

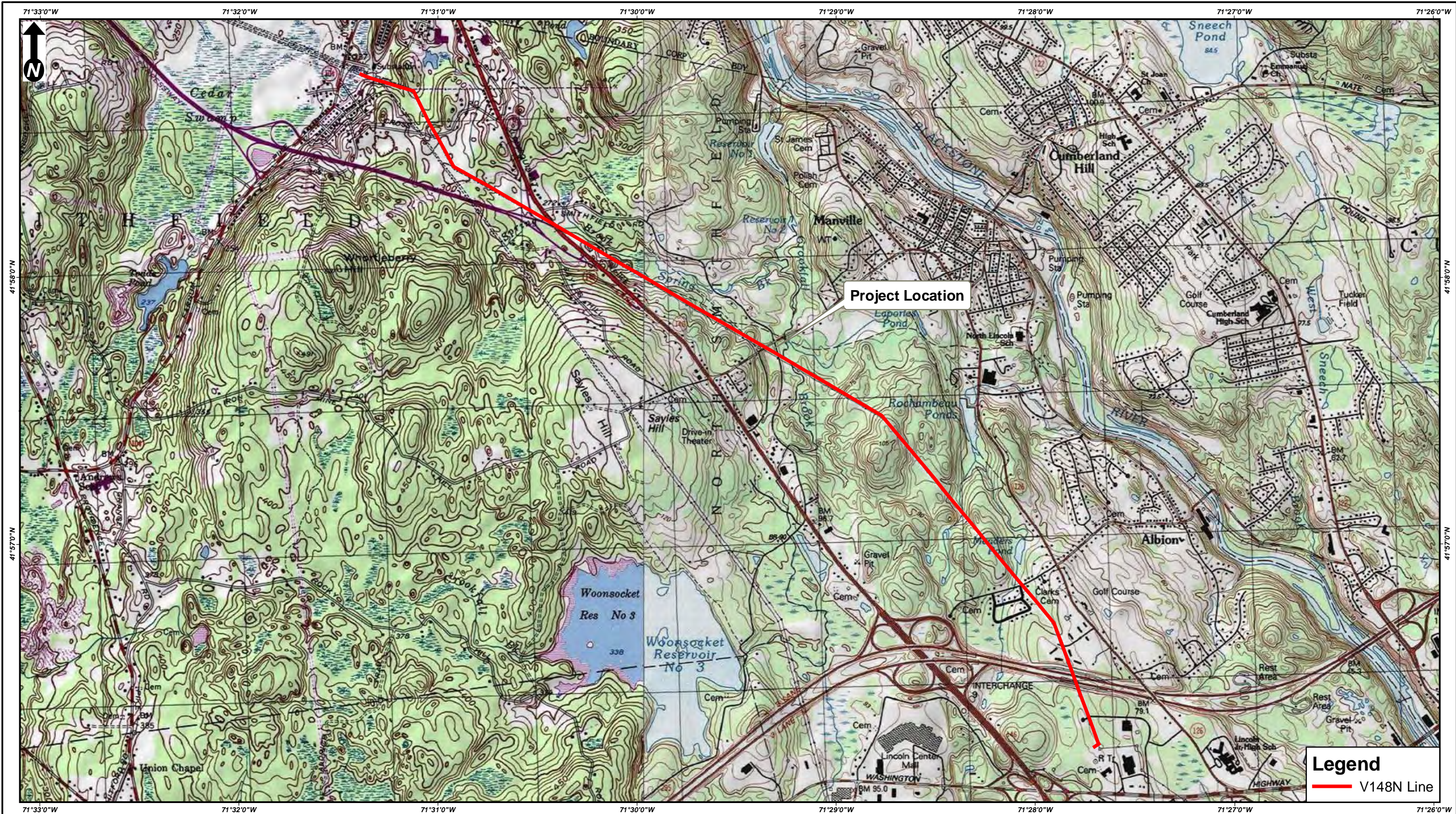
V148N 115kV Transmission Line Reconductoring Project

North Smithfield and Lincoln, Rhode Island

Prepared for:
The Narragansett Electric Company
280 Melrose Street
Providence, RI 02907

Prepared by:
BSC Group, Inc.
33 Waldo Street
Worcester, Massachusetts 01608

June 2015



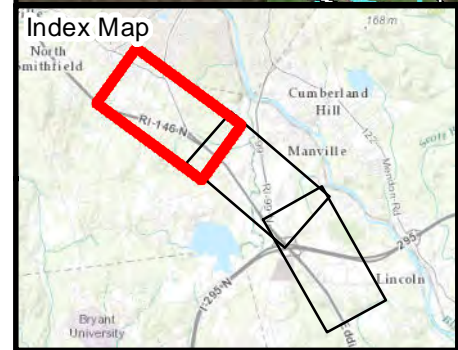
Legend
— V148N Line

Scale:
1 inch = 2,000 feet
(page size: 11 X 17)
0 2,000 4,000
Feet

V148N 115kV TRANSMISSION LINE RECONDUCTORING PROJECT

North Smithfield and Lincoln, Rhode Island
Figure 1-1: Project Locus

Source:
USGS, 1982-1990
nationalgrid
BSC GROUP



Legend

- Existing V148N Structures
- Approximate Line V148N
- - - Approximate Limits of ROW
- ▭ Project Study Area
- Roads
- Streams
- USFWS Wetlands
- Conservation Land
- ▭ Town Boundary

1 inch = 700 feet

0 700 1,400 Feet

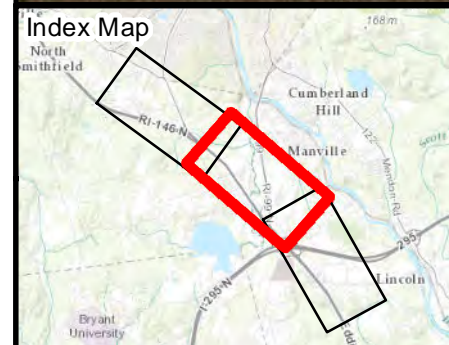
Source: RIGIS Basemap & Environmental Data, Aerial & Topo Imagery, ESRI, DigitalGlobe, GeoEye, F-0ubed, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., AEX, GEBCO, USDA, USGS, FAO, NPS, NRCAN, GeoBase, Getmapping, Aerogrid, IGP, IGN, Kadaster NL, Ordnance Survey, ESRI Japan, METI, ESRI China (Hong Kong), swisstopo, & the GIS User Community

**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

Figure 3-1: Existing Conditions

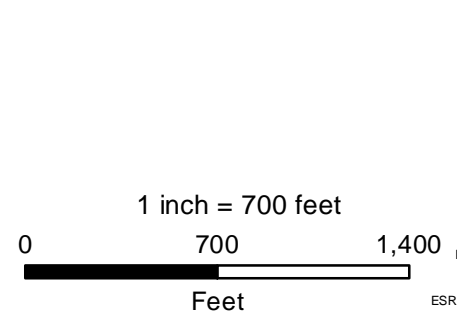
Woonsocket & North Smithfield, RI
 Page 1 of 3





Legend

- Existing V148N Structures
- Approximate Line V148N
- Approximate Limits of ROW
- Project Study Area
- Roads
- Streams
- USFWS Wetlands
- Conservation Land
- Town Boundary



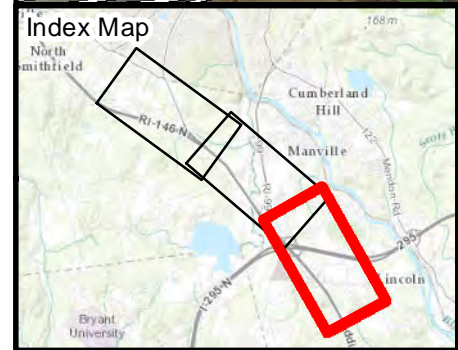
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 -Aerial & Topo Imagery
 ESRI, DigitalGlobe, GeoEye,
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 TomTom, Intermap, increment P Corp.,
 AEX, GEBCO, USDA, USGS, FAO,
 NPS, NRCAN, GeoBase, Getmapping,
 Aerogrid, IGP, IGN, Kadaster NL,
 Ordnance Survey, ESRI Japan, METI,
 ESRI China (Hong Kong), swisstopo, & the
 GIS User Community

**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

Figure 3-1: Existing Conditions

North Smithfield & Lincoln, RI
 Page 2 of 3





Legend

- Existing V148N Structures
- Approximate Line V148N
- - - Approximate Limits of ROW
- ▭ Project Study Area
- Roads
- Streams
- USFWS Wetlands
- Conservation Land
- ▭ Town Boundary

1 inch = 700 feet

0 700 1,400 Feet

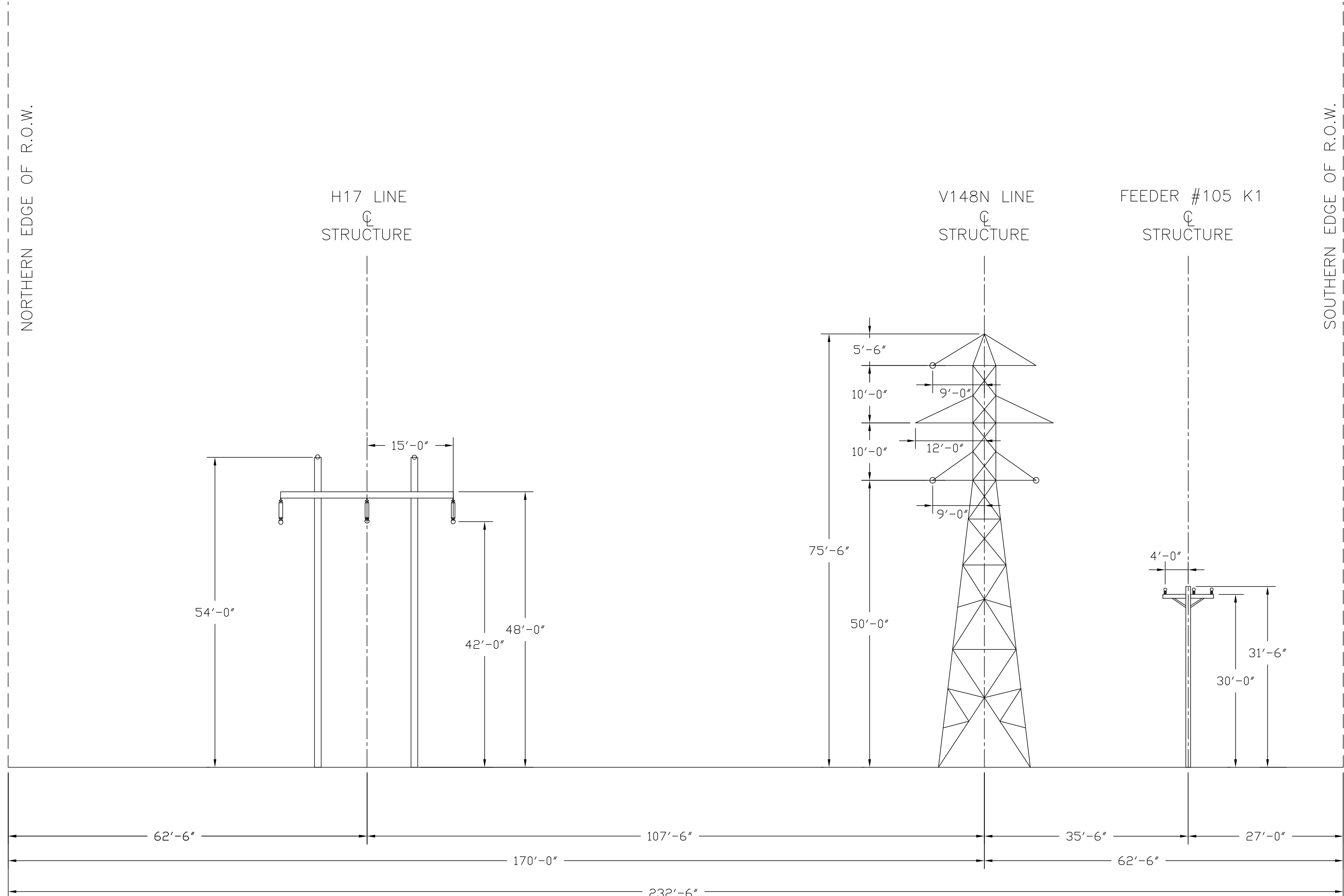
Source: RIGIS Basemap & Environmental Data, Aerial & Topo Imagery, ESRI, DigitalGlobe, GeoEye, Earthstar, DeLorme, NAVTEQ, Swisstopo, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, Getmapping, Aerogrid, IGN, Kadaster NL, Ordnance Survey, ESRI Japan, METI, ESRI China (Hong Kong), swisstopo, & the GIS User Community

**V148N 115 kV TRANSMISSION LINE
 REDUCTORING PROJECT**

Figure 3-1: Existing Conditions



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TYPICAL R.O.W. CROSS-SECTION
LOOKING TOWARD WASHINGTON
SCALE 1"=10'

- NOTES:
- V148N LINE
 - EXISTING CONDUCTOR: 795 AAC "ARBUTUS"
 - EXISTING SHIELDWIRE: 3/8" EHS
 - PROPOSED CONDUCTOR: 795 ACSS 26/7 "DRAKE"
 - PROPOSED SHIELDWIRE: OPGW
 - NUMBER OF DISCS: 8 DISC
 - H17 LINE
 - EXISTING CONDUCTOR: 795 ACSR "TERN"
 - EXISTING SHIELDWIRE: 3/8" EHS
 - NUMBER OF DISCS: 10 DISC
 - 105K1 LINE
 - 3 DISC, 24.9kV
 - EXISTING CONDUCTOR: 336.4 AL "TULIP"

