

**ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE**

and

**DOMINION TRANSMISSION, INC.
SUPPLY HEADER PROJECT**

**Supplemental Filing
January 27, 2017**

APPENDIX E

Update to the Migratory Bird Plan



ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE
Docket Nos. CP15-554-000 &
CP15-554-001

and



DOMINION TRANSMISSION, INC.
SUPPLY HEADER PROJECT
Docket No. CP15-555-000

Migratory Bird Plan

Updated, Rev. 3

Prepared by



January 2017

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LIST OF ACRONYMS AND ABBREVIATIONS

ACP	Atlantic Coast Pipeline
Atlantic	Atlantic Coast Pipeline, LLC
AT	Appalachian Trail
ATWS	Additional Temporary Workspace
BCC	Birds of Conservation Concern
BCR	Bird Conservation Region
BGEPA	Bald and Golden Eagle Protection Act
BRP	Blue Ridge Parkway
CCB	Center for Conservation Biology
COM Plan	Construction, Operations, and Maintenance Plan
DTI	Dominion Transmission, Inc.
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FWS	U.S. Fish and Wildlife Service
GAP	National GAP Analysis Program
GWNF	George Washington National Forest
HDD	Horizontal Directional Drill
HEA	Habitat Equivalency Analysis
IBA	Important Bird Area
IPaC	Information, Planning, and Conservation System
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
MNF	Monongahela National Forest
M&R	Metering and Regulating
NBEMG	National Bald Eagle Management Guidelines
NCDENR	North Carolina Department of Environment and Natural Resources
NCWRC	North Carolina Wildlife Resources Commission
NHI	Natural Heritage Inventory
PNDI	Pennsylvania Natural Diversity Inventory Project
Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
Procedures	Wetland and Waterbody Construction and Mitigation Procedures
Projects	Atlantic Coast Pipeline and Supply Header Project
SHP	Supply Header Project
SPCC	Spill Prevention, Control, and Countermeasures
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
VDCCR	Virginia Department of Conservation and Recreation
VDGIF	Virginia Department of Game and Inland Fisheries
WVDNR	West Virginia Division of Natural Resources

1.0 INTRODUCTION

Atlantic Coast Pipeline, LLC (Atlantic) is a company formed by four major U.S. energy companies – Dominion Resources, Inc. (Dominion; NYSE: D), Duke Energy Corporation (Duke Energy; NYSE: DUK), Piedmont Natural Gas Co., Inc. (Piedmont; NYSE: PNY), and Southern Company Gas (NYSE: AGL).¹ 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. Atlantic has contracted with Dominion Transmission, Inc. (DTI), a subsidiary of Dominion, to permit, build, and operate the ACP on behalf of Atlantic.

In addition, DTI proposes to construct and operate approximately 37.5 miles of pipeline loop and modify existing compression facilities in Pennsylvania and West Virginia. This Project referred to as the Supply Header Project (SHP) will enable DTI to provide firm transportation service of up to 1.5 million dekatherms per day (MMDth/d) to various customers, including Atlantic. Atlantic will be a Foundation Shipper in the SHP, and will utilize the SHP capacity to allow its shippers access to natural gas supplies from various DTI receipt points for further delivery to points along the ACP. By providing its customers access to an affordable and stable source of natural gas, the SHP also satisfies the same purpose and need as the ACP by increasing the reliability and security of natural gas supplies in Virginia and North Carolina. In this Migratory Bird Plan, ACP and SHP are collectively referred to as the Project(s).

2.0 PURPOSE AND REGULATORY BACKGROUND

Atlantic and DTI prepared this *Migratory Bird Plan* to describe measures they have implemented or will implement to avoid, minimize, and mitigate potential impacts on migratory birds, including bald and golden eagles, consistent with the Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BGEPA).

2.1 Migratory Bird Treaty Act

The MBTA protects migratory birds and most bird species native to the United States, including bald and golden eagles. Under the MBTA, it is illegal to pursue; hunt; take; capture; kill; attempt to take, capture, or kill; possess; offer for sale; and export, import, or transport birds, their parts (e.g., feathers), and active nests (and the eggs or young within). Unlike the federal Endangered Species Act (ESA), the MBTA does not include harassment or destruction of habitat in its list of prohibitions or within its definition of take.

While the MBTA has no provision for allowing an otherwise unauthorized take of migratory birds, the U.S. Fish and Wildlife Service (FWS) has recognized that some birds may be unintentionally taken even if all reasonable measures to avoid take are implemented. The FWS carries out its mission to protect migratory birds through investigations and enforcement; by fostering relationships with individuals, companies, other agencies, and industries that have

¹ On August 24, 2015, Southern Company and AGL Resources announced that the boards of directors of both companies approved a definitive merger agreement. Pursuant to the agreement, AGL Resources will become a new wholly owned subsidiary of Southern Company. The companies announced completion of this transaction on July 1, 2016.

taken effective steps to minimize their impacts on migratory birds; and by encouraging others to enact such programs.

Executive Order 13186 (January 2001) was established to increase interagency coordination and ensure that the environmental impacts of federal agency actions are properly evaluated for impacts on migratory birds, with emphasis on species of concern, priority habitats, and key risk factors. The MBTA prohibition most germane to pipeline construction, operation, and maintenance is the killing of an individual bird or egg through destruction of an active nest. Consistent with Executive Order 13186, the FWS has entered into Memoranda of Understanding (MOUs) with the Federal Energy Regulatory Commission (FERC), the U.S. Forest Service (USFS), and the National Park Service that include commitments to avoid or minimize impacts on migratory birds and promote conservation. This *Migratory Bird Plan* is consistent with the MOUs and reflects the commitments made by Atlantic and DTI to implement appropriate steps to avoid and minimize the potential for unintentional take of migratory birds during construction and operation of the proposed Projects.

2.2 Bald and Golden Eagle Protection Act

Beyond the MBTA, the BGEPA provides additional protection to bald and golden eagles. The BGEPA prohibits the take, possession, sale, purchase, barter, offer to sell, purchase, or barter, transport, export or import, of a bald or golden eagle, alive or dead, including a part, nest, or egg, unless allowed by permit. “Take” under this act is defined as “to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb.” “Disturb” is defined as “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.” If a proposed project or action occurs in an area where nesting, feeding, or roosting eagles occur, the proponent often needs to implement special conservation measures to comply with the BGEPA. FWS guidance on complying with the BGEPA for bald eagles is found in the *National Bald Eagle Management Guidelines* (FWS, 2007). The FWS does not currently have similar guidance for the golden eagle.

3.0 MIGRATORY BIRDS POTENTIALLY UTILIZING THE PROJECT AREAS

3.1 Species

A variety of migratory bird species could be present seasonally along the proposed pipeline route. The Projects will be located in the Atlantic Flyway, which is a major migratory route for birds during both Spring and Fall. A variety of migratory bird species, including both songbirds and raptors, use vegetation communities like those identified along the proposed pipeline route as part of their migratory route. Productive riparian, wetland, and coastal habitats are typically important for migratory birds in the Atlantic Flyway. Bird species that are predominantly associated with migratory patterns in the ACP and SHP Project areas include wood thrush, canvasback, American black duck, mallard, ruby-throated hummingbird, white-

eyed vireo, summer tanager, hooded warbler, broad-winged hawk, common tern, black-throated blue warbler, and cerulean warbler (National Audubon Society, 2014; Ducks Unlimited, 2014). Within Virginia there are birds that inhabit high elevations habitats, such as the magnolia warbler and golden-crowned kinglet (Virginia Department of Conservation and Recreation (VDCR), 2015). In addition to migrating through the Project areas, many species nest in the variety of habitats found along the Project routes.

Although the MBTA provides protection for all migratory birds and their nests, it is standard practice as noted in Executive Order 13186 and the MOU between the FERC and FWS to use the Birds of Conservation Concern (BCC) list when evaluating the potential impact of a project on migratory birds. This list identifies “species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing” under the ESA (FWS, 2008).

The United States is divided into Bird Conservation Regions (BCR), each of which has a list of birds present or possibly present within the region that are considered BCC (North American Bird Conservation Initiative, 2013). The ACP crosses BCR 28 - Appalachian Mountains, BCR 29 - Piedmont, and BCR 27 - Southern Coastal Plain; the SHP crosses BCR 28 (see Figure 3.1-1). The BCC birds potentially found in the ACP and SHP Project areas based on these BCRs (as identified through a FWS Information, Planning, and Conservation System (IPaC) review) are listed in Attachment A.

3.1.1 Nests

Atlantic and DTI conducted a desktop review for raptor nests per the Virginia FWS Field Office Project Review Guidance, steps 6a and 6b (FWS, 2014a) as well as surveys for certain migratory bird species. Atlantic and DTI reviewed the Center for Conservation Biology’s (CCB) Virginia Mapping Portal for known eagle and osprey nests (CCB, 2015). In addition, Atlantic and DTI also reviewed the North Carolina and West Virginia Natural Heritage Inventory (NHI) data for known rookeries in the Project area. Aerial surveys conducted in 2015 and 2016 also identified a number of raptor stick nests and rookeries in the ACP Project area. Those nests are shown in the maps in Attachment B, and detailed in Table 3.1.1-1. No migratory bird nests were identified in the SHP Project area during aerial surveys or in the Pennsylvania and West Virginia Natural Heritage Program review.

3.1.2 Rookeries

Atlantic and DTI also reviewed the NHI databases of the North Carolina Wildlife Resources Commission (NCWRC), Pennsylvania Department of Conservation and Natural Resources, and West Virginia Division of Natural Resources and the CCB Virginia Mapping Portal for rookeries in the Project area. Atlantic and DTI conducted aerial surveys for rookeries in 2015 and 2016 along the ACP and SHP Project routes. Rookeries identified by survey or from NHI and CCB data are shown in the maps in Attachment B, and detailed in Table 3.1.1-1.

Migratory Bird Plan

TABLE 3.1.1-1

Migratory Bird Nests in the ACP Project Area ^a

Segment, Near Milepost	Construction Spread ^b	Construction Clearing Time Period	Construction Activities Time Period for Spread	Species	Unique ID	Distance from Nearest Project Workspace or Access Road (feet)	Workspace or Access Road Within Recommended Buffer	Conservation Measures
AP-1								
3.7	1-1	November 2018	April 2019-4Q 2019	Unknown raptor stick nest	STICK-UNO-02	1,370	No	NA
10.3	1-1	November 2018	April 2019-4Q 2019	Rookery	ROOK-01	740	Workspace, Access Road	Consultation with the West Virginia Division of Natural Resources (WVDNR) for appropriate conservation measures for working within recommended buffer. Recommend beginning construction activities in April prior to bird activity; this would only cause disturbance for one season minimizing impacts on rookery. Workspace does not impact vegetation rookery is located in.
10.5	1-1	November 2018	April 2019-4Q 2019	Red-tailed hawk	RTHA-ACT-01	2,470	No	NA
12.4	1-1	November 2018	April 2019-4Q 2019	Unknown raptor stick nest	STICK-UNO-04	270	Workspace	Pedestrian surveys conducted in December 2016 did not identify a nest in this area; no restrictions required as nest is no longer present.
13.1	1-1	November 2018	April 2019-4Q 2019	Unknown raptor stick nest	STICK-UNO-01	1,620	No	NA
13.3	1-1	November 2018	April 2019-4Q 2019	Unknown raptor stick nest	STICK-UNO-03	420	Workspace	Atlantic and DTI will continue to coordinate with state and federal agencies to determine appropriate mitigation measures if construction activities cannot avoid active nesting period.
21.8	1-2	November 2018	April 2019-4Q 2019	Unknown raptor stick nest	STICK-UNO-05	1,300	No	NA
22.5	1-2	November 2018	April 2019-4Q 2019	Unknown raptor stick nest	STICK-UNO-06	260	Workspace	Atlantic and DTI will continue to coordinate with state and federal agencies to determine appropriate mitigation measures if construction activities cannot avoid active nesting period.
23.3	1-2	November 2018	April 2019-4Q 2019	Unknown raptor stick nest	STICK-UNO-09	2,600	No	NA
24.4	1-2	November 2018	April 2019-4Q 2019	Unknown raptor stick nest	STICK-UNO-07	2,220	No	NA
25.9	1-2	November 2018	April 2019-4Q 2019	Red-tailed hawk	RTHA-ACT-03	3,120	No	NA
26.7	1-2	November 2018	April 2019-4Q 2019	Red-tailed hawk	RTHA-ACT-04	2,310	No	NA
27.7	1-2	November 2018	April 2019-4Q 2019	Red-tailed hawk	RTHA-ACT-02	90	Workspace, Access Road	Atlantic and DTI will continue to coordinate with state and federal agencies to determine appropriate mitigation measures if construction activities on access road cannot avoid active nesting period. Nest is not likely visible from construction workspace. No activity restrictions recommended on workspace.
28.7	1-2	November 2018	April 2019-4Q 2019	Unknown raptor stick nest	STICK-UNO-08	2,640	No	NA

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TABLE 3.1.1-1

Migratory Bird Nests in the ACP Project Area ^a

Segment, Near Milepost	Construction Spread ^b	Construction Clearing Time Period	Construction Activities Time Period for Spread	Species	Unique ID	Distance from Nearest Project Workspace or Access Road (feet)	Workspace or Access Road Within Recommended Buffer	Conservation Measures
65.3	2A	November 2017	April 2018-4Q 2018	Unknown raptor stick nest	STICK-UNK-02	520	Workspace	Atlantic and DTI will continue to coordinate with state and federal agencies to determine appropriate mitigation measures if construction activities cannot avoid active nesting period.
68.4	3	November 2018	April 2019-4Q 2019	Unknown raptor stick nest	STICK-UNO-22	1,500	No	NA
83.3	3A	November 2017	April 2018-4Q 2018	Unknown raptor stick nest	STICK-UNO-18	3,910	No	NA
83.5	3A	November 2017	April 2018-4Q 2018	Unknown raptor stick nest	STICK-UNO-17	4,060	No	NA
83.6	3A	November 2017	April 2018-4Q 2018	Unknown raptor stick nest	STICK-UNO-16	4,420	No	NA
87.8	3A	November 2017	April 2018-4Q 2018	Unknown raptor stick nest	STICK-UNO-14	900	No	NA
91.7	4	November 2018	April 2019-4Q 2019	Red-tailed hawk	RTHA-ACT-05	520	Access Road	Nest is on opposite side of knob, not likely visible from access road within buffer, no changes to Project activities recommended.
92.7	4	November 2018	April 2019-4Q 2019	Bald eagle	BAEA-ACT-04	3,740	No	NA
94.5	4	November 2018	April 2019-4Q 2019	Unknown raptor stick nest	STICK-UNO-15	0	Access Road	Nest is at edge of existing road proposed for use as access road. No restrictions recommended as road is existing public road.
124.0	4A	November 2017	April 2018-4Q 2018	Red-tailed hawk	RTHA-ACT-07	890	No	NA
126.7	5	November 2018	February 2019-4Q 2019	Unknown raptor stick nest	STICK-UNO-19	3,000	No	NA
140.2	5	November 2018	February 2019-4Q 2019	Unknown raptor stick nest	STICK-UKN-01	2,420	No	NA
147.8	5	November 2018	February 2019-4Q 2019	Bald eagle	BAEA-ACT-05	1,790	No	NA; however, blasting activities may occur within 0.5 mile of nest. Atlantic and DTI will apply for eagle disturbance permit.
150.0	5	November 2018	February 2019-4Q 2019	Red-tailed hawk	RTHA-ACT-06	3,310	No	NA
155.0	5	November 2018	February 2019-4Q 2019	Unknown raptor stick nest	STICK-UNK-03	250	Workspace	Atlantic and DTI will continue to coordinate with state and federal agencies to determine appropriate mitigation measures if construction activities cannot avoid active nesting period. On George Washington National Forest (GWNF) Property.
160.4	5	November 2018	February 2019-4Q 2019	Unknown raptor stick nest	STICK-UNO-20	2,730	No	NA
200.3	6	November 2017	February 2018-4Q 2018	Unknown raptor stick nest	STICK-UNO-10	1,440	No	NA

Migratory Bird Plan

TABLE 3.1.1-1

Migratory Bird Nests in the ACP Project Area ^a

Segment, Near Milepost	Construction Spread ^b	Construction Clearing Time Period	Construction Activities Time Period for Spread	Species	Unique ID	Distance from Nearest Project Workspace or Access Road (feet)	Workspace or Access Road Within Recommended Buffer	Conservation Measures
203.5	6	November 2017	February 2018-4Q 2018	Unknown raptor stick nest	STICK-UNO-11	3,800	No	NA
218.4	6	November 2017	February 2018-4Q 2018	Great horned owl	GHOW-ACT-01	50	Workspace, Access Road	Atlantic and DTI will continue to coordinate with state and federal agencies to determine appropriate mitigation measures if construction activities cannot avoid active nesting period.
223.3	6	November 2017	February 2018-4Q 2018	Unknown raptor stick nest	STICK-UNO-12a	720	No	NA
244.1	7	November 2018	February 2019-4Q 2019	Bald eagle	BAEA-ACT-01	370	Workspace	Atlantic and DTI applying for eagle permit for potential disturbance of nest. Blasting activities may occur within 0.5 mile of nest.
266.7	7	November 2018	February 2019-4Q 2019	Unknown raptor stick nest	STICK-UNO-12	630	No	NA
278.0	7	November 2018	February 2019-4Q 2019	Bald eagle	BAEA-ACT-02	3,370	No	NA
AP-2								
10.5	8	November 2017	February 2018-4Q 2018	Bald eagle	NA	1,570	No	NA
10.9	8	November 2017	February 2018-4Q 2018	Bald eagle	NA	3,925	No	NA
14.0	8	November 2017	February 2018-4Q 2018	Bald eagle	BE-1	9,130	No	NA
31.8	8	November 2017	February 2018-4Q 2018	Rookery	WBC 01	470	Workspace	Vegetation buffer overlaps workspace; however it overlaps in an agricultural field. Workspace does not impact vegetation rookery is located in; no need to reduce workspace footprint. Work with NCWRC to determine appropriate conservation measures if activities cannot be completed within buffer before birds return to rookery (approximately February).
48.0	8	November 2017	February 2018-4Q 2018	Rookery	WBC 02	860	Workspace	Vegetation buffer does not overlap workspace; no change to workspace needed. Work with NCWRC to determine appropriate conservation measures if activities cannot be completed within activity restriction buffer before birds return to rookery (approximately February).
52.7	8	November 2017	February 2018-4Q 2018	Rookery	WBC 03	4,880	No	NA

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TABLE 3.1.1-1

Migratory Bird Nests in the ACP Project Area ^a

Segment, Near Milepost	Construction Spread ^b	Construction Clearing Time Period	Construction Activities Time Period for Spread	Species	Unique ID	Distance from Nearest Project Workspace or Access Road (feet)	Workspace or Access Road Within Recommended Buffer	Conservation Measures
55.8	8	November 2017	February 2018-4Q 2018	Rookery	WBC 04	1,270	Workspace, Access Road	Vegetation buffer does not overlap workspace; no change to workspace needed. Work with NCWRC to determine appropriate conservation measures if activities cannot be completed within activity restriction buffer before birds return to rookery (approximately February).
62.6	9	November 2018	February 2019-4Q 2019	Rookery	WBC 05	2,050	Workspace	Vegetation buffer does not overlap workspace; no change to workspace needed. Work with NCWRC to determine appropriate conservation measures if activities cannot be completed within activity restriction buffer before birds return to rookery (approximately February).
66.9	9	November 2018	February 2019-4Q 2019	Rookery	WBC 06	2,960	No	NA
70.5	9	November 2018	February 2019-4Q 2019	Rookery	WBC 07	2,060	Workspace	Public road and houses are between right-of-way and rookery, within 0.5 mile restriction area. Due to other human activities between right-of-way and rookery, no restrictions on activities are recommended.
73.2	9	November 2018	February 2019-4Q 2019	Bald eagle	BE 3	1,480	No	NA
74.2	9	November 2018	February 2019-4Q 2019	Rookery	WBC 08	2,610	Access Road	Edge of buffer reaches road; road is an existing public road. No restrictions are recommended.
106.6	9	November 2018	February 2019-4Q 2019	Rookery	WBC 09	300	Workspace, Access Road	Workspace falls within 500-foot vegetation clearing restriction. Atlantic and DTI reviewing options for minor workspace adjustment. Work with NCWRC to determine appropriate conservation measures for working within recommended buffers.
110.2	9	November 2018	February 2019-4Q 2019	Rookery	WBC 10	3,550	No	NA
117.2	9	November 2018	February 2019-4Q 2019	Rookery	WBC 11	2,540	Workspace	Workspace falls at edge of 0.5 mile buffer; vegetation is between workspace and rookery. Recommend no restrictions due to distance from rookery.
122.2	9	November 2018	February 2019-4Q 2019	Bald eagle	BE 4	1,740	No	NA
123.5	9	November 2018	February 2019-4Q 2019	Rookery	WBC 12	1,040	Workspace	Vegetation buffer does not overlap workspace; no change to workspace needed. Work with NCWRC to determine appropriate conservation measures if activities cannot be completed within activity restriction buffer before birds return to rookery (approximately February).

Migratory Bird Plan

TABLE 3.1.1-1

Migratory Bird Nests in the ACP Project Area ^a

Segment, Near Milepost	Construction Spread ^b	Construction Clearing Time Period	Construction Activities Time Period for Spread	Species	Unique ID	Distance from Nearest Project Workspace or Access Road (feet)	Workspace or Access Road Within Recommended Buffer	Conservation Measures	
AP-3	124.5	9	November 2018	February 2019-4Q 2019	Rookery	WBC 15	2,340	Workspace	Highway 95 is between right-of-way and rookery, within 0.5 mile restriction area. Due to other human activities between right-of-way and rookery, no restrictions on activities are recommended.
	144.0	10	November 2017	February 2018-4Q 2018	Rookery	WBC 13	8,510	No	NA
	167.4	10	November 2017	February 2018-4Q 2018	Rookery	WBC 14	6,460	No	NA
	12.8	11	November 2017	February 2018-4Q 2018	Rookery	NHI Rookery	860	Workspace	Public road is between right-of-way and rookery, within 0.5 mile restriction area. Due to other human activities between right-of-way and rookery, no restrictions on activities are recommended. The rookery was not identified as active during 2016 surveys, therefore, may no longer be actively used.
13.1	11	November 2017	February 2018-4Q 2018	Rookery	CCB Rookery	1,050	Workspace	Railroad is between right-of-way and rookery, within 0.5 mile restriction area. Due to other human activities between right-of-way and rookery, no restrictions on activities are recommended. The rookery was not identified as active during 2016 surveys, therefore, may no longer be actively used.	
24.8	11	November 2017	February 2018-4Q 2018	Bald eagle	BAEA-ACT-03	6,180	No	NA	
32.1	11	November 2017	February 2018-4Q 2018	Rookery	CCB Rookery	3,030	No	NA, The rookery was not identified as active during 2016 surveys, therefore, may no longer be actively used.	
38.5	11	November 2017	February 2018-4Q 2018	Rookery	CCB Rookery	100	Workspace, Access Road	Rookery was not identified as active during 2016 surveys, may no longer be active. Recommend no restrictions due to lack of activity in 2016 surveys.	
45.4	11	November 2017	February 2018-4Q 2018	Unknown raptor stick nest	STICK-UNK-04	3,270	No	NA	
46.5	11	November 2017	February 2018-4Q 2018	Unknown raptor stick nest	STICK-UNK-05	2,900	No	NA	
48.6	11	November 2017	February 2018-4Q 2018	Unknown raptor stick nest	STICK-UNK-06	3,620	No	NA	
64.1	11	November 2017	February 2018-4Q 2018	Osprey	CCB Osprey Nest	1,830	No	NA	

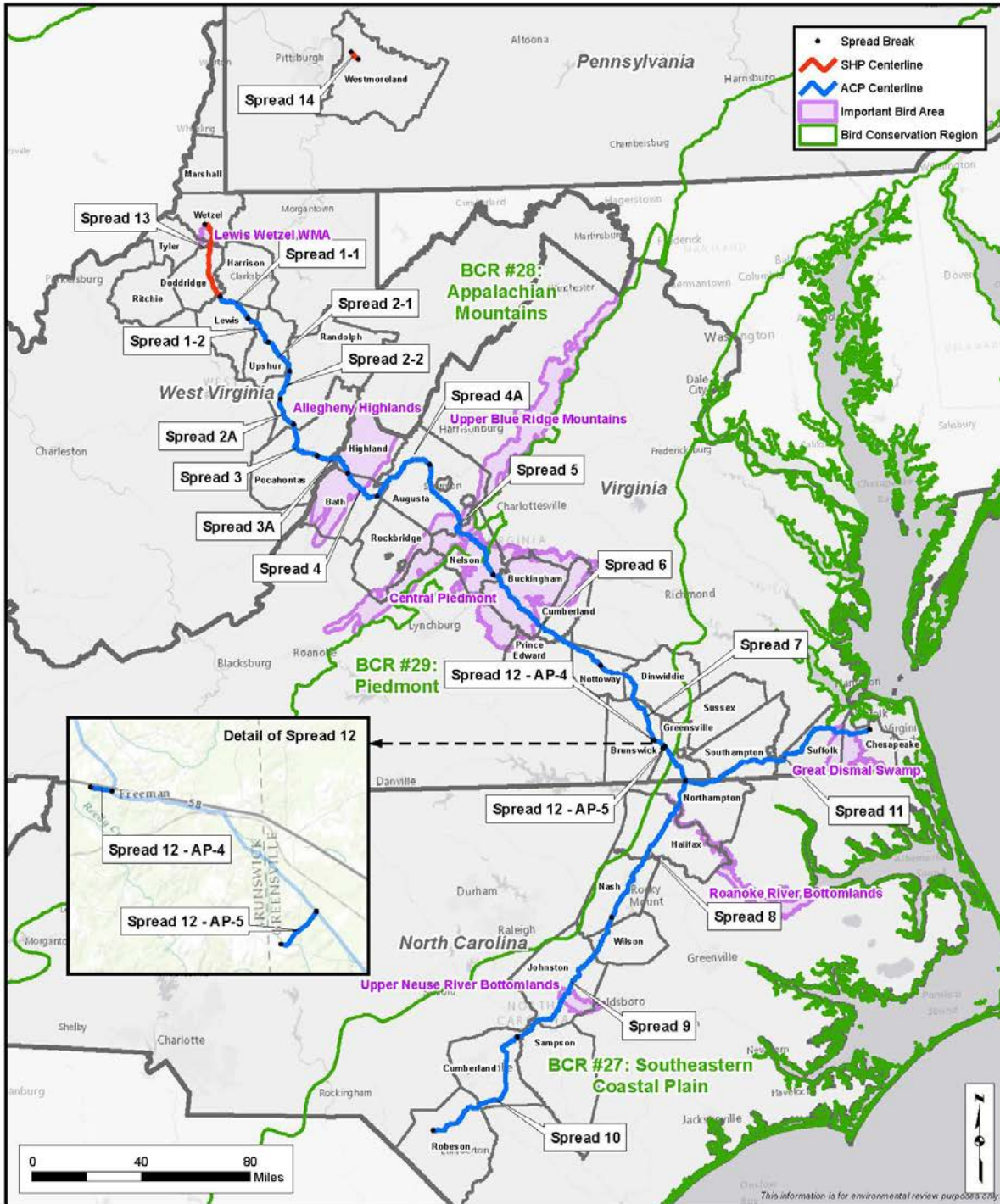
TABLE 3.1.1-1

Migratory Bird Nests in the ACP Project Area ^a

Segment, Near Milepost	Construction Spread ^b	Construction Clearing Time Period	Construction Activities Time Period for Spread	Species	Unique ID	Distance from Nearest Project Workspace or Access Road (feet)	Workspace or Access Road Within Recommended Buffer	Conservation Measures
64.3	11	November 2017	February 2018-4Q 2018	Bald eagle	BAEA-UNO-01	4,730	No	NA
64.4	11	November 2017	February 2018-4Q 2018	Osprey	CCB Osprey Nest	1,430	No	NA
64.6	11	November 2017	February 2018-4Q 2018	Rookery	ROOK-ACT-02	1,950	Workspace	Portion of HDD workspace and access road on east side of Nansemond River falls within recommended buffer. Work with Virginia Department of Game and Inland Fisheries (VDGIF) to determine appropriate conservation measures for working within recommended buffer.
64.7	11	November 2017	February 2018-4Q 2018	Bald eagle	BAEA-ACT-08	3,520	No	NA
68.3	11	November 2017	February 2018-4Q 2018	Unknown raptor stick nest	STICK-UNK-07	320	Workspace	During pedestrian surveys in December 2016, no evidence of a raptor nest was found. No restrictions required.
69.2	11	November 2017	February 2018-4Q 2018	Bald eagle roost	CCB Bald Eagle Roost	5,048	No	NA
76.5	11	November 2017	February 2018-4Q 2018	Bald eagle	BAEA-ACT-06	120	Workspace	Atlantic and DTI reviewing options for minor workspace adjustment and applying for eagle permit for potential disturbance of nest. During pedestrian surveys in December 2016, no evidence of an eagle nest was found. Further surveys will be conducted in spring of 2017 to confirm eagles have not returned to rebuild the nest.
80.4	11	November 2017	February 2018-4Q 2018	Osprey	CCB Osprey Nest	2,440	No	NA
80.7	11	November 2017	February 2018-4Q 2018	Bald eagle	BAEA-ACT-07	5,370	No	NA
81.5	11	November 2017	February 2018-4Q 2018	Osprey	CCB Osprey Nest	1,110	No	NA
82.6	11	November 2017	February 2018-4Q 2018	Osprey	CCB Osprey Nest	50	Workspace	Nest is in artificial structure in parking lot of industrial site. No restrictions recommended.

^a Data from 2015 and 2016 surveys for the Projects, State agency NHI data, and Virginia CCB database.

^b Construction schedule by spread is provided in table 7.2.1-2.



Atlantic Coast Pipeline and Supply Header Project
Figure 3.1-1
Important Bird Areas and Conservation Regions



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3.1.3 Bald and Golden Eagles

Bald and golden eagles are protected under the BGEPA. Bald eagles could occur in both the ACP and SHP Project areas. Bald eagles are known to occur year round in areas with suitable habitat along the ACP and SHP Project areas; bald eagles nest in late winter into the summer and roost in the winter. Golden eagles are not known to nest in Virginia, West Virginia, or Pennsylvania; however, they migrate along Appalachian Mountain ridgelines in Spring and Fall in Virginia and West Virginia and are known to use Winter habitat on Appalachian Mountain ridges and valleys (West Virginia Division of Natural Resources (WVDNR), 2014; Virginia Department of Game and Inland Fisheries (VDGIF), 2014a; Katzner et al, 2012). Golden eagles do not occur in North Carolina.

Atlantic and DTI consulted with the West Virginia Field Office of the FWS, WVDNR, Virginia Field Office of the FWS, VDGIF, North Carolina Field Office of the FWS, North Carolina Department of Environment and Natural Resources (NCDENR), NCWRC, and the Pennsylvania Department of Conservation and Natural Resources to obtain location information on known bald eagle nests in the vicinity of the Projects.

In Virginia, Atlantic and DTI followed the project review process and guidelines outlined in the “Management of Bald Eagle Nests, Concentration Areas, and Communal Roosts in Virginia: A Guide for Landowners,” issued by the VDGIF in 2012; and the Virginia Field Office of the FWS “Endangered Species: Project Reviews in Virginia Step 6a – Eagle Nests” (FWS, 2014a). This process involves reviewing online nest data to determine if known active or historic nests are located in the vicinity of a project. Atlantic and DTI reviewed data from the Virginia NHI and the CCB Virginia Eagle Nest Locator (CCB, 2015; VDGIF, 2014b).

Atlantic and DTI also reviewed data from the North Carolina NHI for bald eagle nest information.

DTI used the Pennsylvania Natural Diversity Inventory Project (PNDI) Environmental Review online system to review locational data for species, including eagle nests. Based on the receipt from the PNDI, no bald eagle nests are known to occur in the vicinity of the proposed SHP facilities in Pennsylvania.

Atlantic and DTI conducted aerial surveys for bald eagle nests and golden eagle winter roosting locations in 2015 and 2016. Nest locations are shown in the maps in Attachment B, and detailed in Table 3.1.1-1. Seven observations of golden eagles were made in Randolph County, West Virginia and Highland and Bath Counties, Virginia during surveys in 2016.

3.1.4 Other Avian Species

Atlantic and DTI have also conducted surveys for a number of other state or USFS listed avian species. Details and results of those surveys are included in Table 3.1.4-1.

TABLE 3.1.4-1
Avian Surveys Conducted for the ACP and SHP Projects

Species	Listing Status ^a	Location of Surveys	Results of Survey
Golden-winged Warbler	MNF RFSS, WV SGCN	West Virginia: MNF, Seneca State Forest, Kumbrabow State Forest	Two singing males observed during survey in Pocahontas County on adjacent private lands.
Northern Goshawk	MNF RFSS, WV SGCN	West Virginia: MNF, Seneca State Forest, Kumbrabow State Forest	No northern goshawks observed during survey.
Northern Saw-whet Owl	GWNF LR	GWNF	No northern saw-whet owls observed during survey.
Loggerhead Shrike	VA State Threatened, GWNF OAR	Augusta County, VA	No loggerhead shrikes or sign observed during survey. Plant survey crew observed one loggerhead shrike on GWNF.
Red-cockaded woodpecker	Federally endangered	City of Suffolk, VA; Johnston, Robeson, and Wilson Counties, NC	No active cavities or observances of red-cockaded woodpecker during surveys.

^a MNF – Monongahela National Forest
 GWNF – George Washington National Forest
 RFSS – Regional Forester’s Sensitive Species
 LR – Locally Rare
 OAR – Occurrence Analysis Results species
 SGCN – Species of Greatest Conservation Need

3.2 Habitat

The ACP Project area crosses cultivated cropland, pasture land, tree plantation/harvested forest, upland forest/woodland, developed land, open land, and wetlands. The SHP Project area crosses cultivated cropland, pasture land, tree plantation/harvested forest, upland forest/woodland, and wetlands. The predominant vegetation community crossed by the Projects is mixed forest, including coniferous forests, deciduous forests, mixed forests, deciduous savanna and glades, and floodplain and riparian forests. These communities are used by migratory birds for nesting, foraging, and migrating.

Important Bird Areas (IBAs) are sites identified by the National Audubon Society that provide essential habitat for one or more species of birds (see Figure 3.1-1). These areas can support breeding, wintering, or migrating birds; can be publicly or privately owned; and may or may not be protected (National Audubon Society, 2014). As shown in Table 3.2-1, the proposed ACP facilities cross six Important Bird Areas in Virginia and North Carolina and the proposed SHP facilities cross one Important Bird Area in West Virginia.

