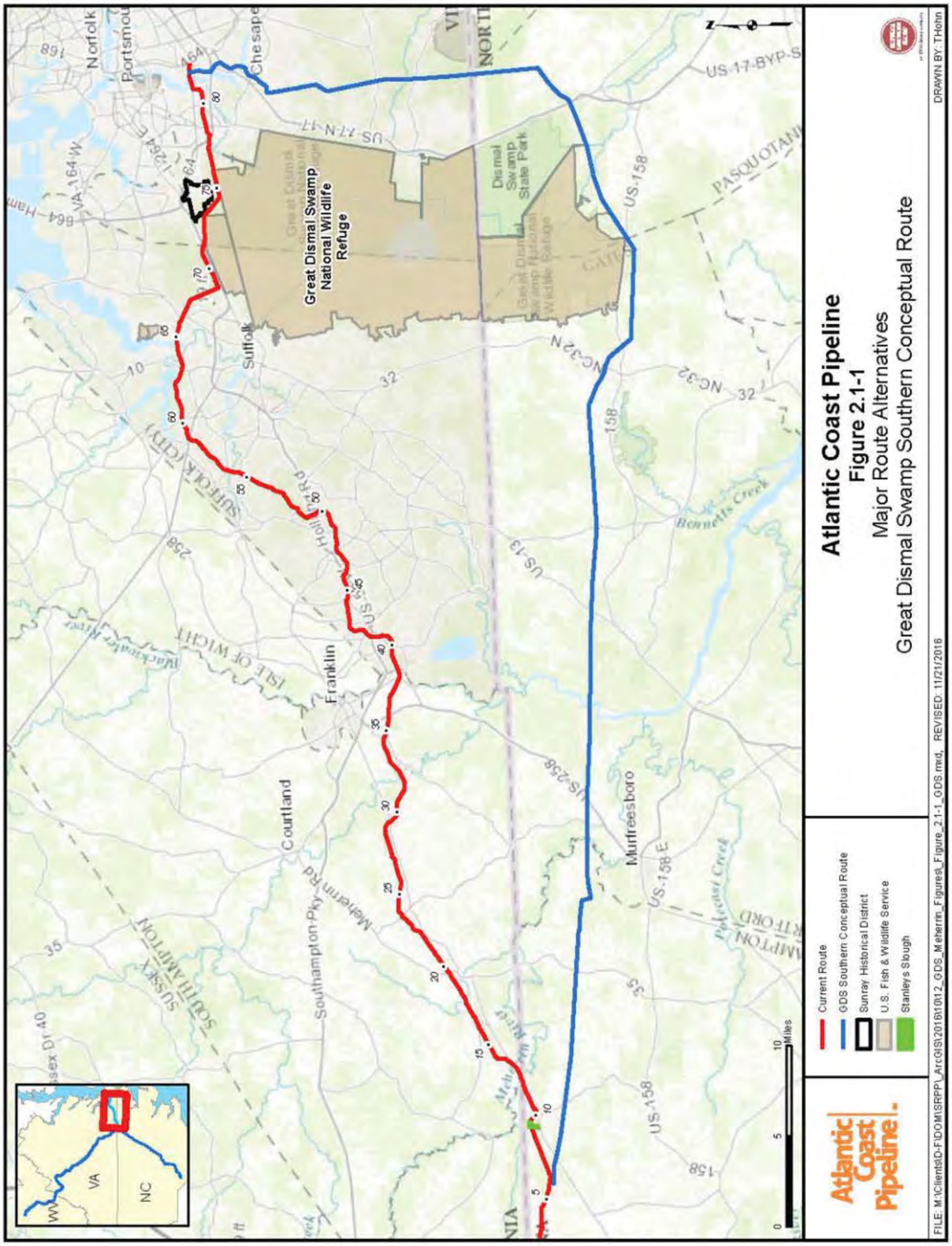
Route variations and alternatives that have been filed as part of the Project record with the FERC have influenced the pipeline route through the area around the SSSW and SII sites. When evaluating the location of the ACP, AP-3 lateral route along which the SSSW and SII sites are located, the location of Compressor Station 2 in Northampton County, North Carolina where the AP-3 lateral starts and the end point of the AP-3 lateral in the City of Chesapeake provide the baseline start and end points for routing the ACP, AP-3 lateral. Alternatives that have influenced the route selection along the AP-3 lateral in the vicinity of and leading up to and away from the SSSW and SII sites are described in Sections 2.1 and 2.2 below. Section 2.3 explains additional routing considerations that resulted in the location of the AP-3 route across portions of the SSSW and SII sites.

2.1 SOUTHERN CONCEPTUAL ROUTE ALTERNATIVE

The southern conceptual alternative route originates approximately at MP 6.0 of the currently proposed AP-3 lateral route in Northampton County, North Carolina (see Figure 2.1-1). From this point, the conceptual route heads due east for approximately 64 miles crossing Northampton, Hertford, Gates, Pasquotank, and Camden Counties, North Carolina, passing south of the Great Dismal Swamp National Wildlife Refuge (GDS-NWR) and Dismal Swamp State Park. The conceptual route then heads north for approximately 20 miles, crossing Camden County, North Carolina and the City of Chesapeake, Virginia, passing east of the GDS-NWR.

Although the southern conceptual route alternative avoids the GDS-NWR, construction along this route would result in an additional 13 miles of impacts, including crossings of many miles of wetlands along the Chowen River, in the area south of the Dismal Swamp State Park, and along the Pasquatank River. Based on National Wetlands Inventory data, the southern conceptual route crosses approximately 30.6 miles of wetlands, while the corresponding segment of the currently proposed route crosses approximately 20.1 miles of wetlands. The southern conceptual route additionally crosses large blocks of land identified by The Nature Conservancy (TNC) as sensitive floodplain forest in areas south and east of the GDS-NWR. Also, the southern conceptual route alternative is almost entirely a greenfield corridor, as there are no existing pipelines, electric transmission lines, railroads, or major roads to follow in the vicinity of the route. By contrast, the corresponding segment of the proposed route is collocated with existing linear corridor facilities for approximately 13 miles.

The Southern Conceptual Route Alternative would have avoided the area of the SSSW and SII sites completely. However, because the southern conceptual route is longer and would result in greater impacts than the currently proposed route, particularly to wetlands, the route is not considered a viable alternative.


Atlantic Coast Pipeline
Figure 2.1-1
Major Route Alternatives
Great Dismal Swamp Southern Conceptual Route
Current Route
GDS Southern Conceptual Route
Sunray Historical District
U.S. Fish & Wildlife Service
Stanleys Slough
Great Dismal Swamp National Wildlife Refuge
Dismal Swamp State Park
Suffolk
Franklin
Courtland
Murfreesboro
Norfolk
Miles
VA
NC
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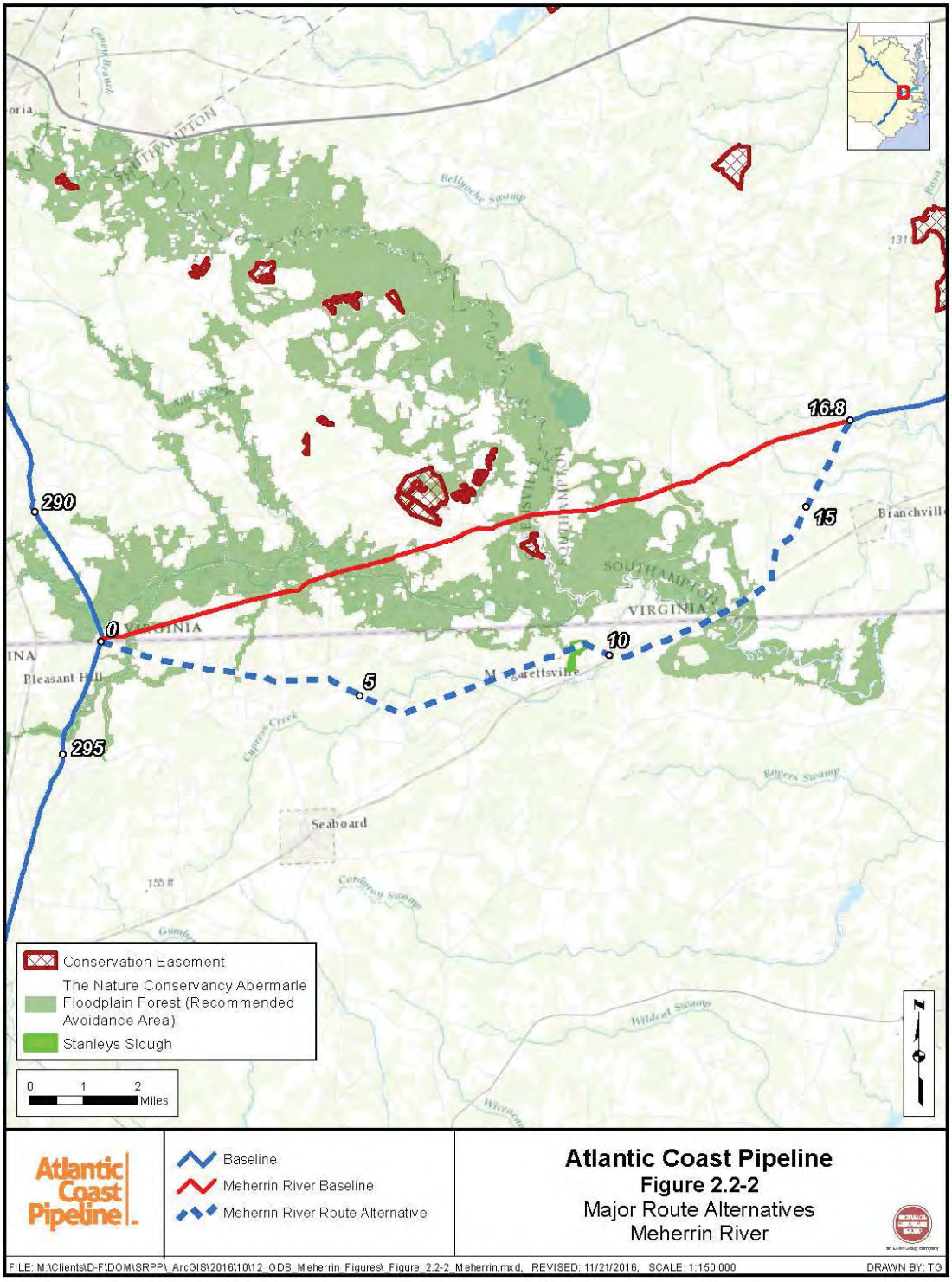
2.2 MEHERRIN RIVER MAJOR ROUTE ALTERNATIVE

