ATTACHMENT 6: VIEWSHED ANALYSIS [SITE 301.05(b)(4)(d)(2)]

INTRODUCTION

The VIA submitted on October 14, 2015 included a viewshed analysis covering an area within five miles of the centerline of the transmission corridor. The computer-based viewshed maps (visibility analysis) included here illustrate where the NPT project may possibly be visible within ten miles of the centerline of the transmission corridor.

The format of the presentation is identical to the mapping that was submitted in the October 14, 2015 VIA. It includes a series of three maps show a) the visibility of the existing 115-kV transmission line, b) the visibility of the proposed structures (both the NPT line and the relocated 115-kV line where it occurs), and c) the difference (delta) between the existing and potential visibility. The scenic resources identified in Attachment 7 are located on the viewshed maps at area of visibility closest to the corridor. The Scenic Resource ID Table serves as a key to the points on the map. See attachment 7 for more scenic resource information.

While the SEC rules require a viewshed analysis for an area of potential effect of ten miles from the corridor, in reality there are very few instances where the transmission structures and cleared corridor would be able to be detected at distances greater than five miles. Even if observers were able to see the transmission line, it would be perceived as a very small object and would not appear as a dominant or prominent feature in the overall landscape.

The visibility analysis provided meets the SEC rules in Site 301.05(b)(4)(d)(2).

METHODOLOGY

See Appendix A of the October 14, 2015 VIA for a technical description of the viewshed development process.

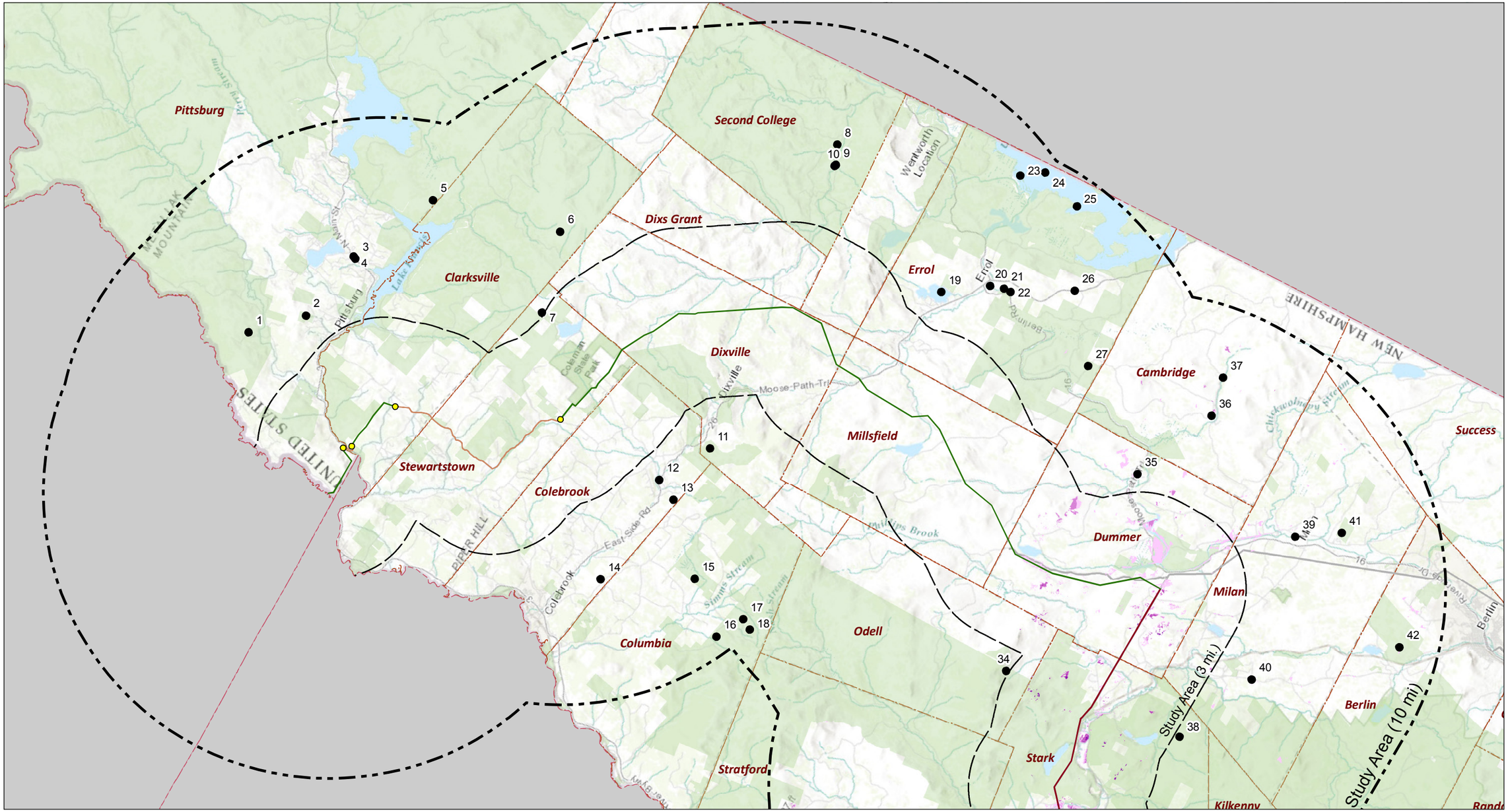
The land coverage was extended out to ten miles on either side of the centerline of the proposed NPT line to create the maps included in this supplement. The viewshed mapping out to five miles was combined with the new viewshed data spanning five to ten miles from the centerline of the transmission corridor. The Digital Terrain Model (DTM) was developed using the National Elevation Data (NED); the Digital Surface Model (DSM) was developed using the New Hampshire Land Cover Data Classifications.

SCENIC RESOURCE ID TABLE

MAP ID	RESOURCE NAME	TOWN
1	Connecticut Lakes Headwaters	Pittsburg
2	Pittsburgh Town Farm	Pittsburg
3	Moose Path Trail Scenic Byway	Pittsburg
4	Snowmobile Trail 142	Pittsburg
5	Connecticut Lakes WMA South	Pittsburg
6	Connecticut Lake Headwaters	Clarksville
11	Tillotson Corp/Balsams Conservation Restriction	Dixville
12	Moosepath Trail Scenic Byway	Colebrook
13	Snowmobile Trail	Colebrook
14	Snowmobile Trail 7A	Colebrook
15	Mohawk Div. of Silvio O Conte NFWR	Columbia
16	Bunnell Working Forest	Columbia
17	Snowmobile Trail 5	Columbia
18	Vickie Bunnell Preserve	Columbia
19	Akers Pond	Errol
20	Clear Stream	Errol
21	Androscoggin River	Errol
22	13 Mile Woods Community Forest	Errol
23	Lake Umbagog National Wildlife Refuge	Errol
24	Umbagog Lake	Errol
25	Umbagog State Park	Errol
26	Moose Path Trail Scenic Byway	Errol
27	Lake Umbagog National Wildlife Refuge	Errol
34	Nash Stream Forest	Odell
35	Moose Path Trail	Dummer
36	Snowmobile Trail 114	Cambridge
37	Snowmobile Trail 18	Cambridge
38	White Mountain National Forest	Milan
39	Snowmobile Trail 114A	Milan
40	Woodland Heritage Trail Scenic Byway	Milan
41	Milan Town Forest	Milan
42	Jericho Mountain State Park	Berlin
43	Mount Cabot Trail	Lancaster
44	Cohos Trail	Jefferson
45	Waumbek Golf Club	Jefferson
46	Randolph Community Forest	Jefferson
47	Unknown Stream	Jefferson
48	Presidential Range Tour/ Woodland Heritage Trail	Jefferson
49	Presidential Recreational Trail	Jefferson
50	Snowmobile Trail 5	Jefferson
51	Red Brook	Jefferson
52	Agnew State Forest	Jefferson
53	White Mountain National Forest	Low & Burbanks
54	Snowmobile Trail 5	Low & Burbanks
55	I93	Littleton
56	Slate Ledge	Littleton
57	Profile Recreational Trail	Bethlehem
58	White Mountain National Forest	Bethlehem
59	South Sugarloaf	Bethlehem
60	Webster Ridge Conservation Area	Holderness
61	Snowmobile Trail 24	Hebron
62	McLane Cockermouth River	Hebron
63	NHAS Paradise Point Nature Center	Hebron
64	Charles L. Bean Sanctuary	Hebron
65	Snowmobile Trail 151	Alexandria
66	Forest Legacy Tract	Alexandria
67	Snowmobile Trail	Alexandria
68	Victor's Woods	Alexandria
69	Newfound Lake	Hebron
70	Pemingewasset Lake	Meredith
71	Witte Forest Management Area	Hill
72	Snowmobile Trail 302	Belmont
75	Bachelder Easement	Loudon
76	Catamount Mountain	Pittfield
77	Penacook Lake	Concord
77	Comte Easement	Nottingham
78	Dimond Hill Farm	Concord
79	St. Paul's School Land	Concord
80	Russell-Shea State Forest	Concord
81	Maplewood Farm	Concord
82	Kimball, F. & D.	Hopkinton
83	Snowmobile Trail 11	Hopkinton
84	Currier and Ives Trail	Hopkinton
85	Hough	Dunbarton
86	General John Stark Byway	Dunbarton
87	Bow Town Forest - Turnpike Lots	Bow
88	Second College Grant	Second College
88	Nottingcook Forest	Bow
89	Bennett Brook	Second College
89	Parsons Way Open Space	Bow
90	Swift Diamond River	Second College
90	Snowmobile Trail 11	Bow
91	Snowmobile Trail	Stewart
91	University Heights Easement 2	Hooksett
92	Marceau Easement	Stratford
92	Hooksett	Hooksett
93	Fort Hill WMA	Stratford
93	Rand Easement	Candia
94	Snowmobile Trail 3	Stratford
94	Upper Lamprey River Scenic Byway	Candia
95	Connecticut River	Stratford
95	Snowmobile Trail 17	Raymond
96	Taylor Brook	Stratford
96	Snowmobile Trail 6	Raymond
97	Connecticut River Scenic Byway	Stratford
98	Arch Park	Tilton
99	Mount Kearsarge State Forest	Warner

