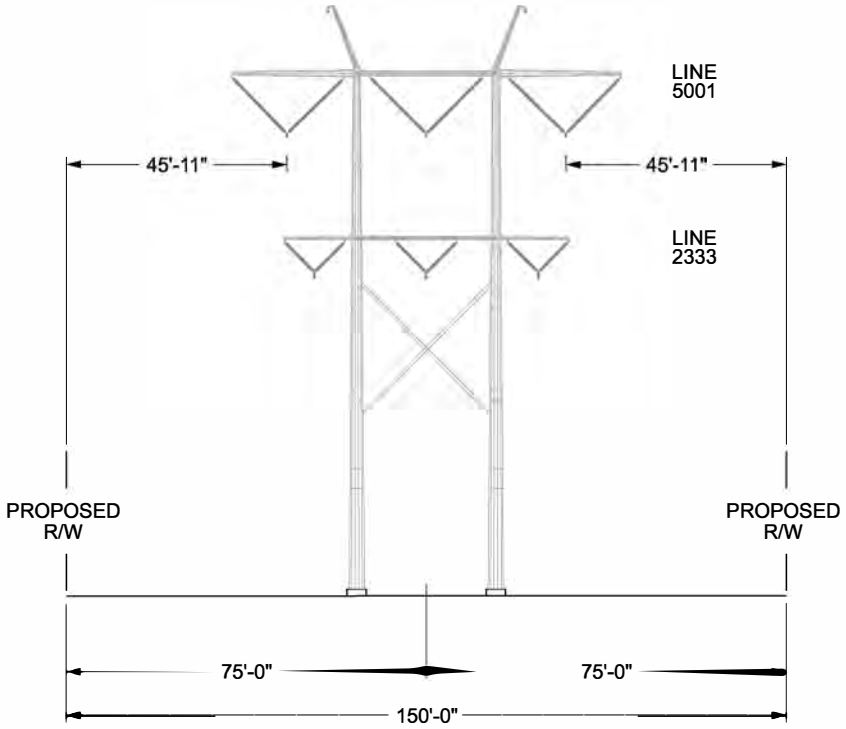
APPENDIX B STRUCTURAL DRAWINGS

PRELIMINARY PROPOSED
ASPEN - GOLDEN

STRUCTURES: *5001/2,*5001/3, 5001/4, 2333/4, 5001/13, 2333/13 - 5001/16, 2333/16, 5001/63, 2333/63 - 5001/68, 2333/68

PROPOSED
500 KV & 230 KV CIRCUITS



PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD GOLDEN

NOTE:

1. PROPOSED STRUCTURE SHOWN WITH APPROXIMATE AVERAGE HEIGHT OF 170' FOR THE 5-2 STRUCTURES. THIS DOES NOT INCLUDE FOUNDATION REVEAL.

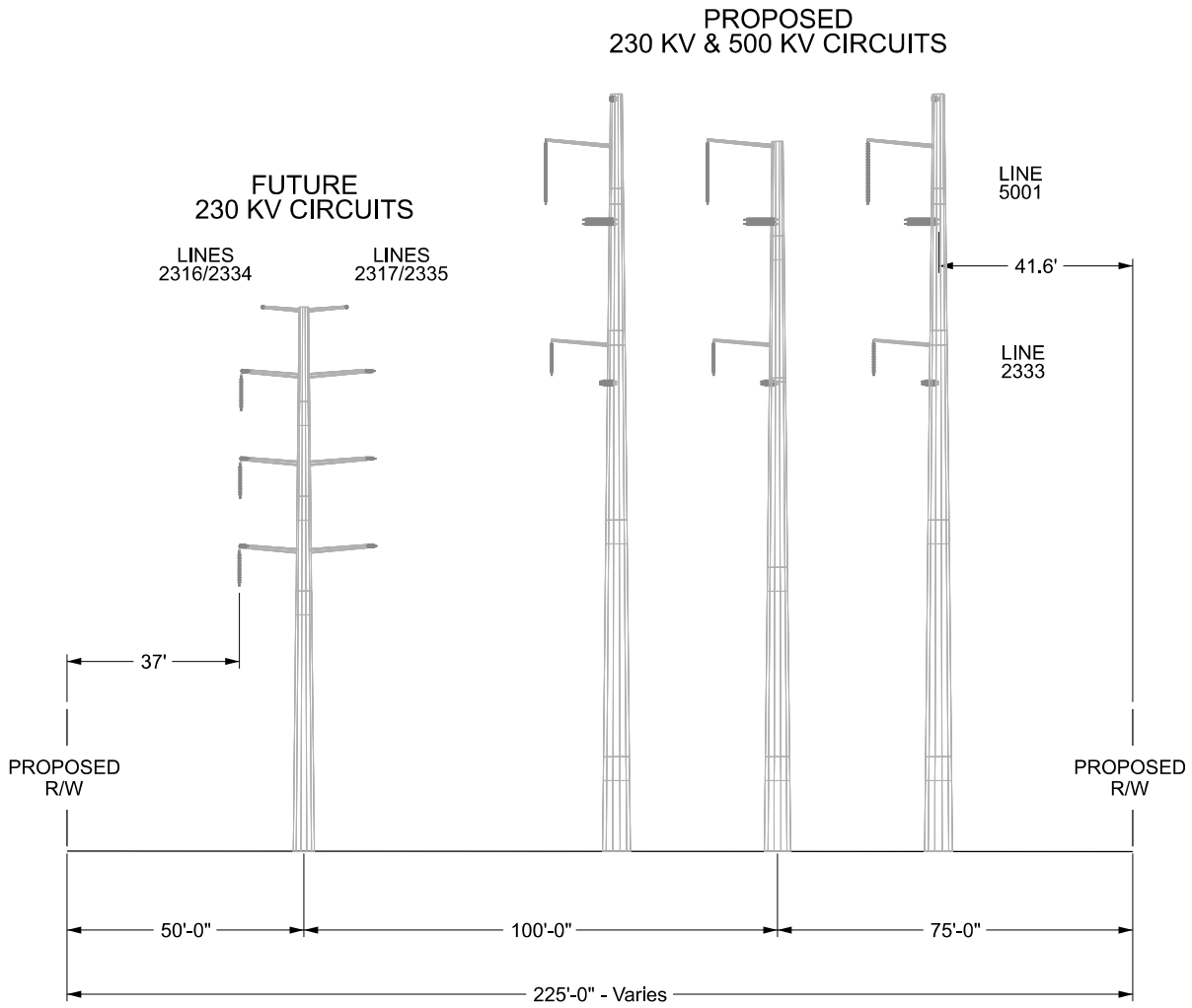
2. APPROXIMATE AVERAGE HEIGHT IS MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE.

3. INFORMATION CONTAINED ON DRAWING IS TO BE CONSIDERED PRELIMINARY IN NATURE AND SUBJECT TO CHANGE BASED ON FINAL DESIGN.

* STRUCTURES 5001/2 AND 5001/3 ARE SINGLE CIRCUIT 500KV H-FRAME STRUCTURES WITH SIMILAR HEIGHT SAME ROW WIDTH.

PRELIMINARY PROPOSED
ASPEN - GOLDEN

STRUCTURES: 5001/6, 2333/6 - 5001/12, 2333/12



PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD GOLDEN

NOTE:

1. PROPOSED STRUCTURE SHOWN WITH APPROXIMATE AVERAGE HEIGHT OF 158' FOR THE 5-2 STRUCTURES AND 113' FOR THE 230 KV STRUCTURES. THIS DOES NOT INCLUDE FOUNDATION REVEAL.

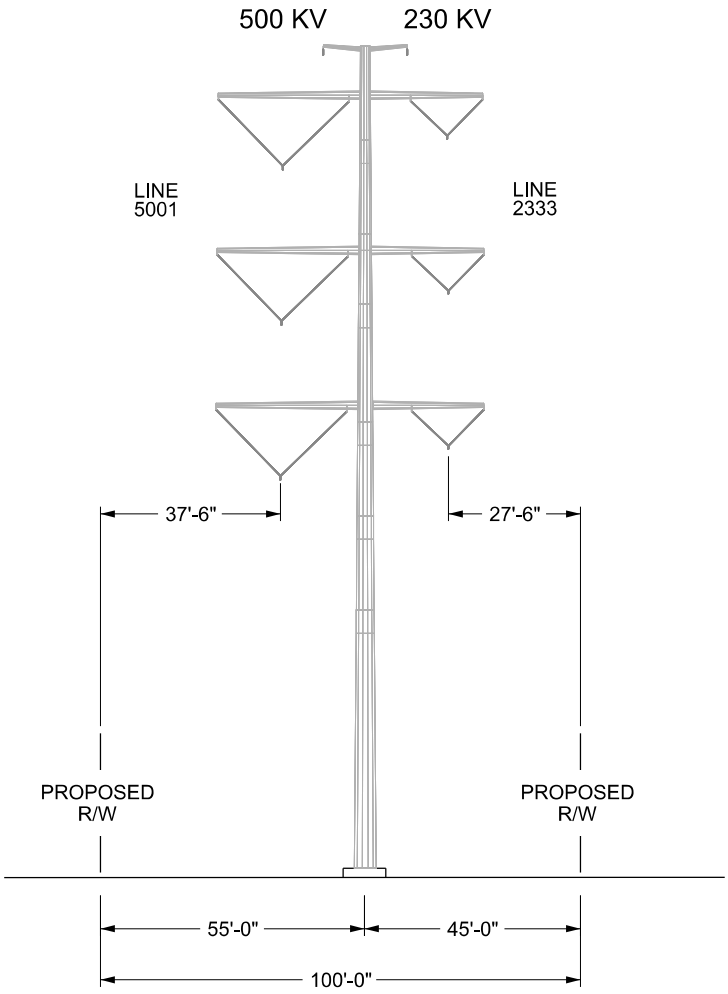
2. APPROXIMATE AVERAGE HEIGHT IS MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE.

3. INFORMATION CONTAINED ON DRAWING IS TO BE CONSIDERED PRELIMINARY IN NATURE AND SUBJECT TO CHANGE BASED ON FINAL DESIGN.

PRELIMINARY PROPOSED
ASPEN - GOLDEN

STRUCTURES: 5001/5, 2333/5, 5001/17, 2333/17 - 5001/62, 2333/62, 5001/69, 2333/69 - 5001/71, 2333/71

PROPOSED CIRCUITS



PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD GOLDEN

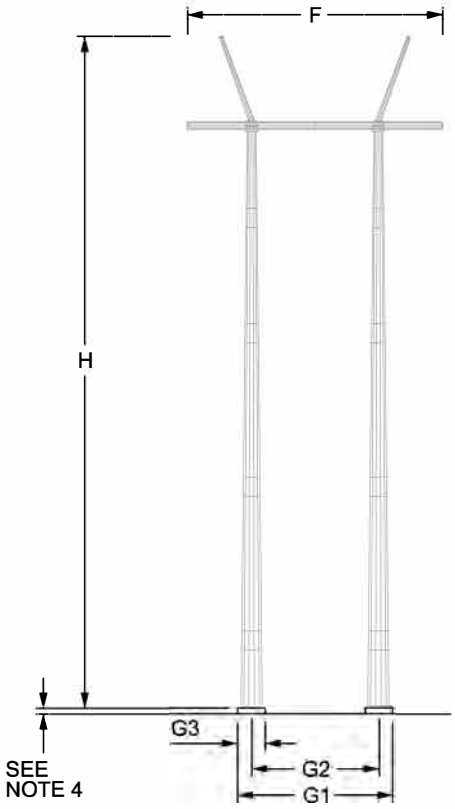
NOTE:

1. PROPOSED STRUCTURE SHOWN WITH APPROXIMATE AVERAGE HEIGHT OF 176' FOR THE 5-2 STRUCTURES. THIS DOES NOT INCLUDE FOUNDATION REVEAL.

2. APPROXIMATE AVERAGE HEIGHT IS MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE.

3. INFORMATION CONTAINED ON DRAWING IS TO BE CONSIDERED PRELIMINARY IN NATURE AND SUBJECT TO CHANGE BASED ON FINAL DESIGN.

STRUCTURE: 5001/2, 5001/3



SC 500 KV H-FRAME STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	HORIZONTAL CONFIGURATION TO REDUCE HEIGHT FOR LINE CROSSING, PREFERRED BY PUBLIC OVER LATTICE
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (2 STRUCTURES)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	66.5'
G1:AVERAGE WIDTH AT BASE\G2: POLE SPACING G3: BASE WIDTH:	G1: 41'\G2: 33'\G3: 8' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	160' 170' 165'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	27.5' (500 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

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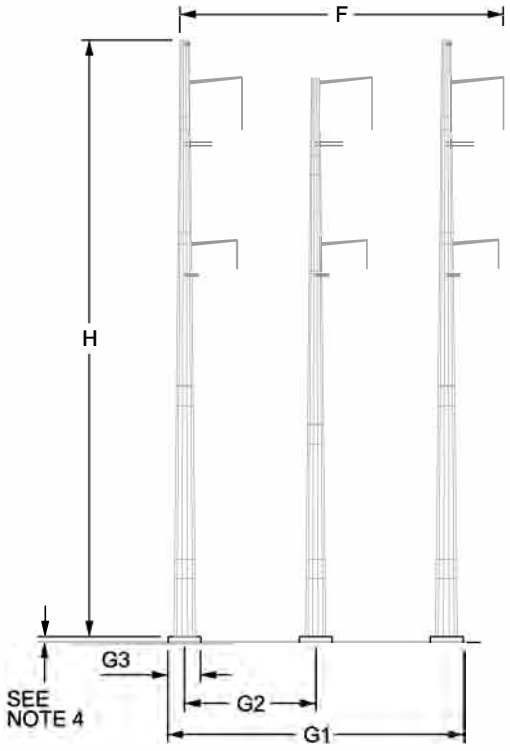
STRUCTURE: 5001/2, 5001/3

DRAWING NO.
ATTACHMENT II.B.3.i

DRAWN: MBV

STRUCTURE: 5001/4, 2333/4, 5001/8, 2333/8, 5001/10, 2333/10, 5001/11, 2333/11, 5001/13, 2333/13 - 5001/15, 2333/15, 5001/64, 2333/64, 5001/67, 2333/67



DOUBLE CIRCUIT 3-POLE STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	SHORTER STRUCTURES FOR DOUBLE CIRCUIT CONFIGURATION, PREFERRED BY PUBLIC OVER LATTICE
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (9 STRUCTURES)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	84.3'
G1:AVERAGE WIDTH AT BASE\G2: POLE SPACING G3: BASE WIDTH:	G1: 77'\G2: 34'\G3: 8' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	130' 180' 153'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	22.5'/27.5' (230/500 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

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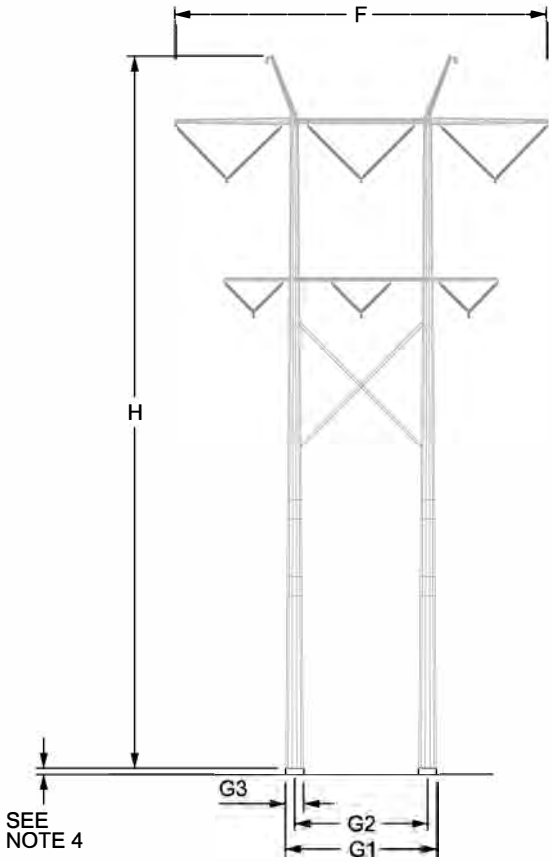
STRUCTURE:
5001/4, 2333/4, 5001/8, 2333/8, 5001/10, 2333/10, 5001/11, 2333/11,
5001/13, 2333/13 - 5001/15, 2333/15, 5001/64, 2333/64, 5001/67, 2333/67

DRAWING NO.
ATTACHMENT II.B.3.ii

DRAWN: MBV

STRUCTURE: 5001/9, 2333/9, 5001/65, 2333/65, 5001/66, 2333/66



DOUBLE CIRCUIT H-FRAME SUSPENSION

B. RATIONALE FOR STRUCTURE TYPE:	SHORTER STRUCTURES FOR DOUBLE CIRCUIT CONFIGURATION, PREFERRED BY PUBLIC OVER LATTICE
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (3 STRUCTURE)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL:	CONCRETE
AVERAGE FOUNDATION REVEAL:	SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	96.9'
G1:AVERAGE WIDTH AT BASE\G2: POLE SPACING G3: BASE WIDTH:	G1: 40.2'\G2: 34.7'\G3: 5.5' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT:	161'
MAXIMUM STRUCTURE HEIGHT:	196'
AVERAGE STRUCTURE HEIGHT:	184'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	22.5'/27.5' (230/500 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

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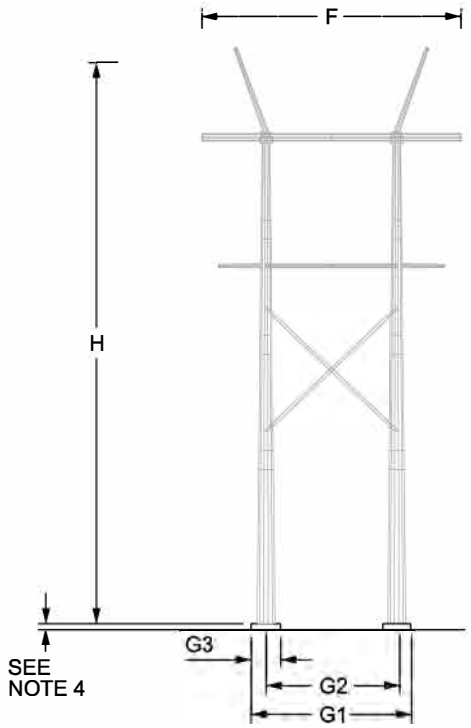
STRUCTURE: 5001/9, 2333/9, 5001/65, 2333/65, 5001/66, 2333/66

DRAWING NO.
ATTACHMENT II.B.3.iii

DRAWN: MBV

STRUCTURE: 5001/12, 2333/12



DOUBLE CIRCUIT H-FRAME DDE STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	SHORTER STRUCTURES FOR DOUBLE CIRCUIT CONFIGURATION, PREFERRED BY PUBLIC OVER LATTICE
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (1 STRUCTURE)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	67.5'
G1:AVERAGE WIDTH AT BASE\G2: POLE SPACING G3: BASE WIDTH:	G1: 43'\G2: 34'\G3: 9' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	145' 145' 145'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	22.5'/27.5' (230/500 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

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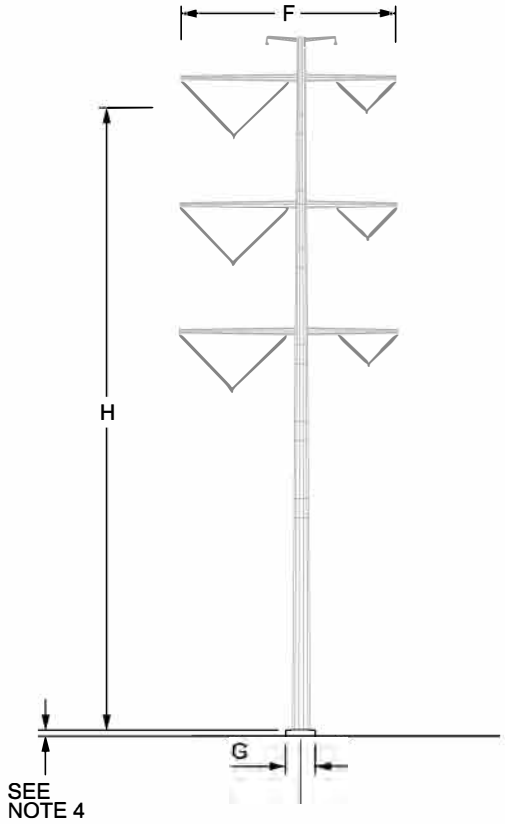
STRUCTURE: 5001/12, 2333/12

DRAWING NO.
ATTACHMENT II.B.3.iv

DRAWN: MBV

STRUCTURE: 5001/19, 2333/19, 5001/21, 2333/21 - 5001/24, 2333/24, 5001/26, 2333/26, 5001/28, 2333/28, 5001/29, 2333/29, 5001/31, 2333/31, 5001/34, 2333/34 - 5001/39, 2333/39, 5001/41, 2333/41, 5001/43, 2333/43, 5001/52, 2333/52, 5001/60, 2333/60, 5001/62, 2333/62



DOUBLE CIRCUIT 1-POLE SUS STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	500KV AND 230KV VERTICALLY ARRANGED TO REDUCE ROW REQUIREMENTS
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (20 STRUCTURES)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	56.3'
G. AVERAGE WIDTH AT BASE:	8' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	160' 195' 178'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	22.5'/27.5' (230/500 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

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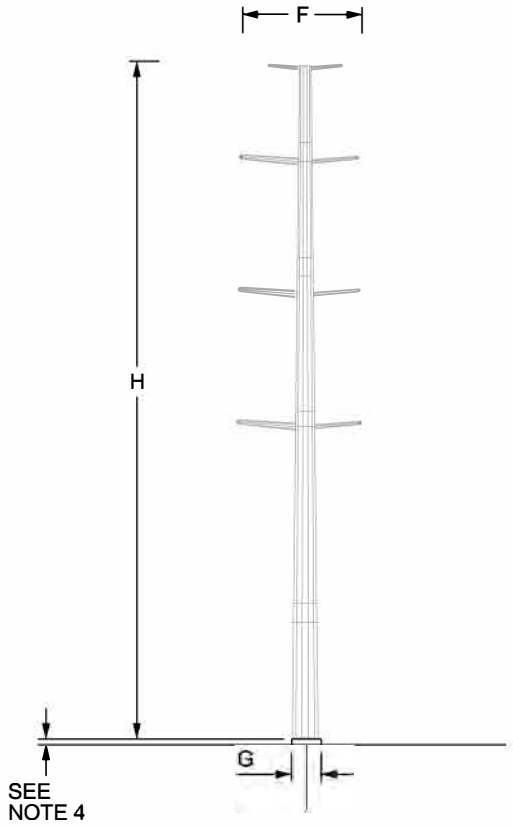
STRUCTURE: 5001/19, 2333/19, 5001/21, 2333/21 - 5001/24, 2333/24, 5001/26, 2333/26, 5001/28, 2333/28, 5001/29, 2333/29, 5001/31, 2333/31, 5001/34, 2333/34 - 5001/39, 2333/39, 5001/41, 2333/41, 5001/43, 2333/43, 5001/52, 2333/52, 5001/60, 2333/60, 5001/62, 2333/62

DRAWING NO.
ATTACHMENT II.B.3.v

DRAWN: MBV

STRUCTURE: 5001/5, 2333/5, 5001/18, 2333/18, 5001/25, 2333/25, 5001/27, 2333/27, 5001/30, 2333/30, 5001/33, 2333/33, 5001/40, 2333/40, 5001/42, 2333/42, 5001/44, 2333/44, 5001/46, 2333/46, 5001/51, 2333/51, 5001/53, 2333/53, 5001/55, 2333/55 - 5001/59, 2333/59, 5001/61, 2333/61



DOUBLE CIRCUIT 1-POLE DDE STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	500KV AND 230KV VERTICALLY ARRANGED TO REDUCE ROW REQUIREMENTS
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (18 STRUCTURES)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	31.1'
G. AVERAGE WIDTH AT BASE:	10' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	160' 195' 174'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	22.5'/27.5' (230/500 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

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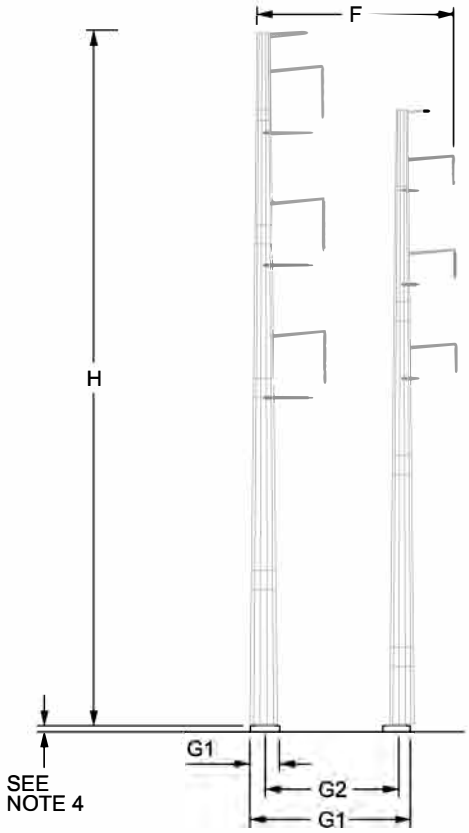
STRUCTURE: 5001/5, 2333/5, 5001/18, 2333/18, 5001/25, 2333/25, 5001/27, 2333/27, 5001/30, 2333/30 5001/33, 2333/33, 5001/40, 2333/40, 5001/42, 2333/42, 5001/44, 2333/44, 5001/46, 2333/46, 5001/51, 2333/51, 5001/53, 2333/53, 5001/55, 2333/55 - 5001/59, 2333/59, 5001/61, 2333/61

DRAWING NO.
ATTACHMENT II.B.3.vi

DRAWN: MBV

STRUCTURE: 5001/6, 2333/6, 5001/7, 2333/7, 5001/16, 2333/16, 5001/17, 2333/17, 5001/20, 2333/20, 5001/32, 2333/32, 5001/45, 2333/45, 5001/47, 2333/47 - 5001/50, 2333/50, 5001/54, 2333/54, 5001/63, 2333/63, 5001/68, 2333/68 - 5001/71, 2333/71



DOUBLE CIRCUIT 2-POLE STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	500KV AND 230KV VERTICALLY ARRANGED TO REDUCE ROW REQUIREMENTS. TWO SEPARATE POLES TO REDUCE LOADING FOR FOUNDATIONS.
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (17 STRUCTURES)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	52.1'
G1:AVERAGE WIDTH AT BASE\G2: POLE SPACING G3: BASE WIDTH:	G1: 43'\G2: 34'\G3: 9' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	160' 190' 179'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	22.5'/27.5' (230/500 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

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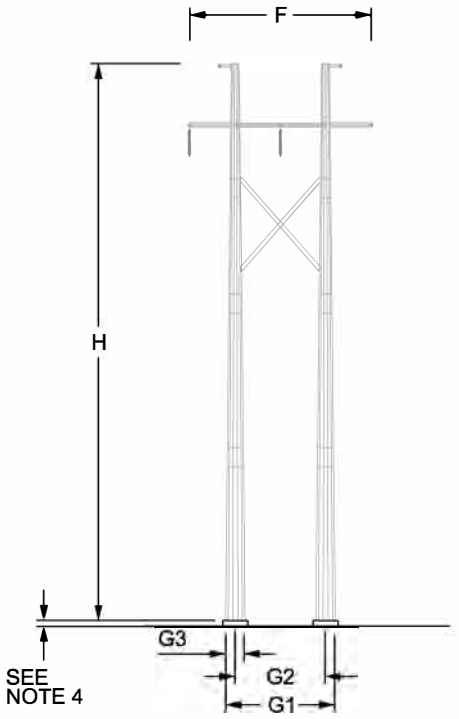
STRUCTURE: 5001/6, 2333/6, 5001/7, 2333/7, 5001/16, 2333/16, 5001/17, 2333/17, 5001/20, 2333/20, 5001/32, 2333/32, 5001/45, 2333/45, 5001/47, 2333/47 - 5001/50, 2333/50, 5001/54, 2333/54, 5001/63, 2333/63, 5001/68, 2333/68 - 5001/71, 2333/71

DRAWING NO.
ATTACHMENT II.B.3.vii

DRAWN: MBV

STRUCTURE: 2333/2, 2333/3



SC 230 KV H-FRAME STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	HORIZONTAL CONFIGURATION TO REDUCE HEIGHT FOR LINE CROSSING. STRUCTURES FOR SINGLE CIRCUIT 230KV CONFIGURATION
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (2 STRUCTURE)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	47.4'
G1:AVERAGE WIDTH AT BASE\G2: POLE SPACING G3: BASE WIDTH:	G1: 29'\G2: 23.5'\G3: 5.5' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	140' 145' 143'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	22.5' (230 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

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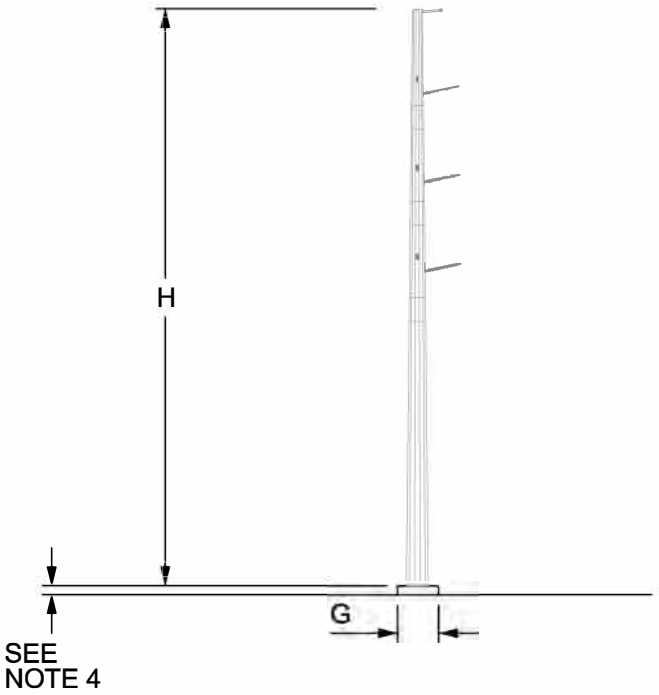
STRUCTURE: 2333/2, 2333/3

DRAWING NO.
ATTACHMENT II.B.3.viii

DRAWN: MBV

STRUCTURE: 2333/72, 2333/73, 2351/183A, 2150/182A, 2348/123A, 2081/122A



SC 230 KV 1-POLE STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	MORE COMPACT STRUCTURES FOR SINGLE CIRCUIT 230KV CONFIGURATION
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (6 STRUCTURES)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	3'
G. AVERAGE WIDTH AT BASE:	8.5' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	105' 120' 113'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	22.5' (230 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

Electric Transmission

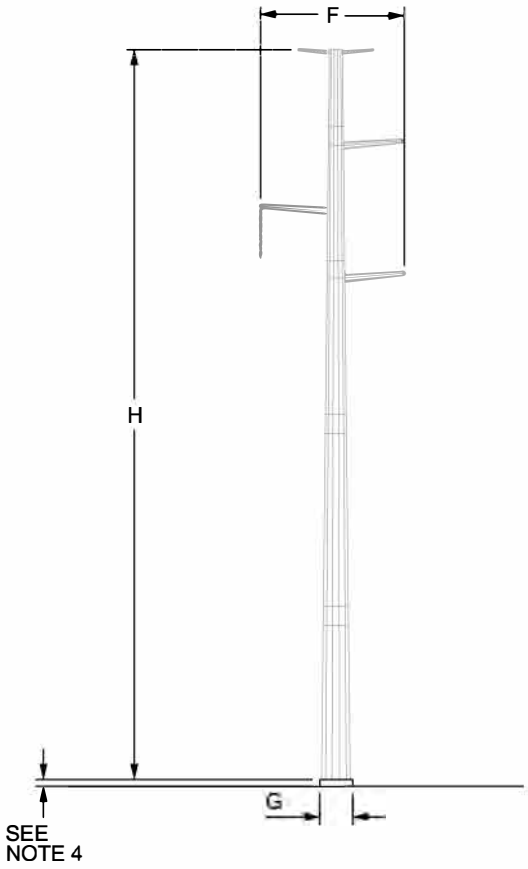
Dominion Energy
5000 Dominion Blvd
Glen Allen, VA 23060

STRUCTURE: 2333/72, 2333/73, 2150/183A, 2150X/182A, 2081/123A, 2081X/122A

DRAWING NO.
ATTACHMENT II.B.3.ix

DRAWN: MBV

STRUCTURE: 5002/2



SC 500 KV 1-POLE DDE STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	COMPACT SINGLE CIRCUIT 500KV DESIGN FOR MINIMAL FOOTPRINT
C. LENGTH OF R/W (STRUCTURE QUANTITY):	0.2 MILES (1 STRUCTURE)
D. STRUCTURE MATERIAL:	GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	GALVANIZED STEEL TO MATCH SUBSTATION STRUCTURES, SINCE INSIDE SUBSTATION FENCE
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	37.4'
G. AVERAGE WIDTH AT BASE:	10' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	190' 190' 190'
I. AVERAGE SPAN LENGTH:	432' (405'-460')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	27.5' (500 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

Electric Transmission

Dominion Energy
Dominion Energy
5000 Dominion Blvd
Glen Allen, VA 23060

STRUCTURE: 5002/2

DRAWING NO.
ATTACHMENT II.B.3.x

DRAWN: MBV

APPENDIX C AGENCY AND STAKEHOLDER CORRESPONDENCE

From: O'brien, Dorothy <Dorothy.O'brien@inova.org>
Sent: Thursday, February 15, 2024 12:14 PM
To: Kathleen R Leonard (Services - 6) <kathleen.r.leonard@dominionenergy.com>
Cc: Forehand, Michael D. <Michael.Forehand@inova.org>; Carroll, Susan T. <Susan.Carroll@inova.org>
Subject: [EXTERNAL] Aspen To Golden Transmission Project

Good afternoon, Kathleen,

I hope this message finds you well.

I am following up on the January 29th meeting where we discussed Dominion's revised plans for the Aspen to Golden transmission project which now envisions 195-foot transmission lines as opposed to the 140-foot lines Inova was briefed on last year.

As we have maintained since being made aware of this project, Inova's primary concern is our ability to serve the healthcare needs of the Loudoun community now and into the future to include emergency helicopter flights to and from our trauma center. After our meeting, we reengaged with our chief pilot and inquired if 195-foot lines would affect their ability to operate safely. The short answer is 195-foot transmission lines on the north side of Route 7 (Belmont Variation B) "*could become a problem*". The southern alignment (Belmont Variation A) "*is not ideal but should not hamper our operations very much".*

Based on this information, while we believe 195-foot transmission lines adjacent to the hospital are suboptimal, Variation A is acceptable. Variation B is not acceptable given it is not conducive to helicopter takeoff/landing.

I would love to have the opportunity to discuss this issue with you sometime early next week if you have time. If you are in the area, perhaps we could meet for coffee or lunch?

Pilot Feedback:
Variation A
I did confirm with Jan (the pilot that I consulted earlier,) the 195 foot lines on the south side of route 7 is not ideal, but should not hamper our operations very much. We would request if they do put them up that they mark them. I am not sure who is responsible for that, but often if high lines are around flight areas, they will put red balls on the lines so that they are more visible.

Variation B

In order to be safe, the pilots would need 300 feet (vertical) clearance during the day (500 feet vertical clearance at night due to restricted visibility) in order to climb before they can make a turn outbound. If they add the towers with the power lines/towers, then it will become a problem when they have to take off to the south (across Rt 7). So, yes it COULD become a problem if the towers are installed on the north side of Rt 7.

My best,

Dorri O'Brien
Director, Government and Community Relations – Western Region

Inova Loudoun Hospital
44045 Riverside Parkway
Leesburg, VA 20176
C 571-439-2893
Inova.org [inova.org]

APPENDIX D WETLAND AND WATERBODY DESKTOP SUMMARY

ERM

222 South 9th Street
Suite 2900
Minneapolis, Minnesota 55402

T +0 804 253 1090
F +0 804 253 1091

erm.com

Virginia Department of Environmental Quality
Office of Environmental Impact Review
Ms. Bettina Rayfield, Manager
P.O. Box 1105
Richmond, Virginia 23218

DATE
7 March 2024

SUBJECT
500-230 kV Aspen Substation, 500 kV Aspen-Goose Creek Line #5002, 500 kV and 230 kV Aspen-Golden Lines #5001 and #2333, 500-230 kV Golden Substation and Lines #2081/#2150 Loop Project Wetland and Waterbody Desktop Summary

REFERENCE
0622601

Dear Ms. Rayfield:

Environmental Resources Management ("ERM"), on behalf of Virginia Electric and Power Company ("Dominion Energy Virginia," "Dominion," or the "Company"), conducted a desktop wetland and waterbody review of publicly available information for the proposed 500-230 kilovolt ("kV") Aspen Substation, 500 kV Aspen-Goose Creek Line #5002, 500 kV and 230 kV Aspen-Golden Lines #5001 and #2333, 500-230 kV Golden Substation, and 230 kV Lines #2081/#2150 Loop ("Project") located within Loudoun County, Virginia. This delineation was done using desktop resources and methodology. A field delineation is required to verify the accuracy and extent of aquatic resource boundaries and will be completed upon a final route being approved. The Project routes and route variations are shown in Attachment 1, with identified wetland boundaries shown in Attachment 2.