In a letter dated September 8, 2014, and in a meeting on November 12, 2014, TNC asked Atlantic to consider an alternative route for the proposed AP-3 lateral to avoid or minimize crossings of the Meherrin River and Fountains Creek watersheds in southeastern Virginia. These watersheds are part of TNC's Albemarle Sound Whole System project area, which encompasses approximately 6 million acres of freshwater-dominated estuarine habitat in southeastern Virginia and northeastern North Carolina. TNC states that the Albemarle Sound System contains "areas of large intact wetland forest that support high levels of use by migratory and breeding birds and buffer some of the best migratory fish spawning and nursery habitats on the East Coast." TNC has worked with public agencies, corporations, landowners, and communities to protect and restore public and private lands in this area.

The Meherrin River baseline route for the AP-3 lateral crossed floodplain forest in the Meherrin River and Fountains Creek watersheds between MPs 0.0 and 12.0, including areas which TNC had recommended for avoidance. Atlantic identified and evaluated a route alternative which avoids Fountains Creek altogether and minimized crossings of floodplain forest in areas recommended by TNC for avoidance. The baseline route and Meherrin River Route Alternative are depicted on Figure 2.2-1.

In addition to the avoidance of floodplain forest, the Meherrin River alternative increased collocation with existing infrastructural rights-of-way by 11.6 miles, where the alternative route follows a Virginia Electric and Power Company electric transmission right-of-way. The increase of collocation addressed a FERC request to increase collocation along this pipeline segment. Based on the feasibility of collocation with other utility corridors in this area, and the relative similarity of the impact on other major resource considerations, Atlantic incorporated the Meherrin River Route Alternative into the proposed route. Incorporation of the Meherrin River Route Alternative into the proposed AP-3 lateral route results in a route that ultimately crosses the SSSW and SII sites.


16.8
290
15
0
10
5
295
Pleasant Hill
Seaboard
155 ft
Conservation Easement
The Nature Conservancy Abermarle Floodplain Forest (Recommended Avoidance Area)
Stanleys Slough
0 1 2 Miles
Baseline
Meherrin River Baseline
Meherrin River Route Alternative
Atlantic Coast Pipeline
Figure 2.2-2
Major Route Alternatives
Meherrin River
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2.3 ADDITIONAL ROUTE ALTERNATIVES REFINEMENT

The objective of the routing process is to identify the shortest possible route between the proposed receipt and delivery points taking into account the ACP purpose and need, engineering constraints, crossings of public lands, issues identified by stakeholders, minimization of impacts by collocating with existing rights-of-way or infrastructure, and the potential for impacts on sensitive environmental, tribal, and historical resources. Once the baseline route was established, Atlantic continued to evaluate route alternatives, variations, and minor adjustments based on a review of additional desktop constraint data, consultations and discussions with agency staff or other stakeholders, and field review in an effort to optimize the routes, as the adoption of the Meherrin River Route Alternative demonstrates.

With the desktop route determined, a field oriented routing team consisting of a lead construction router, civil survey staff, and an ecological specialist teamed to adjust the route based on site-specific conditions while weighing competing constraints associated with environmental, tribal, and historical resource protection, constructability, available technology, and logistical constraints. Where practicable, adjustments to the route were made to avoid and/or minimize impacts to wetlands and waterbodies, and other sensitive features.

Route refinement considerations that influenced the route in the immediate vicinity of the SSSW and SII sites include a FERC requested preference to collocate with an existing transmission line corridor that cuts through these sites to minimize both forest fragmentation and tree clearing. Routing south of the sites would result in crossing close to existing structures and homes. Routing north of the sites would move away from the existing transmission line corridor into forested land, resulting in additional tree clearing. Avoidance and minimization of tree clearing on forested lands will reduce potential impacts on forest-dwelling migratory bird species and potential impacts on state and federally listed bat species.

Atlantic has taken steps to reduce the temporary impact to the SSSW and SII sites. Temporary workspace impacted by the right-of-way was calculated at approximately 0.13 acre. Dominion has been able to reconfigure the temporary workspace and reduce the impacts to 0.00 acre. Reducing the temporary workspace will also help to avoid temporary impacts to wetlands in the area. Refer to appendices to show change

3.0 PROJECT CONSTRUCTION SEQUENCE AND METHODS

Construction of the proposed pipelines, known as the open-cut method, will follow industry-standard practices and procedures as described below. In a typical scenario, construction involves a series of discrete activities conducted in a linear sequence. These include survey and staking; clearing and grading; trenching; pipe stringing, bending, and welding; lowering-in and backfilling; hydrostatic testing; final tie-in; commissioning; and right-of-way cleanup and restoration. Appendix B – Figure B-1 illustrates each of the steps in a typical construction sequence. A description of each step in the process is provided below. According to Atlantic's construction schedule initial site preparation and tree clearing will take place in November 2017 with pipeline construction scheduled to begin in February 2018 and is currently scheduled to be completed by the end of 2018. Following the 2018 construction season Atlantic will continue to monitor, stabilize, and restore the construction right-of-way according to federal and state permit requirements.

3.1 SURVEY AND STAKING

Affected landowners will be notified before the preconstruction survey and staking are conducted. After these notifications, Atlantic's and DTI's survey contractor will stake the pipeline centerlines and limits of the construction right-of-way and Additional Temporary Work Space (ATWS) areas. Wetland boundaries and other environmentally sensitive areas will also be marked at this time.

3.2 CLEARING AND GRADING

Prior to beginning ground-disturbing activities, Atlantic's construction contractors will coordinate with the One-Call systems in North Carolina to have existing underground utilities (e.g., cables, conduits, and pipelines) identified and flagged. Once this process is complete, the clearing crew will mobilize to the construction areas. The clearing crew will then clear the work area of vegetation and other obstacles, including trees, stumps, logs, brush, and rocks.

To the extent feasible, Atlantic will minimize tree removal during construction. Cleared vegetation and stumps will either be burned, chipped (except in wetlands), or hauled offsite to a commercial disposal facility. No chips, mulch, or mechanically cut woody debris will be stockpiled in wetlands, and no upland woody debris will be disposed of in wetlands. Non-merchantable timber will not be disposed of by placing it off the right-of-way without landowner approval. No woody debris disposal will be allowed in agricultural areas or wetlands.

Burning of non-merchantable wood will be allowed only where the contractor has acquired all applicable permits and approvals (e.g., agency and landowner) and in accordance with State and local regulations, and only with site-specific approval from Atlantic. Prior to initiating burning, the contractor will provide Atlantic with copies of required permits and approvals.

Following clearing, the construction right-of-way and ATWS will be graded where necessary to provide a level work surface to allow safe passage of construction equipment and emergency vehicles. Graded topsoil will be segregated in accordance with the FERC - Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures), where required. Typically, topsoil will be segregated from subsoil in non-saturated wetlands, cultivated or rotated croplands, managed pastures, hayfields, residential areas, and in other areas requested by the landowner or land managing agency unless Atlantic is instructed by a landowner or land managing agency not to do so or Atlantic import topsoil in accordance with the Plan.

The depth of topsoil removed will depend on soil conditions and landowner requests or land managing agency requirements. In accordance with the Plan, and in areas where topsoil segregation is required, Atlantic will segregate at least 12 inches of topsoil in deep soils (more than 12 inches of topsoil) and the entire topsoil layer in shallow soils (less than 12 inches of topsoil). Excavated topsoil will be placed on the edge or edges of the construction right-of-way as shown in the construction typicals provided in Appendix B.