See Attachement 7 for more detail and analysis of resources.

EXISTING STRUCTURE VISIBILITY



MAP 01 EXISTING

4 MILES

EXISTING STRUCTURES

- 1-5 EXISTING VISIBLE STRUCTURES
- 6-10 EXISTING VISIBLE STRUCTURES
- 11-20 EXISTING VISIBLE STRUCTURES
- > 20 EXISTING VISIBLE STRUCTURES

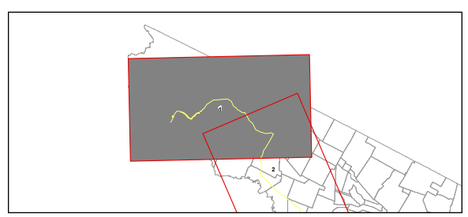
LEGEND

- PROPOSED ABOVE GROUND TRANSMISSION CORRIDOR
- EXISTING ABOVE GROUND TRANSMISSION CORRIDOR
- UNDERGROUND TRANSMISSION CORRIDOR
- OTHER TRANSMISSION CORRIDOR (NOT INCLUDED IN THE PROJECT)
- 3-MILE STUDY AREA BOUNDARY
- 10-MILE VIEWSHED AREA BOUNDARY
- SCENIC RESOURCE LOCATED WITHIN VIEWSHED AREA (3-10 MILES)

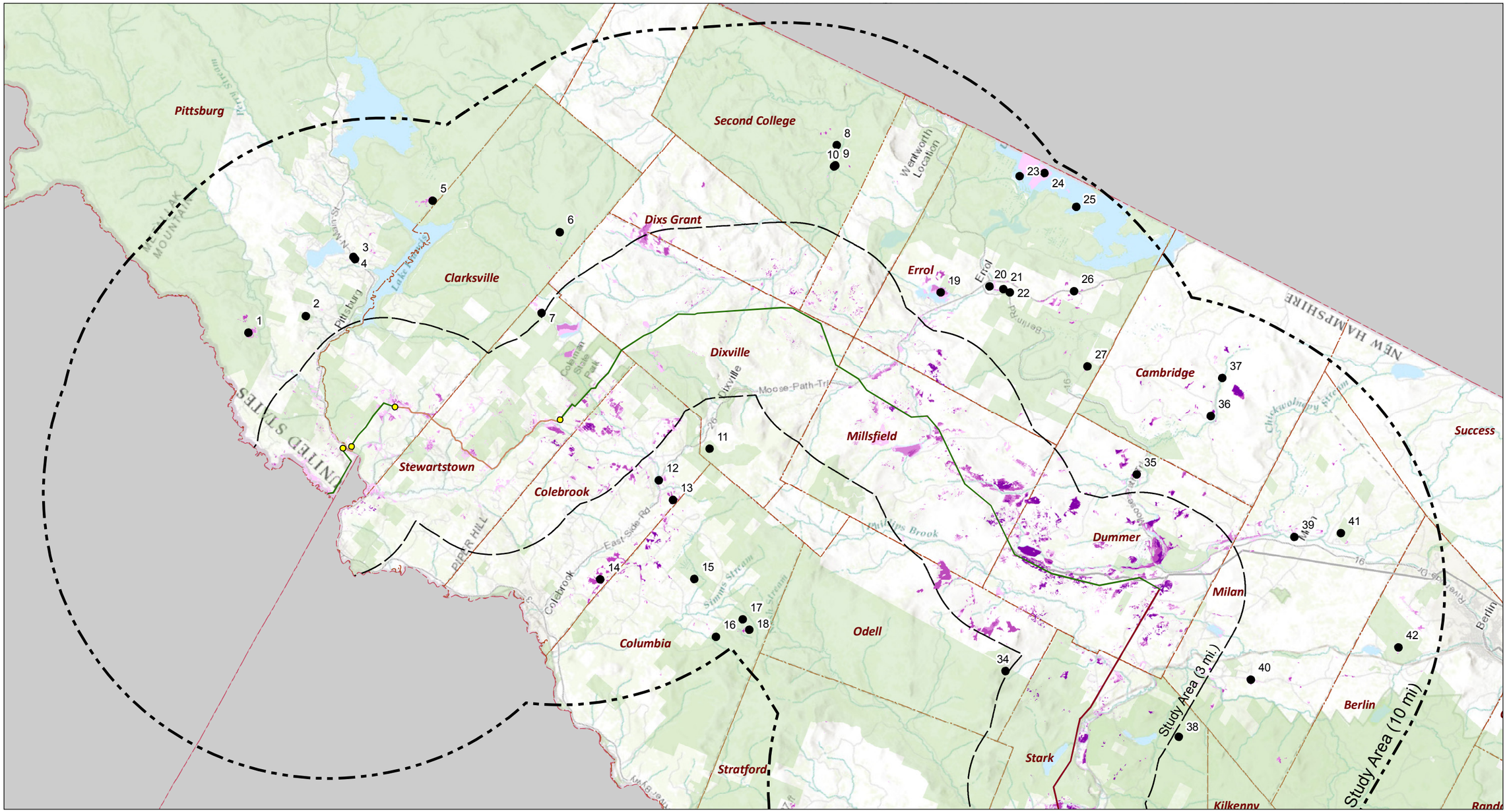
VIEWSHED NOTE

The viewshed map shows visibility of structures in the existing transmission corridor. This includes existing 115-kV and distribution line structures.

INDEX MAP



PROPOSED STRUCTURE VISIBILITY



MAP 01 PROPOSED

4 MILES

PROPOSED STRUCTURES

- 1-5 PROPOSED VISIBLE STRUCTURES
- 6-10 PROPOSED VISIBLE STRUCTURES
- 11-20 PROPOSED VISIBLE STRUCTURES
- > 20 PROPOSED VISIBLE STRUCTURES

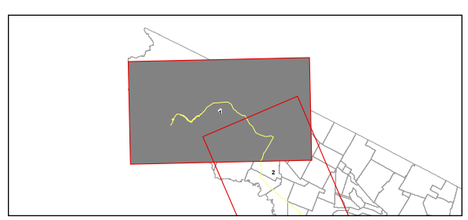
LEGEND

- PROPOSED ABOVE GROUND TRANSMISSION CORRIDOR
- EXISTING ABOVE GROUND TRANSMISSION CORRIDOR
- UNDERGROUND TRANSMISSION CORRIDOR
- OTHER TRANSMISSION CORRIDOR (NOT INCLUDED IN THE PROJECT)
- 3-MILE STUDY AREA BOUNDARY
- 10-MILE VIEWSHED AREA BOUNDARY
- SCENIC RESOURCE LOCATED WITHIN VIEWSHED AREA (3-10 MILES)