Dominion Energy Virginia is filing an application with the State Corporation Commission (SCC) to:

- Construct a new 500-230 kV substation in Loudoun County, Virginia, entirely on Company-owned property ("Aspen Substation"). The 500 kV source to the Aspen Substation will be created by cutting the Company's existing overhead 500 kV Brambleton-Goose Creek Line #558 into the Aspen Substation between Structure #558/1857 and Structure #558/1856. The cut-in of Line #558 to the Aspen Substation will result in (i) 500 kV Aspen-Brambleton Line #558 and (ii) 500 kV Aspen-Goose Creek Line #597.
- Construct a new 500 kV single circuit transmission line extending approximately 0.2 mile connecting the proposed 500-230 kV Aspen Substation to the Company's existing 500 kV Goose Creek Substation in Loudoun County, Virginia, named Aspen-Goose Creek Line #5002 (or the "Aspen-Goose Creek Line"). Aspen-Goose Creek Line #5002 will be

constructed entirely on Company-owned property or existing right-of-way. Combined with the new 500 kV Aspen-Goose Creek Line #597, this new 500 kV Aspen-Goose Creek Line #5002 will bring two new sources to the area by connecting Goose Creek Substation to the area grid via the proposed Aspen Substation. To the extent there are any impacts related to the construction of the 0.2-mile Aspen-Goose Creek Line, such impacts were mitigated during permitting of the recent 500-230 kV Goose Creek Substation expansion and the Lines #558/#2180 right-of-way transmission corridor, in which the proposed line is located. Given that all associated impacts have been mitigated already, and that all Line #5002 work will be conducted within existing Company-owned property or right-of-way, the Company has not included any additional information regarding the construction of Line #5002 in this report.

- Construct a new approximately 9.4-mile overhead 500 kV single circuit transmission line and a new 230 kV single circuit transmission line on entirely[1] new right-of-way. The new transmission lines will originate at the 500 kV and 230 kV buses of the proposed Aspen Substation and continue to the proposed 500-230 kV Golden Substation, where the new lines will terminate, resulting in (i) 500 kV Aspen-Golden Line #5001, and (ii) 230 kV Aspen-Golden Line #2333 (collectively, the "Aspen-Golden Lines").

- Construct a new 500-230 kV substation on property to be obtained by the Company ("Golden Substation").

- Cut Line #2081 and Line #2150 between Structure #2081/124 / #2150/184 and Structure #2081/123 / #2150/183, and loop the existing lines into and out of the proposed Golden Substation, resulting in (i) Golden-Sterling Park #2081, (ii) Golden-Sterling Park #2150, (iii) Golden-Paragon Park #2348, and (iv) Golden-Paragon Park #2351 (collectively, the "Line Loop"). The Line Loop will be constructed entirely within existing transmission corridor right-of-way or on property to be obtained by the Company for the proposed Golden Substation. As the closest existing 230 kV lines to the proposed Golden Substation site, the Line Loop will provide a new 230 kV source from the Aspen/Goose Creek Substation area into Data Center Alley ("DCA") via the proposed Golden Substation. As the Line Loop is located contiguous with Aspen-Golden Line #2333 along the Route 1 right-of-way where Line #2333 and the Line Loop both enter the proposed Golden Substation, any impacts resulting from the Line Loop construction are included in the Route 1 discussion.

The Project is needed to maintain and improve electric service to customers in the eastern Loudoun load area ("Eastern Loudoun Load Area"), which is generally to the north and west of the Dulles Airport and is inclusive of the DCA; to address significant load growth in the Eastern Loudoun Load Area; and to resolve identified North American Electric Reliability Corporation reliability violations. The Company considered the facilities required to construct and operate the Project, the amount of new rights-of-way that will be required, the amount

[1] The Aspen-Golden Lines will be on entirely new right-of-way except where the lines cross the existing 100-foot-wide transmission line right-of-way corridor containing Beaumeade-Belmont Line #227 and Beaumeade-Pleasant View Line #274.

of existing development in each area, the potential for environmental impacts on communities, and the relative cost of the Project.

The purpose of this desktop analysis is to identify and evaluate potential impacts of the Project on aquatic resources (streams, creeks, runs, and open water features) within the proposed routes and substation footprints. In accordance with Virginia Department of Environmental Quality ("DEQ") and the SCC's Memorandum of Agreement, the evaluation was conducted using various data sets that may indicate wetland location and type. This report is being submitted to the DEQ as part of the DEQ Wetland Impacts Consultation.

This desktop assessment did not include field investigations by the Company required for wetland delineations in accordance with the U.S. Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0).

PROJECT STUDY AREA AND POTENTIAL ROUTES

The study area identified for the Project encompasses approximately 30 square miles entirely within unincorporated areas of southeastern Loudoun County. It includes portions of the U.S. Census Bureau census-designated places of Ashburn, Belmont, Broadlands, Dulles Town Center, Kincora, Lansdowne, Moorefield, One Loudoun, Sterling, and University Center. There are no incorporated cities within the study area. Based on the above, ERM and Dominion defined the boundaries of the study area for the Project as follows and as shown in Attachment 1:

- The Company's existing 500 kV Line #558 to the west;
- Riverside Parkway to the north;
- Atlantic Boulevard to the east; and
- State Route 267 (Dulles Greenway) to the south.

Dominion identified one viable overhead route alternative for the Apollo- Twin Creeks Line, described below:

ROUTE 1

Route 1 is comprised of three segments separated by the Belmont Park Segment (Belmont Park Variations A and B) and the Broad Run Segment (Broad Run Variations A and B). Route 1 begins at the proposed Aspen Substation and extends approximately 2.9 miles to the Belmont Park Segment, continues from the Belmont Park Segment approximately 3.3 miles to the Broad Run Segment and then continues for 0.4 mile from the Broad Segment where is terminates at the proposed Golden Substation. The Route 1 right-of-way, excluding the Belmont Park and Broad Run Variations, encompasses about 106.1 acres, inclusive of the proposed Aspen and Golden Substation sites and the Line Loop.

BELMONT PARK VARIATIONS

The Belmont Park Route Variations begin at Route 1 approximately 0.3 mile southwest of the intersection of Rt. 7 and Claiborne Parkway and rejoin Route 1 approximately 0.3 mile southeast of the intersection of Rt. 7 and Claiborne Parkway. Either Belmont Park Variation A (Belmont Park A) or Belmont Park Variation B (Belmont Park B) will be required to connect to Route 1.

BELMONT PARK VARIATION A

Belmont Park Variation A (Belmont Park A) is an approximately 0.6-mile-long variation that begins at Route 1 approximately 0.3 mile west of and extends approximately 0.3 mile east of Claiborne Parkway, directly south of Rt. 7. Belmont Park A crosses through the south side of the cloverleaf interchange of Rt. 7 and Claiborne Parkway/Lansdowne Boulevard. The Belmont Park A right-of-way encompasses about 6.9 acres.

BELMONT PARK VARIATION B

Belmont Park Variation B (Belmont Park B) is an approximately 0.6-mile-long variation that begins approximately 0.3 mile west of Claiborne Parkway on the south side of Rt. 7, crosses from the south to north side of Rt. 7, then extends approximately 0.4 mile to the southeast along the north side of Rt. 7 across Lansdowne Boulevard and crosses back to the south side of Rt 7. Belmont Park B crosses through the northern side of the cloverleaf interchange of Rt. 7 and Claiborne Parkway/Lansdowne Boulevard. The Belmont Park B right-of-way encompasses about 7.7 acres.

BROAD RUN VARIATIONS

The Broad Run Variations begin at Route 1 along the east side of Loudoun County Parkway approximately 0.6 mile south of Russell Branch Parkway, north of Beaverdam Run, and reconnect with Route 1 on the east side of Pacific Boulevard south of Cabin Branch. Either Broad Run Variation A (Broad Run A) or Broad Run Variation B (Broad Run B) will be required to connect to Route 1.

BROAD RUN VARIATION A

Broad Run A begins at Route 1 approximately 0.1 mile north of Beaverdam Run on the east side of Loudoun County Parkway. From there, Broad Run A continues south for 0.2 mile, crossing Beaverdam Run and collocating with Loudoun County Parkway. Broad Run A then follows the east side of Loudoun County Park for approximately 1.3 miles, crossing the Loudoun Water Broad Run Water Reclamation Facility (BRWRF) parcel, Reuse Lane, Aquiary Way, Gloucester Parkway, and Coach Gibbs Drive. Broad Run A then turns southeast for approximately 0.3 mile along the W&OD Trail, crossing over Broad Run toward the existing Paragon Substation. It then turns northeast for 0.2 mile and southeast for 0.2 mile, where it

reconnects with Route 1 near Pacific Boulevard. In total, Broad Run A is approximately 2.2 miles in length with a right-of-way encompassing about 29.7 acres.

BROAD RUN VARIATION B

Broad Run B begins at Route 1 approximately 0.6 mile south of Russell Branch Parkway on the east side of Loudoun County Parkway. From there, Broad Run B turns east for 0.4 mile then south for 0.8 mile across Loudon Water's BRWRF parcel following an existing Company overhead distribution line and a buried sewer utility right-of-way and access road. It then crosses Broad Run and continues to the south for 0.2 mile before crossing Gloucester Parkway, then continues south for 0.6 mile, passing existing BECO Substation and continuing south for 0.2 mile, where it crosses Pacific Boulevard and Cabin Branch and joins with Route 1. In total, Broad Run B is approximately 2.3 miles in length with a right-of-way encompassing about 30.6 acres.

PROPOSED SUBSTATIONS

The proposed 500-230 kV Aspen Substation will be located on approximately 10.0 acres 0.2 mile southwest of Cochran Mill Road. The proposed 500-230 kV Golden Substation will be located on approximately 9.0 acres. Impacts associated with the proposed Aspen Substation and proposed Golden Substation footprints are included in the impacts for Route 1 rather than individually.

DESKTOP EVALUATION METHODOLOGY

The area of effect considered for this study consists of the proposed rights-of-way identified above within which the electric transmission lines would be constructed and operated. Data sources used for this review include the following, each of which is described briefly below:

- USA National Agricultural Imagery Program (NAIP) Natural Color Images, Virginia, 1-meter pixel resolution (NAIP 2023)
- USA NAIP Imagery: Color Infrared NAIP Infrared Images, Virginia, 1-meter pixel resolution (NAIP 2023a)
- USGS 10-meter Digital Elevation Model (USGS 2022)
- Current aerial imagery, taken in spring of 2023 (Loudoun County 2023)
- Historic aerial imagery (Google LLC 2022)
- ESRI World Topographic Map, multiple scales (ESRI et al. 2023)
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) mapping (USFWS 2023)

- U.S. Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) Soil Survey Geographic (SSURGO) database (USDA-NRCS 2023)
- USGS National Hydrography Dataset (NHD) Plus High Resolution (USGS 2023)

NATURAL COLOR AND INFRARED AERIAL PHOTOGRAPHY

Recent (2023) natural color aerial photography was used to provide a visual overview of the Project area and to assist in evaluating current conditions. Infrared aerial photography was used to identify the potential presence of wetlands based on signatures associated with the levels of reflectance. For example, areas that are inundated with water appear very dark (almost black) due to the low level of reflectance in the infrared spectrum. The presence of these dark colors can be used as a potential indicator of hydric or inundated soils that are likely associated with wetlands.

TOPOGRAPHIC MAPS

Recent ESRI world topographic maps show the topography of the area as well as other important landscape features such as forest cover, development, buildings, agricultural areas, streams, lakes, and wetlands (USGS 2022; ESRI et al., 2023).

USFWS NATIONAL WETLAND INVENTORY MAPPING

NWI maps provide the boundaries and classifications of potential wetland areas as mapped by the USFWS (USFWS 2023). NWI data is based primarily on aerial photo interpretations with limited ground-truthing and may represent incorrect boundaries or wetland cover types. NWI data can be unreliable in some areas, especially in forested landscapes, where aerial photography is used as the major data source. The classifications of the majority of the NWI polygons in the study area appear to be accurate based on a review of the cover types observed in the aerial photography. However, in areas where there was an obvious discrepancy between the NWI classification and the aerial photography, ERM modified the classification to more accurately reflect current conditions. To acknowledge ERM's adjustment of NWI classifications where appropriate, all wetland types referenced in this assessment are referred to as "assigned wetland cover types" regardless of whether the cover type was modified from the NWI classification.

USDA-NRCS SOILS DATA

Soils in the study area were identified and assessed using the SSURGO database, which is a digital version of the original county soil surveys (USDA-NRCS 2023). The attribute data within the SSURGO database provides the proportionate extent of the component soils and their properties (e.g., hydric rating) for each soil map unit. The soils in the study area were grouped into three categories based on the hydric rating of the component soils within each map unit: hydric, partially hydric, and non-hydric. Hydric soils were defined as those where the major component soils, and minor components in some cases, are designated as hydric. Hydric

components in these map units account for more than 80 percent of the map unit. Partially hydric soils include map units that only contain minor component soils that are designated as hydric. The partially hydric map units in the Project area contain 10 percent or less hydric soils. The remaining map units do not contain any component soils that are designated as hydric. Areas mapped as hydric or partially hydric have a higher probability of containing wetlands than areas with no hydric soils.

USGS NATIONAL HYDROGRAPHY DATASET

The National Hydrography Dataset (NHD) dataset contains features such as lakes, ponds, streams, rivers, and canals (USGS 2023). The waterbodies mapped by the NHD appeared generally consistent with those visible on the USGS maps and aerial photography.

PROBABILITY ANALYSIS

ERM used a stepwise process to identify probable wetland areas along the route segments, as follows:

1. Infrared and natural color aerial photography was used in conjunction with topographic maps and soils maps to identify potential wetland areas. Boundaries were assigned to the areas that appeared to exhibit wetland signatures based on this review and a cover type was determined based on aerial photo interpretation. For the purpose of the study, these areas are referred to as Interpreted Wetlands.
2. To further determine the probability of a wetland occurring within a given location, the Interpreted Wetland polygon shape files were digitally layered with the NWI mapping and soils information from the SSURGO database.
3. The probability of a wetland occurring was assigned based on the number of overlapping data layers (i.e., indicators of potential wetland presence) that occurred in a particular area.

The criteria assigned to each probability are outlined in Table 1.

Table 1: Criteria Used to Rank the Probability of Wetland Occurrence

Probability	Criteria
High	Areas where layers of hydric soils, Interpreted Wetlands, and NWI data overlap
Medium/High	NWI data overlaps hydric soils; or NWI data overlaps Interpreted Wetlands with or without partially hydric soils; or Hydric soils overlap Interpreted Wetlands
Medium	Interpreted Wetlands with or without overlap by partially hydric soils
Medium/Low	Hydric soils only; or NWI data with or without overlap by partially hydric soils

Probability	Criteria
Low	Partially hydric soils only
Very Low	Non-hydric soils only

WETLAND AND WATERBODY CROSSINGS

The desktop analysis provides a probability of wetlands and waterbody occurrence within each route, with wetlands classified based on the Cowardin classification system described below:

- Palustrine Emergent (PEM) – wetlands characterized by erect, rooted, herbaceous hydrophytes (i.e., aquatic plants) and woody species less than 3 feet in height, excluding mosses and lichens;
- Palustrine Scrub-Shrub (PSS) – wetlands characterized by woody vegetation, excluding woody vines, approximately 3 to 20 feet in height;
- Palustrine Forested (PFO) – wetlands characterized by woody vegetation, excluding woody vines, approximately 20 feet or more in height and 3 in. or larger diameter at breast height (DBH);
- Palustrine Unconsolidated Bottom (PUB) – wetlands characterized by bottom substrate particles smaller than stones (less than 10 inches) covering greater than 25 percent of the area, with plants covering less than 30 percent of the area; and
- Riverine – wetlands within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergent, emergent mosses, or lichens, and (2) habitats with water containing ocean-derived salts in excess of 0.5%. (USFWS 2013).

As stated above, field delineations were not performed by the Company and would be required to verify the accuracy and extent of aquatic resource boundaries. A range of wetland occurrence probabilities are reported by this study from very low to high. The probability of wetland occurrence increases as multiple indicators begin to overlap towards the "high" end of the spectrum. The medium, medium-high and high probability categories are the most reliable representation of in-situ conditions, due to overlapping data sets, and these categories are reported in the summary below as a percentage of the total acreage of each route. Attachment 2 depicts the interpreted wetland types and probabilities displayed on color base map images.

FIELD DELINEATIONS COMPLETED WITHIN THE PROPOSED ROUTE SEGMENTS

Field delineations were completed by external parties in association with unrelated projects along Route 1 between Belmont Ridge Road and Belmont Park Variation A and along Broad Run Variation B between Beaverdam Run and Broad Run. A field delineation was completed by Wetland Studies and Solutions Inc. in September 2020 and revised in January 2023 along Route 1 (between MPs 2.0 and 2.8) southeast of the intersection of Belmont Ridge Road and Rt. 7. This field delineation was approved by the Corps in an Approved Jurisdictional

Determination in April 2023. Another field delineation of wetlands and waterbodies was conducted on behalf of Loudoun Water in 2013 in connection with a floodplain development permit (issued in 2016) and includes areas between MPs 0.3 and 1.0 of Broad Run Variation B.

These field delineations were used to outline boundaries of potential wetlands in these locations in lieu of the wetland desktop delineation method. The field delineated boundaries in these locations are incorporated into the wetland and waterbody probability table below.

RESULTS

Results of the probability analysis are presented in Table 2 below. Summaries are provided in the sections following the table.

Table 2: Summary of the Probabilities of Wetland and Waterbody Occurrence along the Route and Route Variations[a,b]

Probability	Total within right-of-way (acres) [c]	Wetland and Waterbody type (acres)				
		PEM Emergent	PFO Forested	PSS Scrub-shrub	PUB Freshwater pond	Riverine
Route 1						
High	1.8	0.7	1.0	0.0	0.0	0.1
Medium/High	8.2	3.2	3.6	0.0	0.6	0.8
Medium	6.5	1.0	1.9	1.5	1.6	0.4
Medium/Low	0.3	0	0.0	0.0	0.0	0.3
Low	N/A	N/A	N/A	N/A	N/A	N/A
Very Low	N/A	N/A	N/A	N/A	N/A	N/A
Belmont Park Variations						
Belmont Park Variation A						
High	NA	NA	NA	NA	NA	NA
Medium/High	0.4	0.0	0.4	NA	NA	NA
Medium	0.4	0.1	0.2	NA	NA	NA
Medium/Low	NA	NA	NA	NA	NA	NA
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Belmont Park Variation B						
High	NA	NA	NA	NA	NA	NA
Medium/High	1.9	0.6	1.4	NA	NA	NA
Medium	0.6	0.2	0.4	NA	NA	NA

Probability	Total within right-of-way (acres) [c]	Wetland and Waterbody type (acres)				
		PEM Emergent	PFO Forested	PSS Scrub-shrub	PUB Freshwater pond	Riverine
Medium/Low	NA	NA	NA	NA	NA	NA
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Broad Run Variations						
Broad Run Variation A						
High	0.4	NA	0.3	NA	NA	0.0
Medium/High	2.6	0.6	1.7	NA	NA	0.3
Medium	3.7	0.4	3.2	NA	0.0	0.0
Medium/Low	0.4	0.0	0.2	0.3	0.0	0.0
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Broad Run Variation B						
High	2.3	0.0	2.2	NA	NA	0.0
Medium/High	7.4	1.8	5.2	NA	0.0	0.4
Medium	4.2	0.9	2.8	NA	0.4	0.0
Medium/Low	1.4	NA	1.4	NA	NA	NA
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA

Note: Totals may not equal the sum of addends due to rounding.

NA: Not applicable due to absence of wetland or waterbody type within the route

a Numbers in this table have been rounded for presentation purposes; as a result, the totals may not reflect the sum of the addends.

b Route 1 includes the Aspen and Golden Substations and the Line Loop footprints.

c Total acres may not total the sum of wetland and waterbody types because some of the lower probability rankings do not overlap with NWI or interpreted wetlands, and therefore do not have a wetland/waterbody type associated with them.

WETLAND CROSSINGS

ROUTE 1

The length of the corridor of Route 1 is approximately 6.6 miles and encompasses a total of approximately 104.4 acres (including the 5.9-acre Aspen and 8.5-acre Golden Substation footprints and the Line Loop). Based on the methodology discussed above, the right-of-way footprint will encompass approximately 15.8 percent (16.5 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Based on ERM's desktop wetland and waterbody analysis, the Route 1 right-of-way would cross approximately 16.5 acres of

wetlands, including 6.5 acres of palustrine forested ("PFO") wetlands, 1.6 acres of palustrine scrub-shrub ("PSS"), 4.9 acres of palustrine emergent ("PEM") wetlands, 2.3 acres of palustrine unconsolidated bottom ("PUB") wetlands, and 1.3 acres of riverine wetlands.

BELMONT PARK VARIATIONS

BELMONT PARK VARIATION A

The length of the corridor of Belmont A is approximately 0.6 miles and encompasses a total of approximately 6.9 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 11.8 percent (0.8 acres) of land with a medium or higher probability of containing wetlands and waterbodies. The approximately 0.8 acre of wetlands includes 0.7 acre of PFO and 0.2 acre of PEM wetlands.

BELMONT PARK VARIATION B

The length of the corridor of Belmont B is approximately 0.6 miles and encompasses a total of approximately 7.7 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 32.9 percent (2.5 acres) of land with a medium or higher probability of containing wetlands and waterbodies. The approximately 2.5 acres of wetlands includese 1.8 acres of PFO and 0.7 acre of PEM wetlands.

BROAD RUN VARIATIONS

BROAD RUN VARIATION A

The length of the corridor of Broad Run A is approximately 2.2 miles and encompasses a total of approximately 29.7 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 22.2 percent (6.6 acres) of land with a medium or higher probability of containing wetlands and waterbodies. The approximately 6.6 acres of wetlands includes 5.3 acres of PFO, 1.0 acre of PEM, <0.1 acre of PUB, and 0.4 acre of riverine wetlands.

BROAD RUN VARIATION B

The length of the corridor of Broad Run B is approximately 2.3 miles and encompasses a total of approximately 30.6 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 45.3 percent (13.9 acres) of land with a medium or higher probability of containing wetlands and waterbodies. The approximately 13.9 acres of wetlands includes 10.3 acres of PFO, 2.7 acres of PEM, 0.4 acre of PUB, and 0.4 acre of riverine wetlands.

WATERBODY CROSSINGS

ERM identified and mapped waterbodies in the study area using similar publicly available GIS databases as those used to identify and map wetlands. Route 1 and the Variations cross

perennial and intermittent waterbodies (rivers, streams, tributaries, and open water features). Named waterbody crossings include perennial streams Sycolin Creek, Goose Creek, Russell Branch, and Beaverdam Run (Route 1), Broad Run (Broad Run Variations A and B), and Cabin Branch (Broad Run Variation B). According to the U.S. Army Corps of Engineers ("Corps") documentation, no waters considered navigable under Section 10 of the Rivers and Harbors Act are crossed by Route 1 and the Variations for the Project.

ROUTE 1

Route 1 would have a total of 32 waterbody crossings. Of these, 16 are NHD-mapped waterbody crossings, including three perennial streams (Sycolin Creek, Goose Creek, and Russell Branch), 12 unnamed, intermittent streams, and one lake/pond. There are 16 unmapped waterbodies, including 11 open waterbody features that appear to be stormwater control features and five unnamed, unclassified streams identified within the right-of-way using recent aerial imagery (spring 2023). Based on ERM's desktop wetland and waterbody analysis, the Route 1 right-of-way would encompass approximately 1.3 acres of riverine wetlands and 2.3 acres of PUB wetlands.

BELMONT PARK VARIATIONS

Based on ERM's desktop wetland and waterbody analysis, the Belmont Park Variations would not cross any NHD-mapped or unmapped waterbodies.

BROAD RUN VARIATIONS

BROAD RUN VARIATION A

Broad Run Variation A would have a total of five waterbody crossings. Of these, four are NHD-mapped waterbody crossings, including 2 perennial streams (Beaverdam Run and Broad Run) and two unnamed intermittent tributaries to Broad Run. There is one unmapped open waterbody feature identified within the right-of-way using recent aerial imagery (spring 2023). Based on ERM's desktop wetland and waterbody analysis, the Broad Run Variation A right-of-way would encompass approximately 0.4 acre of riverine wetlands and less than 0.1 acre of PUB wetlands.

BROAD RUN VARIATION B

Broad Run Variation B would have a total of six waterbody crossings. Of these, three are NHD-mapped perennial streams (Beaverdam Run, Broad Run, and Cabin Branch) and two are NHD-mapped unnamed intermittent tributaries to Broad Run. There is one unmapped open waterbody feature identified within the right-of-way using recent aerial imagery (spring 2023). Based on ERM's desktop wetland and waterbody analysis, the Broad Run Variation A right-of-way would encompass approximately 0.4 acre of riverine and 0.4 acre of PUB wetlands.

PROJECT IMPACTS

Avoiding or minimizing new impacts on wetlands and streams was among the criteria used in developing routes for the Project. To minimize impacts on wetland areas, the transmission line has been designed to span or avoid wetlands where possible, keeping transmission structures outside of wetlands to the extent practicable. Direct impacts to wetlands would be limited to placement of structures within wetlands if unavoidable and the permanent conversion of PSS/PFO wetlands within the right-of-way to PSS or PEM type wetlands.

There would be no change in contours of wetlands and waterbodies, or redirection of the flow of water, and the amount of spoil from foundations and structure placement would be minimal. Excess soil in wetlands generated through foundation construction would be limited through the use of Best Management Practices (erosion and sediment controls) and would be removed from the wetland.

The majority of potential direct impacts on wetlands due to Project construction would be temporary in nature. Mats would be used for construction equipment to travel over wetlands, as appropriate. Due to the absence of an existing right-of-way, some new access roads may be necessary along the route. If a section of line cannot be accessed from existing roads, Dominion Energy Virginia may need to install a culvert, ford, or temporary bridge along the right-of-way to cross small streams. In such cases, some temporary fill material in wetlands adjacent to such crossings may be required. This fill would be placed on erosion control fabric and removed when work is completed, returning ground elevations to original contours. When siting transmission lines, perpendicular crossings of wetland systems are prioritized to minimize direct impacts to these sensitive areas and reduce overall impacts to the watershed.

Where the removal of trees or shrubby vegetation occurs within wetlands, Dominion Energy Virginia would use the least intrusive method reasonably possible to clear the corridor. Hand-cutting of vegetation would be conducted, where needed, to avoid and minimize impacts on streams and/or wetlands. Where tree clearing is required within the new right-of-way, PFO and PSS wetlands would be permanently converted to PSS or PEM wetland types. Forested wetlands and riparian buffers provide functions such as peak flood flow reduction, nutrient and sediment capture, filtration of pollutants to adjacent waterbodies, and habitat diversity. The conversion of forested wetlands would reduce or eliminate some of these functions.

Required tree removal adjacent to waterbodies would reduce riparian buffer functions such as stream bank stabilization and erosion control, nutrient and sediment filtration, floodwater storage and peak flow reduction, and water temperature modification from shading. Vegetation within the right-of-way would be allowed to return to maintained grasses and shrubs after construction, which would provide some filtration stabilization to help protect waterbodies from pollutants. Within the stream buffers (100 feet), all trees will be hand felled with stumps left in place to reduce the potential for erosion. Shrubs and trees with a diameter at breast height of less than three inches will be left in place unless it impedes temporary

access where they would be clipped, leaving roots in place which will be able to naturally regenerate.

SUMMARY

This Wetland and Waterbody Summary report was prepared in accordance with the Memorandum of Agreement between the DEQ and the SCC for the purpose of initiating a Wetlands Impact Consultation. Please note that a formal onsite wetland delineation was not conducted as part of this review.

In addition, there is a Project website where the SCC application will be available after filing, as well as maps and discussions about the Project. It can be accessed by going to: www.dominionenergy.com/NOVA.

If you have any questions regarding this wetland assessment, please contact me at 612-347-7178 or by email at mariah.weitzenkamp@erm.com.

Sincerely,

Mariah Weitzenkamp
Environmental Resources Management

cc: Laura Meadows, Dominion Energy Virginia
James Young, Dominion Energy Virginia

Enclosures: Attachments 1 and 2

REFERENCES

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ATTACHMENT 1

PROPOSED ASPEN SUB

PROPOSED GOLDEN SUB

Lansdowne
Belmont
Sycolin
Dunlin
Goose Creek Village
Ashburn
One Loudoun
University Center
Countryside
Cascades
Sugarland Run
Dulles Town Center
Broadlands
Moorefield
Evergreen Mills
Banshee Reeks Nature Preserve
Beaverdam Reservoir
Leesburg Executive Airport
Academies of Loudoun
Bazil Newman Riverfront Park
Lansdowne Golf Club
Bles Park / Eastern Loudoun Adult Day Center
Chesapeake and Ohio Canal
Horsepen Branch
McKee-Beshers WMA
Islands of the Potomac WMA
Algonkian Regional Park
Claude Moore Park / Recreation and Community Center / Heritage Farm Museum
1757 Golf Club
Battlefield Pkwy SE
Crosstrail Blvd
Riverside Pkwy
Claiborne Pkwy
Hay Rd
Ashburn Farm Pkwy
Gloucester Pkwy
Ashburn Rd
Farmwell Rd
Waxpool Rd
Dennott Dr
Sycolin Rd
Croson Ln
Loudoun County Pkwy
Moran Rd
Sully Rd
River Rd
Hughes Rd
Algonkian Pkwy
392 ft
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636
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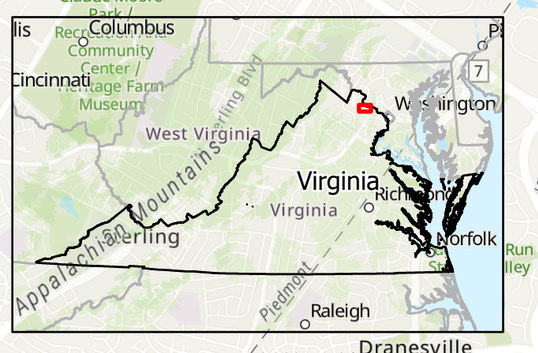

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- Proposed Substation
- Study Area
- Route 1
- Belmont Park Variation A
- Belmont Park Variation B
- Broad Run Variation A
- Broad Run Variation B
- Aspen-Goose Creek Line
- Lines #2081/#2150 Loop

Attachment 1
Project Overview
Aspen-Golden 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy

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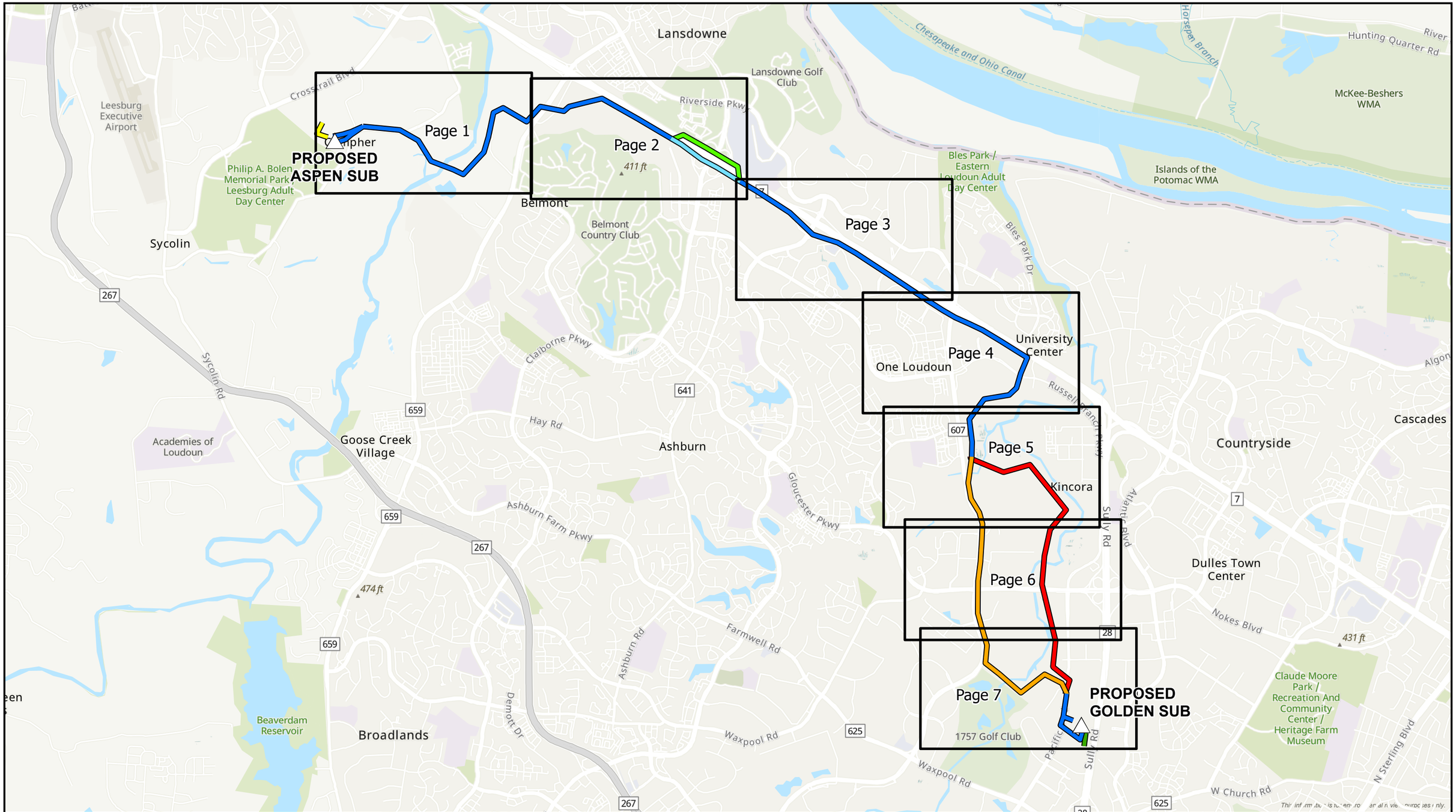
222 South 9th Street
Suite 2900
Minneapolis, Minnesota 55402

T +0 804 253 1090
F +0 804 253 1091

erm.com

ATTACHMENT 2



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- Page Index
- Route 1
- Belmont Park Variation A
- Belmont Park Variation B
- Broad Run Variation A
- Broad Run Variation B
- Aspen-Goose Creek Line
- Lines #2081/#2150 Loop

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Attachment 2
Wetland and Waterbody Index
Aspen-Golden 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

Dominion Energy

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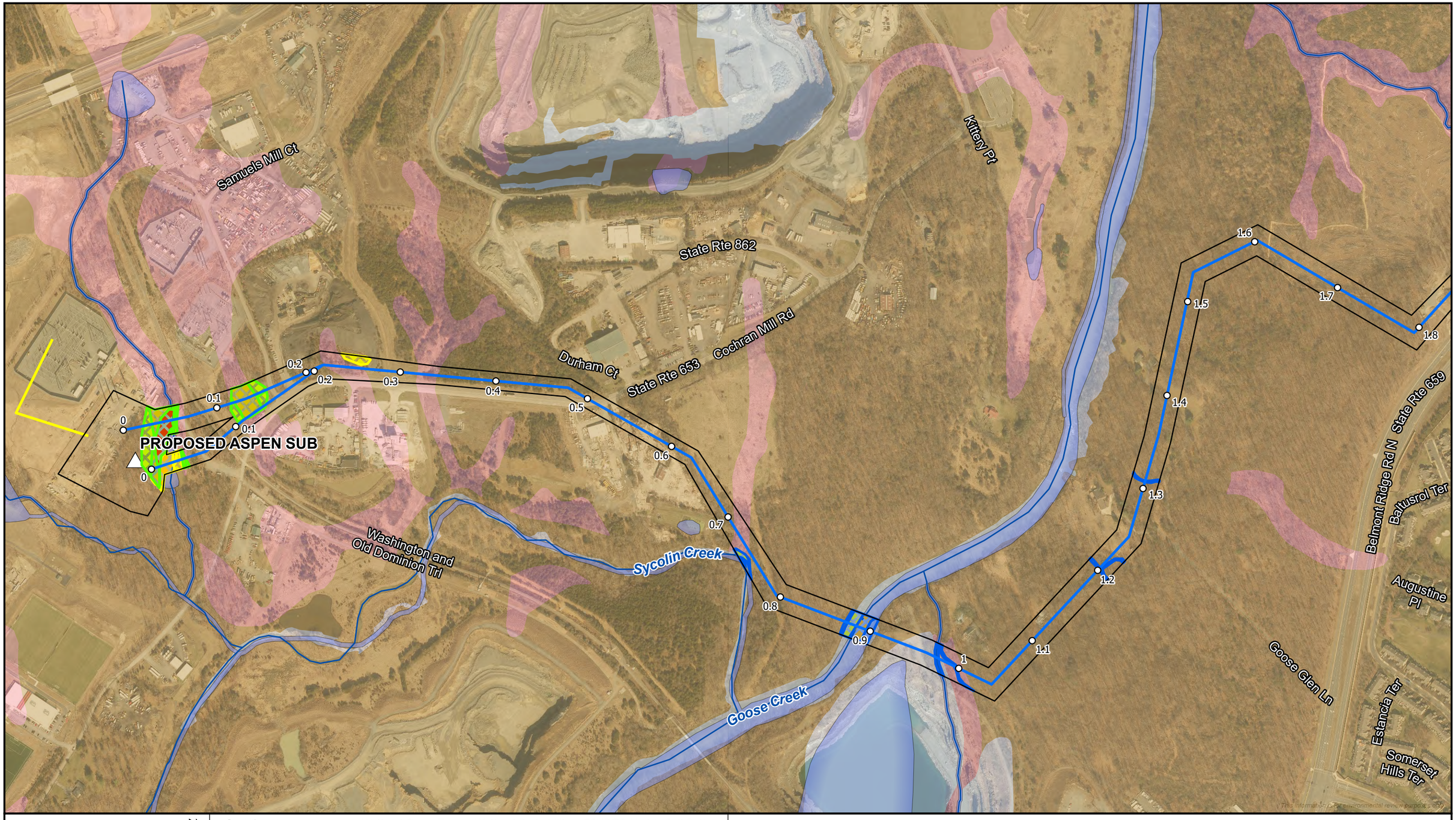

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Mileposts
Route 1
Aspen-Goose Creek Line
Right-of-Way
NWI Wetland

Wetland Cover Type
PFO
PUB
Riverine

Wetland Probability
Medium
Medium/High
High

SSURGO Hydric Soil Rating
Not Hydric Soil
Partially Hydric Soil
Hydric Soil

ERM

Attachment 2
Wetland and Waterbody Mapset
Aspen-Golden 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