If the ground is relatively flat and does not require topsoil segregation or grading, the existing vegetative mat will be peeled and removed similar to topsoil and stockpiled along the right-of-way for use in restoration. In areas disturbed by grading, and as required by the Plan and Procedures, temporary erosion and sediment controls will be installed within the right-of-way to minimize erosion. All materials used for erosion and sediment control (e.g., hay bales or straw mulch) will be certified as weed free. The

erosion and sediment controls will be inspected and maintained throughout the construction and restoration phases of the Project, as appropriate, and as required by the Plan and Procedures.

3.3 TRENCHING

Pipe trench will be excavated by rotary trenching machines, track-mounted backhoes, or other similar equipment. Trench spoil will be deposited adjacent to the trench within the construction right-of-way. The trench for each pipeline will be excavated to a depth that provides sufficient cover over the pipeline after backfilling. The typical dimensions of each pipeline trench will vary depending on a number of factors, such as the diameter of the pipe being installed and the substrate in the vicinity of the trench (see Table 3.3-1). The bottom width of the trench will be sufficient to accommodate the diameter of the pipeline and sufficient pad material around it (typically approximately 1 foot on either side of the pipeline). The top width will vary to allow the sides of the trench to be adapted to local soil conditions at the time of construction. If trench dewatering is required within or off of the construction right-of-way, it will be conducted in accordance with the Plan and Procedures and applicable permits in a manner that will not cause erosion or result in silt-laden water flowing into a wetland or waterbody.

In areas where topsoil segregation is required, subsoil from trench excavations will be placed adjacent to the topsoil in a separate pile to allow for proper restoration of the soil during backfilling and restoration. Gaps will be left between the topsoil and subsoil piles to prevent stormwater runoff from backing up or flooding. Mixing of topsoil and subsoil piles will be prevented by separating them physically or with a mulch or silt fence barrier, where necessary, to accommodate reduced workspace.

When rock or rocky formations are encountered, hydraulic hammers, tractor-mounted mechanical rippers or rock trenchers will be used for breaking up the rock prior to excavation. In areas where mechanical equipment or other means cannot be used to break up or loosen boulders or shallow bedrock, blasting will be required.

TABLE 3.3-1

Typical Trench Dimensions for the Atlantic Coast Pipeline

Pipeline	Outside Diameter	Cover	Top Width (feet)	Depth (feet)	Typical Depth of Cover (feet)
Atlantic Coast Pipeline					
AP-3	20-inch	Non-agricultural upland	5–10	6	3
		Agricultural	5–10	7	4
		Wetland	10–15	6	3
		Road, railroad, and waterbody crossings	10–15	8	5 or more

3.4 PIPE STRINGING, BENDING, AND WELDING

Individual joints of pipe (up to approximately 80 feet long) will be trucked to the construction right-of-way and strung along the trenchline in a single, continuous line. Individual sections of pipe will be bent, where necessary, to allow for a uniform fit with the contours at the bottom of the trench and horizontal points of inflection. Typically, a track-mounted, hydraulic pipe-bending machine will tailor the shape of the pipe to conform to the contours of the trench. After the pipe sections are bent, they will be welded together into long sections and placed on temporary supports along the trench.

Welding is a crucial phase of pipeline construction because the integrity of the pipeline depends on this process. Each weld must exhibit the same structural integrity with respect to strength and ductility. Welding will be conducted in compliance with 49 CFR 192 and API Standard 1104, *Welding of Pipelines and Related Facilities*. Completed welds will be visually and radiographically inspected. Welds that do not meet established specifications will be repaired or removed. Following welding and after inspection, pipe weld joints will be coated with an epoxy coating in accordance with required specifications. If the coating is sprayed on, it will be contained within a flocking ring as it is sprayed onto the weld joint; this will result in little to no overspray of coating into the environment. The coating will be inspected for defects, and repaired, if necessary, prior to lowering the pipe into the trench.

3.5 LOWERING AND BACKFILLING

Prior to lowering-in, the trench will be inspected to confirm it is free of rocks and other debris that could damage the pipe or its protective coating. Dewatering may be necessary to inspect the bottom of the trench in areas where water has accumulated. If dewatering is required, it will be conducted in accordance with the Plan and Procedures and applicable permits in a manner that will not cause erosion or result in silt-laden water flowing into a wetland or waterbody.

The pipe will be lifted from the temporary supports and lowered into the trench using side-boom tractors. As necessary, trench breakers (stacked sand bags or foam) will be installed in the trench around the pipe in steeply sloped areas to prevent movement of subsurface water along the pipeline.

After lowering-in, the pipe will be padded and the trench will be backfilled with previously excavated materials using bladed equipment or backhoes. If the material excavated from the trench is rocky, the pipeline will be protected with a rock shield or covered with other suitable fill (i.e., crushed limestone rock or screened sand). Excavated rock will then be used to backfill the trench to the top of the existing bedrock profile in the trench, except that large rock will be buried on the working side of the two-tone cut where the contractor levels the ground for construction. This will prevent large rocks from migrating into the pad material in the trench and making contact with the pipe. Additionally, excavated rock may be crushed with a rock pulverizer and incorporated into fill or used as gravel to upgrade access roads. Excavated material not required for backfill will be removed and disposed of at approved upland disposal sites.

3.6 HYDROSTATIC TESTING

After backfilling and all other construction activities that could affect the pipeline are complete, each pipeline will be hydrostatically tested in sections to verify that each system is free from leaks and will provide the required margin of safety at operating pressures. Individual sections of pipeline to be tested will be determined by water availability and terrain conditions. Water for hydrostatic testing will be obtained from surface water sources in accordance with State regulations and required permits. As practicable, water will be transferred from one test section to another to reduce the amount of water that is required for testing. Once hydrostatic testing is complete, the test water will be discharged in accordance with the Plan and Procedures and applicable permits through an approved discharge structure to remove turbidity or suspended sediments (i.e., dirt left in the pipe during construction) and prevent scour and erosion. Alternatively, the water will be hauled offsite for disposal at an approved location.

During hydrostatic testing, internal pressures and durations will be in accordance with 49 CFR 192 and applicable permit conditions. If leaks are found during testing, the leaks will be repaired and the section of pipe retested until the required specifications are met.

3.7 FINAL TIE-IN AND COMMISSIONING

After hydrostatic testing, the final tie-ins on each pipeline will be completed and commissioning will commence. Commissioning involves activities to verify that equipment is properly installed and working; controls and communications systems are functional; and the pipeline is ready for service. The pipeline will be cleaned, dried, and inspected using in-line inspection tools (pigs) to detect anomalies in the pipe that may have been introduced during construction, and prepared for service by purging the line of air and loading the line with natural gas.

3.8 CLEAN UP AND RESTORATION

Final cleanup will begin after backfilling and as soon as weather and site conditions permit. Final cleanup (including final grading and installation of permanent erosion control devices) will be completed within timeframes required by permits, in accordance with landowner requests, as required by the Plan and Procedures, or as approved by the appropriate agencies. Construction debris will be collected and taken to an approved disposal facility. Preconstruction contours will be restored as closely as practicable. Segregated topsoil will be spread over the surface of the right-of-way, and permanent erosion controls will be installed.

Revegetation measures will be implemented in accordance with the Plan and Procedures or as directed by the appropriate land managing agency. Disturbed, non-cultivated work areas will be stabilized and seeded as soon as possible after final grading, weather and soil conditions permitting, subject to the recommended seeding dates for the seed mixes used to revegetate different areas along the pipelines.

3.9 PIPELINE RIGHTS-OF-WAY AND WORKSPACE

3.9.1 Construction Right-of-Way

For the AP-3 pipeline laterals, the construction corridor in non-agricultural uplands and in wetlands will measure 75 feet in width, with a 25-foot-wide excavated material side and 50-foot-wide working side. In areas where full width topsoil segregation is required (e.g., agricultural areas), an additional 25 feet of temporary construction workspace will be needed on the working side of the corridor to provide sufficient space to store topsoil. Following construction, a 50-foot-wide permanent easement will be maintained for operation of each pipeline. Appendix B – Figure B-2 shows the typical construction right-of-way in non-agricultural areas and wetlands. Appendix B – Figure B-3 shows the typical construction right-of-way in agricultural areas.

3.9.2 Additional Temporary Workspace

In addition to the construction rights-of-way, ATWS will be required to stage construction activities and store equipment, materials, and excavated material at wetland, waterbody, and road crossings. For the AP- AP-3 lateral, ATWS measuring 25 by 100 feet will typically be required on both sides of the corridor and both sides of the crossing at wetlands, waterbodies, roads, and railroads.

Following construction of the pipelines, ATWS will be restored in accordance with the Plan and Procedures, agency requirements, and landowner stipulations. Appendix B – Figure B-4 shows the typical ATWS at wetland crossings.

3.9.3 Wetland Construction Right-of-Way

Construction across wetlands will be conducted in accordance with the Procedures, site-specific modifications to the Procedures requested by Atlantic and DTI and approved by the FERC, and additional requirements identified in Federal or State wetland crossing permits. In accordance with the Procedures, the width of the construction right-of-way will be limited to 75 feet through wetlands, with ATWS on both sides of wetland crossings to stage construction equipment and materials, fabricate the pipeline, and store materials and excavated spoil. ATWS will be located in upland areas a minimum of 50 feet from the wetland edge (with the exception of site-specific modifications as requested by Atlantic and DTI and approved by the FERC). Appendix B – Figure B-5 shows the typical wetland construction right-of-way and open cut construction method.