FIGURE 3-2: EXISTING AND PROPOSED ROW CROSS-SECTION
SHOWING TYPICAL ARRANGEMENT OF LINES (SHEETS 1-3)
SHEET 1: VICINITY OF CROSS RD TO VICINITY OF ROUTE 146



VER	DATE	DESCRIPTION	VERSION
1	10/17/14	INITIAL RELEASE	
2			
3			
4			
5			
6			
7			

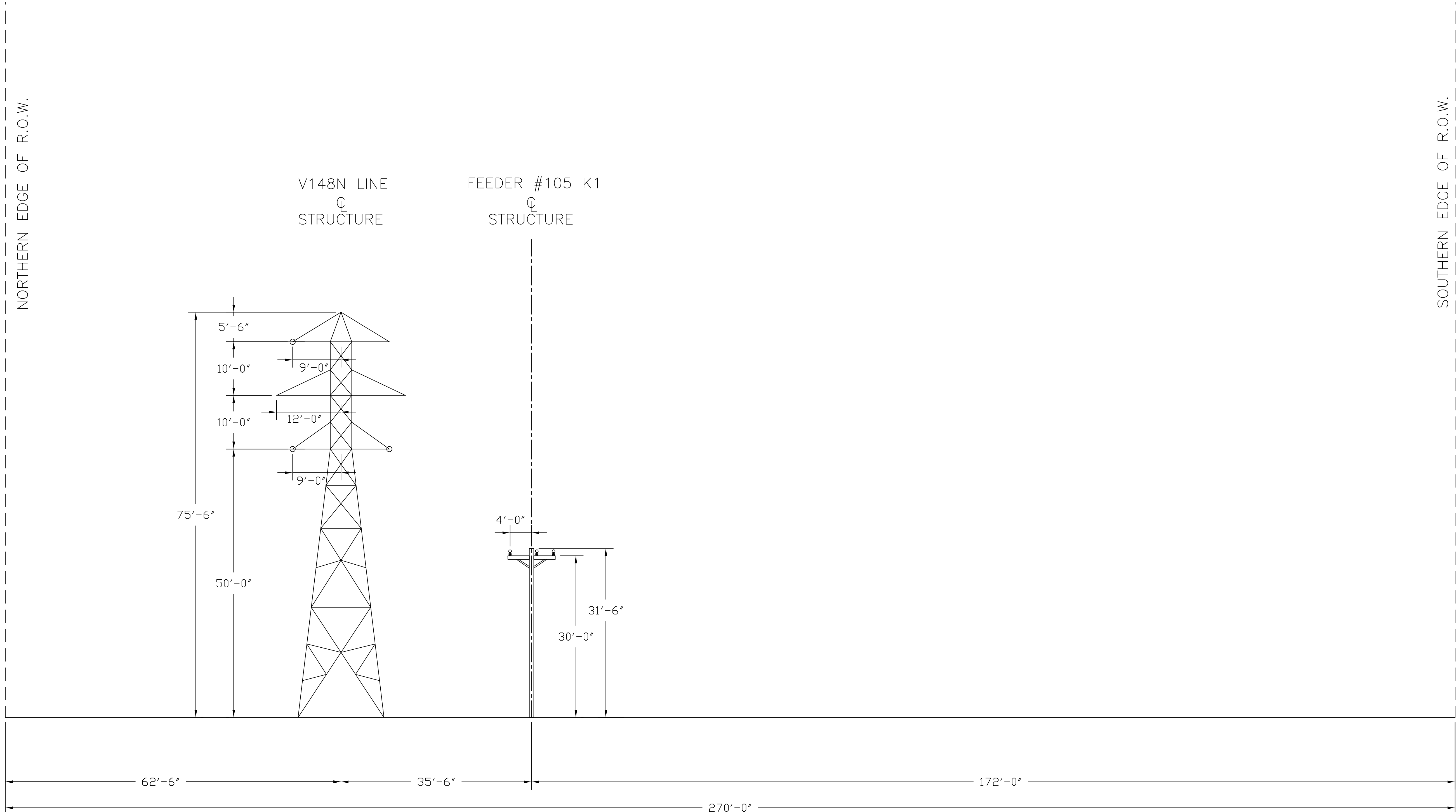
nationalgrid

REVIEWED BY: EEG | 9/17/14
 APPROVED BY: AS SHOWN
 SCALE: 1" OF 1
 SHEET: 1 OF 1
 INDEX: 400390

V148N WOONSOCKET-WASHINGTON
 115KV LINE: WOONSOCKET, RI
 EMF STUDY
 R/W CROSS-SECTION 1

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400390-C-X-02



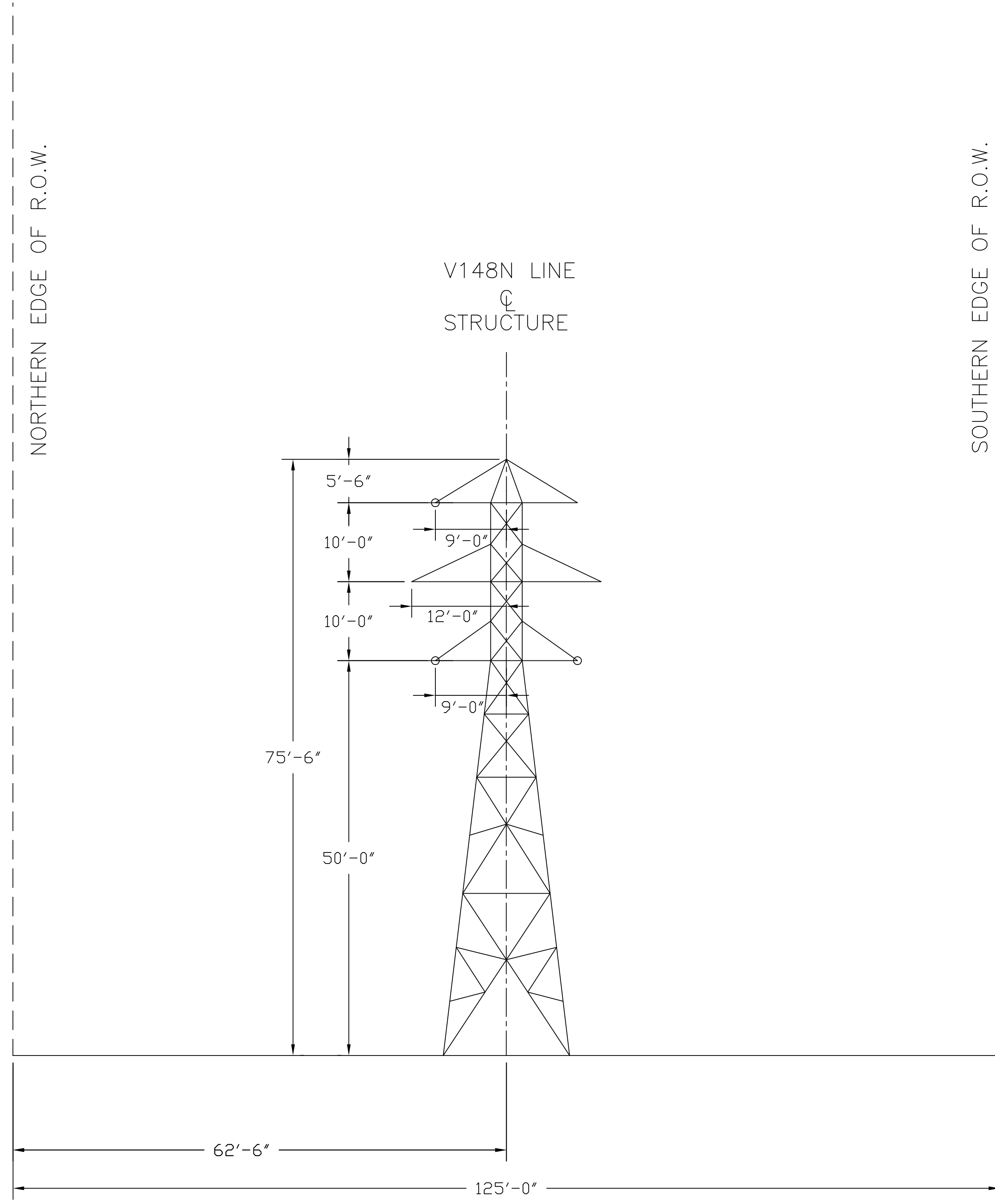
TYPICAL R.O.W.
CROSS-SECTION
LOOKING TOWARD WASHINGTON
SCALE 1"=10'

FIGURE 3-2: EXISTING AND PROPOSED ROW CROSS-SECTION
SHOWING TYPICAL ARRANGEMENT OF LINES (SHEETS 1-3)
SHEET 2: VICINITY OF ROUTE 146 TO VICINITY OF SAYLES HILL RD.

INCHES ON ORIGINAL

REVISION 1 10/7/14 INITIAL RELEASE 2 3 4 5 6 7		VERSION DESCRIPTION 1
REVISION APPROVED ELEG		VERSION 1
PREPARED BY EEG	DATE 9/17/14	INITIAL RELEASE
REVIEWED BY	AS SHOWN	1 OF 1
SCALE	SHEET	INDEX
V148N WOONSOCKET-WASHINGTON 115KV LINE: WOONSOCKET, RI EMF STUDY R/W CROSS-SECTION 2	400390	nationalgrid

400390-C-X-02



TYPICAL R.O.W.
 CROSS-SECTION
 LOOKING TOWARD WASHINGTON
 SCALE 1"=10'

NOTES:
 V148N LINE
 EXISTING CONDUCTOR:
 795 AAC "ARBUTUS"
 EXISTING SHIELDWIRE:
 3/8" EHS
 PROPOSED CONDUCTOR:
 795 ACSS 26/7 "DRAKE"
 PROPOSED SHIELDWIRE:
 OPGW
 NUMBER OF DISCS:
 8 DISC

FIGURE 3-2: EXISTING AND PROPOSED ROW CROSS-SECTION
 SHOWING TYPICAL ARRANGEMENT OF LINES (SHEETS 1-3)
 SHEET 3: VICINITY OF SAYLES HILL RD TO BLACKSTONE VALLEY PL.

REVISIONS 1 10/17/14 INITIAL RELEASE 2 3 4 5 6 7		VERSION DESCRIPTION 1	
PREPARED BY EEC	DATE 9/17/14	REVIEWED BY AS SHOWN	SCALE 1" OF 1"
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nationalgrid			
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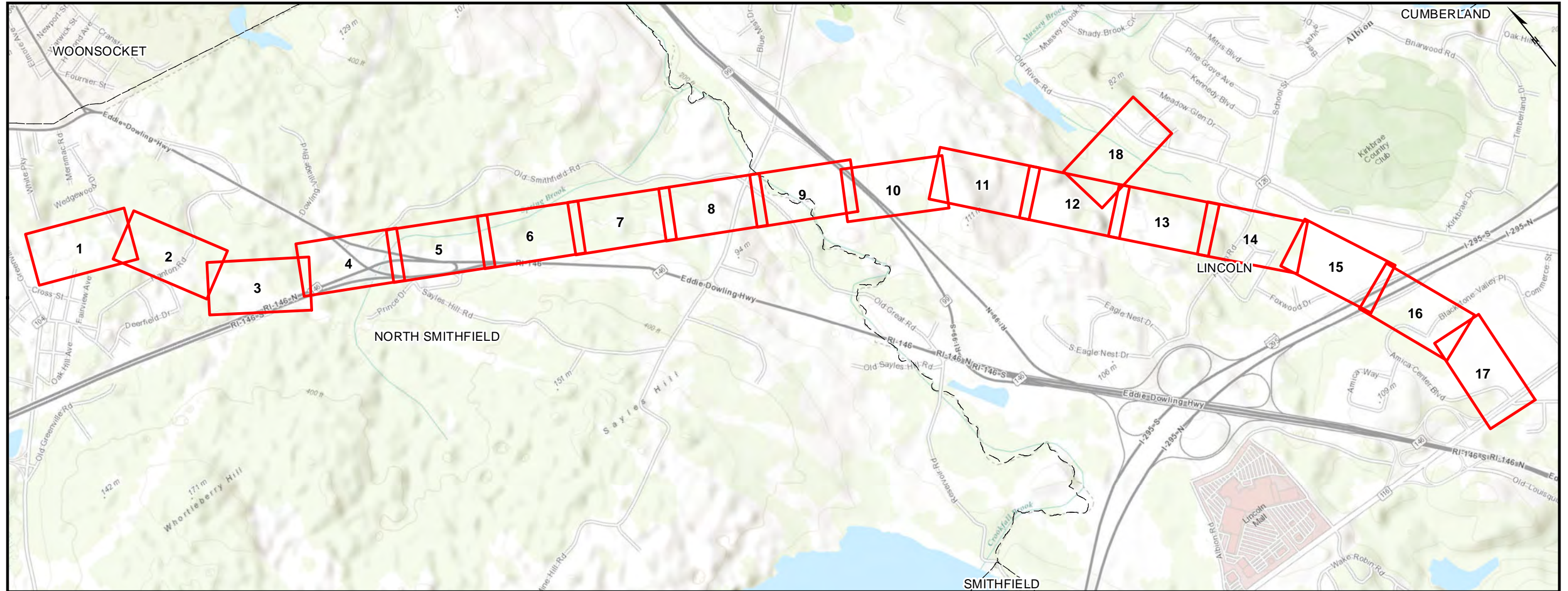
THE NARRAGANSETT ELECTRIC COMPANY - V148N 115kV

TRANSMISSION LINE RECONDUCTORING PROJECT

North Smithfield, and Lincoln, Rhode Island

Figure 3-3: Permitting and Access Plans (Sheets 1-18)