Dominion Energy

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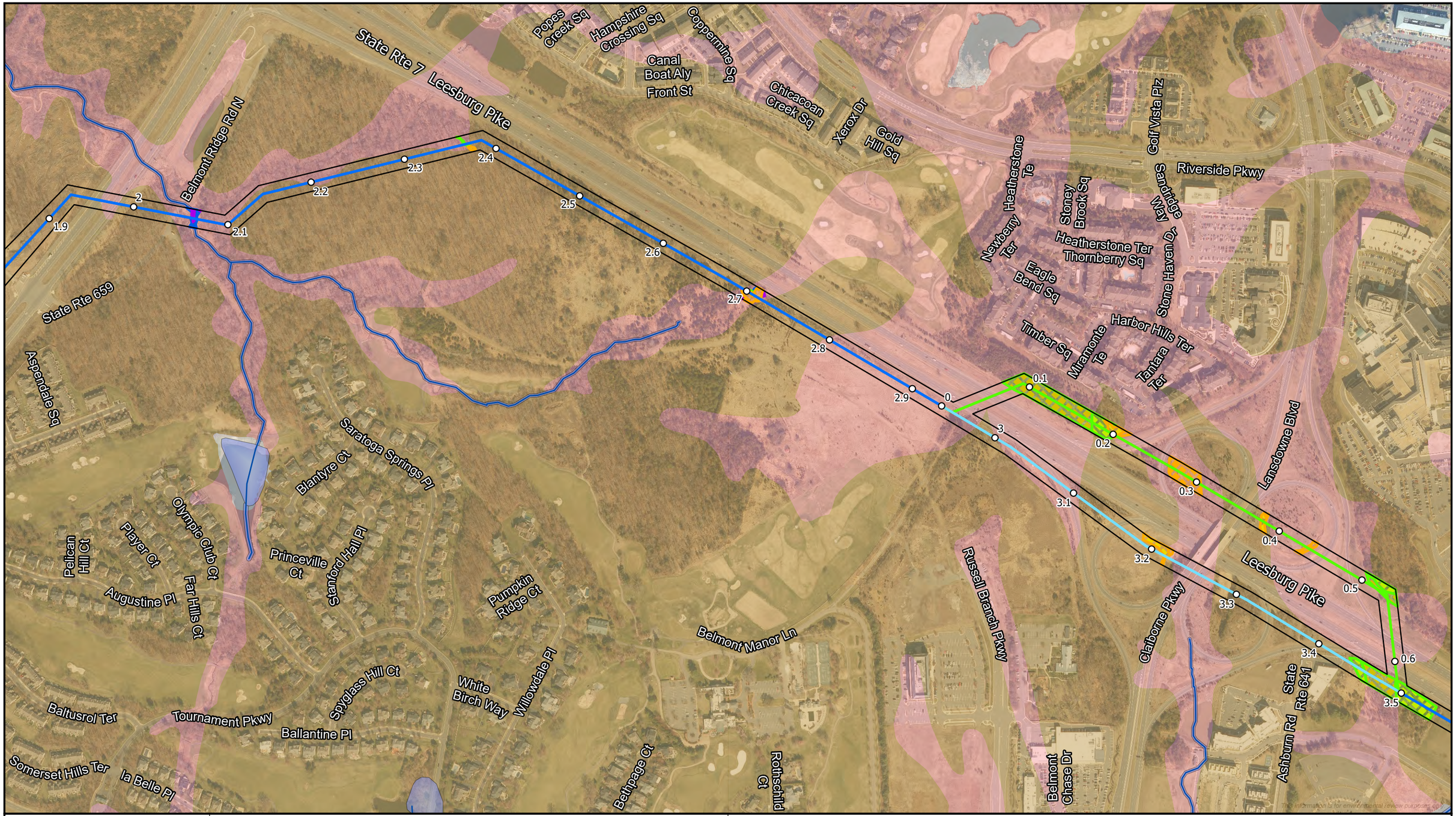

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Mileposts
Route 1
Belmont Park Variation A
Belmont Park Variation B
Right-of-Way
NWI Wetland

Wetland Cover Type
PEM
PFO
PSS
Riverine

Wetland Probability
Medium
Medium/High
High

SSURGO Hydric Soil Rating
Not Hydric Soil
Partially Hydric Soil
Hydric Soil

ERM

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Dominion Energy Virginia
Loudoun County, Virginia

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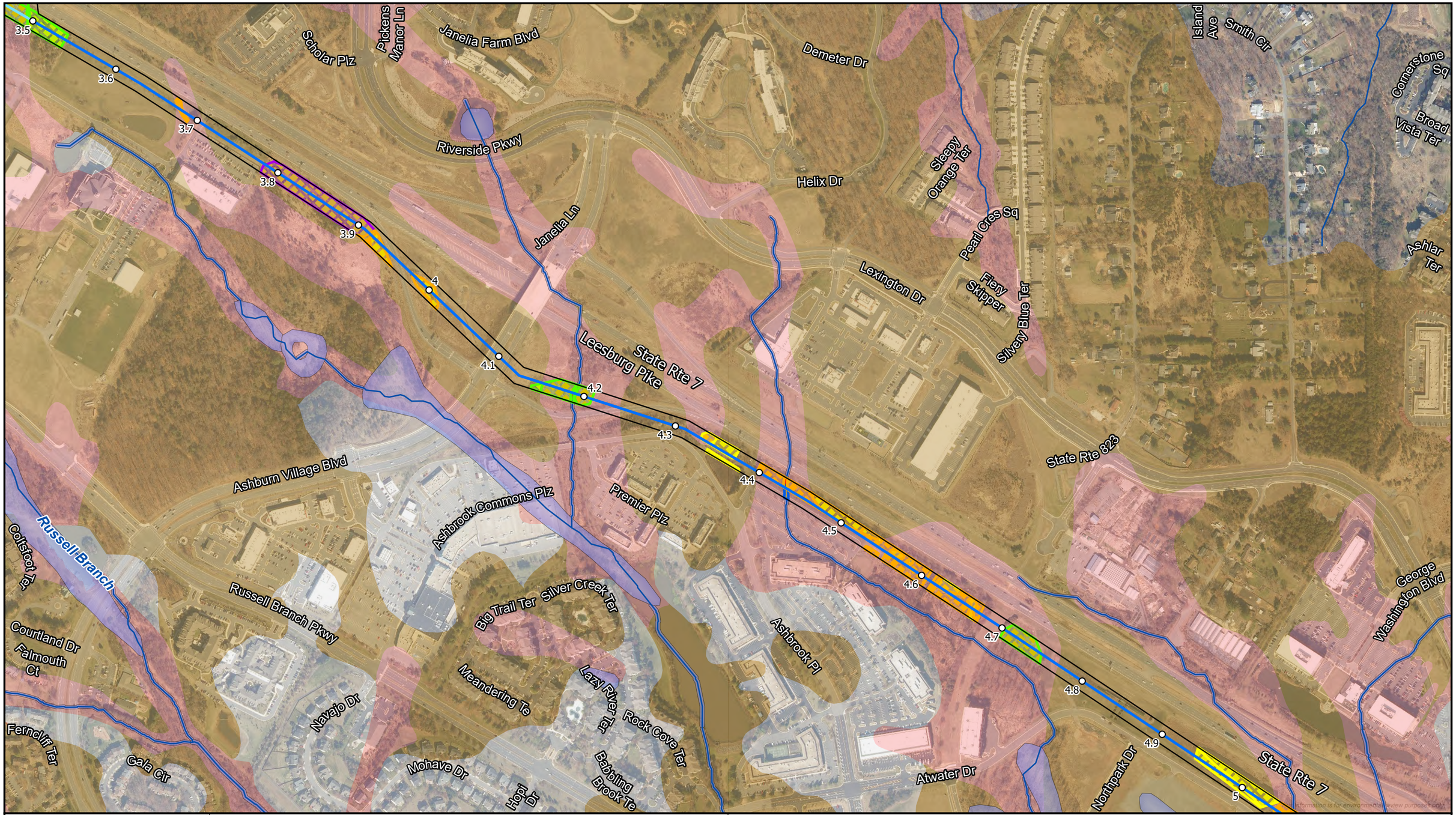

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- Route 1
- Belmont Park Variation A
- Belmont Park Variation B
- Right-of-Way
- NWI Wetland

Wetland Cover Type
- PEM
- PFO
- PSS
- PUB

- Riverine

Wetland Probability
- Medium
- Medium/High
- High

SSURGO Hydric Soil Rating
- Not Hydric Soil
- Partially Hydric Soil
- Hydric Soil

ERM

Attachment 2
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Aspen-Golden 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

Dominion Energy

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Feet

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Mileposts
Route 1
Right-of-Way
NWI Wetland

Wetland Cover Type
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PFO
PUB
Riverine

Wetland Probability
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Medium/High
High

SSURGO Hydric Soil Rating
Not Hydric Soil
Partially Hydric Soil
Hydric Soil

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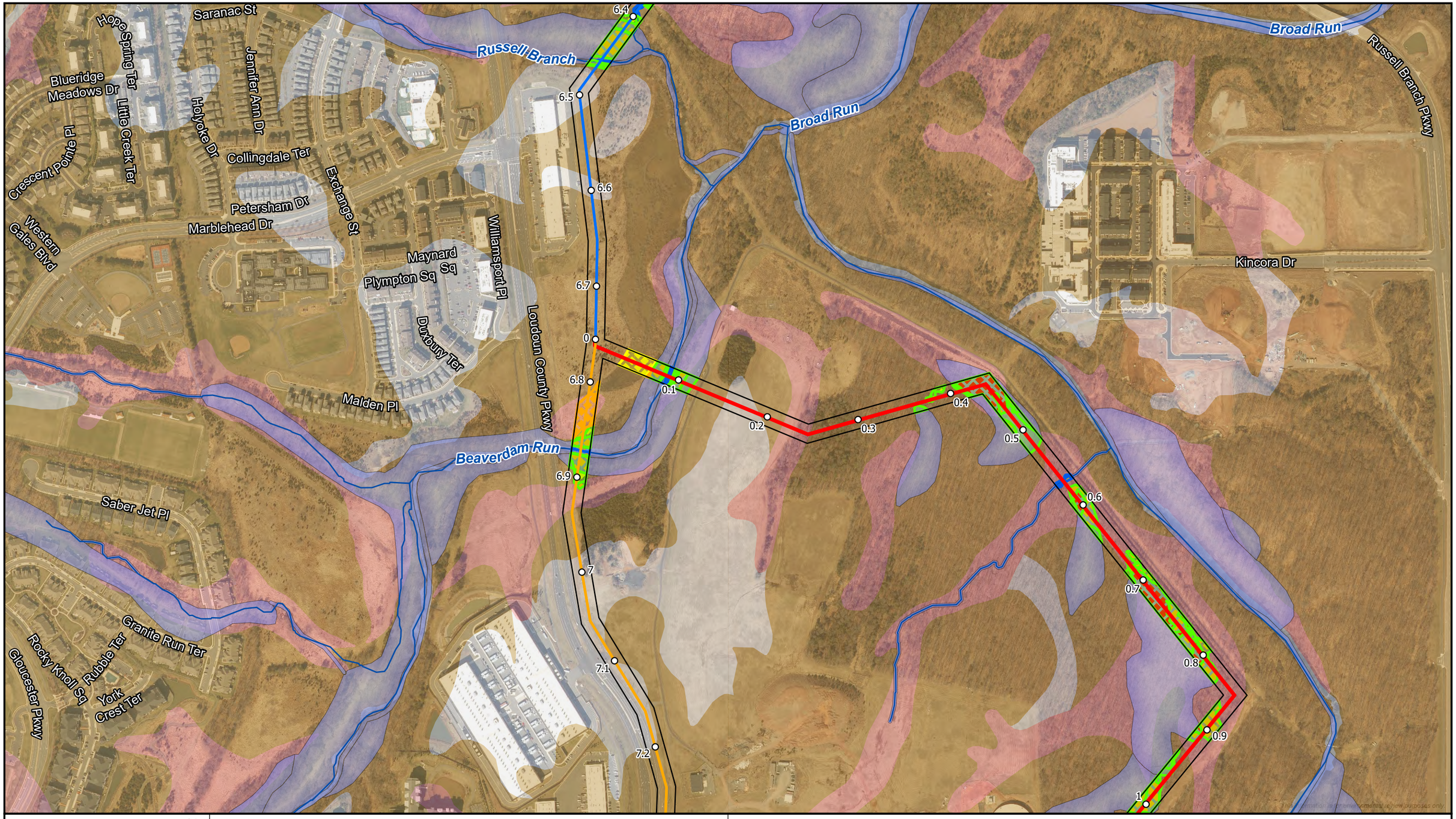

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Dominion Energy Virginia
Loudoun County, Virginia

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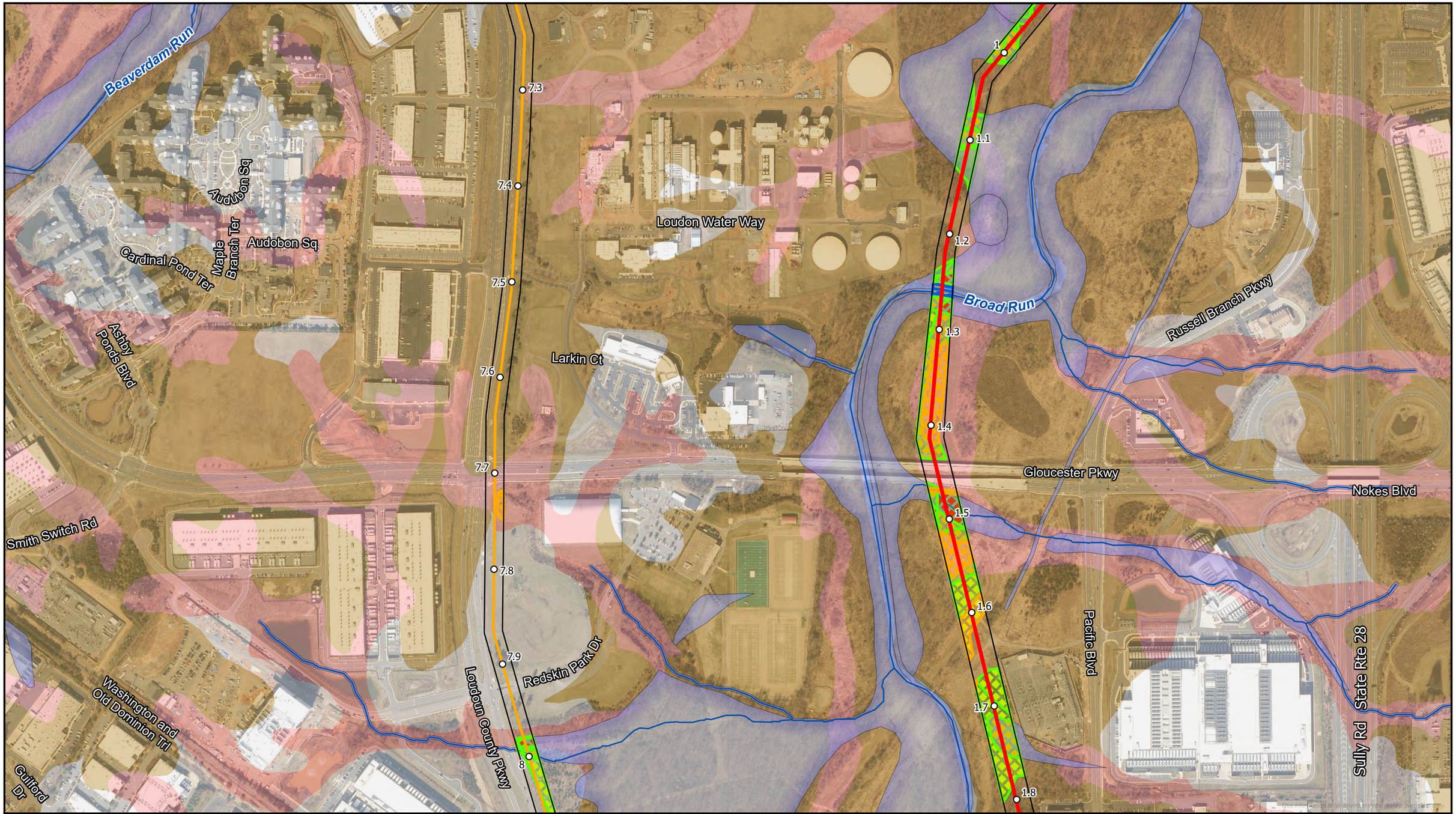

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Feet

N

- Mileposts
- Broad Run Variation A
- Broad Run Variation B
- Right-of-Way
- NWI Wetland

Wetland Cover Type
- PEM
- PFO
- Riverine

Wetland Probability
- Medium
- Medium/High
- High

SSURGO Hydric Soil Rating
- Not Hydric Soil
- Partially Hydric Soil
- Hydric Soil

ERM

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Loudoun County, Virginia

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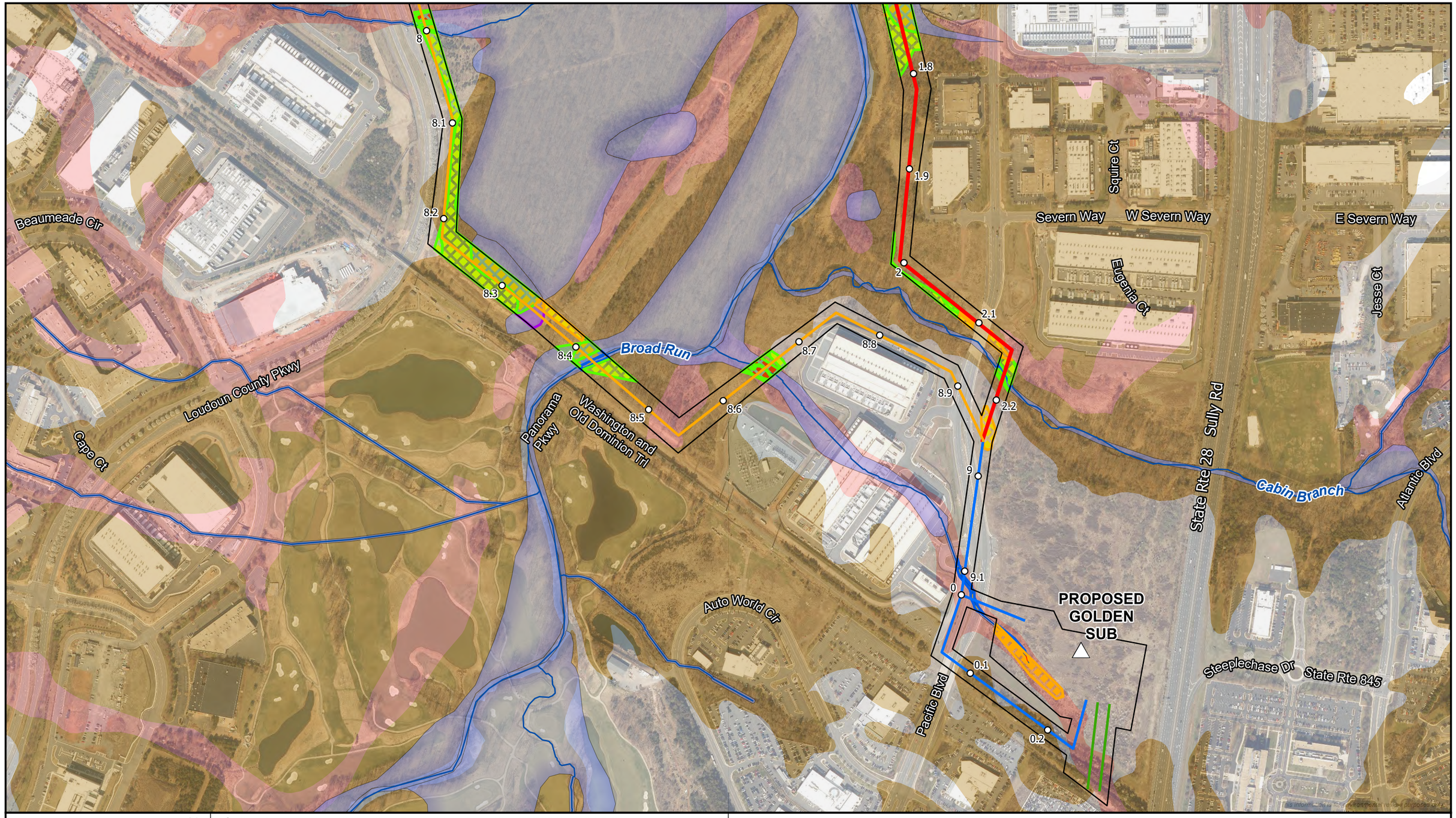

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Mileposts
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Broad Run Variation A
Broad Run Variation B
Lines #2081/#2150 Loop
Right-of-Way
NWI Wetland

Wetland Cover Type
PEM
PFO
PSS
Riverine

Wetland Probability
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Medium/High
High

SSURGO Hydric Soil Rating
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Partially Hydric Soil
Hydric Soil

ERM

Attachment 2
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Aspen-Golden 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

Dominion Energy

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APPENDIX E APPROVED JURISDICTIONAL DETERMINATION

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NORFOLK DISTRICT
FORT NORFOLK
803 FRONT STREET
NORFOLK VA 23510-1011

April 25, 2023

NOTIFICATION OF APPROVED JURISDICTIONAL DETERMINATION

Northern Virginia Regulatory Section
NAO-2020-02065 (Russell Branch)

Toll Brothers, Inc.
Attn. Greg Leygraaf
24323 Marrwood Drive, Suite B
Aldie, Virginia 20105

Dear Mr. Leygraaf:

This letter is in regard to your request for an approved jurisdictional determination for the waters of the U.S. (including wetlands) on the 113-acre property, known as Northstar Square (AKA Russell Branch Parkway Extension). The site is located at 500 feet southeast of the Belmont Ridge Road and Harry Byrd Highway intersection Loudoun County, Virginia.

On February 2, 2023, the U.S. Army Corps of Engineers (Corps) received your request for an approved jurisdictional determination for the above referenced project area. Based upon a desktop evaluation, the 33 CFR 329 definition of navigable waters of the United States, and the 33 CFR 328 definition of waters of the United States and federal regulation of navigable waters, the Corps determines:

There are waters of the U.S. within the above-described project area, which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344) and/or Section 10 of the Rivers and Harbors Act. These waters exhibit wetland criteria as defined by the 1987 Corps of Engineers Wetland Delineation Manual, pre-2015 Rapanos Regulatory Regime and the Eastern Mountains and Piedmont Regional Supplement. This site also contains waters with an ordinary high-water mark that are part of the tributary system to Navigable Waters of the U.S.

The above-described project area contains isolated wetlands (SW-1, SW-2, SW-3, and SW-4), which are not subject to the permitting requirements of Section 404 of the Clean Water Act (pre-2015 Rapanos Regulatory Regime) nor Section 10 of the Rivers and Harbors Act. Any discharge of dredged and/or fill material into these non-jurisdictional wetlands/waters will not require a Department of Army Permit; however, you may be required to obtain a permit from the Virginia Department of Environmental Quality (DEQ) for activities affecting these isolated wetlands/waters and we are notifying them by copy of this letter.

The delineation included herein has been conducted to identify the location, extent, and jurisdictional status of the waters within the established project area for purposes of Section 404 of the Clean Water Act (CWA). The Corps verifies the delineation of waters of the U.S. depicted on the map entitled "Attachment I: Waters of the US (Including Wetlands) Delineation Map, NorthStar Square, Loudoun County, Virginia," dated September 20, 2023, latest revision date January 1, 2023, and conducted by Wetland studies and Solution, Inc. Please note, we are not confirming the Cowardin classifications of these waters, nor the limits/jurisdiction status of any waters mapped outside the above-described project area.

Please be aware that you may be required to obtain a Corps permit for any permanent or temporary discharges of dredged and/or fill material into waters of the U.S. In addition, you may be required to obtain a Corps permit for certain activities occurring within, under, or over a navigable water of the U.S. subject to Section 10 of the Rivers and Harbors Act. Furthermore, you may be required to obtain state and local authorizations, including a Virginia Water Protection Permit from DEQ, a permit from the Virginia Marine Resource Commission (VMRC), and/or from your local wetlands board. Any discharges of dredge and/or fill material into waters not subject to Corps jurisdiction (i.e., isolated waters) will not require a Corps permit but may require state or local authorization as cited above.

This delineation and jurisdictional determination may not be valid for the Wetland Conservation Provisions of the Food Security Act of 1985, as amended. Therefore, if you or your tenant are U.S. Department of Agriculture (USDA) program participants, or anticipate participation in USDA programs, you should discuss the applicability of a certified wetland determination with the local USDA service center, prior to starting work.

The Norfolk District has relied on the information and data provided by the agent to make this determination. If it is determined such information and data are materially false or materially incomplete, a new determination would be necessary.

ADMINISTRATIVE APPEALS NOTIFICATION

This letter constitutes an approved jurisdictional determination for the above-described project area. If you object to this determination, you may request an administrative appeal under Corps regulations (33 CFR Part 331.) Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the North Atlantic Division Office at the following address:

ATTN: Mr. Andrew Dangler
Regulatory Appeals Review Officer
U.S. Army Corps of Engineers
North Atlantic Division-Fort Hamilton
301 John Warren Avenue-First Floor
Brooklyn, New York 11252-6700

The Corps will determine whether the RFA is complete and meets the criteria for appeal under 33 CFR 331.5. The RFA must be received at the above address within 60 days of the RFA, and by June 24, 2023. The Corps will not accept incomplete or late RFAs. You do not need to submit an RFA if you do not object to the approved jurisdictional determination.

This approved jurisdictional determination is valid for five years from the date of this notification unless new information (including any changes to the definition of Waters of the United States) warrants revision prior to the expiration date.

If you have any questions regarding this notification, please contact Regena Bronson either via telephone at (757) 201-7828 or via email at Regena.D.Bronson@usace.army.mil.

Sincerely,

Regena Bronson
Project Manager, Northern Virginia
Regulatory Section

Enclosure(s)

Cc: Anna Oesher, Wetlands Studies and Solutions, Inc.

LEGEND

	SITE BOUNDARY
	PERENNIAL STREAM (PER WSSI'S OBSERVATIONS)
	APPROXIMATE LIMITS OF PERENNIAL STREAM (PER WSSI OBSERVATIONS - NOT SURVEYED) NOTE #13
	INTERMITTENT STREAM (PER WSSI'S OBSERVATIONS)
	APPROXIMATE LIMITS OF INTERMITTENT STREAM (PER WSSI OBSERVATIONS - NOT SURVEYED) NOTE #13
	PALUSTRINE FORESTED WETLAND AREAS
	ISOLATED PALUSTRINE FORESTED WETLAND (NOTE #15)
	PALUSTRINE SCRUB/SHRUB WETLAND AREAS
	ISOLATED PALUSTRINE SCRUB/SHRUB WETLAND AREAS (NOTE #15)
	PALUSTRINE EMERGENT WETLAND AREAS
	ISOLATED PALUSTRINE EMERGENT WETLAND AREAS (NOTE #14 AND #15)
#1	SITE PHOTOGRAPHS
/D6	WETLAND FLAGGING POINT/NUMBER (pink-glo)
ZA6 +	WETLAND FLAGGING POINT/NUMBER (pink-glo)
DP2 ⊞	DATA POINT LOCATION/NUMBER (orange and pink-glo) (SURVEYED)
	DATA POINT LOCATION/NUMBER (orange and pink-glo) (NOT SURVEYED)
CMP	CORRUGATED METAL PIPE
CPP	CORRUGATED PLASTIC PIPE
	FLY (CCL & OTHERS)
	FLY POINT (WSSI)
○	IRON PIPE FOUND (IPF)
•	IRON PIPE FOUND
IRF	IRON ROD FOUND
RCP	REINFORCED CONCRETE PIPE
Ⓢ	SANITARY MANHOLE

COWARDIN CLASSIFICATION

R3	RIVERINE UPPER PERENNIAL
R4	RIVERINE INTERMITTENT
PFO	PALUSTRINE FORESTED WETLAND
PSS	PALUSTRINE SCRUB-SHRUB WETLAND
PEM	PALUSTRINE EMERGENT WETLAND

WATERS OF THE U.S. DELINEATION AND SURVEY NOTES:

1. Survey location of wetland boundaries and site boundary was performed by christopher consultants, ltd. and received by Wetland Studies and Solutions, Inc. (WSSI) via email on September 10, 2020 from ESE Consultants, Inc. The base map, including boundary, easements, and physical improvements provided to WSSI by ESE Consultants, Inc. on September 10, 2020 via email is used with their permission.

Field locations of additional WOTUS flags and data points were completed by WSSI on November 15, 2022. Wetlands and other Waters of the U.S. (i.e., streams) flags, data points, and the monumentation shown were located in the field using Real Time Network GPS and conventional survey methods.

2. Horizontal datum shown hereon is referenced to the Virginia Coordinate System (VCS) 1983 - North as established from a current GPS survey. Boundary and physical improvements shown hereon are based on the land records of Loudoun County, VA and field survey performed by christopher consultants, ltd., between the dates of July 10, 2020 and August 7, 2020.

3. Monumentation, including traverse stations and fly points, shown on this drawing should be used to orient wetland locations to any future boundary, topographic, or location survey.

4. Periodic flag numbers are shown depicting the survey-located boundary of wetlands and other waters of the U.S. (i.e., streams etc.). Waters of the U.S. flags are pink-glo in color. Data points are flagged with orange-glo and pink-glo flagging tied together.

5. Boundary information provided by christipher consultants, ltd. and topo/boundary information obtained in digital format from Loudoun County digital data were used as a base for this Attachment.

6. This delineation was performed pursuant to the "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1 (1987 Manual) and subsequent guidance and modification by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0)* dated April 2012.

7. The Routine On-Site Wetland Determination Method for sites more than 5 acres was used for this study area, with multiple transects performed as depicted on this Attachment.

8. Field work was performed on July 9-10, 2020 and July 14, 2020 by Anna Oehser and William Neville, WPIT. Additional field work was performed on October 27, 2022 by Jennifer Favela, PWS, PWD and Rachel Shumway, WPIT.

9. This water of the U.S. (i.e., stream or wetland) originates off-site, upslope.

10. This water of the U.S. (i.e., stream or wetland) or other resource continues off-site, downslope.

11. Stream evaluation methods developed by the North Carolina Division of Water Quality (NCDWQ) and the Fairfax County Department of Public Works and Environmental Services (DPWES) were used in the field to distinguish between ephemeral and intermittent streams (based on the NCDWQ method) and between intermittent and perennial streams (based on both methods). These methods were used to characterize representative reaches of the streams on-site.

12. The terms "Intermittent" and "Perennial" used on this Attachment classify and describe the flow regime character of streams, are based on WSSI's field observations, and are only provided for state and local regulatory purposes. The flow regimes of streams are not verified by the COE; however, the geographic limits of these streams are all subject to COE jurisdiction, and the COE's approval of this delineation represents only the approval of the geographic limits of waters of the U.S.

13. WSSI has delineated and surveyed the outer limits of jurisdictional areas within the project site. Many of the jurisdictional areas on the site are composed of systems containing different wetland (i.e., PFO, PSS, and PEM) and stream (i.e., R3 and R4) types. The approximate limits of the different wetland and stream types within the surveyed jurisdictional areas are depicted as a thin colored line of the associated wetland or stream type.

14. The features identified on this Attachment as isolated water bodies (SW-3 and SW-4) in the south-central and southeastern portions of the site lack a surface connection to jurisdictional wetlands or other waters of the U.S. and, in WSSI's opinion, have no nexus to interstate commerce. Based on decisions in the U.S. Court of Appeals for the Fourth Circuit (Wilson Decision) and the U.S. Supreme Court (SWANCC Decision) and related guidance issued by the COE on May 29, 1998 and December 2, 2008, the COE is not regulating isolated water bodies at the present time, unless the COE determines that there is a connection with interstate commerce or that the isolated water body has a significant nexus to a jurisdictional water of the U.S. WSSI will request the COE to concur these isolated wetlands are not jurisdictional under the Clean Water Act. Note that all isolated water bodies, regardless of whether they are considered jurisdictional under the Clean Water Act, are regulated by Virginia's Department of Environmental Quality (DEQ) per 9VAC25-210-10 as “state waters”.

However, the isolated PEM wetland (SW-4) meets all the criteria for an "Isolated Wetland of Minimal Ecological Value" (IWOMEV), as it is less than 0.10 acres in size, is not located in a floodplain, is not forested, and does not provide habitat for endangered or threatened species. Thus, the DEQ, at its discretion, may elect not to require a permit for impacts to this IWOMEV.

15. The PEM and PFO wetlands within the stormwater control features (SW-1 and SW-2) appear to have been excavated in uplands for the purpose of retaining stormwater and were not created on-line with a stream. Stormwater control features constructed or excavated in upland or in non-jurisdictional waters to convey, treat, infiltrate, or store stormwater runoff are not considered to be "waters of the U.S." per 33 CFR Section 328.3 in the "Final Rule for Regulatory Programs of the Corps of Engineers" (Fed. Reg. Vol. 51, No. 219, pg. 41217, November 13, 1986). Additionally, such features are excluded from the requirements for a DEQ permit under the Virginia Administrative Code (9VAC25-210-60 (12)). These features meet all three wetland parameters and are depicted as "State Surface Waters".

16. This map has been updated to incorporate additional areas not included within the original delineation. These additional areas are labeled out on this Attachment.

SUMMARY OF JURISDICTIONAL RESOURCES BY COWARDIN CLASSIFICATION*

COWARDIN CLASSIFICATION	AREA		LINEAR FEET OF STREAMBED
	SQUARE FEET	ACRE	
R3	59,285	1.361	4,708
R4	19,431	0.446	2,508
PFO	12,831	0.295	N/A
PSS	2,936	0.067	N/A
PEM	14,046	0.322	N/A
TOTAL	**108,529**	**2.49**	**7,216**

* These numbers are based on the surveyed and approximate locations of the delineated WOTUS and other resource boundaries within the study area boundary.

SUMMARY OF JURISDICTIONAL AND ISOLATED WATERS/STATE WATERS WITHIN THE NORTHSTAR SQUARE SITE*

JURISDICTIONAL WOTUS				
AQUATIC RESOURCE	COWARDIN CLASSIFICATION	AREA		LINEAR FEET OF STREAMBED
		SQUARE FEET	ACRE	
S-1	R3	27,965	0.642	2,102
S-2	R4	3,424	0.079	379
S-3	R4	2,676	0.061	367
S-4	R3	22,970	0.527	1,785
S-5	R4	764	0.018	110
S-6	R4	271	0.006	38
S-7	R3	8,350	0.192	821
S-8	R4	707	0.016	121
S-9	R4	11,132	0.256	1,425
S-10	R4	457	0.010	68
W-1	PEM	154	0.004	N/A
W-2	PSS	720	0.017	N/A
W-3	PEM	531	0.012	N/A
W-4	PSS	58	0.001	N/A
W-5	PSS	88	0.002	N/A
W-6	PEM	143	0.003	N/A
W-7	PSS	117	0.003	N/A
W-8	PEM	85	0.002	N/A
W-9	PSS	435	0.010	N/A
W-10	PEM	185	0.004	N/A
W-11	PEM	25	0.001	N/A
W-12	PFO	261	0.006	N/A
W-13	PFO	121	0.003	N/A
W-14	PFO	81	0.002	N/A
W-15	PFO	78	0.002	N/A
W-16	PFO	56	0.001	N/A
W-17	PEM	260	0.006	N/A
W-18	PFO	846	0.019	N/A
W-19	PFO	613	0.014	N/A
W-20	PFO	29	0.001	N/A
W-21	PFO	41	0.001	N/A
W-22	PSS	60	0.001	N/A
W-23	PFO	167	0.004	N/A
W-24	PFO	1,486	0.034	N/A
W-25	PFO	23	0.001	N/A
W-26	PEM	32	0.001	N/A
W-27	PEM	407	0.009	N/A
W-28	PFO	10	0.0002	N/A
W-29	PFO	244	0.006	N/A
W-30	PFO	705	0.016	N/A
W-31	PFO	1,185	0.027	N/A
W-32	PEM	523	0.012	N/A
W-33	PEM	587	0.013	N/A
W-34	PSS	256	0.006	N/A
W-35	PFO	588	0.013	N/A
W-36	PEM	348	0.008	N/A
W-37	PFO	309	0.007	N/A
W-38	PFO	527	0.012	N/A
W-39	PFO	604	0.014	N/A
W-40	PFO	175	0.004	N/A
W-41	PFO	144	0.003	N/A
W-42	PFO	103	0.002	N/A
W-43	PEM	243	0.006	N/A
W-44	PEM	3,147	0.072	N/A
W-45	PEM	68	0.002	N/A
W-46	PEM	2,483	0.057	N/A
W-47	PEM	113	0.003	N/A
W-48	PEM	35	0.001	N/A
W-49	PEM	178	0.004	N/A
W-50	PSS	415	0.010	N/A
W-51	PFO	33	0.001	N/A
W-52	PSS	447	0.010	N/A
W-53	PEM	4,499	0.103	N/A
W-54	PSS	340	0.008	N/A
W-55	PFO	2,574	0.059	N/A
W-56	PFO	938	0.022	N/A
W-57	PFO	890	0.020	N/A
TOTAL JURISDICTIONAL WOTUS ON SITE		**108,529**	**2.49**	**7,216**
ISOLATED WATERS/STATE WATERS				
SW-1	PEM	1,143	0.026	N/A
SW-2	PFO	60	0.001	N/A
SW-3	PSS	1,430	0.033	N/A
SW-4	PEM	9	0.0002	N/A
TOTAL STATE WATERS AND OTHER RESOURCES ON SITE		**2,642**	**0.06**	**N/A**

* These numbers are based on the surveyed and approximate locations of the delineated WOTUS boundaries within the site boundary.

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ATTACHMENT I:
WATERS OF THE U.S. (INCLUDING WETLANDS) DELINEATION MAP

Prepared For: Toll Brothers, Inc.