TABLE 3.2-1

Important Bird Areas Occurring in the Vicinity of the Atlantic Coast Pipeline and Supply Header Projects			
Important Bird Area	Project Component	Milepost	Description of Habitats
WEST VIRGINIA			
Lewis Wetzel Wildlife Management Area	SHP TL-635	MP 23.5 to 29.4	Dry deciduous and moist deciduous forest. These “cove forests” tend to have high species richness.
VIRGINIA			
Allegheny Highlands	ACP AP-1	MP 84.0 to 97.2	Successional habitat, pasturelands, grassy fields, shrubby edges, mixed hardwood forests. The area is an important migratory pathway for Neotropical migrants.
Upper Blue Ridge Mountains	ACP AP-1	MP 152.1 to 161.8	Rocky outcrops, dry ridges, cove forests, diverse forest communities, and mature deciduous forests. The area is a significant Fall raptor flyway and stopover habitat for migrating passerines.
Central Piedmont	ACP AP-1	MP 164.0 to 209.4	Early to mid-successional grasslands and scrub/shrub habitats, hardwood, mixed, and pine forests, and fallow fields.
Great Dismal Swamp	ACP AP-3	MP 66.3 to 76.1	Forested wetlands, cypress-tupelo habitat, and Atlantic white-cedar forest. The area is a significant stopover habitat for migrating passerines in the Spring and Fall.
NORTH CAROLINA			
Roanoke River Bottomlands	ACP AP-2	MP 9.2 to 10.2 and MP 11.1 to 11.9	Bottomland hardwood forest, and bald cypress and water tupelo habitats. The area supports several colonies of wading birds and breeding ducks. Neotropical migrants are known to breed in the Important Bird Area.
Upper Neuse River Bottomlands	ACP AP-2	MP 97.1 to 101.5	Bottomland hardwood forest, cypress-tupelo-gum swamp forest, pine forest, mixed hardwood forest, and grassland.

Source: National Audubon Society, 2014.

4.0 POTENTIAL IMPACTS ON MIGRATORY BIRDS

4.1 Nesting Migratory Birds and Rookeries

Potential impacts on nesting migratory bird species include direct impacts on nesting birds; noise generated during construction which could disturb nesting birds, if present; habitat fragmentation; and loss of wooded habitat, including temporary removal of vegetation which could cause nesting species to relocate to other suitable habitat.

The clearing phase of construction has the greatest potential for such impacts if conducted during the nesting season. Construction in agricultural and other open areas is likely to have the least impacts as nesting densities are typically lower in areas with a regular disturbance regime, and disturbance of nesting habitat will only be temporary. Impacts on migratory bird species requiring contiguous forested patches are of primary concern because nesting densities tend to be higher in these habitats. Habitat for shrubland species is often created by clearing events (e.g., fires), so impacts in these areas are expected to be less than in forested lands. Some bird species that use open or shrubland habitats may benefit from the habitat conditions created by the proposed Projects in the maintained rights-of-way.

Noise from horizontal directional drill (HDD) activities could disturb birds in habitats adjacent to the workspace. The HDD equipment sound levels were projected to the NSAs from sound level measurements of actual operating HDD equipment at sites in Arlington, VA. Based

upon these sound level measurements, the total Leq (equivalent continuous noise level) source sound levels of the HDD equipment are 89 dBA at 50 feet (sound power level of 121 dBA) at the entry point and 76 dBA at 50 feet (sound power level of 108 dBA) at the exit point. Noise from the construction equipment at HDD locations may cause birds to avoid the area near HDDs during their construction. Construction activities at HDDs may occur 24 hours a day until complete, disturbing feeding, nesting, or resting birds.

Construction activities at other times of the year (i.e., outside the nesting season) could impact migratory birds, but suitable habitat will be available in areas immediately adjacent to the construction areas. Construction activities and noise are only expected to temporarily displace migratory birds from the immediate construction areas.

Potential impacts on known nests and rookeries within the ACP Project area are detailed in Table 3.1.1-1; there were no migratory bird nests identified in the SHP Project area during surveys.

4.2 Bald and Golden Eagles

It is possible that construction, operation, and maintenance of the Projects could result in impacts on eagles. Potential impacts on nesting eagles could include direct impacts on individuals; noise generated during construction and operation of facilities, which could disturb nesting birds, if present; and removal of vegetation, which could cause individuals to relocate to other suitable habitat.

In addition to potential impacts on nesting eagles, bald and golden eagles could roost in the Winter near the ACP and SHP Project areas. Bald and golden eagles may also migrate through the areas crossed by the Projects. Impacts on roosting and migrating birds include loss of wooded habitat; temporary removal of vegetation, which could cause species to relocate to other suitable habitat; and noise generated during construction, which could disturb birds, if present.

A bald eagle nest (nest ID BAEA-ACT-06) was identified within the proposed workspace in the City of Chesapeake, Virginia during aerial surveys (shown on map in Attachment B, page B-47). During pedestrian surveys in December 2016, no evidence of an eagle nest was found. Further surveys will be conducted in the spring of 2017 to confirm eagles have not returned to rebuild the nest. Atlantic and DTI have made a minor route adjustment to move the workspace 120 feet from the nest tree location (the same approximate distance that the nest location is from the active railway) and will request a permit from FWS for potential disturbance of the eagle. In addition, Atlantic will not construct within the buffer of the nest location when the nest is active, from approximately December 15 through July 15. Construction activities may disturb birds if they are on or near the nest, and clearing activities for the workspace may modify the habitat around the nest.

A second bald eagle nest (nest ID BAEA-ACT-01) falls within the recommended 660 foot buffer in Nottoway County, Virginia (FWS, 2007) and within the recommended 330 foot no vegetation clearing buffer (shown on map in Attachment B, page B-21) and within 0.5 mile of potential blasting activities. Construction activities may disturb birds if they are on or near the

nest, and clearing activities for the workspace may modify the habitat around the nest. Atlantic will not construct within the buffer of the nest location when the nest is active, from approximately December 15 through July 15. Atlantic will request a permit from the FWS for potential disturbance of the eagle.

A third bald eagle nest (nest ID BAEA-ACT-05) falls within 0.5 mile of potential blasting activities in Augusta County, Virginia. Blasting activities may disturb eagles if the nest is active at the time of the activity. Atlantic will request a permit from the FWS for potential disturbance of the eagle.

No eagle nests were identified in Pennsylvania, or West Virginia.

4.3 Fragmentation and Edge Effects

Effects on most non-forested upland and wetland habitats disturbed by construction will be temporary, and these areas are expected to recover quickly once construction and restoration is completed. Similarly, impacts on scrub/shrub and emergent wetland habitats will be relatively short-term. Because of the linear nature of the Projects, temporary impacts in these habitats will be minimized by the presence of similar habitat communities adjacent to the right-of-way. Additionally, non-forested plant communities can be replanted with similar species which reach maturity relatively quickly compared to forested areas. Neighboring areas will allow birds to disperse sufficiently to continue to utilize similar habitats. The temporary effects on these habitats should have little or no significant impact on their importance to birds, and no changes to local populations are anticipated.

In the temporary right-of-way, upland and wetland forested areas will be impacted to a greater extent than non-forested vegetation types due to the time requirement for the conversion of earlier successional stages to mature woodlands. In the permanent, maintained easement, there will be a permanent conversion of forested land to scrub/shrub and/or non-woody herbaceous species. Impacts on forest dwelling species include temporary and permanent habitat loss, fragmentation of habitat, and the addition of edge-type habitat. Locally, species composition could change as habitats are converted post-construction from forested to scrub/shrub or herbaceous, and edges are created along the new pipeline corridors.

Fragmentation refers to the breaking up of contiguous areas of vegetation communities into smaller patches. Fragment size plays a crucial role in landscape function and many ecosystem interactions, including the distribution of plants and animals, fire regime, vegetation structure, and wildlife habitat. Reducing the size of contiguous patches of suitable habitat can indirectly reduce the effectiveness of that habitat for individual species beyond the removal of habitat. Some species require large, un-fragmented blocks of habitat, and fragmentation can lead to reduced habitat quality. Fragmentation has been shown to be a primary factor in the decline of neotropical migrant birds and can negatively impact habitat specialist species, while having a positive or neutral effect on habitat generalist species (Graham, 2002).

An important impact of fragmentation, aside from breaking up blocks of vegetation, is an increase in edge effects. Edge effects result when two different vegetation types are adjacent to each other. Edge effects can encompass a multitude of impacts including: an alteration in nutrient flows/cycling; an increase in the rate of invasion by invasive species and pathogens; a lowering of the carrying capacity of a habitat patch; and disruptions in meta-population dynamics (Saunders et al., 1991). Invasive species may displace native wildlife by altering sheltering habitats and food sources such as plant communities and insect populations, respectively (Graham, 2002). While creation of edges can negatively impact bird species that require interior habitat, there are some bird species that benefit from creation of edge habitats.

Edge effects tend to be more pronounced with increasing differences in the two adjacent habitat types (e.g., mature forest adjacent to grassland). The creation of edges in forests influences microclimatic factors such as temperature, wind, humidity, and light, and could lead to a change in plant species composition within the adjacent uncut or un-manipulated habitat, or increase the rate of invasion by invasive species and forest pathogens (Murcia, 1995). Compared to the interior of a forest, areas near edges receive more direct solar radiation during the day, lose more long-wave radiation at night, have lower humidity, and have less protection from wind. Increased sunlight and wind can desiccate vegetation by increasing evapotranspiration, affect which plant species survive (typically favoring shade-intolerant species), and dry out soil. Edge effects are typically more pronounced in forest and woodland vegetation communities than shrub-steppe or grassland communities due to the greater typical vegetation height and structural complexity in forested ecosystems.

The ACP will cause permanent fragmentation and edge effects only in forested areas, since the vegetation type in non-forested areas will not be modified permanently. The edge effect on forested habitat in temporary workspace and Additional Temporary Workspace (ATWS) could last several decades; in the maintained pipeline easement, the impact on forested habitat will be permanent. In areas where the proposed pipeline corridors are adjacent to existing rights-of-way, clearing will result in moving an existing edge outward, rather than creating newly fragmented forested habitat.

Habitat fragmentation can result in increased predation and can alter use of these forests, in particular by habitat specialist species, such as the magnolia warbler and cerulean warbler (Graham, 2002). Edge habitats often have different microclimates than interior forests; drier and warmer conditions occur due to lack of shade and more solar radiation. This can alter the insect community, affecting the type or amount of food available to a forest interior species. In addition, brown-headed cowbirds are brood parasites who lay their eggs in nests of other host species, usually at the host brood's expense. Brown-headed cowbirds are commonly found in edge habitats like those created by utility corridors. Most open land and edge species have some strategies to counter cowbirds, but interior forest birds do not (Olcott, 2006). Cowbirds can reduce reproductive success for interior forest bird species utilizing edge habitats or smaller forest fragments for nesting (Graham, 2002).

Utility corridors can create a barrier to wildlife movement for some species and a travel corridor for other species (Graham, 2002). Corridor widths and vegetative characteristics can have varying effects on different species. Abrupt vegetation transitions often cause the greatest barriers, while a forest to shrub to grassland transition can have minimal to no effect on

transiting species (Graham, 2002). They also can create connections between habitats where species such as cowbirds or other invasive species can travel to gain access into other habitats more easily (Askins, 1994).

4.4 Important Bird Areas

Impacts on IBAs include temporary and permanent impacts on potential migratory bird habitat. Because of the linear nature of the Projects, temporary impacts in these habitats will be minimized by the presence of similar habitat communities adjacent to the right-of-way. Additionally, non-forested plant communities can be replanted with similar species which reach maturity relatively quickly compared to forested areas. Neighboring areas will allow birds to disperse sufficiently to continue to utilize similar habitats. The temporary effects on these habitats should have little or no significant impact on their importance to birds, and no changes to local populations are anticipated.

In the temporary right-of-way, upland and wetland forested areas will be impacted to a greater extent than non-forested vegetation types due to the time requirement for the conversion of earlier successional stages to mature woodlands. In the permanent, maintained easement, there will be a permanent conversion of forested land to scrub/shrub and/or non-woody herbaceous species. Impacts on forest dwelling species include temporary and permanent habitat loss, fragmentation of habitat, and the addition of edge-type habitat. Locally, species composition could change as habitats are converted post-construction from forested to scrub/shrub or herbaceous and edges are created along the new pipeline corridors.

4.5 Birds of Conservation Concern

Fifty-four BCCs may occur in the ACP and SHP Project areas. As described above, impacts are expected on habitats that may be used by these birds for nesting, feeding, and wintering. Direct impacts on nesting birds are not anticipated due to the timing of construction activities and time of year restrictions and buffers for identified nests. Overall habitat impacts are expected to be temporary as suitable habitat is available in areas adjacent to the right-of-way which these birds can utilize during construction activities. Impacts on BCCs are expected to be minor.

5.0 ACTIONS TAKEN TO AVOID AND MINIMIZE IMPACTS

The Projects will comply with the MBTA and BGEPA through implementation of conservation measures to avoid or minimize impacts. This section describes conservation measures Atlantic and DTI will implement during planning, construction, and post-construction to avoid or minimize potential impacts on migratory birds. Atlantic and DTI, in accordance with FWS recommendations, have implemented and will continue to implement measures such as utilizing routing as a tool to avoid impacts on discrete habitats and environmental features used as nesting areas by migratory birds; clearing outside of the nesting season and implementing activity buffers around active nests for certain species; and limiting the width of the construction and permanent corridor to the minimum needed to safely build and maintain the pipeline.

5.1 Measures Implemented During Project Planning

5.1.1 Agency Recommendations

In correspondence with Atlantic, the West Virginia FWS (in a letter dated December 9, 2014 (FWS, 2014b)) provided the following recommendations to reduce impacts on migratory birds and their habitats:

- Clear natural or semi-natural habitats (e.g., forests, woodlots, reverting fields, fencerows, and shrubby areas) between September 1 and March 31, which is outside the nesting season for most native bird species.
- Avoid fragmenting large, contiguous tracts of wildlife habitat, where feasible, especially in circumstances where habitat cannot be fully restored after construction. Maintain contiguous habitat corridors, where possible, to facilitate dispersal. Where practicable, concentrate construction activities, infrastructure, and man-made structures (e.g., roads, parking lots, and staging areas) on lands already cultivated, and away from areas of intact and healthy native habitats.
- To reduce habitat fragmentation, co-locate roads, lay down areas, staging areas, and other infrastructure in or immediately adjacent to already disturbed areas (e.g., existing roads, pipelines, and agricultural fields). Where this is not possible, minimize roads and other infrastructure. To minimize habitat loss and fragmentation, cluster development features (e.g., lay down areas, staging areas, and roads) where possible rather than distributing infrastructure broadly across the landscape.

The Pennsylvania FWS office provided recommended practices for conserving migratory birds:

- Where disturbance is necessary, clear natural or semi-natural habitats (e.g., forests, woodlots, reverting fields, shrubby areas) and perform maintenance activities (e.g., mowing) between September 1 and March 31, which is outside the nesting season for most native bird species. Without undertaking specific analysis of breeding species and their respective nesting seasons on the project site, implementation of this seasonal restriction will avoid take of most breeding birds, their nests, and their young (*i.e.*, eggs, hatchlings, fledglings).
- Minimize land and vegetation disturbance during project design and construction. To reduce habitat fragmentation, co-locate roads, fences, lay down areas, staging areas, and other infrastructure in or immediately adjacent to already-disturbed areas (e.g., existing roads, pipelines, agricultural fields) and cluster development features (e.g., buildings, roads) as opposed to distributing them throughout land parcels. Where this is not possible, minimize roads, fences, and other infrastructure.

- Avoid permanent habitat alterations in areas where birds are highly concentrated. Examples of high concentration areas for birds are wetlands, State or Federal refuges, Audubon Important Bird Areas, private duck clubs, staging areas, rookeries, leks, roosts, and riparian areas. Avoid establishing sizable structures along known bird migration pathways or known daily movement flyways (e.g., between roosting and feeding areas).
- To conserve area-sensitive species, avoid fragmenting large, contiguous tracts of wildlife habitat, especially if habitat cannot be fully restored after construction. Maintain contiguous habitat corridors to facilitate wildlife dispersal. Where practicable, concentrate construction activities, infrastructure, and man-made structures (e.g., buildings, cell towers, roads, parking lots) on lands already altered or cultivated, and away from areas of intact and healthy native habitats. If not feasible, select fragmented or degraded habitats over relatively intact areas.
- Develop a habitat restoration plan for the proposed site that avoids or minimizes negative impacts to birds, and that creates functional habitat for a variety of bird species. Use only plant species that are native to the local area for revegetation of the project area.

During a conference call on May 5, 2016, the West Virginia, Virginia, and North Carolina FWS recommended additional avoidance, minimization, and mitigation measures for migratory birds, which have been incorporated into this Migratory Bird Plan in the sections below.

5.1.2 Routing

Atlantic and DTI utilized routing as a tool to avoid impacts on discrete habitats and environmental features used as nesting areas by migratory birds. Specifically, Atlantic and DTI have and continue to identify and evaluate alternative route segments to optimally design and locate the proposed facilities in a manner that minimizes the environmental footprint while adhering to the purpose and need of the Projects. The route review process consists of an assessment of technical and economic feasibility; constructability; impacts on environmental resources; and coordination with federal and commonwealth/state agencies and other stakeholders to identify and, where feasible, avoid sensitive habitats or resources.

Atlantic and DTI have implemented route adjustments and optimization in conjunction with agency and stakeholder consultations. Many of the routing decisions made to date have avoided or minimized impacts on environmentally sensitive features, cultural resources, or historic areas and/or have improved safety and constructability. For example, reroutes or alternatives have been identified that minimize, shorten, or avoid wetland or waterbody crossings, avoid sensitive lands such as conservation easements, avoid known sensitive habitats, minimize crossings of state/commonwealth and federal lands, and minimize forest clearing. These implemented routing decisions will reduce impacts on migratory birds as these areas are commonly used for nesting, foraging, and as stopover habitat when migrating.

5.1.3 Right-of-Way Configuration

Where feasible, Atlantic and DTI have collocated facilities with existing pipeline facilities, electric transmission lines, transportation corridors, or recently disturbed areas to minimize habitat fragmentation and impacts on environmental resources. For the ACP, the proposed mainline pipelines (AP-1 and AP-2) will be collocated with existing rights of way for approximately 48.0 miles of the combined length of these pipelines (9 percent). The proposed AP-3 lateral will be collocated with existing rights of way for approximately 30.0 miles of the total length of the buried route (36 percent). No section of the AP-4 and AP-5 lateral will be collocated with existing facilities. For the SHP, the proposed pipeline loops will be collocated with existing linear facility rights of way for approximately 11.5 miles of the combined length of the buried routes (31 percent).

In consultation with state and federal agencies, Atlantic and DTI will utilize site-specific construction and installation methods (e.g., utilizing a horizontal directional drill) to further reduce impacts in sensitive areas.

In accordance with the FERC's *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures), clearing for construction along each of the proposed pipelines will be limited to a 75-foot wide construction right-of-way in wetlands, which will minimize impacts on wetland vegetation. Additional temporary workspaces will be located in upland areas a minimum of 50 feet from wetland and waterbody edges. Atlantic has proposed 18 variances from this standard. These actions will minimize impacts on migratory birds that utilize wetland and riparian habitats.

The size and location of workspaces have been adjusted to avoid or minimize impacts on sensitive and high quality upland habitats. Atlantic and DTI continue to work with agencies to determine how best to avoid or minimize impacts to migratory birds and their habitats through optimized design.

5.1.4 Eagle Permit

Atlantic and DTI will apply for a non-purposeful eagle take permit for potential disturbance of the previously identified bald eagle nest in the City of Chesapeake near project milepost 76.5 on AP-3, the bald eagle nest in Nottoway County, Virginia near project milepost 244.1 on AP-1, and the bald eagle nest in Augusta County, Virginia near project milepost 147.8 on AP-1.

5.2 Measures to Be Implemented During Construction

Atlantic and DTI will implement measures to avoid and minimize impacts on migratory birds during construction, such as clearing outside of the nesting season and implementing activity buffers around active nests for certain species, as outlined in Table 3.1.1-1. Implementation of the required construction and operational practices for FERC-regulated projects, as described in the FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and the Procedures, will reduce the potential for impacts on migratory birds. Collectively, the Plan and Procedures identify accepted standards and best management practices for minimizing impacts on environmental resources and restoring disturbed areas to pre-

construction conditions. Moreover, mitigation required for wetland impacts under Section 404 of the Clean Water Act, particularly mitigation for the conversion of forested wetlands to other cover types, will provide benefits for birds that utilize forested wetland habitats.

5.2.1 Seasonal Timing Restrictions

There is limited potential for take during migration and wintering seasons; at these times, birds can move out of the area and away from construction activities. As a result, take of, or direct impacts on, migratory birds are not expected for those portions of the Projects for which construction occurs during these seasonal periods. Subject to receipt of the required permits and regulatory approvals, Atlantic and DTI anticipate that vegetation pre-clearing (tree felling and mowing) will commence on November 16, 2017. The ACP pipelines will be built along 17 spreads with construction (clearing (removal of vegetation from the right of way), grading, trenching, etc.) occurring over an approximate 2-year period beginning in February through April 2018, depending on spread. ² See Table 5.2.1-1 for the specific construction schedule by spread. The SHP pipelines will be built along two spreads with initial vegetation clearing (tree felling and mowing) beginning on November 16, 2017 and construction occurring through two construction seasons, beginning in April 2018. Atlantic and DTI anticipate that all facilities for the Projects will be placed in service by the fourth quarter of 2019, in order to meet the needs of project customers. Based on Atlantic’s current assumptions for the project schedule, key milestone dates for the construction schedule are summarized in Table 5.2.1-1 (see Table 5.2.1-1). Vegetation clearing is planned to occur outside of the general migratory bird nesting season prescribed by the FWS (see Table 5.2.1-2), avoiding direct impacts on nesting birds. As described in Table 3.1.1-1, agency recommended activity and vegetation clearing restrictions will be implemented for other known migratory bird nests. Atlantic and DTI will continue to consult with appropriate state agencies and the FWS regarding locations where the recommended buffers cannot be adhered to, in order to develop appropriate conservation measures for those identified nest or rookery locations.

In addition, Atlantic and DTI have designed the Projects, including by employing the measures described in Section 5.1.3 above, in order to minimize potential impacts to bird species, and will employ the additional mitigation and conservation measures described in Section 5.2.3 below during construction in order to further minimize potential effects.

TABLE 5.2.1-1				
Construction Schedule by Spread for the Atlantic Coast Pipeline and Supply Header Project ^a				
Spread	Approximate Mileposts	Counties/Cities and States/Commonwealths	Begin Construction	Finish Construction ^d
ATLANTIC COAST PIPELINE				
Initial Construction Activities				
Initial Site Preparation (2018 spreads)	By spread	See below	November 2017	1Q 2018

² The number and definition of spreads could change depending on the needs of construction.

TABLE 5.2.1-1

Construction Schedule by Spread for the Atlantic Coast Pipeline and Supply Header Project ^a

Spread	Approximate Mileposts	Counties/Cities and States/Commonwealths	Begin Construction	Finish Construction ^d
Tree Clearing (2018 spreads) ^{b,c}	By spread	See below	November 2017	1Q 2018
Initial Site Preparation (2019 spreads)	By spread	See below	September 2018	1Q 2019
Tree Clearing (2019 spreads) ^{b,c}	By spread	See below	November 2018	1Q 2019
Construction of Pipeline				
Spread 1-1 (AP-1)	0.0–17.2	Harrison, and Lewis Counties, WV	April 2019	4Q 2019
Spread 1-2 (AP-1)	17.2-31.6	Lewis and Upshur Counties, WV	April 2019	4Q 2019
Spread 2-1 (AP-1) ^f	31.6-47.3	Upshur and Randolph Counties, WV	April 2018	4Q 2018
Spread 2-2 (AP-1) ^f	47.3-56.1	Randolph County, WV	April 2018	4Q 2018
Spread 2A (AP-1) ^f	56.1-65.4	Randolph County, WV	April 2018	4Q 2018
Spread 3 (AP-1)	65.4-79.2	Randolph and Pocahontas Counties, WV	April 2019	4Q 2019
Spread 3A (AP-1) ^f	79.2-91.3	Pocahontas County, WV and Highland County, VA	April 2018	4Q 2018
Spread 4 (AP-1)	91.3-103.1	Highland, Bath, and Augusta Counties, VA	April 2019	4Q 2019
Spread 4A (AP-1) ^f	103.1-125.9	Bath and Augusta Counties, VA	April 2018	4Q 2018
Spread 5 (AP-1) ^e	125.9-183.3	Augusta and Nelson Counties, VA	February 2019	4Q 2019
Spread 6 (AP-1) ^e	183.3-239.6	Nelson, Buckingham, Cumberland, Prince Edward, and Nottoway Counties, VA	February 2018	4Q 2018
Spread 7 (AP-1)	239.6-300	Nottoway, Dinwiddie, Brunswick, and Greensville Counties, VA, and Northampton County, NC	February 2019	4Q 2019
Spread 8 (AP-2)	0.0–61.6	Northampton, Halifax, and Nash Counties, NC	February 2018	4Q 2018
Spread 9 (AP-2)	61.6–125.0	Nash, Wilson, Johnston, Sampson, and Cumberland Counties, NC	February 2019	4Q 2019
Spread 10 (AP-2)	125.0–183.0	Cumberland and Robeson Counties, NC	February 2018	4Q 2018
Spread 11 (AP-3)	0.0–83.0	Northampton County, NC, Greenville and Southampton Counties, VA, and the Cities of Suffolk and Chesapeake, VA	February 2018	4Q 2018
Spread 12 (AP-4; AP-5) ^e	0.0–0.4; 0.0-1.1	Brunswick County, VA; Greensville County, VA	February 2018	4Q 2018
Construction of Compressor Stations				
Compressor Station 1	7.6	Lewis County, WV	November 2017	4Q 2019
Compressor Station 2	191.5	Buckingham County, VA	November 2017	4Q 2019
Compressor Station 3	300.1	Northampton County, NC	November 2017	4Q 2019
Construction of Metering and Regulating Stations				
Kincheloe	7.6	Lewis County, WV	November 2017	4Q 2019
Long Run	47.2	Randolph County, WV	April 2018	4Q 2019
Woods Corner	191.5	Buckingham County, VA	November 2017	4Q 2019
Smithfield	92.7	Johnston County, NC	November 2017	3Q 2019
Fayetteville	132.9	Johnston County, NC	February 2018	3Q 2019
Pembroke	183.0	Robeson County, NC	March 2018	3Q 2019
Elizabeth River	83.0	City of Chesapeake, VA	April 2018	3Q 2019
Brunswick	0.4	Brunswick County, VA	January 2018	3Q 2019
Greensville	1.1	Greensville County, VA	February 2018	3Q 2019

TABLE 5.2.1-1

Construction Schedule by Spread for the Atlantic Coast Pipeline and Supply Header Project ^a

Spread	Approximate Mileposts	Counties/Cities and States/Commonwealths	Begin Construction	Finish Construction ^d
SUPPLY HEADER PROJECT				
Initial Construction Activities				
Initial Site Preparation (Spread 13)	By spread	See below	November 2017	1Q 2018
Tree Clearing (Spread 13) ^{b, c}	By spread	See below	November 2017	1Q 2018
Initial Site Preparation (Spread 14)	By spread	See below	November 2018	1Q 2019
Tree Clearing (Spread 14) ^{b, c}	By spread	See below	November 2018	1Q 2019
Construction of Pipeline Spreads				
Spread 13 (TL-635)	0.0–33.6	Wetzel, Doddridge, Tyler, and Harrison Counties, WV	April 2018	4Q 2019
Spread 14 (TL-636)	0.0–3.9	Westmoreland County, PA	January 2019	4Q 2019
Construction of Compressor Station Modifications				
JB Tonkin	0.0	Westmoreland County, PA	February 2018	3Q 2019
Crayne	NA	Greene County, PA	February 2018	3Q 2019
Burch Ridge	NA	Marshall County, WV	April 2019	4Q 2019
Mockingbird Hill	0.0	Wetzel County, WV	February 2018	3Q 2019
M&R Stations				
CNX	NA	Lewis County, WV	January 2019	4Q 2019
Abandonment of Gathering Compressor Units				
Hastings	NA	Wetzel County, WV	January 2019	4Q 2019
^a	The number and timing of the construction spreads are subject to change dependent upon construction and permit requirements.			
^b	The start of tree clearing is dependent upon the results of the environmental surveys and agency consultations.			
^c	Including tree clearing for aboveground facilities, access roads, and contractor yards. Tree clearing for construction spreads 1-1, 1-2, 3, 4, Blue Ridge Parkway HDD, and James River HDD will take place from November 2017 to 1Q 2018.			
^d	The finish construction date refers to the end of mechanical construction; additional restoration and post construction activity is expected to occur in the Project area beyond the timeframe reflected here. 1Q = first quarter; 2Q = second quarter; 3Q = third quarter; 4Q = fourth quarter.			
^e	Spread 12 will be completed with spread 11 and is counted as one spread.			
^f	Hydrostatic test and remaining cleanup will be completed by Q3 of 2019.			
^g	Blue Ridge Parkway and James River HDDs will be constructed in 2018.			

TABLE 5.2.1-2

Agency Recommended Migratory Bird Buffers and Timing

Species/Group	Recommending Agency ¹	Recommended Measures	Associated Restriction Dates	Source
PENNSYLVANIA				
Migratory birds	PAFWS	Avoid clearing vegetation during the primary nesting season for most native birds	April 1 – August 31	PAFWS Adaptive Management Practices for Conserving Migratory Birds
WEST VIRGINIA				
Bald eagle nests and winter roosts	WVFWWS	Follow National Bald Eagle Management Guidelines (NBEMG)	See NBEMG	WVFWWS Technical Assistance Letter dated December 9, 2014
Bald eagle nests	MNF	1,500 foot no activity buffer	Active eagle nests	MNF Forestwide Standards
Migratory birds	WVFWWS	Avoid clearing vegetation during the primary nesting season for most native birds	April 1 – August 31	WVFWWS Letter dated December 9, 2014
VIRGINIA				
Bald eagle nests	VAFWS	Follow VA Review process at: http://www.fws.gov/northeast/virginiafield/endangered/projectreviews_step6a.html / Follow National Bald Eagle Management Guidelines	See NBEMG	VAFWS Technical Assistance Letter dated January 23, 2015
Migratory birds	VAFWS	Avoid clearing vegetation during the primary nesting season for most native birds	March 15 – August 15	Meeting with VAFWS on December 16, 2015
Rookeries	VDGIF	No activity during active breeding season, within 0.25 mile of edge of rookery. Avoid clearing vegetation within 500 feet of rookery.	April 1 – August 15	VADGIF Technical Assistance Letter dated June 1, 2016
NORTH CAROLINA				
Bald eagle nests	NCFWS	Follow National Bald Eagle Management Guidelines / Southeast Region Bald Eagle Management Guidelines and Conservation Measures at: http://www.fws.gov/southeast/es/baldeagle/	See NBEMG / website provided	NCFWS Technical Assistance Letter dated March 25, 2015
Migratory birds	FERC	Avoid clearing vegetation during the primary nesting season for most native birds	April 15 – August 1	FERC Guidance
Rookeries	NCWRC	No activity during active breeding season, within 0.5 mile of edge of rookery. Avoid clearing vegetation within 500 feet of rookery.	February 15 – July 31	Email from G. Garrison (NCWRC) to S. Thronson (NRG), dated December 23, 2015
¹ FWS – FWS Ecological Services Field Office MNF – Monongahela National Forest GWNF – George Washington National Forest NCWRC – North Carolina Wildlife Resources Commission VDGIF – Virginia Department of Game and Inland Fisheries				

5.2.2 Monitoring for Eagles

If additional bald eagle nests or occupied bald or golden eagle Winter roosting habitat are identified ahead of or during construction, Atlantic and DTI will follow the National Bald Eagle Management Guidelines for work within 660 feet of bald eagle nests. Atlantic and DTI will monitor for golden eagles ahead of Winter vegetation clearing activities using a qualified avian biologist.

For any tree clearing that occurs during the Winter roosting season or nesting season, a qualified biological monitor will accompany the clearing crews for work conducted in areas where golden and bald eagles are present or likely to be present in the George Washington National Forest (GWNF) or Monongahela National Forest (MNF) and, based on 2016 surveys and CCB data, in Randolph and Pocahontas Counties, West Virginia and in Highland and Augusta Counties, Virginia (**Virginia counties pending FWS approval**). The qualified biological monitor will walk ahead of the clearing crews and search for roosting golden and bald eagles and nesting bald eagles.

If a roosting eagle is located in or near the work area, the monitor will ensure that crews do not cause injury to the bird. In order to protect the bird, if necessary, the crew will leave the area and return once the bird is no longer in the area. If the eagle moves to another area, the monitor will note its new location if possible, and direct crews away from that area. The WV and VA FWS will be notified of any golden eagle activity within the Project area within 24 hours of its discovery. The Bald Eagle Management Guidelines and Forest Service standards will be followed for active bald eagle nests identified. If the recommended buffers in the Guidelines cannot be implemented, a qualified biologist will communicate with the FWS and the USFS (for nests on Forest Service property) to determine an appropriate buffer based on the work activity, visibility to nest, and stage of nesting. The GWNF, MNF, and appropriate FWS office will be contacted to discuss appropriate measures to protect the nesting eagles if the standards in the Bald Eagle Management Guidelines cannot be adhered to and to determine if an eagle disturbance permit may be necessary.

Bald eagle nests identified during aerial survey or via the CCB database will be monitored during pre-construction to determine bird activity. The Bald Eagle Management Guidelines will be followed for active bald eagle nests and appropriate protections will be placed on other active raptor nests as described above.

5.2.3 Project-Level Conservation Measures

During construction, Atlantic and DTI will implement measures to avoid and minimize impacts on migratory birds, such as seasonal timing restrictions on construction activities and activity buffers around active nests, rookeries, and other sensitive habitats for certain species. Implementation of the construction and operational practices for FERC-regulated projects (i.e., Plans and Procedures), will also reduce the potential for impacts on migratory birds, including where construction must occur during the migratory bird nesting season. Collectively, the Plan and Procedures identify industry-proven standards and best management practices for minimizing impacts on environmental resources and restoring disturbed areas to pre-construction condition in accordance with the Projects' *Restoration and Rehabilitation Plan*.

Atlantic and DTI will implement the following measures to minimize impacts on migratory birds and their habitats during construction activities.

- Minimize tree removal during construction, and remove timber in accordance with the *Timber Removal Plan*.
- Segregate topsoil and minimize mixing with subsoil, in accordance with the Plan.