June 2015



PREPARED FOR:



40 Sylvan Road
Waltham, MA 02451

INDEX OF FIGURES

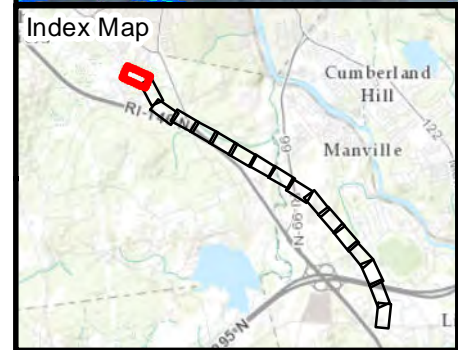
- T1 - TITLE SHEET
- 1-17 - PLAN SHEETS
- 18 - ACCESS PLANS

ISSUED FOR PERMITTING
NOT CONSTRUCTION

PREPARED BY:



33 Waldo Street
Worcester, MA 01608



Legend

<ul style="list-style-type: none"> ● Existing Structure ● New Structure ● Reinforce Structure ● Relocate Existing Structure ● Remove Structure ● Replace with Steel Structure — Approximate Line V148N — Preferred Access Road — Alternate Access Road — Roads — Straw Wattle 	<ul style="list-style-type: none"> — Approximate Limits of ROW — Swamp Mats — Work Pad — Culverts ● Mobil Pipeline Marker — Mobil Gas Pipeline — Stonewall — Field Delineated Stream Centerline — Field Delineated Streams — Riverbank Wetland ● Field Delineated Wetland Flags — Field Delineated Wetland Lines — Field Delineated Wetlands 	<ul style="list-style-type: none"> — Perimeter Wetland — Streams — Natural Heritage Area — USFWS Wetlands — FEMA Floodplain — Waterbodies — Conservation Land — Surface Water Protection Area — Access Gate — Community Wellhead Protection Area — Pull Pads — Town Boundary
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1 inch = 100 feet

0 100 200 Feet

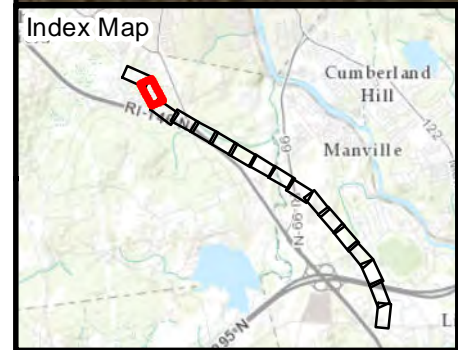
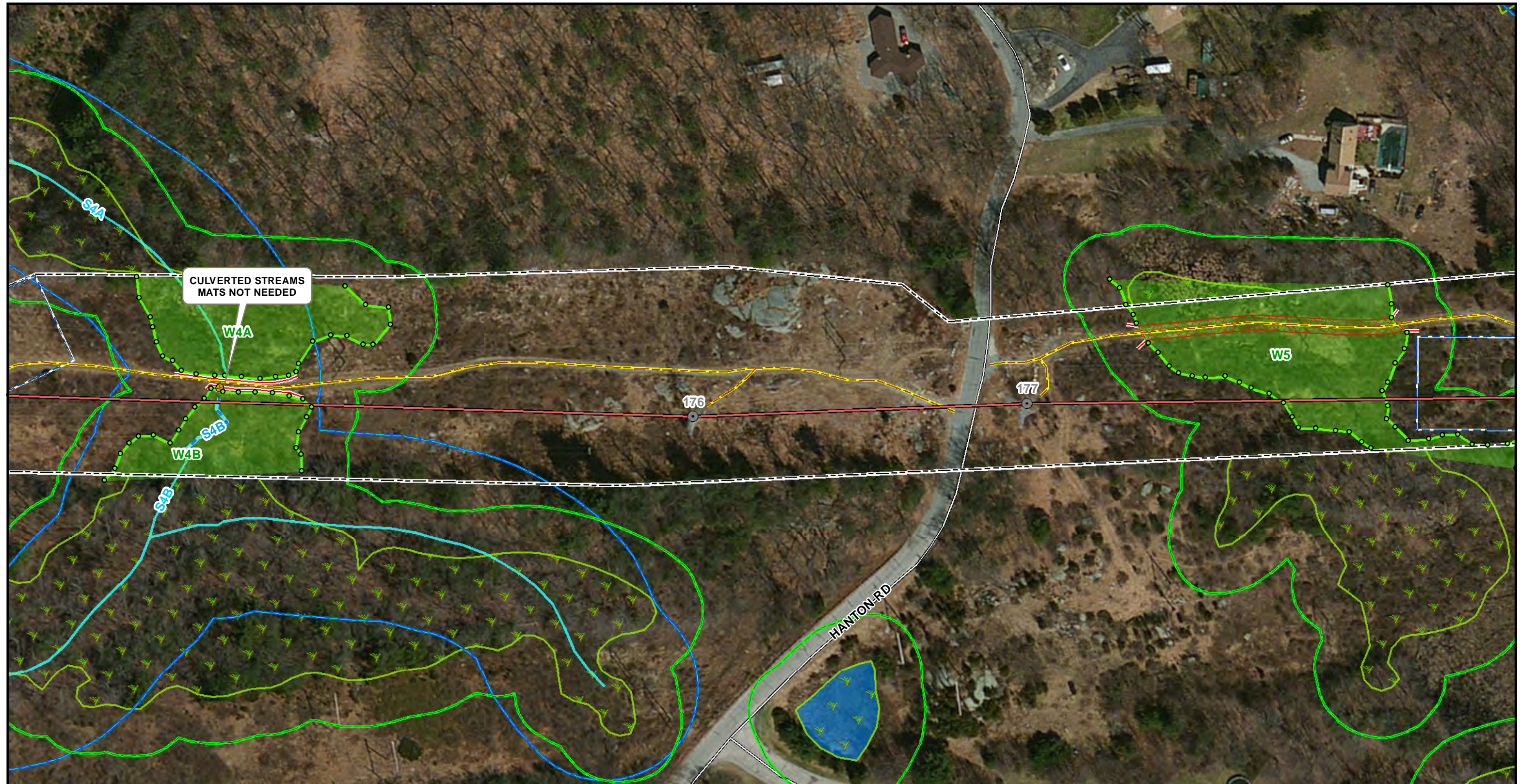
Source: -RIGIS
 Basemap & Environmental Data
 -Aerial & Topo Imagery
 ESRI, DigitalGlobe, GeoEye,
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 TomTom, Intermap, increment P Corp.,
 AEX, GEBCO, USDA, USGS, FAO, NPS,
 NRCAN, GeoBase, Getmapping, Aergrid,
 IGP, IGN, Kadaster NL, Ordnance
 Survey, ESRI Japan, METI, ESRI
 China (Hong Kong), swisstopo, & the
 GIS User Community

**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

**Figure 3-3: Permitting and Access Plans
 (Sheets 1-18)**

North Smithfield, RI





Legend

<ul style="list-style-type: none"> ● Existing Structure ● New Structure ● Reinforce Structure ● Relocate Existing Structure ● Remove Structure ● Replace with Steel Structure — Approximate Line V148N — Preferred Access Road — Alternate Access Road — Roads — Straw Wattle 	<ul style="list-style-type: none"> --- Approximate Limits of ROW ▭ Swamp Mats ▭ Work Pad ▭ Culverts ● Mobil Pipeline Marker — Mobil Gas Pipeline — Stonewall — Field Delineated Stream Centerline — Field Delineated Streams ▭ Riverbank Wetland ● Field Delineated Wetland Flags — Field Delineated Wetland Lines ▭ Field Delineated Wetlands 	<ul style="list-style-type: none"> ▭ Perimeter Wetland ▭ Streams ▭ Natural Heritage Area ▭ USFWS Wetlands ▭ FEMA Floodplain ▭ Waterbodies ▭ Conservation Land ▭ Surface Water Protection Area — Access Gate ▭ Community Wellhead Protection Area ▭ Pull Pads ▭ Town Boundary
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1 inch = 100 feet

0 100 200 Feet

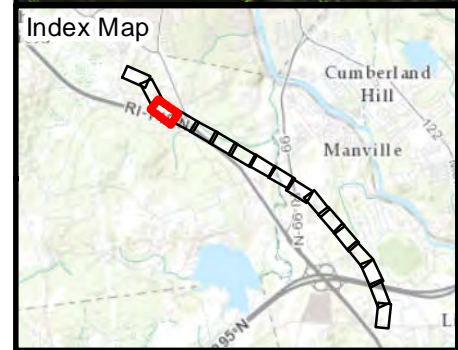
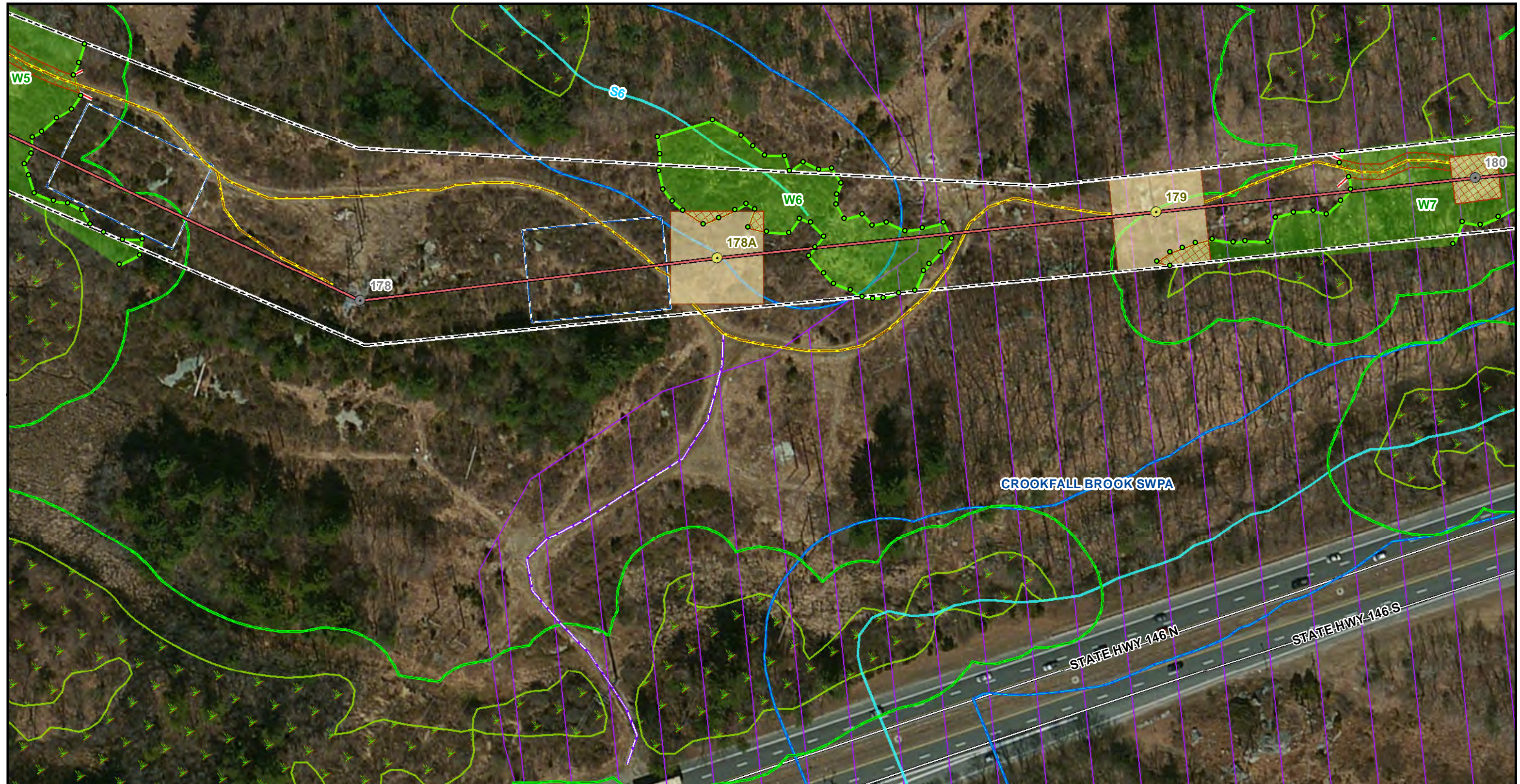
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**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