Northstar Square
Loudoun County, Virginia

REVISIONS

No.	Date	Description	Rev. By	App. By
1	5/25/22	Revised to reflect current WOTUS rule	JMF	BNR
2	1/9/2023	Revised to include additional delineated areas	RMS	BNR

DATE: September 2020 SCALE: 1" = 100' C.I.:2'

Horizontal Datum: VCS NAD 83
Vertical Datum: NAVD 88
Boundary and Topo Source:
Boundary: christopher consultants, ltd.
Base data: Loudoun County digital data

Design	Draft	Approved
CN	AAO	BNR

Sheet #
1 of 3

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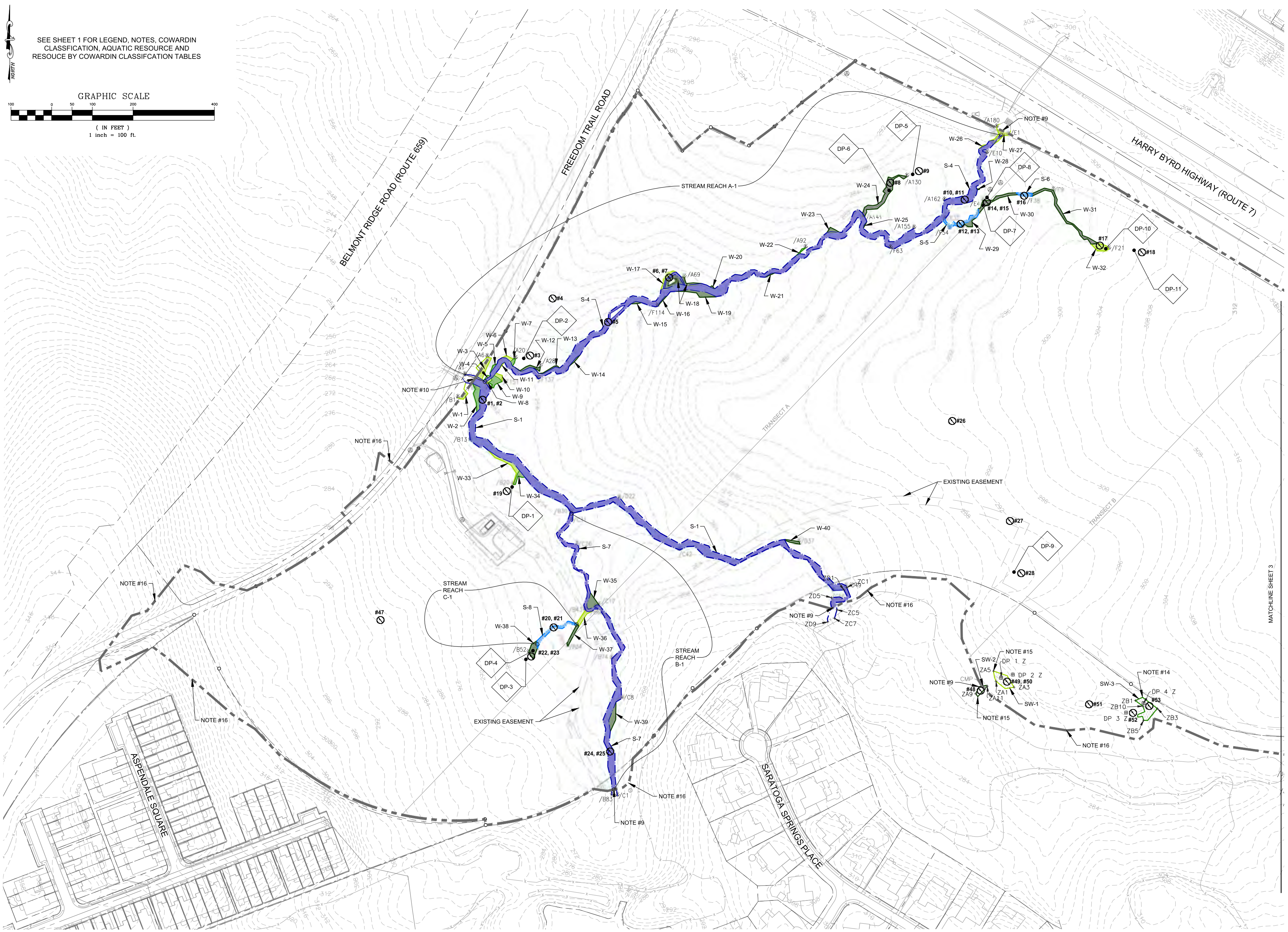
SEE SHEET 1 FOR LEGEND, NOTES, COWARDIN CLASSFICATION, AQUATIC RESOURCE AND RESOUCE BY COWARDIN CLASSIFCATION TABLES



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Prepared For: Toll Brothers, Inc.

Northstar Square

Loudoun County, Virginia

REVISIONS

No.	Date	Description	Rev. By	App. By
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DATE: September 2020 SCALE: 1" = 100' C.I.:2'

Horizontal Datum: VCS NAD 83

Vertical Datum: NAVD 88

Boundary and Topo Source:
Boundary: christopher consultants, ltd.
Base data: Loudoun County digital data

Design	Draft	Approved
CN	AAO	BNR

Sheet #

Computer File Name:
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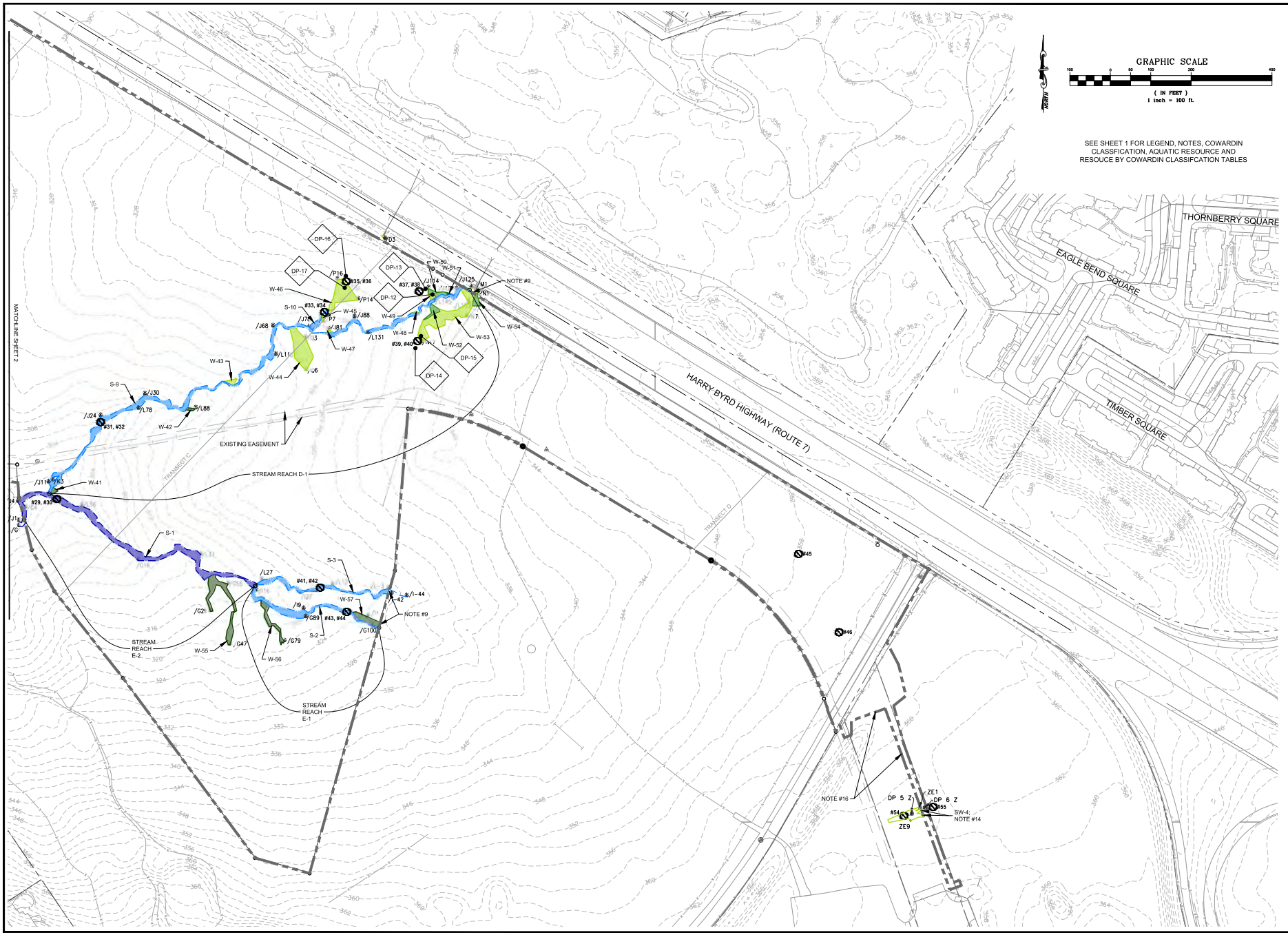

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ATTACHMENT I: WATERS OF THE U.S. (INCLUDING WETLANDS) DELINEATION MAP

Prepared For: Toll Brothers, Inc.

Northstar Square

Loudoun County, Virginia

REVISIONS

No.	Date	Description	Rev. By:	App. By:
1	5/5/22	Revised to reflect current WOTUS rule	JMF	BNR
2	1/6/2023	Revised to include additional delineated areas	RMS	BNR

DATE: September 2020 SCALE: 1" = 100' C.I.: 2'

Horizontal Datum: VCS NAD 83

Vertical Datum: NAVD 88

Boundary and Topo Source:
Boundary: christopher consultants, ltd.
Base data: Loudoun County digital data

Design	Draft	Approved
CN	AAO	BNR

Sheet # 3 of 3

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APPENDIX F VDCR CORRESPONDENCE AND FEDERAL- AND STATE-LISTED SPECIES INFORMATION

Travis A. Voyles
Secretary of Natural and Historic Resources

Matthew S. Wells
Director

Andrew W. Smith
Chief Deputy Director

Frank N. Stovall
Deputy Director for Operations

Darryl Glover
Deputy Director for Dam Safety, Floodplain Management and Soil and Water Conservation

Laura Ellis
Deputy Director for Administration and Finance

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

September 21, 2023

Briana Cooney
Environmental Resources Management, Inc.
222 South 9th Street, Suite 2900
Minneapolis, MN 55402

Re: 0622601, Aspen to Golden

Dear Ms. Cooney:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

Terrestrial Resources

According to the information in our files, the Ashburn Quarry Conservation Site and Murray's Ford Conservation Site are located within the project area. Conservation sites are tools for representing key areas of the landscape that warrant further review for possible conservation action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. The Ashburn Quarry Conservation Site has been assigned a biodiversity rank of B5, which represents a site of general interest/open space significance. The natural heritage resource associated with this site is:

Falco peregrinus	Peregrine Falcon	G4/S1B, S2N/NL/LT

Peregrine Falcons nest on cliffs, bluffs, talus slopes, old tree hollows, and abandoned nests of other birds of prey (Byrd, 1991). The adult Peregrine Falcon has long and pointed wings, a dark blue or slate back, black on its head and cheeks and white on its throat and sides of its neck. Their belly is barred white and blackish brown and its long, narrow tail is blue grey with rounded narrow black bands and a white tipped end (Byrd, 1991). The Peregrine Falcon declined dramatically worldwide as a result of pesticide use in the mid-1900's and was once extirpated from east of the Mississippi, including Virginia (CCB, 2006). Once nesting took place in mountainous areas with sheer cliffs (CCB, 2006); currently, nesting pairs in Virginia use artificial structures such as tall buildings, bridge supports, and towers primarily in the coastal plain (Byrd, 1991; CCB, 2006). Intensive reintroduction efforts have been applied in Virginia since the 1970s, and currently the population in Virginia still warrants protection and management.

Threats to the Peregrine falcon include continued exposure to pesticides and human disruption of nesting attempts (Byrd, 1991). Please note that this species is currently classified as threatened by the Virginia Department of Wildlife Resources (VDWR).

The Murray's Ford Conservation Site has been assigned a biodiversity rank of B2, which represents a site of very high significance. The natural heritage resource associated with this site is:

Piedmont Mafic Barren	G1/S1/NL/NL

Piedmont Mafic Barren communities are low-elevation outcrop barrens, these communities can contain sparse woodlands, scrub, and herbaceous vegetation. These communities occur up to 3200 feet in elevation and most of the documented occurrences are on mafic outcrops, which includes diabase outcrops (Fleming et al 2021). Mafic barrens generally have a high cover of exposed bedrock but have a higher cover of organic soils or soil mats than acidic barrens. This leads to a higher vascular plant cover that is usually a patchwork of severally stunted trees, shrub thickets, and herbaceous mats. Lithophytic lichens, which are classified as fungi, also help make up the patchwork cover (Fleming et al. 2021).

These small-patch communities are prone to degradation from trampling and invasive weeds when they are located near popular trails and overlooks. The Mafic Barrens are more prone to invasion by the non-native weeds than their acidic counterparts (Fleming et al. 2021).

DCR recommends avoiding both conservation sites when planning the powerline routes, including but not limited to avoiding tree removal at Murray's Ford Conservation Site. Due to the legal status of Peregrine falcon, DCR recommends coordination with Virginia's regulatory authority for the management and protection of this species, the VDWR, to ensure compliance with the Virginia Endangered Species Act **(**VA ST §§ 29.1-563 – 570).

In addition to the documented resources, according to DCR's diabase screening layer and review by a DCR biologist, there is a potential for diabase flatrocks to occur in the project area. Several rare plants, which are typically associated with prairie vegetation and inhabit semi-open diabase glades in Virginia, may occur at this location if suitable habitat is present. Diabase glades are characterized by historically fire-dominated grassland vegetation on relatively nutrient-rich soils underlain by Triassic bedrock. Diabase flatrock, a hard, dark-colored volcanic rock, is found primarily in northern Virginia counties and is located within the geologic formation known as the Triassic Basin. Where the bedrock is exposed, a distinctive community type of drought-tolerant plants occurs. Diabase flatrocks are extremely rare natural communities that are threatened by activities such as quarrying and road construction (Rawinski, 1995).

In Northern Virginia, diabase supports occurrences of several global and state rare plant species: Earleaf False foxglove (*Agalinis auriculata*, G3/S1/NL/NL), American bluehearts (*Buchnera americana*, G5?/S1S2/NL/NL), Downy phlox (*Phlox pilosa*, G5/S1/NL/NL), Torrey's Mountain-mint (*Pycnanthemum torreyi*, G2/S2/SOC/LT), Stiff goldenrod (*Solidago rigida var. rigida*, G5T5/S2/NL/NL), and Hairy hedgenettle (*Stachys arenicola*, G4?/S1/NL/NL).

Please note that Torrey's Mountain-mint is listed as threatened by the Virginia Department of Agriculture and Consumer Services (VDACS). Torrey's Mountain-mint is also listed as a Species of Concern (SOC) by United States Fish and Wildlife Service (USFWS); however, this is not a legal designation.

Due to the potential for this site to support populations of natural heritage resources, DCR recommends an inventory for the resource in the study area. With the survey results we can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources.

DCR-Division of Natural Heritage biologists are qualified to conduct inventories for rare, threatened, and endangered species. Please contact Anne Chazal, Natural Heritage Chief Biologist, at anne.chazal@dcr.virginia.gov or 804-786-9014 to discuss availability and rates for field work.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. Survey results should be coordinated with DCR-DNH. Upon review of the results, if it is determined the species is present, and there is a likelihood of a negative impact on the species, DCR-DNH will recommend coordination with VDACS to ensure compliance with Virginia's Endangered Plant and Insect Species Act.

Aquatic Resources

According to the information in our files, the Broad Run - Rte 607 Stream Conservation Unit (SCU) is located within the project area. SCUs identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are also given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain. The Broad Run - Rte 607 SCU has been assigned a biodiversity rank of B5, which represents a site of general interest/open space significance. The natural heritage resource associated with this SCU is:

Lampsilis cariosa	Yellow Lampmussel	G3G4/S2/NL/NL

The Yellow Lampmussel ranges from Nova Scotia to Georgia in Atlantic slope drainages (NatureServe, 2009). In Virginia, it is recorded from the Roanoke, Chowan, James, York, and Potomac drainages. It is found in larger streams and rivers where good currents exist over sand and gravel substrates and in small creeks and ponds (Johnson, 1970).

Considered good indicators of the health of aquatic ecosystems, freshwater mussels are dependent on good water quality, good physical habitat conditions, and an environment that will support populations of host fish species (Williams et al., 1993). Because mussels are sedentary organisms, they are sensitive to water quality degradation related to increased sedimentation and pollution. They are also sensitive to habitat destruction through dam construction, channelization, and dredging, and the invasion of exotic mollusk species.

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations.

Additional Comments

Additionally, if tree clearing occurs outside of the existing rights-of-way (ROW), the proposed project has the potential to impact Ecological Cores **(C4 and C5)** as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

Ecological Cores are areas of at least 100 acres of continuous interior, natural cover that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Interior core areas begin 100 meters inside core edges and continue to the deepest parts of cores. Cores also provide the natural, economic, and quality of life benefits of open space, recreation, thermal moderation, water quality (including drinking water recharge and protection, and erosion prevention), and air quality (including sequestration of carbon, absorption of gaseous pollutants, and production of oxygen). Cores are ranked from C1 to C5 (C5 being the least significant) using nine prioritization criteria, including the habitats of natural heritage resources they contain.

Impacts to cores occur when their natural cover is partially or completely converted permanently to developed land uses. Habitat conversion to development causes reductions in ecosystem processes, native biodiversity, and habitat quality due to habitat loss; less viable plant and animal populations; increased predation; and increased introduction and establishment of invasive species.

DCR recommends avoidance of impacts to cores. When avoidance cannot be achieved, DCR recommends minimizing the area of impacts overall and concentrating the impacted area at the edges of cores, so that the most interior remains intact.

Furthermore, DCR recommends the development and implementation of an invasive species plan to be included as part of the maintenance practices for any new or existing ROWs. The invasive species plan should include an invasive species inventory for the project area based on the current DCR Invasive Species List (http://www.dcr.virginia.gov/natural-heritage/document/nh-invasive-plant-list-2014.pdf) and methods for treating the invasives. DCR also recommends the ROW restoration and maintenance practices planned include appropriate revegetation using native species in a mix of grasses and forbs, robust monitoring, and an adaptive management plan to provide guidance if initial revegetation efforts are unsuccessful or if invasive species outbreaks occur.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

A fee of $800.00 has been assessed for the service of providing this information. Please find attached an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, DCR Finance, 600 East Main Street, 24th Floor, Richmond, VA 23219. Payment is due within thirty days of the invoice date. Please note late payment may result in the suspension of project review service for future projects.

The Virginia Department of Wildlife Resources (VDWR) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed https://services.dwr.virginia.gov/fwis/ or contact Amy Martin at 804-367-2211 or amy.martin@dwr.virginia.gov. According to the information currently in our files, Goose Creek, which has been designated by the VDWR as a "Threatened and Endangered Species Water" for the Green Floater (*Lasmigona subviridis*, G3/S2/NL/LT) is within the submitted project boundary. Therefore, DCR recommends coordination with Virginia's regulatory authority for the management and protection of this species, the VDWR, to ensure compliance with the Virginia Endangered Species Act **(**VA ST §§ 29.1-563 – 570).

Should you have any questions or concerns, feel free to contact me at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,

S. René Hypes
Natural Heritage Project Review Coordinator

Cc: Amy Martin, VDWR

Literature Cited

Johnson, R.I. 1970. The systematics and zoogeography of the Unionidae (Mullusca: Bilvava) of the southern Atlantic slope region. Bulletin Museum of Comparative Zoology vol 140(6): 362-365.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: April 27, 2010).

Williams, J.D., M.L. Warren, Jr., K.S. Cummings, J.L. Harris, and R.J. Neves. 1993. Conservation status of freshwater mussels of the United States and Canada. Fisheries 18: 6-9.

VAFWIS - Department of Wildlife Resources

39,02,37.3 -77,29,05.2
is the Search Point
Submit Cancel

Search Point
- **Change** to "clicked" map point
- **Fixed** at 39,02,37.3 -77,29,05.2

Show Position Rings
Yes No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
Yes No
3.9 Search distance miles radius

Search Point is at map center

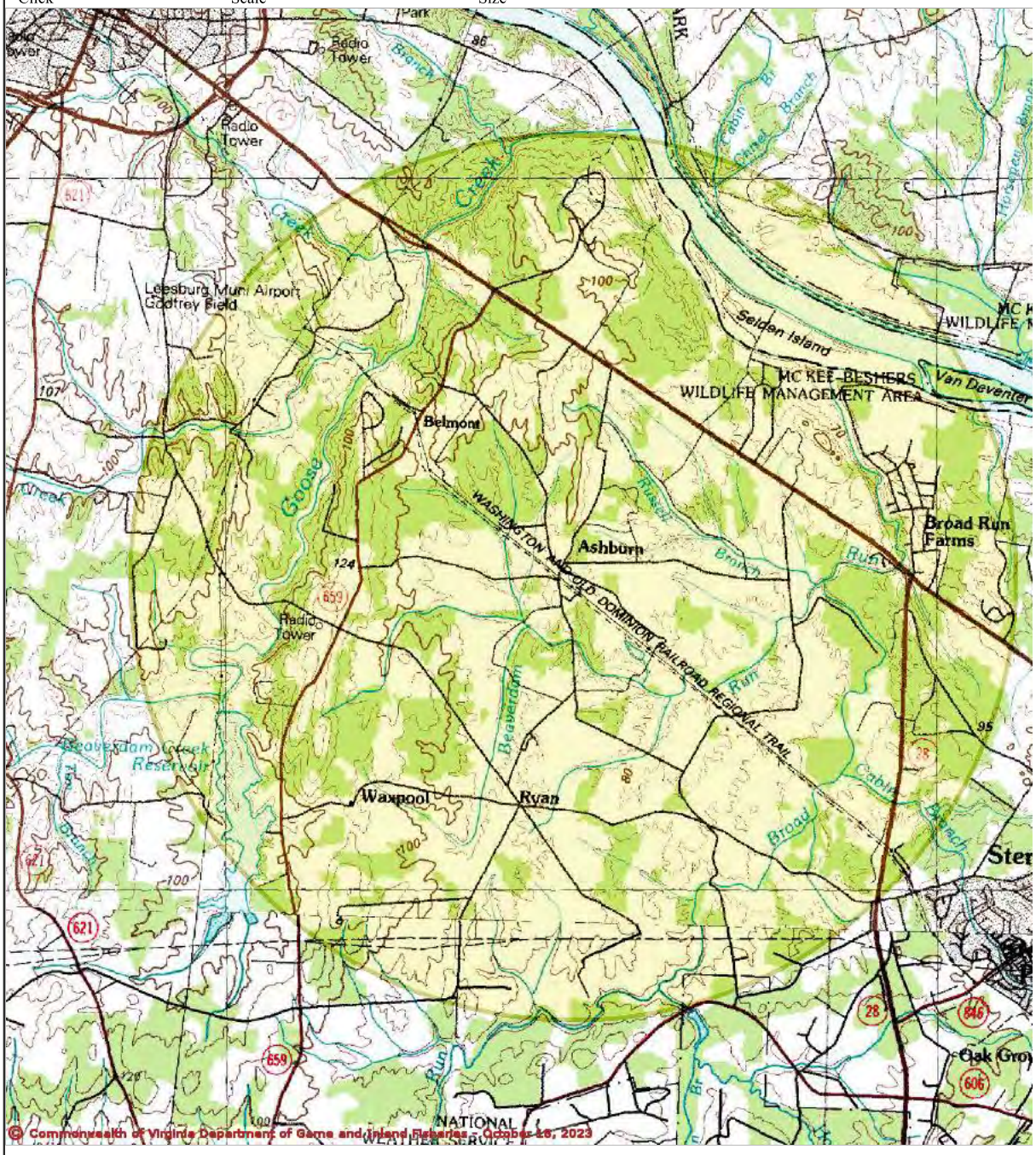
Base Map Choices
Topography

Map Overlay Choices
Current List: Search

Map Overlay Legend
3.9 mile radius Search Area

back | Refresh Browser Page | Help

Map Click: Pan Id M
Map Scale: In Zoom Out
Screen Size: Small Size Big



N
1 0 1 2 3 4 Kilometers
1 0 1 2 3 4 Miles

Point of Search 39,02,37.3 -77,29,05.2
Map Location 39,02,37.3 -77,29,05.2

Select **Coordinate System:**
- Degrees,Minutes,Seconds Latitude - Longitude
- Decimal Degrees Latitude - Longitude
- Meters UTM NAD83 East North Zone
- Meters UTM NAD27 East North Zone

Base Map source: USGS 1:100,000 topographic maps (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 18 NAD 1983 with left 276959 and top 4332564. Pixel size is 16 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 1000 columns by 1000 rows for a total of 1000000 pixles. The map display represents 16000 meters east to west by 16000 meters north to south for a total of 256.0 square kilometers. The map display represents 52502 feet east to west by 52502 feet north to south for a total of 98.8 square miles.

Topographic maps and Black and white aerial photography for year 1990+-
are from the United States Department of the Interior, United States Geological Survey.
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.
Shaded topographic maps are from TOPO! ©2006 National Geographic
http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Wildlife Resources.

map assembled 2023-10-18 17:52:06 (qa/qc March 21, 2016 12:20 - tn=1533012 dist=6275.099999999999 I)
$poi=39.0436944 -77.4847777

VaFWIS Search Report Compiled on 10/18/2023, 5:54:24 PM

Help

Known or likely to occur within a **3.9 mile radius around point 39,02,37.3 -77,29,05.2** in **107 Loudoun County, VA**

View Map of Site Location

519 Known or Likely Species ordered by Status Concern for Conservation (displaying first 32) (32 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
050022	FEST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
060003	FESE	Ia	Wedgemussel, dwarf	Alasmidonta heterodon		BOVA
060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		BOVA,HU6
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA
050027	FPSE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA
060006	SE	Ib	Floater, brook	Alasmidonta varicosa		BOVA
030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes	BOVA,Habitat,SppObs,HU6
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA,HU6
040379	ST	Ia	Sparrow, Henslow's	Centronyx henslowii	Potential	BOVA,BBA
100155	ST	Ia	Skipper, Appalachian grizzled	Pyrgus wyandot		HU6
060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes	BOVA,TEWaters,Habitat,HU6
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
100079	FC	IIIa	Butterfly, monarch	Danaus plexippus		BOVA
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA,HU6
030012	CC	IVa	Rattlesnake, timber	Crotalus horridus		BOVA,HU6
040092		Ia	Eagle, golden	Aquila chrysaetos		BOVA
040040		Ia	Ibis, glossy	Plegadis falcinellus		HU6

040306		Ia	Warbler, golden-winged	Vermivora chrysoptera		BOVA
100248		Ia	Fritillary, regal	Speyeria idalia idalia		BOVA,HU6
040213		Ic	Owl, northern saw-whet	Aegolius acadicus		BOVA,HU6
040052		IIa	Duck, American black	Anas rubripes		BOVA,HU6
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea	Potential	BOVA,BBA
040181		IIa	Tern, common	Sterna hirundo		HU6
040320		IIa	Warbler, cerulean	Setophaga cerulea		BOVA,HU6
040140		IIa	Woodcock, American	Scolopax minor		BOVA,HU6
060071		IIa	Lampmussel, yellow	Lampsilis cariosa		BOVA,HU6
040203		IIb	Cuckoo, black-billed	Coccyzus erythropthalmus		BOVA
040105		IIb	Rail, king	Rallus elegans		BOVA
040304		IIc	Warbler, Swainson's	Limnothlypis swainsonii		HU6
100154		IIc	Butterfly, Persius duskywing	Erynnis persius persius		HU6
100166		IIc	Skipper, Dotted	Hesperia attalus slossonae		BOVA,HU6

To view **All 519 species** View 519

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need;
IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;
b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

View Map of All Query Results from All Observation Tables

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Impediments to Fish Passage (4 records)

View Map of All Fish Impediments

ID	Name	River	View Map
1239	ASHBURN VILLAGE LAKE #1	TR-RUSSEL BRANCH	Yes
1214	BEAVERDAM CREEK DAM	BEAVERDAM CREEK	Yes
1216	GOOSE CREEK DAM	GOOSE CREEK	Yes
1220	HORSEPEN DAM	HORSEPEN RUN	Yes

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters (20 Reaches)

View Map of All Threatened and Endangered Waters

Stream Name	T&E Waters Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Goose Creek (018820)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (022535)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (023151)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (023631)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (025464)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (026509)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (026550)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (026603)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (027795)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (028649)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (028846)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes

Goose Creek (031573)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (032031)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (032084)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (032895)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (034177)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (034352)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (035653)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (036348)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Goose Creek (040279)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Species Observations

(237 records - displaying first 20 , 1 Observation with Threatened or Endangered species)

View Map of All Query Results Species Observations

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE*	Highest Tier**	
623115	SppObs	Jul 23 2015	Linda; Sieh	1	ST	I	Yes

633212	SppObs	Jun 17 2015	Rick Browder; Gabriel Darkwah	3		III	Yes
633211	SppObs	Jun 17 2015	Rick Browder; Gabriel Darkwah	4		III	Yes
607875	SppObs	Jul 22 2009	Richard; Browder	7		III	Yes
601718	SppObs	Jun 2 2009	Richard; Browder	8		III	Yes
318779	SppObs	Mar 13 2007	Christine Geist	7		III	Yes
318780	SppObs	Jan 9 2007	Christine Geist	1		III	Yes
308381	SppObs	Jun 2 2004	Alex Barron	4		III	Yes
308382	SppObs	Jun 2 2004	Alex Barron	4		III	Yes
67864	SppObs	Aug 21 2001	Rick Browder (Principle Permittee)	5		III	Yes
67870	SppObs	Aug 7 2001	Rick Browder (Principle Permittee)	6		III	Yes
55951	SppObs	Oct 3 1998	PAUL ANGERMEIER (PRINCIPAL PERMITTEE), KEVIN R. GOODWIN, (COLLECTOR), VA COOPERATIVE FISH AND WILDLIFE UNIT	1		III	Yes
55952	SppObs	Oct 3 1998	PAUL ANGERMEIER (PRINCIPAL PERMITTEE), KEVIN R. GOODWIN, (COLLECTOR), VA COOPERATIVE FISH AND WILDLIFE UNIT	23		III	Yes
11559	SppObs	Oct 6 1989	ANGERMEIER ET AL	21		III	Yes
332215	SppObs	Jan 1 1956	VPI-VA. TECH	7		III	Yes
332209	SppObs	Jan 1 1956	VPI-VA. TECH	13		III	Yes
364125	SppObs	Jan 1 1900		1		III	Yes
631137	SppObs	Jun 25 2019	John Alderman; Joseph Alderman	6		IV	Yes
628395	SppObs	Jul 16 2015	Cynthia Hauser	2		IV	Yes
628394	SppObs	Jul 15 2015	Cynthia Hauser	2		IV	Yes

Displayed 20 Species Observations

Selected 237 Observations View all 237 Species Observations

Habitat Predicted for Aquatic WAP Tier I & II Species (9 Reaches)

View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species

Stream Name	Tier Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Beaverdam Creek (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Beaverdam Run (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Broad Run (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Goose Creek (20700081)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Horsepen Run (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Russell Branch (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Sycolin Creek (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
tributary (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Tuscarora Creek (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Tuscarora Creek (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species

N/A

Virginia Breeding Bird Atlas Blocks (10 records)

View Map of All Query Results
Virginia Breeding Bird Atlas Blocks

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE*	Highest Tier**	
50202	Arcola, NE	43		III	Yes
51202	Herndon, NE	51		III	Yes
51201	Herndon, NW	47	ST	I	Yes
50214	Leesburg, CE	63		III	Yes

50212	Leesburg, NE	58		III	Yes
50216	Leesburg, SE	69		III	Yes
51214	Sterling, CE	76		II	Yes
51213	Sterling, CW	64		III	Yes
51216	Sterling, SE	72		III	Yes
51215	Sterling, SW	6		III	Yes

Public Holdings:

N/A

Summary of BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia:

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
107	Loudoun	438	FESE	I

USGS 7.5' Quadrangles:
Arcola
Leesburg
Herndon
Sterling

USGS NRCS Watersheds in Virginia:

N/A

USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
PL14	Goose Creek-Big Branch	59	FTST	I
PL15	Sycolin Creek	54	ST	I
PL16	Goose Creek-Cattail Branch	56	ST	I
PL17	Broad Run-Lenah Run	49	ST	I
PL18	Horsepen Run	61	ST	I
PL19	Broad Run-Beaverdam Run	53	ST	I
PL20	Potomac River-Selden Island	47	ST	I

Compiled on 10/18/2023, 5:54:24 PM I1533012.0 report=all searchType= R dist= 6275 poi= 39,02,37.3 -77,29,05.2

PixelSize=64; Anadromous=0.02072; BBA=0.041119; BECAR=0.02017; Bats=0.02198; Buffer=0.238285; County=0.05297; HU6=0.054136; Impediments=0.021847; Init=0.268766; PublicLands=0.023184; Quad=0.029871; SppObs=0.337972; TEWaters=0.034999; TierReaches=0.059447; TierTerrestrial=0.037049; Total=1.278718; Tracking_BOVA=0.198836; Trout=0.02287; huva=0.029137

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032

In Reply Refer To:
Project Code: 2023-0126495
Project Name: A2G 20230908

September 08, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Code in the header of this

letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

PROJECT SUMMARY

Project Code: 2023-0126495
Project Name: A2G 20230908
Project Type: Transmission Line - New Constr - Above Ground
Project Description: This request is a part of a pre-permitting effort to determine feasibility of overhead powerline routes
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.04592435,-77.48691233786717,14z

Counties: Loudoun County, Virginia

ENDANGERED SPECIES ACT SPECIES

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

CLAMS

NAME	STATUS
Dwarf Wedgemussel *Alasmidonta heterodon* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/784	Endangered
Green Floater *Lasmigona subviridis* There is **proposed** critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/7541	Proposed Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE

SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Cerulean Warbler *Dendroica cerulea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 28 to Jul 20
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
King Rail *Rallus elegans* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

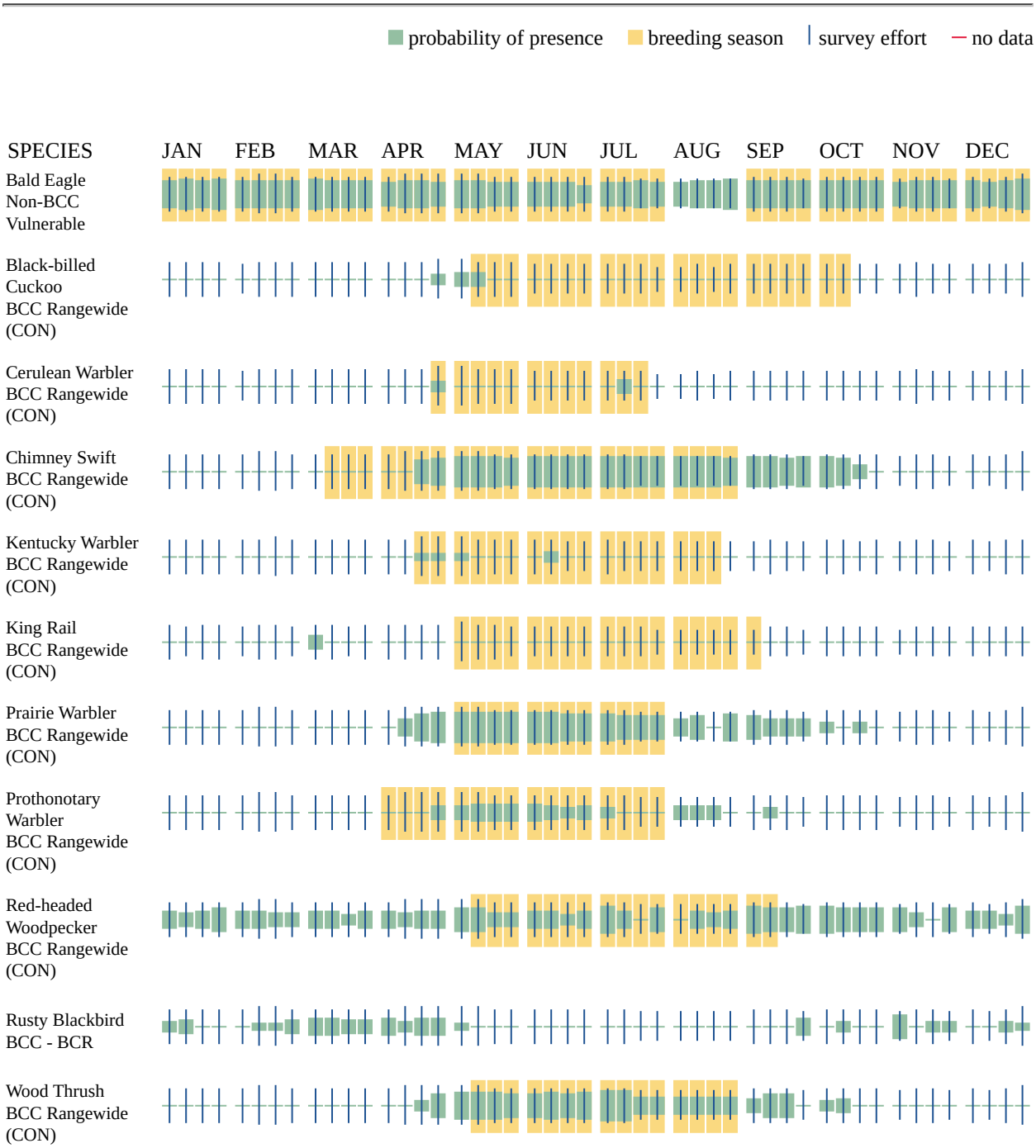
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species

- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

MIGRATORY BIRDS FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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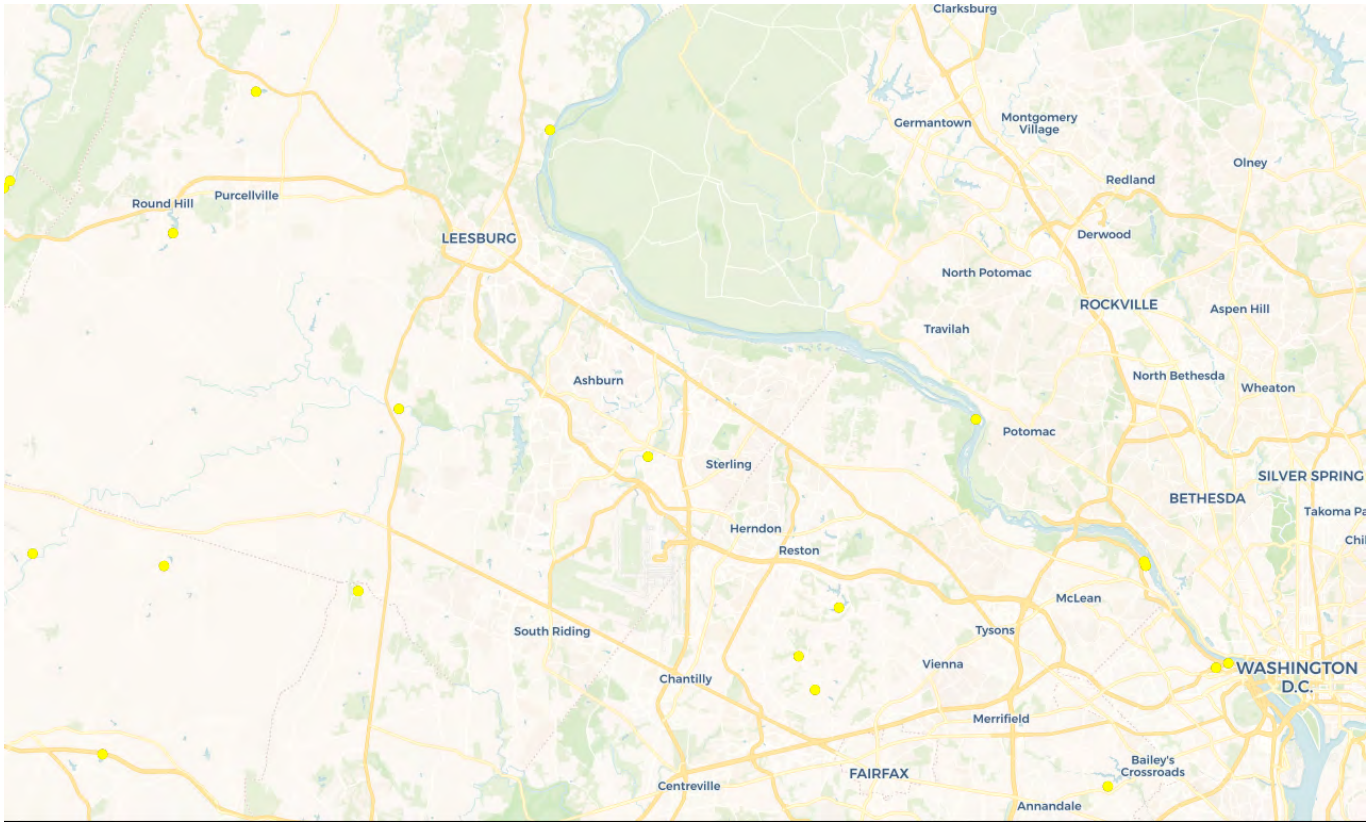
CCB Mapping Portal



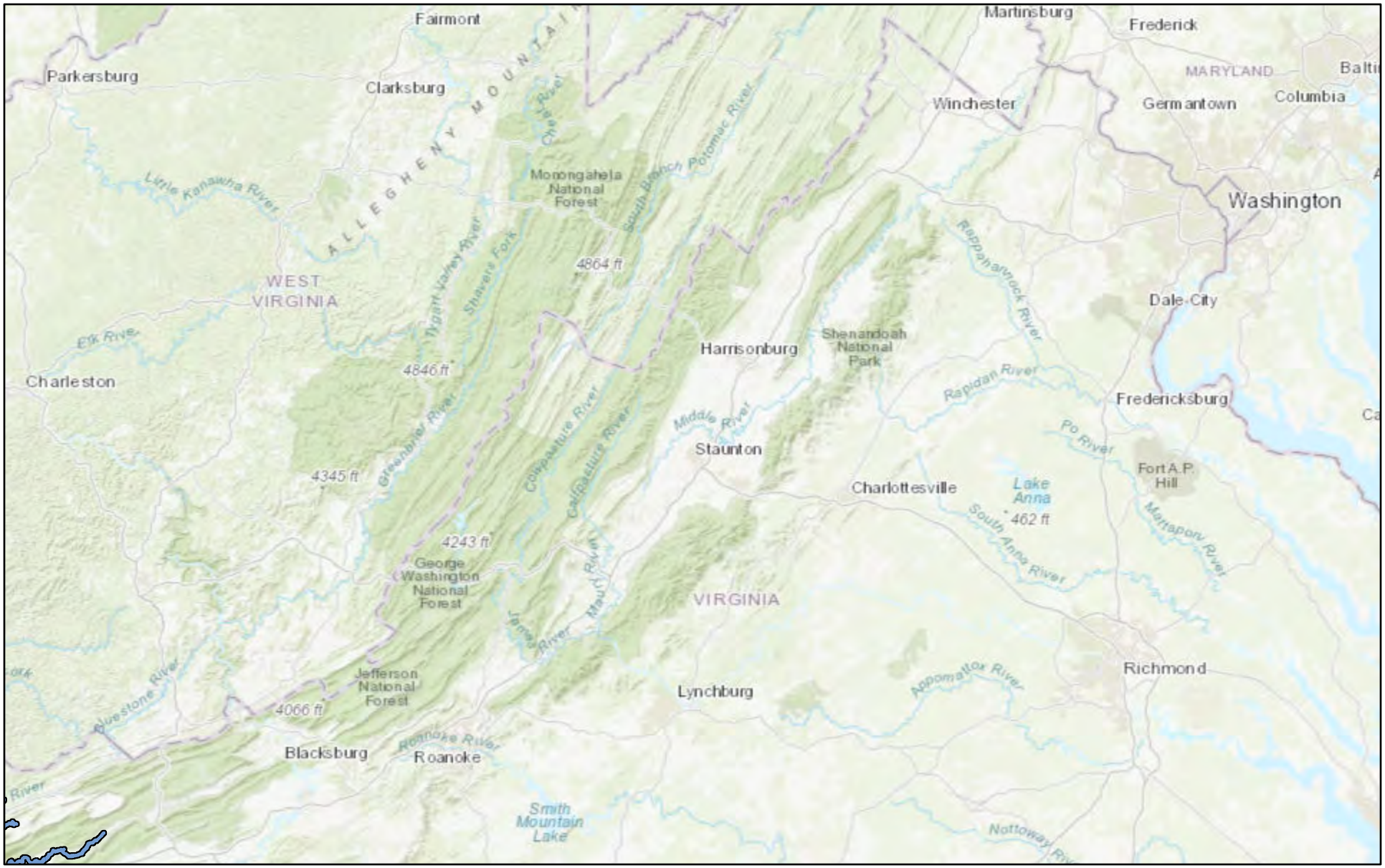
Layers: VA Eagle Nest Locator, VA Eagle Nest Buffers

Map Center [longitude, latitude]: [-77.46734619140625, 39.03065255999985]

Map Link:
https://ccbbirds.org/maps/#layer=VA+Eagle+Nest+Locator&layer=VA+Eagle+Nest+Buffers&zoom=11&lat=39.03065255999985&lng=-77.46734619140625&legend=legend_tab_7c321b7e-e523-11e4-aaa0-0e0c41326911&base=Street+Map+%28OSM%2FCarto%29

Report Generated On: 02/17/2023

Critical Habitat - Loudoun N and Compton



February 17, 2023

Virginia Critical Habitat (published)

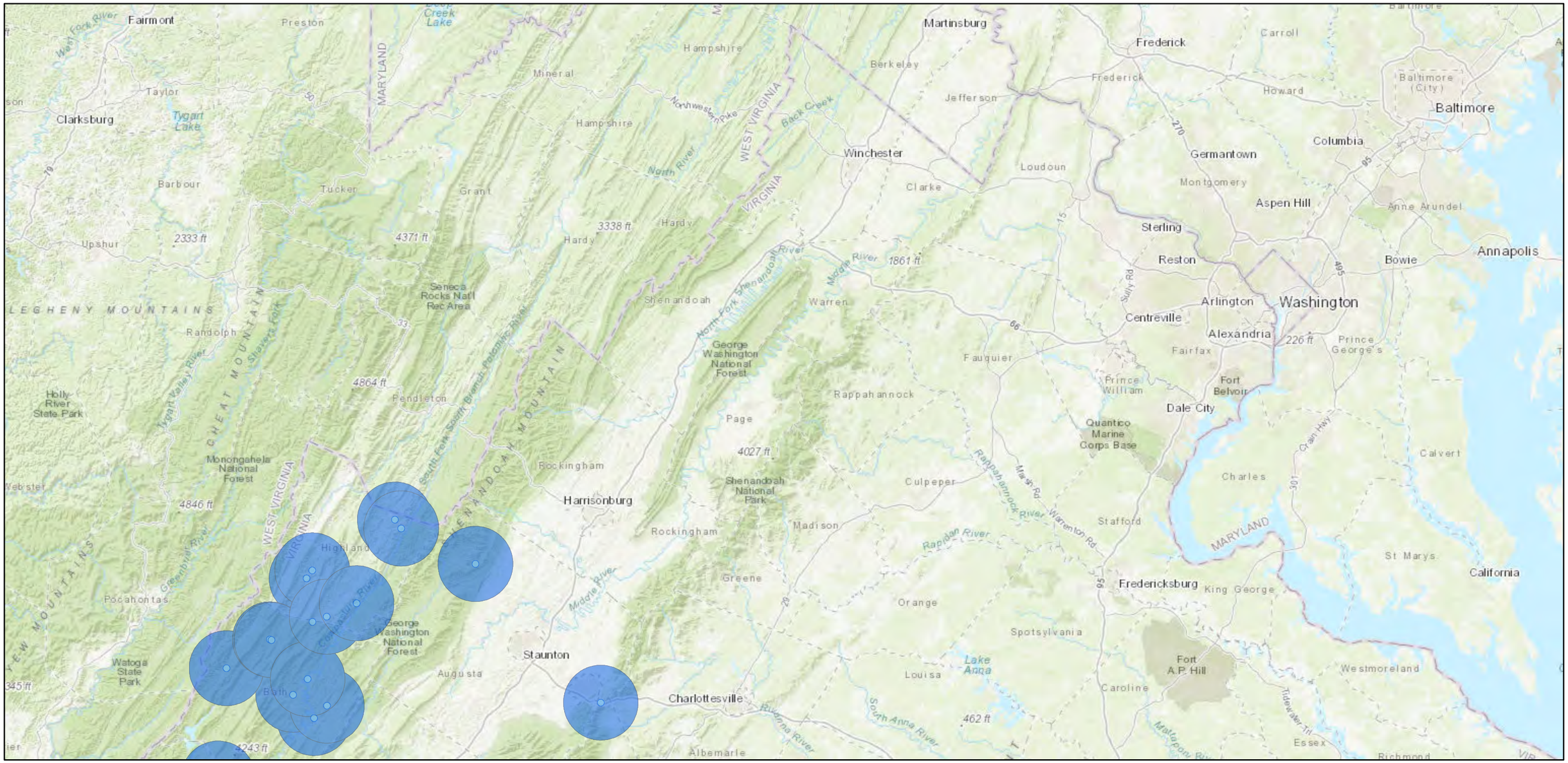
1:2,311,162

0 15 30 60 mi

0 20 40 80 km

Esri, HERE, Garmin, FAO, USGS, EPA, NPS

MYLU-PESU Locations and Roost Trees - Loudoun N and Compton



2/17/2023, 12:01:00 PM

Tri-colored and Little Brown Hibernaculum Half Mile Buffer

Tri-colored and Little Brown Hibernaculum 5.5 Mile Buffer

1:1,155,581

0 10 20 40 mi

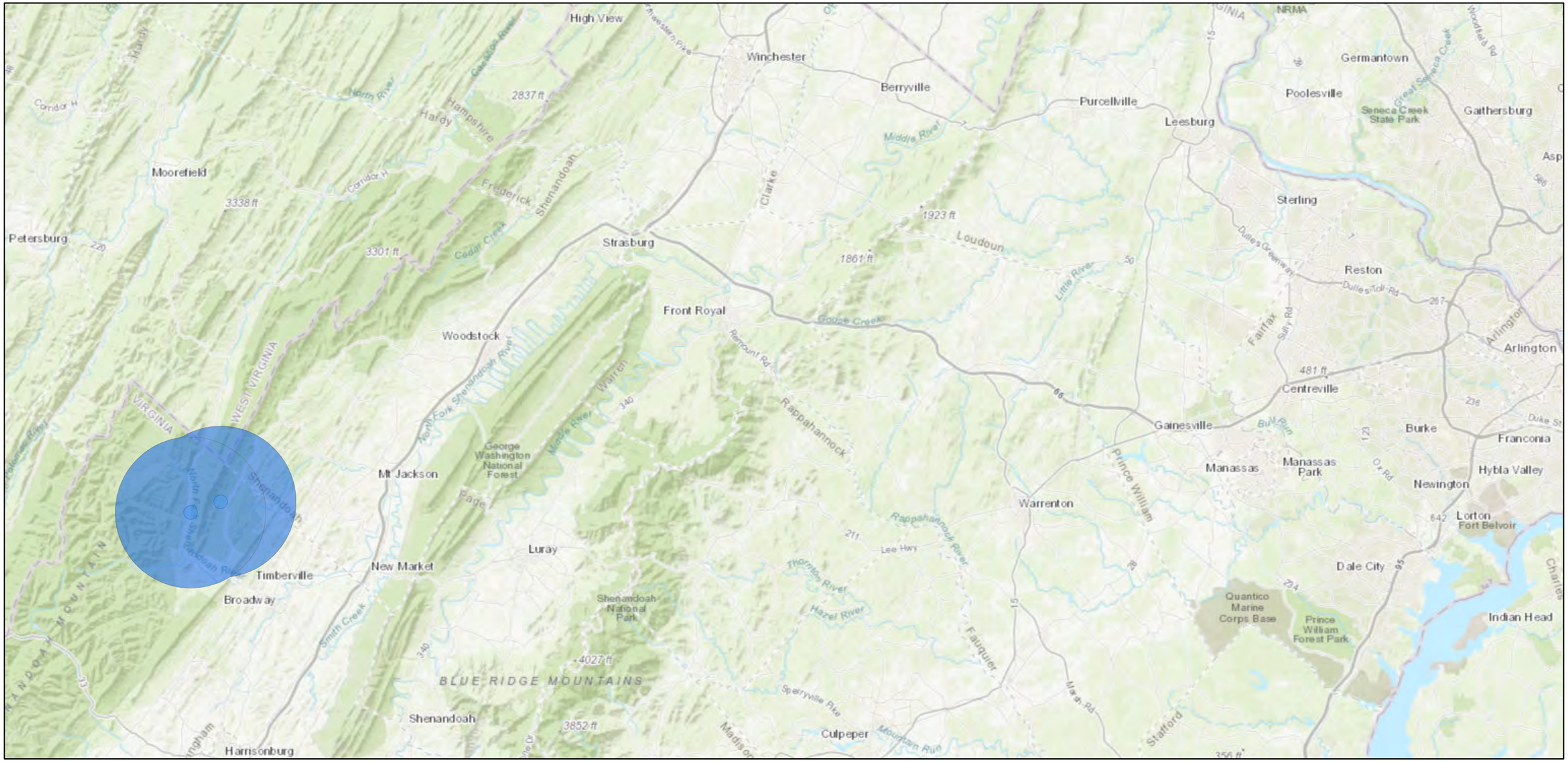
0 15 30 60 km

Esri, HERE, Garmin, FAO, USGS, NGA, EPA, NPS

Dept. Game and Inland Fisheries

Esri, HERE, Garmin, FAO, USGS, NGA, EPA, NPS |

NLEB Locations and Roost Trees - Loudoun N and Compton



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NLEB Hibernaculum 5.5 Mile Buffer

NLEB Hibernaculum Half Mile Buffer

1:577,791

0 5 10 20 mi

0 5 10 20 km

Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

VA Dept. Game & Inland Fisheries

Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS |

BECO – DTC 230 kV Transmission Line

Loudoun County, Virginia

PREPARED FOR

James Young
120 Tredegar Street
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PREPARED BY

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June 2023

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1

Introduction

This report summarizes the results of the Phase 2 Presence/Probable Absence Acoustic Monitoring Surveys (acoustic surveys) targeting the northern long-eared bat (*Myotis septentrionalis* or MYSE) performed by VHB, Inc. (VHB) on behalf of Dominion Energy Virginia (Dominion) for the new construction of a 1.3-mile overhead 230 kV double circuit electric transmission line in Loudoun County, Virginia (see **Figure 1, Appendix A**). The MYSE is state-threatened species in Virginia and has recently been reclassified from federally threatened to federally endangered under the Endangered Species Act (ESA; 16 U.S.C. § 1531 et seq.). The final rule to reclassify MYSE as federally endangered was published in the Federal Register on November 30, 2022 and took effect on March 31, 2023 (Federal Register, Vol. 87 No. 229). This survey was performed as a due diligence effort because the proposed overhead transmission line is within the habitat range of MYSE and contains potentially suitable summer bat habitat. The survey was conducted in accordance with the MYSE Phase 2 Study Plan for the Project, approved by the US Fish and Wildlife Service (USFWS) in June 2022.

The acoustic surveys targeted the MYSE and two other Virginia state-endangered species, the tricolored bat (*Perimyotis subflavus,* PESU) and little brown bat (*Myotis lucifugus*, MYLU). These species are also under consideration for federal protection. On September 14, 2022, the USFWS published a proposal to list the PESU as federally endangered under the ESA (Federal Register, Vol. 87, No. 177) and is conducting a discretionary review on the status of MYLU (USFWS, 2021), expected to be completed in 2023. Other federally endangered species such as the Indiana bat (*M. sodalis*), gray bat (*M. grisescens*), eastern small-footed bat (*M. leibii*), and Virginia big-eared bat (*Corynorhinus townsendii*), as well as the state-endangered Rafinesque's big-eared bat (*Corynorhinus rafinesquii*) are not expected to occur within the Project Area based on known habitat preferences and locations.

1.1 Project Overview

Dominion is proposing to construct a new electric transmission line, known as BECO-DTC 230 kV Transmission Line Project (the Project), in Loudoun County, Virginia (**Figure 1**). The proposed line will consist of two circuits, Lines 2143 and 2249, collocated on the same structures in new right-of-way (ROW) between the existing BECO Substation and the proposed DTC Substation. The proposed line crosses Broad Run, a US Geological Survey (USGS) mapped perennial stream, in two locations. The Project is considered linear by definition and covers approximately 2.2 kilometers (km) in total length. It is within the Broad Run-Beaverdam Run watershed, hydrologic Unit code (HUC) 020700080903.

1.2 Existing Conditions

The land use within and immediately surrounding the Project is predominantly mixed deciduous forest habitat while agriculture fields and industrial land occupy the surrounding areas. The proposed line has two stream crossings over a USGS mapped perennial stream. Suitable summer bat habitat is present along approximately 1.5 km of the Project.

2

Methods

VHB biologists with bat acoustic survey experience conducted the acoustic survey in accordance with the Phase 2 Study Plan submitted to and approved by USFWS in May 2023. The Study Plan was developed in accordance with the *USFWS 2023 Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines (Guidelines)*.

2.1 Habitat Assessment and Site Selection

Per the USFWS *Guidelines*, sites were selected via a desktop analysis (i.e., aerial photo interpretation) during the development of the Study Plan by VHB biologists to ensure sufficient coverage of the linear Project. Four detector locations (**Figures 2-4**) over two calendar nights met the minimum survey requirement of eight detector nights. Each detector location was micro-sited in the field to ensure that suitable site conditions were present, and that optimal microphone placement was achieved.

The detector at Site 1 was placed near the forested edge of a parking lot in the northern part of the Project Area. The microphone was oriented facing east to survey along the forested edge to the north. The edge of the deciduous forest consisted of white oak (*Quercus alba*), pignut hickory (*Cayra glabra*), northern red oak (*Q. rubra*), eastern redbud (*Cercis canadensis*), and American elm (*Ulmus americana*). The area immediately adjacent to the parking lot was dominated by periodically mowed grasses and weeds.

The detector at Site 2 was placed near forested edge habitat near Broad Run. The microphone was oriented facing northwest to survey along the forested edge habitat. The stream was located about 200 feet southeast of the cone of detection. Mixed deciduous forest was adjacent to the cone of detection. The edge of the deciduous forest habitat was characterized by green ash (*Fraxinus pennsylvanica*) and hackberry (*Celtis occidentalis*). The herbaceous plant community primarily included Japanese stiltgrass (*Microstegium vimineum*) and common grasses and weeds.

The detector at Site 3 was placed near forested edge habitat and Broad Run. The microphone was oriented facing south to survey along the forested edge habitat. The microphone was located less than three meters from the forested edge, and approximately eight meters from the stream. The surrounding mixed deciduous forest was characterized by green ash, box elder (*Acer negundo*), and

American pawpaw (*Asimina triloba*). The herbaceous plant community included Japanese stiltgrass and other common grasses and weeds.

The detector at Site 4 was placed near the tree line on the edge of an access road. The microphone was oriented facing northwest to survey along the flyway through the access road. The detector was near a large emergent wetland with mature hardwoods surrounding it. The emergent wetland vegetation primarily included broadleaf cattail (*Typha latifolia*) and soft rush (*Juncus effusus*). The deciduous trees in the surrounding area included southern red oak (*Q. falcata*), American sycamore (*Platanus occidentalis*), and sweetgum (*Liquidambar styraciflua*).

2.2 Detector and Microphone Deployment and Placement

Four Pettersson D500x ultrasonic full spectrum detectors (detector) with Pettersson external, directional microphones were deployed within the Project Area (as shown in **Figure 1** in **Appendix A**) for two, consecutive calendar nights from May 22-24, 2023. Photographs of the survey sites and field data forms are included in **Appendix B**. A concise summary of the survey effort for this project is detailed in **Tables 1** and **2** provided in **Appendix C**. A total of eight detector nights were recorded during the survey effort and analysis of the recordings is presented in **Table 3** of **Appendix C**.

Detector locations were micro-sited in the field to meet the USFWS survey protocols for detector and microphone placement, as described in the approved Study Plan. This included raising the microphone to a height of at least three meters above the ground level vegetation and orienting the microphone toward potential flight corridors such as forest canopy openings, near water sources, parallel to woodland edges, or other suitable survey locations as described within the *Guidelines* and when available within the Project Area. VHB biologists selected survey locations with minimal vegetative clutter in the cone of detection. Site descriptions are included on the field data forms provided in **Appendix B**. Detector equipment function was verified prior to deployment and at retrieval with a clap and/or finger rub test at the microphone, along with verification of the detector settings and review of the event logs. Refer to **Table 1** provided in **Appendix C** for additional equipment details. Specific information for each detector by site is listed in **Table 2**, also provided in **Appendix C**.

2.3 Weather Criteria

The survey included two calendar nights that met the following survey weather criteria per the USFWS *Guidelines*: temperatures did not fall below 50°F during the first five hours of the survey period; no precipitation (rain and/or fog) that exceeded 30 minutes continuously or continued intermittently during the first five hours of the survey period; and no sustained wind speeds greater than nine miles per hour for 30 minutes continuously during the first five hours of the survey period. Hourly weather conditions were monitored from the nearest active Weather Underground Station: KVASTERL 145. Refer to **Table 1** provided in **Appendix C** for an abbreviated weather summary for each calendar night.

2.4 Call Analysis

A VHB biologist trained in conducting acoustic analyses (principally Anna Weaver - resume provided in **Appendix D**) was responsible for automated call analysis and the qualitative review of call files. Sound files were processed through SonoBat Data Wizard Version 4.4.5 to attribute metadata to each file and then calls were scrubbed with the SonoBat Data Wizard Batch File Scrubber to remove sound files that registered below 20 kilohertz (kHz). Full spectrum files were auto classified with Kaleidoscope Pro Version 5.4.7. Total call counts by species are included in **Table 3** provided in **Appendix C**. The MLE ("maximum likelihood estimator" or p values) assigned by Kaleidoscope Pro are reported in **Table 3** and species that have been manually vetted are also denoted in **Table 3**.

Qualitative analysis (manual vetting) was conducted for all calls that were auto-identified as high frequency (i.e., UNHF, PESU, evening bat [*Nycticeius humeralis or NYHU*], and eastern red bat [*Lasiuris borealis* or LABO] regardless of MLE value) and any unknown calls which have a characteristic frequency (Fc) of 35 kilohertz (kHz) or greater since these calls are considered high frequency and have the potential to include *Myotis*, PESU, NYHU or LABO calls. The suite of species evaluated in the manual vetting process includes the federally and state endangered MYSE, proposed federally endangered PESU, and the state endangered MYLU. Auto-identified LABO and NYHU calls are manually vetted because these species emit high frequency calls and have highly variable call repertoire and there is the potential for auto-identification software to misclassify *Myotis* species as LABO or NYHU. VHB conducted qualitative analysis in full spectrum format using SonoBat Version 4.4.5. **Table 4** in **Appendix C** includes a bat species key. Qualitative analysis was performed on a total of 1,368 recordings that met the qualitative review criteria, as detailed in **Table 5** provided in **Appendix C.** Calls that met the criteria for manual vetting were reviewed by Meghan Lout for qualitative review (refer to **Appendix D** for resume).

Decisions on manual identification of calls are made based on a variety of call characteristics, including characteristic slope (Fs), Fc, the length of the sequence, frequency modulation, the type of call (search phase, attack phase, feeding buzz, etc.), the presence of harmonics, among other factors. References consulted during the qualitative analysis process are based on in-person workshops on manual vetting, Echolocation Call Characteristics of Eastern U.S. Bats, and the USGS Guide to Processing Bat Acoustic Data for the North American Bat Program. Meghan Lout conducted final review of the calls that met the criteria for manual vetting for this Project. These sources are included in the References section below.

3

Survey Results

Surveys resulted in a probable absence determination for MYSE, MYLU, and PESU. Automated and qualitative analysis of calls resulted in the detection of the following species or species guilds: LABO, NYHU, big brown bat (*Eptesicus fuscus* or EPFU), hoary bat (*Lasiurus cinereus* or LACI), silver-haired Bat (*Lasionycteris noctivagans* or LANO), EPFU/LANO guild, LABO/NYHU guild, unknown high frequency guild (UNHF), unknown low frequency guild (UNLF), and unknown (UNKN).[1]

3.1 Auto Classification and Qualitative Analysis Results

Kaleidoscope Pro 5.4.7 auto-classified a total of 1,860 call sequences (or calls) that rendered the identification of six species, including: eastern red bat (LABO; n=863 calls); evening bat (NYHU; n=69 calls); big brown bat (EPFU; n=436 calls); hoary bat (LACI; n=29 calls); silver-haired bat (LANO; n=36 calls); and little brown bat (MYLU; n=4 calls). A total of 423 calls were classified as unknown with two of those classified as noise.

Qualitative review was conducted on a total of 1,368 calls. The results of manually vetting included nine species or species guilds, including; eastern red bat (LABO; n=177); evening bat (NYHU; n=100); silver-haired bats (LANO; n=17); hoary bat (LACI; n=5), LABO/NYHU guild (n=968); EPFU/LANO guild (n=24); unknown low frequency which included the four auto classified MYLU calls (UNLF; n=20); unknown high frequency (UNHF; n=23); and unknown (UNKN; n=34). The number of calls and Maximum Likelihood Estimates ("MLE") are provided for each species by detector-night at respective survey locations. The results of the data analysis efforts are detailed in **Tables 3** through **5** provided in **Appendix C.** Spectrograms of select calls are provided in **Appendix E**. The event logs for each detector night are provided in **Appendix F**.

The completed USFWS Northeast 2023 Reporting Form for Acoustic Surveys will be submitted to USFWS as an electronic Excel spreadsheet after this report.

[1] The final species composition reported here only includes those species that were confirmed by manual vetting or had software generated MLE values of 0.05 or less for low-frequency species. For the full suite of species identified by the software and the respective MLE values, refer to **Table 3** in **Appendix C**.

4

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Appendix A - Figures

FIGURE 1.

Project Location Map

BECO-DTC, 230 kV

Loudoun County, Virginia

Client:
Dominion Energy Virginia

Prepared By:	Date:
MKB	07/20/23

0 1,000 2,000 Feet

Scale is 1 in = 2,000 feet when printed at original size of 11x17

0 500 Meters

SITE DATA

Study Area (2.2 km)

Notes:
1. Basemap Source: USGS 7.5 minute Arcola, Virginia Quadrangle.
2. Inset Map Source: USGS The National Map

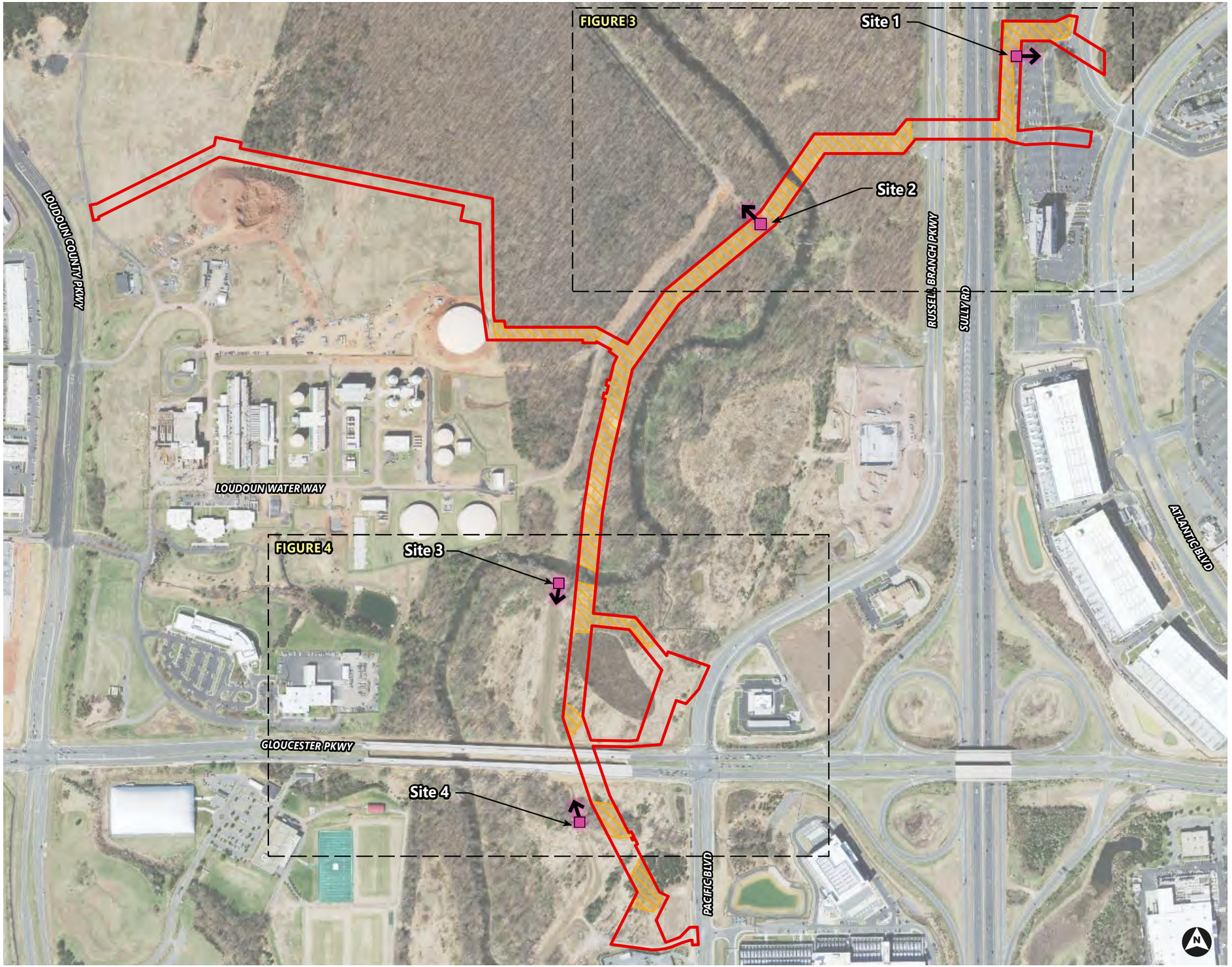


FIGURE 2.

Detector Locations

BECO-DTC, 230 kV

Loudoun County, Virginia

Client:
Dominion Energy Virginia

Prepared By: MKB

Date: 07/20/23

0 250 500 Feet

Scale is 1 in = 500 feet when printed at original size of 11x17

0 125 250 Meters

SITE DATA

- Study Area (2.2 km)
- Forested Bat Habitat
- Site Location
- Microphone Orientation

Notes:
1. Basemap Source: VGIN/VBMP Most Recent Orthoimagery
2. Inset Map Source: USGS The National Map

vhb Dominion Energy C2 ENVIRONMENTAL

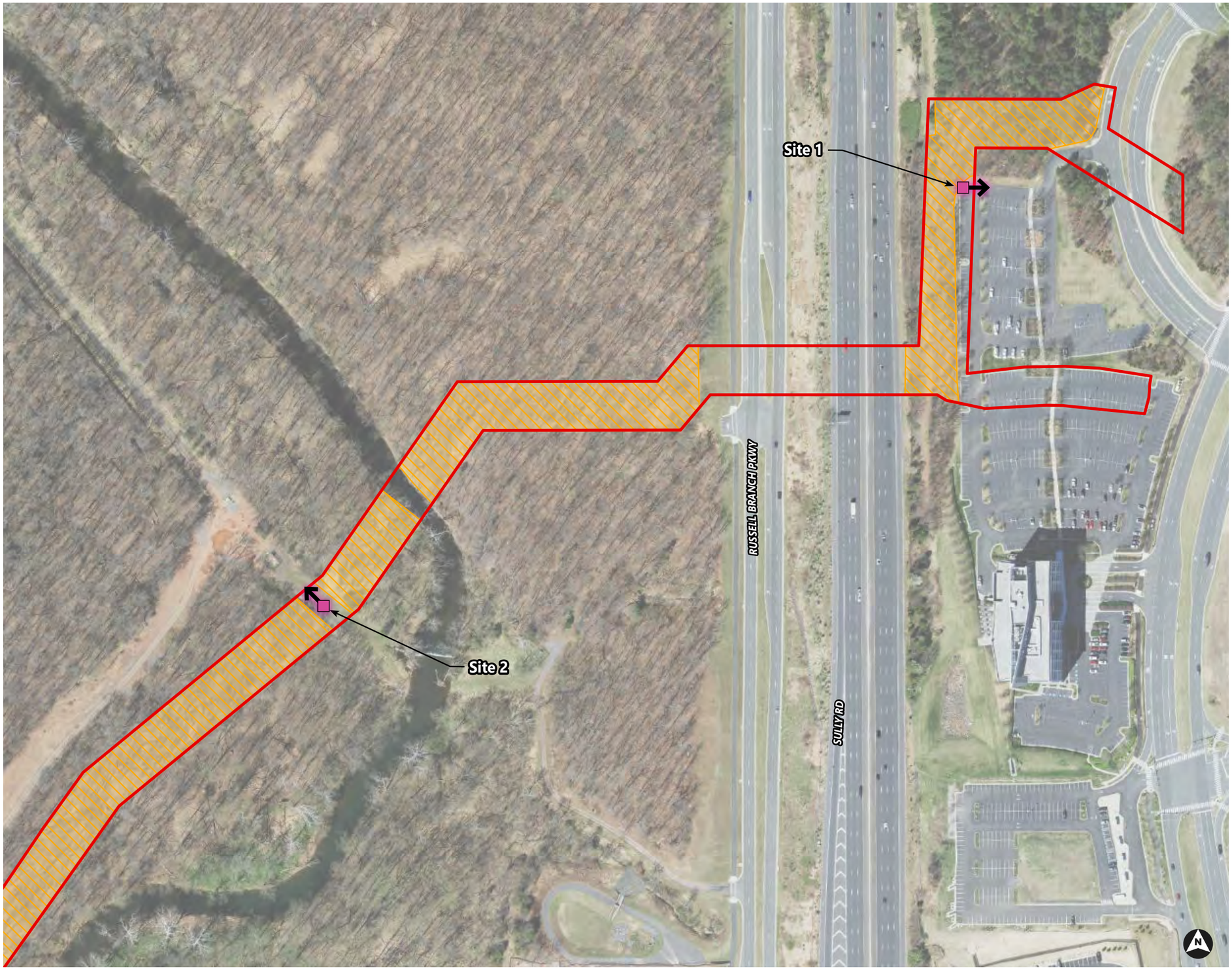


FIGURE 3.

Detector Locations

BECO-DTC, 230 kV

Loudoun County, Virginia

Client:
Dominion Energy Virginia

Prepared By: MKB

Date: 07/20/23

0 100 200 Feet

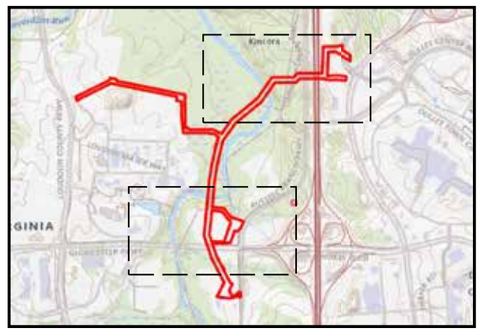
Scale is 1 in = 200 feet when printed at original size of 11x17

0 65 Meters

SITE DATA

- Study Area (2.2 km)
- Forested Bat Habitat
- Site Location
- Microphone Orientation

Notes:
1. Basemap Source: VGIN/VBMP Most Recent Orthoimagery
2. Inset Map Source: USGS The National Map



vhb Dominion Energy C2 ENVIRONMENTAL

FIGURE 4.