3.10 WETLAND CONSTRUCTION METHODS

Wetland boundaries will be clearly marked in the field prior to the start of construction with signs and flagging. Clearing of vegetation in wetlands will be limited to trees and shrubs, which will be cut flush with the surface of the ground and removed from the wetland. To avoid excessive disruption of wetland soils and the native seed and rootstock within the topsoil, stump removal, grading, topsoil segregation, and excavation will be limited to the area immediately over the trenchline, except a limited amount of stump removal and grading may be conducted in other areas if required by safety-related issues. Topsoil segregation over the trenchline will only occur if the wetland soils are not saturated at the time of construction.

The method of pipeline construction used in wetlands will depend on site-specific weather conditions, soil saturation, and soil stability at the time of construction. If wetland soils are not excessively saturated at the time of construction and can support construction equipment on timber mats, they will be crossed using conventional open-trench construction. This will occur in a manner similar to conventional upland cross-country construction techniques. In unsaturated wetlands, topsoil from the trenchline will be stripped and stored separately from subsoil.

Where wetland soils are saturated or in inundated lowlands areas where soils cannot support conventional pipe-laying equipment, the pipeline may be installed using the push-pull method. This method will involve stringing and welding the pipeline outside of the wetland and excavating and backfilling the trench using a backhoe supported by equipment mats or pontoons. A prefabricated section of pipeline will be installed in the wetland by equipping it with buoys and pushing or pulling it across the water-filled trench. After the pipeline is floated into place, the floats will be removed and the pipeline will sink into place. In most cases, the pipeline will be coated with concrete or equipped with bag weights to provide negative buoyancy. Once the pipeline is in place, the trench will be backfilled. The push-pull construction method minimizes the number of equipment passes, reducing wetland impacts and soil compaction in lowland areas.

3.11 POST CONSTRUCTION MAINTENANCE

Following construction a 50-foot-wide permanent easement will be maintained for operation of the pipeline based on FERC right of way maintenance requirements. An area of ten feet centered on the pipeline will be maintained in an herbaceous state to facilitate aerial inspection of the pipeline. Trees within an area of thirty feet centered on the pipeline with roots that could compromise the integrity of the pipeline coating may be selectively cut and removed from the permanent right-of-way. Outside of the 30-foot maintenance area in wetlands will be allowed to regrow with no restrictions or vegetation maintenance by Atlantic. Appendix B – Figure B-6 shows the maintenance corridors.

4.0 CONCLUSION

The ACP is an approximately 603.8-mile-long interstate natural gas transmission pipeline system designed to meet growing energy needs in Virginia and North Carolina. The Project proposes to cross the Stanley's Slough Stream and Wetland Restoration Site and Stanley's II Wetland Restoration Site which are mitigation bank sites in the North Carolina In-Lieu Fee Program. The ACP Lateral Pipeline AP-3 workspace has been minimized from 0.17 acres within construction workspace down to 0.05 acre of workspace impacts on the SSSW and SII sites. Wetlands delineated as part of the ACP project, consisting of approximately 0.05 acre within permanent workspace located within the SSSW and SII sites. Location of the route across the SSSW and SII sites is the result of an extensive routing study that has involved route adjustments to the baseline route that have resulted in the AP-3 route crossing the SSSW and SII sites. The larger route alternatives as well as localized route adjustments that have been adopted to align the route to its current configuration are the result of stakeholder input, with an emphasis on reducing environmental impacts. Construction techniques, including specialized wetland crossing methods, will minimize impacts to wetlands located within the SSSW and SII sites during construction.

With the minimum overlap of the permanent easement with the NCDMS sites, Atlantic anticipates that there would not be permanent right-of-way clearing that would occur within wetlands on the NCDMS sites, based on the FERC right-of-way maintenance requirements. Therefore, based on the GIS data reviewed, Atlantic anticipates that the 0.02 acre of emergent wetland disturbed during construction would be restored to pre-construction conditions one to three years after construction. In addition, Atlantic anticipates that the 0.03 acre of forested wetland disturbance during construction would be allowed to restore to pre-construction condition over a number of years of natural recruitment.

Given the information provided in this request to cross SSSW and SII sites submittal, Atlantic respectfully requests further coordination with NCDMS to determine solutions to allow the AP-3 route to remain along its current alignment.

5.0 REFERENCES

Cowardin, L.M., V. Carter, F.C. Golet, E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Jamestown, ND: Northern Prairie Wildlife Research Center Online. Available online at: http://www.npwrc.usgs.gov/resource/wetlands/classwet/. Accessed October 2014.

North Carolina Department of Environmental and Natural Resources – Ecosystem Enhancement Program. 2013. Stanley's Slough Stream and Wetland Restoration Site and Stanley's II Wetland Restoration Site Mitigation Plan. North Carolina Department of Environmental Quality – Division of Mitigation Services, Raleigh, North Carolina. Available online at : https://ncdenr.s3.amazonaws.com/s3fs-public/Mitigation%20Services/Document%20Management%20Library/Projects/Stanley's%20II_%2095838_MP_2013.pdf. Accessed October 2016.

Peterson, James. 2015. Phone Communication with West Virginia Department of Environmental Protection, Water and Waste Management Section. Communication on April 7, 2015.

U.S. Energy Information Administration. 2014. Virginia State Profile and Energy Estimates. U.S. Department of Energy, Washington, District of Columbia. Available online at http://www.eia.gov/state/?sid=VA. Accessed June 2015.

U.S. Energy Information Administration. 2015. Annual Energy Outlook 2015 with Projections to 2040. U.S. Department of Energy, Washington, District of Columbia.

West Virginia Code of State Regulations. 2014. Title 47 Legislative Rule: Series 2, Requirements Governing Water Quality Standards. Available online at: http://www.dep.wv.gov/WWE/Programs/wqs/Documents/Rule%20Approved%20Letter%20and%20Rule%20Itself%202014/WVDEP_WQS_2014TriReview_FinalRule47CSR2_June_2014.pdf. Accessed November 2014.

ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE

Appendix A
Figure A-1
Project Overview Map

Atlantic Coast Pipeline

ACP Mainline

ACP Lateral

ACP Compressor Station

Atlantic Coast Pipeline Project

Figure A-1

Project Overview Map

NATURAL RESOURCE GROUP
an ERM Group company

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Appendix A
Figure A-2
Mitigation Sites Aerial Map

This information is for environmental review purposes only.

- Milepost
- ACP Centerline
- Mitigation Bank
- Perm AR
- Perm ROW
- Temp ATWS
- Temp ROW
- Temp TS

Atlantic Coast Pipeline
Figure A-2
Aerial Overview Map
Stanley Slough and Stanley Slough II
In-Lieu Fee Sites

Natural Resource Group
an ERM Group company

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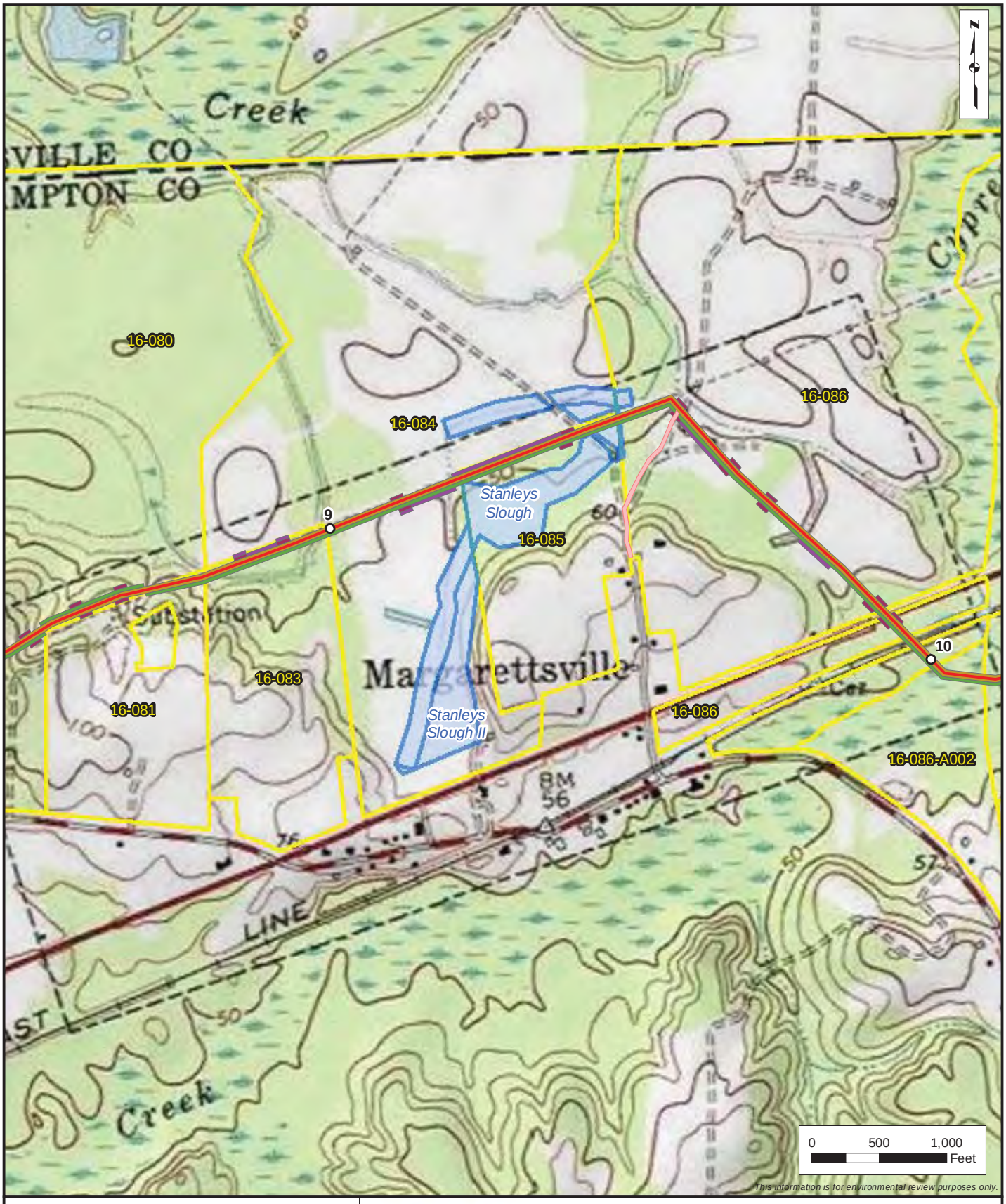
ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE

Appendix A
Figure A-3
Mitigation Sites Topographic Map



Milepost
ACP Centerline
Mitigation Bank
Perm AR
Perm ROW
Temp ATWS
Temp ROW
Temp TS

Atlantic Coast Pipeline
Figure A-3
Topographic Overview
Stanley Slough and Stanley Slough II
In-Lieu Fee Sites

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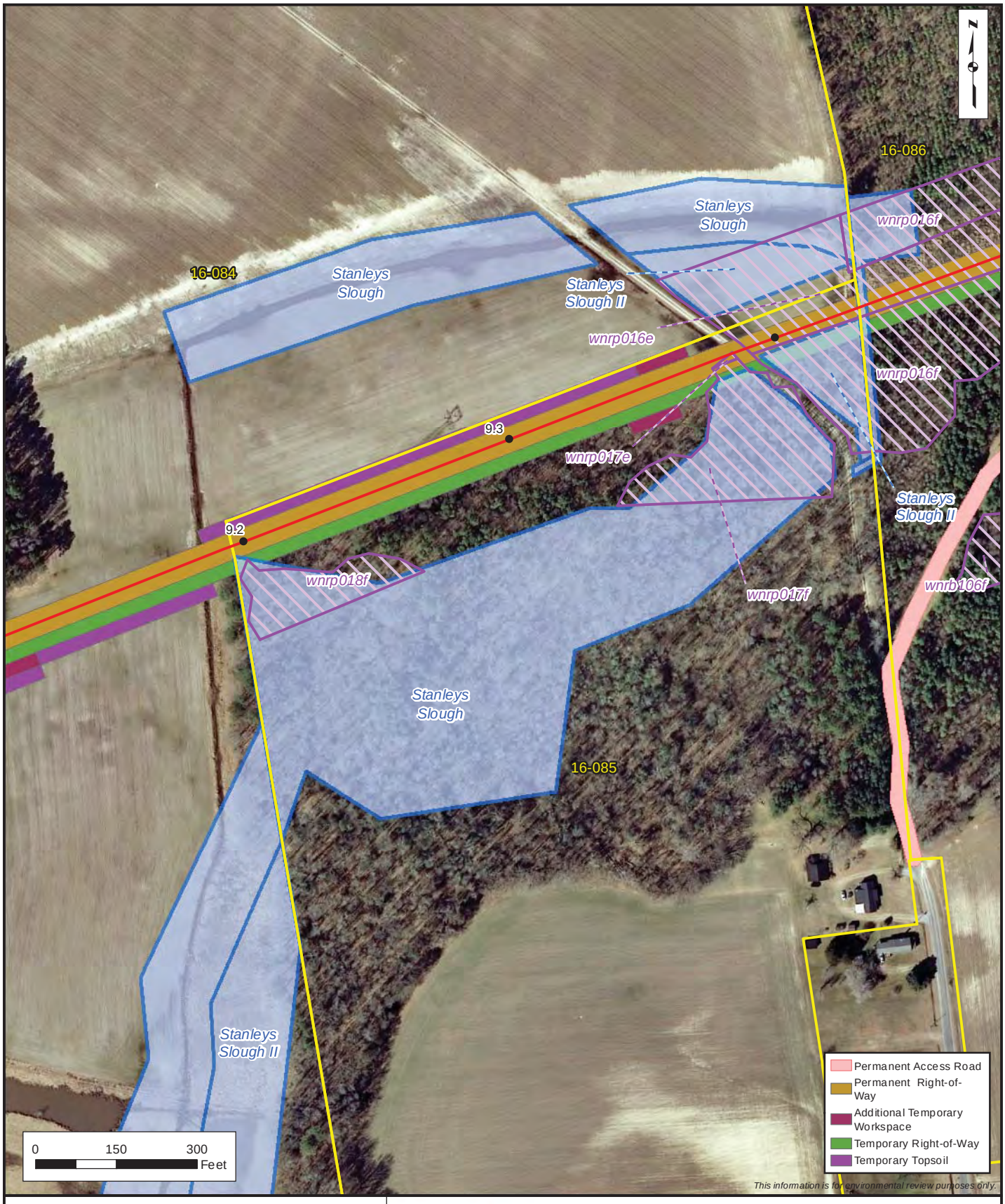
ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE

Appendix A
Figure A-4
Original Workspace Layout



- Milepost
- ACP Centerline
- Parcel
- Mitigation Bank
- Surveyed Waterbody
- Surveyed Wetland

Atlantic Coast Pipeline

Atlantic Coast Pipeline
Figure A-4
Original Workspace Layout
Stanley Slough and Stanley Slough II
In-Lieu Fee Sites

NATURAL RESOURCE GROUP
an ERM Group company

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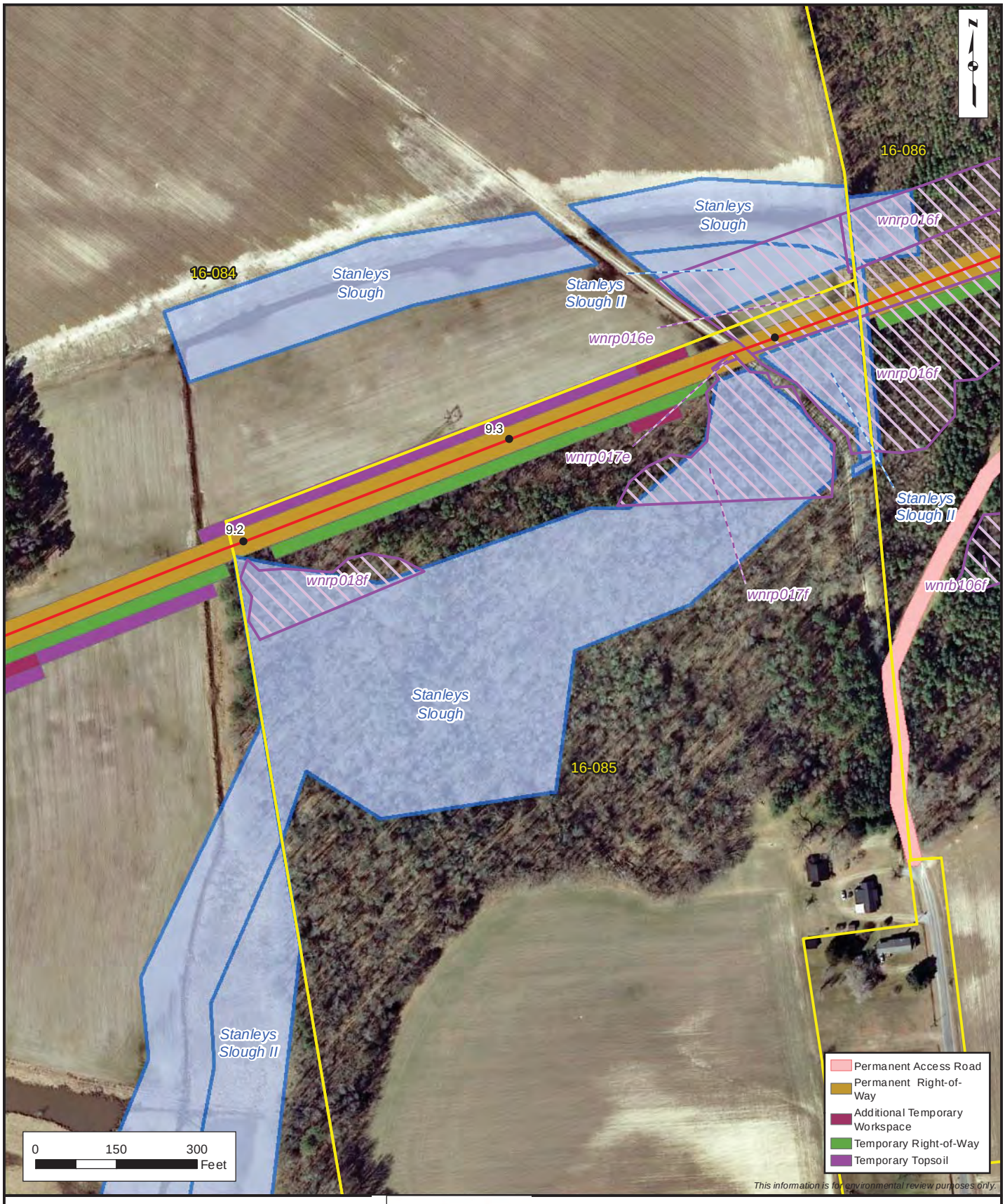
ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE

Appendix A
Figure A-5
Proposed Minimization of Workspace Layout



- Milepost
- ACP Centerline
- Parcel
- Mitigation Bank
- Surveyed Waterbody
- Surveyed Wetland

Atlantic Coast Pipeline
Figure A-5
Proposed Minimization of Workspace Layout
Stanley Slough and Stanley Slough II
In-Lieu Fee Sites

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Appendix A
Figure A-6
Proposed Workspace with Aerial Background

- Milepost
- ACP Centerline
- Parcel
- Project Workspace
- Mitigation Bank
- Surveyed Waterbody
- Surveyed Wetland

Atlantic Coast Pipeline

Atlantic Coast Pipeline
Figure A-6
Proposed Workspace with Aerial Background
Stanley Slough and Stanley Slough II
In-Lieu Fee Sites

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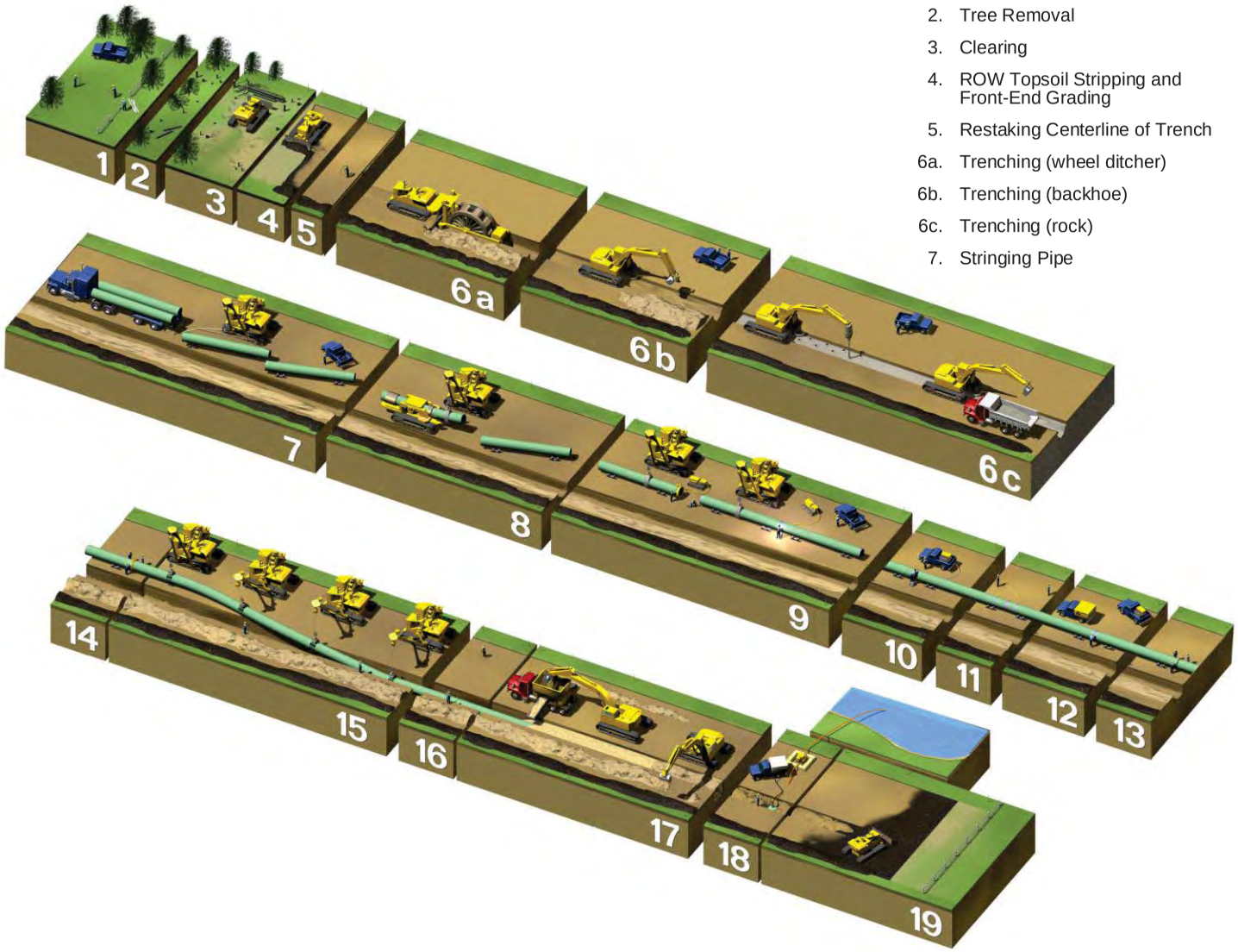
ATLANTIC COAST PIPELINE

Appendix B
Atlantic Coast Pipeline Construction Sequence and Typical Drawings



1. Survey and Staking
2. Tree Removal
3. Clearing
4. ROW Topsoil Stripping and Front-End Grading
5. Restaking Centerline of Trench

6a. Trenching (wheel ditcher)
6b. Trenching (backhoe)
6c. Trenching (rock)

7. Stringing Pipe
8. Field Bending Pipe
9. Line-Up, Initial Weld
10. Fill & Cap, Final Weld
11. As-Built Footage
12. X-Ray Inspection, Weld Repair
13. Coating Field Welds
14. Inspection & Repair of Coating
15. Lowering Pipe into Trench
16. As-Built Survey
17. Pad, Backfill, Rough Grade
18. Hydrostatic Testing, Final Tie-in
19. Replace Topsoil, Final Clean-Up, Full Restoration

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Atlantic Coast Pipeline
Dominion

Atlantic Coast Pipeline and Supply Header Project

Typical Pipeline Construction Sequence

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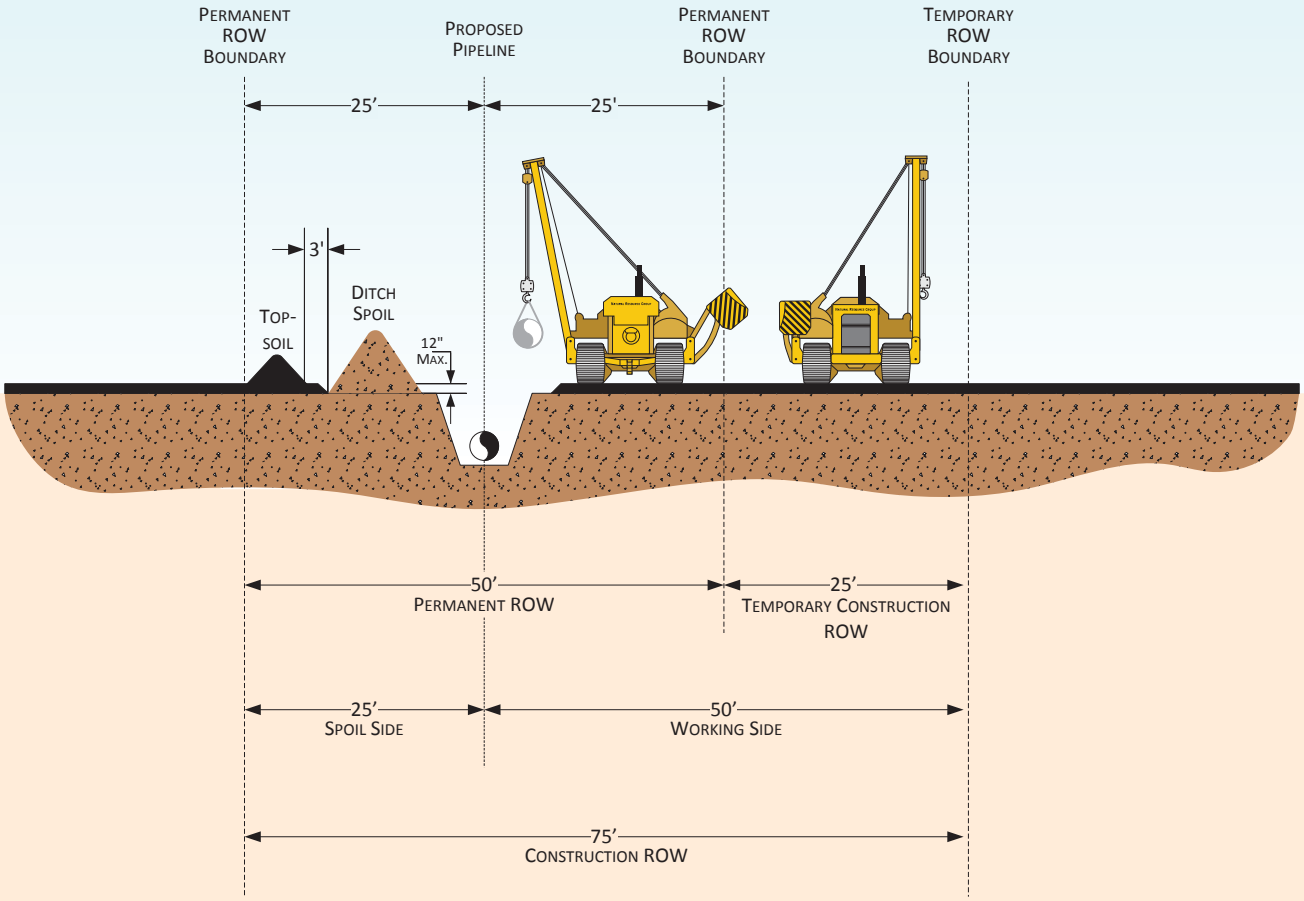
Figure B-1