**Figure 3-3: Permitting and Access Plans
 (Sheets 1-18)**

North Smithfield, RI





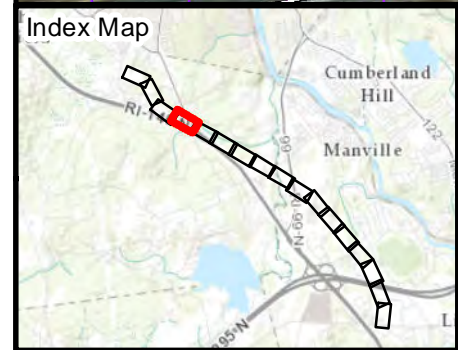
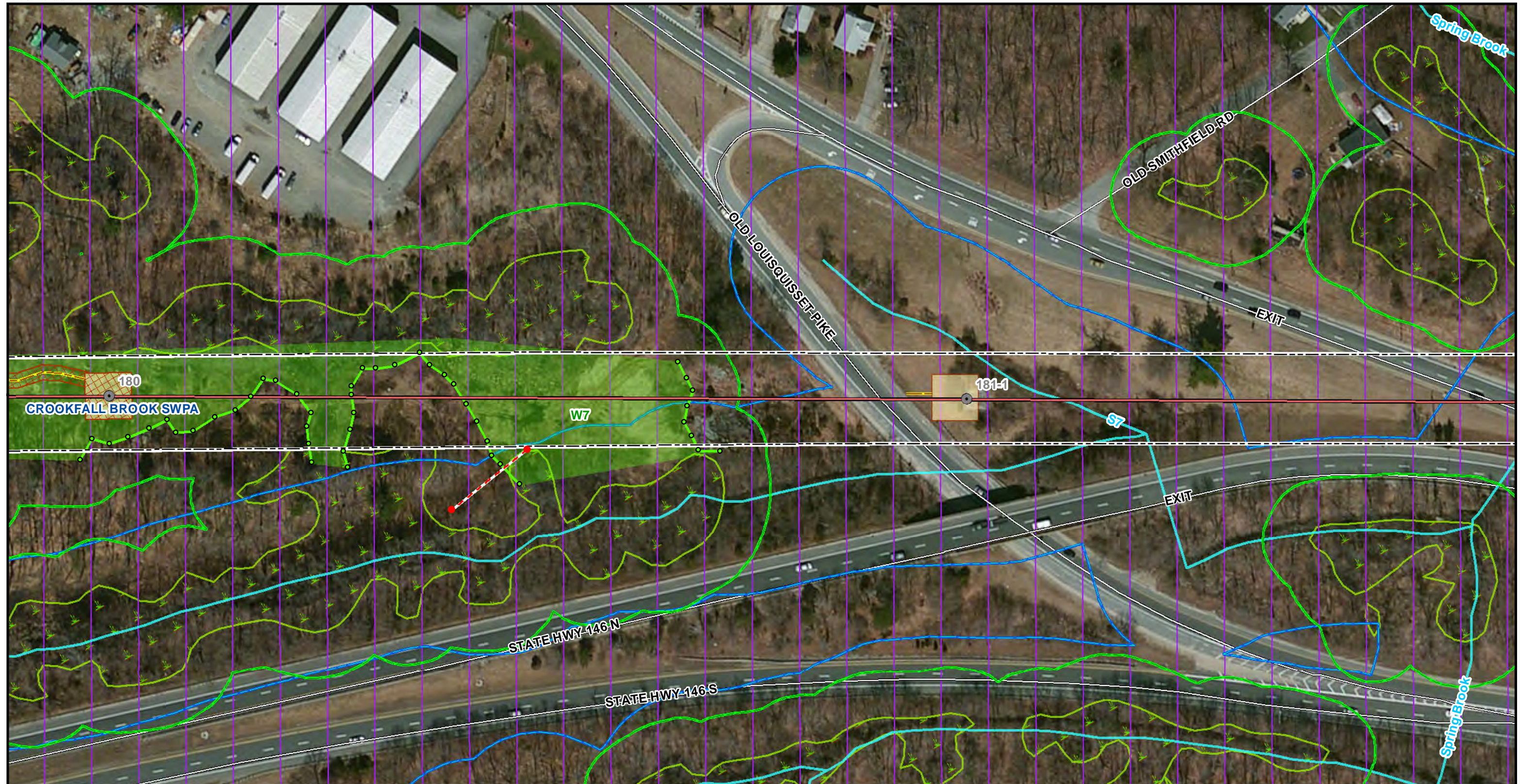
Legend			
Existing Structure	Approximate Limits of ROW	Perimeter Wetland	Access Gate
New Structure	Swamp Mats	Streams	Community Wellhead Protection Area
Reinforce Structure	Work Pad	Natural Heritage Area	Pull Pads
Relocate Existing Structure	Culverts	USFWS Wetlands	Town Boundary
Remove Structure	Mobil Pipeline Marker	FEMA Floodplain	
Replace with Steel Structure	Mobil Gas Pipeline	Waterbodies	
Approximate Line V148N	Stonewall	Conservation Land	
Preferred Access Road	Field Delineated Stream Centerline	Surface Water Protection Area	
Alternate Access Road	Field Delineated Streams		
Roads	Riverbank Wetland		
Straw Wattle	Field Delineated Wetland Flags		
	Field Delineated Wetland Lines		
	Field Delineated Wetlands		

**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

**Figure 3-3: Permitting and Access Plans
 (Sheets 1-18)**

North Smithfield, RI

Page 3 of 18



Legend

<ul style="list-style-type: none"> Existing Structure New Structure Reinforce Structure Relocate Existing Structure Remove Structure Replace with Steel Structure Approximate Line V148N Preferred Access Road Alternate Access Road Roads Straw Wattle 	<ul style="list-style-type: none"> Swamp Mats Work Pad Culverts Mobil Pipeline Marker Mobil Gas Pipeline Stonewall Field Delineated Stream Centerline Field Delineated Streams Riverbank Wetland Field Delineated Wetland Flags Field Delineated Wetland Lines Field Delineated Wetlands 	<ul style="list-style-type: none"> Approximate Limits of ROW Natural Heritage Area USFWS Wetlands FEMA Floodplain Waterbodies Conservation Land Surface Water Protection Area Perimeter Wetland Streams Perimeter Wetland Streams Natural Heritage Area USFWS Wetlands FEMA Floodplain Waterbodies Conservation Land Surface Water Protection Area 	<ul style="list-style-type: none"> Access Gate Community Wellhead Protection Area Pull Pads Town Boundary
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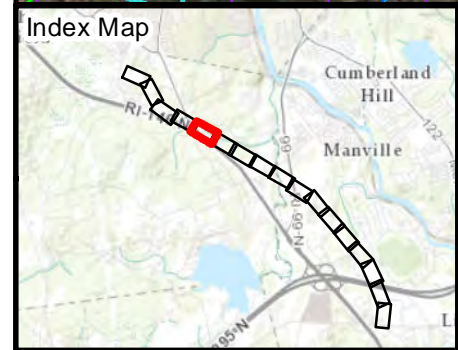
1 inch = 100 feet

0 100 200 Feet

Source: -RIGIS Basemap & Environmental Data -Aerial & Topo Imagery ESRI, DigitalGlobe, GeoEye, -iQuint, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., AEX, GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, Getmapping, Aerogrid, IGP, IGN, Kadaster NL, Ordnance Survey, ESRI Japan, METI, ESRI China (Hong Kong), swisstopo, & the GIS User Community

**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**
**Figure 3-3: Permitting and Access Plans
 (Sheets 1-18)**
 North Smithfield, RI
 Page 4 of 18





Legend

<ul style="list-style-type: none"> ● V148N Structures ● Existing Structure ● New Structure ● Reinforce Structure ● Relocate Existing Structure ● Remove Structure ● Replace with Steel Structure ● Approximate Line V148N ● Preferred Access Road ● Alternate Access Road ● Roads ● Straw Wattle 	<ul style="list-style-type: none"> --- Approximate Limits of ROW ■ Swamp Mats ■ Work Pad ■ Culverts ● Mobil Pipeline Marker ● Mobil Gas Pipeline ■ Stonewall ■ Field Delineated Stream Centerline ■ Field Delineated Streams ■ Riverbank Wetland ● Field Delineated Wetland Flags ■ Field Delineated Wetland Lines ■ Field Delineated Wetlands 	<ul style="list-style-type: none"> ■ Perimeter Wetland ■ Streams ■ Natural Heritage Area ■ USFWS Wetlands ■ FEMA Floodplain ■ Waterbodies ■ Conservation Land ■ Surface Water Protection Area ■ Access Gate ■ Community Wellhead Protection Area ■ Pull Pads ■ Town Boundary
--	---	--

Scale: 1 inch = 100 feet
 0 100 200 Feet

Source: RIGIS Basemap & Environmental Data
 -Aerial & Topo Imagery
 ESRI, DigitalGlobe, GeoEye, Earthstar, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., AEX, GEBCO, USDA, USGS, FAO, NPS, NRCAN, GeoBase, Getmapping, Aergrid, IGP, IGN, Kadaster NL, Ordnance Survey, ESRI Japan, METI, ESRI China (Hong Kong), swisstopo, & the GIS User Community

V148N 115 kV TRANSMISSION LINE RECONDUCTORING PROJECT

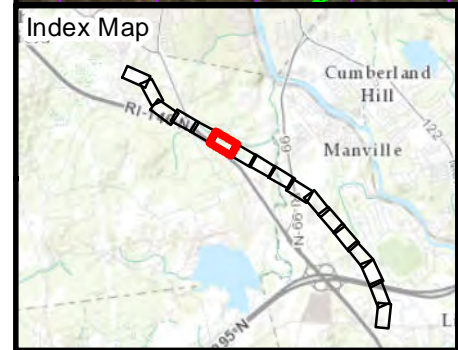
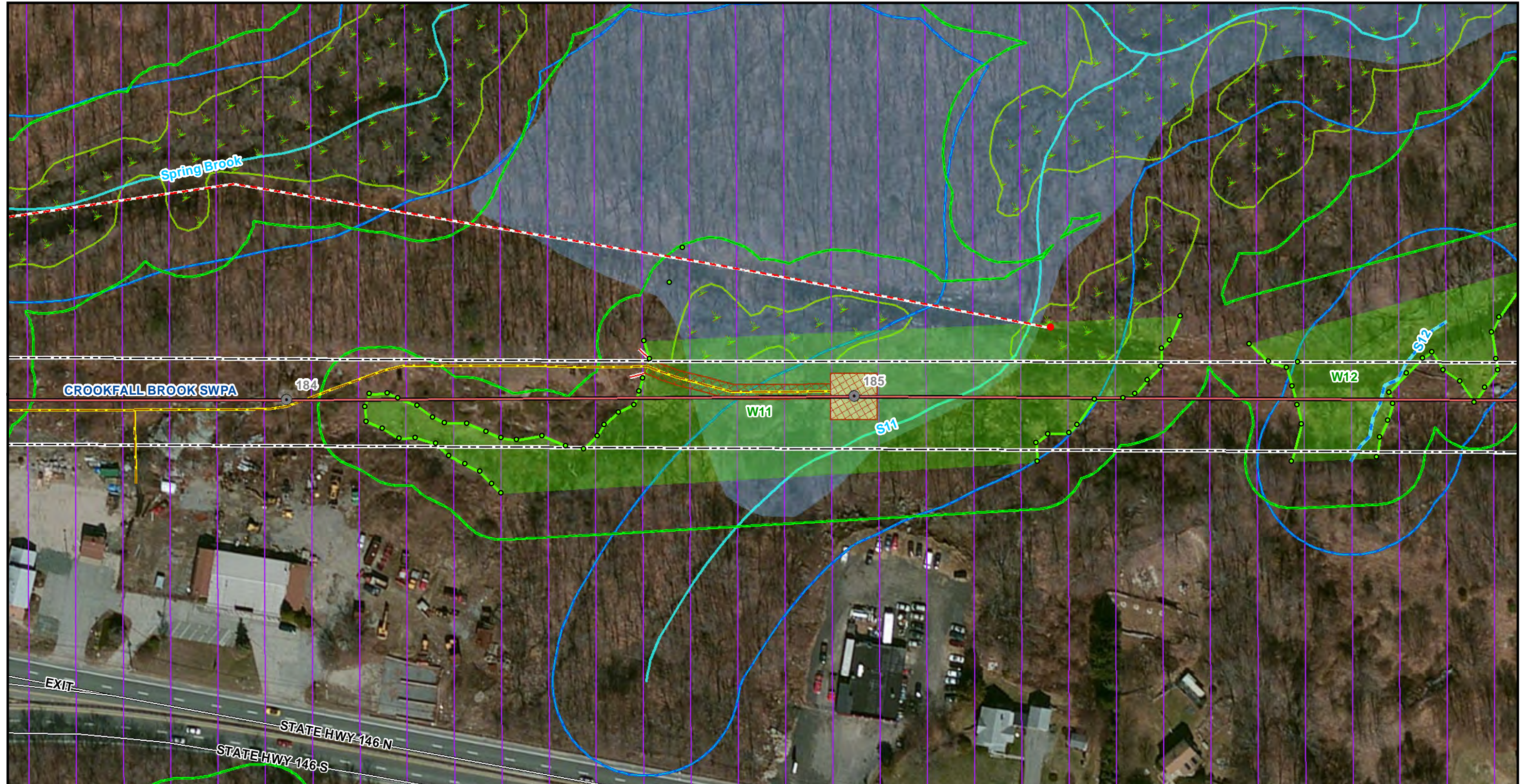
Figure 3-3: Permitting and Access Plans (Sheets 1-18)

North Smithfield, RI

Page 5 of 18

nationalgrid

BSC GROUP



Legend

<ul style="list-style-type: none"> ● Existing Structure ● New Structure ● Reinforce Structure ● Relocate Existing Structure ● Remove Structure ● Replace with Steel Structure — Approximate Line V148N — Preferred Access Road — Alternate Access Road — Roads — Straw Wattle 	<ul style="list-style-type: none"> — Approximate Limits of ROW ▭ Swamp Mats ▭ Work Pad ▭ Culverts ● Mobil Pipeline Marker — Mobil Gas Pipeline — Stonewall — Field Delineated Stream Centerline — Field Delineated Streams ▭ Riverbank Wetland ● Field Delineated Wetland Flags — Field Delineated Wetland Lines — Field Delineated Wetlands 	<ul style="list-style-type: none"> ▭ Perimeter Wetland — Streams ▭ Natural Heritage Area ▭ USFWS Wetlands ▭ FEMA Floodplain ▭ Waterbodies ▭ Conservation Land ▭ Surface Water Protection Area — Access Gate ▭ Community Wellhead Protection Area ▭ Pull Pads ▭ Town Boundary
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1 inch = 100 feet