Detector Locations

BECO-DTC, 230 kV

Loudoun County, Virginia

Client:
Dominion Energy Virginia

Prepared By:	Date:
MKB	07/20/23

0 100 200 Feet

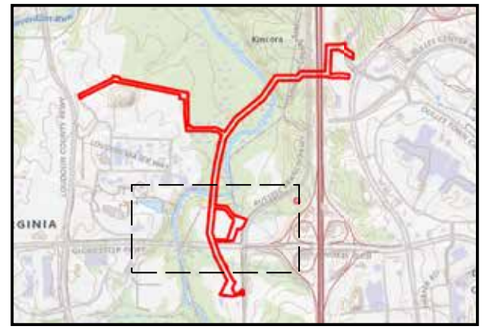
Scale is 1 in = 200 feet when printed at original size of 11x17

0 65 Meters

SITE DATA

- Study Area (2.2 km)
- Forested Bat Habitat
- Site Location
- Microphone Orientation

Notes:
1. Basemap Source: VGIN/VBMP Most Recent Orthoimagery
2. Inset Map Source: USGS The National Map



Appendix B – Field Data Forms and Site Photos

Bat Acoustic Monitoring Data Form

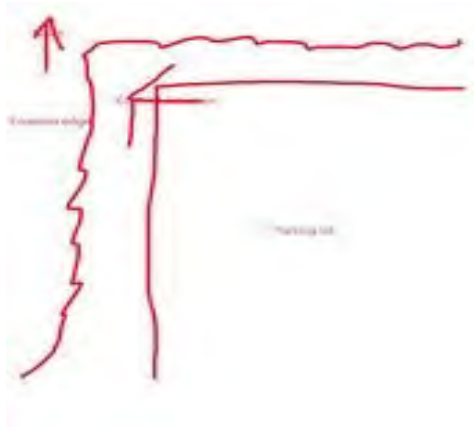
Project:	BECO-DTC-230Kv Line				**Site#:**	1	**Site Name:**	BECO 1				
Municipality:		**County:**	Loudoun		**State:**	VA	**Survey Contact:** Anna Weaver, aweaver@VHB.com					
Latitude:	39.03761525	**Longitude:**	-77.43066112		**Datum:**	WGS84						
Surveyed By:	Phil Bailey, Jackson Hunt				**Setup:** 05/22/2023 16:40		**Retrieval:** 05/24/2023 16:30					
Land Use:	Industrial (Parking lot), Deciduous (forested edge habitat)			**Mic Test**	**Setup**	Yes	**Battery Capacity (v)**	**Setup**	5.8	**CF Card Capacity (GB)**	**Setup**	29
					Retrieval	Yes		**Retrieval**	5.1		**Retrieval**	27.58

BD #	Trigger Sensitivity	Mic	Mic Orientation	HT [1]	Clutter	Gain	Trigger	Interval	Recording Start Time	Recording End Time
52580	Medium	External	E	5	EDGE	45	160	0	19:15	06:20

Site Description / Additional Notes

Forested edge of parking lot targeted for acoustic recording. Deciduous trees located along the edge of the adjacent parking lot. The microphone was oriented facing east to survey along the forested edge to the north. Minimal vehicle or pedestrian activity near detector, but some road noise heard from adjacent roadway. The microphone was located less than 10 feet from the forested edge to the east, and approximately 4 feet from the parking lot. Clutter was adjected along the edge habitat, but outside of the cone of detection.

Additional data download and detector check occurred on 5/23/23. Battery Level = 5.3V, CF Storage=26.45, time checked= 11:20am.
Formatted CF cards and conducted microphone test during check.



Site sketch

[1] *Height of microphone above ground level (in meters)*

Bat Acoustic Monitoring Data Form

1. Cone of detection and edge habitat beside parking lot

Observations

Taken: May 22, 2023 Facing: E

2. Parking lot and mowed edge beside detector

Observations

Taken: May 22, 2023 Facing: NE

Bat Acoustic Monitoring Data Form

3. Forested edge and surrounding habitat

Observations	Taken: May 22, 2023 Facing: S 

5. Forested habitat adjacent to detector location

Observations	Taken: May 22, 2023 Facing: N 

Bat Acoustic Monitoring Data Form

6. Forested edge facing west with view of equipment

Observations	Taken: May 22, 2023 Facing: 

Bat Acoustic Monitoring Data Form

Project:	BECO-DTC-230Kv Line			**Site#:**	2	**Site Name:**	BECO 2				
Municipality:		**County:**	Loudoun	**State:**	VA	**Survey Contact:** Anna Weaver, aweaver@VHB.com					
Latitude:	39.03543732	**Longitude:**	-77.43515645	**Datum:**	WGS84						
Surveyed By:	Phil Bailey, Jackson Hunt			**Setup:** 05/22/2023 13:00		**Retrieval:** 05/24/2023 11:00					
Land Use:	Deciduous, Streams / Canals	**Mic Test**	**Setup** Yes / **Retrieval** Yes	**Battery Capacity (v)**	**Setup** 5.8 / **Retrieval** 5	**CF Card Capacity (GB)**	**Setup** 29 / **Retrieval** 28.57				

BD #	Trigger Sensitivity	Mic	Mic Orientation	HT [1]	Clutter	Gain	Trigger	Interval	Recording Start Time	Recording End Time
52562	Medium	External	NW	5	EDGE	45	160	0	19:15	06:20

Site Description / Additional Notes

Forest edge habitat near stream targeted for acoustic recording. Mixed deciduous forest located adjacent to cone of detection. Stream located about 200 feet southeast of the cone of detection. The microphone was oriented facing northwest to survey along the forest edge habitat. The microphone was located less than 10 feet from the forested edge to the east.

Additional data download and detector check occurred on 5/23/23. Battery level = 5.3 V, CF storage = 28.94 GB, and time checked = 10:51 AM.

Site sketch

[1] *Height of microphone above ground level (in meters)*

Bat Acoustic Monitoring Data Form

1. Cone of detection, edge habitat, and water pump facing west.

Observations

Taken: May 22, 2023 Facing: W

2. Cone of detection and edge habitat facing north.

Observations

Taken: May 22, 2023 Facing: N

Bat Acoustic Monitoring Data Form

3. Road and edge habitat facing south.

Observations	Taken: May 22, 2023 Facing: S 

4. Mixed deciduous forest habitat.

Observations	Taken: May 22, 2023 Facing: E 

Bat Acoustic Monitoring Data Form

5. Cone of detection facing southeast.

Observations	Taken: May 22, 2023 Facing: SE 

6. Mixed deciduous forest habitat.

Observations	Taken: May 22, 2023 Facing: SW 

Bat Acoustic Monitoring Data Form

Project:	BECO-DTC-230Kv Line			**Site#:**	3	**Site Name:**	BECO 3					
Municipality:		**County:**	Loudoun	**State:**	VA	**Survey Contact:** Anna Weaver, aweaver@VHB.com						
Latitude:	39.03043825	**Longitude:**	-77.43887397	**Datum:**	WGS84							
Surveyed By:	Phil Bailey, Jackson Hunt			**Setup:** 05/22/2023 12:30		**Retrieval:** 05/24/2023 11:30						
Land Use:	Deciduous, Streams / Canals	**Mic Test**	**Setup**	Yes	**Battery Capacity (v)**	**Setup**	5.7	**CF Card Capacity (GB)**	**Setup**	29		
			Retrieval	Yes		**Retrieval**	5.1		**Retrieval**	28.9		

BD #	Trigger Sensitivity	Mic	Mic Orientation	HT [1]	Clutter	Gain	Trigger	Interval	Recording Start Time	Recording End Time
52579	Medium	External	S	5	EDGE	45	160	0	19:15	06:20

Site Description / Additional Notes

Forest edge habitat near stream targeted for acoustic recording. Mixed deciduous forest located adjacent to cone of detection. The microphone was oriented facing south to survey along the forest edge habitat. The microphone was located less than 10 feet from the forested edge to the east, and approximately 25 feet from the stream.

Additional data download and detector check occurred on 5/23/23. Battery Level = 5.3V, CF Storage=28.64, time checked = 10:10 AM.

Formatted CF cards and conducted microphone test during check.

Site sketch

[1] *Height of microphone above ground level (in meters)*

Bat Acoustic Monitoring Data Form

1. Cone of detection and edge habitat facing east.

Observations

Taken: May 22, 2023 Facing: E

2. Mixed deciduous forest habitat adjacent to cone of detection.

Observations

Taken: May 22, 2023 Facing: W

Bat Acoustic Monitoring Data Form

3. Broad Run facing northeast.

Observations	Taken: May 22, 2023 Facing: NE 

4. Mixed deciduous forest habitat.

Observations	Taken: May 22, 2023 Facing: E 

Bat Acoustic Monitoring Data Form

5. Open field and edge habitat facing southeast.

Observations	Taken: May 22, 2023 Facing: SE 

6. Cone of detection, stream, and edge habitat.

Observations	Taken: May 22, 2023 Facing: NE 

Bat Acoustic Monitoring Data Form

Project:	BECO-DTC-230Kv Line				**Site#:**	4	**Site Name:**	BECO 4				
Municipality:		**County:**	Loudoun	**State:**	VA	**Survey Contact:** Anna Weaver, aweaver@VHB.com						
Latitude:	39.02702188	**Longitude:**	-77.43855322		**Datum:**	WGS84						
Surveyed By:	Phil Bailey, Jackson Hunt				**Setup:** 05/22/2023 12:00			**Retrieval:** 05/24/2023 14:30				
Land Use:	Transport, Utilities, Deciduous, Streams / Canals, Forested	**Mic Test**	**Setup**	Yes	**Battery Capacity (v)**	**Setup**	5.6	**CF Card Capacity (GB)**	**Setup**	29.82		
			Retrieval	Yes		**Retrieval**	5.0		**Retrieval**	29.55		

BD #	Trigger Sensitivity	Mic	Mic Orientation	HT [1]	Clutter	Gain	Trigger	Interval	Recording Start Time	Recording End Time
52582	Medium	External	NW	5	EDGE	45	160	0	19:15	06:20

Site Description / Additional Notes

Detector set up along tree line on the edge of an access road. Detector is near a large emergent wetland with mature hardwoods surrounding it.

Additional data download and detector check occurred on 5/23/23. Battery Level = 5.3V, CF Storage=28.56, time checked = 10:32 AM.

Formatted CF cards and conducted microphone test during check.

Site sketch

[1] *Height of microphone above ground level (in meters)*

Bat Acoustic Monitoring Data Form

1. Showing detector direction along wood line

Observations

Taken: May 22, 2023 Facing: N

2. Edge of woods beside detector

Observations

Taken: May 22, 2023 Facing: NE

Bat Acoustic Monitoring Data Form

3. Forested wetland habitat adjacent to cone of detection.

Observations	Taken: May 22, 2023 Facing: E 

4. Forested wetland habitat.

Observations	Taken: May 22, 2023 Facing: SE 

Bat Acoustic Monitoring Data Form

5. Forest edge and dirt road behind detector.

Observations

Taken: May 22, 2023 Facing: S

6. Herbaceous vegetation and road edge west of detector.

Observations

Taken: May 22, 2023 Facing: W

Appendix C – Data Tables

Table 1: Project and Equipment Overview

Project Name	**BECO-DTC 230 kV Transmission Line**
Project Location	Ashburn and Sterling, Loudoun County, Virginia
Weather Summary	5/22/2023-5/23/2023: High Temp: 74.1°F, Low Temp: 52.3°F, Avg Temp: 63.8°F, Avg Wind Speed: 0.7 mph, Precipitation: No 5/23/2023-5/24/2023: High Temp: 69.4°F, Low Temp: 50.0°F, Avg Temp: 59.7°F, Avg Wind Speed: 0.2 mph, Precipitation: No Weather Underground Station: KVASTERL145
Principal Equipment	Pettersson D500x; D500x external, high frequency, full spectrum microphone with a directional horn and PVC tube
VHB Personnel	Anna Weaver (data processing, habitat assessment, site selection, data compilation), Phillip Bailey, Jackson Hunt, Miguel Ortiz, (Field deployment, retrieval, and data download), Meghan Lout (qualitative acoustic analysis), Jessica Druze (reporting). Refer to resumes in **Appendix D**
Standard Pettersson D500x Settings	Sampling Frequency = 500 PreTrig = Off Recording Length = 5 seconds HP-Filter = Yes Auto-Record = Yes Input Gain = 45 Trigger Level = 160 Interval = 0
Standard Mic Setup	Height above ground = 3-5 meters Vertical orientation = 45 degrees (assuming 0 degrees is parallel with the horizon). Clap sound test performed at deployment and retrieval to determine proper functioning, along with review of event log.
Acoustic Analysis Software	**Program:** Kaleidoscope Pro 5.4.7 for automated analysis; SonoBat, V 4.4.5 for qualitative analysis
	Filters or Parameters: Files were scrubbed and attributed using SonoBat Data Wizard V 4.4.5, set to medium: accepts all but poor-quality calls; accepts some noise with tonal content, include signals from 20 kHz and above.
	Program Settings Signal detection parameters (default parameters) Minimum and Maximum Frequency Range: 8-120 kHz Minimum and Maximum Length of Detected Pulses: 2-500 ms Maximum inter-syllable gap: 500 ms Min. # of pulses for species ID = 2 Suite of species/groups included in program analysis: EPFU, LANO, LABO, LACI, MYLU, MYSE, NYHU, PESU

Table 2: Detector Details

Site	Detector #	Detector Night Start Dates	Latitude[1]	Longitude[1]	Start Time	End Time	Mic Orientation	Clutter	Distance to Nearest Vegetation or Obstruction	Habitat Type[2]
1	52580	5/22/2023 5/23/2023	39.03761697	-77.43066198	19:15	06:20	E	Edge	10 feet	Industrial (parking lot), deciduous forest
2	52562	5/22/2023 5/23/2023	39.03543488	-77.43515682	19:15	06:20	NW	Edge	<10 feet	Deciduous forest, stream
3	52579	5/22/2023 5/23/2023	39.0304381	-77.43887348	19:15	06:20	S	Edge	<10 feet	Mixed deciduous forest, stream
4	52582	5/22/2023 5/23/2023	39.02702052	-77.43855512	19:15	06:20	NW	Edge	10 feet	Deciduous forest, forested wetland, stream

1 Sub-meter accuracy.
2 Refer to the Field Data Forms in Appendix B for more detailed site information.

Table 3: Recorded Bat Call Results

Site Number & Detector Night		Species Identification[1]													Total # of Significant [3] Calls	Total # of Calls
		EPFU	LABO	LACI	LANO	MYLU	MYSE	NYHU	PESU	LABO/ NYHU	EPFU/ LANO	UNHF	UNLF	UNKN		
Site 1 5/22/23 – 5/23/23	Number of Calls	*8**	*139**	*6**	*5**	0	0	*45**	0	*486**	*0*	*2**	*1**	*14**	*685*	706
	MLE (p)[2]	<0.01	0	0.09	0.07	-	-	1	-	-	-	-	-	-		
Site 1 5/23/23 – 5/24/23	Number of Calls	1	*36**	1	*3**	0	0	*40**	0	*353**	0	3*	0	11*	*432*	448
	MLE (p)[2]	0.57	0	0	0.24	-	-	1	-	-	-	-	-	-		
Site 2 5/22/23 – 5/23/23	Number of Calls	*64**	*1**	*6*	*13**	0	0	*4**	0	22*	*6**	*3**	*1**	2*	*103*	122
	MLE (p)[2]	0	0	0.33	1	-	-	1	-	-	-	-	-	-		
Site 2 5/23/23 – 5/24/23	Number of Calls	*18**	0	*5**	3	0	0	0	0	9*	*4**	0	*2**	1*	*32*	42
	MLE (p)[2]	0	-	0.06	1	-	-	-	-	-	-	-	-	-		
Site 3 5/22/23 – 5/23/23	Number of Calls	*101**	*1**	8	*16**	0	0	*7**	0	*21**	*11**	*2**	*11**	*2**	144	180
	MLE (p)[2]	0	0	0.41	1	-	-	1	-	-	-	-	-	-		
Site 3 5/23/23 – 5/24/23	Number of Calls	*26**	0	5	1	0	0	*1**	0	*7**	*2**	0	*1**	*1**	36	44
	MLE (p)[2]	0	-	0.05	1	-	-	0.91	-	-	-	-	-	-		
Site 4 5/22/23 – 5/23/23	Number of Calls	*203**	0	2	*3**	0	0	*3**	0	*38**	0	*6**	*4**	*3**	247	262
	MLE (p)[2]	0	-	1	1	-	-	1	-	-	-	-	-	-		
Site 4 5/23/23 – 5/24/23	Number of Calls	*15**	0	1	0	0	0	0	0	*32**	1	*7**	0	0	48	56
	MLE (p)[2]	0	-	1	-	-	-	-	-	-	-	-	-	-		
Automatic ID Total		436	863	29	36	4	-	69	-	-	-	-	-	423	**1860**	
Manual ID Total		-	177	5	17	-	-	100	-	968	24	23	20	34	**1368**	
														TOTAL CALLS FOR ALL SITES	-	**1860**
														TOTAL SIGNIFICANT CALLS FOR ALL SITES[3]	**1727**	-

	1 Refer to species key in Table 4 2 MLE (p) values ≤0.05 are considered to be significant and suggest presence. 3 Significant calls (italicized) include those with an MLE value ≤0.05 and those calls which have been manually vetted; this does not include any calls classified as UNKN, UNHF, UNLF. *All or a portion of the calls were qualitatively reviewed.

Table 4: Bat Species Key[1]

Species Abbreviation	Scientific Name	Common Name
EPFU	*Eptesicus fuscus*	Big Brown Bat
LABO	*Lasiurus borealis*	Eastern Red Bat
LACI	*Lasiurus cinereus*	Hoary Bat
LANO	*Lasionycteris noctivagans*	Silver-haired Bat
MYLU	*Myotis lucifugus*	Little Brown Bat
MYSE	*Myotis septentrionalis*	Northern Long-eared Bat
NYHU	*Nycticeius humeralis*	Evening Bat
PESU	*Perimyotis subflavus*	Tricolored Bat
UNHF	*Unknown high frequency*	Unknown high frequency
UNLF	*Unknown low frequency*	Unknown low frequency
UNKN	*Unknown*	Assigned to calls that are too fragmented or poor quality to be classified to species.

1 The federally endangered Indiana bat (*Myotis sodalis*), gray bat (*Myotis grisescens*), eastern small-footed bat (*Myotis leibii)*, and Virginia big-eared bat (Corynorhinus townsendii) as well as the state endangered Rafinesque's big-eared bat (*Corynorhinus rafinesquii*) are not expected to occur within the Project Area based on known habitat preferences and locations.

Table 5: Qualitative Analysis Summary

Site	Detector Night Start Date	Auto-ID by KPro 5.4.7	QA-QC ID by VHB/	Comments
Site 1	5/22/23	LABO	LABO	A total of 139 calls were classified as LABO as well as manually vetted as LABO.
Site 1	5/22/23	LABO	LABO/NYHU	A total of 333 calls classified by AutoID as LABO were consistent with LABO/NYHU guild.
Site 1	5/22/23	LABO	LANO	Two calls were classified by AutoID as LABO with characteristics of LANO calls
Site 1	5/22/23	LABO	NYHU	A total of 21 calls classified by AutoID as LABO were characteristic of NYHU.
Site 1	5/22/23	LABO	UNHF	Two calls classified by AutoID as LABO were identified as unknown HiF calls.
Site 1	5/22/23	LABO	UNKN	One call classified By AutoID was identified as unknown. Call fragment with feeding buzz
Site 1	5/22/23	LACI	UNLF	One call classified by Auto ID as LACI was identified as unknown LoF call during qualitative analysis.
Site 1	5/22/23	LANO	LACI	Three calls classified by AutoID as LANO were identified during qualitative analysis as LACI
Site 1	5/22/23	UNKN	LABO/NYHU	A total of 147 calls classified by AutoID as UNKN; Identified as LABO/NYHU guild during qualitative analysis.
Site 1	5/22/23	UNKN	LACI	One call classified as UNKN by AutoID; Identified as LACI during qualitative analysis
Site 1	5/22/23	UNKN	NYHU	Four calls classified as UNKN by AutoID; Identified as NYHU during qualitative analysis
Site 1	5/22/23	UNKN	UNKN	Thirteen calls classified as UNKN by AutoID; Identified as UNKN during qualitative analysis
Site 1	5/22/23	NYHU	LABO/NYHU	Six calls classified as NYHU by Auto ID; Identified as LABO/NYHU guild during qualitative analysis
Site 1	5/22/23	NYHU	NYHU	Twenty calls classified as NYHU by AutoID: Consistent with NYHU ID during qualitative analysis
Site 1	5/23/23	LABO	LABO	Total of 35 calls classified as LABO by AutoID: Consistent with LABO ID during qualitative analysis
Site 1	5/23/23	LABO	LABO/NYHU	A total of 220 calls classified as LABO by AutoID: Consistent with LABO/NYHU guild during qualitative analysis.
Site 1	5/23/23	LABO	LANO	One call identified as LABO during AutoID; Identified as LANO during qualitative analysis
Site 1	5/23/23	LABO	NYHU	Seven calls identified as LABO during AutoID: identified as NYHU during Qualitative analysis
Site 1	5/23/23	LABO	UNKN	One call identified as LABO during AutoID; Identified as Unknown during qualitative analysis. Poor quality call
Site 1	5/23/23	LANO	LANO	One call identified as LANO in AutoID and verified during qualitative analysis
Site 1	5/23/23	UNKN	LABO/NYHU	A total of 126 calls classified as UNKN in AutoID: consistent with LABO/NYHU guild during qualitative analysis.
Site 1	5/23/23	UNKN	NYHY	Fourteen calls classified as UNKN in AutoID: consistent with NYHU calls during qualitative analysis.
Site 1	5/23/23	UNKN	UNKN	Eight calls classified as UNKN in AutoID: identified as UNKN. Poor quality calls

Site 1	5/23/23	NYHU	LABO	One call classified as NYHU in AutoID; consistent with LABO call during qualitative analysis.
Site 1	5/23/23	NYHU	LABO/NYHU	Seven calls classified as NYHU in AutoID: Consistent with LABO/NYHU guild during qualitative analysis.
Site 1	5/23/23	NYHU	NYHU	Nineteen calls classified as NYHU in AutoID: Consistent with NYHU during qualitative analysis.
Site 1	5/23/23	NYHU	UNHF	Three calls classified as NYHU in AutoID: identified as unknown HiF call during qualitative analysis
Site 1	5/23/23	NYHU	UNKN	One call classified as NYHU: identified as unknown call during qualitative analysis
Site 2	5/22/23	LABO	LABO/NYHU	Total of 15 calls classified as LABO by AutoID, consistent with LABO/NYHU guild
Site 2	5/22/23	LABO	NYHU	Total of 4 calls identified as LABO by AutoID were characteristic of NYHU.
Site 2	5/22/23	MYLU	UNHF	Sequence of 7 call pulses mostly out of range – considered unidentified HF bat.
Site 2	5/22/23	UNKN	LABO	Sequence of 17 call pulses classified as UNKN by AutoID, consistent with LABO.
Site 2	5/22/23	UNKN	UNHF	Sequence of 5 out of range call pulses.
Site 2	5/22/23	UNKN	LABO/NYHU	A total of 7 call files classified by AUTO ID as UNKN, consistent with either LABO or NYCH calls based on FC and DUR.
Site 2	5/22/23	UNKN	LANO	Total of 5 call files identified as UNKN in AutoID, consistent with LANO calls.
Site 2	5/22/23	UNKN	EPFU/LANO	Total of 6 call files classified as UNKN in AutoID, consistent with EPFU/LANO guild.
Site 2	5/22/23	Noise	UNLF	Unknown low frequency call
Site 2	5/22/23	UNKN	UNKN	Two calls classified as UNKN
Site 2	5/23/23	UNKN	LABO/NYHU	Seven call files classified as UNKN by AUTO ID: consistent with LABO/NYHU guild.
Site 2	5/23/23	UNKN	UNKN	Sequence of 4 call pulses; out of range
Site 2	5/23/23	UNKN	EPFU/LANO	Four calls classified as unknown by Auto ID: consistent with EPFU/LANO guild
Site 2	5/23/23	UNKN	UNLF	Two calls with unknown LoF bats
Site 2	5/23/23	UNKN	LACI	Low frequency call with 10 pulses identified as LACI.
Site 2	5/23/23	NYHU	LABO/NYHU	Two calls classified as NYHU by Auto ID, consistent with LABO/NYHU guild
Site 3	5/22/23	LABO	LABO/NYHU	Sixteen call files classified as LABO by AUTO ID: consistent with LABO/NYHU guild.
Site 3	5/22/23	LABO	NYHU	Five call files classified as LABO by AUTO ID, identified as NYHU calls
Site 3	5/22/23	LABO	LABO	One call with characteristics of LABO
Site 3	5/22/23	NYHU	NYHU	Characteristic approach phase
Site 3	5/22/23	UNKN	NYHU	Call classified as UNKN by Auto ID, consistent with NYHU call
Site 3	5/22/23	NYHU	LABO/NYHU	Two calls classified as NYHU by Auto ID, consistent with LABO/NYHU guild
Site 3	5/22/23	UNKN	UNKN	Two calls classified and confirmed as unknown
Site 3	5/22/23	UNKN	EPFU/LANO	Eleven call files classified as UNKN by AUTO ID: consistent with EPFU/LANO guild.

Site 3	5/22/23	UNKN	UNLF	Eleven call files classified as UNKN by AUTO ID: unknown LoF calls
Site 3	5/22/23	UNKN	LANO	Three calls with clear characteristic pulses; consistent with LANO calls
Site 3	5/22/23	UNKN	LABO/NYHU	Three calls classified as UNKN by AutoID, consistent with LABO/NYHU guild
Site 3	5/22/23	LABO	UNHF	Two calls with fragments of pulses; HiF calls unidentifiable
Site 3	5/23/23	LABO	LABO/NYHU	Three calls classified as LABO by AutoID, consistent with LABO/NYHU guild
Site 3	5/23/23	NYHU	LABO/NYHU	Two calls classified as NYHU by AutoID, consistent with LABO/NYHU guild
Site 3	5/23/23	UNKN	UNLF	One call file classified as UNKN by AUTO ID: unknown LoF calls
Site 3	5/23/23	UNKN	LABO/NYHU	Two calls classified as UNKN by AutoID, consistent with LABO/NYHU guild
Site 3	5/23/23	UNKN	EPFU/LANO	Two calls classified as UNKN by AutoID, consistent with EPFU/LANO guild
Site 3	5/23/23	UNKN	UNKN	One Call
Site 3	5/23/23	LABO	NYHU	Call classified by AutoID as LABO, characteristic of NYHU call
Site 4	5/22/23	LABO	LABO/NYHU	Total of 28 calls classified as LABO by AutoID; calls consistent with LABO/NYHU guild.
Site 4	5/22/23	LABO	NYHU	Two calls classified by AutoID as LABO: consistent with NYHU calls
Site 4	5/22/23	LABO	UNHF	Two calls classified as LABO by AutoID: Identified as unknown HiF calls
Site 4	5/22/23	MYLU	UNHF	Three calls classified as MYLU by AutoID: Identified as unknown HiF calls
Site 4	5/22/23	UNKN	LABO/NYHU	Ten calls classified as UNKN by AutoID; Identified as LABO/NYHU guild during qualitative analysis.
Site 4	5/22/23	UNKN	LANO	One call classified as UNKN by AutoID; Identified as LANO during qualitative analysis.
Site 4	5/22/23	UNKN	NYHU	One call classified as UNKN by AutoID; Identified as NYHU during qualitative analysis.
Site 4	5/22/23	UNKN	UNHF	One call classified as UNKN by AutoID; Identified as unknown HiF call during qualitative analysis
Site 4	5/22/23	UNKN	UNKN	Three calls classified as UNKN by AutoID; Identified as UNKN during qualitative analysis.
Site 4	5/22/23	UNKN	UNLF	Four Calls classified as UNKN by AutoID; Identified as unknown LoF calls during qualitative analysis.
Site 4	5/23/23	LABO	LABO/NYHU	Fourteen calls classified as LABO by AutoID; Identified as LABO/NYHU guild during qualitative analysis.
Site 4	5/23/23	LABO	UNHF	Five calls classified as LABO by AutoID; Identified as unknown HiF calls during qualitative analysis.
Site 4	5/23/23	UNKN	LABO/NYHU	Thirteen calls classified as UNKN by AutoID; Identified as LABO/NYHU guild during qualitative analysis.
Site 4	5/23/23	UNKN	EPFU/LANO	One call classified as UNKN by AutoID; Identified as EPFU/LANO guild during qualitative analysis.

Site 4	5/23/23	UNKN	UNHF	Two calls classified as UNKN by AutoID; Identified as unknown HiF calls during qualitative analysis.
Site 4	5/23/23	NYHU	LABO/NYHU	Five calls classified as NYHU by AutoID; Identified as calls consistent with LABO/NYHU guild during qualitative analysis.

[1]HiF = high frequency.
[2]LoF = low frequency.
[3]Fc= characteristic frequency; the frequency of a call pulse at its flattest point, where the slope is closest to horizontal.
[4]DUR = duration; the total length, in milliseconds, of a bat call pulse.
[5]CPS = calls-per-second; a sequence calculation usually describing the average number of pulses emitted over the entire time of the recording.

Appendix D - Resumes

Anna Weaver, CE, WPIT

Environmental Scientist

Anna is an Environmental Scientist and Certified Ecologist in VHB's Williamsburg, Virginia, office with extensive experience in leading and conducting field monitoring projects and natural resource studies related to environmental compliance, the Endangered Species Act, and the National Environmental Policy Act. Anna's expertise includes acoustic, hands-on, and visual identification of birds. Her experience conducting bat surveys includes acoustic monitoring, mist netting, radiotelemetry, and emergence surveys. She is experienced in reviewing state and federal regulations and coordinating with agencies, as well as writing protocol and plans for natural resource monitoring and mitigation measures.

Education

BS, Biology, West Virginia University Institute of Technology, 2014

Registrations/Certifications

Certified Ecologist: ESA, 2026

Dual Inspector for Erosion and Sediment Control and Stormwater Management, Virginia, 2026

Wetland Professional in Training, 2024

Affiliations/Memberships

Society of Wetland Scientists

Virginia Herpetological Society

Audubon Society

The Wildlife Society

Ecological Society of America

Northeast Bat Working Group

Southeastern Bat Diversity Network

8 years of professional experience

Stanley Consultants/MidAmerican Energy - Avian Risk Assessment, Davenport, IA

Anna served as project manager and was responsible for developing the Avian Risk Assessment for a 15-mile transmission line in Davenport, IA. She developed a field monitoring plan to evaluate and assess risks to avian species from project implementation. She conducted habitat surveys and avian use surveys for species covered under the Migratory Bird Treaty Act, Endangered Species Act (ESA), and Bald and Golden Eagle Projection Act (BGEPA). She coordinated with state and federal agencies including the Iowa Department of Natural Resources (DNR) and followed all guidelines and methodologies within the standards developed by the Avian Powerline Interaction Committee (APLIC) and MidAmerican Energy's Avian Protection Plan.

Acoustic Survey Methods Course, Watertown, MS (2021)

Completed the acoustic survey methods course provided for VHB in Watertown, MS. This course provided a comprehensive training on conducting bat acoustic monitoring, data management, and analysis on bat echolocation calls to species level for all bats found in the eastern U.S. Data analysis for full spectrum and zero-cross data were reviewed and software used in this course included Kaleidoscope Pro and SonoBat Data Wizard.

Private Conservation Properties: Bat, Bird, and Herpetofauna Surveys

Anna was responsible for conducting field surveys for 117 conservation properties throughout Florida, Alabama, Georgia, South Carolina, over a 3-year period. These surveys were conducted to compile comprehensive species lists and to identify state and federally listed species for each site. She conducted habitat assessments for targeted bird surveys and transect surveys for herpetofauna and birds. Anna assisted in performing bat surveys with a focus on state and federally rare, threatened, and endangered bats in Escambia County Alabama. She is experienced in characterizing habitats, species identification, report writing, statistical analysis, reviewing state and federal survey guidelines, and tracking conservation statuses of all species observed. Her project responsibilities for bat surveys included habitat assessments, mist-netting,

acoustic survey equipment deployment and retrieval, assistance with automated acoustic data analysis, and report writing.

NCDOT, 2019 Eastern NC Northern Long-Eared Bat Research Study, NC

Anna assisted with the bat research project, which is part of a programmatic agreement between North Carolina Department of Transportation (NCDOT), Federal Highway Administration (FWHA), U.S. Army Corps of Engineers, and U.S. Fish and Wildlife Service (USFWS). She assisted in conducting in mist netting and extensive radiotelemetry for federally threatened northern long-eared bats within the North River Gameland (Tupelo-Cypress blackwater swamp habitat). Her other project responsibilities included data collection, fur and tissue samples, emergence surveys at tracked roost locations, and report writing. She identified and handled the following bat species: *Myotis septentrionalis*, *Lasiurus borealis*, *Nycticeius humeralis*, *Eptesicus fuscus*, *Perimyotis subflavus, and Corynorhinus rafinesquii*. Other study areas were Merchants Millpond State Park and Great Dismal Swamp State Park. Anna identified and handled the following bat species: *Myotis spetentrionalis*, *Myotis austroriparius*, and *Myotis lucifugus*.

Virginia Department of Transportation (VDOT) Hampton Roads Bridge Tunnel Expansion Project

As the lead VDOT Bird Monitor, Anna helped develop the avian survey and data collection protocol for this project in coastal Virginia. She conducts nesting season bird surveys to determine avian abundance, behavior, and land use for numerous colonial nesting species. As well as the bird monitoring effort, bird deterrence measures are regularly checked. On-call injured bird, egg, and nest response, and weekly reporting is required. She coordinates daily survey efforts, schedules field crews, and is responsible for QA/QC of survey data, and USFWS Permit reporting. On a biweekly basis, she discusses a review of field observations to VDOT and the Virginia Department of Wildlife Resources (VDWR). The purpose of these communications is to evaluate effectiveness of bird deterrence measures, summarize bird behavioral observations, and discuss VDWR habitat creation efforts. This project is ongoing, and monitoring will continue throughout construction efforts.

City of Norfolk, Ohio Creek Watershed Transformation Plan, Norfolk, VA

Provided EIS report writing assistance and vegetation monitoring for this community resiliency project. The project involves NEPA compliance through a HUD EIS, natural systems design, shoreline design and local, state, and federal environmental permitting. Anna conducted tree density and population surveys and assisted in creating the admin records and conducted environmental research for the EIS.

James City County, Sand Drive West Outfall Wetland Delineation, James City County, VA

Anna conducted a wetland delineation for jurisdictional determination on the Sand Drive West Outfall Project for a proposed stilling basin. Anna assisted in completing the environmental permitting review, wetland data, and reporting for USACE permitting protocols.

NRG-Dominion/ACP Natural Resource Surveys, West Virginia, Virginia, and North Carolina

Anna conducted numerous natural resources surveys during the life of this project but spent most of her time conducting avian surveys that included the following:

- Bald and golden eagle winter biomonitoring and raptor stick nest surveys in West Virginia (GWNF and Monongahela National Forest (MNF)), and private lands throughout Virginia and West Virginia
- Great blue heron rookery and bald eagle nest surveys in North Carolina, Virginia, and West Virginia
- Migratory Bird Treaty Act (MBTA) nest surveys in North Carolina
- Small Mammal habitat level assessments
- Pre-construction and Post construction biomonitoring of small whorled pogonia (*Isotria medeoloides*) populations at four separate sites in Virginia and West Virginia.
- Supported relocation efforts of several populations of American ginseng (*Panas quinquefolius*) from the proposed Project footprint to an off-site location.
- Assisted with botanical surveys for both federal and state-listed rare, threatened, and endangered (RTE) plant species throughout West Virginia, Virginia, and North Carolina.

ERM-TC Energy/VA Reliability Project, Multiple Counties, VA

Data management and review for the wetland delineation field services were provided for an approx. 50-mile natural gas pipeline. She was responsible for QAQC of all data, compilation of all photos and data for submittal to the client, and coordination with field crews on data collection.

North Carolina Department of Transportation (NCDOT), Multiple Roadway Projects*

Anna conducted numerous field surveys for the federally endangered red cockaded woodpecker and state-listed bald eagle for numerous roadway expansion projects throughout the state of North Carolina. Work included in-office review of existing data and reports of known species occurrence, known roost trees, and field assessment of habitats including age distribution, diameter, and density of pines stands potentially used for nesting and foraging woodpeckers in accordance with U.S. Fish and Wildlife Service guidelines.

She was also responsible for habitat level assessments and presence/absence surveys for *Rhus michauxii*, *Helianthus schweinitzii*, and *Schwalbea americana*. These surveys required prior knowledge of habitat requirements for all species along with proficient identification skills for each of the listed species.

**Completed prior to joining VHB*

Beech Ridge Wind Energy Facility, West Virginia*

Anna was a field technician and crew leader for a post-construction fatality monitoring and turbine curtailment study. The purpose of the studies was to quantify fatality rates for birds and bats and test the effectiveness of operational turbine management. Anna was responsible for ensuring that field survey methods met conditions outlined in a Habitat Conservation Plan, as required under Section 10 of the Endangered Species

Act. Anna also ensured surveys were conducted in compliance with the USFWS' Land-Based Wind Energy Guidelines and the West Virginia Division of Natural Resource's requirements. Her additional responsibilities included:

- The identification and verification of bird and bat fatalities
- Coordination and collection of fur and tissue samples of bat carcasses for genetic analysis at Frostburg State University
- Recording all avian observations on site
- Overseeing that field crews follow strict protocols and adherence to stringent reporting requirements for threatened and endangered species observations
- Coordinating and communicating with fatality search teams
- Immediate reporting of bald and golden eagle observations or carcasses on site
- Following and enforcing client and employer safety protocols
- Data management and quality assurance/quality control of all data recorded

**Completed prior to joining VHB*

Phillip Bailey

Environmental Scientist, VHB
6840 Shawnee Road, Richmond, Virginia 23225
PBailey@VHB.com
757-813-4023

Education

BS, Wildlife and Fisheries Resources,

West Virginia University,

2017

Certifications

Associate Wildlife Biologist, 2017

Wetland Professional in Training, 2018

USFWS Approved Surveyor (Small Whorled Pogonia) VA, 2019

Virginia DOF Certified Prescribed Burn Manager, 2021

Memberships

The Wildlife Society, 2016

Society of Wetland Scientists, 2017

Virginia Herpetological Society, 2016

The Orianne Society, 2018

Virginia Native Plant Society, 2017

Virginia Associate of Wetland Professionals,

2017

Southeastern Bat Diversity Network, 2018

Northeastern Bat Working Group, 2020

Vanasse Hangen Brustlin (VHB) 2016-present

Energy:

Rare, Threatened, and Endangered Plant and Small Mammal Species Surveys, West Virginia & Virginia

Phillip served as environmental scientist for RT&E species surveys across ~300 miles of proposed corridor. Small mammal surveys included conducting habitat-level analysis for Allegheny woodrat (*Neotoma magister*), southern rock vole (*Microtus chrotorrhinus carolinensis*), and southern water shrew (*Sorex palustris punctulatus*). Plant surveys included performing detailed investigation for federally listed, state listed, and state ranked species. These floristic surveys led to 2 years of small whorled pogonia (*Isotria medeoloides*) population monitoring and relocating over 300 American ginseng (*Panax quinquefolius*) individuals to an offsite location to avoid proposed project footprint. Responsibilities also included mapping of natural community types, generating comprehensive plant species lists, photo documentation of on-site conditions, and collecting applicable GIS/GPS data.