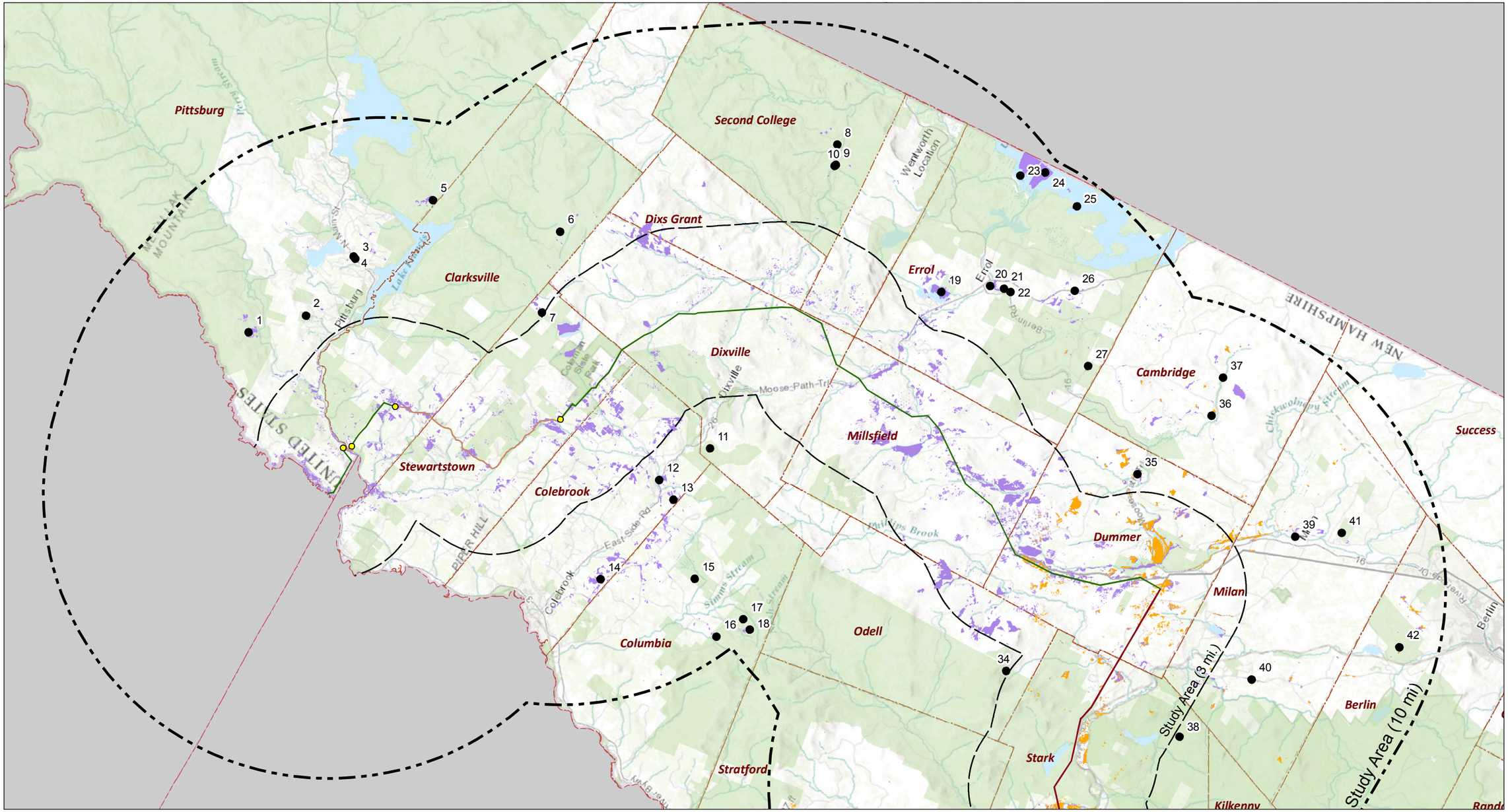
VIEWSHED NOTE

The viewshed map shows visibility of structures in the existing transmission corridor. This including new HVDC structures, relocated and remaining 115-kV structures, and relocated and remaining distribution line structures.

INDEX MAP



INCREASED AREAS WITH STRUCTURE VISIBILITY



MAP 01
DELTA

4 MILES

DELTA BETWEEN EXISTING + PROPOSED

- AREAS WITH VISIBILITY OF STRUCTURES IN EXISTING CORRIDOR
- AREAS WITH VISIBILITY OF STRUCTURES IN PROPOSED CORRIDOR

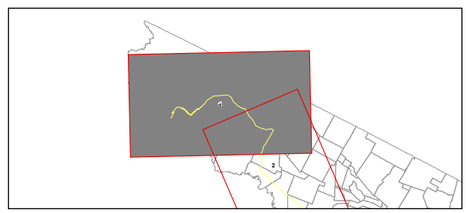
LEGEND

- PROPOSED ABOVE GROUND TRANSMISSION CORRIDOR
- EXISTING ABOVE GROUND TRANSMISSION CORRIDOR
- UNDERGROUND TRANSMISSION CORRIDOR
- OTHER TRANSMISSION CORRIDOR (NOT INCLUDED IN THE PROJECT)
- 3-MILE STUDY AREA BOUNDARY
- 10-MILE VIEWSHED AREA BOUNDARY
- SCENIC RESOURCE LOCATED WITHIN VIEWSHED AREA (3-10 MILES)

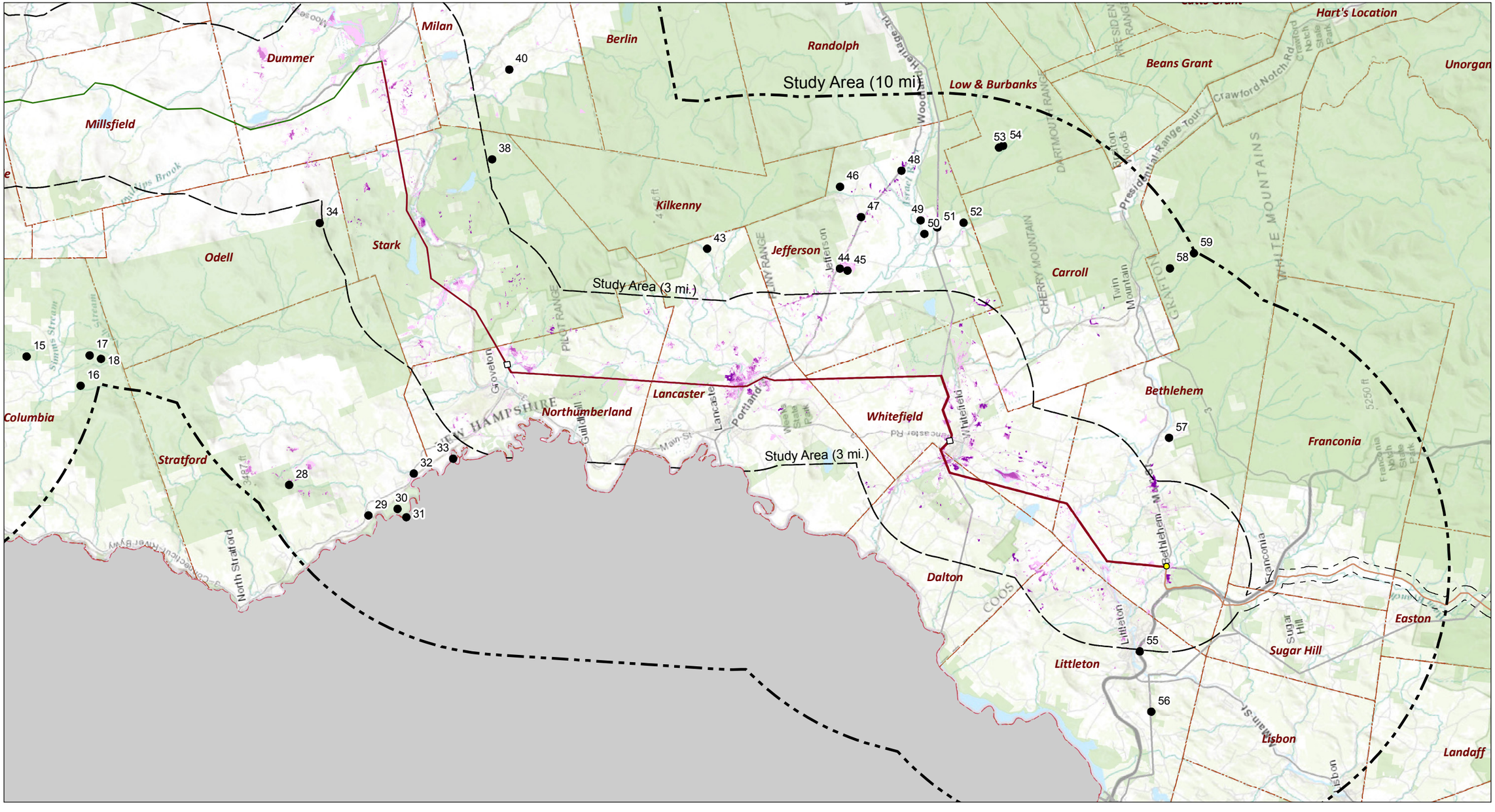
VIEWSHED NOTE

This viewshed map shows delta or increase in areas with structure visibility. The orange represents areas that currently have visibility of the existing structures. The purple represents areas where structures are not currently visible, but will be visible with the proposed changes.