0 100 200 Feet

Source: -RIGIS Basemap & Environmental Data -Aerial & Topo Imagery ESRI, DigitalGlobe, GeoEye, i-cubed, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., AEX, GEBCO, USDA, USGS, FAO, NPS, NRCAN, GeoBase, Getmapping, Aerogrid, IGP, IGN, Kadaster NL, Ordnance Survey, ESRI Japan, METI, ESRI China (Hong Kong), swisstopo, & the GIS User Community

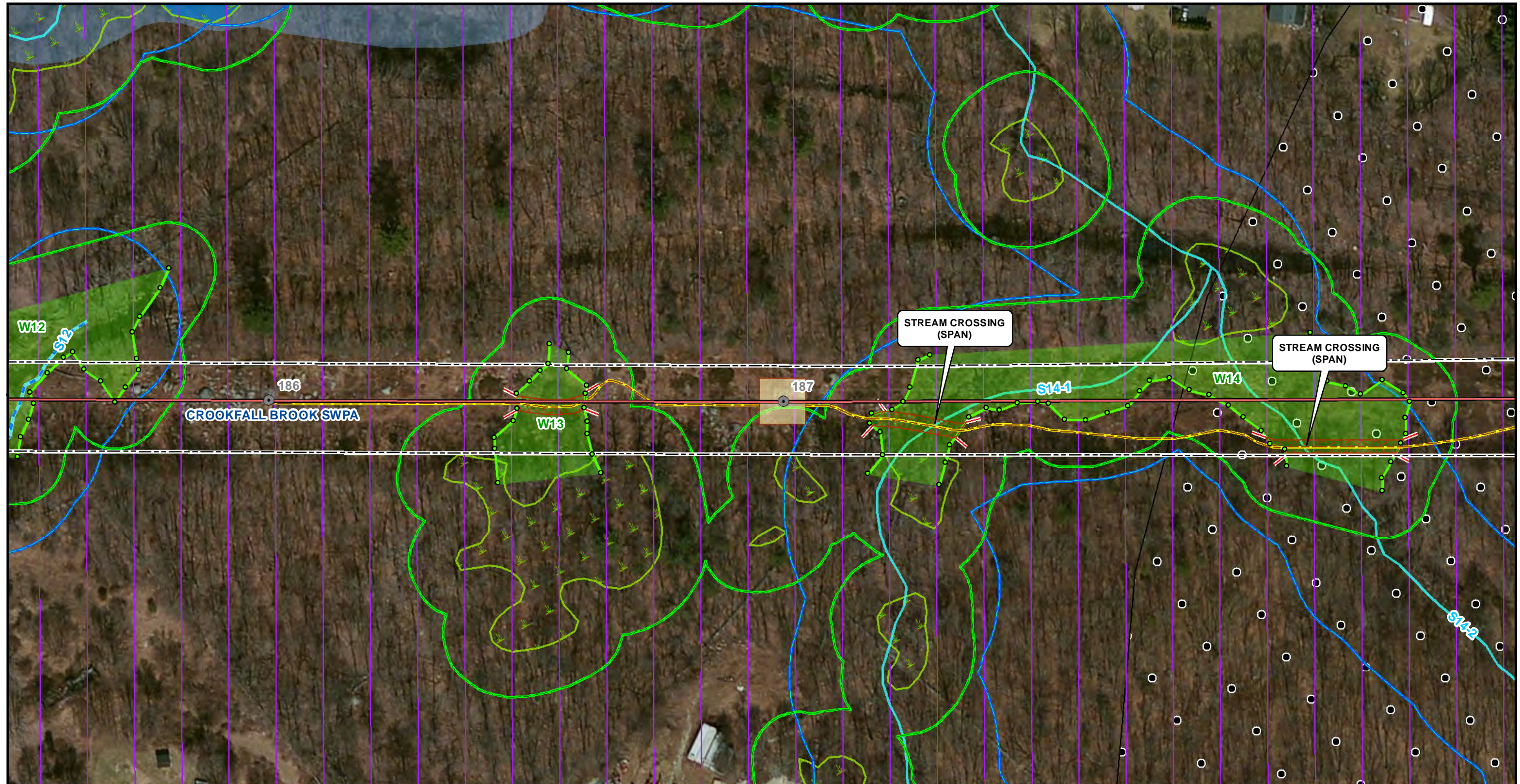
**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

**Figure 3-3: Permitting and Access Plans
 (Sheets 1-18)**

North Smithfield, RI

Page 6 of 18





Legend

<ul style="list-style-type: none"> Existing Structure New Structure Reinforce Structure Relocate Existing Structure Remove Structure Replace with Steel Structure Approximate Line V148N Preferred Access Road Alternate Access Road Roads Straw Wattle 	<ul style="list-style-type: none"> Approximate Limits of ROW Swamp Mats Work Pad Culverts Mobil Pipeline Marker Mobil Gas Pipeline Stonewall Field Delineated Stream Centerline Field Delineated Streams Riverbank Wetland Field Delineated Wetland Flags Field Delineated Wetland Lines Field Delineated Wetlands 	<ul style="list-style-type: none"> Perimeter Wetland Streams Natural Heritage Area USFWS Wetlands FEMA Floodplain Waterbodies Conservation Land Surface Water Protection Area Access Gate Community Wellhead Protection Area Pull Pads Town Boundary
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1 inch = 100 feet

0 100 200 Feet

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**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

**Figure 3-3: Permitting and Access Plans
 (Sheets 1-18)**

North Smithfield, RI





Legend	
Existing Structure	Approximate Limits of ROW
New Structure	Perimeter Wetland
Reinforce Structure	Streams
Relocate Existing Structure	Natural Heritage Area
Remove Structure	USFWS Wetlands
Replace with Steel Structure	FEMA Floodplain
Approximate Line V148N	Waterbodies
Preferred Access Road	Conservation Land
Alternate Access Road	Surface Water Protection Area
Roads	Field Delineated Stream Centerline
Straw Wattle	Field Delineated Streams
Mobil Pipeline Marker	Riverbank Wetland
Mobil Gas Pipeline	Field Delineated Wetland Flags
Stonewall	Field Delineated Wetland Lines
Swamp Mats	Field Delineated Wetlands
Work Pad	Access Gate
Culverts	Community Wellhead Protection Area
Mobil Pipeline Marker	Pull Pads
Mobil Gas Pipeline	Town Boundary

1 inch = 100 feet

0 100 200 Feet

Source: -RIGIS Basemap & Environmental Data -Aerial & Topo Imagery ESRI, DigitalGlobe, GeoEye, i-ubed, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., AEX, GEBCO, USDA, USGS, FAO, NPS, NRCAN, GeoBase, Getmapping, Aergrid, IGP, IGN, Kadaster NL, Ordnance Survey, ESRI Japan, METI, ESRI China (Hong Kong), swisstopo, & the GIS User Community

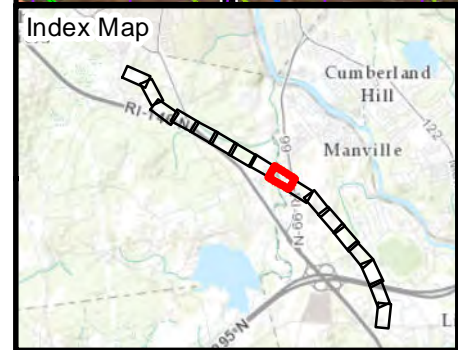
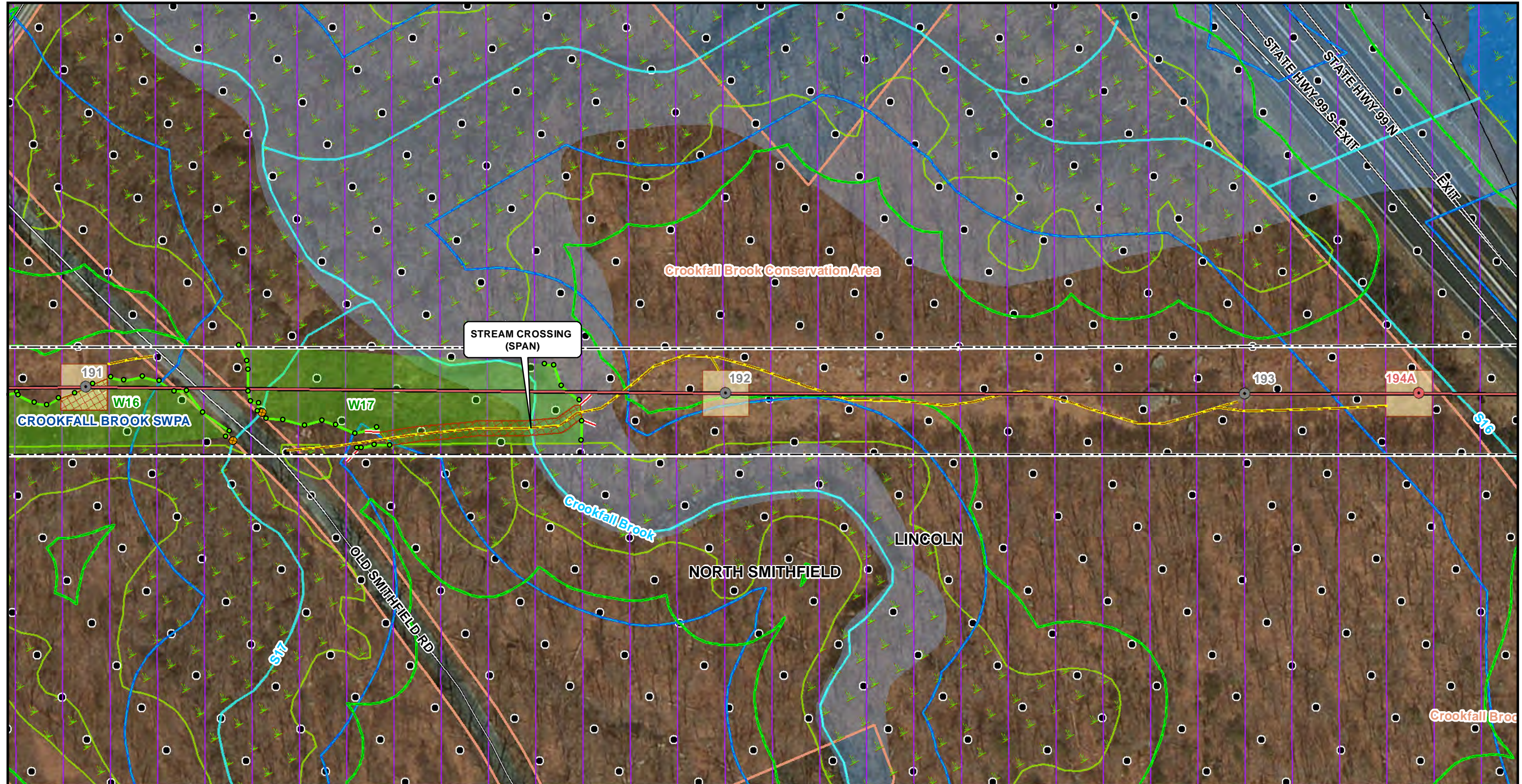
V148N 115 kV TRANSMISSION LINE REDUCTORING PROJECT

Figure 3-3: Permitting and Access Plans (Sheets 1-18)