MBTA, Bald and Golden Eagle Act, West Virginia, Virginia, North Carolina

Phillip served as a bio-monitor during the tree felling phase during construction activities. This task involved surveying trees for bald and golden eagle nests and migratory bird nests throughout the right of way to ensure no nests are harmed or impacted during the avoidance and minimization measures window.

Northern Flying Squirrel Habitat Assessments, Monongahela National Forest, West Virginia

Phillip served as an environmental scientist responsible for performing detailed habitat assessments along 11-mile corridor for West Virginia Northern Flying Squirrel (*Glaucomys sabrinus fuscus*). This assessment was within the Monongahela National Forest in Randolph and Pendleton counties, West Virginia. Surveys included detailed natural community mapping, determination of habitat suitability for target species, and generating vegetative species lists for each community.

Wetland Delineations in Florida, Virginia, North Carolina, West Virginia, Maryland, Tennessee, Georgia, South Carolina, New Jersey, New Hampshire, Vermont, Maine

Phillip has been project manager for dozens of wetland delineations along the east coast of the U.S. His responsibilities included: desktop review, defining jurisdictional boundaries, in-field GPS work, data review, and compiling AJD/PJD submittals. In total, he has been responsible for leading delineations for approximately 400 miles of transmission line ROW.

Wetland Delineations for Solar facilities

Phillip has led countless wetland delineations along the east coast of the U.S. His responsibilities included: desktop review, defining jurisdictional boundaries, in-field GPS work, data review, compiling AJD/PJD submittals, and permitting when applicable. In total, he has

been responsible for leading delineations on approximately 3,000 acres across various geographic regions.

Natural Resource Exclusion Fencing, Wilmington, NC

Phillip was project lead for this protective fencing project in Wilmington, NC. He was responsible for providing exclusion areas for wetland resources and red cockaded woodpecker (*Dryobates borealis*) cavity locations. Additional RCW surveys were conducted based on suitable habitat and suitable areas were targeted for presence absence surveys. During this project, numerous new cavity trees associated with an active RCW colony were discovered and were able to be excluded from all tree clearing activities.

Transportation:

NCDOT, Northern Long-Eared Bat Surveys

Mist netting for threatened and endangered bat species. Radiotelemetry tracking of northern long-eared bats in North River Gameland (Tupelo-Cypress blackwater swamp habitat). Identified the following bat species: *Myotis septentrionalis*, *Lasiurus borealis*, *Nycticeius humeralis*, *Eptesicus fuscus*, *Perimyotis subflavus*, *and Tadarida brasiliensis.* Study areas were North River Gamelands, Merchants Millpond State Park, and Great Dismal Swamp State Park. Identified the following bat species: *Myotis spetentrionalis*, *Myotis austroriparius*, *Myotis lucifugus*, *Lasiurus borealis*, *Corynorhinus rafinesquii,* and *Eptesicus fuscus*.

NCDOT, Multiple Roadway Projects in Divisions 1, 2, 3, 4, 6, 8, 12, 13, and 14

Phillip conducted dozens of field surveys for the federally endangered red cockaded woodpecker (*Dryobates borealis*) and state-listed bald eagle for many roadway expansion projects throughout the state of North Carolina. Work included in-office review of existing data and reports of known species occurrence, and field assessment of habitats to include age distribution, diameter, and density of pines stands potentially used for nesting and foraging woodpeckers in accordance with U.S. Fish and Wildlife Service guidelines.
Phillip also conducted surveys for the following federally listed plant species: sensitive joint-vetch (*Aeschynomene virginica*), small anthered bittercress (*Cardamine micranthera*), smooth coneflower (*Echinacea laevigata*), Schweinitz's sunflower (*Helianthus schweinitzii*), small whorled pogonia (*Isotria medeoloides*), rough-leaved loosestrife (*Lysimachia asperulaefolia*), Michaux's sumac (*Rhus michauxii*), and American chaffseed (*Schwalbea americana*). Conducted habitat-level assessment, presence/absence surveys, and generated comprehensive species lists.

Along with the wildlife surveys detailed above, Phillip was responsible for delineations on all projects as well. This consisted of desktop review prior to fieldwork and then leading delineation efforts for all projects. He then handled all coordination with state and federal agencies to deliver Preliminary Jurisdictional Determinations and the required technical reports.

VDOT, Patrick County, Virginia

Phillip conducted habitat-level assessments for 2 federally listed animals, Roanoke logperch (*Percina rex*) and bog turtle (*Glyptemys muhlenbergii*) along with one federally listed plant, rough-leaved loosestrife (*Lysimachia asperulaefolia*). Surveys for the logperch (*P. rex*) required transects though stream channels to determine silt levels and substrate composition suitable for the target species. Bog turtle (*G. muhlenbergii*) surveys involved assessing any bogs or fens for suitable hydrology, soils, and vegetation composition found in the project area. Surveys for *Lysimachia asperulaefolia* were similar to animal surveys above and required transects that focused on the stream banks.

VDOT, Amphibian Habitat Assessment

Phillip led the field efforts for VDOT road widening projects by determining suitable breeding ponds for barking tree frog (*Hyla gratiosa*) and Mabee's salamander (*Ambystoma mabeei*). This effort involved desktop review of GIS data before fieldwork to determine areas that need sampling, followed by transect surveys to locate any vernal pools within the ~500-acre study areas.

GDOT, Wetland Delineation and Floristic Habitat Surveys

Phillip led wetland delineation and conducted habitat surveys for relict trillium (*Trillium reliquum*), fringed campion (*Silene polypetala*), black-spored quillwort (*Isoetes melanospora*), and little amphianthus (*Amphianthus pusillus*) for proposed 40-mile highway widening from Atlanta to Macon, Georgia.

Monticello Sidewalk Construction, Small Whorled Pogonia Survey

Phillip was involved in performing a habitat level assessments and detailed surveys for a proposed sidewalk construction plan in Williamsburg, Virginia. This sidewalk is proposed to be constructed roughly 400 feet from an existing individual small whorled pogonia. Surveys were conducted 200 feet from the project area to determine any suitable habitat in the area, followed by detailed surveys in those suitable areas.

Private:

Private Conservation Properties: Wildlife, Bat, Herpetofauna, Cave assessments

Phillip was responsible for conducting field surveys for 150 conservation properties throughout Florida, Alabama, Georgia, South Carolina, and Tennessee over a 3-year period. These surveys were preformed to compile overall species lists and to identify state and federally listed species for each site. Survey methods included mist-netting and acoustic

surveys for bat species, camera trap surveys for mammals, birds and other various wildlife, transect surveys for herpetofauna and karst features.

Williamsburg Pottery Small Whorled Pogonia Survey

For this project, Phillip identified suitable small whorled pogonia habitat throughout this ~700-acre property. Once habitat was delineated, detailed surveys were conducted using transect methods though out the suitable areas. Numerous suitable habitat areas were found throughout the project, and many new plants were located during the detailed survey.

Government:

Fort Gordon Army Base Gopher Tortoise and Red-Cockaded Woodpecker Surveys

Phillip led the field efforts for surveying approximately 13,000 acres of habitat for the federally threatened gopher tortoise (*Gopherus polyphemus*) and the federally endangered red-cockaded woodpecker (*Dryobates borealis*). Transect surveys were completed to locate all tortoise burrows and cavity trees. Once these initial surveys were completed, Phillip went back to each burrow to record size and activity. Once data was recorded, each burrow was scoped to determine if any tortoises were present. For red-cockaded woodpeckers, once cavity trees were located, tree species and overall notes were recorded. Some instances required banding of newly hatched RCWs with the Fort Gordon biologists.

Camp Peary/ Solstice Environmental Timber Sale Survey for Small Whorled Pogonia

For this project, Phillip assisted in performing the habitat level assessment within Camp Peary's timber area, delineating suitable areas that will require a detailed survey. Once the survey window opened, Phillip also assisted in the detailed survey. Numerous suitable habitat areas were found throughout the project, but no plants were located during the detailed survey.

West Virginia University, 2013-2017

Graduate Work Assistance

Phillip assisted graduate students with various fisheries related projects throughout his time at WVU. He participated in surveys for different projects to compile overall species lists in university managed streams. A major project Phillip was involved in was surveying the Elk River for the Federally Endangered diamond darter (*Crystallaria cincotta*) after the area had been severely flooded. These were primarily nocturnal transect surveys using headlights to shine and identify fish.

Meghan S. Lout, CWB

Senior Bat Biologist

Certifications

Certified Wildlife Biologist

Approved Bat Surveyor in Vermont

Memberships

The Wildlife Society; Northeast Bat Working Group (PP)

Bat Capture and Acoustic Analysis Training

Acoustic Identification of Eastern Bat Species, Vesper Bat Detection Services, LLC., 2022;

Advanced Acoustics Master Class (bats) with Joe Szweczak, 2021;

Combined Field Techniques-Bat Survey Solutions, 2017;

Bat Acoustic Data Management Course, Bat Surveys Solutions, 2016

The VT Bat Center

Board Member, Satellite Rehab Facility

Permits

TE64393C-0

Meghan recently rejoined VHB after three years as a Senior Bat Biologist with the Vermont Agency of Transportation. Meghan has extensive experience in the design and conduct of field monitoring projects associated with environmental compliance under the National Environmental Policy Act (NEPA) and Sections 7 and 10 of the Endangered Species Act (ESA) as they relate to rare, threatened, and endangered bats. Meghan is a federally permitted bat biologist (TE64393C-0), a Certified Wildlife Biologist, and a board member of Vermont's Mammals Scientific Advisory Group. In addition, she serves as Past President of The Northeast Bat Working Group after fulfilling roles as both President and President-elect of the organization.

Meghan's professional experience includes managing and implementing hundreds of surveys for bats, including hibernaculum, mist-netting, and harp trapping; and conducting tracking and emergence surveys. Meghan is also regionally recognized leader in acoustic monitoring and the associated analyses.

22 years of professional experience

Education

Applied Biostatistics, University of Massachusetts, 2011

M.S. Ecology, Evolution and Population Biology, Purdue University, 2009
Thesis: Species Interactions at Range Boundaries Along a Tropical Elevational Gradient. Meghan studied patterns in the song differentiation of congeneric bird species at range boundaries in a tropical montane cloud forest to compliment extinction rate predictions of endemic birds through computer modeling.

B.S. Wildlife and Fisheries Conservation, University of Massachusetts, 2003.

Certificate in Tropical Reforestation, The School for Field Studies (Australia), 2002

Capture Experience

VT Fish and Wildlife Department – Vermont, 2022

Mist-netting little brown bat maternity colonies and processing and banding approximately 100 individuals.

VT Fish and Wildlife Department—Vermont, 2019
Mist-netting, affixing transmitters and tracking easternsmall-footed bats a slate quarry.

VT Fish and Wildlife Department—Vermont, 2018
Meghan was responsible for siting and deploying mist-nets with the VFWD for the VT BioBlitz at North Branch Nature Center. She monitored nets and processed the one bat captured (silver-haired bat).

VT Fish and Wildlife Department—Vermont, 2017
Siting, deploying and checking mists with Vermont Fish & Wildlife Department (VFWD) for the VT BioBlitz at Mercy Farm.

VT Agency of Transportation—Vermont, 2017
Lead biologist for a Section 7 Consultation that included mist- netting *Myotis* bats at a bridge replacement project. Her responsibilities included siting and deploying mist-nets, processing bats, outfitting four northern long-earedbats with transmitters, tracking individuals to roosts, and conducting exit surveys atroost locations.

VT Fish and Wildlife Department, New York State Department of Environmental Conservation (NYSDEC), U.S. Fish and Wildlife Service—Vermont, 2017
Meghan assisted with tracking of five Indiana bats (transmitters affixed by the NYSDEC) as they emerged from Barton Hill Mine and flew to Vermont.

National Parks Service—Kentucky, 2017

Meghan attended a field course as an assistant and advanced student that included the capture of bats at Mammoth Cave National Park using harp traps and mist-nets (see table on page 4 for species captured).

VT Fish and Wildlife Department—Vermont, 2017

Meghan and the VFWD deployed mist-nets and a harp trap at newly discovered northern long-eared bat and little brown bat maternity colonies (due to Meghan's capture and tracking efforts). A total of 39 little brown bats and one eastern red bat were captured within 30 minutes of opening nets, which required rapid and appropriate handling of bats. All little brown bats were processed and banded

Wind Energy Developments—Maryland and New York, 2011-2016
Meghan coordinated and assisted with mist-netting surveys and transmittering and tracking at least four Indiana and northern long-eared bats each at proposed and operational wind energy facilities.

University of Kentucky, Idaho, 2005
Meghan was the field crew leader who sited mist-net locations, captured, transmittered and tracked 30 northern long-legged myotis. She tracked tagged bats to day roost locations and conducted night-time telemetry on transmittered individuals.

Fur and Tissue Sampling (live bats only)

Robertson Mill Pond Preserve—North Carolina, 2019

Meghan collected fur and tissue samples from two southeastern myotis bats and one eastern red bat that were captured in in mist-netting surveys for the State of Georgia. (See table on page 4 for a list of fur and tissue samples taken from bat casualties recovered at wind energy facilities for research being conducted by Frostburg State University.)

Bat Habitat Assessments

Meghan has conducted habitat assessments consistent with the U.S. Fish and Wildlife Service's current guidance of a given year for the Indiana bat, northern long-eared bat, Virginia big-eared bat, and/or eastern small-footed bat. Her project responsibilities included the identification of potential roosts (trees or structures),

photo documentation and reporting at the following projects:

- All Structure Projects while working for VTrans – 2020-2023
- Various VTrans Projects (as a consultant) – 2020-2022
- Burlington Parks and Recreation, Burlington Bike Path, Phase 4—VT, 2019
- VTrans, Coggman Bridge Rehabilitation Project—VT, 2018
- Massachusetts Department of Transportation (MassDOT) and Federal Railroad Administration (FRA), Patriot Corridor Rail Project—MA, 2018
- Mount Snow, Mount Snow Phase 1 Project—VT, 2018
- Green Mountain Power, Lake Dunmore Dam—VT, 2018
- VTrans & FRA, Leicester Wye Project—VT, 2017
- Encore Renewables, Magee Hill Solar Project—VT, 2017
- VTrans & FRA, Middlebury Bridge and Rail Project—VT, 2016 and 2017
- City of Saint Albans & VTrans, Saint Albans Multi-Modal Connector Project—VT, 2016
- Vermont Gas, Gas Pipeline Project—VT, 2016
- VTrans, Bridge 77 Project—VT, 2016
- Babson College, The Innovation Center Project—MA, 2016
- VTrans, Bridge No. 7, 11 and 46—VT, 2016
- Invenergy, Beech Ridge Expansion Wind Project—WV, 2015
- EDP Renewables North America, Confidential Wind Project—MD, 2014
- Private Developer, Confidential Wind Project—PA, 2012

Bridge Inspections

- Dozens of bridge inspections while with VTrans – 2020-2023
- Various VTrans Projects (as a consultant) – VT, 2020
- VTrans, Coggman Bridge Rehabilitation Project—VT, 2018
- VTrans, Westminster Bridge Rehabilitation Project—VT, 2018
- VTrans & FRA, Middlebury Bridge and Rail Project—VT, 2017
- VTrans, Bridge No. 7, 11 and 46—VT, 2016
- VTrans, Bridge 77 Project—VT, 2016

Bat-Handling and Survey Experience by Species

APPROXIMATE NUMBER OF BATS HANDLED (LOCATIONS)								
SPECIES	# CAPTURED (LOCATIONS/YEARS)	# BATS TRANS-MITTERED/ TRACKED	# BATS BANDED	#BATS WITH FUR AND TISSUES SAMPLED	# BATS GUANO COLLECTED	APPROXIMATE # BAT CARCASSES IDED AT WIND PROJECTS (LOCATIONS/YRS)[1]	AREAS SURVEYED (FOR LIVE CAPTURES ONLY)	APPROXIMATE # HOURS WITH SPECIES
Eptesicus fuscus	70 (VT, 2017; KY, 2017)	-	70	-	-	100 (WV, MD, NY, ME, NH, PA), 2012-2016	Structures, flight corridors near water	19
Lasiurus borealis	51 (ID, 2004; NY/PA, 2014; VT/KY, 2017; NC, 2019)	-	20	1	-	1,000 (WV, MD, NY, ME, NH, PA), 2012-2016	Wooded areas	122
Myotis leibii	36 (KY, 2017); 2 (2019)	2	30	-	-	-	Cave entrances	0.5
Nycticeius humeralis	33 (KY, 2017)	-	0	-	-	-	Wooded areas, cave entrances	1
Myotis grisescens	41 (KY, 2017)	-	0	-	-	-	Cave entrances	5
Lasiurus cinereus	91 (ID, 2004; NY/PA, 2012-2015; KY, 2017)	-	10	-	-	600 (WV, MD, NY, ME, NH, PA), 2012-2016	Open areas, some near water	75
Myotis Austroriparius	2 (NC, 2019)	-	2	2	2		Wooded swamp	0.5
Myotis sodalis	22 (KY, 2017)	8	22	-	8	3 (IN, 2014; VT, 2017)	Cave entrances, forested clearings	11
Myotis lucifugus	260 (VT, 2016/2017/ 2022; KY, 2017)	-	206	-	40	550 (MD, PA) 2010-2012	Houses, structures	65
Myotis septentrionalis	14 (VT, 2017/2019; KY, 2019)	12	57	-	-	5 (MD/PA, 2013; VT, 2019)	Flight corridor, cave entrances	7
Myotis volans	30 (ID, 2004)	30	30	-	30	-	Forested areas near water	5
Corynorhinus rafinesquii	18 (KY, 2017)	-	30	-	-	-	Wooded areas, cave entrances	3.5
Lasiurus seminolus	-	-	-	-	-	10 (WV and MD) 2012-2016	High elevations, wooded clearings	2
Lasionycteris noctivagans	28 (ID, 2004; OH, 2010; NY/PA 2014/2015; KY, 2017; VT, 2017/2018; NC, 2019)	-	-	-	-	250 (WV, MD, NY, ME, NH, PA) from 2012-2016	Wooded areas near water	5
Perimyotis subflavus	26 (KY, 2017)	-	50	-	-	5 (NH, WV), 2015	Cave entrances	6.5

[1] *Meghan collected fur and tissue samples from all bat carcasses recorded at the listed wind energy projects. Samples were mailed to researchers at Frostburg State's Appalachian Lab in Maryland.*

Bat Fatality Monitoring

West Virginia, Maryland, New Hampshire, Pennsylvania, New York, 2011-2015
Meghan was project manager/field coordinator for or monitor at more than 20 post-construction fatality monitoring studies at wind energy facilities from 2010 through 2015 (see the table below). Meghan confirmed the identification of hundreds of injured and dead bats, including *Myotis*, *Perimyotis* and migratory tree bats (see table that follows.)

Representative wind energy projects where Meghan was the technical lead in avian and bat identification either visually and/or acoustically.

WIND ENERGY FACILITY	DEVELOPER	LOCATION	YEARS	SURVEY TYPE[1]
Jericho Rise Wind Project	EDP Renewables North America	Lewis County, NY	2015	P/A, LTA
Quilt Block Wind Project	EDP Renewables North America	Lafayette County, WI	2015	other
Kimberly Run Wind Project	Everpower Wind Holdings	Somerset County, PA	2016	LTA
Mason Dixon Wind Project	Everpower Wind Holdings	Somerset County, PA	2017	LTA
Highland North Wind Project	Everpower Wind Holdings	Somerset County, PA	2018	P/A, LTA
Stiles Brook Wind Project	Avangrid (Iberdrola Renewables)	Windham and Grafton Counties, NH	2015	P/A, LTA
Groton Wind Project	Avangrid (Iberdrola Renewables)	Grafton County, NH	2012-2015	LTA
Pinewood Wind Project	Apex Clean Energy LLC	Pulaski County, NC	2012-2015	LTA
Rocky Forge Wind Project	Apex Clean Energy LLC	Botetourt County, NC	2012-2015	LTA
Beech Ridge Wind Project	Invenergy LLC	Greenbrier and Nicholas Counties, WV	2011-2015	LTA, FM
Beech Ridge Expansion	Invenergy LLC	Greenbrier and Nicholas Counties, WV	2015	other
Arkwright Summit Wind Project	EDP Renewables North America	Freedonia County, NY	2015-2016	P/A, LTA
Marble River Wind Project	EDP Renewables North America	Clinton County, NY	2014-2015	MN, P/A, LTA, FM
Maple Ridge I and II Wind Projects	EDP Renewables North America	Lewis County, NY	2014	P/A, LTA, FM
Fair Winds Wind Project	Exelon Generation LLC	Garrett County, MD	2014	P/A, LTA, FM
Spruce Ridge Wind Project	EDP Renewables	Grafton County, NH	2014	LTA
Lempster Wind Project	Avangrid (Iberdrola Renewables)	Sullivan County, NH	2012-2014	other
Criterion Wind Project	Exelon Generation LLC	Garrett County, MD	2011-2014	MN, LTA
Beethoven Wind Project	Beethoven LLC	McPherson County, SD	2014	other
Howard Wind Project	Everpower Wind Holdings LLC	Steuben County, MD	2012-2013	LTA, FM
Greenfield Wind Project	EDP Renewables North America	Lackawanna County, PA	2012	other
Number 9 Wind Project	EDP Renewables North America	Aroostic County, ME	2013	LTA
Hardscrabble Wind Project	Avangrid (Iberdrola Renewables)	Herkimer County, NY	2013	LTA, FM
Stony Creek Wind Farm	Stony Creek LLC	Somerset County, PA	2012	other
Cape Vincent Wind Project	BP Wind Energy North America	Jefferson County, NY	2012	other
Alder Stream Wind Project	Pattern Energy	Franklin County, ME	2012	LTA
High Sheldon Wind Farm	Invenergy LLC	Wyoming County, NY	2011	LTA, FM
Forward Wind Project	Sun Edison	Somerset County, PA	2010	FM
Lookout Wind Project	Sun Edison	Somerset County, PA	2010	LTA

[1]*Mist-netting (M), Presence/Probable Absence Acoustic (P/A); Long-Term Acoustics (LTA), Fatality Monitoring (FM)*

Meghan Lout, CWB

Bat Identification, Handling and Banding Experience at The Vermont Bat Center

SPECIES	2015	2016	2017	2018	2019	2022	2023
	# BATS / # BATS BANDED	# BATS / # BATS BANDED	# BATS / # BATS BANDED	# BATS / # BATS BANDED	# BATS / # BATS BANDED	# BATS / # BATS BANDED	# BATS / # BATS BANDED
Eptesicus fuscus	26 / 16	45 / 22	38 / 22	58 / 18	4 / -	- / -	4 / -
Eptesicus fuscus (pups, hand-raised)	17 / 10	14 / 4	12 / 11	4 / 2	- / -	- / -	- / -
Myotis lucifugus	4 / 1	15 / 10	13 / 10	13 / 6	5 / -	12 / -	11 / -
Myotis septentrionalis	1 / 1	5/2	- / -	1 / -	2 / -	3 / -	1 / -
Myotis Leibii	- / -	- / -	- / -	- / -	2 / -	- / -	- / -
Lasiurus cinereus	1 / -	1 / -	2 / 1	- / -	- / -	1 / 0	- / -
Perimyotis subflavus	- / -	- / -	- / -	- / -	- / -	- / -	- / -

Bat Acoustic Monitoring

Meghan is an expert in acoustic monitoring, proper conduct of surveys, data management, and subsequent reporting requirements. She has used Anabat, Song Meter (SM) 2BAT and SM3BAT, and Pettersson D500x Acoustic Detectors. Meghan conducts acoustic analyses using Bat Call Identification, Kaleidoscope Pro, approved versions and SonoBat. Meghan was the technical lead at the following projects:

Active Acoustic Monitoring

- VTrans – various projects, 2020-2023
- Civil Engineering Associates, Vermont National Country Club—VT, 2019
- VTrans, Woodford Roadcut Civil Engineering Associates, Vermont National Country Club—VT, 2019
- CRW Consulting Brattleboro Housing Demolition Project – VT, 2018
- VTrans, Coggman Bridge Replacement Project—VT, 2018
- VTrans, Westminster Bridge Replacement Project—VT, 2018
- VFWD, Weybridge Street Mitigation Surveys—VT, 2018
- VTrans & FRA, Middlebury Bridge and Rail Project—VT, 2017
- VTrans, Encore Renewables, Magee Hill Solar Project—VT, 2017
- VTrans, Bridge No. 6 Rehabilitation Project—VT, 2016
- VTrans, Bridge No. 11 Replacement Project—VT, 2016
- VTrans, Bridge No. 46 Replacement Project—VT, 2016
- VTrans & FRA, Middlebury Bridge and Rail Project—VT, 2016

Passive Acoustic Monitoring

- VTrans (as an employee) – Over 55 Projects, VT, 2020-2022
- VTrans – 20 Projects, VT, 2021
- VTrans – 35 Projects, VT, 2020
- Civil Engineering Associates, Vermont National Country Club—VT, 2019
- VTrans, Woodford Roadcut—VT, 2019
- Dramby Environmental Consulting, Confidential Project—TN, 2019
- Killington/Pico Ski Resort, Squeeze Play Terrain Park—VT, 2019
- U.S. Forest Service, Goshen Emergency Spillway Project—VT, 2019
- VTrans, Woodford Road Cut—VT, 2019
- VHB Bat Training Workshop, Robertson Mill Pond Preserve—NC, 2019
- Project and technical lead for MassDOT projects, 2019
    - Connecticut River and bikeway construction, Chicopee
    - Reconstruction of Route 143, Worthington
    - Bridge replacement, New Marlborough
    - Bridge superstructure replacement, Middlefield

  - Bridge replacement, Sheffield
  - Resurfacing on the Ashuwillticook Rail Trail, Adams/Cheshire/Lanesborough
  - Bridge replacement, Pittsfield
  - Culvert replacements, Dennis
  - Culvert replacements, Saugus
  - Bridge Replacement, Lynn and Saugus
- VTrans, Coggman Bridge Replacement Project—VT, 2018
- VTrans, Westminster Bridge Replacement Project—VT, 2018
- VFWD & VTrans, North Branch Nature Center Bioblitz—VT, 2018
- MassDOT & PanAmerican Railways Patriot Corridor Fall Swarming Surveys—MA, 2018
- Project and technical lead for MassDOT Transportation Projects, 2018
  - Reconstruction of Routes 6 and 28, Wareham
  - Intersection Improvements, Hingham
  - Columbia Greenway Rail Trail Construction, Westfield
  - Glendale Road Reconstruction, Southampton
  - Pedestrian Bridge Rehabilitation, Brookline
  - Road Widening, Lennox
  - Ashuwillticook Rail Trail Extension, Lanesborough/Pittsfield
  - Intersection Improvements, Pembroke
  - Corridor Improvements on Route 123, Norton
  - Road Resurfacing, Marshfield and Hingham
  - Bridge Preservation, Randolph
  - Highway Lighting Upgrade in Interstate 91, Chicopee/West Springfield
- Washington Gas, Offset J Loop Project—VA, 2018
- National Parks Service, Mammoth Cave National Park—KY, 2017
- FRA & VTrans, Middlebury Bridge and Rail Project—VT, 2017
- Encore Renewables, Magee Hill Solar Project—VT 2017
- MassDOT Transportation Projects—MA, 2017
  - Goshen Resurfacing Project
  - Sheffield Bridge Replacement
  - Agawam/West Springfield Bridge Replacement
  - Congamond Road Reconstruction Project
  - Shrewsbury Resurfacing and Widening Project
  - Raynham Bridge Replacement
  - Berkley/Freetown Resurfacing Project
  - Fitchburg/Lunenburg/Leominster Reconstruction Project
- Babson College, Innovation Center Project (presence/probable absence and fall swarming/spring emergence surveys), Wellesley, MA, 2016 and 2017

- Cold River Camp Inventory, Appalachian Mountain Club, NH,2016
- Bridge No. 11 Replacement Project, VTrans, Montpelier, VT, 2016
- Bridge No. 46 Replacement Project VTrans, Saint Johnsbury, VT, 2016
- Middlebury Bridge and Rail Project, FRA & VTrans, Middlebury, VT, 2016
- Avangrid (Iberdrola Renewables), Stiles Brook Wind Project—VT, 2015
- EDP Renewables North America, Jericho Rise Wind Project—NY, 2015
- EDP Renewables North America, Kimberly Run Wind Project—PA, 2015
- EDP Renewables North America, Mason Dixon Wind Project—PA, 2015
- EDP Renewables North America, Highland North Wind Project—PA, 2015
- Avangrid (Iberdrola Renewables), Groton Wind Plant—NH, 2012-2015
- Apex Clean Energy, Pinewood Wind Project—VA, 2012-2015
- Apex Clean Energy, Rocky Forge Wind Project—VA, 2012-2015
- EDP Renewables North America, Arkwright Summit Wind Project—NY, 2015
- EDP Renewables North America, Marble River Wind Project—NY, 2015
- EDP Renewables North America, Maple Ridge I and II Wind Projects—NY, 2014-2015
- Exelon Generation, Fair Winds Wind Project—MD, 2014
- EDP Renewables North America, Spruce Ridge Wind Project—NH, 2014
- Exelon Generation, Criterion Wind Project—MD, 2011-2014
- EDP Renewables North America, Number Nine Wind Project—ME, 2013
- Avangrid (Iberdrola Renewables), Hardscrabble Wind Project—NY, 2013
- VT Electric Company—VT, 2012
- Pattern Energy, Alder Stream Wind Project—ME, 2012
- Everpower Wind Holdings, Howard Wind Project—NY, 2012
- Invenergy, High Sheldon Wind Farm—NY, 2011
- Invenergy, Beech Ridge Wind Project—WV, 2011
- Sun Edison, Look out Wind Project—PA, 2010

Expert Testimony

Surfside Crossing Partners, LLC – Massachusetts, 2019
Meghan reviewed documents prepared by the Massachusetts Natural Heritage and Endangered Species Program, and reports and interpretation of acoustic data of Project opponents to provide rebuttal exert and live testimony related to whether the State's No Take Determination for the northern long-eared bat was made in accordance with the Massachusetts Endangered Species Act.

Hibernacula Survey Experience

Barton Hill Mine – Moriah, NY 2022

Mount Snow, Ltd. – Vermont 2019-2024

Other Professional Experience

2020-Present: Vermont Agency of Transportation: Biologist/Bat Specialist

- Review transportation projects for impacts to natural resources
- Primary Job Responsibilities: write Resource Identification Memorandums and NEPA Clearances; Conduct surveys for RT&E species; wetland delineations and permitting; Army Corps of Engineers permitting

2016-2020: Vanasse Hangen Brustlin (VHB): Wildlife Biologist/Bat Specialist

- Conduct/Supervise wildlife surveys for RT&E Species, primarily bats
- NEPA and ESA reporting
- Developing Scopes of Work and Study Plans for RT&E species

2011-2016: Western EcoSystems Technology, Inc.: Wildlife Biologist/Project Manager (Vermont)

- Conduct/supervise wildlife surveys for RT&E species
- Train field technicians
- NEPA and ESA reporting for wildlife studies at wind energy facilities
- Developing Scopes of Work and Study Plans for RT&E species

2011 Springfield College—Adjunct Professor of Ecology (fall semester; Springfield, MA) Adjunct Professor of Ecology: Biology 260 (Ecology), 261 (Ecology lab)

2011 University of Massachusetts: Wood Thrush Field Biologist (Amherst, MA)

- Assisted with nest searches, mounting transmitters on and tracking fledglings for research investigating population decline

2010-2011 Stantec Consulting—Avian and Bat Migration Technician (Topsham, ME)

- Supervised pre and post-construction surveys at proposed and operational wind energy facilities in Pennsylvania.
- Assisted with bat acoustic data analysis and writing technical reports.

2006-2009 Purdue University—Graduate Student Research (West Lafayette, IN and Costa Rica)

- Investigated song differentiation of nightingale thrushes at range boundaries to test hypotheses addressing forces underlying species distributions, and whether such traits could affect range shifts and subsequent extinction rates predicted by climate change models.
- Recorded and analyzed avian vocalizations; territory mapping.

2005 University of Kentucky—Bat Research Technician (Lexington, KY and northern ID)

- Supervised a research project investigating the roosting and foraging ecology of

bats in response to various forest management practices

- Mist-netted, processed and mounted transmitters on, and tracked bats to roosts using radio telemetry equipment

2005 USGS/Northern Prairie Wildlife Research Center—Sandhill Crane Research Technician (Jamestown, ND and North Platte River in NE)

- Assisted with rocket-netting, processing, mounting transmitters on, and tracking foraging and roosting sandhill crane using null-peak telemetry to understand use of the North Platte River by cranes

2004 Utah State University—Ferruginous Hawk Research Assistant (Logan and Uintah Basin, UT)

- Conducted aerial and ground-based hawk and eagle surveys for research assessing the impact of oil and gas well developments on ferruginous hawk
- Banded, mounted transmitters on nestlings and tracked until dispersal

2003-2004 The Peregrine Fund—California Condor Field Biologist (Northern, AZ)

- Assisted with reintroduction/monitoring of the California condor
- Tracked, handled, chelated sick birds and monitored behavior

2000-2001 U.S. Fish and Wildlife Service—Ornithology Intern (North Chatham, MA and The Eastern MA National Wildlife Refuge Complex)

- Monitored shorebirds, conducted staging counts and censuses
- Conducted passerine, marsh-bird, waterfowl and horseshoe crab surveys
- Assisted with gull population and nocturnal predator control

Presentations

- Acoustic Monitoring Results and Mitigation for Bat Species at Transportation Projects Throughout Vermont, Northeast Bat Working Group Conference Manchester, NH 2022
- Northern long-eared Bats and Little brown Bats at the Middlebury Bridge and Rail Project, Vermont, Northeast Bat Working Group Conference, Manchester, NH 2022
- Acoustic Monitoring Results and Mitigation for the Northern Long-eared bat (*Myotis Septentrionalis*) at Transportation Projects throughout Vermont, Northeast Bat Working Group Conference, virtual, 2021
- National Bat Week Presentations for VTrans – 2020 and 2021
- Avoidance, Minimization and Mitigation of Vermont Bats, Vermont Institute of Natural Sciences Bat Panel, 2021
- Acoustic Monitoring of the Northern Long-eared Bat Throughout Vermont, Northeast Bat Working Group Conference, 2021
- Presence of the Northern Long-eared Bat in Urban Vermont,Northeast Bat Working Group Conference – Saratoga Springs, NY, 2020

- Presence of the Northern long-eared Bat at Historic Hibernaculum—State College, PA, 2019
- Identifying Suitable Habitat for Rare, Threatened and Endangered Bats—Vermont Electric Company, South Burlington, VT, 2018
- Unexpected Use of Anthropogenic Structures and Urban Areas by the Northern Long-eared Bat—Northeast Bat Working Group and Small Mammals Colloquium Conference, Roanoke, VA, 2018
- Land Use Review Guidance for Bats—Vermont Fish and Wildlife's Land Use Review Training for Northern Long-eared Bats in VT, Castleton, VT, 2017
- Unexpected Co-habitation of Bridge Roosts by Myotis Bats—Northeast Bat Working Group Conference, Amherst, MA, 2017
- Bats, Regulations and Vermont Projects—Vermont Society of Engineers, Waterbury, VT, 2017
- Bats of New Hampshire—Appalachian Mountain Club, North Chatham, NH, 2016
- Bats and Bridges—Northeast Transportation and Wildlife Conference, Lake Placid, NY, 2016
- Using Acoustic Monitoring to Determine Impacts of Wind Energy to Migratory Songbirds, Cornell University – Ithaca, NY, 2015
- Species Interactions at Range Boundaries Along a Tropical Elevational Gradient, Purdue University – West Lafayette Indiana, 2010

Jessica Druze, WPIT

Environmental Scientist

Jessica is an Environmental Scientist in VHB's Manasquan, New Jersey office. She is experienced in conducting field work such as wildlife surveys, wetland delineations, and habitat assessments and frequently prepares technical reports, permit applications, and maps using ArcGIS Pro software. Jessica's ecological expertise includes identification of birds by sight and sound and plant identification. She has assisted in the preparation of permit applications in accordance with the NJDEP Freshwater Wetlands Protection Act, Flood Hazard Area Control Act, and Coastal Zone Management Act.

Education

MS, Wildlife and Fisheries Resources, Clemson University, present

BS, Conservation Biology, SUNY College of Environmental Science and Forestry, 2017

AS, Environmental Science, Brookdale Community College, 2015

Affiliations/Memberships

Ecological Society of America

The Wildlife Society

Renewable Energy Working Group

6 years of professional experience

Large-scale Renewable Energy Project, Confidential Client - Wetland Delineations, Ambient Noise Surveys, Environmental Permitting, New Jersey

Jessica assists with field work, permitting, and stakeholder engagement for a large-scale renewable energy project proposed by a confidential client. Her responsibilities include wetland delineations, airborne sound surveys, preparing technical reports, assisting with stakeholder outreach and project management, and NJDEP permit preparation. NJDEP permits include a Letter of Interpretation Line Verification, Coastal Zone Management Act Coastal General Permit 23 – Geotechnical Survey Borings, and Coastal Area Facility Review Act Individual Permit. Accordingly, the applications also address all required information set forth in the NJDEP Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A), Coastal Zone Management Rules (N.J.A.C. 7:7), and Flood Hazard Area Control Act Rules (N.J.A.C. 7:13).

New Jersey Department of Military and Veterans Affairs - Integrated Natural Resources Management Plan of NJ National Guard Training Center (NGTC), Sea Girt, Monmouth County, NJ

Jessica assists with implementation of the Integrated Natural Resources Management Plan (INRMP) at the New Jersey National Guard Training Center in Sea Girt, NJ. She assists in beach nesting bird habitat management, rare and invasive plant monitoring, wetland restoration monitoring, beach vegetation thinning, trash removal, and macroinvertebrate studies. Additionally, she has assisted in updating the five-year INRMP document.