PROFILE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 75' WIDE CONSISTING OF 50' OF PERMANENT RIGHT-OF-WAY AND 25' OF TEMPORARY CONSTRUCTION RIGHT-OF-WAY. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL, RIVER CROSSINGS, SIDESLOPES, WHERE FULL RIGHT-OF-WAY TOPSOIL STRIPPING IS CONDUCTED, AND OTHER SPECIAL CIRCUMSTANCES AS REQUIRED.

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Atlantic Coast Pipeline

Atlantic Coast Pipeline
AP-3 (20" Outside Diameter), and AP-4 and AP-5 (16" Outside Diameter)
Typical Construction Right-of-Way
Non-Agricultural Areas and Wetlands

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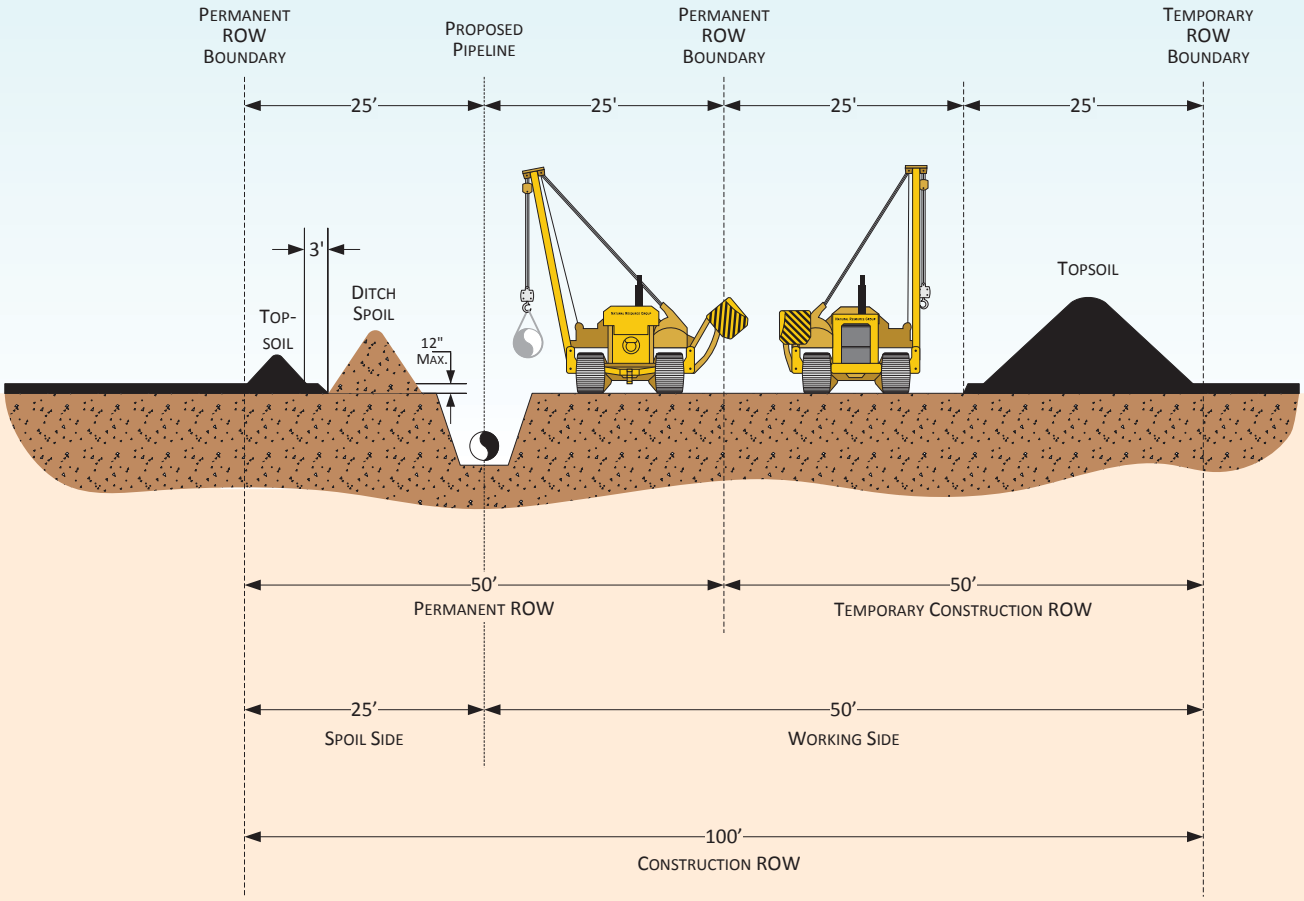
K:_CLIENT_PROJECTS\D-F\DOM\ACP\TYPICAL_CONSTRUCTION\TYP_CON_NONAG_AP_3.VSD, | REVISED: 4/15/2015 DRAWN BY: McGregor

Figure B-2



PROFILE

NOTES:

1. IN AGRICULTURAL AREAS WHERE FULL WIDTH TOPSOIL STRIPPING IS REQUIRED, AN ADDITIONAL 25' OF TEMPORARY WORKSPACE WILL BE REQUIRED. IN THIS SCENARIO, THE CONSTRUCTION RIGHT-OF-WAY WILL BE 100' WIDE, CONSISTING OF 50' OF PERMANENT RIGHT-OF-WAY AND 50' OF TEMPORARY CONSTRUCTION RIGHT-OF-WAY. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL, RIVER CROSSINGS, SIDESLOPES, AND OTHER SPECIAL CIRCUMSTANCES AS REQUIRED.

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Atlantic Coast Pipeline SM

Atlantic Coast Pipeline
AP-3 (20" Outside Diameter), and AP-4 and AP-5 (16" Outside Diameter)
Typical Construction Right-of-Way
Agricultural Areas

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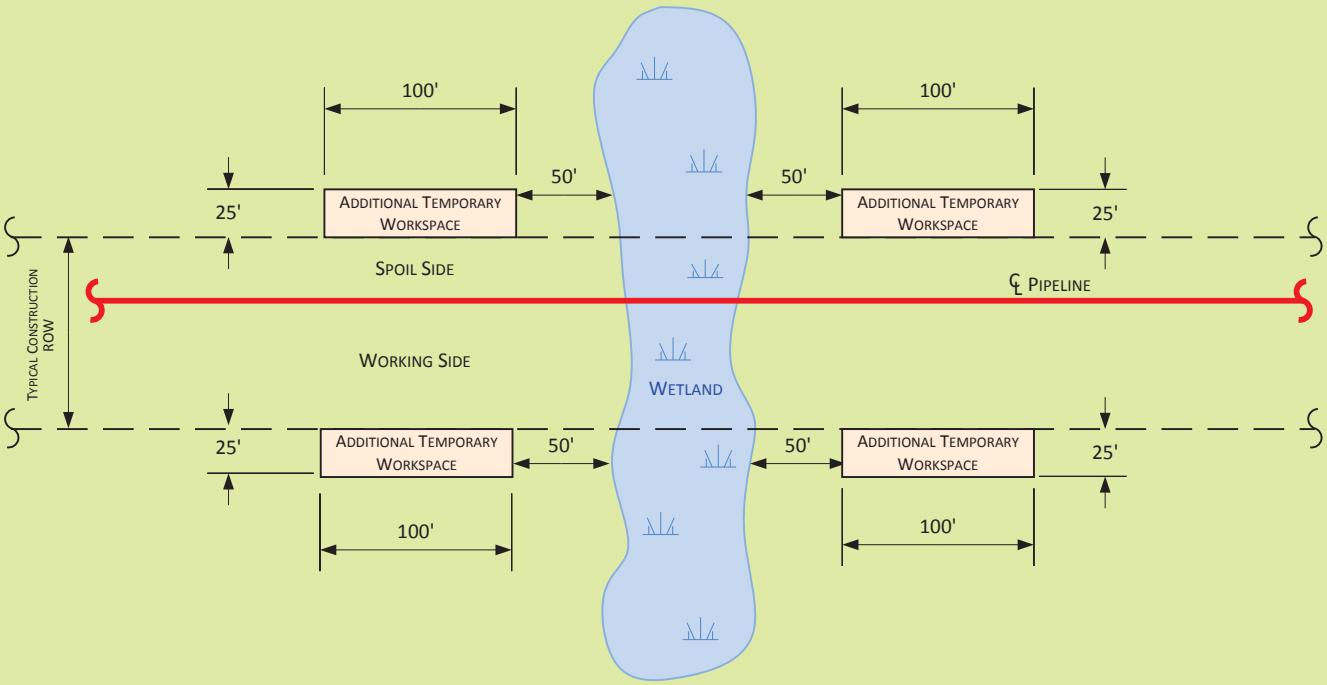
Figure B-3



For environmental review purposes only.