INDEX MAP



EXISTING STRUCTURE VISIBILITY



MAP 02
EXISTING

4 MILES

EXISTING STRUCTURES

- 1-5 EXISTING VISIBLE STRUCTURES
- 6-10 EXISTING VISIBLE STRUCTURES
- 11-20 EXISTING VISIBLE STRUCTURES
- > 20 EXISTING VISIBLE STRUCTURES

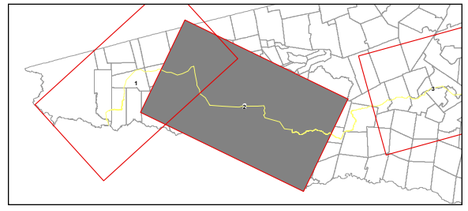
LEGEND

- PROPOSED ABOVE GROUND TRANSMISSION CORRIDOR
- EXISTING ABOVE GROUND TRANSMISSION CORRIDOR
- UNDERGROUND TRANSMISSION CORRIDOR
- OTHER TRANSMISSION CORRIDOR (NOT INCLUDED IN THE PROJECT)
- 3-MILE STUDY AREA BOUNDARY
- 10-MILE VIEWSHED AREA BOUNDARY
- SCENIC RESOURCE LOCATED WITHIN VIEWSHED AREA (3-10 MILES)

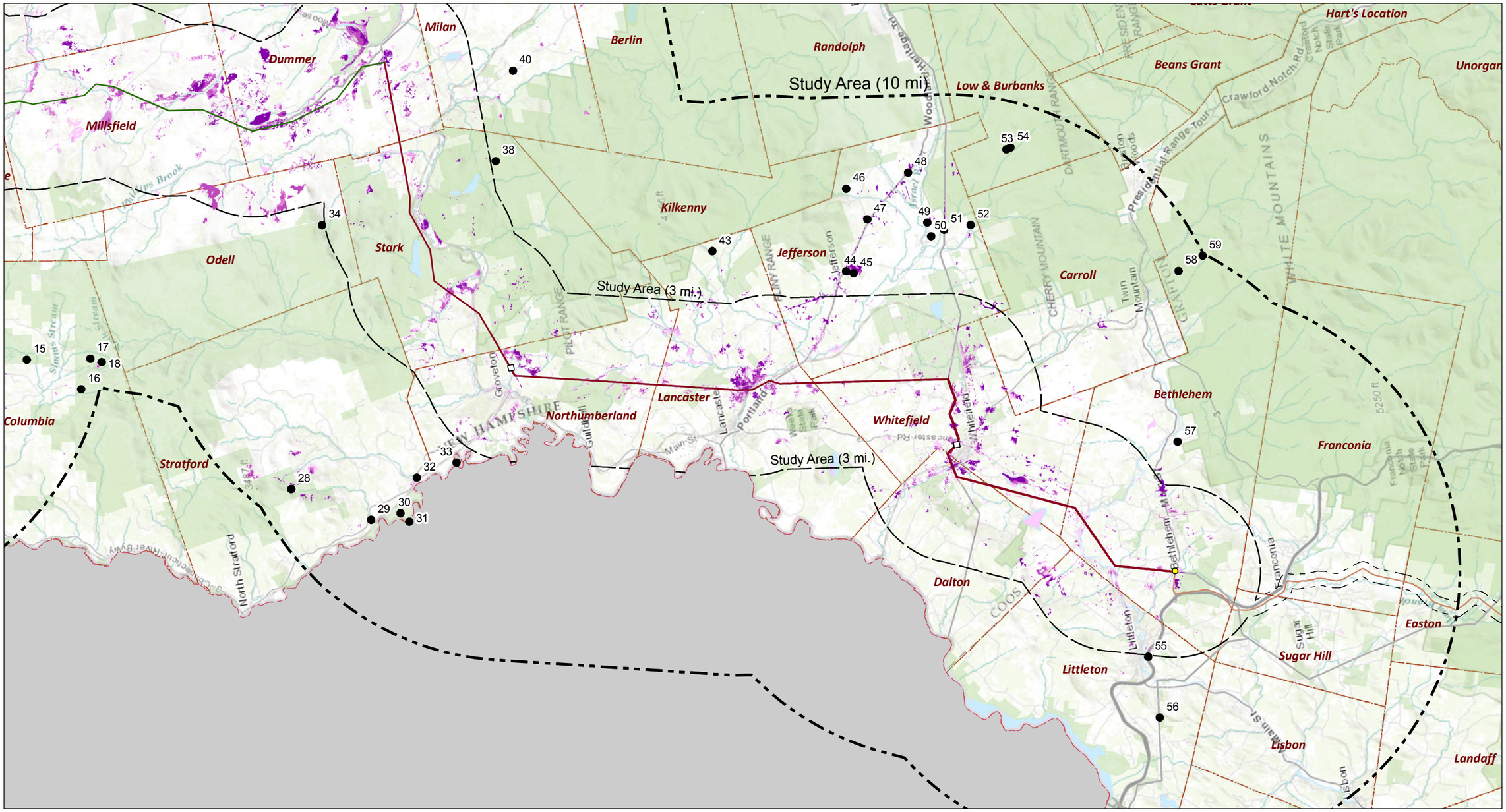
VIEWSHED NOTE

The viewshed map shows visibility of structures in the existing transmission corridor. This includes existing 115-kV and distribution line structures.

INDEX MAP



PROPOSED STRUCTURE VISIBILITY



MAP 02
PROPOSED

4 MILES

PROPOSED STRUCTURES

- 1-5 PROPOSED VISIBLE STRUCTURES
- 6-10 PROPOSED VISIBLE STRUCTURES
- 11-20 PROPOSED VISIBLE STRUCTURES
- > 20 PROPOSED VISIBLE STRUCTURES

LEGEND

- PROPOSED ABOVE GROUND TRANSMISSION CORRIDOR
- EXISTING ABOVE GROUND TRANSMISSION CORRIDOR
- UNDERGROUND TRANSMISSION CORRIDOR
- OTHER TRANSMISSION CORRIDOR (NOT INCLUDED IN THE PROJECT)
- 3-MILE STUDY AREA BOUNDARY
- 10-MILE VIEWSHED AREA BOUNDARY
- SCENIC RESOURCE LOCATED WITHIN VIEWSHED AREA (3-10 MILES)

VIEWSHED NOTE

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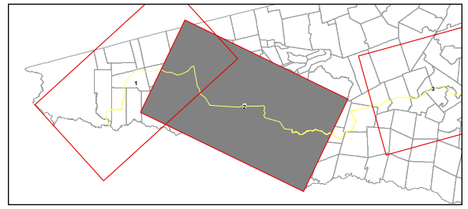
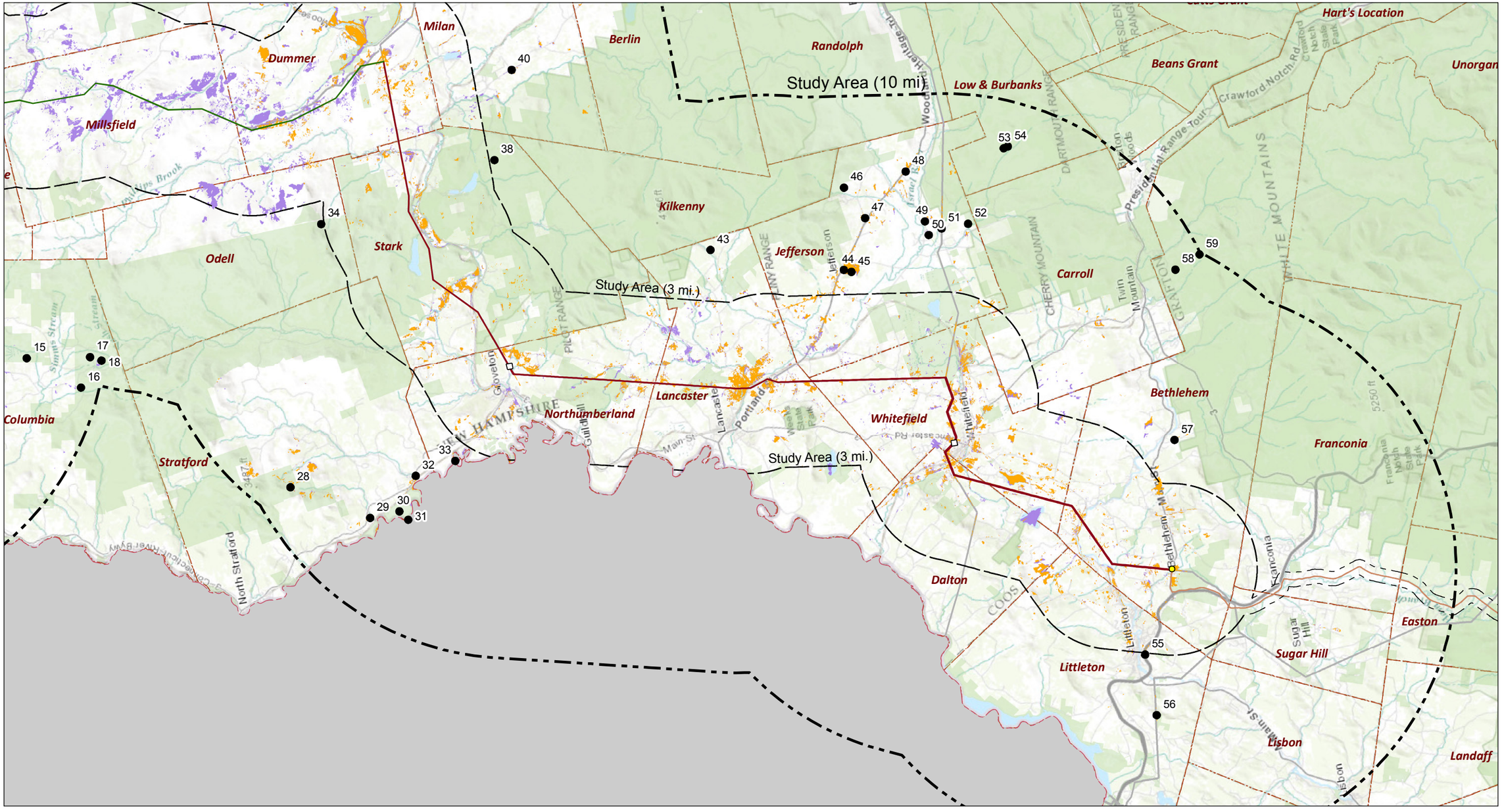