Connecticut Department of Transportation (CTDOT) – Bat acoustic surveys, Norwalk, Fairfield County, CT

Jessica assisted with bat acoustic surveys for CTDOT in Norwalk, CT. Her role included preparation of the USFWS study plan, detector location selection, detector set up and take down, and preparation of survey data sheets.

Ocean County Engineer - Environmental Permitting of Barnegat Branch Trail Phase IX, South Toms River, Ocean County, NJ

Jessica assisted in the preparation of a Waterfront Development Individual Permit in accordance with the NJDEP Coastal Zone Management Rules (N.J.A.C. 7:7). The trail is one part of a retired railroad bed conversion into a pedestrian trail extending from Barnegat to Toms River. The trail includes the construction of a steel pedestrian bridge over Jake's Branch.

Ocean County Engineer - Environmental Permitting of Otis Bog Bridge Replacement, Little Egg Harbor, Ocean County, NJ

Jessica assisted in the preparation of land use permits including NJDEP Freshwater Wetlands General Permit 10B – Minor Road Crossing, NJDEP CAFRA Individual Permit, and NJDEP Flood Hazard Area General Permit 10 – Reconstruction of a Bridge or Culvert. The bridge, constructed in 1941, carries Otis Bog Road over the Giffords Mill Branch of Tuckerton Creek in Little Egg Harbor Township. Accordingly, the application also addresses all required information set forth in the NJDEP Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A), Coastal Zone Management Rules (N.J.A.C. 7:7), and Flood Hazard Area Control Act Rules (N.J.A.C. 7:13).

Rutgers University Cook College - LSRP Service, Rutgers Cook College Student Center, New Brunswick, Middlesex County, NJ

Jessica assisted in the preparation of the NJDEP Freshwater Wetlands General Permit 4 – Hazardous Site Investigation and Cleanup permit in accordance with the Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A). She also provided oversight and documentation for the removal and disposal of contaminated soil.

Paterson STEAM High School – Presence/Absence LOI, Paterson, Passaic County, NJ

Jessica completed a NJDEP Freshwater Wetlands Presence/Absence LOI for a new school development in Paterson, New Jersey in accordance with the Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A).

North Bay Homes Real Estate – Wetland Delineation, Oceanport, Monmouth County, NJ

Jessica assisted with a wetland delineation and the preparation of an NJDEP Letter of Interpretation Line Verification for new development in Oceanport, New Jersey.

New Jersey Transit - Princeton Transitway Study, West Windsor, Mercer County, NJ

Jessica assisted in conducting an environmental constraints analysis to evaluate potential transit improvements within the Princeton Branch rail right-of-way and transit connections. The desktop analysis included screening for wetlands, wetland transition areas, State open waters, flood hazard areas, riparian zones, and endangered and threatened species habitat along the approximate 2.7-mile corridor.

Hamilton Township - Van Horn Park Wetlands Restoration, Hamilton, Mercer County, NJ

Jessica assisted in the creation of a wetlands restoration plan approved by NJDEP. Her role included selecting native trees, shrubs, and a seed mix appropriate for the area and creating the plan layout.

Monmouth County - NJDEP Land Use Permitting, Tinton Falls, Monmouth County, NJ

Jessica assisted in the preparation of the NJDEP Combined Application to replace the superstructure of Monmouth County Bridge S-15 in the Borough of Tinton Falls. Bridge S-15 carries Riverdale Avenue over Pine Brook, a tidal waterbody. Required permits included Freshwater Wetlands General Permit 10A – Very Minor Road Crossings, Upland Waterfront Development Individual Permit, and a Flood Hazard Area Individual Permit. Accordingly, the application also addresses all required information set forth in

the NJDEP Flood Hazard Area Control Act Rules (N.J.A.C. 7:13), Coastal Zone Management Rules (N.J.A.C. 7:7), and Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A).

Wetlands Restoration – Multiple Projects in New Jersey and Pennsylvania*

Jessica conducted upland and wetland forest restoration projects on multiple private properties throughout New Jersey and Pennsylvania. Her responsibilities included native tree planting, restoration design, invasive species control, tree removal with a chainsaw, project management, and proposal preparation.

**Completed prior to joining VHB*

Threatened and Endangered Wildlife Surveys – Multiple Projects in Wyoming and Utah*

Jessica performed a wide variety of threatened and endangered wildlife surveys, both on foot and aerially, for three field seasons with the majority of the projects occurring in Wyoming. Field work included surveying for nesting activity, presence/absence, or conducting point counts for greater sage-grouse (*Centrocercus urophasianus*), burrowing owl (*Athene cunicularia*), mountain plovers (*Charadrius montanus*), sagebrush steppe songbirds, and multiple raptor species. Other species surveys included pronghorn antelope (*Antilocapra americana*), swift fox (*Vulpes velox*), northern leopard frog (*Lithobates pipiens*), prairie dogs (*Cynomys sp.*), and trapping of black-footed ferrets (*Mustela nigripes*).

**Completed prior to joining VHB*

Jackson Hunt

Environmental Scientist

Jackson is an Environmental Scientist in VHB's Raleigh, NC, office. His prior work experience includes surface and groundwater water quality testing and water compliance monitoring which included field sampling, laboratory analysis, and technical report writing. Project experience includes air permit compliance, wetland restoration, and environmental permitting.

Years of professional experience: 1 VHB; 0 other employers

Education

BS, Environmental Science, North Carolina State University, 2021

VHB Office

Raleigh, NC

Nutrien Aurora Phosphate, Co-Op Program, Aurora, NC

Prior to joining VHB, Jackson worked as an Environmental Specialist as part of a Co-Op Program where he collected and analyzed water samples that discharged into the Pamlico River; testing for total phosphorus, turbidity, and fluoride levels to meet NPDES permit requirements. He performed maintenance on outfalls that discharged water into Pamlico River, mapped and traced water lines moving within numerous chemical plants, engineered a bio-filtration nitrate reduction study at a Wastewater Treatment Plant, and worked to understand direction of groundwater flow by taking well level depths and surveying the elevation above sea level. Jackson completed nearly 70 chemical approvals to document human and environmental hazards, compiled and created all the SDS documents for more than 100 chemicals used within the environmental laboratory, and shadowed others completing tasks such as air quality stack testing, potable water treatment, groundwater sampling, wetland mitigation, and laboratory practices.

North Carolina Department of Transportation, Bridge Replacement & Roadway Improvement, NC

Jackson has worked on numerous bridge and roadway improvement projects across the state, for the North Carolina Department of Transportation. This has included leading wetland delineations, preforming threatened and endangered species surveys, operating GPS equipment, preparing WET files, creating ArcGIS figures, and preparing Preliminary Jurisdictional Determinations (PJD), Natural Resource Technical Reports (NRTR), and Stream Origin Buffer Applicability Determination (SOBAD) for their respective agencies. Field work duties included GPS operation, wetland and stream delineation, threatened and endangered plant surveys, bat bridge and culvert habitat assessments, and bald eagle nest surveys. He used data collected in the field to create a WET file in MicroStation, for design purposes. He also used this data to create figures and compile previously mentioned reports.

Fort Gordon, Gopher Tortoise Survey, Augusta, GA

Jackson was responsible for identifying threatened gopher tortoise burrows, scoping them for activity, analyzing population density, and writing a report of these findings at the Fort Gordon Army Base. During his field work, he walked along transects placed in prime habitat and identified all burrows that could be that of a gopher tortoise. He was then involved in the scoping process of these burrows with a camera to identify which were active and occupied. This data then was used by Jackson to formulate a population size for the over 9,000-acre area of Fort Gordon that was surveyed using

the program *Distance*. He also was responsible for writing the report for this project explaining his methodology, findings, and figures.

Duke Energy, Line 99 Compliance Service, Leland, NC
Jackson assisted in the field work associated with the Dominion Gas Line 99 reclamation project. Wetlands previously identified within the LOD needed to be stacked and flagged off to restrict accesses and ensure the wetlands are not disturbed. Field work included use of field maps to locate wetlands, hanging of flagging, and communication with client and surveyors.

Surface Transportation Board, EIS for CP and KCS Merger, Washington, DC
Jackson worked on the environmental field team for the merger of Canadian Pacific and Kansas City Southern regarding drafting an Environmental Impact Statement. He traveled to seven capital improvement locations along the railroad in Louisiana, Arkansas, and Oklahoma. His main responsibility was collecting GIS data using field maps of wetland areas that may be impacted in the future. He also helped in gathering details on the habitats of these areas as well.

SPSA, Third-Party EIS for Landfill Expansion, Suffolk, VA
Jackson aided in preparing an Environmental Impact Statement (EIS) to evaluate the alternative SU02 expansion of Southeastern Public Service Authority of Virginia (SPSA's) regional landfill to increase its solid waste disposal capacity. The USACE used VHB as a third-party to delineate this alternative location and draft an EIS. This was a unique sight where Jackson had to walk transects and specifically identified hydrologic indicators of wetlands as well as hydric soils. He also collected data points and completed USACE data forms in office. Lastly, Jackson assisted in creating a photolog that would be included in the draft EIS.

Charles City County, Mining Engineering Services, Charles City County, VA
Jackson aided in wetland delineation for a nearly 600-acre site that is proposed to turn into a mine. His responsibilities range from extensive field work to data preparation as well. During the wetland delineation, he collected all the GIS data, mapping out the wetlands and streams on site. Afterwards, he was able to help in the data collection of wetland data points needed for the USACE, as well as scoring of streams on site. He is handling entering this data into the appropriate forms that will be used when submitting the delineation to the USACE.

Miguel Ortiz

Environmental Scientist

Education

BS, Environmental Science and Policy, Florida State University, 2019

Registrations/Certifications

N.C. Division of Water Resources – Surface Water Identification Training Certification 2023

Miguel is an Environmental Scientist in VHB's, Raleigh, North Carolina office. Within the Natural Resources department, Miguel assists with and performs stream and wetland delineations, protected species surveys, GPS data collection, mapping and document preparation. Miguel is also cross-trained to assist with traffic studies and geomatics data collection.

Years of professional experience: 4 (2 VHB, 2 other employers)

NCDOT BP5.R117 Durham 110 Bridge Replacement, Durham County, NC
For the North Carolina Department of Transportation (NCDOT) Division 5, Miguel performed stream and wetland delineations, endangered species surveys, and community typing in support of a request for Preliminary Jurisdictional Determination to the U.S. Army Corps of Engineers, a Stream Origin/Buffer Applicability Determination to the N.C. Department of Water Resources, and a Natural Resources Technical Report.

NCDOT BP5.R103 Granville 107 Bridge Replacement, Granville County, NC
For NCDOT Division 5, Miguel performed stream and wetland delineations, endangered species surveys, and community typing in support of a request for Preliminary Jurisdictional Determination to the U.S. Army Corps of Engineers, a Stream Origin/Buffer Applicability Determination to the N.C. Department of Water Resources, and a Natural Resources Technical Report.

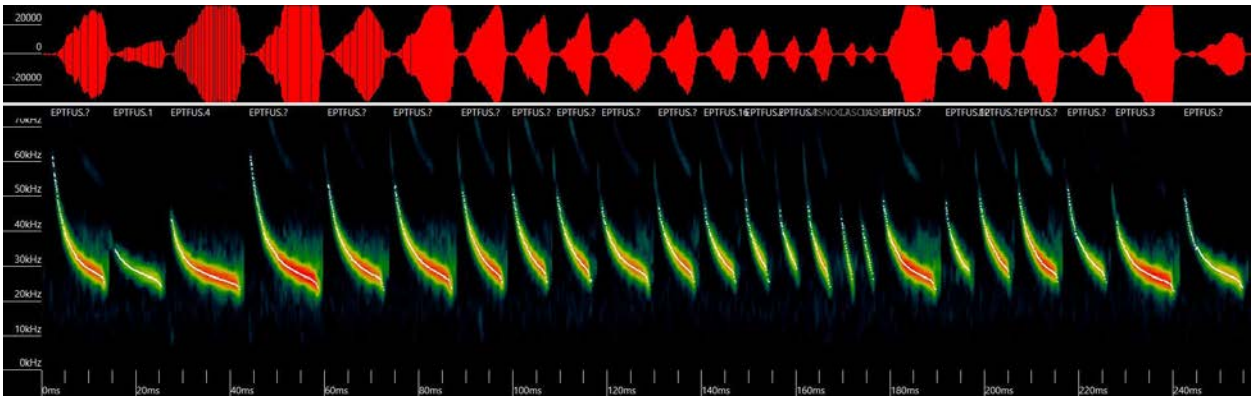
NCDOT BP5.R102 Granville 74 Bridge Replacement, Granville County, NC
For NCDOT Division 5, Miguel performed stream and wetland delineations, endangered species surveys, and community typing in support of a request for Preliminary Jurisdictional Determination to the U.S. Army Corps of Engineers, a Stream Origin/Buffer Applicability Determination to the N.C. Department of Water Resources, and a Natural Resources Technical Report.

NCDOT TIP HE-0007C, International Drive Extension, Durham County, NC
For NCDOT Division 5, Miguel performed stream and wetland delineations, endangered species surveys, and community typing in support of a request for Preliminary Jurisdictional Determination to the U.S. Army Corps of Engineers, a Stream Origin/Buffer Applicability Determination to the N.C. Department of Water Resources, and a Natural Resources Technical Report.

Bonnethead Shark Navigation Survey, St. Teresa, FL
For FSU's Marine Lab, Miguel participated in the capture, tagging, and release of Bonnethead sharks through the use of longlines and gill nets. Miguel was required to operate small boats, handle sharks and other marine organisms, prepare bait, and clean and prepare equipment/boat before and after each survey.

Layton Key Sponge and Reef Water Quality Survey, Layton, FL
For FSU's Marine Sponge Lab, Miguel prepared sponge sample slides for microscopes, cataloged and organized data/specimens, gathered water samples, and prepared and cleaned equipment before and after each survey. He was required to perform snorkeling to place artificial reef using rebar to anchor to the ocean floor.

Appendix E – Representative Spectrograms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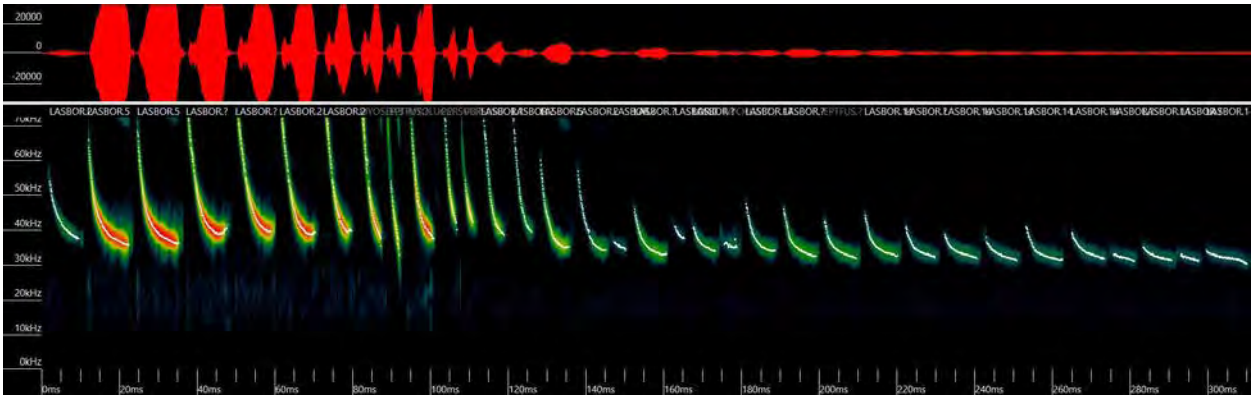
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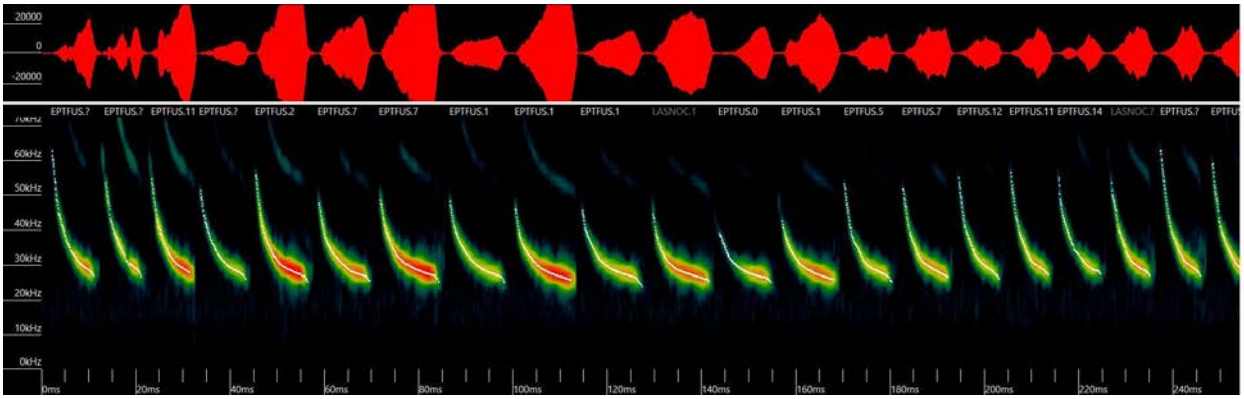
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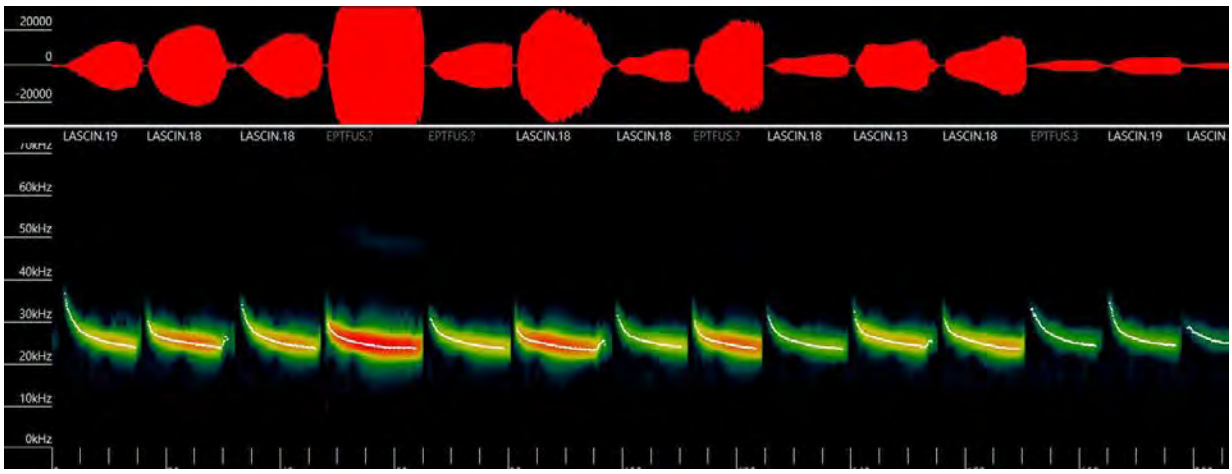
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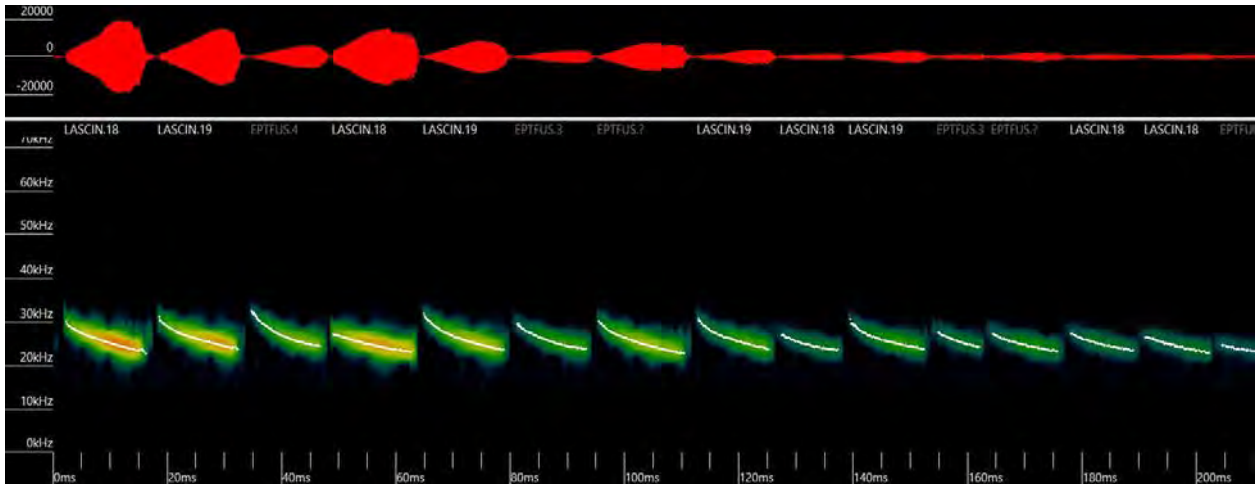
0kHz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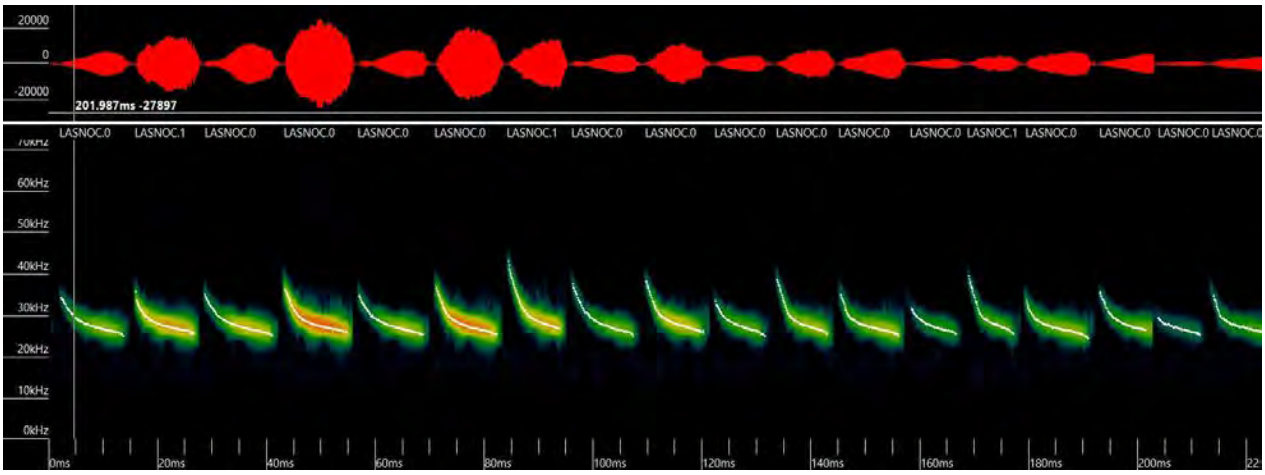
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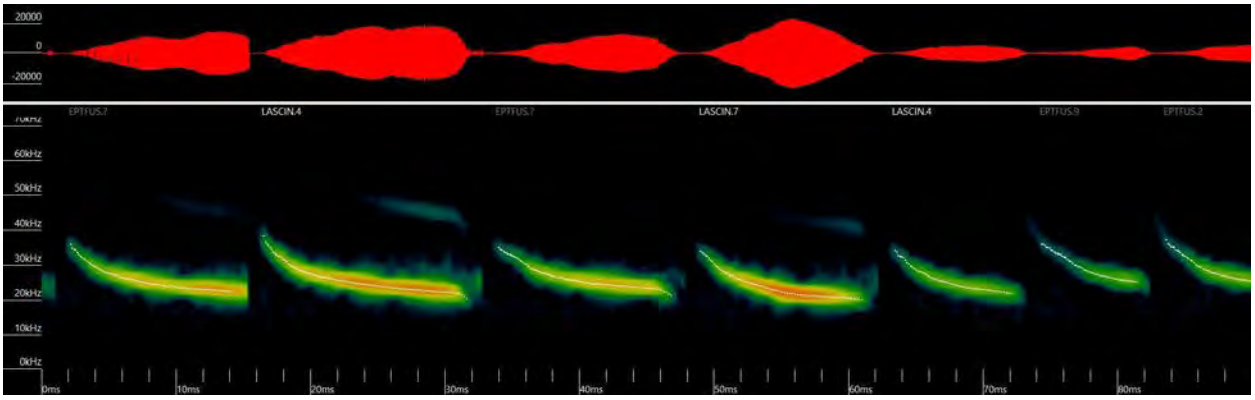
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LASCIN.4
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EPTFUS.2
60kHz
50kHz
40kHz
30kHz
20kHz
10kHz
0kHz
0ms
10ms
20ms
30ms
40ms
50ms
60ms
70ms
80ms

Appendix F – Event Logs

BECO-DTC_Site1_052223-052322

MODEL NO: SDCFXS-032G

FW REV: HDX16.01

SERIAL: J ZA100122901372

LABEL: D500X

2023-05-22 15:50:01 $$SYSTEM START, FW VERSION: D500X V2.4.5 201211, 12:06:56, S/N: 52580, TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.8V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 15:59:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.7V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.7V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.8V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.8V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.8V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 19:15:01 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.8V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 20:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.7V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 21:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.5V, FILE: M000009.WAV, TOTAL FREE: 59.59G

2023-05-22 22:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.4V, FILE: M000025.WAV, TOTAL FREE: 59.51G

2023-05-22 23:00:05 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: M000126.WAV, TOTAL FREE: 59.03G

2023-05-23 00:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: M000200.WAV, TOTAL FREE: 58.68G

2023-05-23 01:00:04 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: M000239.WAV, TOTAL FREE: 58.49G

2023-05-23 02:00:14 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000369.WAV, TOTAL FREE: 57.87G

2023-05-23 03:00:09 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000502.WAV, TOTAL FREE: 57.24G

2023-05-23 04:00:11 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000692.WAV, TOTAL FREE: 56.33G

2023-05-23 05:00:03 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000706.WAV, TOTAL FREE: 56.27G

2023-05-23 05:50:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000708.WAV, TOTAL FREE: 56.26G

2023-05-23 06:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000708.WAV, TOTAL FREE: 56.26G

2023-05-23 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000708.WAV, TOTAL FREE: 56.26G

2023-05-23 08:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000708.WAV, TOTAL FREE: 56.26G

2023-05-23 09:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000708.WAV, TOTAL FREE: 56.26G

2023-05-23 10:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: M000708.WAV, TOTAL FREE: 56.26G

2023-05-23 11:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: M000708.WAV, TOTAL FREE: 56.26G

2023-05-23 11:19:43 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: M000708.WAV, TOTAL FREE: 56.26G

2023-05-23 11:20:23 $$KEYBOARD SLEEP ---- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2VFILE: M000708.WAV, TOTAL FREE: 56.26G

BECO-DTC_Site1_052323-052423

MODEL NO: SDCFXS-032G

FW REV: HDX16.01

SERIAL: J ZA100122901372

LABEL: D500X

2023-05-23 11:28:08 $$SYSTEM START, FW VERSION: D500X V2.4.5 201211, 12:06:56, S/N: 52580, TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 11:28:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 12:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 13:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 14:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 15:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 17:27:41 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 19:15:02 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 20:00:04 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 21:00:04 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000005.WAV, TOTAL FREE: 59.60G

2023-05-23 22:00:03 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000044.WAV, TOTAL FREE: 59.42G

2023-05-23 23:00:05 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.9V, FILE: M000116.WAV, TOTAL FREE: 59.08G

2023-05-24 00:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.9V, FILE: M000146.WAV, TOTAL FREE: 58.93G

2023-05-24 01:00:01 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.8V, FILE: M000303.WAV, TOTAL FREE: 58.19G

2023-05-24 02:00:03 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.8V, FILE: M000387.WAV, TOTAL FREE: 57.79G

2023-05-24 03:00:12 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.8V, FILE: M000434.WAV, TOTAL FREE: 57.56G

2023-05-24 04:00:04 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.8V, FILE: M000434.WAV, TOTAL FREE: 57.56G

2023-05-24 05:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.7V, FILE: M000444.WAV, TOTAL FREE: 57.51G

2023-05-24 06:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.7V, FILE: M000448.WAV, TOTAL FREE: 57.50G

2023-05-24 06:20:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.8V, FILE: M000448.WAV, TOTAL FREE: 57.50G

2023-05-24 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.8V, FILE: M000448.WAV, TOTAL FREE: 57.50G

2023-05-24 08:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.9V, FILE: M000448.WAV, TOTAL FREE: 57.50G

2023-05-24 09:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.9V, FILE: M000448.WAV, TOTAL FREE: 57.50G

2023-05-24 10:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000448.WAV, TOTAL FREE: 57.50G

2023-05-24 11:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000448.WAV, TOTAL FREE: 57.50G

2023-05-24 11:02:34 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000448.WAV, TOTAL FREE: 57.50G

2023-05-24 11:02:57 $$KEYBOARD SLEEP ---- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000448.WAV, TOTAL FREE: 57.50G

2023-05-24 11:03:11 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000448.WAV, TOTAL FREE: 57.50G

2023-05-24 11:04:00 $$KEYBOARD SLEEP ---- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000448.WAV, TOTAL FREE: 57.50G

BECO-DTC_Site2_052223-052323

MODEL NO: TS32GCF133

FW REV: 20171204

SERIAL: 0H75572080336A820004

LABEL: D500X

2023-05-22 13:29:02 $$SYSTEM START, FW VERSION: D500X V2.4.5 201211, 12:06:56, S/N: 52562, TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.8V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 13:41:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.7V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 14:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.7V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 15:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.8V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.8V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.8V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.8V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.8V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 19:15:02 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.8V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 20:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.7V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 21:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.4V, FILE: M000007.WAV, TOTAL FREE: 59.59G

2023-05-22 22:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.4V, FILE: M000030.WAV, TOTAL FREE: 59.49G

2023-05-22 23:00:05 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: M000063.WAV, TOTAL FREE: 59.33G

2023-05-23 00:00:04 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: M000082.WAV, TOTAL FREE: 59.24G

2023-05-23 01:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: M000144.WAV, TOTAL FREE: 58.94G

2023-05-23 02:00:04 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000185.WAV, TOTAL FREE: 58.75G

2023-05-23 03:00:07 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000212.WAV, TOTAL FREE: 58.62G

2023-05-23 04:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000244.WAV, TOTAL FREE: 58.47G

2023-05-23 05:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000246.WAV, TOTAL FREE: 58.46G

2023-05-23 05:50:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000246.WAV, TOTAL FREE: 58.46G

2023-05-23 06:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000246.WAV, TOTAL FREE: 58.46G

2023-05-23 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: M000246.WAV, TOTAL FREE: 58.46G

2023-05-23 08:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: M000246.WAV, TOTAL FREE: 58.46G

2023-05-23 09:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: M000246.WAV, TOTAL FREE: 58.46G

2023-05-23 10:01:10 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: M000246.WAV, TOTAL FREE: 58.46G

2023-05-23 10:04:06 $$KEYBOARD SLEEP ---- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: M000246.WAV, TOTAL FREE: 58.46G

BECO-DTC_Site2_052323-052423

MODEL NO: TS32GCF133

FW REV: 20171204

SERIAL: 0H75572080336A820004

LABEL: D500X

2023-05-23 10:11:41 $$SYSTEM START, FW VERSION: D500X V2.4.5 201211, 12:06:56, S/N: 52562, TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 10:13:00 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 11:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 12:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 13:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 14:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 15:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.4V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.4V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.4V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.4V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 19:15:02 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.4V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 20:00:01 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: M000026.WAV, TOTAL FREE: 59.50G

2023-05-23 21:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000035.WAV, TOTAL FREE: 59.46G

2023-05-23 22:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000072.WAV, TOTAL FREE: 59.29G

2023-05-23 23:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000153.WAV, TOTAL FREE: 58.90G

2023-05-24 00:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.9V, FILE: M000186.WAV, TOTAL FREE: 58.74G

2023-05-24 01:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.9V, FILE: M000188.WAV, TOTAL FREE: 58.73G

2023-05-24 02:00:01 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.9V, FILE: M000189.WAV, TOTAL FREE: 58.73G

2023-05-24 03:00:01 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.9V, FILE: M000190.WAV, TOTAL FREE: 58.72G

2023-05-24 04:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.9V, FILE: M000190.WAV, TOTAL FREE: 58.72G

2023-05-24 05:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.9V, FILE: M000192.WAV, TOTAL FREE: 58.71G

2023-05-24 05:50:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.9V, FILE: M000192.WAV, TOTAL FREE: 58.71G

2023-05-24 06:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.9V, FILE: M000192.WAV, TOTAL FREE: 58.71G

2023-05-24 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.9V, FILE: M000192.WAV, TOTAL FREE: 58.71G

2023-05-24 08:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000192.WAV, TOTAL FREE: 58.71G

2023-05-24 09:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000192.WAV, TOTAL FREE: 58.71G

2023-05-24 10:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000192.WAV, TOTAL FREE: 58.71G

2023-05-24 10:30:51 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000192.WAV, TOTAL FREE: 58.71G

2023-05-24 10:31:46 $$KEYBOARD SLEEP ---- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000192.WAV, TOTAL FREE: 58.71G

BECO-DTC_Site3_052223-052323

(EVENT LOG OFF)

MODEL NO: SDCFXS-032G

FW REV: HDX16.01

SERIAL: E ZA100122116320

LABEL: D500X

2023-05-22 14:35:34 **SYSTEM START, FW VERSION: D500X V2.4.5 201211, 12:06:56, S/N: 52579, TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.7V, FILE: -, TOTAL FREE: 59.63G

BECO-DTC_Site3_052323-052423

(EVENT LOG OFF)

MODEL NO: SDCFXS-032G

FW REV: HDX16.01

SERIAL: E ZA100122116320

LABEL: D500X

2023-05-23 11:00:51 **SYSTEM START, FW VERSION: D500X V2.4.5 201211, 12:06:56, S/N: 52579, TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

BECO-DTC_Site4_052223-052323

MODEL NO: SDCFXS-032G

FW REV: HDX16.01

SERIAL: F ZA100122907471

LABEL: D500X

2023-05-23 10:38:29 $$SYSTEM START, FW VERSION: D500X V2.4.5 201211, 12:06:56, S/N: 52582, TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 10:39:00 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 10:40:51 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 11:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 12:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 13:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 14:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 15:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.4V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 17:18:01 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.4V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.4V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.4V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 19:15:02 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.4V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 20:00:03 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.4V, FILE: -, TOTAL FREE: 59.63G

2023-05-23 21:00:03 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000004.WAV, TOTAL FREE: 59.61G

2023-05-23 22:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000026.WAV, TOTAL FREE: 59.50G

2023-05-23 23:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000048.WAV, TOTAL FREE: 59.40G

2023-05-24 00:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000049.WAV, TOTAL FREE: 59.40G

2023-05-24 01:00:01 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000051.WAV, TOTAL FREE: 59.39G

2023-05-24 02:00:03 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000053.WAV, TOTAL FREE: 59.38G

2023-05-24 03:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.9V, FILE: M000056.WAV, TOTAL FREE: 59.36G

2023-05-24 04:00:01 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 4.9V, FILE: M000056.WAV, TOTAL FREE: 59.36G

2023-05-24 05:00:04 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000056.WAV, TOTAL FREE: 59.36G

2023-05-24 06:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000056.WAV, TOTAL FREE: 59.36G

2023-05-24 06:20:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000056.WAV, TOTAL FREE: 59.36G

2023-05-24 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000056.WAV, TOTAL FREE: 59.36G

2023-05-24 08:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000056.WAV, TOTAL FREE: 59.36G

2023-05-24 09:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.0V, FILE: M000056.WAV, TOTAL FREE: 59.36G

2023-05-24 09:36:31 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000056.WAV, TOTAL FREE: 59.36G

2023-05-24 09:38:03 $$KEYBOARD SLEEP ---- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000056.WAV, TOTAL FREE: 59.36G

BECO-DTC_Site4_052323-052423

MODEL NO: SDCFXS-032G

FW REV: HDX16.01

SERIAL: F ZA100122907471

LABEL: D500X

2023-05-22 12:19:44 $$SYSTEM START, FW VERSION: D500X V2.4.5 201211, 12:06:56, S/N: 52582, TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.8V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 12:34:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.7V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 13:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.7V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 14:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.7V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 15:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.7V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.7V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.8V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.8V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.8V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 19:15:01 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.7V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 20:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.7V, FILE: -, TOTAL FREE: 59.63G

2023-05-22 21:00:27 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.4V, FILE: M000039.WAV, TOTAL FREE: 59.44G

2023-05-22 22:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: M000190.WAV, TOTAL FREE: 58.72G

2023-05-22 23:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: M000198.WAV, TOTAL FREE: 58.69G

2023-05-23 00:00:03 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: M000200.WAV, TOTAL FREE: 58.68G

2023-05-23 01:00:01 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: M000200.WAV, TOTAL FREE: 58.68G

2023-05-23 02:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: M000201.WAV, TOTAL FREE: 58.67G

2023-05-23 03:00:07 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: M000210.WAV, TOTAL FREE: 58.63G

2023-05-23 04:00:01 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000229.WAV, TOTAL FREE: 58.54G

2023-05-23 05:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000245.WAV, TOTAL FREE: 58.46G

2023-05-23 05:50:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000263.WAV, TOTAL FREE: 58.38G

2023-05-23 06:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000263.WAV, TOTAL FREE: 58.38G

2023-05-23 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.1V, FILE: M000263.WAV, TOTAL FREE: 58.38G

2023-05-23 08:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: M000263.WAV, TOTAL FREE: 58.38G

2023-05-23 09:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: M000263.WAV, TOTAL FREE: 58.38G

2023-05-23 10:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: M000263.WAV, TOTAL FREE: 58.38G

2023-05-23 10:31:44 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.3V, FILE: M000263.WAV, TOTAL FREE: 58.38G

2023-05-23 10:32:36 $$KEYBOARD SLEEP ---- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 13:00/00:53, DST=DIS, BATTERY: 5.2V, FILE: M000263.WAV, TOTAL FREE: 58.38G