- Limit vegetation clearing in wetlands to trees and shrubs, which will be cut flush with the surface of the ground and removed from the wetland. Limit stump removal, grading, topsoil segregation and excavation to the area immediately over the trenchline, or where stump removal is required to ensure safe passage of equipment through the wetland.
- Implement the *Spill Prevention, Control, and Countermeasures Plan* (SPCC Plan).
- Restore streambeds and banks to pre-construction contours and stabilize following construction.
- Install permanent erosion and sediment controls as described in the Plan and Procedures and the Erosion and Sediment Control Plan.
- Seed and mulch disturbed areas, as necessary and as soon as practical after construction is complete.
- Install temporary sediment barriers around disturbed areas.
- Implement site-specific erosion and sediment control methods in wetlands.
- Mitigate surface erosion of steep slopes by armoring or otherwise stabilizing surface soils using riprap, coir cloth, hydro seeding, mulching, and/or tracking.
- Implement a Geohazards Analysis Program to analyze geotechnical, hydrotechnical, and tectonic hazards to minimize risks of landslides, debris flows, subsidence, channel degradation, bank erosion, aseismic creep, ground displacement, and rupture.
- Complete in-stream construction as quickly as possible.
- Locate ATWS at least 50 feet from stream banks (with the exception of site-specific modifications requested by Atlantic and DTI and approved by the FERC), and at least 100 feet from stream banks in the GWNF and MNF.
- Install temporary erosion control devices in uplands adjacent to waterbody crossings subsequent to construction and until there is successful revegetation of the construction right-of-way.
- Implement an *Invasive Plant Species Management Plan* for the Projects. This plan describes procedures to be implemented during construction of the proposed facilities to minimize the spread of invasive plant species that could compete with listed species, their habitats, or food sources. This plan includes measures such as cleaning equipment, regular inspection of the Project areas, hand spraying for spot treatment of invasive species, segregation of topsoil to avoid spreading invasive plants, and inspection of erosion control materials.
- Employ reasonable and practicable measures to control the invasive plants within the right-of-way and to work with adjacent landowners to prevent the spread of invasive plants to adjacent lands. Implement control measures at the aboveground facility sites to prevent the spread of invasive plant species onto adjacent properties.
- Treat weed infestations that develop as a result of construction using mechanical methods (e.g., mowing), or alternative methods, as appropriate for the species and in accordance with applicable laws and regulations. The method selected will be the best available for the time, place and species as determined through consultation with the appropriate state/commonwealth or federal agency.
- Install rock barriers, gates, fences, non-drivable berms, logs, or locked gates at or near pipeline road crossings within forested areas and adjacent to waterbodies with federally listed species to restrict access by the public during operation of the

facilities, at USFS road crossings within forested areas of the ACP on USFS lands, and elsewhere at the request of the private landowners. Site-specific locations and methods will be determined during easement negotiations with individual landowners and in the preparation of the COM Plan with the USFS.

- Coordinate with the FWS regarding blasting activities within 0.5 mile of bald eagle nests (BAEA-ACT-05 and BAEA-ACT-01 in Table 3.1.1-1).

In addition, Atlantic and DTI will implement applicable recommended measures from the FWS Nationwide Standard Conservation Measures for migratory birds as incorporated below (see:

<https://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>).

- Provide enclosed solid waste receptacles, at a minimum, at each contractor yard.
- Clearly mark all Project workspace boundaries to minimize risk of additional impacts on adjacent habitats. Clearly mark all bird restriction buffer areas on the right-of-way to restrict unauthorized access.
- Use down shielding or directional lighting at waterbody crossings that require nighttime illumination to avoid light pollution into adjacent bird habitats.
- Equipment operators will check equipment for nesting birds if equipment has sat for more than three days without use to identify any potential nesting birds on equipment during the nesting season.

5.2.4 Restoration and Revegetation

After construction is complete, Atlantic and DTI will restore the rights-of-way in accordance with the Plan and Procedures, the Projects' *Restoration and Rehabilitation Plan*, and the other construction, restoration, and mitigation plans developed in consultation with other land managing agencies for the Projects. Cropland will be restored to active agricultural production, and other areas will be revegetated using methods and seed mixes appropriate to existing land uses and cover types. Atlantic and DTI have prepared and will implement an *Invasive Plant Species Management Plan* for the Projects. This plan describes procedures to be implemented during construction of the proposed facilities to minimize the spread of invasive plant species. Revegetation of disturbed areas will follow guidelines in the *Restoration and Rehabilitation Plan*, including timely restoration of disturbed areas, reseeding with the appropriate seed mixes, and the use of effective erosion control measures to minimize the duration of vegetation disturbance. Atlantic and DTI will conduct post-construction monitoring and implement remedial actions as described in the *Restoration and Rehabilitation Plan*.

5.2.5 Training

Prior to the start of construction, Atlantic and DTI will conduct environmental and safety training for Company and Contractor personnel. The training program will focus on FERC's Plan and Procedures; the Projects' Timber Removal Plan, Invasive Plant Species Management Plan, and other construction, restoration, and mitigation plans; this *Migratory Bird Plan*; and applicable permit conditions. In addition, Atlantic and DTI will provide large-group training

sessions before each work crew commences construction with periodic follow-up training for groups of newly assigned personnel and as needed to emphasize specific topics.

5.3 Measures to Be Implemented During Operational Activities

Regular maintenance of vegetation in the permanent rights-of-way will be conducted in accordance with the Plan and Procedures and further restricted by FERC to only include 50 feet centered on the pipeline. The Plan states: "Routine vegetation mowing or clearing over the full width of the permanent right-of-way in uplands shall not be done more frequently than every 3 years. However, to facilitate periodic corrosion/leak surveys, a corridor not exceeding 10 feet in width centered on the pipeline may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state." Routine vegetation mowing or clearing will not occur during the migratory bird nesting season, which is from April 15 to August 1. In Virginia, clearing for operations activities will occur outside the primary songbird nesting season, which runs from March 15 through August 15. In West Virginia, clearing for operations activities will occur outside the primary songbird nesting season, which runs from April 1 through August 30. Where necessary and when required, DTI will use mechanical mowing or cutting along the right-of-way for normal vegetation maintenance. Atlantic and DTI will avoid in-stream or wetland impacts by going around and accessing from the other side or use of a temporary bridge if it is not possible to go around the feature.

Weed infestations that develop as a result of construction will be addressed using mechanical methods (e.g., mowing), or alternative methods, as appropriate for the species and in accordance with applicable laws and regulations. The method selected will be the best available for the time, place and species as determined through consultation with the appropriate state/commonwealth or federal agency. Aerial spraying will not be used for invasive species control along the right of way, but minimal hand or spot spraying may occur for invasive species. Sprays for invasive species will not occur within 25 feet of federally listed species. Atlantic and DTI will implement the Projects' *Invasive Plant Species Management Plan*.

6.0 MITIGATION

Atlantic and DTI recognize that not all impacts on migratory birds can be avoided. To mitigate for unavoidable impacts on migratory birds, Atlantic and DTI are continuing to consult with FWS and other state and federal agencies to develop a mitigation plan. Details of the mitigation plan will be provided at a later date.

In addition, Atlantic and DTI will prepare a compensatory wetland mitigation plan for impacts on each single and complete crossing of Waters of the U.S. and Waters of the State for the Projects with assistance from each of the U.S. Army Corps of Engineers (USACE) District offices. Ratios for unavoidable impacts to Waters of the U.S. and Waters of the State will be determined by the USACE and applied as necessary to calculate the amount of compensatory mitigation credits needed to compensate for both forested and shrub wetlands conversions and permanent losses of Waters of the U.S. Where available, mitigation bank credits will be utilized as a preferred option to mitigate impacts. In the event that mitigation bank credits are unavailable for purchase, or to make up the balance of credits needed, participation in an In-lieu Fee Program will be used to satisfy remaining compensatory mitigation requirements.

Atlantic and DTI are coordinating with FWS to develop a Habitat Equivalency Analysis (HEA) model to quantify the offsets to impacts from the proposed mitigation projects which are being developed. The HEA model will be provided in Attachment C, upon completion.

7.0 IMPLEMENTATION OF CONSERVATION MEASURES

Atlantic and DTI are committed to implementing the conservation measures discussed within the *Migratory Bird Plan* related to avoidance, minimization, and reduction of impacts on migratory birds. To ensure effective implementation, Atlantic and DTI will do the following:

- Incorporate the relevant conservation measures into construction documents issued for the Projects.
- Prior to initiating pre-clearing activities and construction, Atlantic and DTI will conduct environmental training for Company and Contractor personnel. The training program will include the measures described within this plan. In addition, Atlantic and DTI will provide large-group training sessions before each crew commences construction with periodic follow-up training for groups of newly assigned personnel and as needed to emphasize specific topics.

8.0 CONCLUSION

The Projects will implement the measures described in this plan, including targeted routing, right-of-way configuration and optimization, vegetation management, specialized construction methods (e.g., horizontal directional drill), seasonal timing restrictions, no-activity buffers, restoration of disturbed areas, and mitigation measures. Based on the relatively limited extent of the proposed disturbance within the broader landscape, and with the implementation of the proposed avoidance, conservation, minimization, and mitigation measures, the Projects are not expected to result in significant long-term impacts on migratory birds.

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**ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE**

and

**DOMINION TRANSMISSION, INC.
SUPPLY HEADER PROJECT**

Migratory Bird Plan

**ATTACHMENT A
Migratory Birds of Conservation Concern Within the
Vicinity of the Atlantic Coast Pipeline and Supply Header Projects**

Common Name (<i>Scientific name</i>)	BCR Region Listed In	Nesting Habitat	Atlantic Coast Pipeline			Supply Header Pipeline	
			West Virginia	Virginia	North Carolina	Pennsylvania	West Virginia
American Bittern (<i>Botaurus lentiginos</i>)	27	Freshwater marshes with tall vegetation.		X ^a	X ^a		
American Kestrel (<i>Falco sparverius paulus</i>)	27	Longleaf pine sandhills.		X	X		
American Oystercatcher (<i>Haematopus palliatus</i>)	27	Beaches, dunes, marsh islands.		X			
Bachman's Sparrow (<i>Aimophila aestivalis</i>)	27, 29	Pine forests with grassy floors.			X		
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	27, 28, 29	Forested areas adjacent to large bodies of water.	X	X	X	X	X
Bewick's Wren (<i>Thryomanes bewickii ssp. bewickii</i>)	27, 28, 29	Brushy scrub and open woodlands.	X	X			
Black-billed Cuckoo (<i>Coccyzus erythrophthalmus</i>)	None Project crosses	Woodlands and thickets.	X	X		X	X
Black-capped Chickadee (<i>Poecile carolinensis</i>)	28	Deciduous and mixed forests, swamps, riparian areas, and open woods and parks.	X			X	X
Black Rail (<i>Laterallus jamaicensis</i>)	27, 29	High portions of shallow freshwater marshes, wet meadows, and flooded grassy vegetation.		X			
Black Skimmer (<i>Rynchops niger</i>)	27	Beaches, dredge deposition islands, saltmarshes, and gravelbars.		X			
Black-throated Green Warbler (<i>Setophaga virens</i>)	27	Transitional coniferous-deciduous forest.		X			
Blue-winged Warbler (<i>Vermivora cyanoptera</i>)	27, 28, 29	Forest/field edges, often near abandoned farmland and forest clearings.	X	X		X	X
Brown-headed Nuthatch (<i>Sitta pusilla</i>)	27, 29	Pine forests of comprised of longleaf and slash pines where natural fire patterns have been maintained.		X	X		
Canada Warbler (<i>Cardellina canadensis</i>)	28	Moist forests with a well-developed shrub layer, swamps, and streamside thickets.	X	X		X	
Cerulean Warbler (<i>Setophaga cerulean</i>)	27, 28, 29	Forests with tall deciduous trees and open understory, such as wet bottomlands and dry slopes.	X	X	X	X	X
Chuck-will's-widow (<i>Antrostomus carolinensis</i>)	27	Pine, oak-hickory, and other forests often with canopy openings.		X	X		
Fox Sparrow (<i>Passerella iliaca</i>)	None Project crosses	Thickets and chapparal.	X ^a	X ^a	X ^a		X ^a
Golden-winged Warbler (<i>Columbina passerine</i>)	28	Regenerating clear-cuts, wet thickets, tamarack bogs, and aspen or willow stands.	X	X		X	

TABLE A-1 (cont'd)

Migratory Birds of Conservation Concern Within the Vicinity of the Atlantic Coast Pipeline and Supply Header Project							
Common Name (<i>Scientific name</i>)	BCR Region Listed In	Nesting Habitat	Atlantic Coast Pipeline			Supply Header Pipeline	
			West Virginia	Virginia	North Carolina	Pennsyl- vania	West Virginia
Gull-billed Tern (<i>Gelochelidon nilotica</i>)	27	Gravelly or sandy beaches.		X			
Henslow's Sparrow (<i>Ammodramus henslowii</i>)	27, 28, 29	Large, flat fields with no woody plants, and with tall, dense grass.			X	X	X
Hudsonian Godwit (<i>Limosa haemastica</i>)	None Project crosses	Grassy tundra.		X ^a			
Kentucky Warbler (<i>Geothlypis formosa</i>)	27, 28, 29	Hardwood forests with thick understory.	X	X	X	X	X
Least Bittern (<i>Ixobrychus exilis</i>)	27	Freshwater or brackish marshes with tall vegetation.	X	X	X	X	X
Least Tern (<i>Sternula antillarum</i>)	27	Beaches and lakes and rivers with gravel or sand bars.		X			
Lesser Yellowlegs (<i>Tringa flavipes</i>)	None Project crosses	Open boreal forests with shallow wetlands.		X ^a			
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	27, 28, 29	Short grass with isolated trees or shrubs, especially pastureland.		X	X		
Louisiana Waterthrush (<i>Parkesia motacilla</i>)	28	Breeds along gravel-bottomed streams flowing through hilly, deciduous forest.	X	X		X	X
Marbled Godwit (<i>Limosa fedoa</i>)	27	Marshes and flooded plains.		X ^a			
Mississippi Kite (<i>Ictinia mississippiensis</i>)	None Project crosses	Riverine forest, and open woodland.			X		
Nelson's Sharp-tailed Sparrow (<i>Ammodramus nelsoni</i>)	27	Freshwater marshes and wet meadows.		X ^a			
Northern Saw-whet Owl (<i>Aegolius acadicus</i>)	28	Various forested habitats and most closely associated with conifer and mixed conifer/hardwood forests.	X			X	X
Olive-sided Flycatcher (<i>Contopus cooperi</i>)	28	Coniferous forests, edges and openings.	X	X			
Peregrine Falcon (<i>Falco peregrinus</i>)	27, 28, 29	Cliffs, manmade objects, such as transmission towers, silos, and bridges.	X	X	X ^a	X	X
Pied-billed Grebe (<i>Podilymbus podiceps</i>)	None Project crosses	Seasonal or permanent ponds with dense stands of emergent vegetation, bays and sloughs.	X	X		X	X
Prairie Warbler (<i>Setophaga discolor</i>)	27, 28, 29	Various shrubby habitats including southern pine forest, pine and scrub oak barrens, and regenerating forest.	X	X	X	X	X
Prothonotary Warbler (<i>Protonotaria citrea</i>)	27	Wooded swamps and other bottomland forests.		X	X		
Purple Sandpiper (<i>Calidris maritima</i>)	None project crosses	Low tundra and gravel beaches.		X ^a			

TABLE A-1 (cont'd)

Migratory Birds of Conservation Concern Within the Vicinity of the Atlantic Coast Pipeline and Supply Header Project							
Common Name (<i>Scientific name</i>)	BCR Region Listed In	Nesting Habitat	Atlantic Coast Pipeline			Supply Header Pipeline	
			West Virginia	Virginia	North Carolina	Pennsyl- vania	West Virginia
Red Crossbill (<i>Loxia curvirostra</i>)	28	Mature coniferous forests.	X				
Red-headed Woodpecker (<i>Melanerpes erythrocephalus</i>)	27, 28	Deciduous woodlands often with groves of dead or dying trees.	X	X		X	X
Red Knot (<i>Calidris canutus rufa</i>)	27	Dry tundra areas.		X ^a	X ^a		
Rusty Blackbird (<i>Euphagus carolinus</i>)	27, 28, 29	Wet forests.	X ^a	X ^a	X ^a		
Saltmarsh Sparrow (<i>Ammodramus caudacutus</i>)	27	Salt marshes.		X			
Seaside Sparrow (<i>Ammodramus maritimus</i>)	27	Salt marshes.		X			
Sedge Wren (<i>Cistothorus platensis</i>)	27, 28, 29	Dense tall sedges and grasses in wet meadows, hayfields, and marshes.		X ^a	X ^a		
Short-billed Dowitcher (<i>Limnodromus griseus</i>)	27	Muskegs of taiga to timberline.		X ^a			
Short-eared Owl (<i>Asio flammeus</i>)	29	Open country, including prairies, meadows, marshes, and open woodland.	X ^a	X ^a	X ^a	X ^a	X ^a
Snowy Egret (<i>Egretta thula</i>)	None Project crosses	Thick vegetation in isolated places such as dredge-spoil islands, swamps, and marshes.		X			
Swainson's Warbler (<i>Limnothlypis swainsonii</i>)	27, 28, 29	Southern forests with thick undergrowth.	X	X	X		
Whimbrel (<i>Numenius phaeopus</i>)	27	Tundra.		X ^a			
Willow Flycatcher (<i>Empidonax traillii</i>)	None Project crosses	Moist shrubby areas near water.	X	X		X	X
Wood Thrush (<i>Hylocichla mustelina</i>)	27, 28, 29	Mature deciduous and mixed forests.	X	X	X	X	X
Worm-eating Warbler (<i>Helmitheros vermivorum</i>)	28	Mature deciduous or mixed deciduous-coniferous forest with patches of dense understory.	X	X	X	X	X
Yellow-bellied Sapsucker (<i>Sphyrapicus varius</i>)	28	Various forested habitats and often young forests with edge habitat, especially areas regenerating from timber harvesting.	X	X			
Yellow Rail (<i>Coturnicops noveboracensis</i>)	27	Shallow marshes and wet meadows.		X ^a	X ^a		

^a Species does not breed in state; wintering or migrating populations only.

Source: IPaC July 2016; 2008 Birds of Conservation Concern.

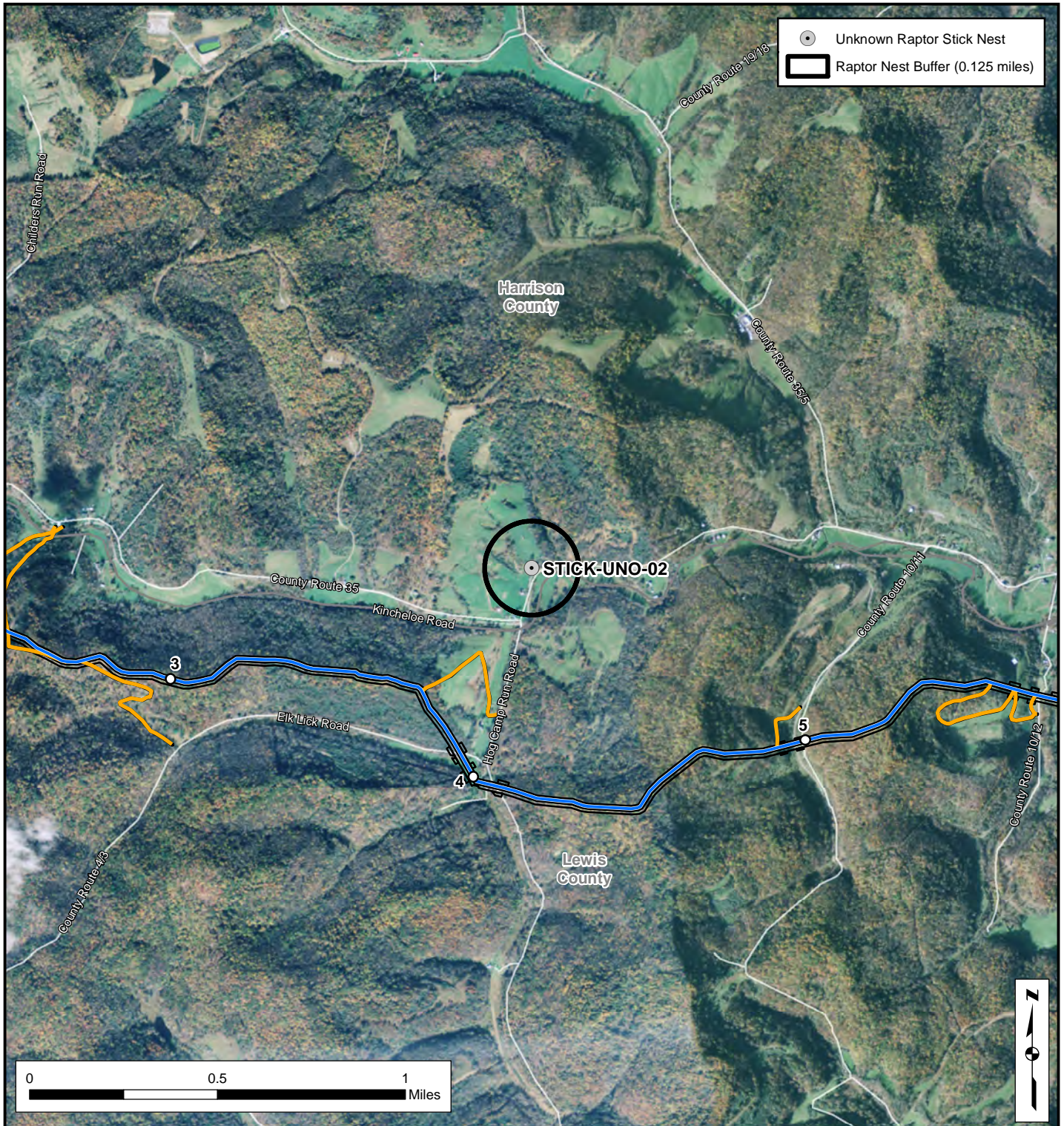
**ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE**

and

**DOMINION TRANSMISSION, INC.
SUPPLY HEADER PROJECT**

Migratory Bird Plan

**ATTACHMENT B
Known Migratory Bird Nesting Sites**



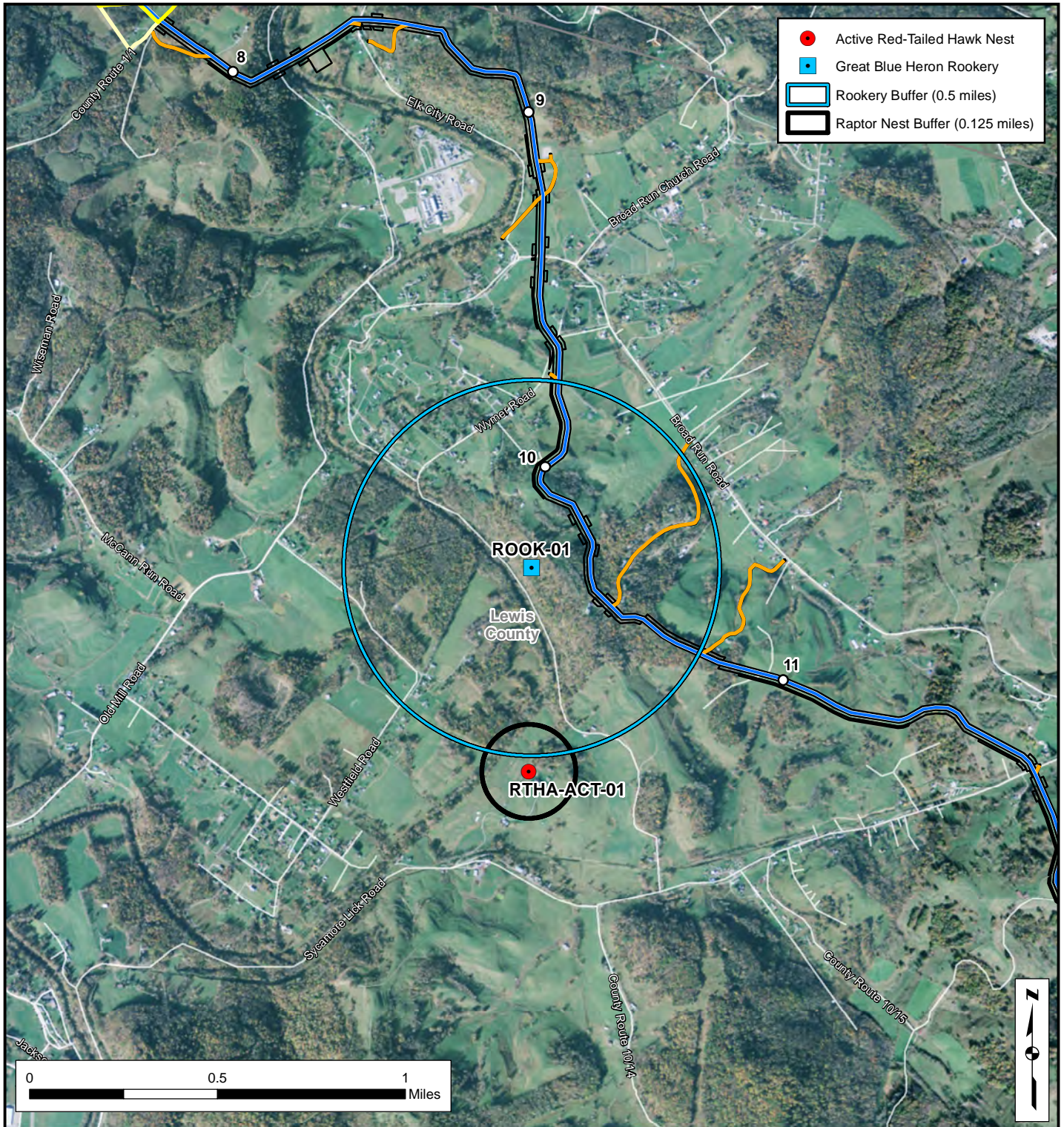
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	WV: Apr. 1 - Aug. 31



- Milepost
- AP-1 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
 Harrison County, West Virginia
 Page B-1

* Times are approximate, and dependent on actual bird activity at nest or rookery.



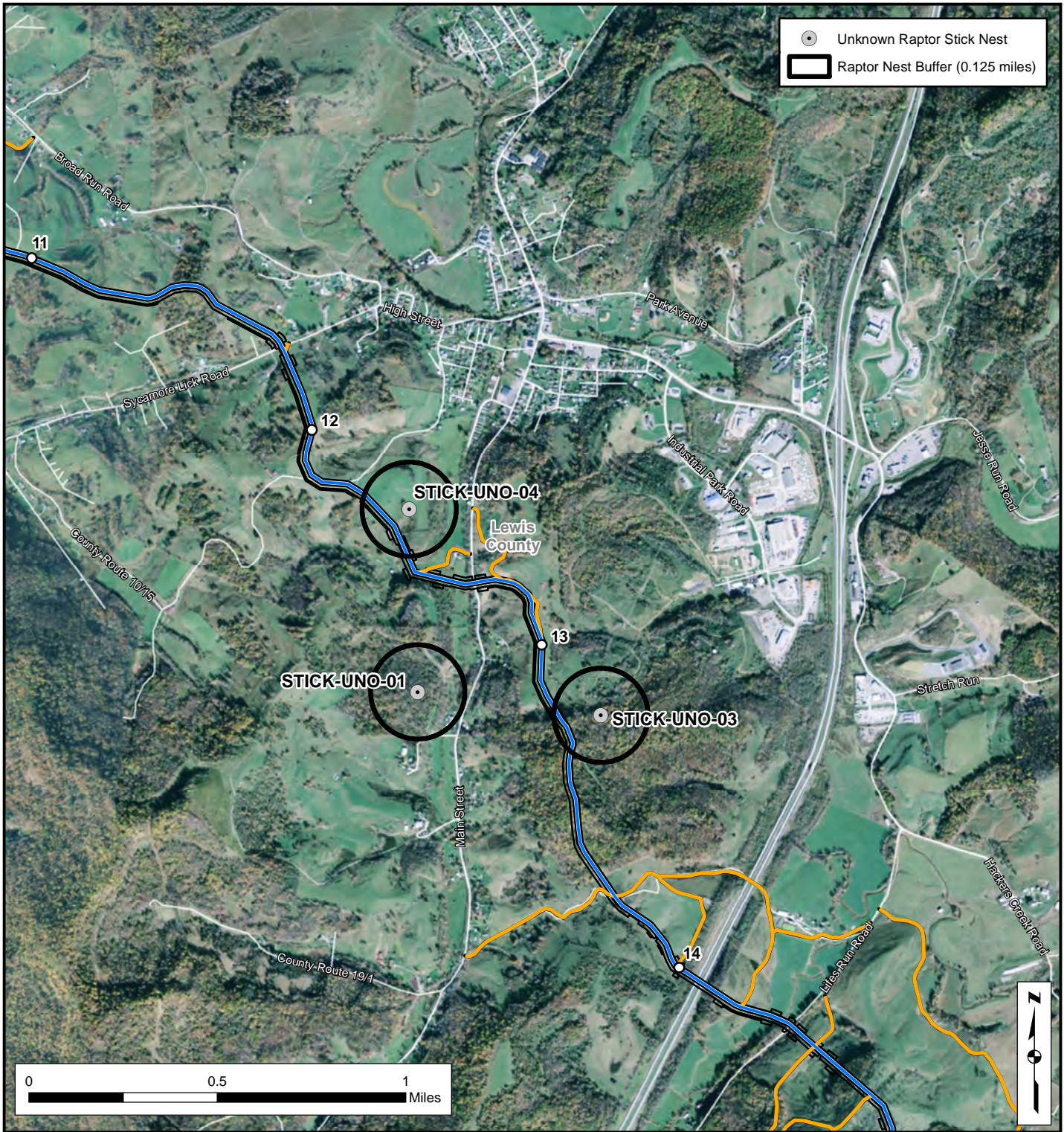
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Rookeries	0.5 mile	WV: Apr. 1 - Aug. 15 (Pending agency confirmation)
Non-raptor migratory birds	Vegetation clearing	WV: Apr. 1 - Aug. 31



- Milepost
- AP-1 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
 Lewis County, West Virginia
 Page B-2

* Times are approximate, and dependent on actual bird activity at nest or rookery.



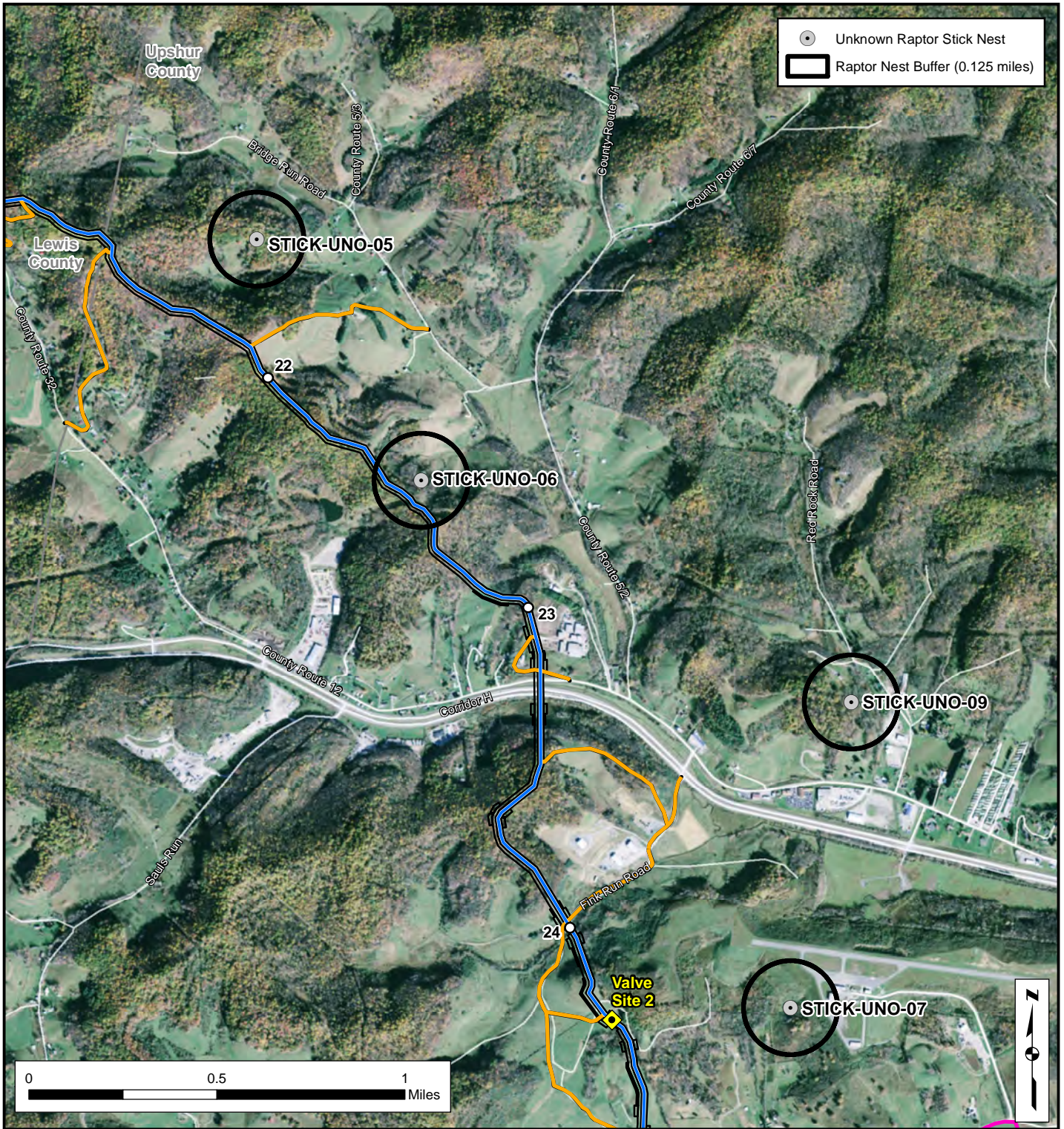
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	WV: Apr. 1 - Aug. 31



- Milepost
- AP-1 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
 Lewis County, West Virginia
 Page B-3

* Times are approximate, and dependent on actual bird activity at nest or rookery.



Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	WV: Apr. 1 - Aug. 31

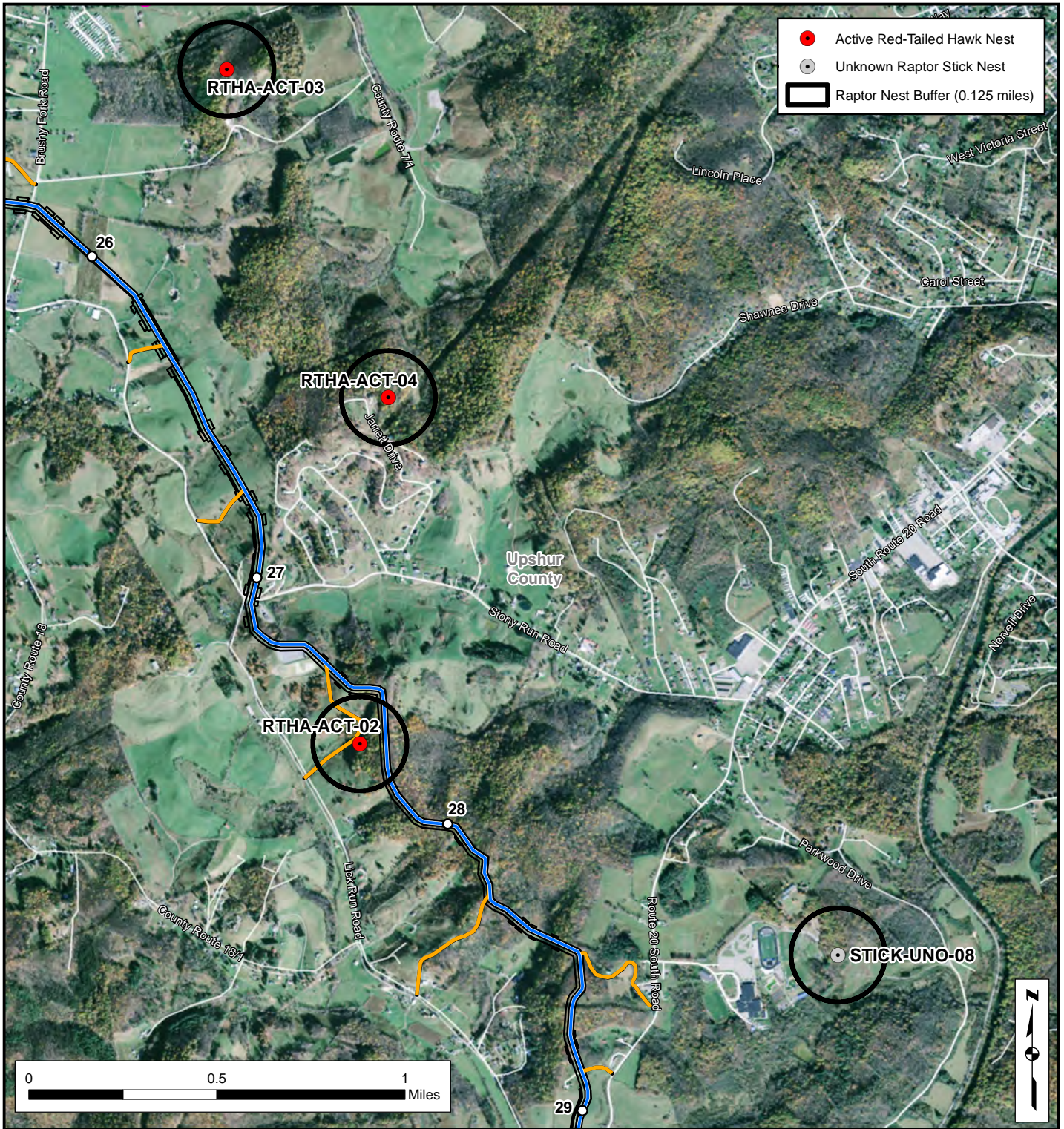


- Milepost
- AP-1 (Rev 11a)
- ◆ Valve Site
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)
- Contractor/Pipe Yard

**Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
Upshur County, West Virginia
Page B-4**



* Times are approximate, and dependent on actual bird activity at nest or rookery.



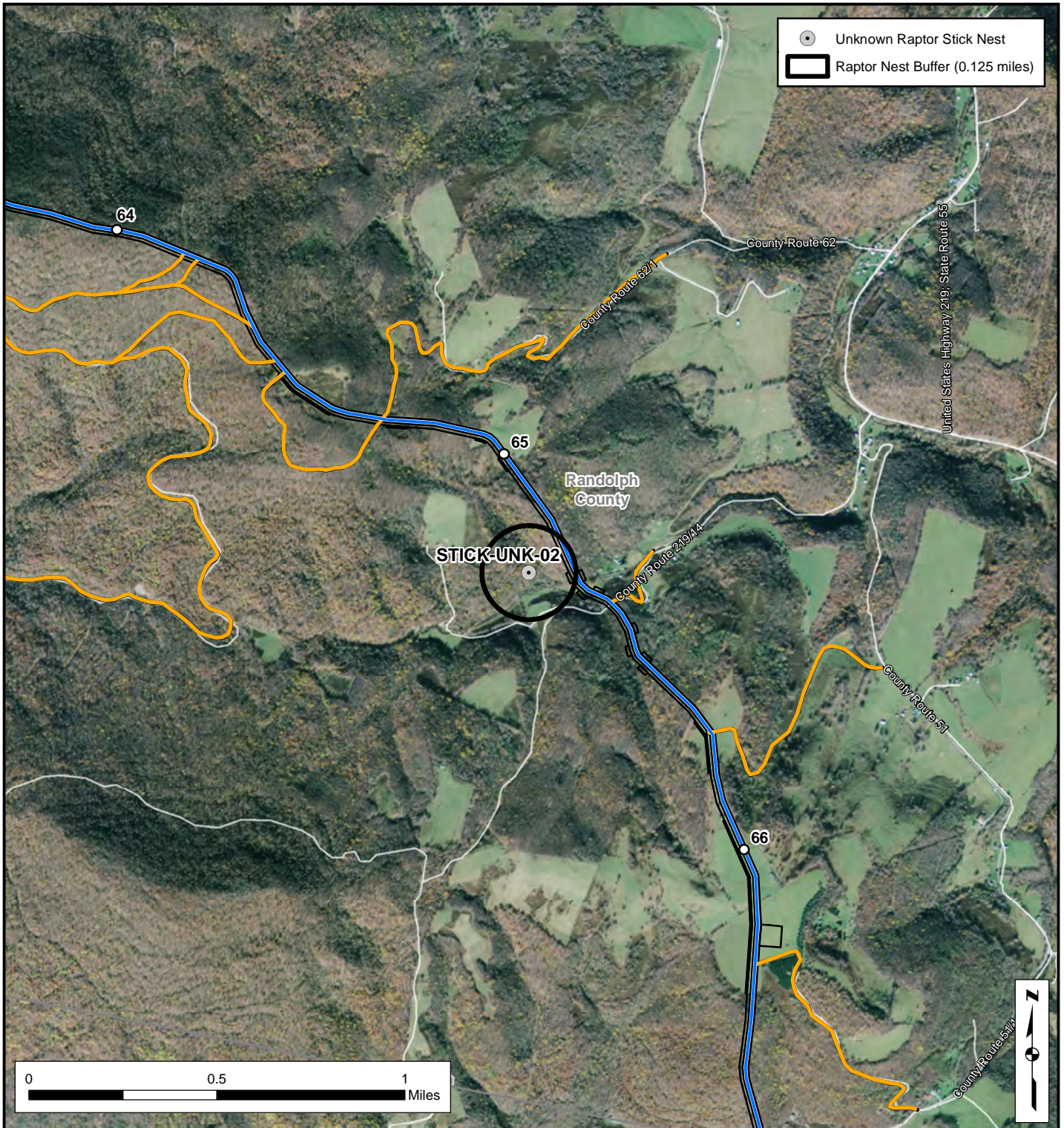
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	WV: Apr. 1 - Aug. 31



- Milepost
- AP-1 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)
- Contractor/Pipe Yard

Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
 Upshur County, West Virginia
 Page B-5

* Times are approximate, and dependent on actual bird activity at nest or rookery.



- Unknown Raptor Stick Nest
- Raptor Nest Buffer (0.125 miles)

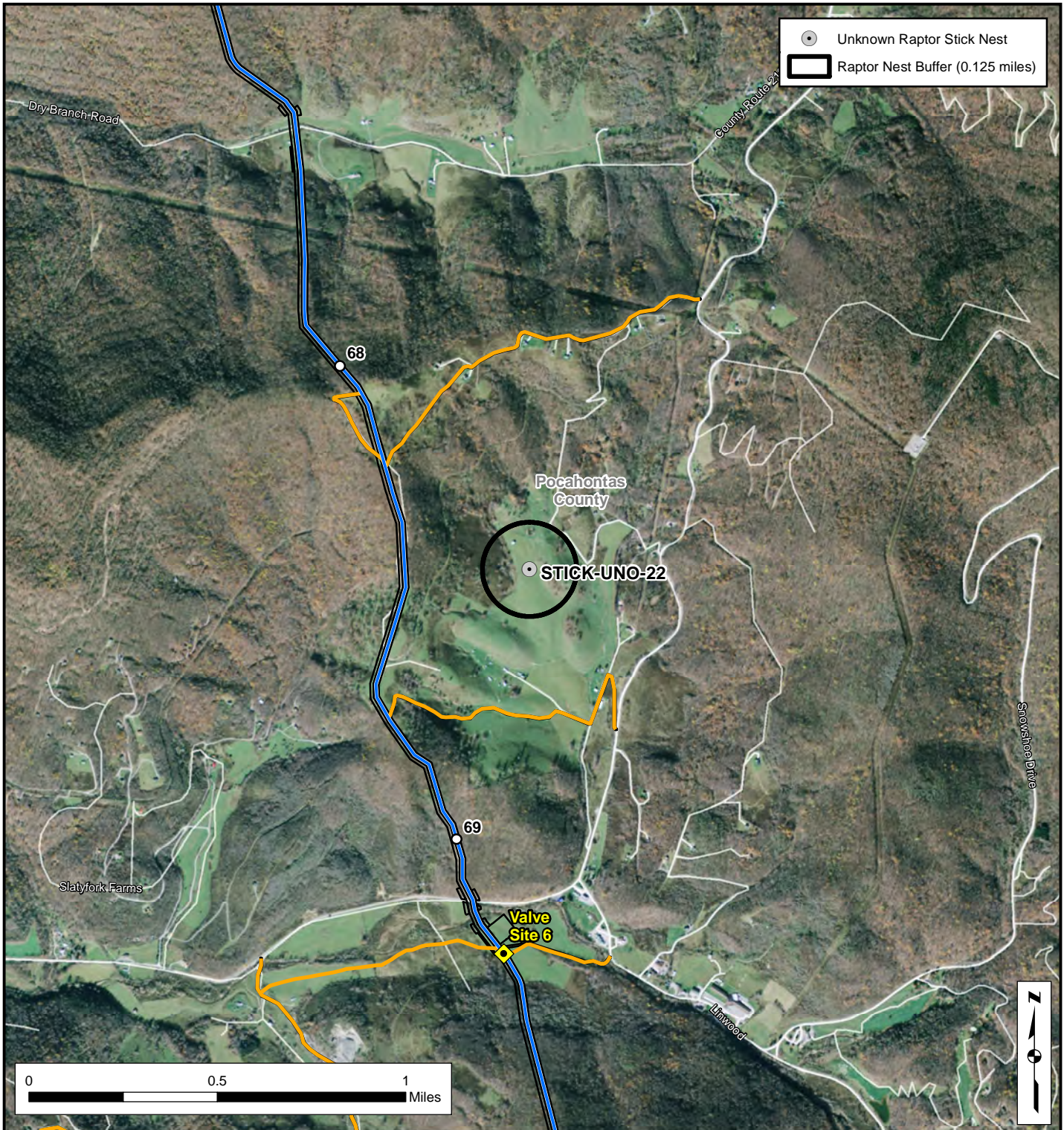
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	WV: Apr. 1 - Aug. 31



- Milepost
- AP-1 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
 Randolph County, West Virginia
 Page B-6

* Times are approximate, and dependent on actual bird activity at nest or rookery.



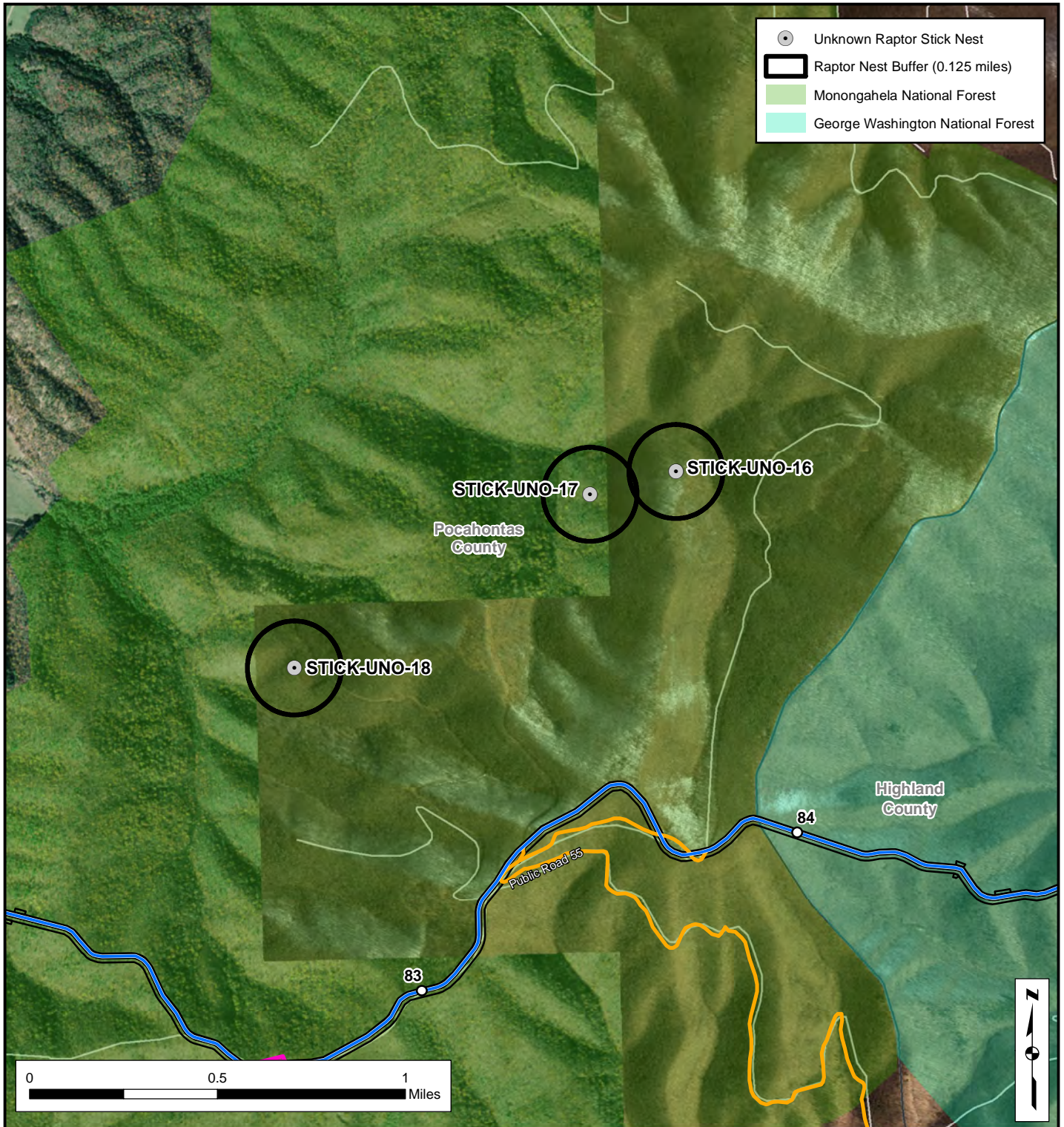
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	WV: Apr. 1 - Aug. 31



- Milepost
- AP-1 (Rev 11a)
- Valve Site
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

**Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
Pocahontas County, West Virginia
Page B-7**

* Times are approximate, and dependent on actual bird activity at nest or rookery.



Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	WV: Apr. 1 - Aug. 31

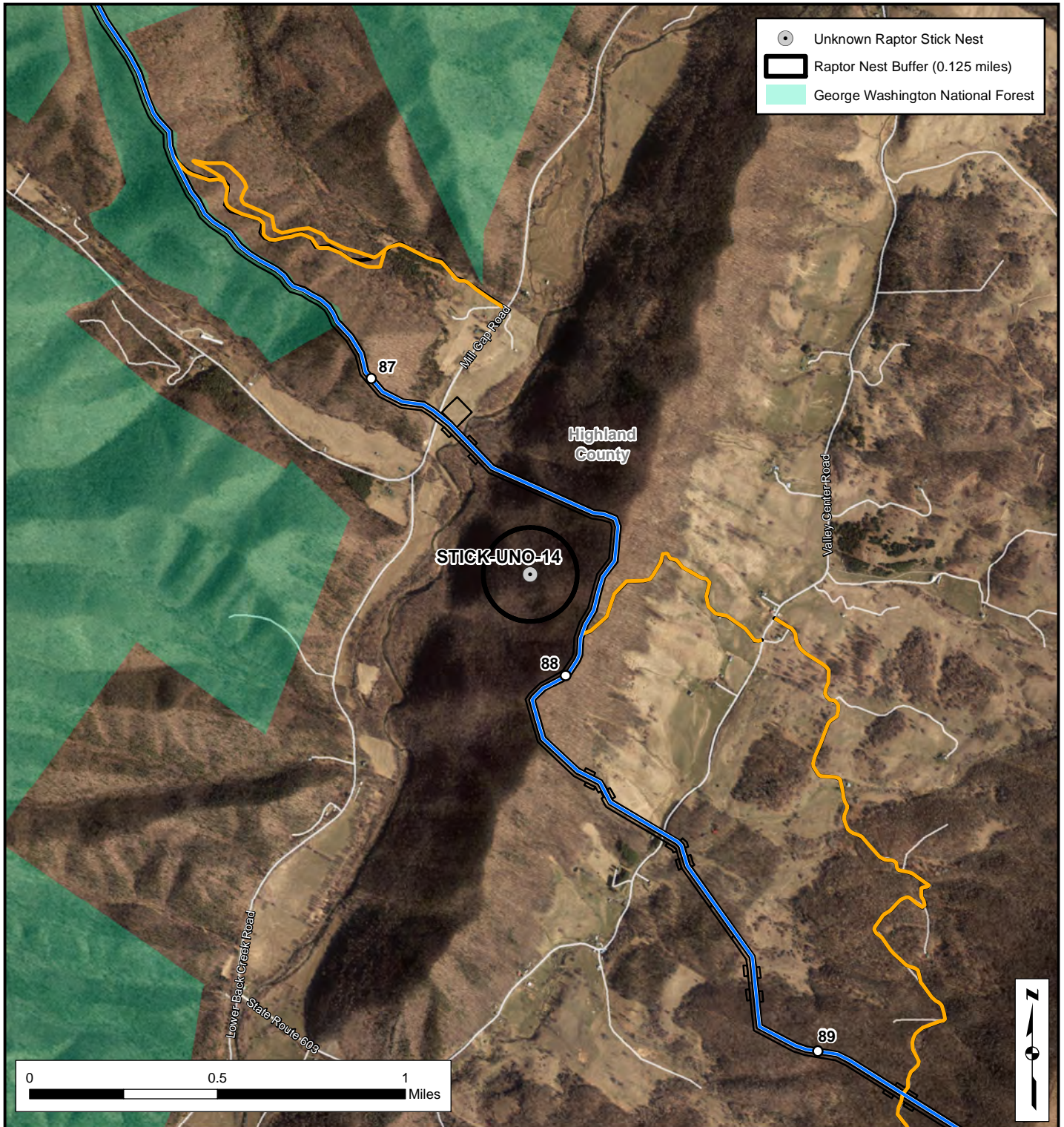





- Milepost
- AP-1 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)
- Contractor/Pipe Yard

**Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
Pocahontas County, West Virginia
Page B-8**







* Times are approximate, and dependent on actual bird activity at nest or rookery.




-  Unknown Raptor Stick Nest
-  Raptor Nest Buffer (0.125 miles)
-  George Washington National Forest

Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15

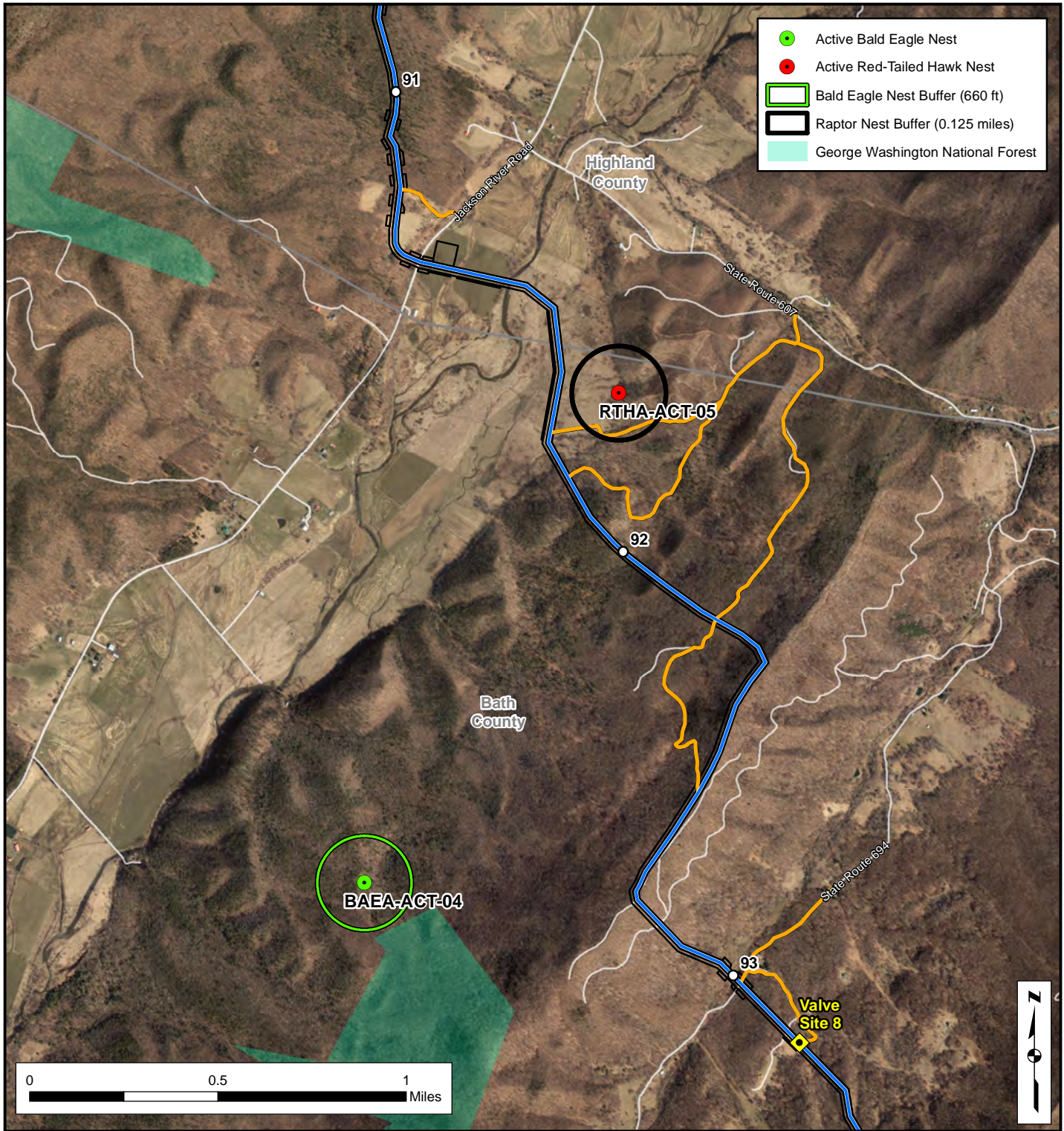



-  Milepost
-  AP-1 (Rev 11a)
-  Access Road
-  Construction Impact Footprint 7-14-2016 (Rev 11a)


Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
 Highland County, Virginia
 Page B-9



* Times are approximate, and dependent on actual bird activity at nest or rookery.



Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Bald Eagle Nests	660 feet	Nov. 15 - July 15
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15



Dominion


- Milepost
- AP-1 (Rev 11a)
- ◆ Valve Site
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project

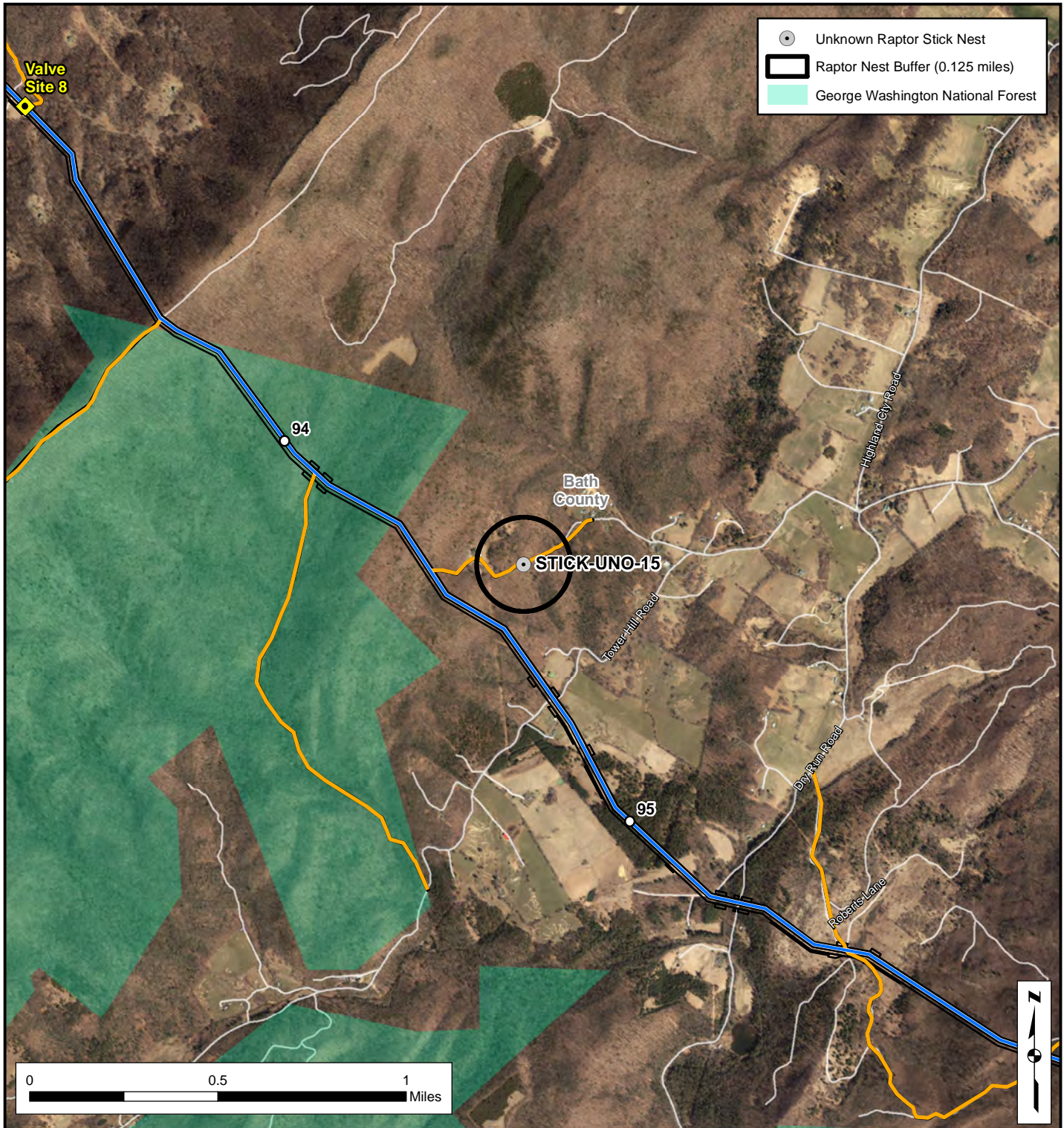
Known Migratory Bird Nesting Sites




Bath County, Virginia

Page B-10







* Times are approximate, and dependent on actual bird activity at nest or rookery.



-  Unknown Raptor Stick Nest
-  Raptor Nest Buffer (0.125 miles)
-  George Washington National Forest

Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15

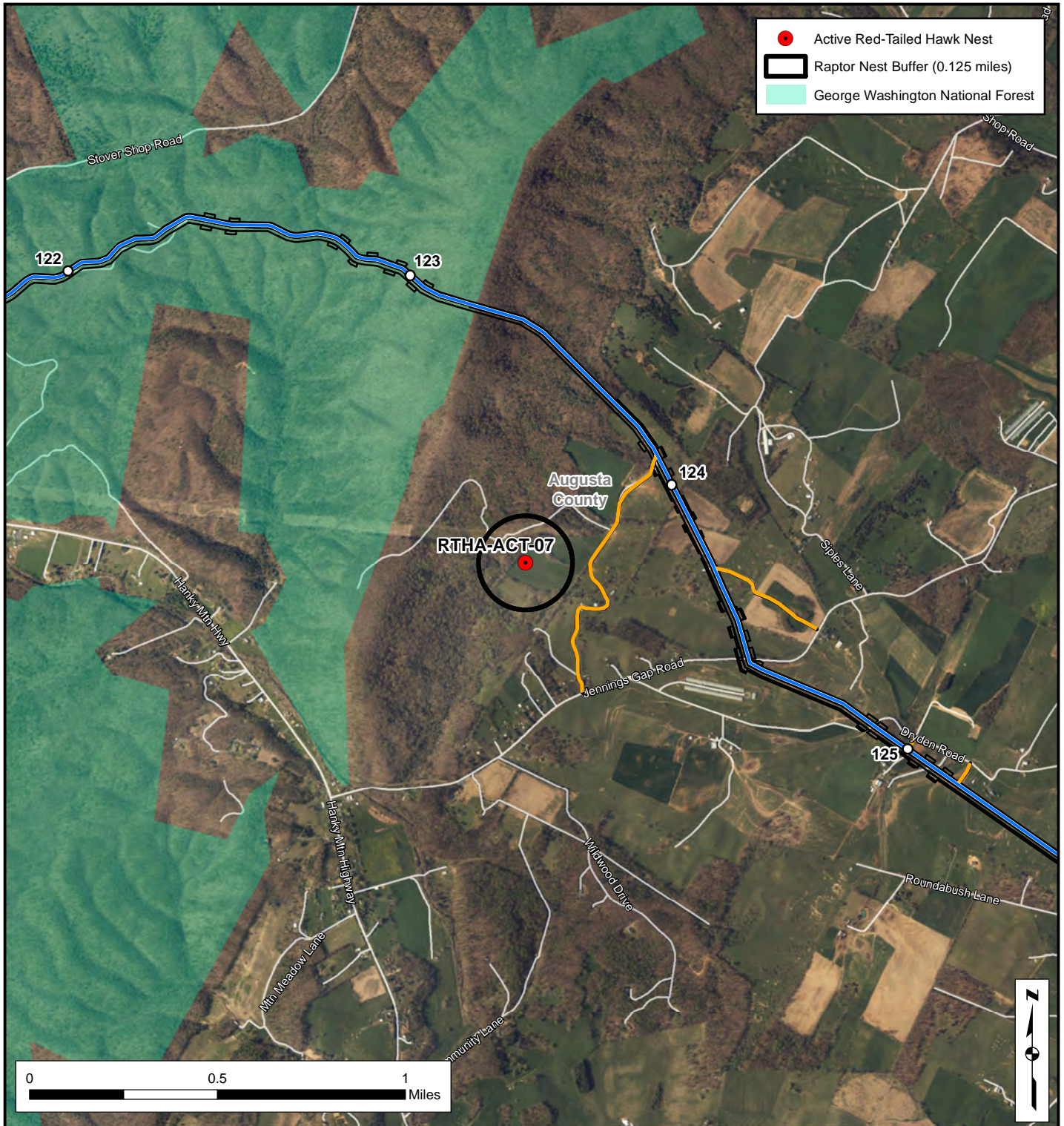


-  Milepost
-  AP-1 (Rev 11a)
-  Valve Site
-  Access Road
-  Construction Impact Footprint 7-14-2016 (Rev 11a)








**Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
Bath County, Virginia
Page B-11**



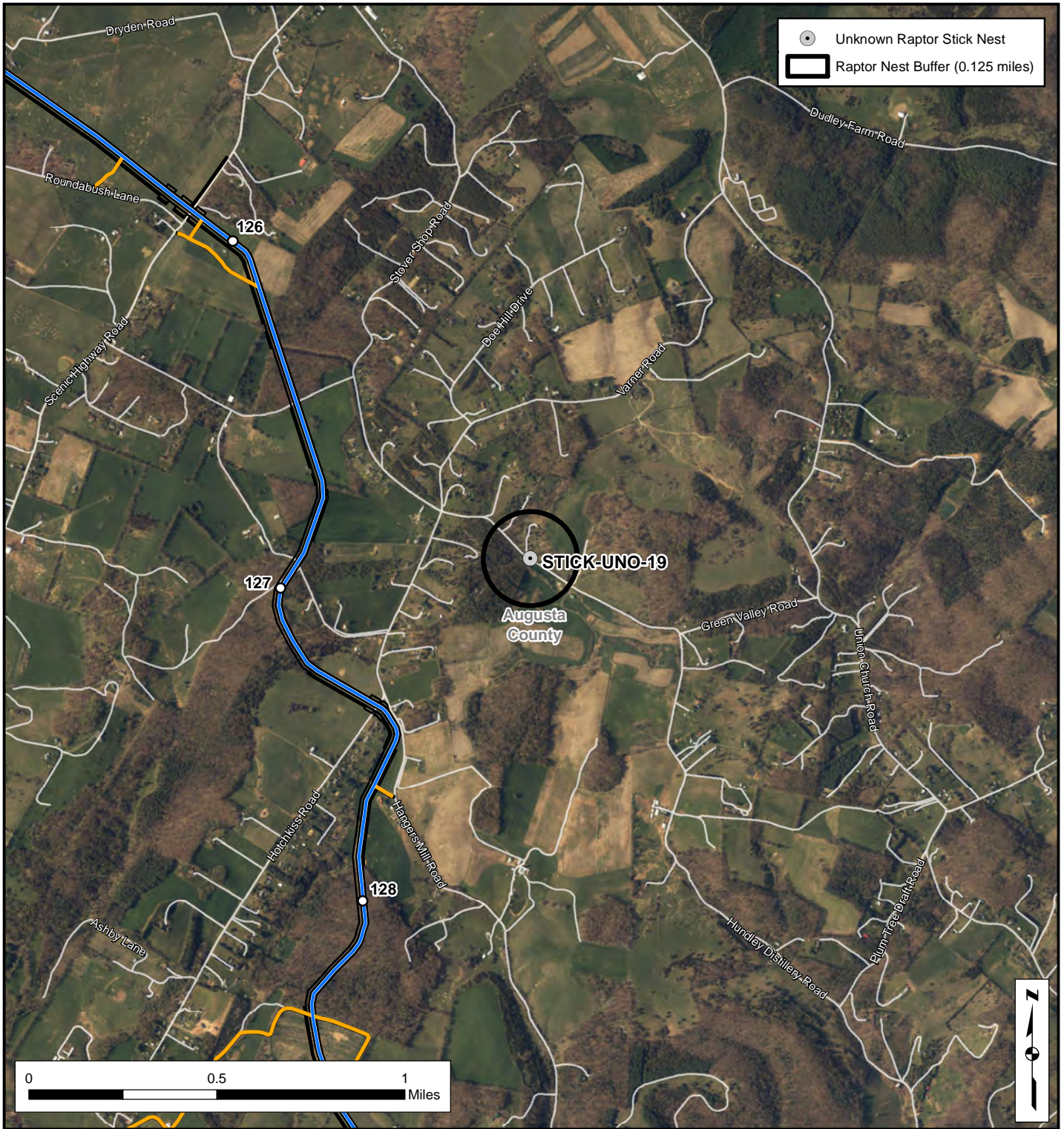
* Times are approximate, and dependent on actual bird activity at nest or rookery.





Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15

 	<ul style="list-style-type: none">  Milepost  AP-1 (Rev 11a)  Access Road  Construction Impact Footprint 7-14-2016 (Rev 11a) 	<h3>Atlantic Coast Pipeline Project</h3> <h3>Known Migratory Bird Nesting Sites</h3> <h3>Augusta County, Virginia</h3> <h3>Page B-12</h3> 
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* Times are approximate, and dependent on actual bird activity at nest or rookery.