INCREASED AREAS WITH STRUCTURE VISIBILITY



MAP 02
DELTA

4 MILES

DELTA BETWEEN EXISTING + PROPOSED

- AREAS WITH VISIBILITY OF STRUCTURES IN EXISTING CORRIDOR
- AREAS WITH VISIBILITY OF STRUCTURES IN PROPOSED CORRIDOR

LEGEND

- PROPOSED ABOVE GROUND TRANSMISSION CORRIDOR
- EXISTING ABOVE GROUND TRANSMISSION CORRIDOR
- UNDERGROUND TRANSMISSION CORRIDOR
- OTHER TRANSMISSION CORRIDOR (NOT INCLUDED IN THE PROJECT)
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- SCENIC RESOURCE LOCATED WITHIN VIEWSHED AREA (3-10 MILES)

VIEWSHED NOTE

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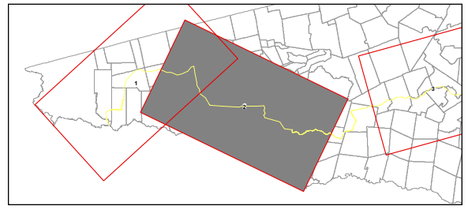
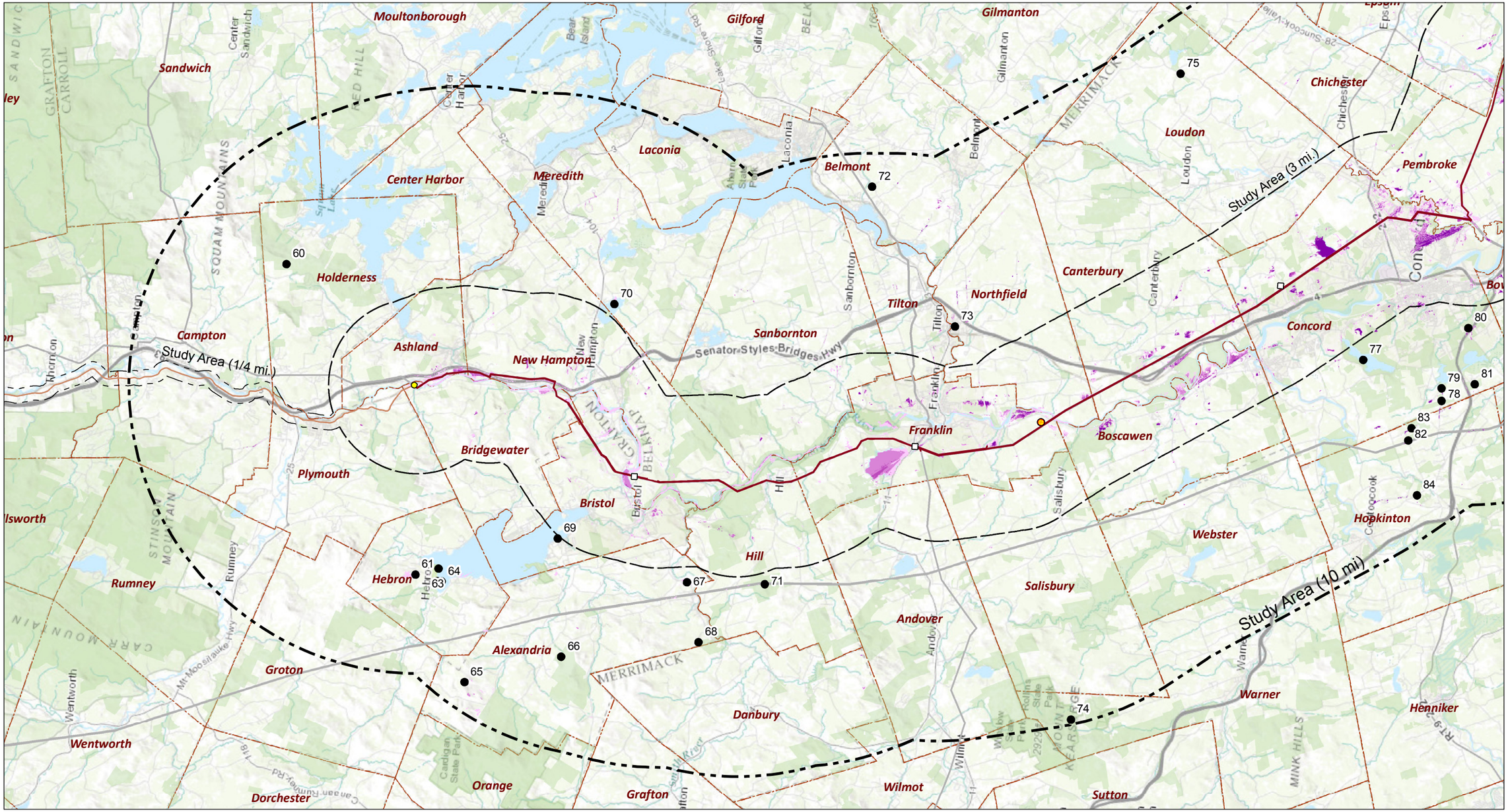
INDEX MAP



EXISTING STRUCTURE VISIBILITY



MAP 03 EXISTING

4 MILES

EXISTING STRUCTURES

- 1-5 EXISTING VISIBLE STRUCTURES
- 6-10 EXISTING VISIBLE STRUCTURES
- 11-20 EXISTING VISIBLE STRUCTURES
- > 20 EXISTING VISIBLE STRUCTURES

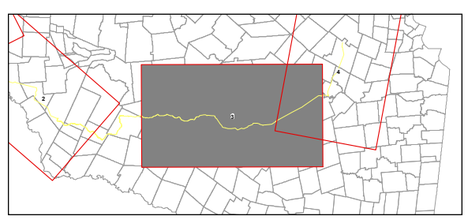
LEGEND

- PROPOSED ABOVE GROUND TRANSMISSION CORRIDOR
- EXISTING ABOVE GROUND TRANSMISSION CORRIDOR
- UNDERGROUND TRANSMISSION CORRIDOR
- OTHER TRANSMISSION CORRIDOR (NOT INCLUDED IN THE PROJECT)
- 3-MILE STUDY AREA BOUNDARY
- 10-MILE VIEWSHED AREA BOUNDARY
- SCENIC RESOURCE LOCATED WITHIN VIEWSHED AREA (3-10 MILES)