North Smithfield, RI

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Legend

<ul style="list-style-type: none"> ● Existing Structure ● New Structure ● Reinforce Structure ● Relocate Existing Structure ● Remove Structure ● Replace with Steel Structure — Approximate Line V148N — Preferred Access Road — Alternate Access Road — Roads — Straw Wattle 	<ul style="list-style-type: none"> — Approximate Limits of ROW — Swamp Mats — Work Pad — Culverts ● Mobil Pipeline Marker — Mobil Gas Pipeline — Stonewall — Field Delineated Stream Centerline — Field Delineated Streams — Riverbank Wetland ● Field Delineated Wetland Flags — Field Delineated Wetland Lines — Field Delineated Wetlands 	<ul style="list-style-type: none"> — Perimeter Wetland — Streams — Natural Heritage Area — USFWS Wetlands — FEMA Floodplain — Waterbodies — Conservation Land — Surface Water Protection Area — Access Gate — Community Wellhead Protection Area — Pull Pads — Town Boundary
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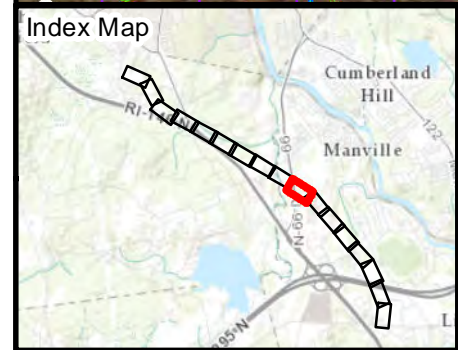
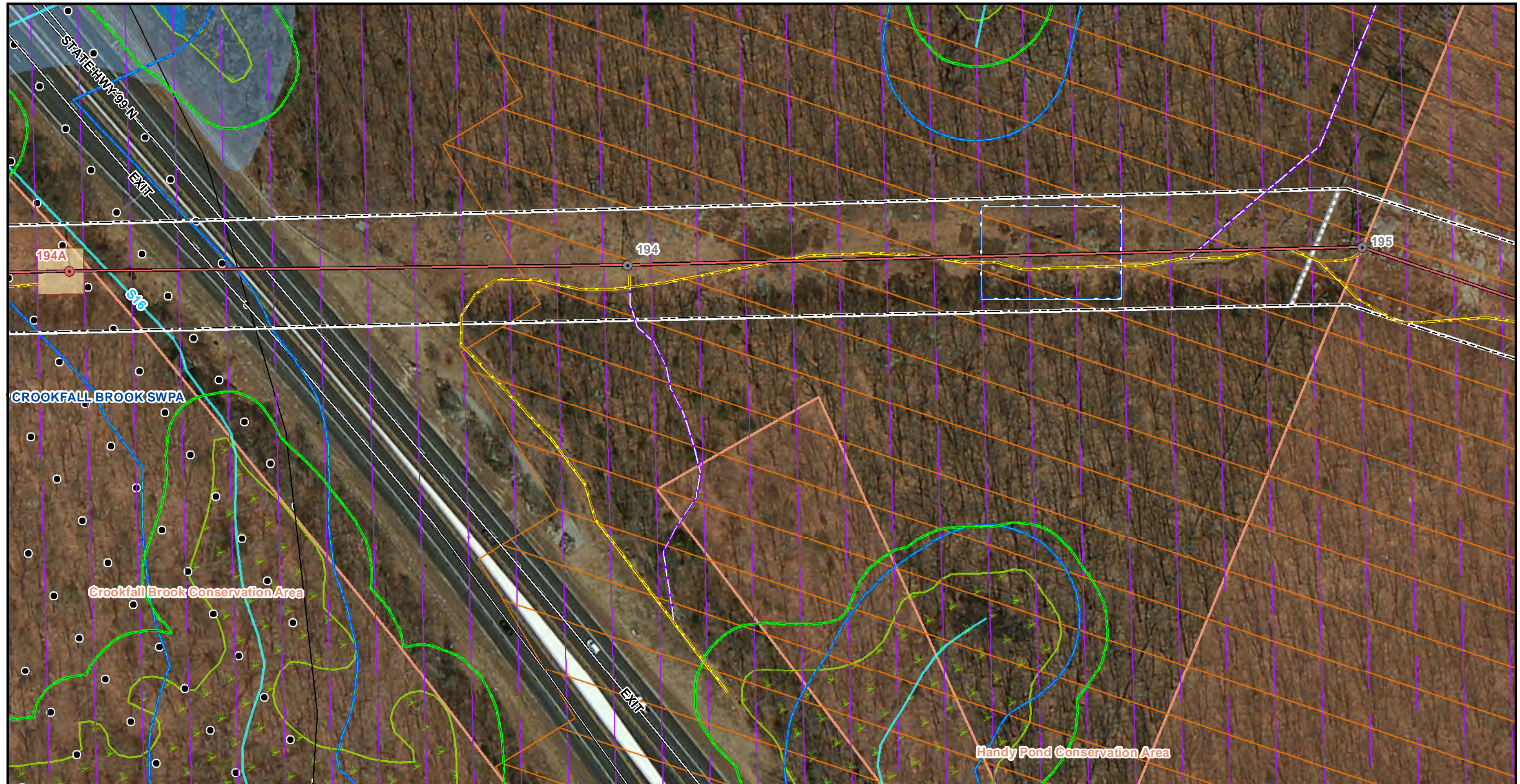
1 inch = 100 feet

0 100 200 Feet

Source: RIGIS Basemap & Environmental Data -Aerial & Topo Imagery, ESRI, DigitalGlobe, GeoEye, GeoEye, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., AEX, GEBCO, USDA, USGS, FAO, NPS, NRCAN, GeoBase, Getmapping, Aergrid, IGP, IGN, Kadaster NL, Ordnance Survey, ESRI Japan, METI, ESRI China (Hong Kong), swisstopo, & the GIS User Community

**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**
**Figure 3-3: Permitting and Access Plans
 (Sheets 1-18)**
 North Smithfield & Lincoln, RI
 Page 9 of 18





Legend

<ul style="list-style-type: none"> ● Existing Structure ● New Structure ● Reinforce Structure ● Relocate Existing Structure ● Remove Structure ● Replace with Steel Structure — Approximate Line V148N — Preferred Access Road — Alternate Access Road — Roads — Straw Wattle 	<ul style="list-style-type: none"> --- Approximate Limits of ROW ▭ Swamp Mats ▭ Work Pad ▭ Culverts ● Mobil Pipeline Marker — Mobil Gas Pipeline ▭ Stonewall — Field Delineated Stream Centerline — Field Delineated Streams ▭ Riverbank Wetland ● Field Delineated Wetland Flags — Field Delineated Wetland Lines ▭ Field Delineated Wetlands 	<ul style="list-style-type: none"> ▭ Perimeter Wetland — Streams ▭ Natural Heritage Area ▭ USFWS Wetlands ▭ FEMA Floodplain ▭ Waterbodies ▭ Conservation Land ▭ Surface Water Protection Area — Access Gate ▭ Community Wellhead Protection Area ▭ Pull Pads ▭ Town Boundary
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1 inch = 100 feet

0 100 200 Feet

Source: -RIGIS
 Basemap & Environmental Data
 -Aerial & Topo Imagery
 ESRI, DigitalGlobe, GeoEye,
 -iQuint, DeLorme, NAVTEQ,
 TomTom, Intermap, increment P Corp.,
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 NRCAN, GeoBase, Getmapping, Aergrid,
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 Survey, ESRI Japan, METI, ESRI
 China (Hong Kong), swisstopo, & the
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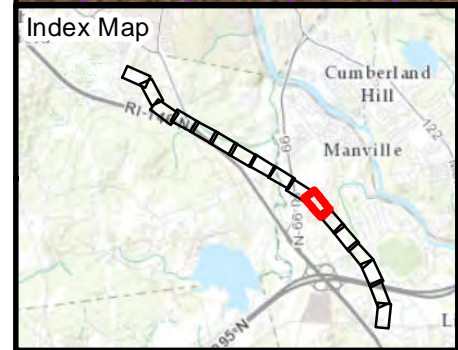
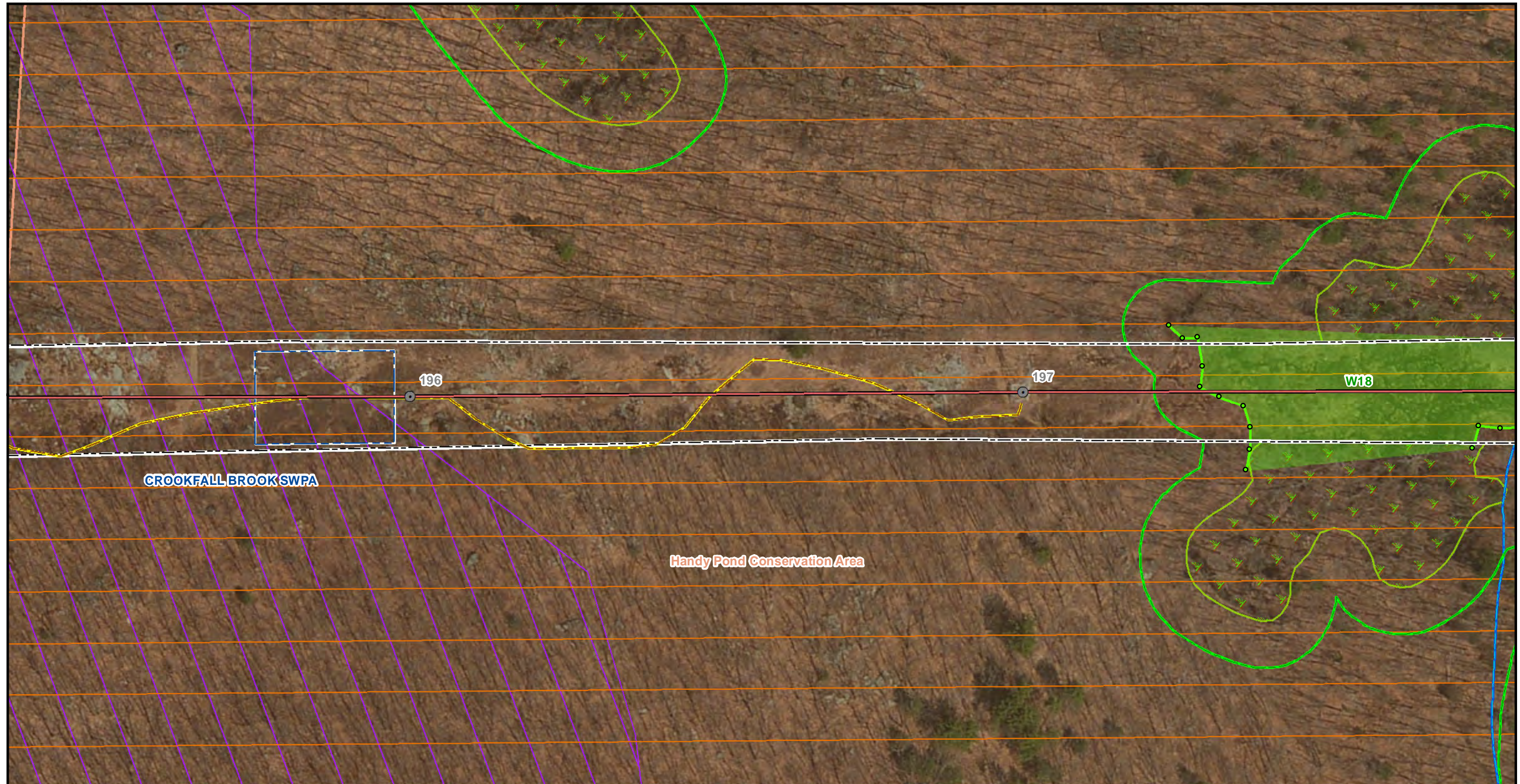
**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

**Figure 3-3: Permitting and Access Plans
 (Sheets 1-18)**

Lincoln, RI

Page 10 of 18





Legend

<ul style="list-style-type: none"> ● Existing Structure ● New Structure ● Reinforce Structure ● Relocate Existing Structure ● Remove Structure ● Replace with Steel Structure — Approximate Line V148N — Preferred Access Road — Alternate Access Road — Roads — Straw Wattle 	<ul style="list-style-type: none"> — Approximate Limits of ROW ▭ Swamp Mats ▭ Work Pad ⊗ Culverts ● Mobil Pipeline Marker — Mobil Gas Pipeline — Stonewall — Field Delineated Stream Centerline — Field Delineated Streams ▭ Riverbank Wetland ● Field Delineated Wetland Flags — Field Delineated Wetland Lines ▭ Field Delineated Wetlands 	<ul style="list-style-type: none"> ▭ Perimeter Wetland — Streams ▭ Natural Heritage Area ▭ USFWS Wetlands ▭ FEMA Floodplain ▭ Waterbodies ▭ Conservation Land ▭ Surface Water Protection Area — Access Gate ▭ Community Wellhead Protection Area ▭ Pull Pads ▭ Town Boundary
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Scale: 1 inch = 100 feet
 0 100 200 Feet

Source: -RIGIS Basemap & Environmental Data
 -Aerial & Topo Imagery
 ESRI, DigitalGlobe, GeoEye, Earthstar, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., AEX, GEBCO, USDA, USGS, FAO, NPS, NRCAN, GeoBase, Getmapping, Aerogrid, IGN, IGP, Kadaster NL, Ordnance Survey, ESRI Japan, METI, ESRI China (Hong Kong), swisstopo, & the GIS User Community

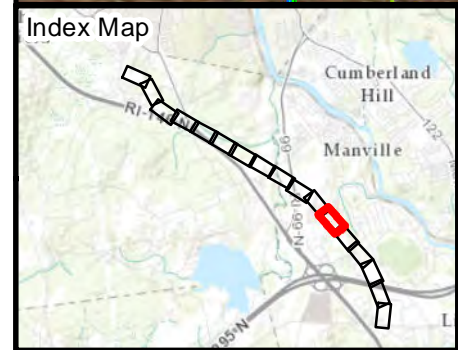
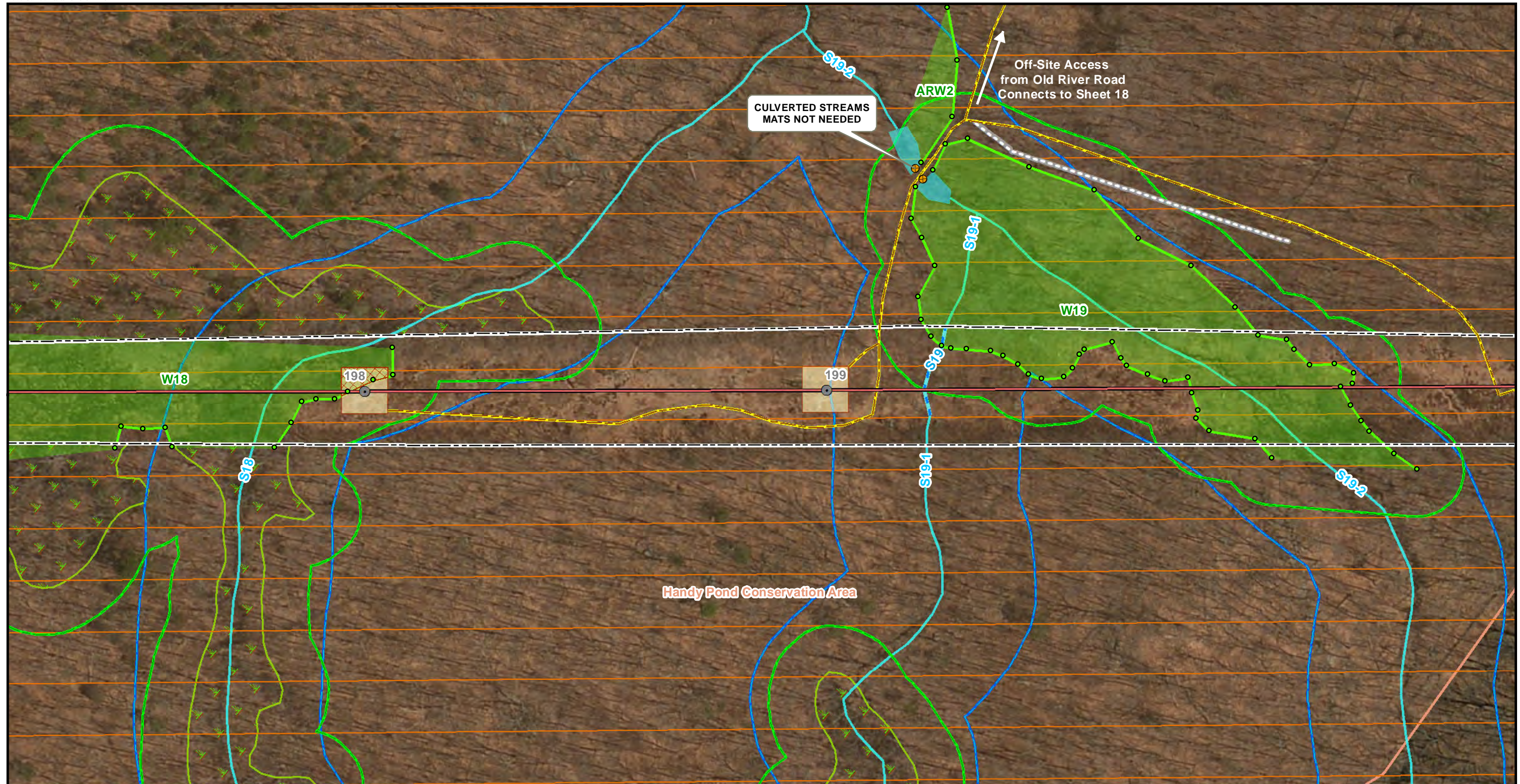
**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