-  Unknown Raptor Stick Nest
-  Raptor Nest Buffer (0.125 miles)

Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15



-  Milepost
-  AP-1 (Rev 11a)
-  Access Road
-  Construction Impact Footprint 7-14-2016 (Rev 11a)

**Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
Augusta County, Virginia
Page B-13**



* Times are approximate, and dependent on actual bird activity at nest or rookery.



- Unknown Raptor Stick Nest
- Raptor Nest Buffer (0.125 miles)

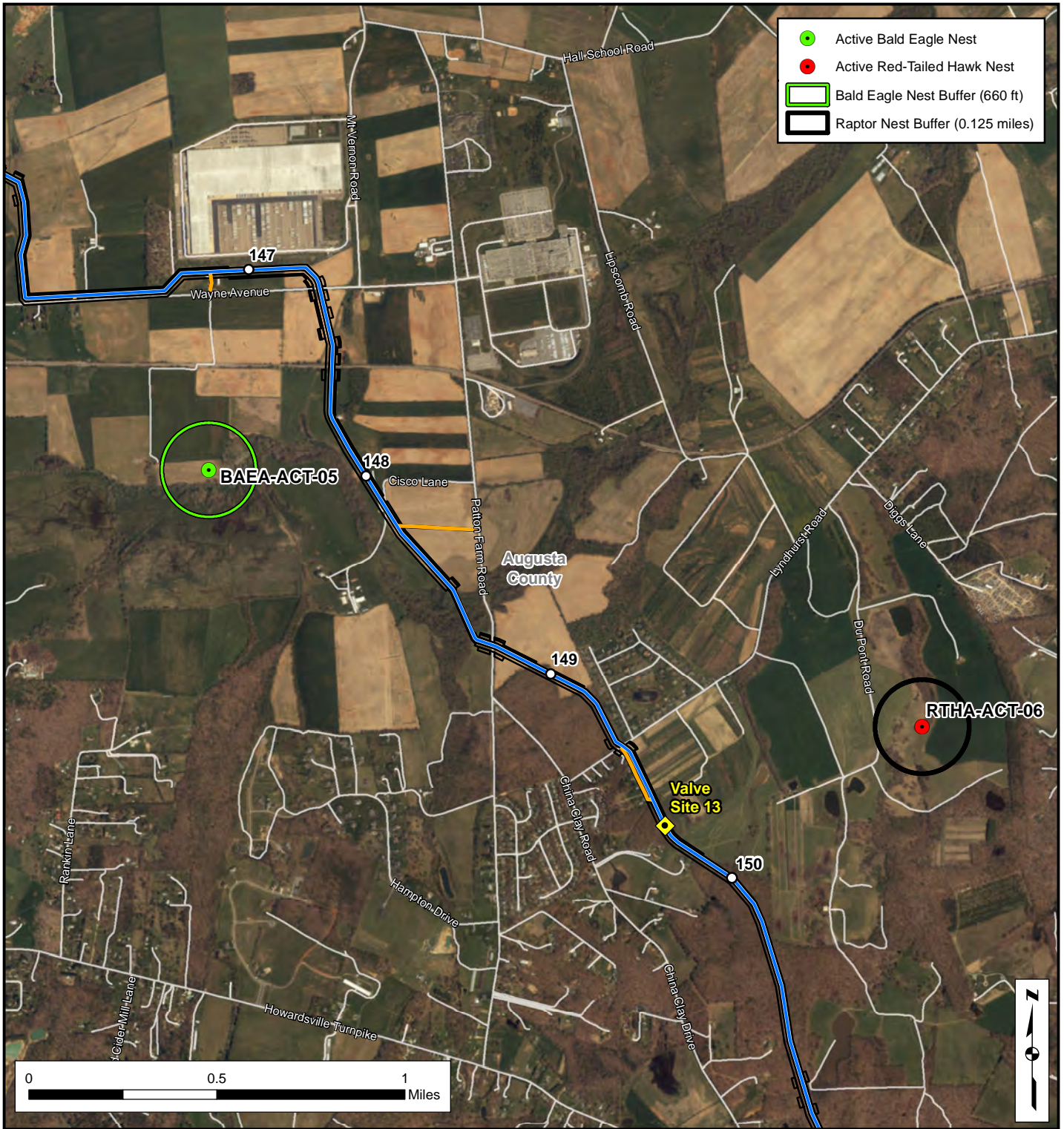
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15



- Milepost
- AP-1 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
 Augusta County, Virginia
 Page B-14

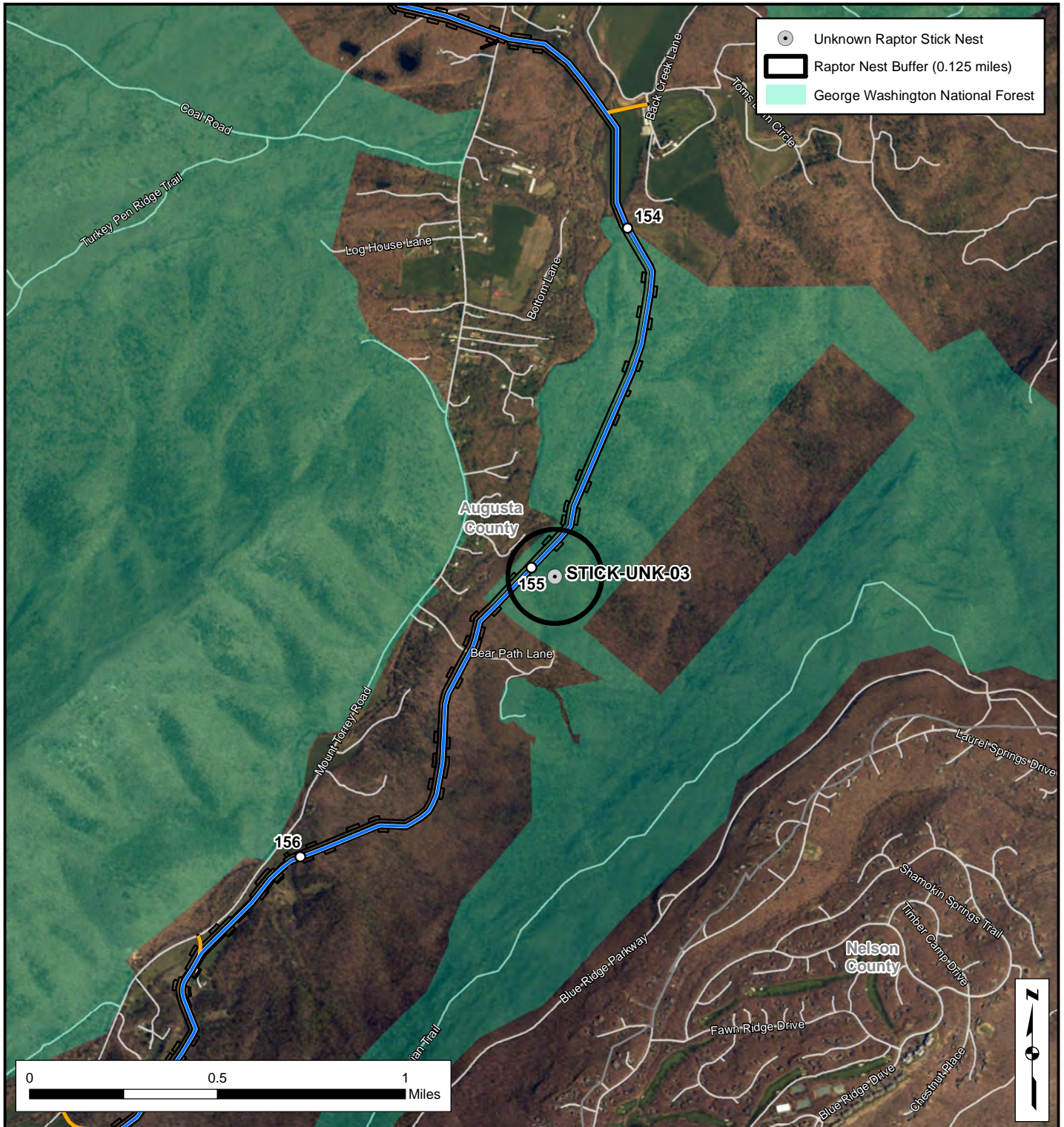
* Times are approximate, and dependent on actual bird activity at nest or rookery.



Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Bald Eagle Nests	660 feet	Nov. 15 - July 15
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15

 	<ul style="list-style-type: none"> Milepost AP-1 (Rev 11a) Valve Site Access Road Construction Impact Footprint 7-14-2016 (Rev 11a) 	<h3>Atlantic Coast Pipeline Project</h3> <h3>Known Migratory Bird Nesting Sites</h3> <h3>Augusta County, Virginia</h3> <p>Page B-15</p>
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* Times are approximate, and dependent on actual bird activity at nest or rookery.



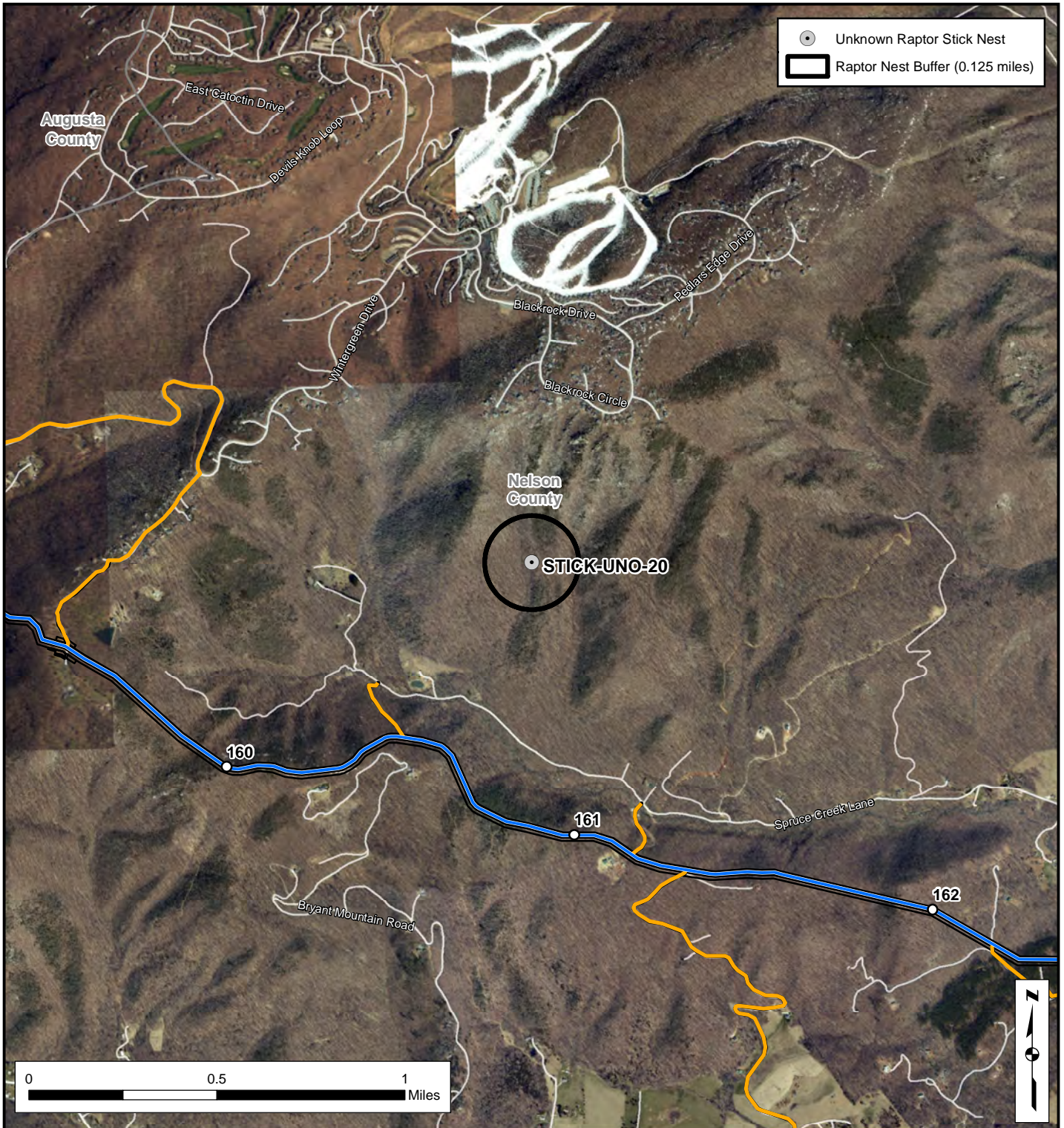
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15





- Milepost
- AP-1 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)



Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
 Augusta County, Virginia
 Page B-16





* Times are approximate, and dependent on actual bird activity at nest or rookery.



-  Unknown Raptor Stick Nest
-  Raptor Nest Buffer (0.125 miles)

Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15


-  Milepost
-  AP-1 (Rev 11a)
-  Access Road
-  Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project

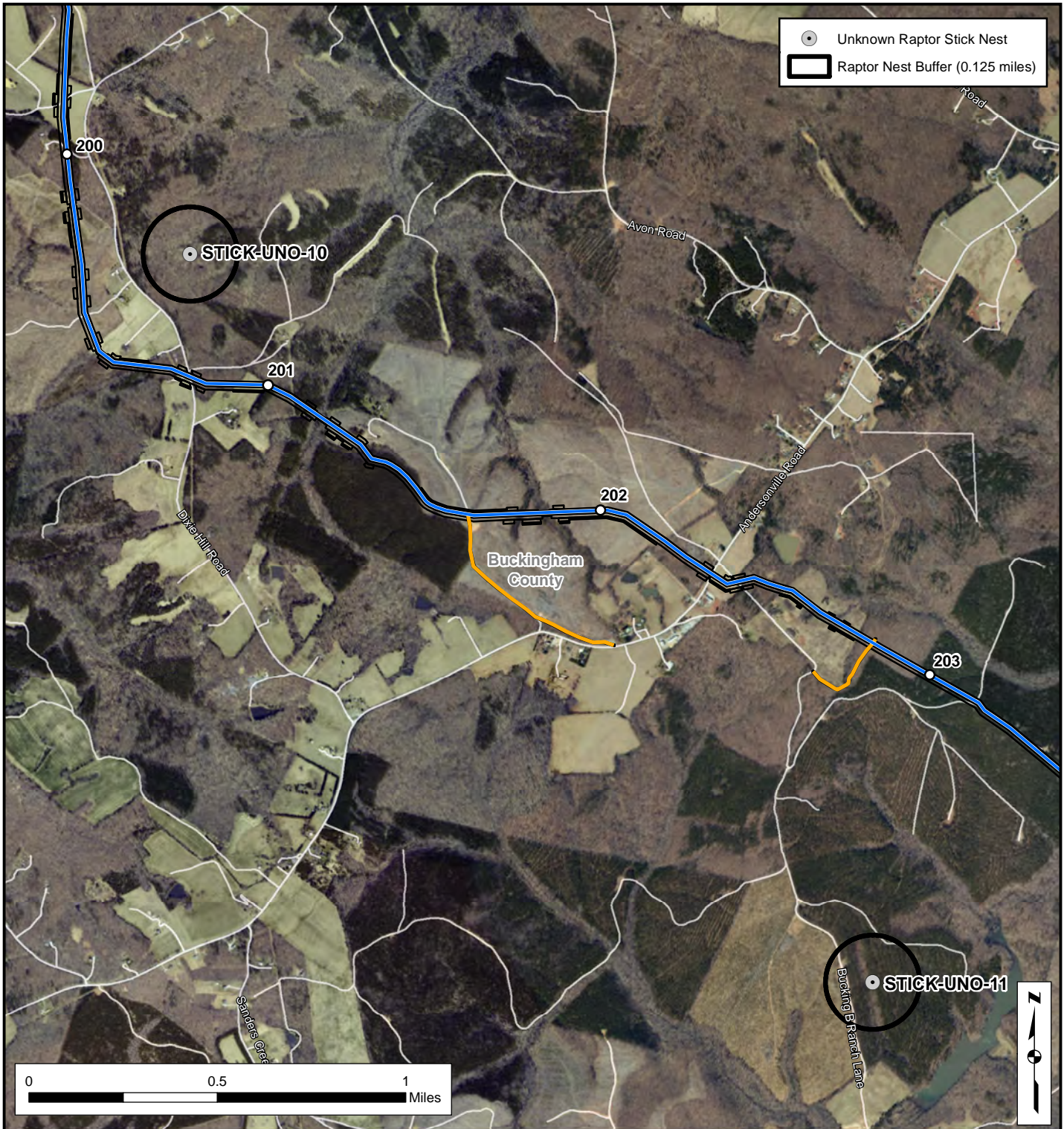
Known Migratory Bird Nesting Sites

Nelson County, Virginia

Page B-17



* Times are approximate, and dependent on actual bird activity at nest or rookery.



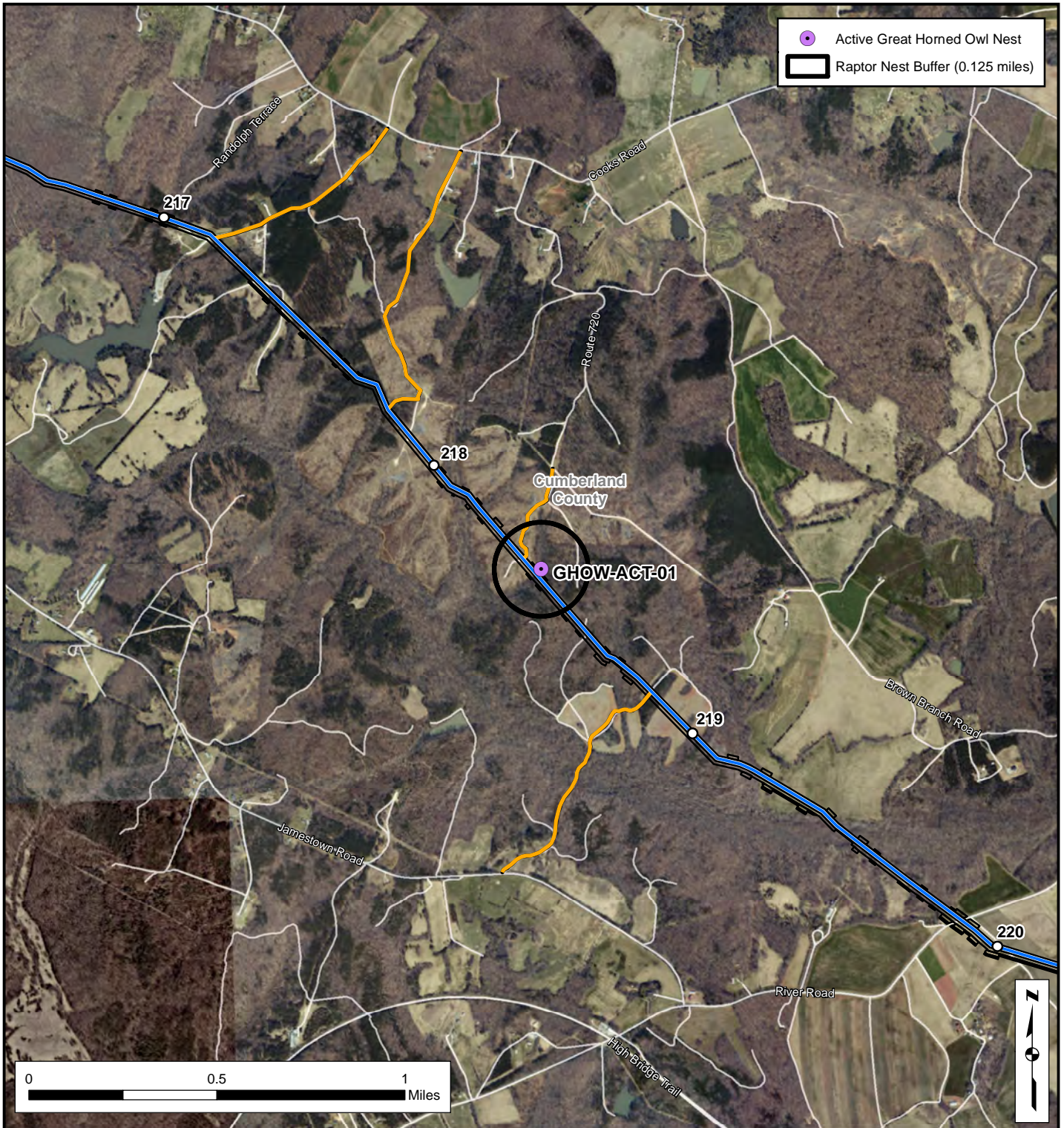
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15



- Milepost
- AP-1 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

**Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
Buckingham County, Virginia
Page B-18**

* Times are approximate, and dependent on actual bird activity at nest or rookery.



- Active Great Horned Owl Nest
- Raptor Nest Buffer (0.125 miles)

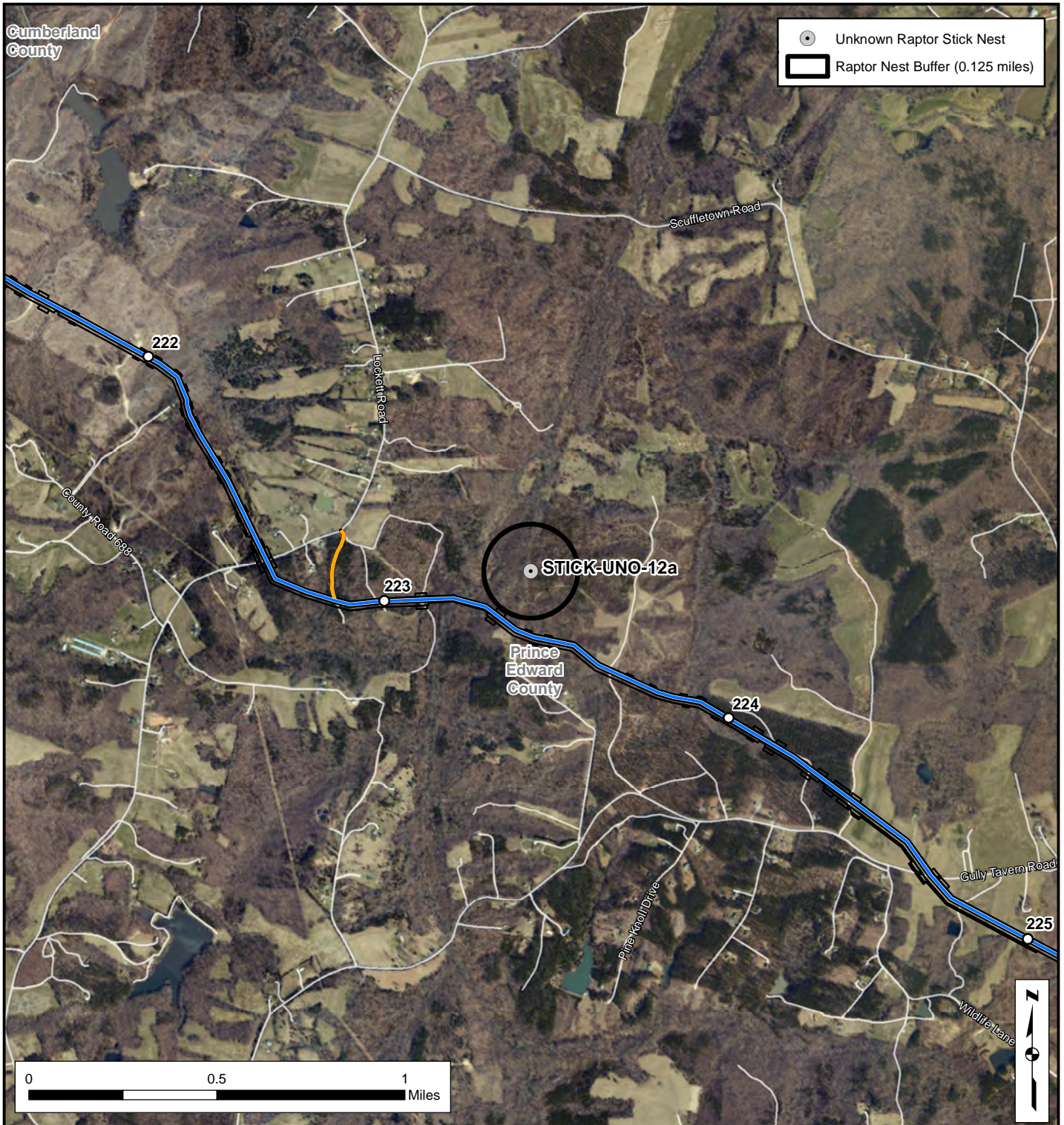
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15



- Milepost
- AP-1 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
 Cumberland County, Virginia
 Page B-19

* Times are approximate, and dependent on actual bird activity at nest or rookery.



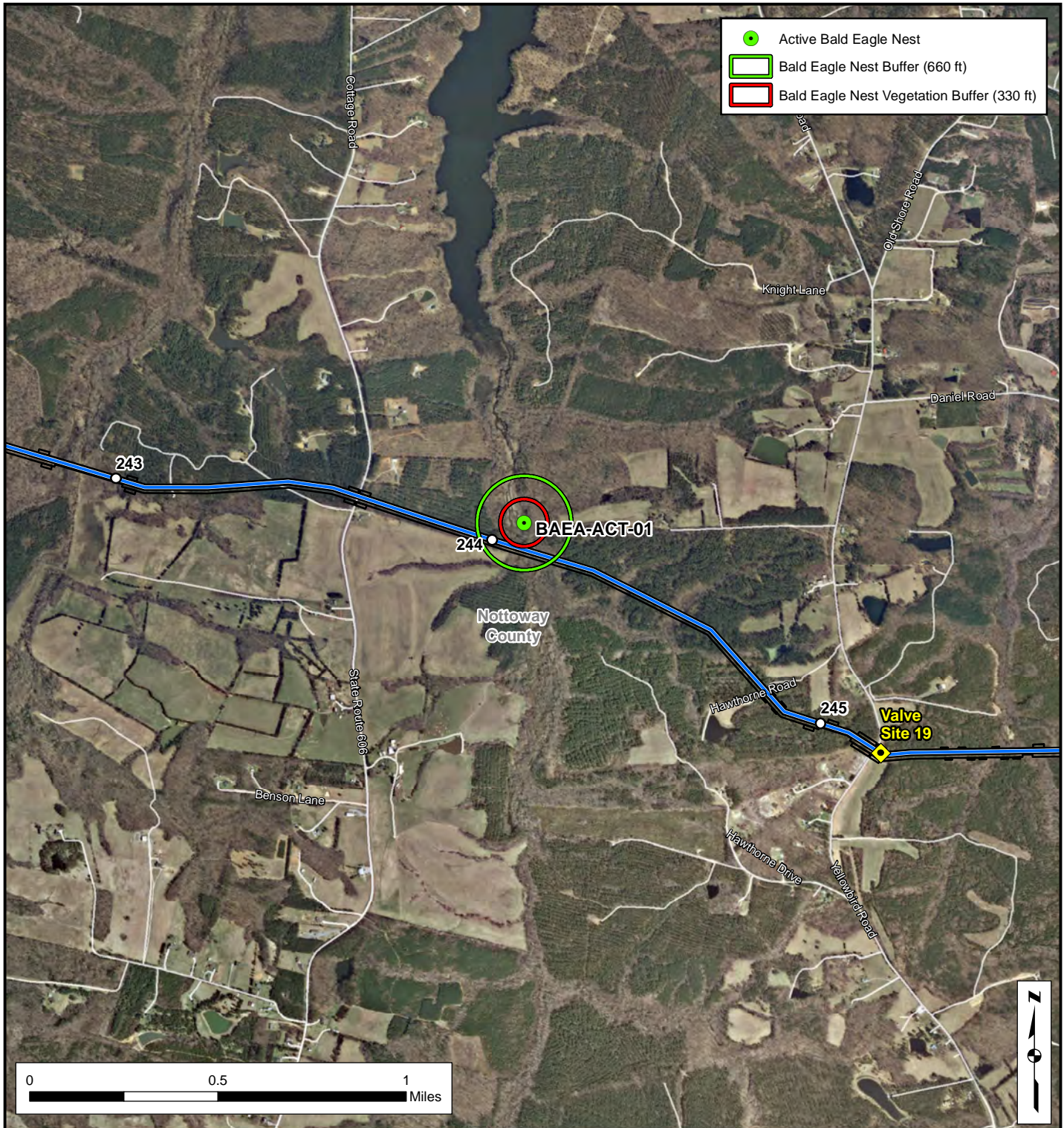
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15



- Milepost
- AP-1 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

**Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
Prince Edward County, Virginia
Page B-20**

* Times are approximate, and dependent on actual bird activity at nest or rookery.

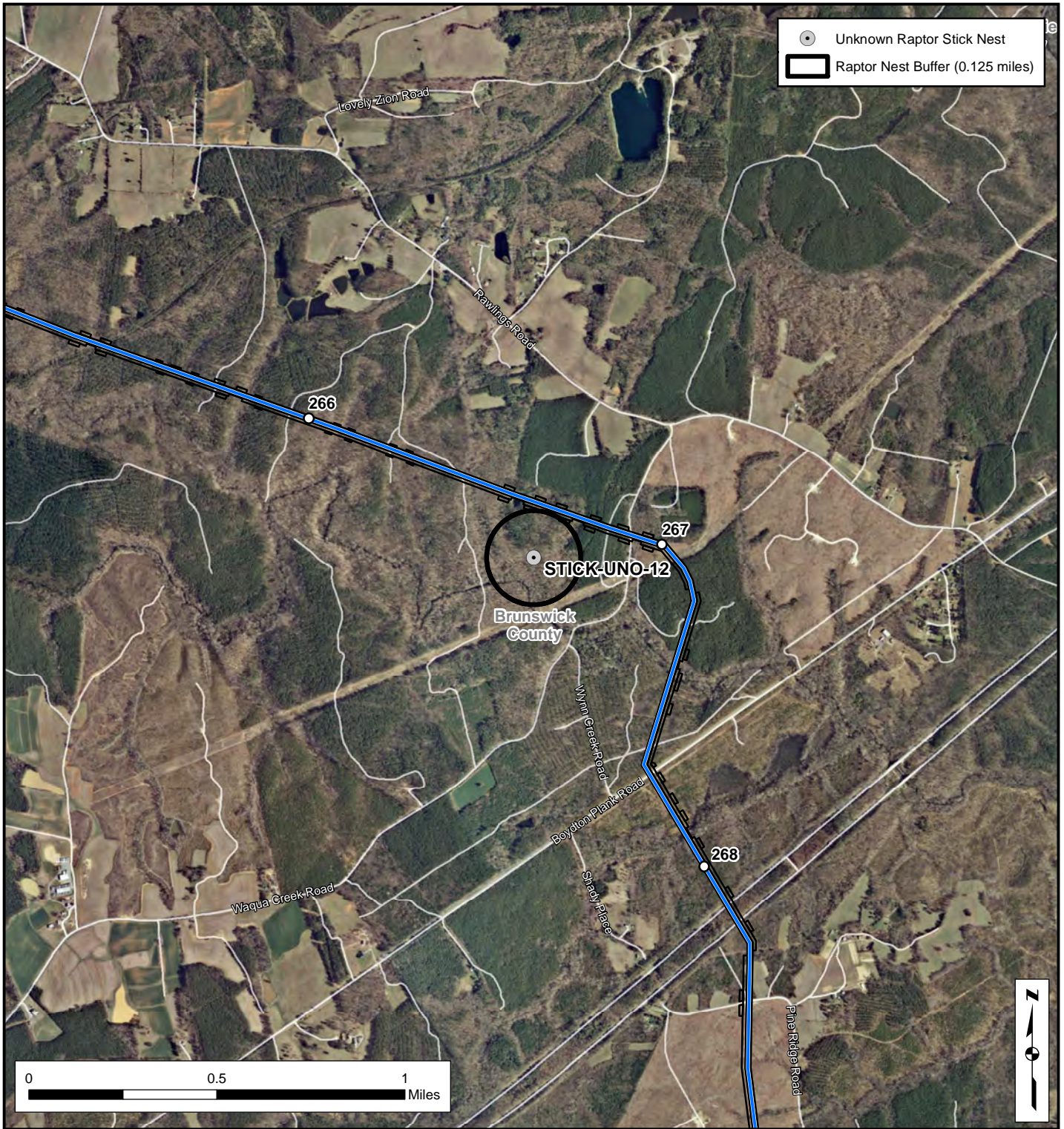


Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Bald Eagle Nests	660 feet	Nov. 15 - July 15
Bald Eagle Nests	330 feet	All year, no vegetation clearing without eagle permit
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15

- Milepost
- AP-1 (Rev 11a)
- Valve Site
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
 Nottoway County, Virginia
 Page B-21

* Times are approximate, and dependent on actual bird activity at nest or rookery.



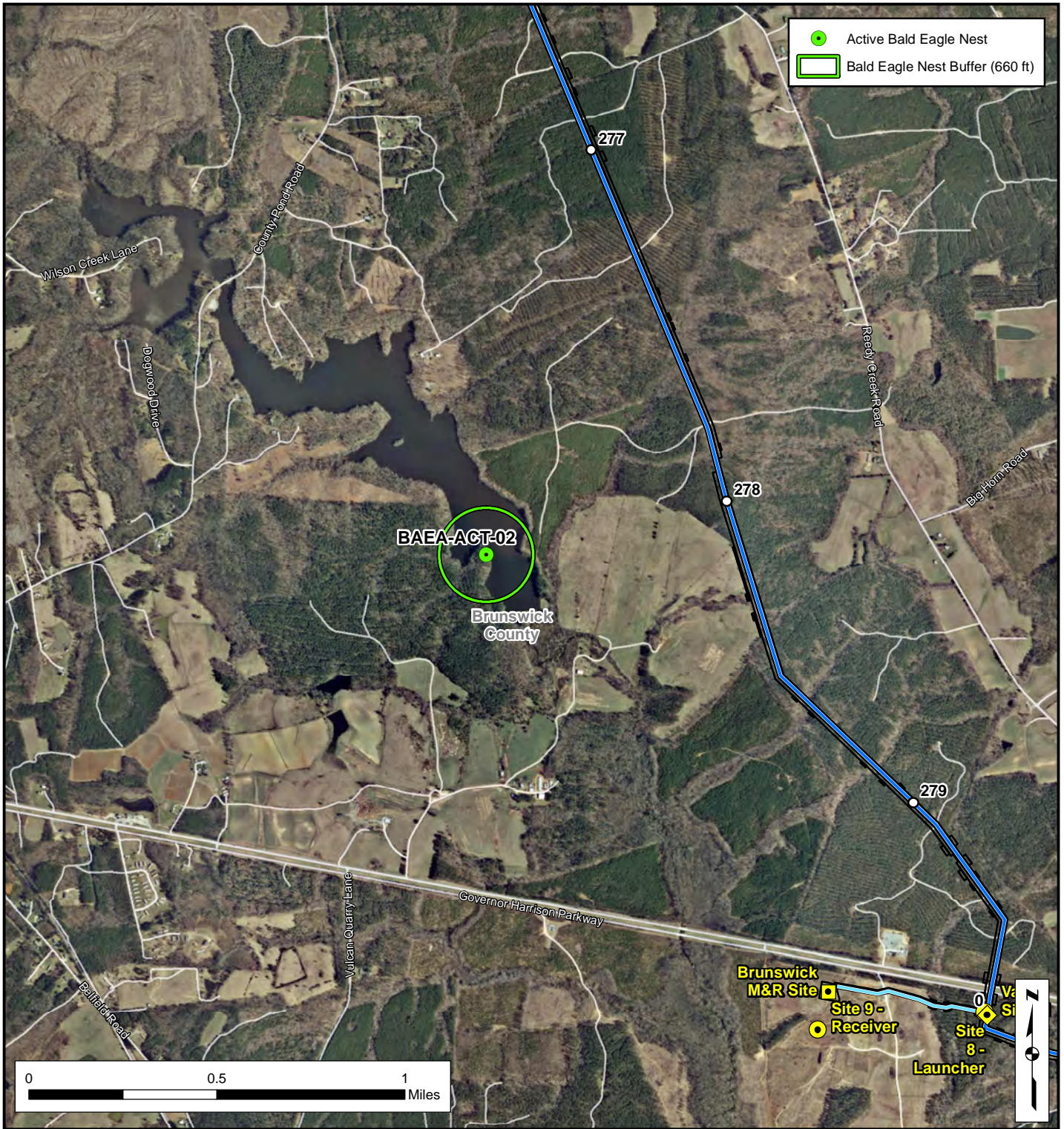
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15



- Milepost
- AP-1 (Rev 11a)
- Construction Impact Footprint 7-14-2016 (Rev 11a)

**Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
Brunswick County, Virginia
Page B-22**

* Times are approximate, and dependent on actual bird activity at nest or rookery.



Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Bald Eagle Nests	660 feet	Nov. 15 - July 15
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15

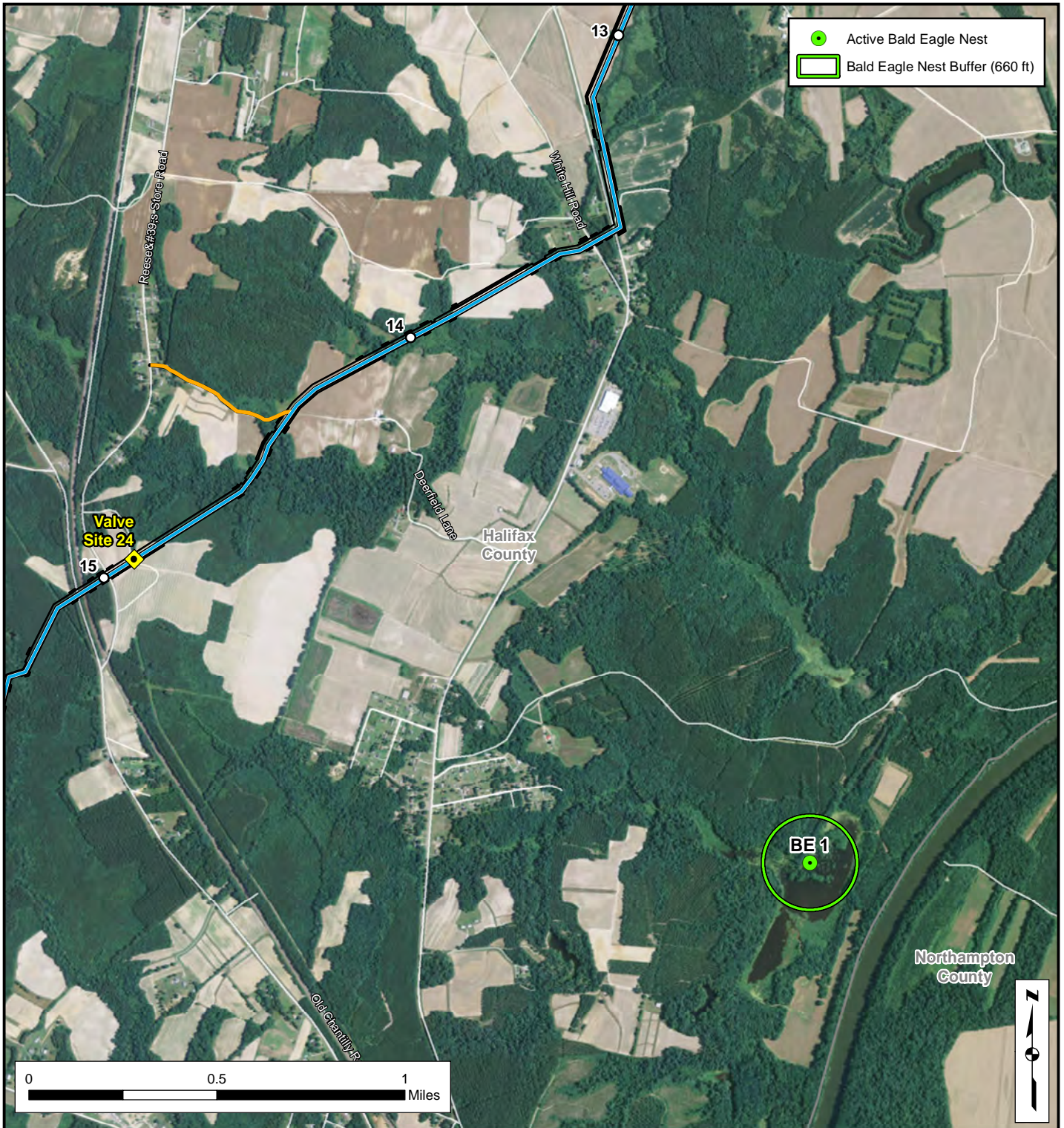


- Milepost
- ◆ Valve Site
- AP-1 (Rev 11a)
- AP-4 (Rev 11a)
- M and R Site
- Land R Site
- Construction Impact Footprint 7-14-2016 (Rev 11a)

**Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
Brunswick County, Virginia
Page B-23**



* Times are approximate, and dependent on actual bird activity at nest or rookery.

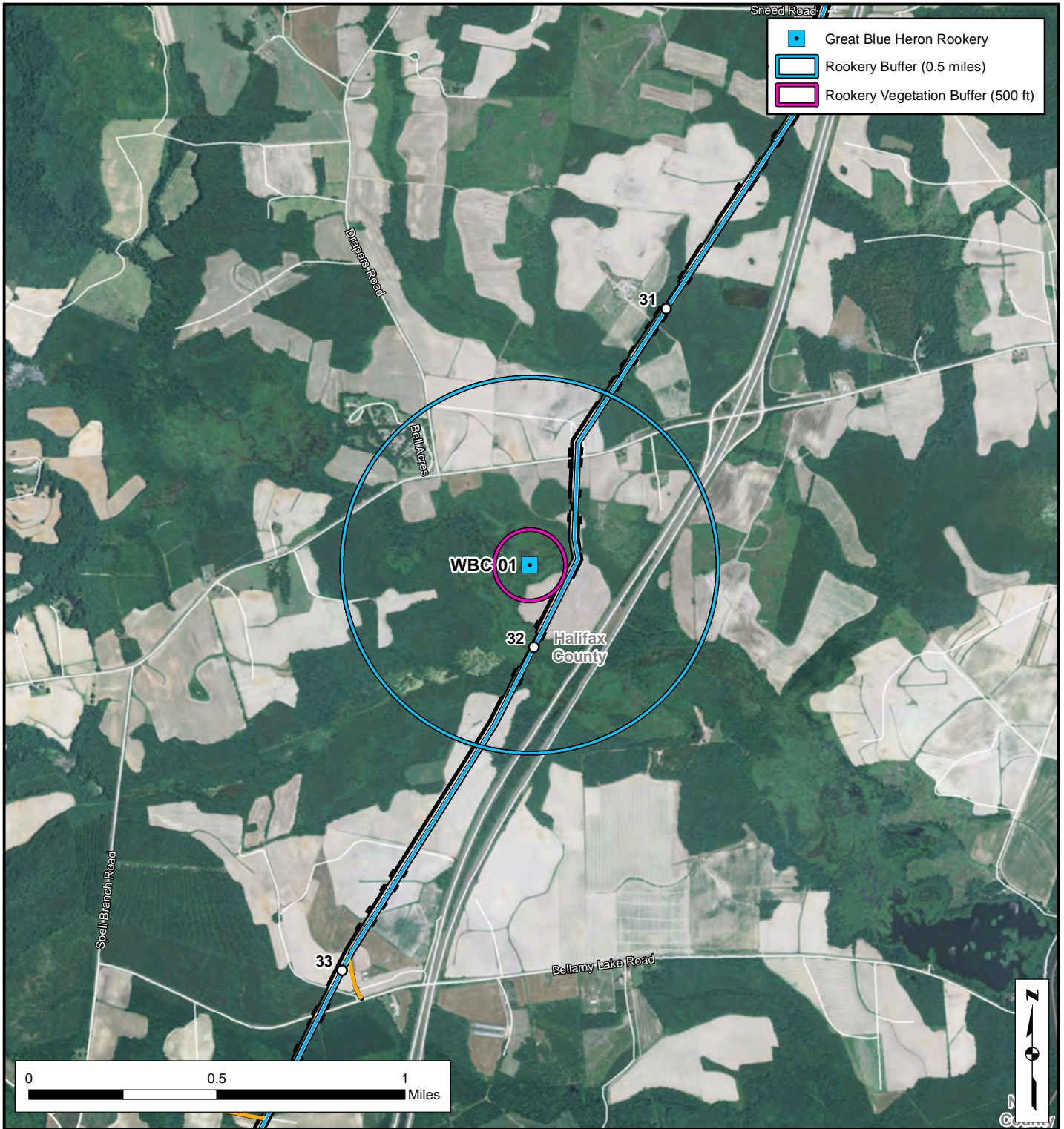


Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Bald Eagle Nests	660 feet	Nov. 15 - July 15
Non-raptor migratory birds	Vegetation clearing	NC: Apr. 15 - Aug. 1 (FERC)

- Milepost
- AP-2 (Rev 11a)
- Valve Site
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
 Halifax County, North Carolina
 Page B-24

* Times are approximate, and dependent on actual bird activity at nest or rookery.



- Great Blue Heron Rookery
- Rookery Buffer (0.5 miles)
- Rookery Vegetation Buffer (500 ft)

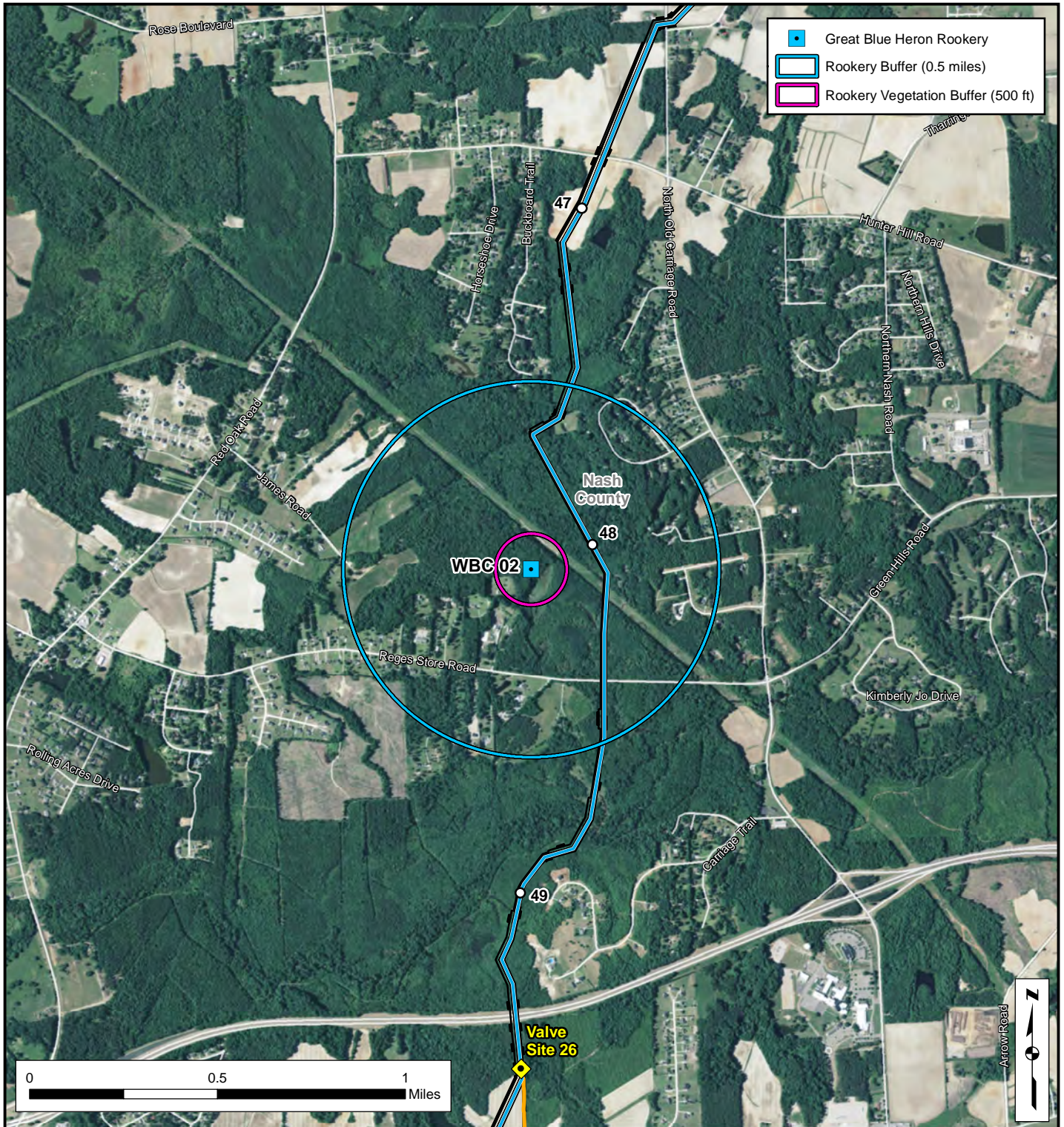
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Rookeries	0.5 mile	NC: Feb. 15 - July 31
Rookeries	500 feet	All year, no vegetation clearing
Non-raptor migratory birds	Vegetation clearing	NC: Apr. 15 - Aug. 1 (FERC)

- Milepost
- AP-2 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project Known Migratory Bird Nesting Sites Halifax County, North Carolina

Page B-25

* Times are approximate, and dependent on actual bird activity at nest or rookery.

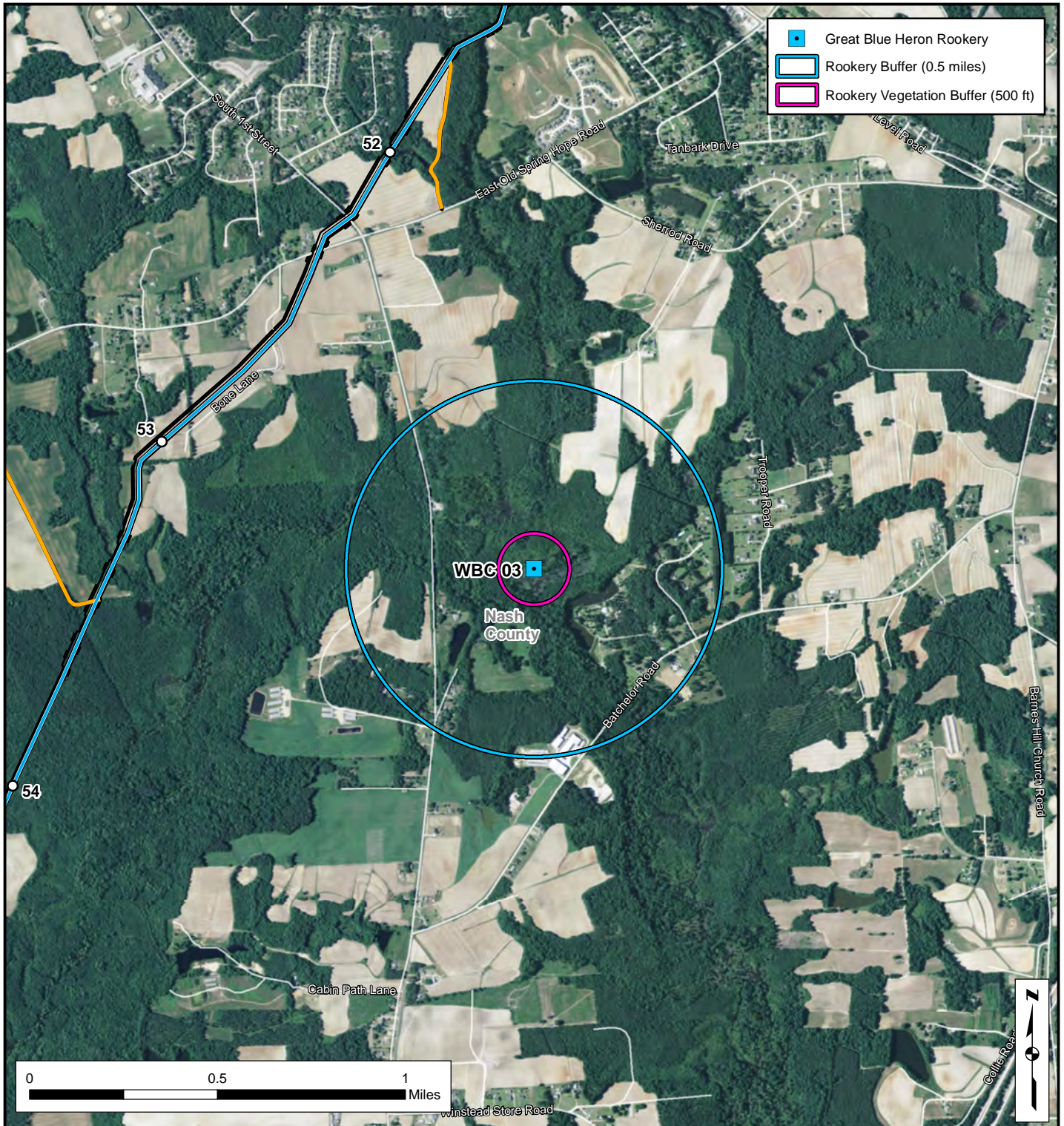


Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Rookeries	0.5 mile	NC: Feb. 15 - July 31
Rookeries	500 feet	All year, no vegetation clearing
Non-raptor migratory birds	Vegetation clearing	NC: Apr. 15 - Aug. 1 (FERC)

- Milepost
- AP-2 (Rev 11a)
- Valve Site
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

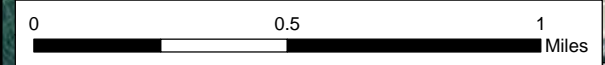
**Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
Nash County, North Carolina
Page B-26**

* Times are approximate, and dependent on actual bird activity at nest or rookery.



- Great Blue Heron Rookery
- Rookery Buffer (0.5 miles)
- Rookery Vegetation Buffer (500 ft)

WBC 03
Nash County



Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Rookeries	0.5 mile	NC: Feb. 15 - July 31
Rookeries	500 feet	All year, no vegetation clearing
Non-raptor migratory birds	Vegetation clearing	NC: Apr. 15 - Aug. 1 (FERC)

- Milepost
- AP-2 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

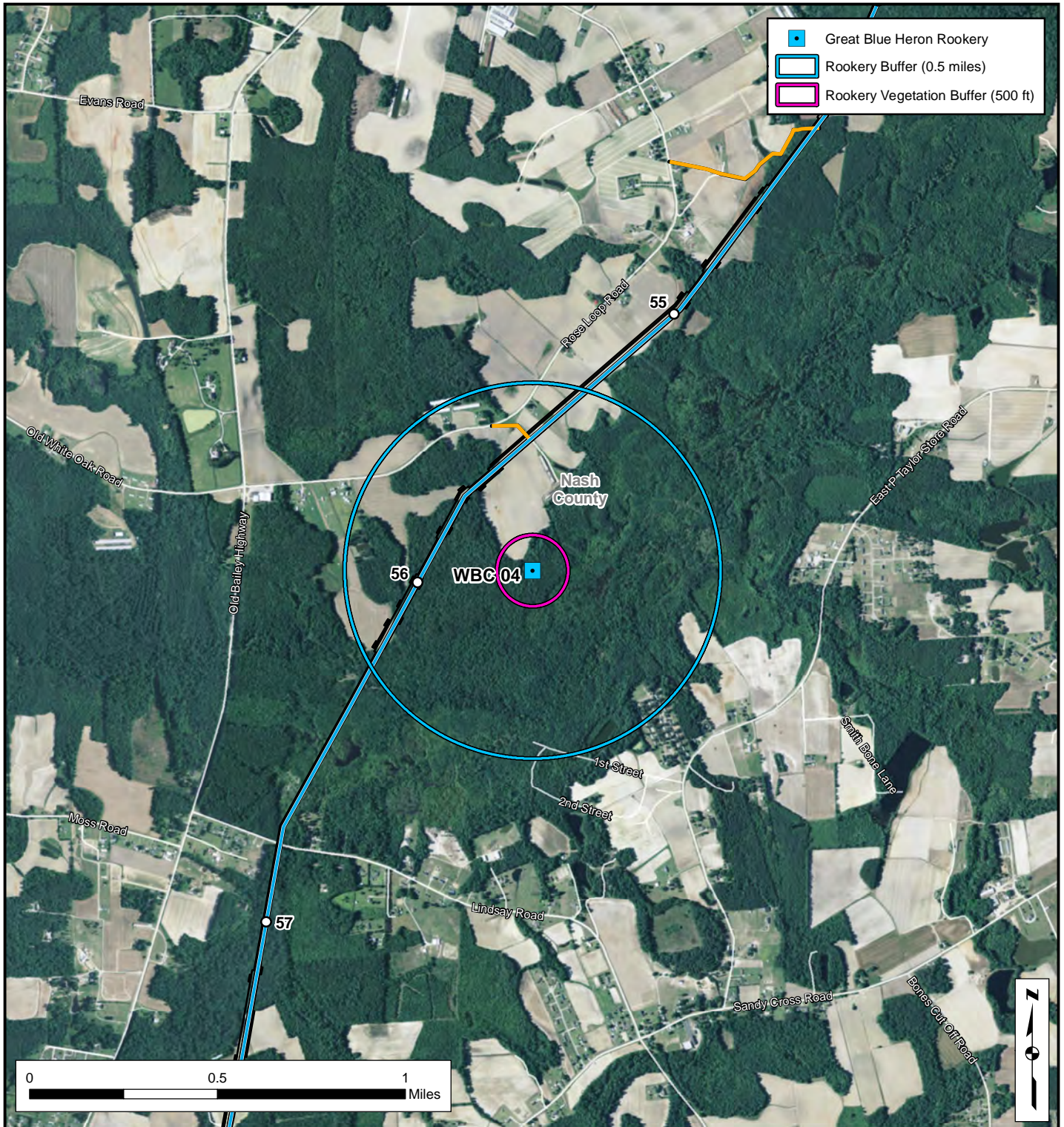
Atlantic Coast Pipeline Project

Known Migratory Bird Nesting Sites

Nash County, North Carolina

Page B-27

* Times are approximate, and dependent on actual bird activity at nest or rookery.

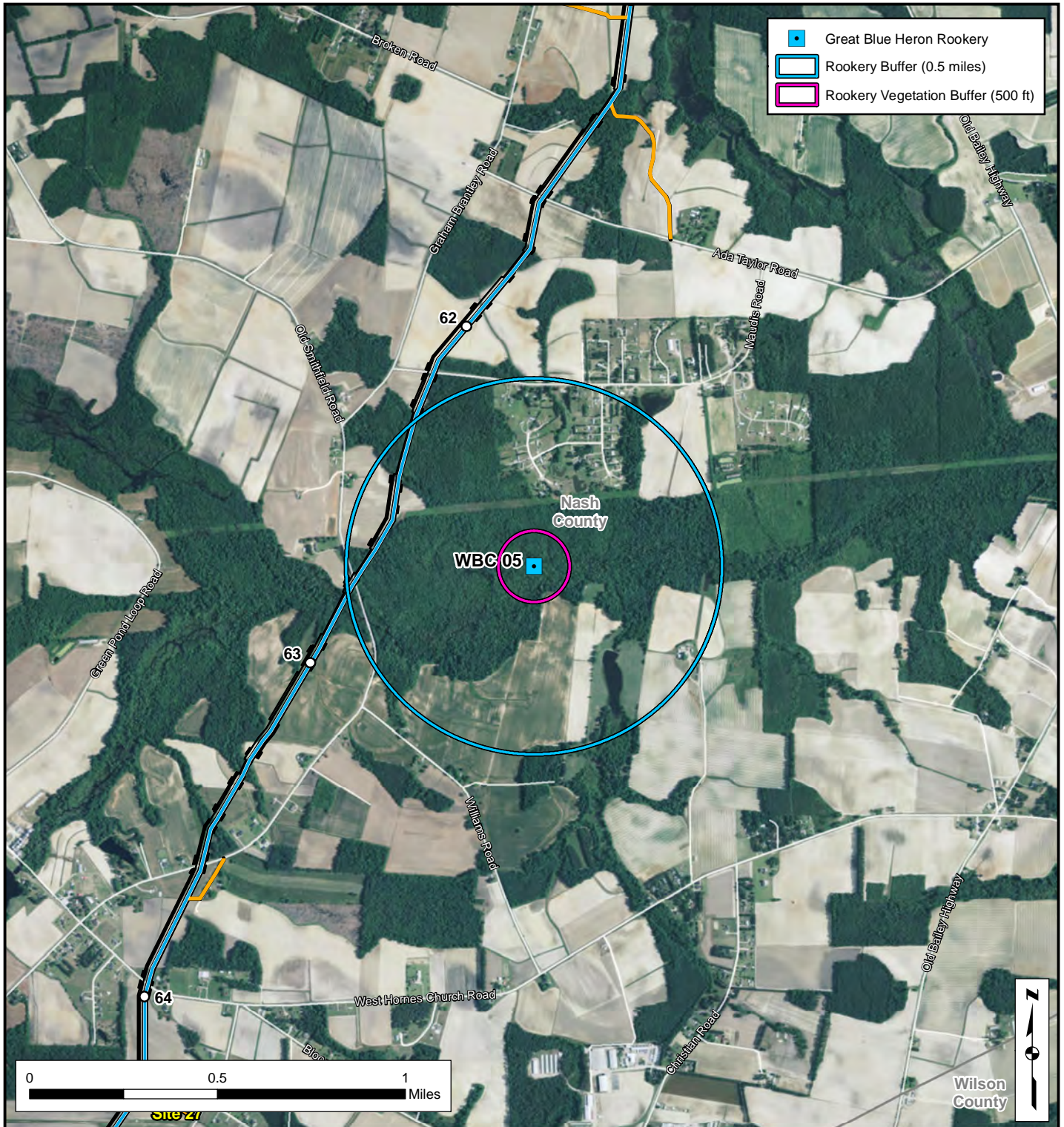


Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Rookeries	0.5 mile	NC: Feb. 15 - July 31
Rookeries	500 feet	All year, no vegetation clearing
Non-raptor migratory birds	Vegetation clearing	NC: Apr. 15 - Aug. 1 (FERC)

○ Milepost
 — AP-2 (Rev 11a)
 — Access Road
 □ Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
 Nash County, North Carolina
 Page B-28

* Times are approximate, and dependent on actual bird activity at nest or rookery.

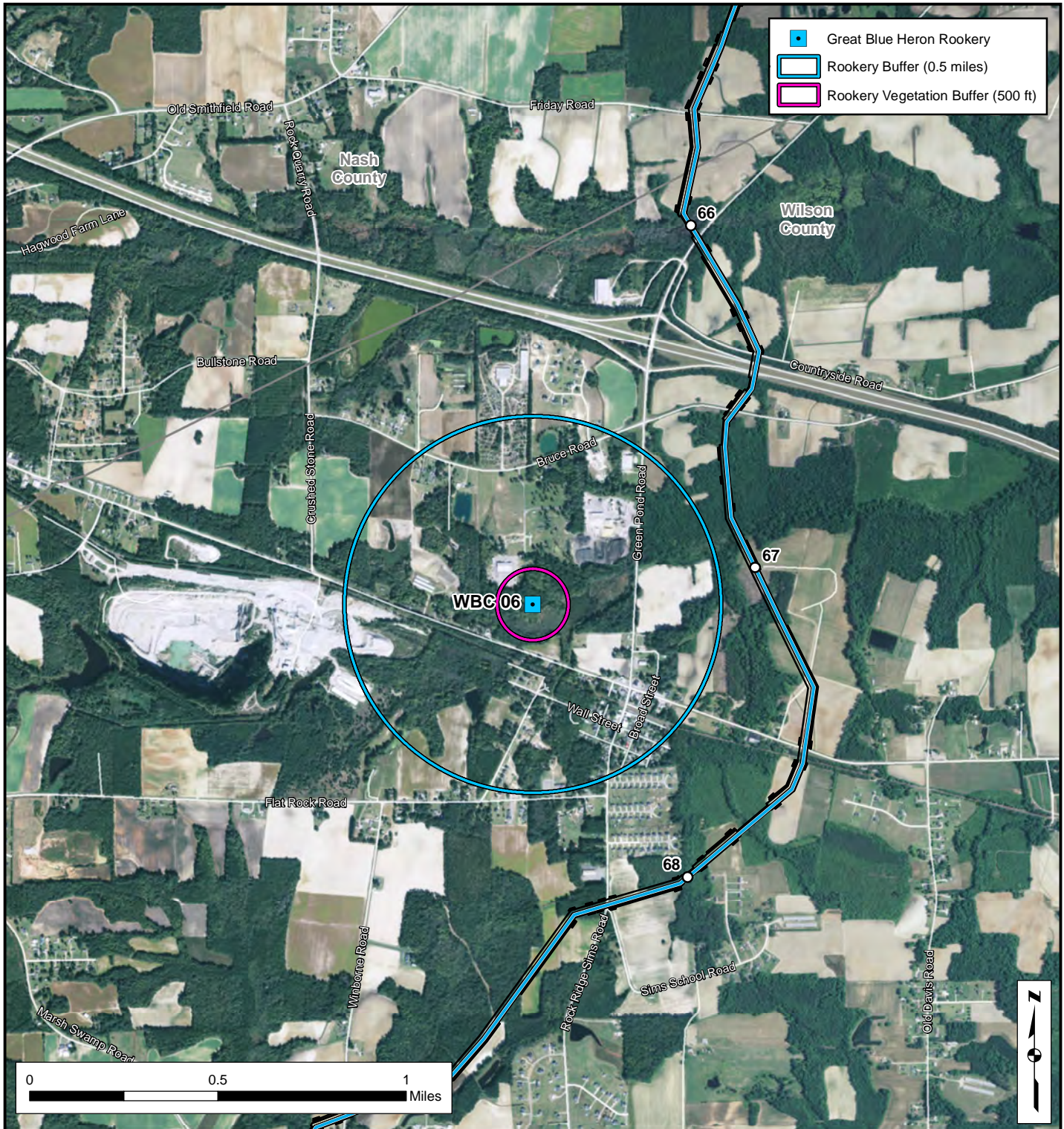


Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Rookeries	0.5 mile	NC: Feb. 15 - July 31
Rookeries	500 feet	All year, no vegetation clearing
Non-raptor migratory birds	Vegetation clearing	NC: Apr. 15 - Aug. 1 (FERC)







- Milepost
- AP-2 (Rev 11a)
- Valve Site
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
 Nash County, North Carolina
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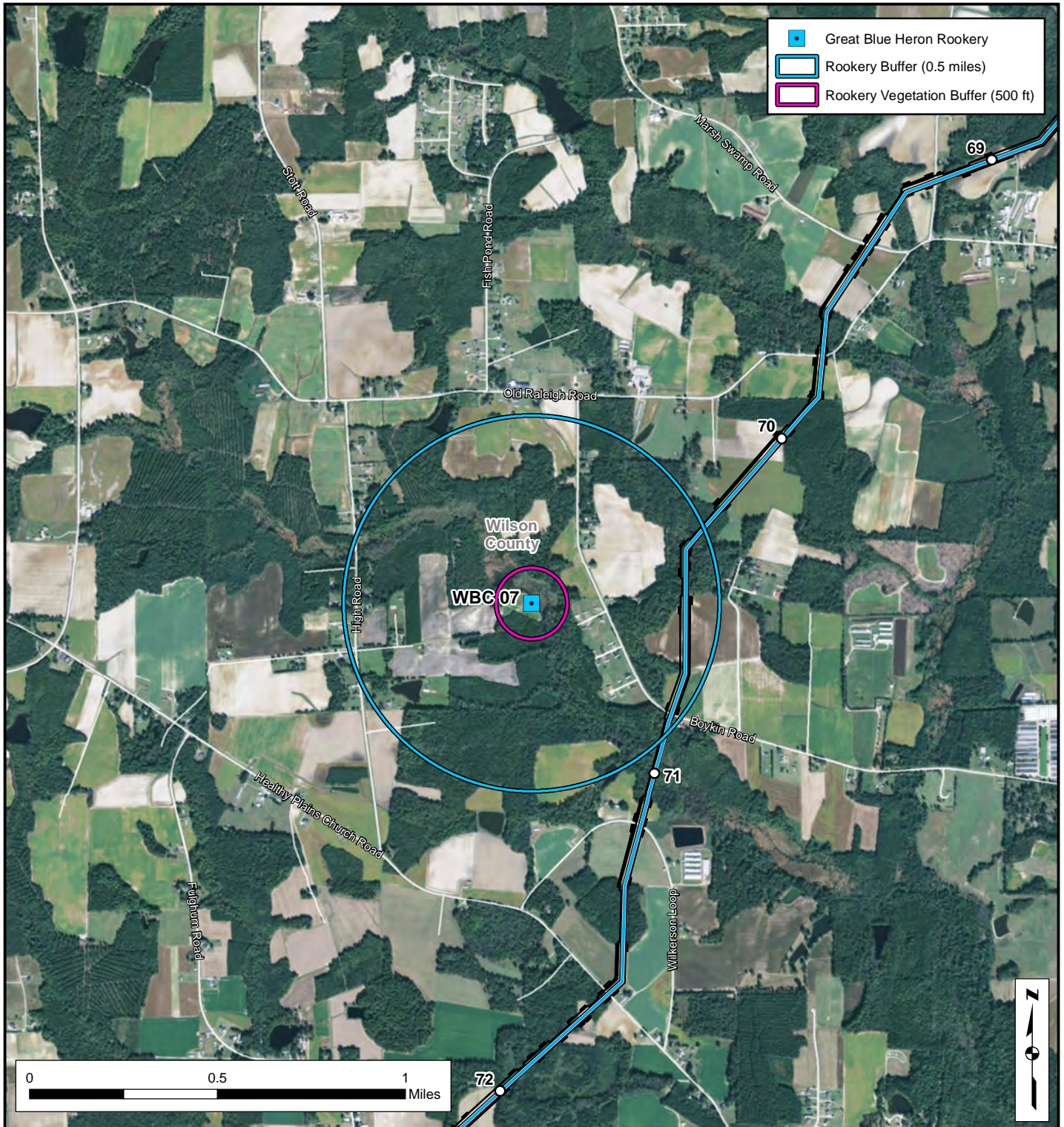
* Times are approximate, and dependent on actual bird activity at nest or rookery.









Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Rookeries	0.5 mile	NC: Feb. 15 - July 31
Rookeries	500 feet	All year, no vegetation clearing
Non-raptor migratory birds	Vegetation clearing	NC: Apr. 15 - Aug. 1 (FERC)

 	<ul style="list-style-type: none">  Milepost  AP-2 (Rev 11a)  Construction Impact Footprint 7-14-2016 (Rev 11a) 	<h3>Atlantic Coast Pipeline Project</h3> <h3>Known Migratory Bird Nesting Sites</h3> <p>Wilson County, North Carolina</p> <p>Page B-30</p> 
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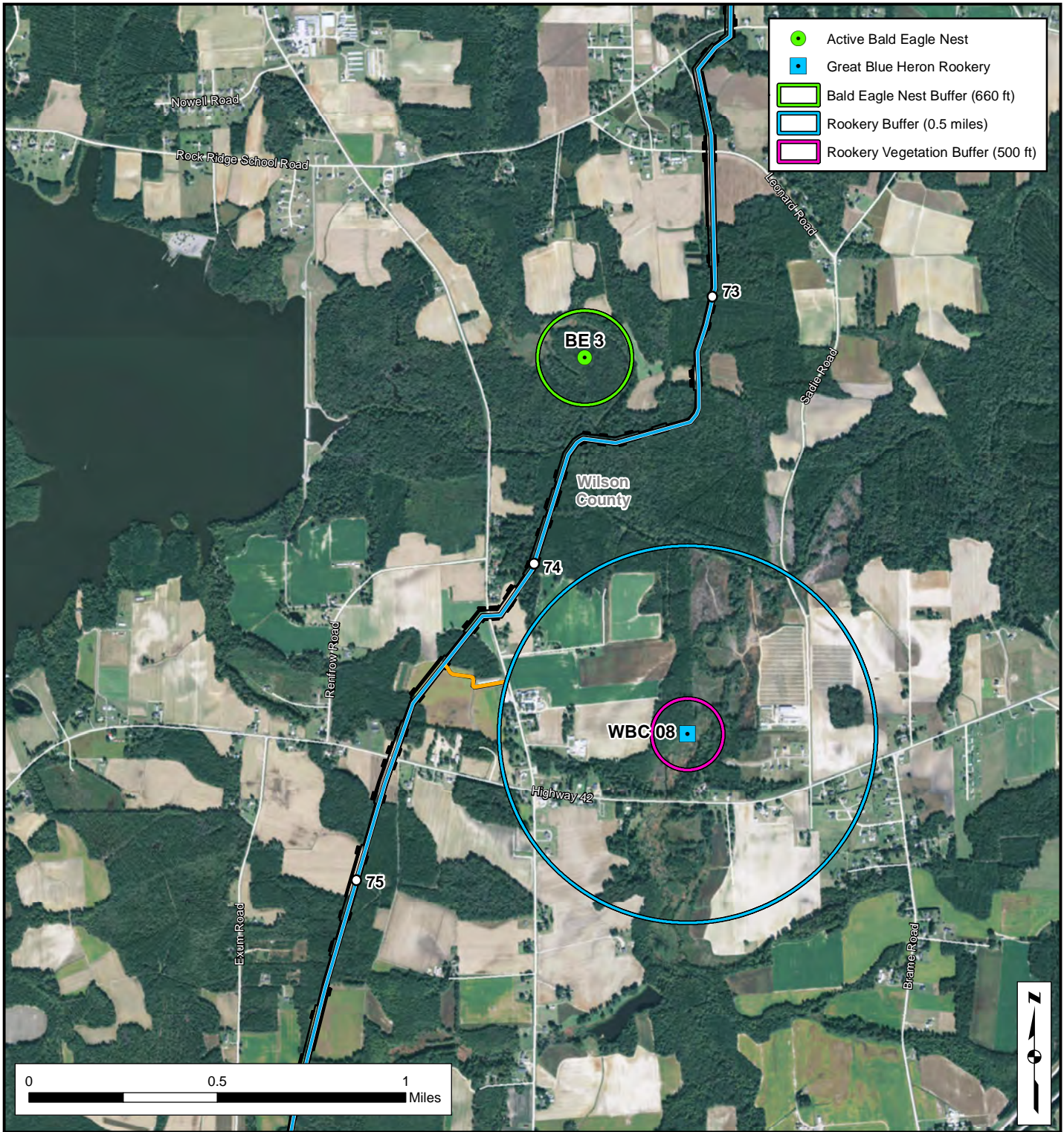
* Times are approximate, and dependent on actual bird activity at nest or rookery.



Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Rookeries	0.5 mile	NC: Feb. 15 - July 31
Rookeries	500 feet	All year, no vegetation clearing
Non-raptor migratory birds	Vegetation clearing	NC: Apr. 15 - Aug. 1 (FERC)



 	<ul style="list-style-type: none">  Milepost  AP-2 (Rev 11a)  Construction Impact Footprint 7-14-2016 (Rev 11a) 	<h3>Atlantic Coast Pipeline Project</h3> <h3>Known Migratory Bird Nesting Sites</h3> <p>Wilson County, North Carolina</p> <p>Page B-31</p> 
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* Times are approximate, and dependent on actual bird activity at nest or rookery.



- Active Bald Eagle Nest
- Great Blue Heron Rookery
- Bald Eagle Nest Buffer (660 ft)
- Rookery Buffer (0.5 miles)
- Rookery Vegetation Buffer (500 ft)


Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Bald Eagle Nests	660 feet	Nov. 15 - July 15
Rookeries	0.5 mile	NC: Feb. 15 - July 31
Rookeries	500 feet	All year, no vegetation clearing
Non-raptor migratory birds	Vegetation clearing	NC: Apr. 15 - Aug. 1 (FERC)

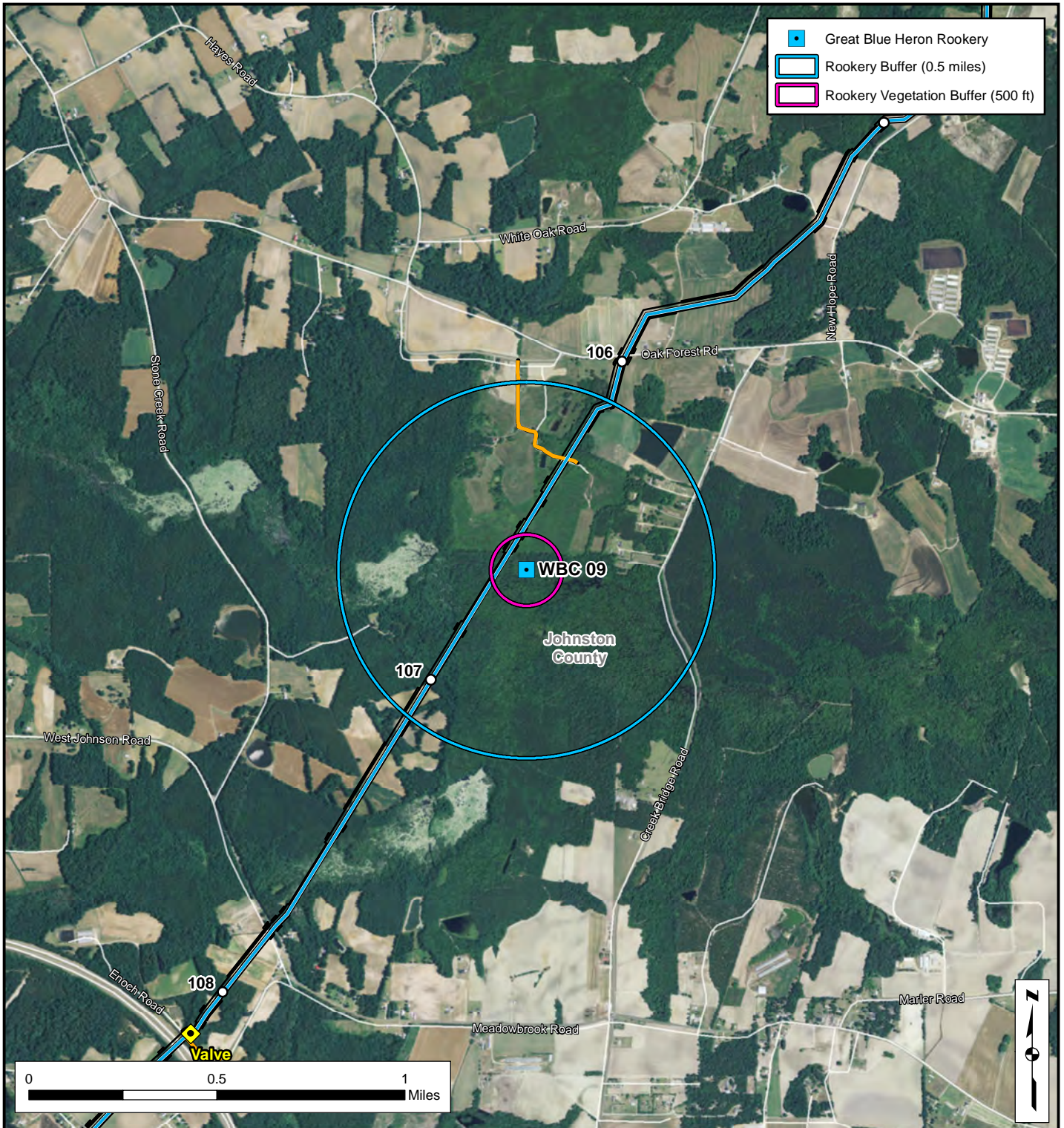
- Milepost
- AP-2 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project Known Migratory Bird Nesting Sites Wilson County, North Carolina

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* Times are approximate, and dependent on actual bird activity at nest or rookery.

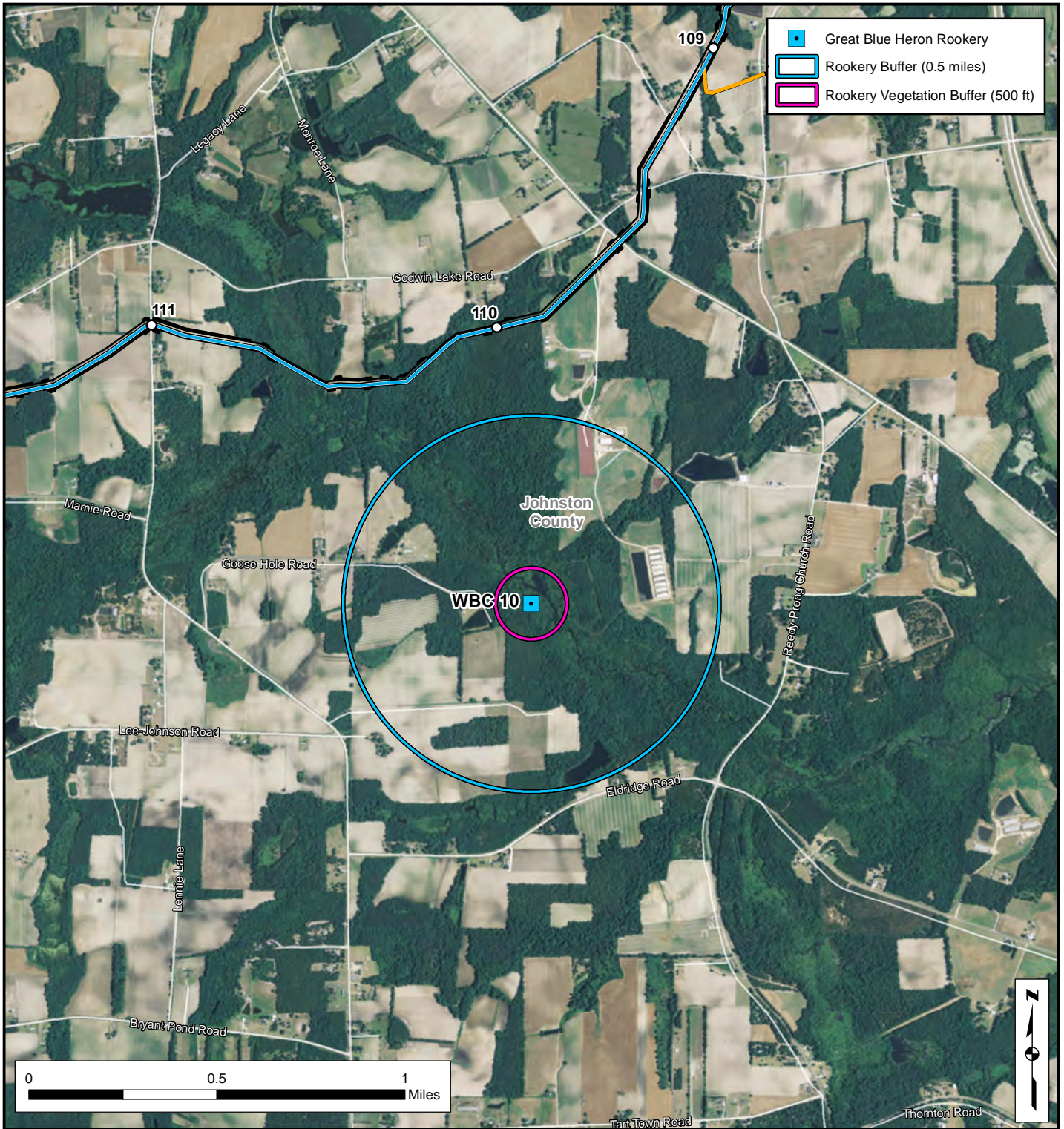


Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Rookeries	0.5 mile	NC: Feb. 15 - July 31
Rookeries	500 feet	All year, no vegetation clearing
Non-raptor migratory birds	Vegetation clearing	NC: Apr. 15 - Aug. 1 (FERC)








- Milepost
- AP-2 (Rev 11a)
- Valve Site
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
 Johnston County, North Carolina
 Page B-33

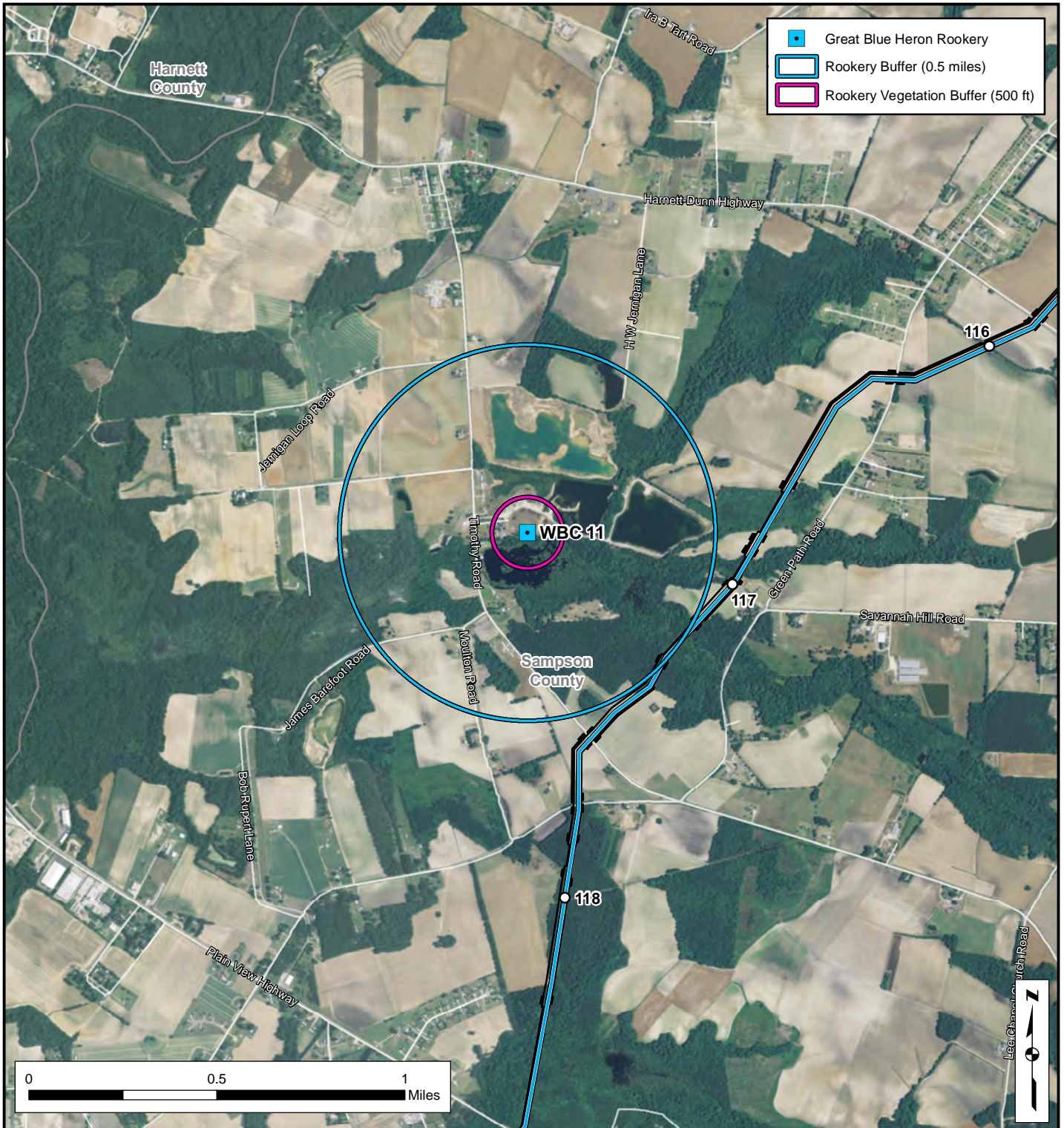
* Times are approximate, and dependent on actual bird activity at nest or rookery.



Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Rookeries	0.5 mile	NC: Feb. 15 - July 31
Rookeries	500 feet	All year, no vegetation clearing
Non-raptor migratory birds	Vegetation clearing	NC: Apr. 15 - Aug. 1 (FERC)

 	<ul style="list-style-type: none">  Milepost  AP-2 (Rev 11a)  Access Road  Construction Impact Footprint 7-14-2016 (Rev 11a) 	<h3>Atlantic Coast Pipeline Project</h3> <h3>Known Migratory Bird Nesting Sites</h3> <p>Johnston County, North Carolina</p> <p>Page B-34</p> 
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* Times are approximate, and dependent on actual bird activity at nest or rookery.



- Great Blue Heron Rookery
- Rookery Buffer (0.5 miles)
- Rookery Vegetation Buffer (500 ft)

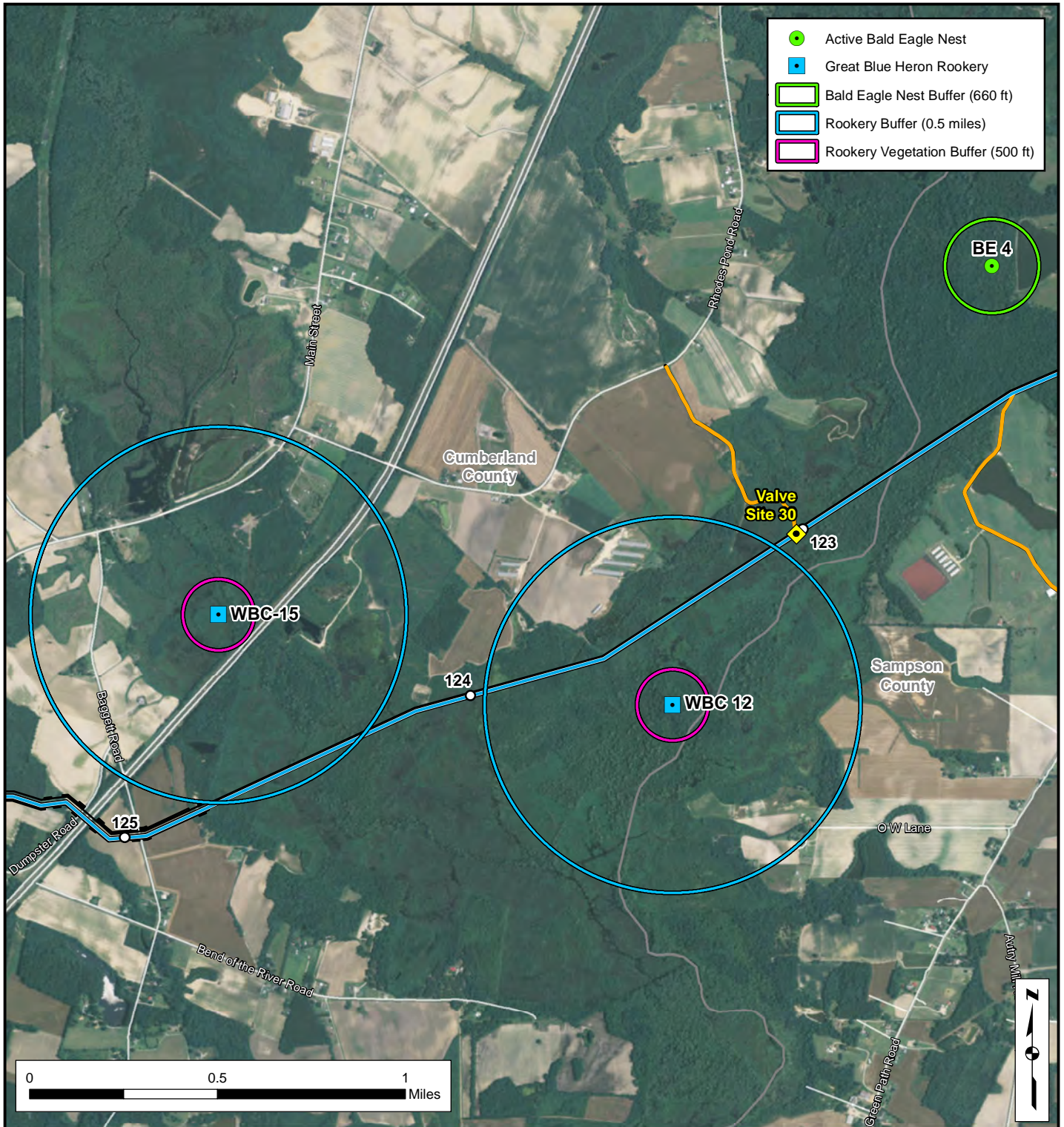
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Rookeries	0.5 mile	NC: Feb. 15 - July 31
Rookeries	500 feet	All year, no vegetation clearing
Non-raptor migratory birds	Vegetation clearing	NC: Apr. 15 - Aug. 1 (FERC)



- Milepost
- AP-2 (Rev 11a)
- Construction Impact Footprint 7-14-2016 (Rev 11a)



**Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
Sampson County, North Carolina**
Page B-35

* Times are approximate, and dependent on actual bird activity at nest or rookery.



- Active Bald Eagle Nest
- Great Blue Heron Rookery
- Bald Eagle Nest Buffer (660 ft)
- Rookery Buffer (0.5 miles)
- Rookery Vegetation Buffer (500 ft)

Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Bald Eagle Nests	660 feet	Nov. 15 - July 15
Rookeries	0.5 mile	NC: Feb. 15 - July 31
Rookeries	500 feet	All year, no vegetation clearing
Non-raptor migratory birds	Vegetation clearing	NC: Apr. 15 - Aug. 1 (FERC)


- Milepost
- AP-2 (Rev 11a)
- ◆ Valve Site
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project

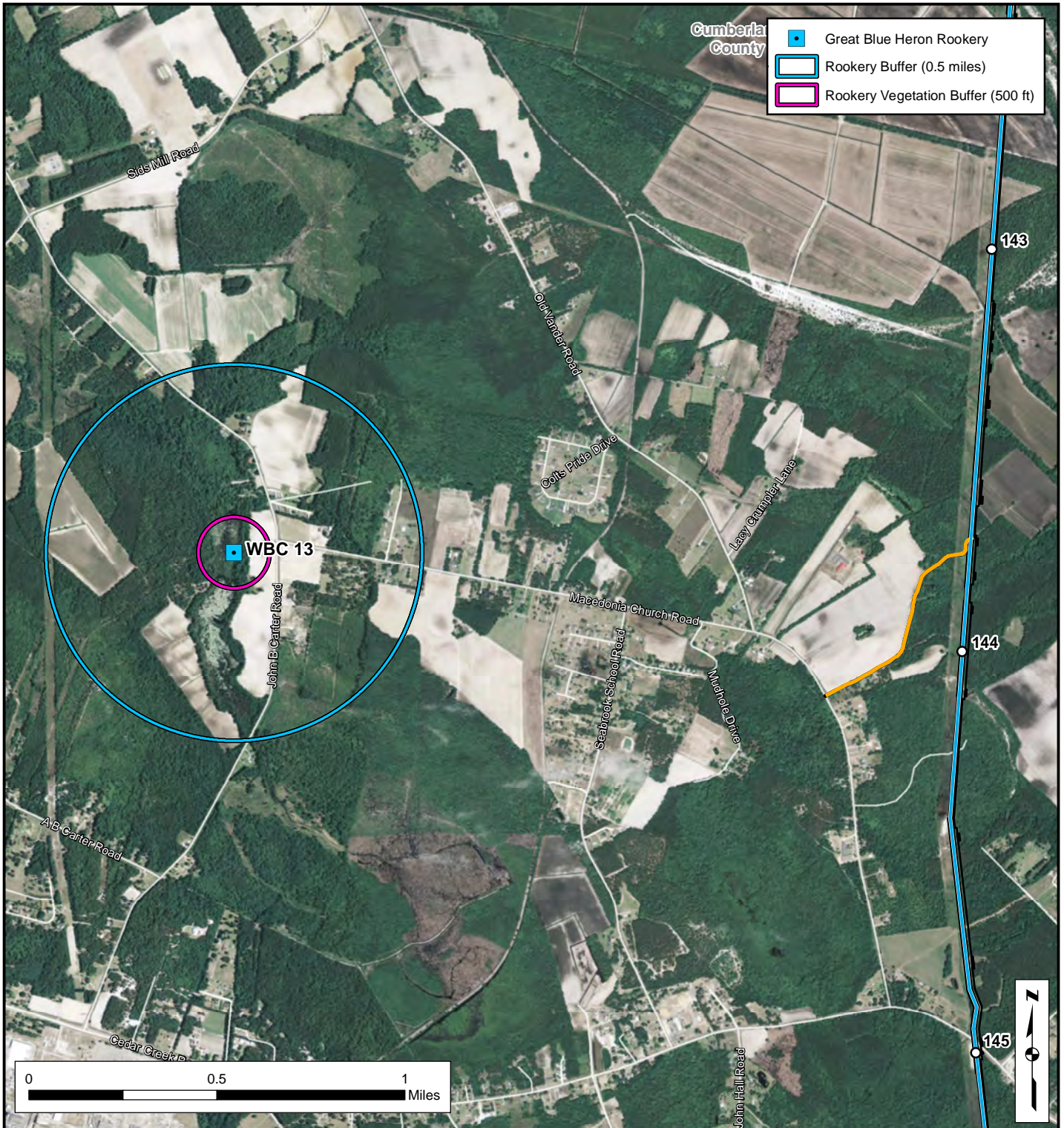
Known Migratory Bird Nesting Sites

Cumberland County, North Carolina

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* Times are approximate, and dependent on actual bird activity at nest or rookery.



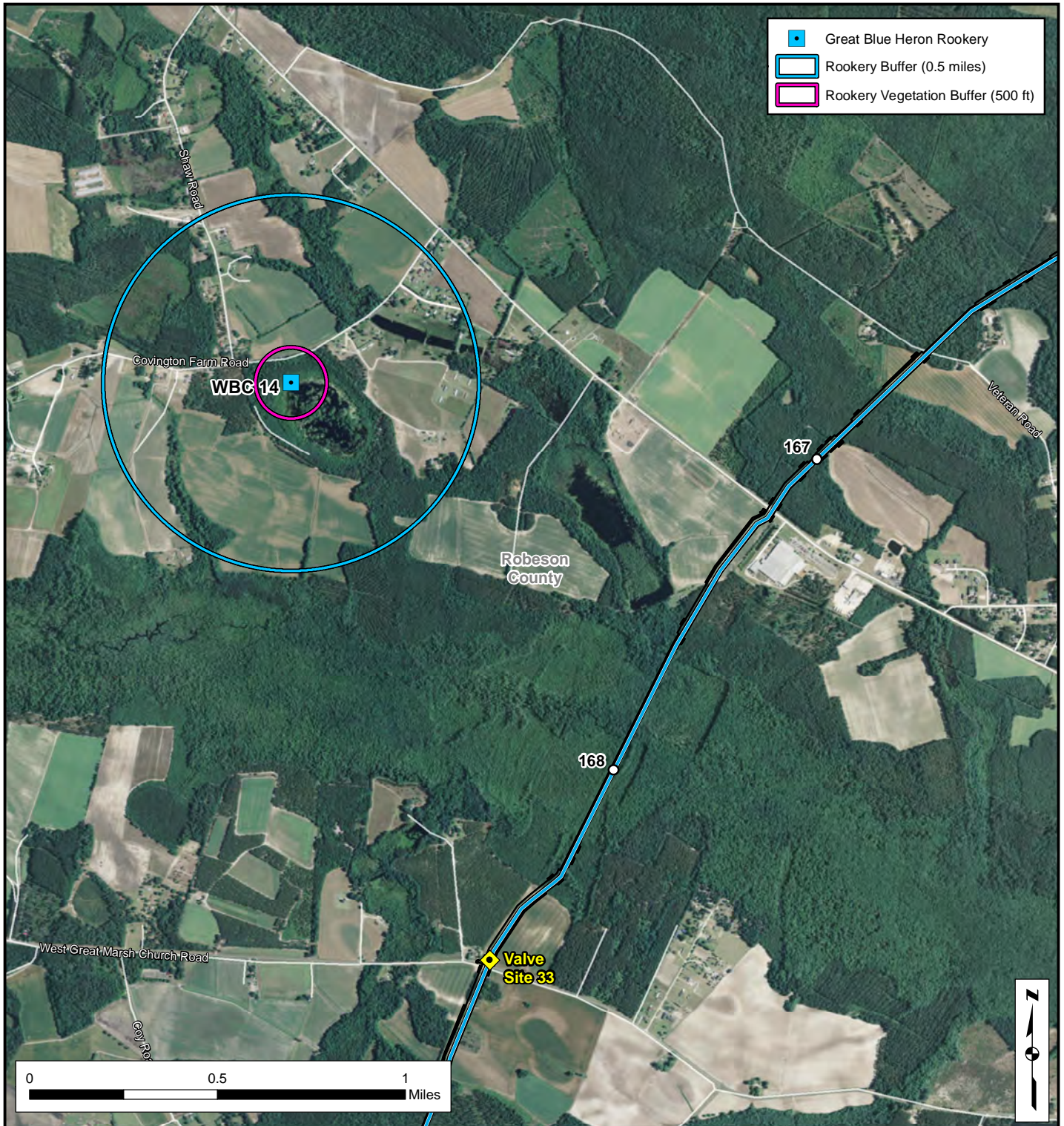
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Rookeries	0.5 mile	NC: Feb. 15 - July 31
Rookeries	500 feet	All year, no vegetation clearing
Non-raptor migratory birds	Vegetation clearing	NC: Apr. 15 - Aug. 1 (FERC)

- Milepost
- AP-2 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project Known Migratory Bird Nesting Sites Cumberland County, North Carolina

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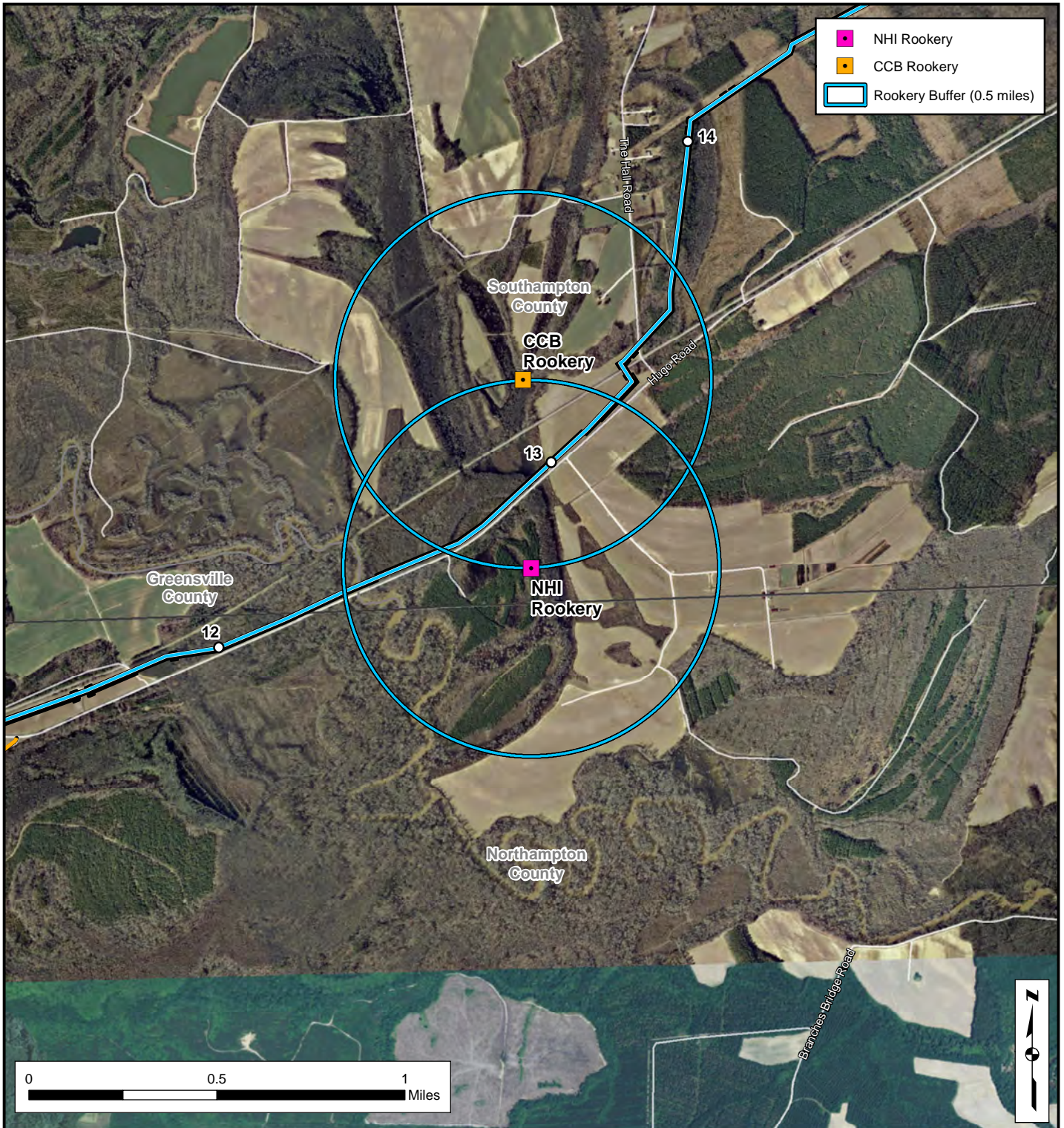
* Times are approximate, and dependent on actual bird activity at nest or rookery.



Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Rookeries	0.5 mile	NC: Feb. 15 - July 31
Rookeries	500 feet	All year, no vegetation clearing
Non-raptor migratory birds	Vegetation clearing	NC: Apr. 15 - Aug. 1 (FERC)

 	<ul style="list-style-type: none"> Milepost AP-2 (Rev 11a) Valve Site Access Road Construction Impact Footprint 7-14-2016 (Rev 11a) 	<h3>Atlantic Coast Pipeline Project</h3> <h3>Known Migratory Bird Nesting Sites</h3> <p>Robeson County, North Carolina</p> <p>Page B-38</p>

* Times are approximate, and dependent on actual bird activity at nest or rookery.



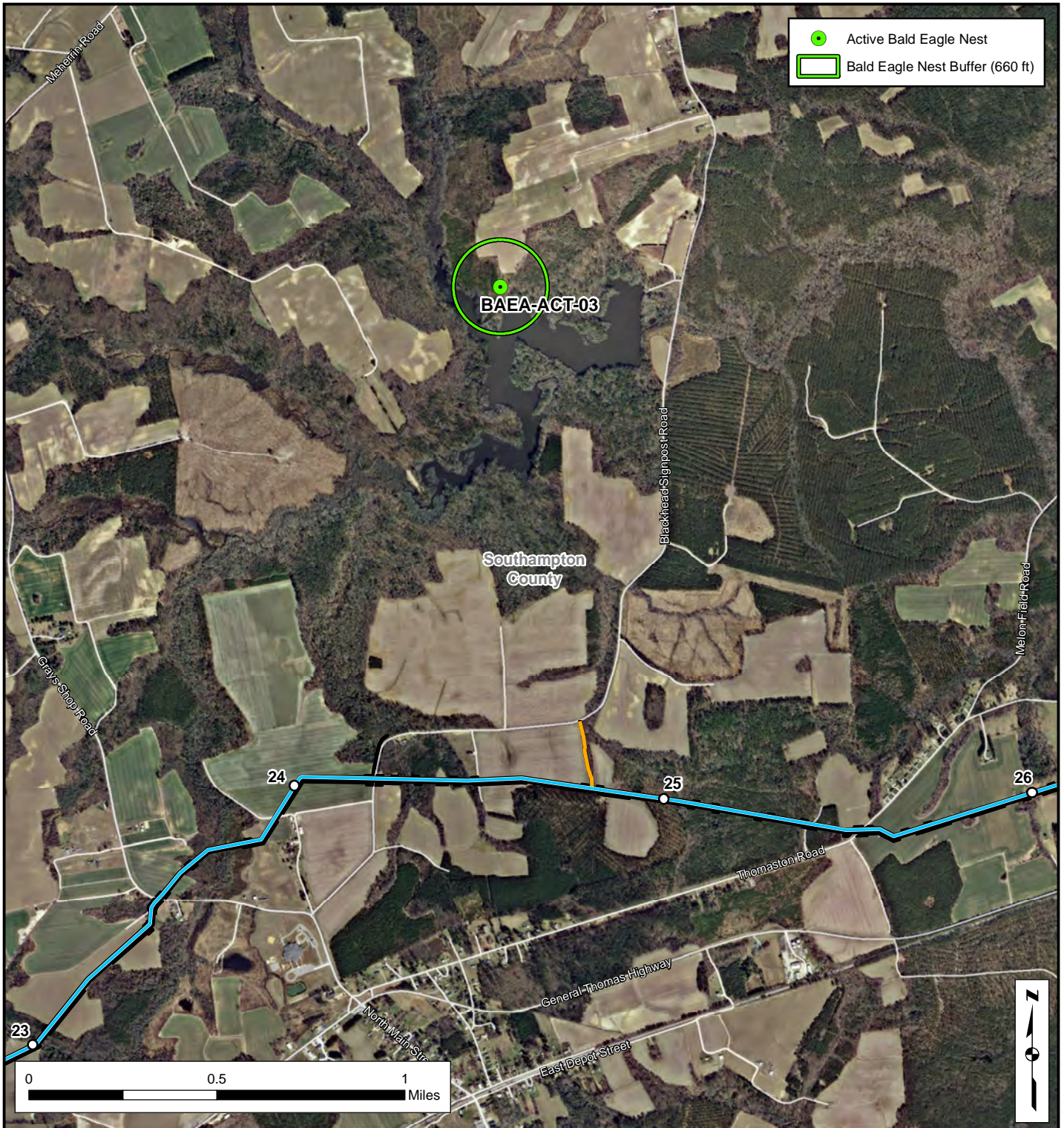
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Rookeries	0.5 mile	VA: Apr. 1 - Aug. 15
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15



- Milepost
- AP-3 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)




**Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
Southampton County, Virginia
Page B-39**

* Times are approximate, and dependent on actual bird activity at nest or rookery.

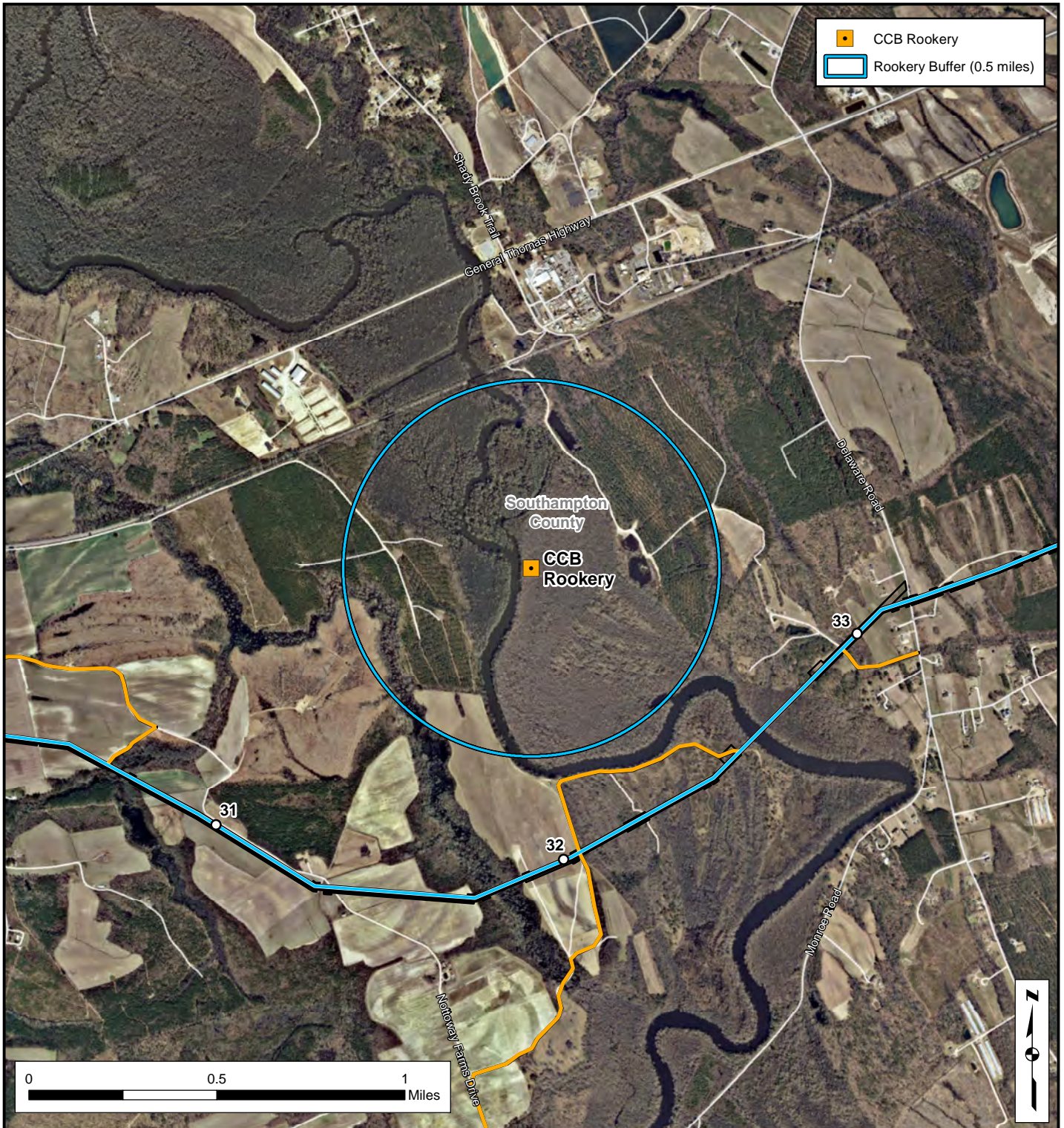


- Active Bald Eagle Nest
- Bald Eagle Nest Buffer (660 ft)

Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Bald Eagle Nests	660 feet	Nov. 15 - July 15
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15

 	<ul style="list-style-type: none"> ○ Milepost — AP-3 (Rev 11a) — Access Road Construction Impact Footprint 7-14-2016 (Rev 11a) 	<h3>Atlantic Coast Pipeline Project</h3> <h3>Known Migratory Bird Nesting Sites</h3> <h3>Southampton County, Virginia</h3> <p>Page B-40</p> 
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* Times are approximate, and dependent on actual bird activity at nest or rookery.



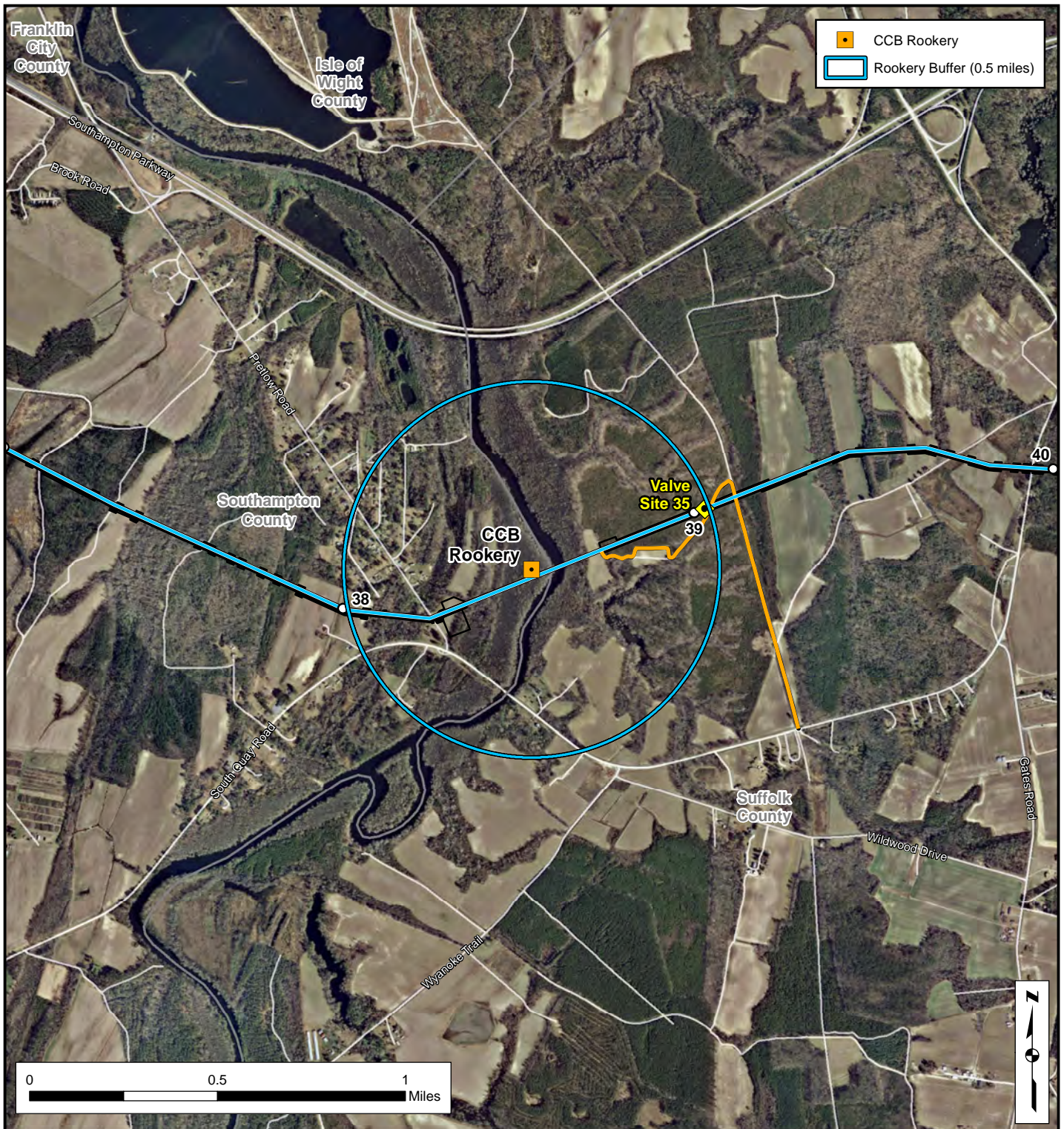
Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Rookeries	0.5 mile	VA: Apr. 1 - Aug. 15
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15



- Milepost
- AP-3 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

**Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
Southampton County, Virginia
Page B-41**

* Times are approximate, and dependent on actual bird activity at nest or rookery.



Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Rookeries	0.5 mile	VA: Apr. 1 - Aug. 15
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15

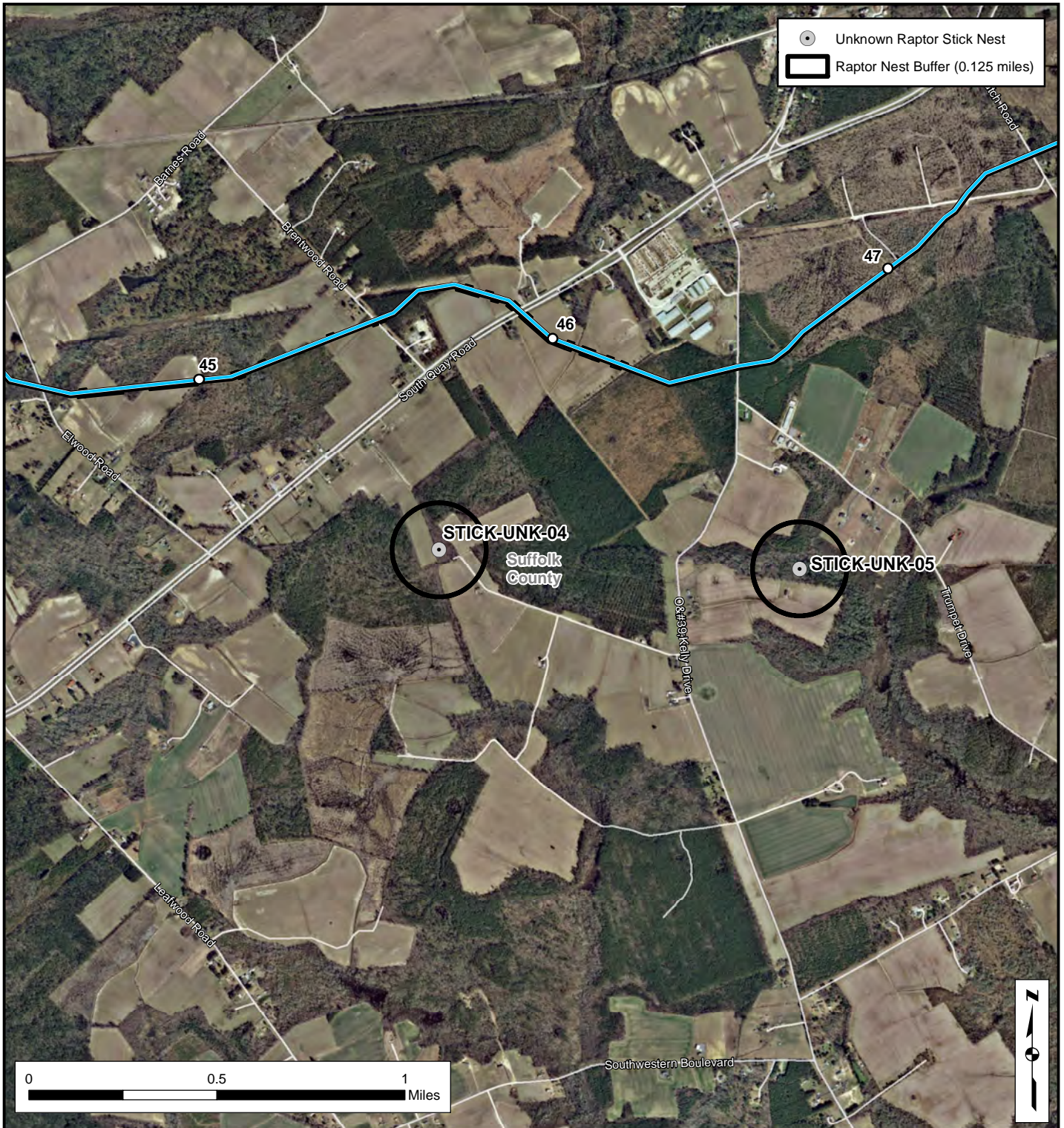


- Milepost
- AP-3 (Rev 11a)
- ◆ Valve Site
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

**Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
Southampton County, Virginia
Page B-42**

NATURAL RESOURCE GROUP
an ERM Group company

* Times are approximate, and dependent on actual bird activity at nest or rookery.



Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15

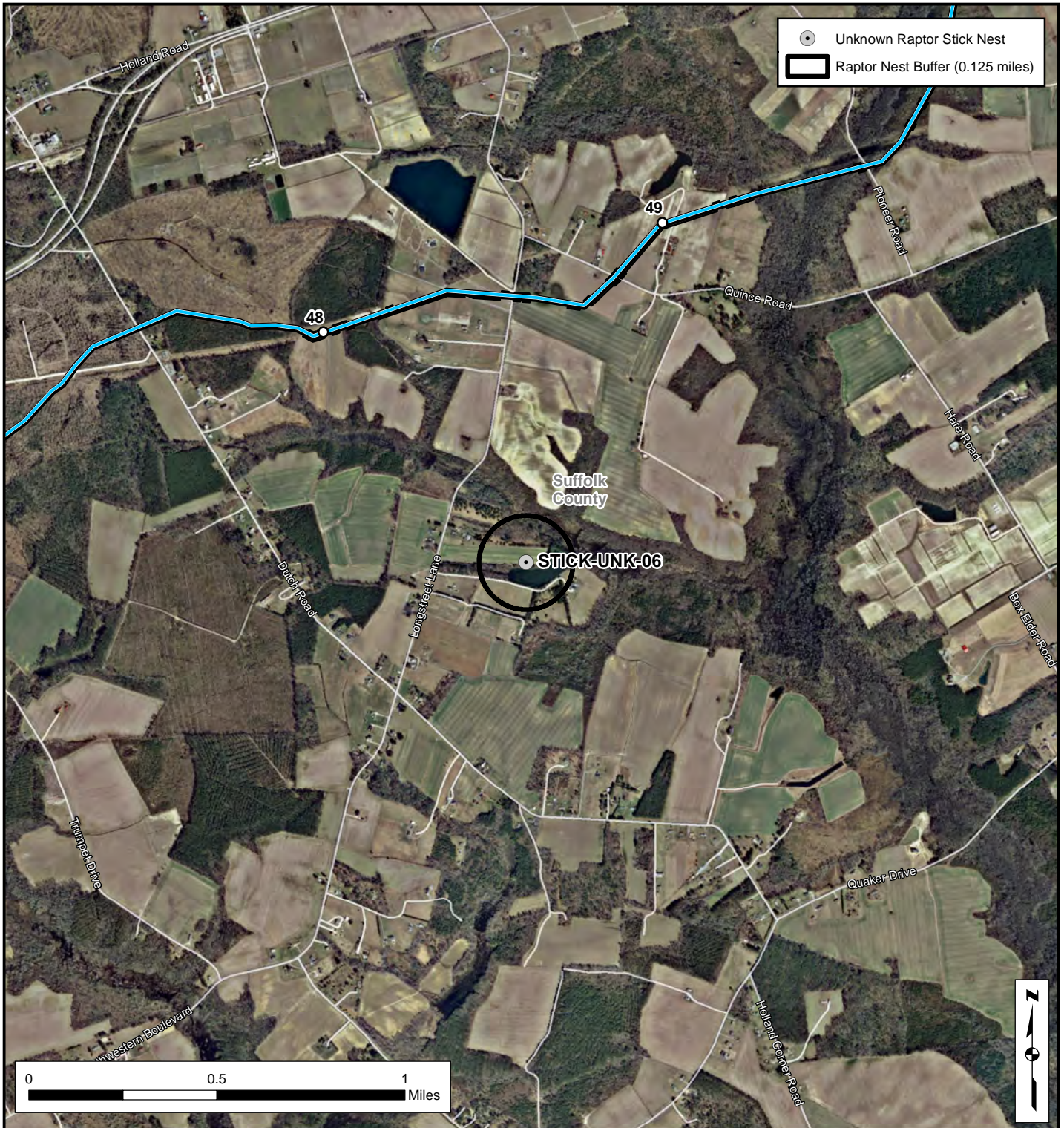


- Milepost
- AP-3 (Rev 11a)
- Construction Impact Footprint 7-14-2016 (Rev 11a)

**Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
City of Suffolk, Virginia
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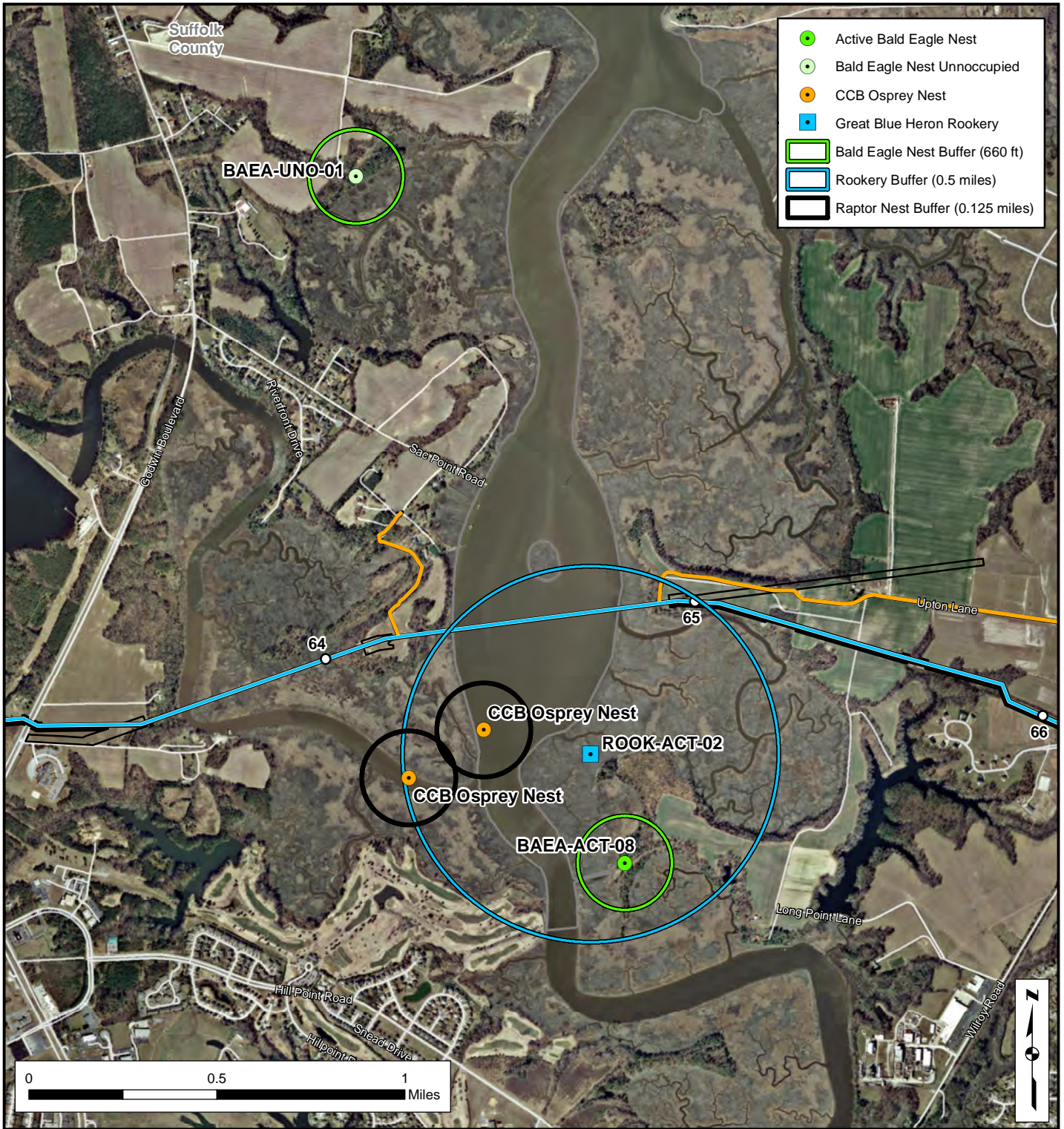
* Times are approximate, and dependent on actual bird activity at nest or rookery.



Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15

 	<ul style="list-style-type: none"> Milepost AP-3 (Rev 11a) Construction Impact Footprint 7-14-2016 (Rev 11a) 	<h3>Atlantic Coast Pipeline Project</h3> <h3>Known Migratory Bird Nesting Sites</h3> <p>City of Suffolk, Virginia</p> <p>Page B-44</p>
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* Times are approximate, and dependent on actual bird activity at nest or rookery.



Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Bald Eagle Nests	660 feet	Nov. 15 - July 15
Rookeries	0.5 mile	VA: Apr. 1 - Aug. 15
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15

- Milepost
- AP-3 (Rev 11a)
- Access Road
- Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project

Known Migratory Bird Nesting Sites

City of Suffolk, Virginia

Page B-45

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* Times are approximate, and dependent on actual bird activity at nest or rookery.

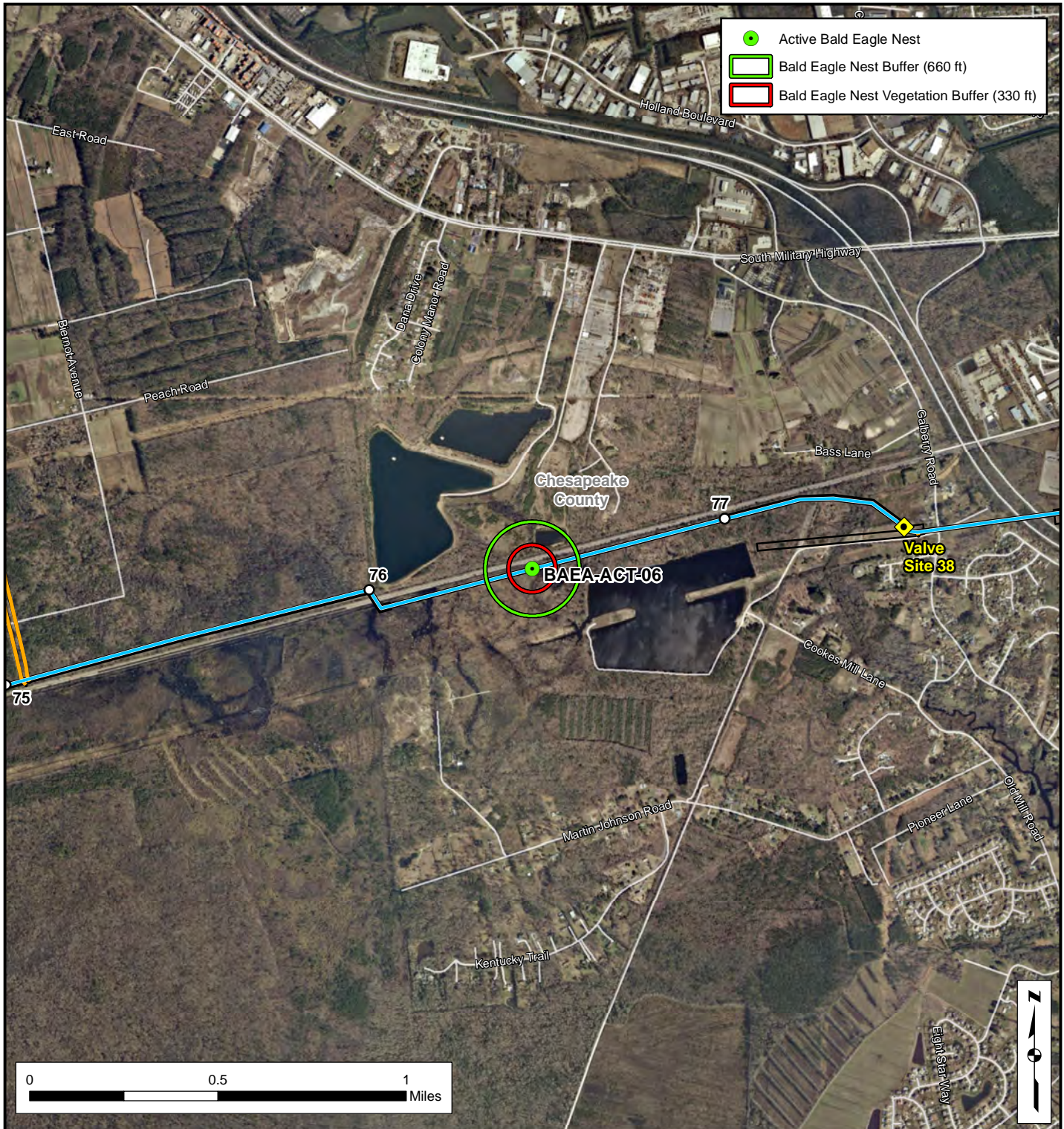


- CCB Bald Eagle Roost
- Unknown Raptor Stick Nest
- Raptor Nest Buffer (0.125 miles)

Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15

	<ul style="list-style-type: none"> Milepost AP-3 (Rev 11a) Construction Impact Footprint 7-14-2016 (Rev 11a) 	<h2 style="margin: 0;">Atlantic Coast Pipeline Project</h2> <h3 style="margin: 0;">Known Migratory Bird Nesting Sites</h3> <p style="margin: 0;">City of Suffolk, Virginia</p> <p style="margin: 0;">Page B-46</p>
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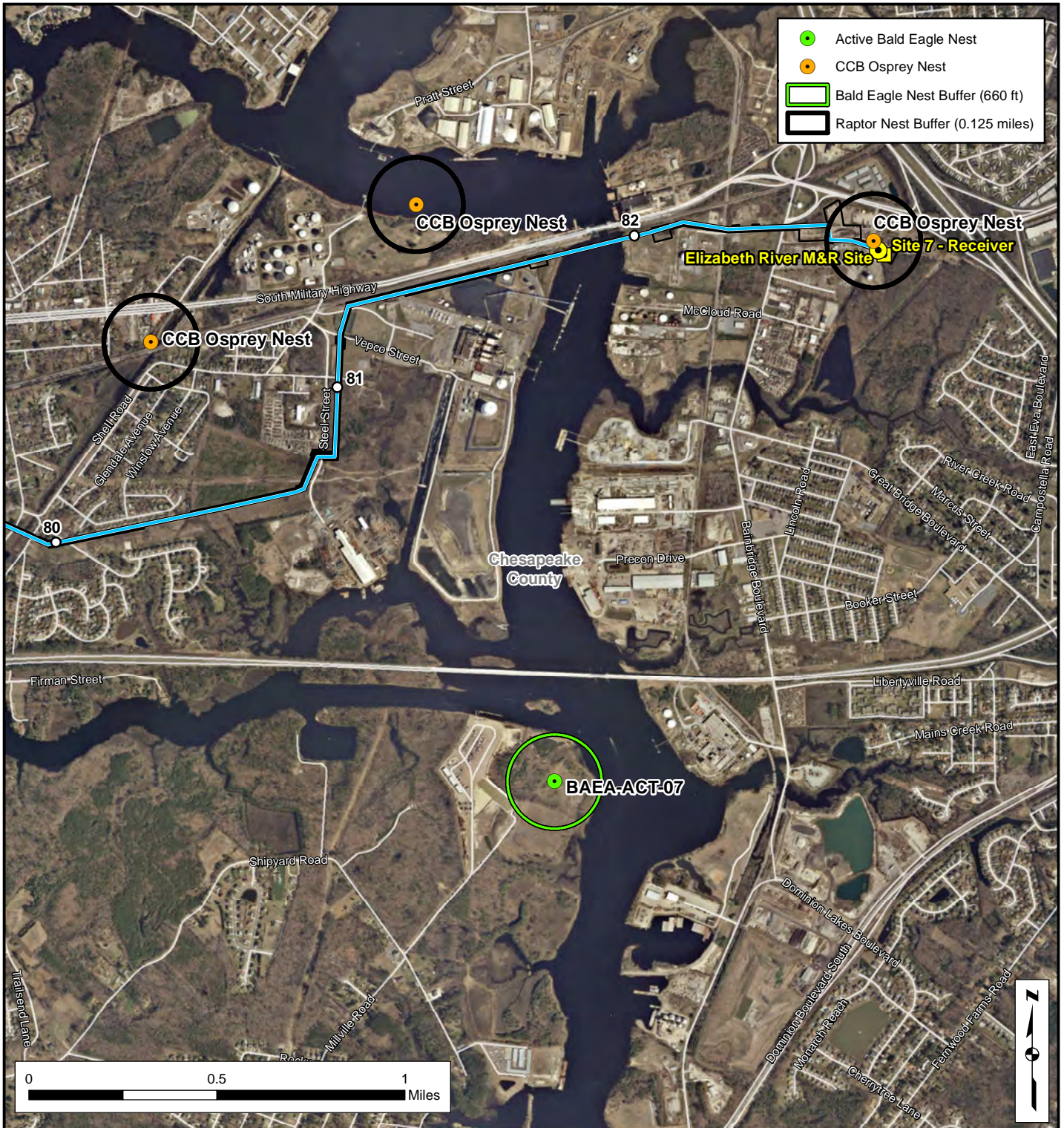
* Times are approximate, and dependent on actual bird activity at nest or rookery.





Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Bald Eagle Nests	330 feet	All year, no vegetation clearing without eagle permit
Bald Eagle Nests	660 feet	Nov. 15 - July 15
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15






 	<ul style="list-style-type: none"> Milepost AP-3 (Rev 11a) Valve Site Access Road Construction Impact Footprint 7-14-2016 (Rev 11a) 	<h3>Atlantic Coast Pipeline Project</h3> <h3>Known Migratory Bird Nesting Sites</h3> <p>City of Chesapeake, Virginia</p> <p>Page B-47</p>
	<small>an ERM Group company</small>	

* Times are approximate, and dependent on actual bird activity at nest or rookery.




Bird Resource	Restriction Distance	Time of Year Restriction (no activity)*
Bald Eagle Nests	660 feet	Nov. 15 - July 15
Non-eagle raptor nests	0.125 mile	Species Dependent; can start as early as January and go through August
Non-raptor migratory birds	Vegetation clearing	VA: Mar. 15 - Aug. 15

-  Milepost
-  AP-3 (Rev 11a)
-  M and R Site
-  L and R Site
-  Construction Impact Footprint 7-14-2016 (Rev 11a)

Atlantic Coast Pipeline Project
Known Migratory Bird Nesting Sites
 City of Chesapeake, Virginia
 Page B-48



* Times are approximate, and dependent on actual bird activity at nest or rookery.

**ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE**

and

**DOMINION TRANSMISSION, INC.
SUPPLY HEADER PROJECT**

Migratory Bird Plan

**ATTACHMENT C
Habitat Equivalency Analysis**
[To be provided upon completion]