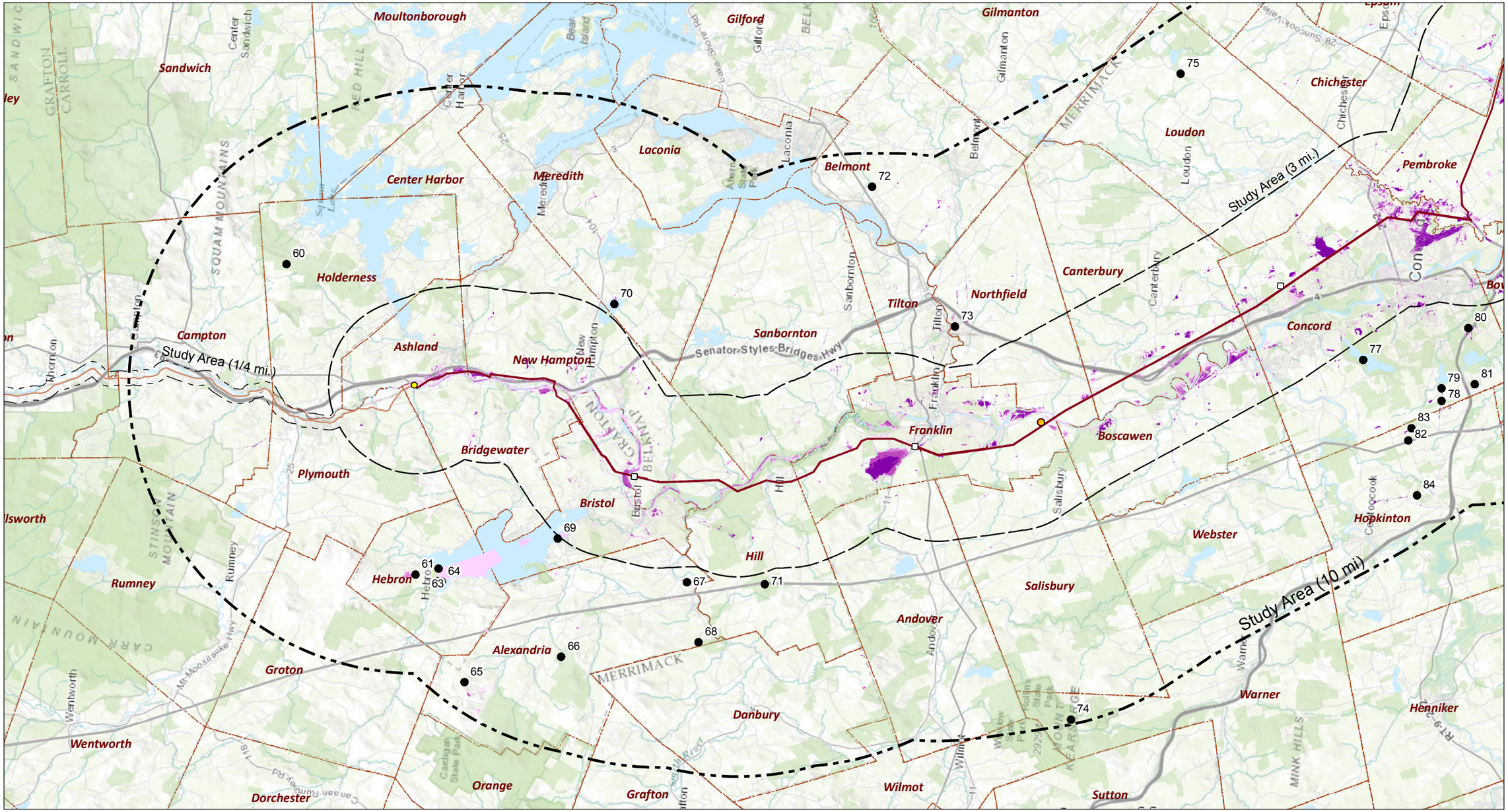
VIEWSHED NOTE

The viewshed map shows visibility of structures in the existing transmission corridor. This includes existing 115-kV and distribution line structures.

INDEX MAP



PROPOSED STRUCTURE VISIBILITY



MAP 03 PROPOSED

4 MILES

PROPOSED STRUCTURES

- 1-5 PROPOSED VISIBLE STRUCTURES
- 6-10 PROPOSED VISIBLE STRUCTURES
- 11-20 PROPOSED VISIBLE STRUCTURES
- > 20 PROPOSED VISIBLE STRUCTURES

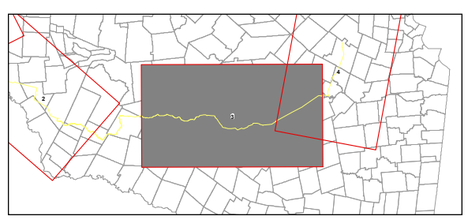
LEGEND

- PROPOSED ABOVE GROUND TRANSMISSION CORRIDOR
- EXISTING ABOVE GROUND TRANSMISSION CORRIDOR
- UNDERGROUND TRANSMISSION CORRIDOR
- OTHER TRANSMISSION CORRIDOR (NOT INCLUDED IN THE PROJECT)
- 3-MILE STUDY AREA BOUNDARY
- 10-MILE VIEWSHED AREA BOUNDARY
- SCENIC RESOURCE LOCATED WITHIN VIEWSHED AREA (3-10 MILES)

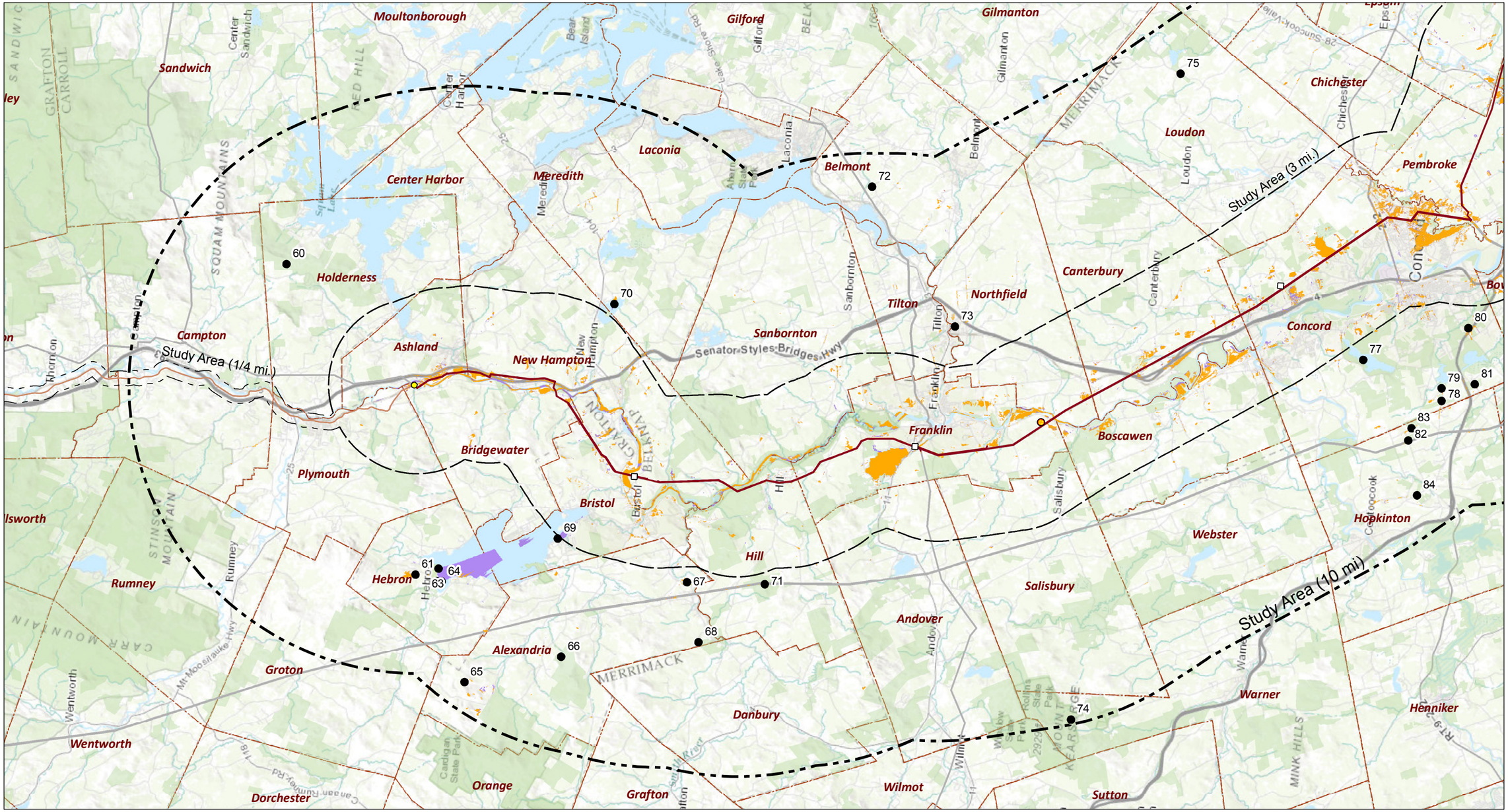
VIEWSHED NOTE

The viewshed map shows visibility of structures in the existing transmission corridor. This including new HVDC structures, relocated and remaining 115-kV structures, and relocated and remaining distribution line structures.