**Figure 3-3: Permitting and Access Plans
 (Sheets 1-18)**

Lincoln, RI

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Legend

<ul style="list-style-type: none"> ● Existing Structure ● New Structure ● Reinforce Structure ● Relocate Existing Structure ● Remove Structure ● Replace with Steel Structure — Approximate Line V148N — Preferred Access Road — Alternate Access Road — Roads — Straw Wattle 	<ul style="list-style-type: none"> — Approximate Limits of ROW ▭ Swamp Mats ▭ Work Pad ▭ Culverts ● Mobil Pipeline Marker — Mobil Gas Pipeline — Stonewall — Field Delineated Stream Centerline — Field Delineated Streams ▭ Riverbank Wetland ● Field Delineated Wetland Flags — Field Delineated Wetland Lines — Field Delineated Wetlands 	<ul style="list-style-type: none"> ▭ Perimeter Wetland — Streams ▭ Natural Heritage Area ▭ USFWS Wetlands ▭ FEMA Floodplain ▭ Waterbodies ▭ Conservation Land ▭ Surface Water Protection Area — Access Gate ▭ Community Wellhead Protection Area ▭ Pull Pads ▭ Town Boundary
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1 inch = 100 feet

0 100 200 Feet

Source: -RIGIS Basemap & Environmental Data -Aerial & Topo Imagery ESRI, DigitalGlobe, GeoEye, -Foubed, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., AEX, GEBCO, USDA, USGS, FAO, NPS, NRCAN, GeoBase, Getmapping, Aerogrid, IGP, IGN, Kadaster NL, Ordnance Survey, ESRI Japan, METI, ESRI China (Hong Kong), swisstopo, & the GIS User Community

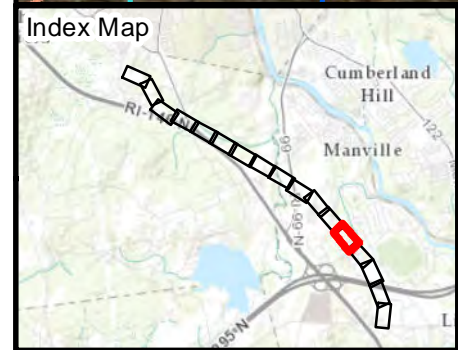
**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

**Figure 3-3: Permitting and Access Plans
 (Sheets 1-18)**

Lincoln, RI

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Legend			
V148N Structures	Approximate Limits of ROW	Perimeter Wetland	Access Gate
Existing Structure	Swamp Mats	Streams	Community Wellhead Protection Area
New Structure	Work Pad	Natural Heritage Area	Pull Pads
Reinforce Structure	Culverts	USFWS Wetlands	Town Boundary
Relocate Existing Structure	Mobil Pipeline Marker	FEMA Floodplain	
Remove Structure	Mobil Gas Pipeline	Waterbodies	
Replace with Steel Structure	Stonewall	Conservation Land	
Approximate Line V148N	Field Delineated Stream Centerline	Surface Water Protection Area	
Preferred Access Road	Field Delineated Streams		
Alternate Access Road	Riverbank Wetland		
Roads	Field Delineated Wetland Flags		
Straw Wattle	Field Delineated Wetland Lines		
	Field Delineated Wetlands		

**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

**Figure 3-3: Permitting and Access Plans
 (Sheets 1-18)**

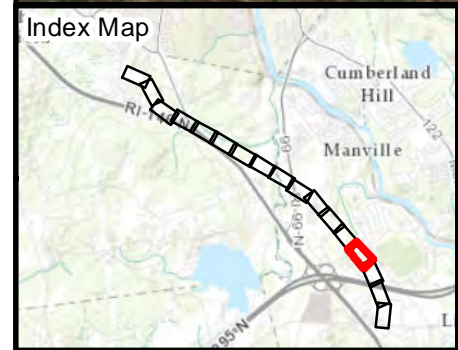
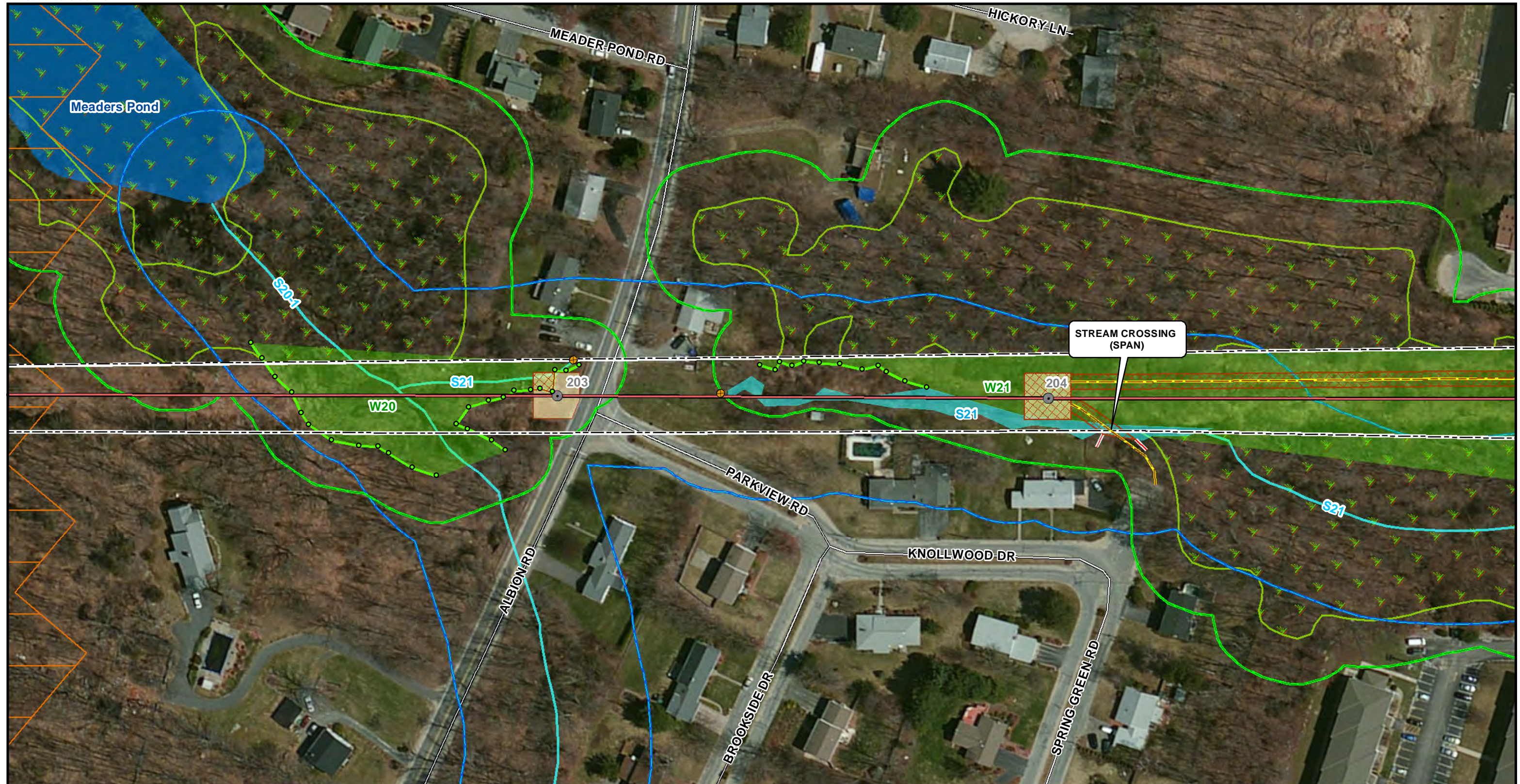
Lincoln, RI

Page 13 of 18

Source: -RIGIS
 Basemap & Environmental Data
 -Aerial & Topo Imagery
 ESRI, DigitalGlobe, GeoEye,
 i-cubed, DeLorme, NAVTEQ,
 TomTom, Intermap, increment P Corp.,
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 Survey, ESRI Japan, METI, ESRI
 China (Hong Kong), swisstopo, & the
 GIS User Community

1 inch = 100 feet

0 100 200
 Feet



Legend

<ul style="list-style-type: none"> ● Existing Structure ● New Structure ● Reinforce Structure ● Relocate Existing Structure ● Remove Structure ● Replace with Steel Structure — Approximate Line V148N — Preferred Access Road — Alternate Access Road — Roads — Straw Wattle 	<ul style="list-style-type: none"> --- Approximate Limits of ROW ▨ Swamp Mats ▨ Work Pad ▨ Culverts ● Mobil Pipeline Marker — Mobil Gas Pipeline — Stonewall — Field Delineated Stream Centerline — Field Delineated Streams — Riverbank Wetland ● Field Delineated Wetland Flags — Field Delineated Wetland Lines — Field Delineated Wetlands 	<ul style="list-style-type: none"> ▨ Perimeter Wetland — Streams ▨ Natural Heritage Area ▨ USFWS Wetlands ▨ FEMA Floodplain ▨ Waterbodies ▨ Conservation Land ▨ Surface Water Protection Area — Access Gate ▨ Community Wellhead Protection Area ▨ Pull Pads ▨ Town Boundary
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0 100 200 Feet

Source: -RIGIS Basemap & Environmental Data -Aerial & Topo Imagery ESRI, DigitalGlobe, GeoEye, Earthstar, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., AEX, GEBCO, USDA, USGS, FAO, NPS, NRCAN, GeoBase, Getmapping, Aerogrid, IGN, Kadaster NL, Ordnance Survey, ESRI Japan, METI, ESRI China (Hong Kong), swisstopo, & the GIS User Community

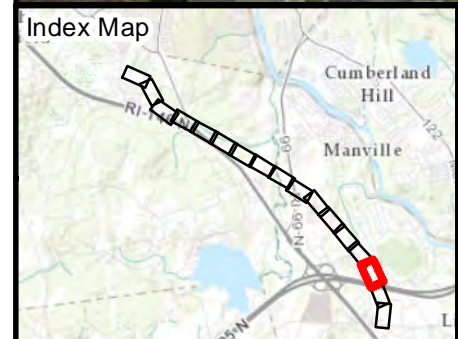
**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