Atlantic Coast Pipeline

AP-2 (36" Outside Diameter), AP-3 (20" Outside Diameter), and AP-4 and AP-5 (16" Outside Diameter)

Typical Additional Workspace at Wetland Crossings

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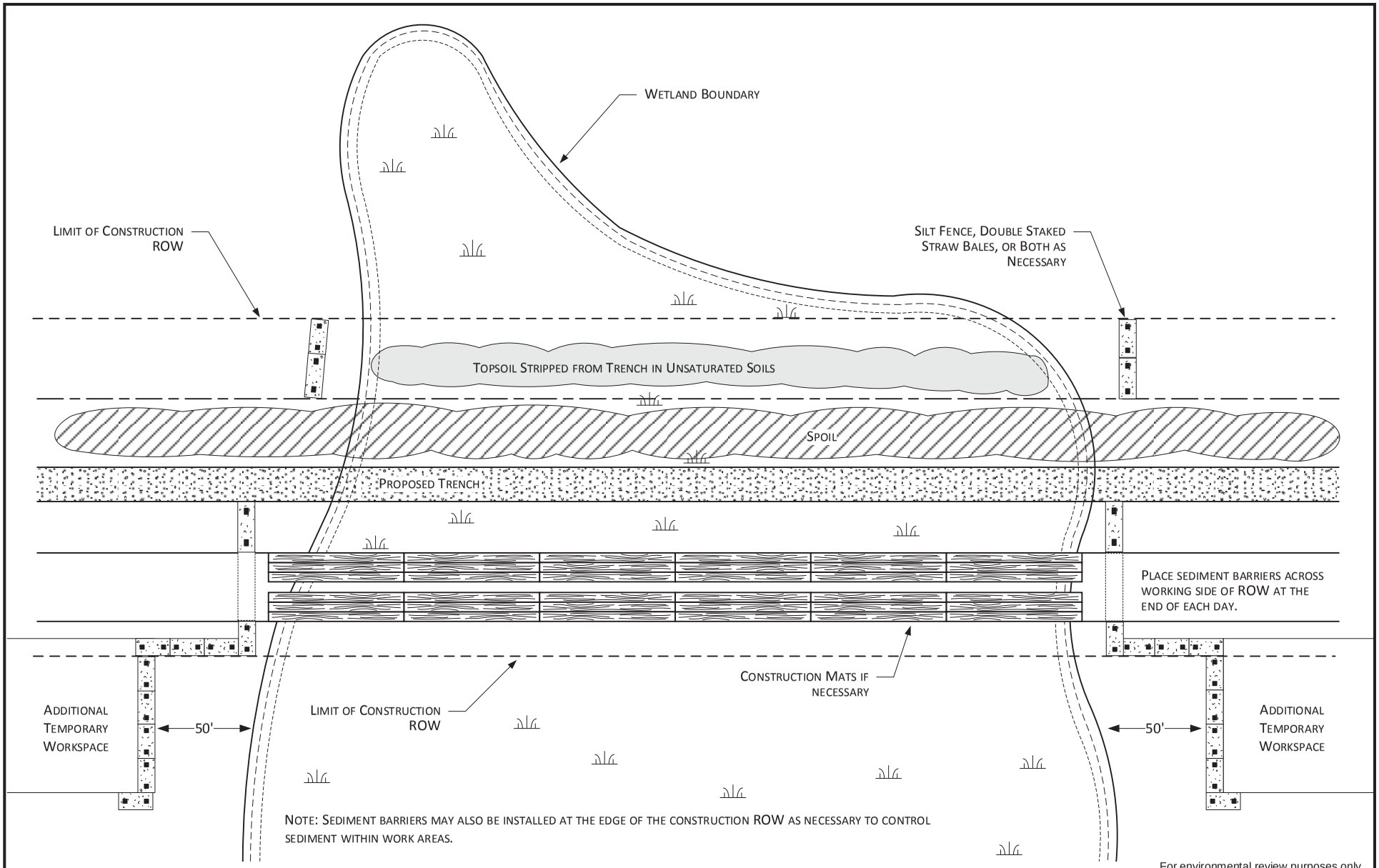
Figure B-4



For environmental review purposes only.

Atlantic Coast Pipeline

AP-1 (42" Outside Diameter), AP-2 (36" Outside Diameter), AP-3 (20" Outside Diameter), and AP-4 and AP-5 (16" Outside Diameter)

Typical Wetland Crossing
Open Cut Method

an ERM Group company

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Figure B-5

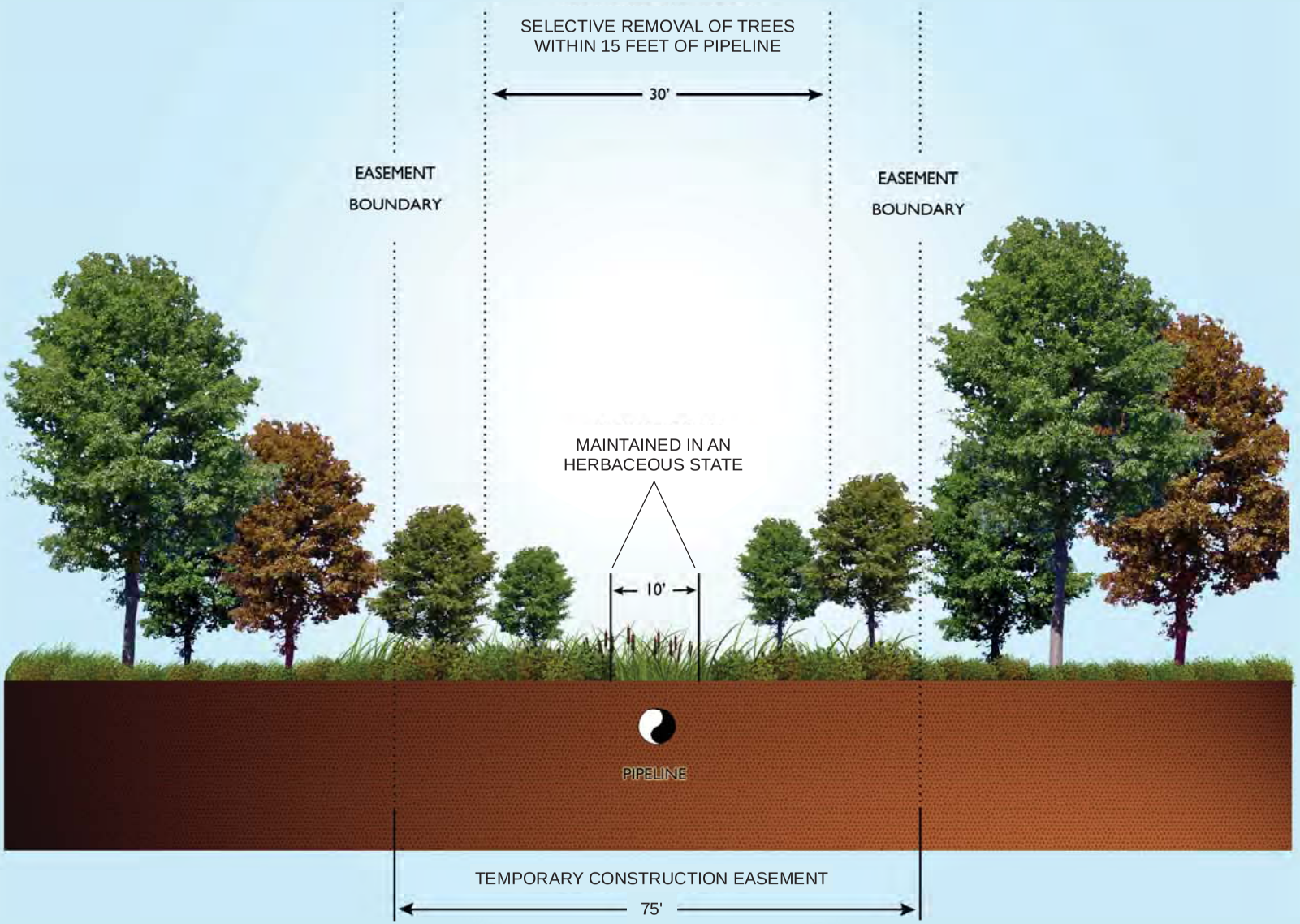

Figure B-6

Atlantic Coast Pipeline and Supply Header Project
Corridor Wetland Maintenance

an ERM Group company

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