INDEX MAP



INCREASED AREAS WITH STRUCTURE VISIBILITY



MAP 03
DELTA

4 MILES

DELTA BETWEEN EXISTING + PROPOSED

- AREAS WITH VISIBILITY OF STRUCTURES IN EXISTING CORRIDOR
- AREAS WITH VISIBILITY OF STRUCTURES IN PROPOSED CORRIDOR

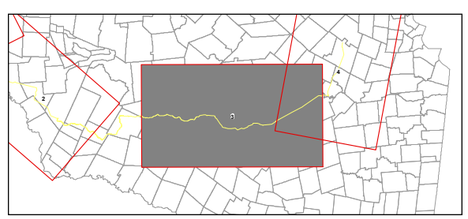
LEGEND

- PROPOSED ABOVE GROUND TRANSMISSION CORRIDOR
- EXISTING ABOVE GROUND TRANSMISSION CORRIDOR
- UNDERGROUND TRANSMISSION CORRIDOR
- OTHER TRANSMISSION CORRIDOR (NOT INCLUDED IN THE PROJECT)
- 3-MILE STUDY AREA BOUNDARY
- 10-MILE VIEWSHED AREA BOUNDARY
- SCENIC RESOURCE LOCATED WITHIN VIEWSHED AREA (3-10 MILES)

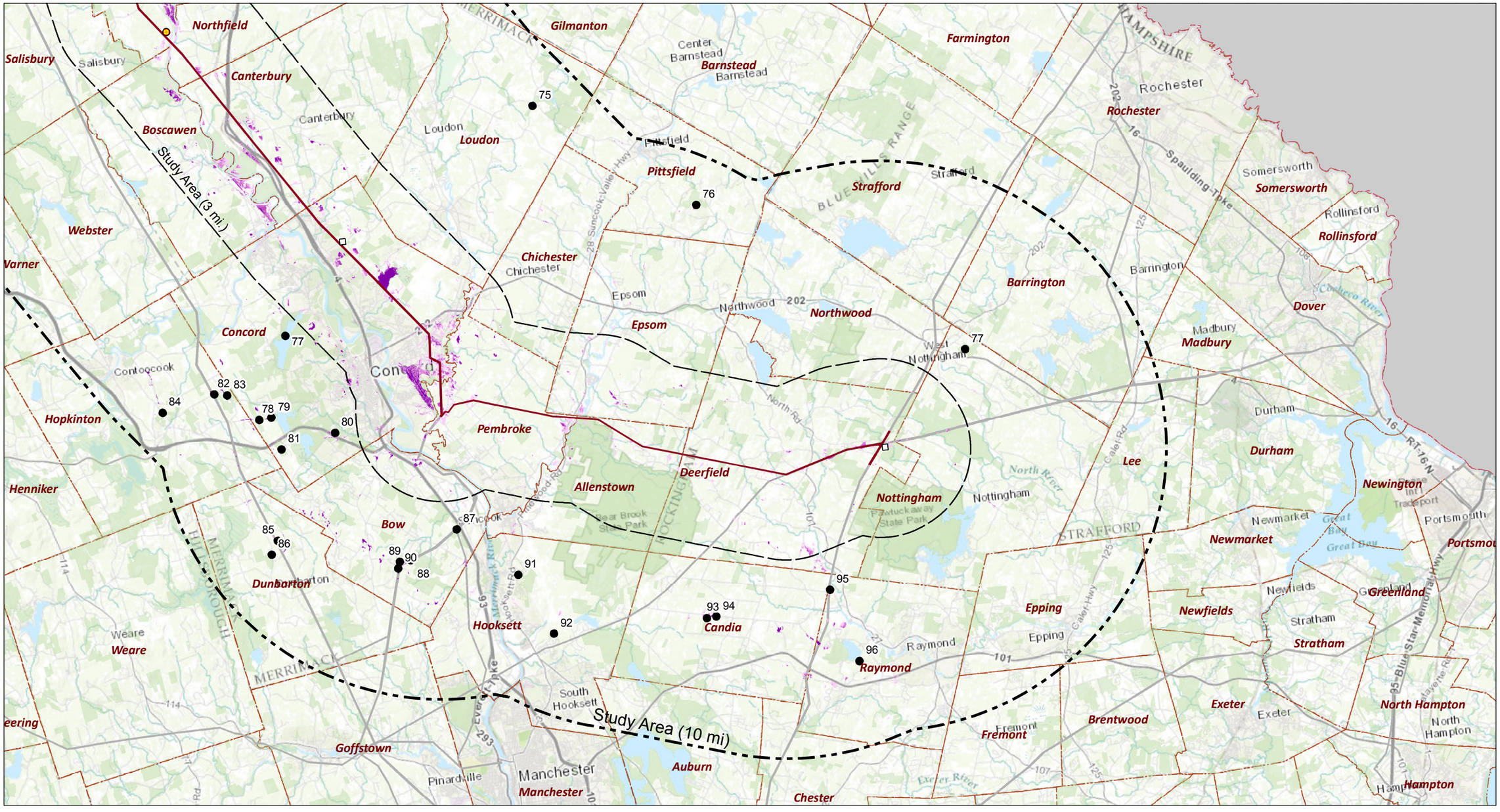
VIEWSHED NOTE

This viewshed map shows delta or increase in areas with structure visibility. The orange represents areas that currently have visibility of the existing structures. The purple represents areas where structures are not currently visible, but will be visible with the proposed changes.

INDEX MAP



EXISTING STRUCTURE VISIBILITY



MAP 04
EXISTING

4 MILES

EXISTING STRUCTURES

- 1-5 EXISTING VISIBLE STRUCTURES
- 6-10 EXISTING VISIBLE STRUCTURES
- 11-20 EXISTING VISIBLE STRUCTURES
- > 20 EXISTING VISIBLE STRUCTURES

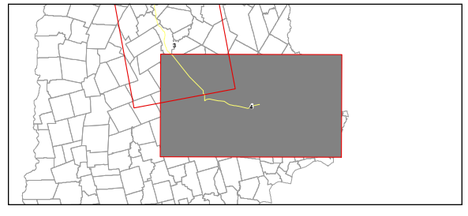
LEGEND

- PROPOSED ABOVE GROUND TRANSMISSION CORRIDOR
- EXISTING ABOVE GROUND TRANSMISSION CORRIDOR
- UNDERGROUND TRANSMISSION CORRIDOR
- OTHER TRANSMISSION CORRIDOR (NOT INCLUDED IN THE PROJECT)
- 3-MILE STUDY AREA BOUNDARY
- 10-MILE VIEWSHED AREA BOUNDARY
- SCENIC RESOURCE LOCATED WITHIN VIEWSHED AREA (3-10 MILES)

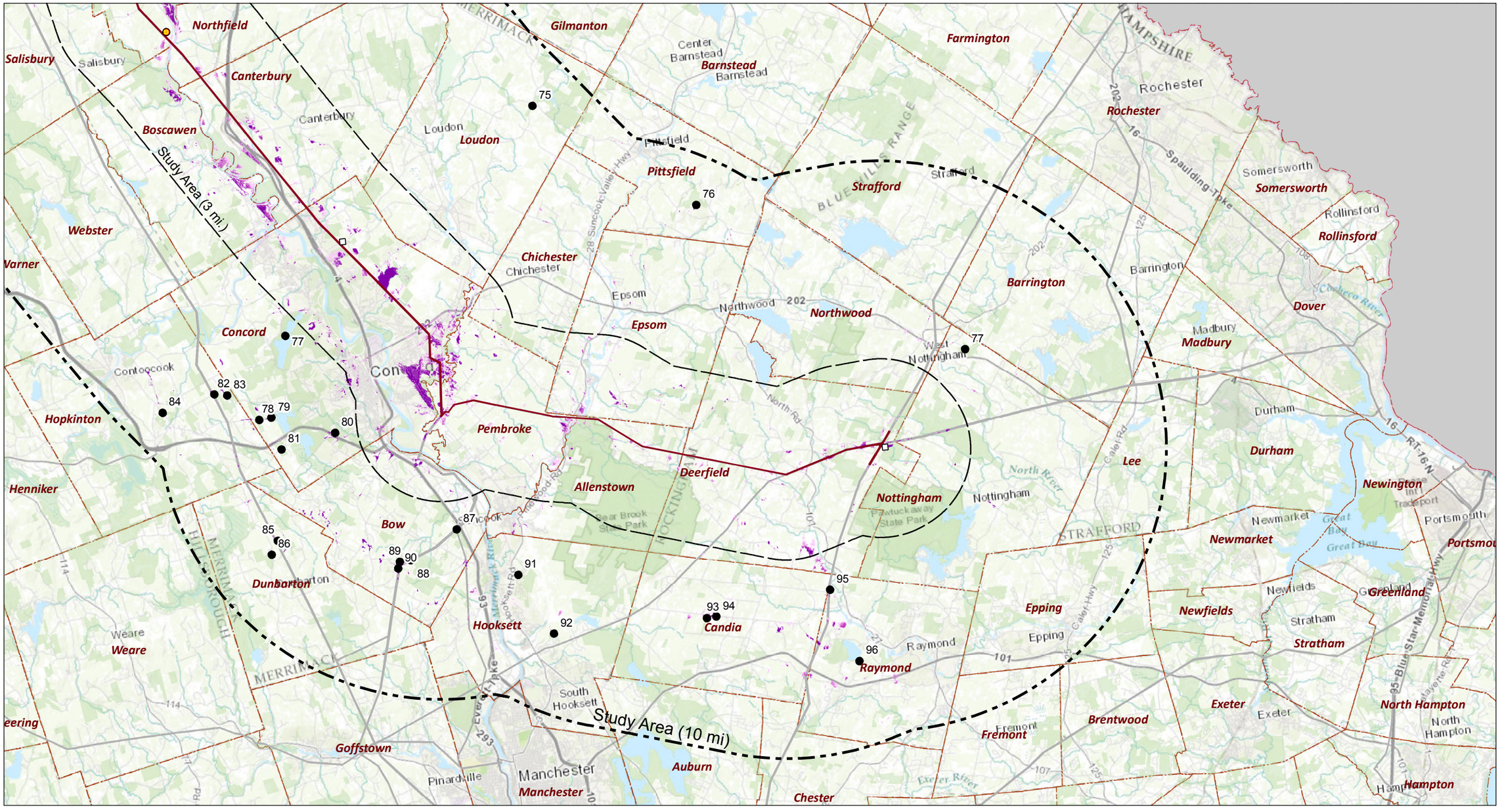
VIEWSHED NOTE

The viewshed map shows visibility of structures in the existing transmission corridor. This includes existing 115-kV and distribution line structures.

INDEX MAP



PROPOSED STRUCTURE VISIBILITY



MAP 04 PROPOSED

4 MILES

PROPOSED STRUCTURES

- 1-5 PROPOSED VISIBLE STRUCTURES
- 6-10 PROPOSED VISIBLE STRUCTURES
- 11-20 PROPOSED VISIBLE STRUCTURES
- > 20 PROPOSED VISIBLE STRUCTURES

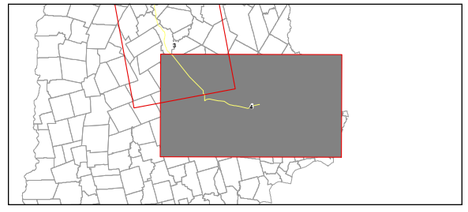
LEGEND

- PROPOSED ABOVE GROUND TRANSMISSION CORRIDOR
- EXISTING ABOVE GROUND TRANSMISSION CORRIDOR
- UNDERGROUND TRANSMISSION CORRIDOR
- OTHER TRANSMISSION CORRIDOR (NOT INCLUDED IN THE PROJECT)
- 3-MILE STUDY AREA BOUNDARY
- 10-MILE VIEWSHED AREA BOUNDARY
- SCENIC RESOURCE LOCATED WITHIN VIEWSHED AREA (3-10 MILES)

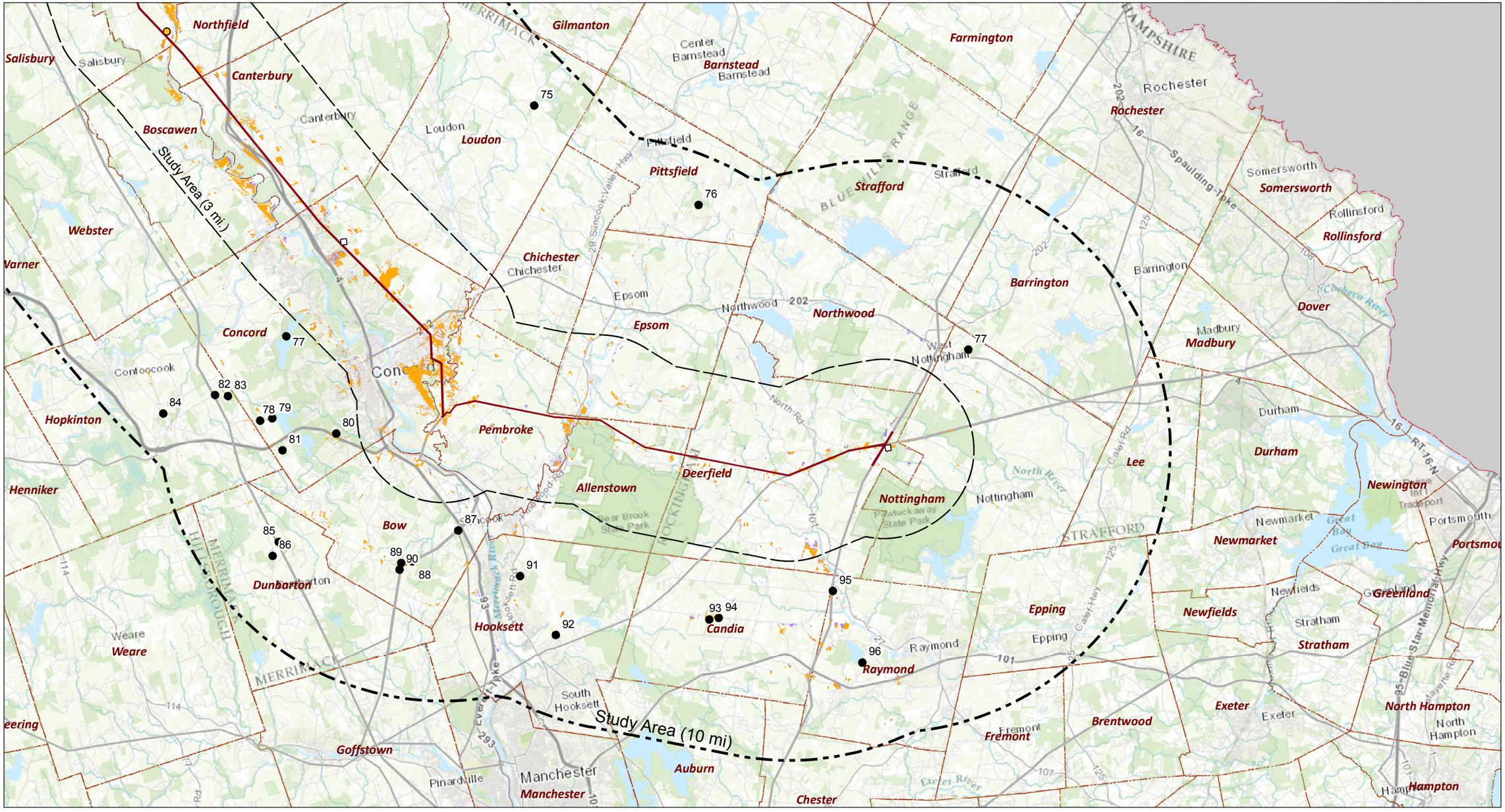
VIEWSHED NOTE

The viewshed map shows visibility of structures in the existing transmission corridor. This including new HVDC structures, relocated and remaining 115-kV structures, and relocated and remaining distribution line structures.

INDEX MAP



INCREASED AREAS WITH STRUCTURE VISIBILITY



MAP 04
DELTA

4 MILES

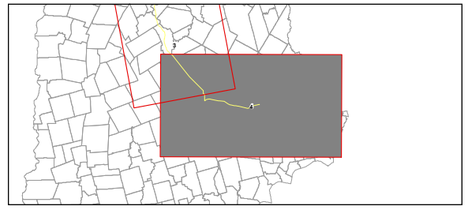
DELTA BETWEEN EXISTING + PROPOSED

- AREAS WITH VISIBILITY OF STRUCTURES IN EXISTING CORRIDOR
- AREAS WITH VISIBILITY OF STRUCTURES IN PROPOSED CORRIDOR

LEGEND

- PROPOSED ABOVE GROUND TRANSMISSION CORRIDOR
- EXISTING ABOVE GROUND TRANSMISSION CORRIDOR
- UNDERGROUND TRANSMISSION CORRIDOR
- OTHER TRANSMISSION CORRIDOR (NOT INCLUDED IN THE PROJECT)
- 3-MILE STUDY AREA BOUNDARY
- 10-MILE VIEWSHED AREA BOUNDARY
- SCENIC RESOURCE LOCATED WITHIN VIEWSHED AREA (3-10 MILES)

VIEWSHED NOTE

This viewshed map shows delta or increase in areas with structure visibility. The orange represents areas that currently have visibility of the existing structures. The purple represents areas where structures are not currently visible, but will be visible with the proposed changes.

INDEX MAP