**Figure 3-3: Permitting and Access Plans
 (Sheets 1-18)**

Lincoln, RI

Page 14 of 18





Legend

<ul style="list-style-type: none"> ● Existing Structure ● New Structure ● Reinforce Structure ● Relocate Existing Structure ● Remove Structure ● Replace with Steel Structure — Approximate Line V148N — Preferred Access Road — Alternate Access Road — Roads — Straw Wattle 	<ul style="list-style-type: none"> — Approximate Limits of ROW ■ Swamp Mats ■ Work Pad ■ Culverts ● Mobil Pipeline Marker — Mobil Gas Pipeline — Stonewall — Field Delineated Stream Centerline — Field Delineated Streams — Riverbank Wetland ● Field Delineated Wetland Flags — Field Delineated Wetland Lines — Field Delineated Wetlands 	<ul style="list-style-type: none"> ■ Perimeter Wetland — Streams ■ Natural Heritage Area ■ USFWS Wetlands ■ FEMA Floodplain ■ Waterbodies ■ Conservation Land ■ Surface Water Protection Area — Access Gate ■ Community Wellhead Protection Area ■ Pull Pads ■ Town Boundary
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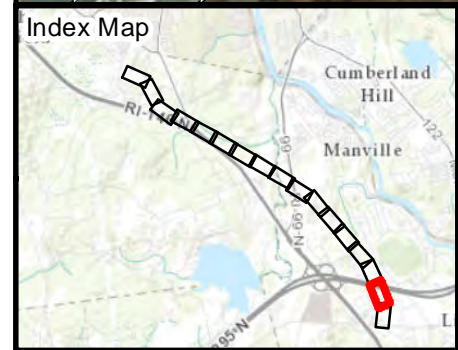
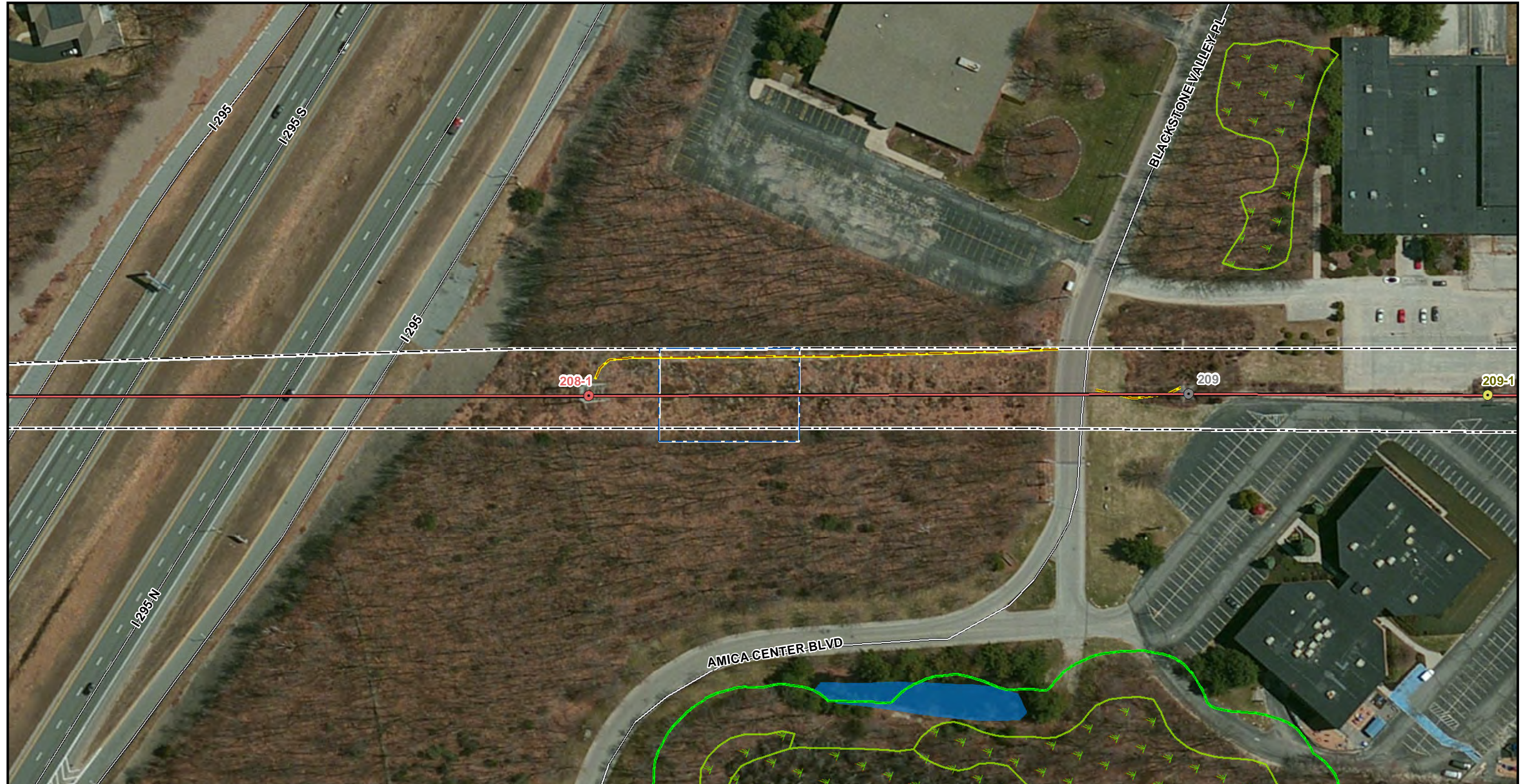
**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

**Figure 3-3: Permitting and Access Plans
 (Sheets 1-18)**

Lincoln, RI

Page 15 of 18





Legend

<ul style="list-style-type: none"> ● Existing Structure ● New Structure ● Reinforce Structure ● Relocate Existing Structure ● Remove Structure ● Replace with Steel Structure — Approximate Line V148N — Preferred Access Road — Alternate Access Road — Roads — Straw Wattle 	<ul style="list-style-type: none"> — Approximate Limits of ROW ▭ Swamp Mats ▭ Work Pad ▭ Culverts ● Mobil Pipeline Marker — Mobil Gas Pipeline — Stonewall — Field Delineated Stream Centerline — Field Delineated Streams ▭ Riverbank Wetland ● Field Delineated Wetland Flags — Field Delineated Wetland Lines — Field Delineated Wetlands 	<ul style="list-style-type: none"> ▭ Perimeter Wetland — Streams ▭ Natural Heritage Area ▭ USFWS Wetlands ▭ FEMA Floodplain ▭ Waterbodies ▭ Conservation Land ▭ Surface Water Protection Area — Access Gate ▭ Community Wellhead Protection Area ▭ Pull Pads ▭ Town Boundary
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1 inch = 100 feet

0 100 200 Feet

Source: RIGIS Basemap & Environmental Data -Aerial & Topo Imagery, ESRI, DigitalGlobe, GeoEye, GeoEye, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., AEX, GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, Getmapping, Aerogrid, IGP, IGN, Kadaster NL, Ordnance Survey, ESRI Japan, METI, ESRI China (Hong Kong), swisstopo, & the GIS User Community

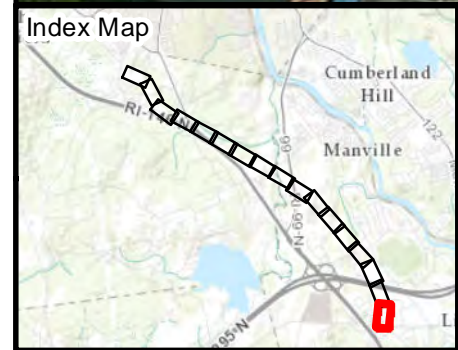
**V148N 115 kV TRANSMISSION LINE
 REDUCTORING PROJECT**

**Figure 3-3: Permitting and Access Plans
 (Sheets 1-18)**

Lincoln, RI

Page 16 of 18





Legend

<ul style="list-style-type: none"> ● Existing Structure ● New Structure ● Reinforce Structure ● Relocate Existing Structure ● Remove Structure ● Replace with Steel Structure — Approximate Line V148N — Preferred Access Road — Alternate Access Road — Roads — Straw Wattle 	<ul style="list-style-type: none"> — Approximate Limits of ROW ▭ Swamp Mats ▭ Work Pad ▭ Culverts ● Mobil Pipeline Marker — Mobil Gas Pipeline ▭ Stonewall — Field Delineated Stream Centerline — Field Delineated Streams ▭ Riverbank Wetland ● Field Delineated Wetland Flags — Field Delineated Wetland Lines ▭ Field Delineated Wetlands 	<ul style="list-style-type: none"> ▭ Perimeter Wetland ▭ Streams ▭ Natural Heritage Area ▭ USFWS Wetlands ▭ FEMA Floodplain ▭ Waterbodies ▭ Conservation Land ▭ Surface Water Protection Area — Access Gate ▭ Community Wellhead Protection Area ▭ Pull Pads ▭ Town Boundary
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1 inch = 100 feet

0 100 200 Feet

Source: RIGIS Basemap & Environmental Data -Aerial & Topo Imagery ESRI, DigitalGlobe, GeoEye, i-cubed, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., AEX, GEBCO, USDA, USGS, FAO, NPS, NRCAN, GeoBase, Getmapping, Aergrid, IGP, IGN, Kadaster NL, Ordnance Survey, ESRI Japan, METI, ESRI China (Hong Kong), swisstopo, & the GIS User Community

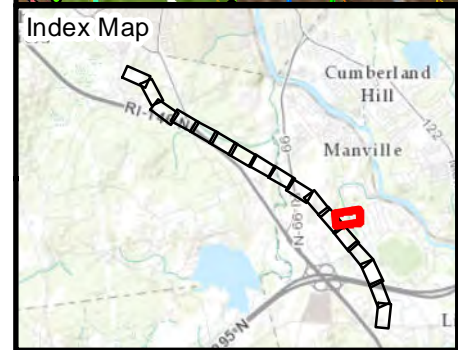
V148N 115 kV TRANSMISSION LINE RECONDUCTORING PROJECT

Figure 3-3: Permitting and Access Plans
 (Sheets 1-18)

Lincoln, RI

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Legend		V148N Structures	
Existing Structure	Approximate Limits of ROW	Perimeter Wetland	Access Gate
New Structure	Swamp Mats	Streams	Community Wellhead Protection Area
Reinforce Structure	Work Pad	Natural Heritage Area	Town Boundary
Relocate Existing Structure	Culverts	USFWS Wetlands	Pull Pads
Remove Structure	Mobil Pipeline Marker	FEMA Floodplain	
Replace with Steel Structure	Mobil Gas Pipeline	Waterbodies	
Approximate Line V148N	Stonewall	Conservation Land	
Preferred Access Road	Field Delineated Stream Centerline	Surface Water Protection Area	
Alternate Access Road	Field Delineated Stream		
Roads	Riverbank Wetland		
Straw Wattle	Field Delineated Wetland Flags		
	Field Delineated Wetland Lines		
	Field Delineated Wetlands		

**V148N 115 kV TRANSMISSION LINE
REDUCTORING PROJECT**

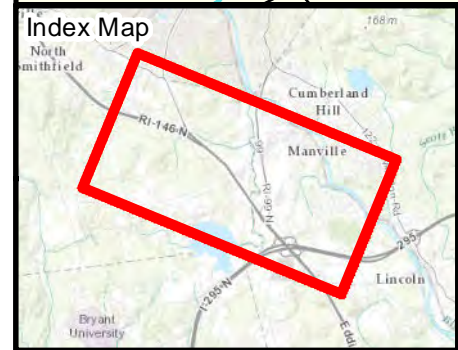
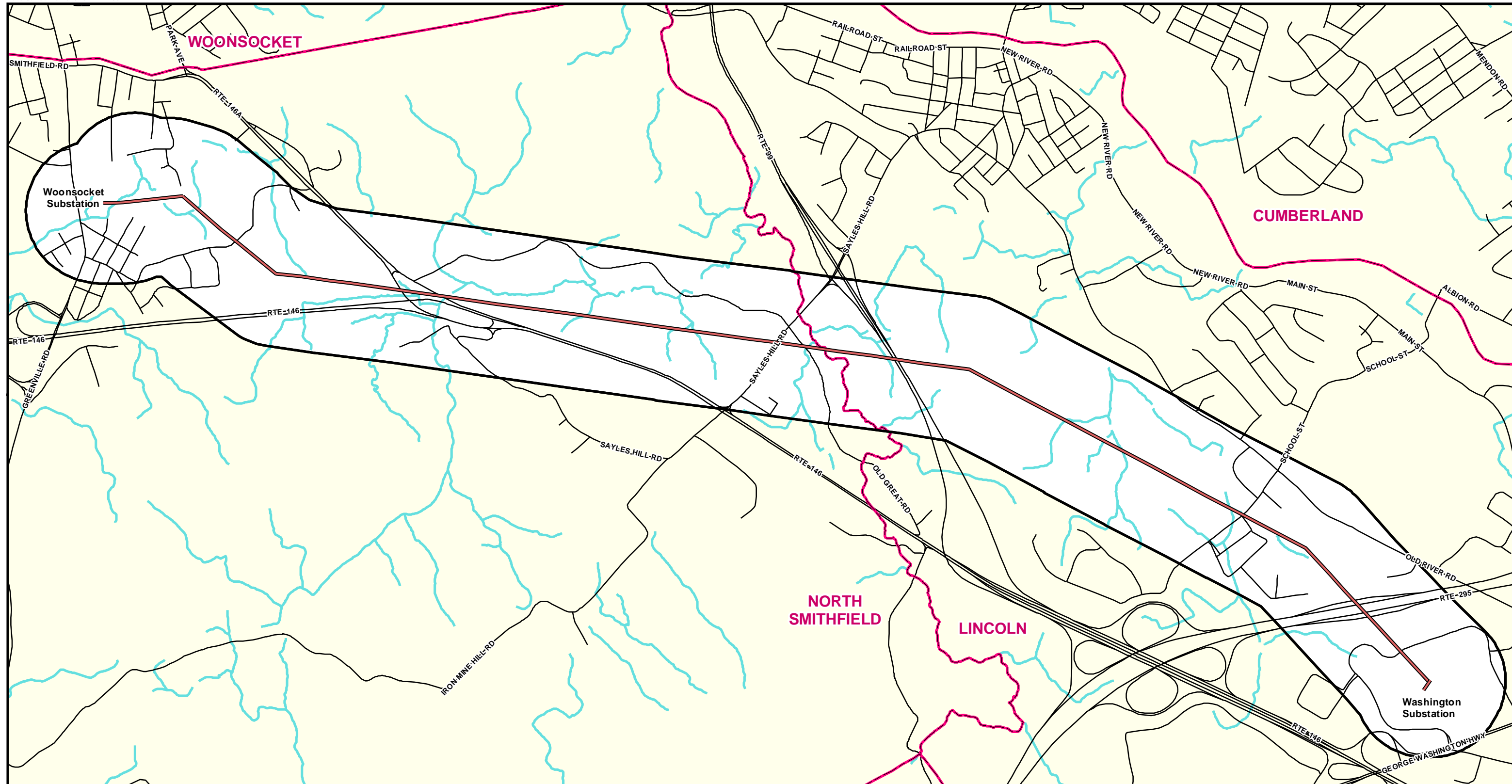
**Figure 3-3: Permitting and Off-Site Access Plans
(Sheets 1-18)**

Lincoln, RI

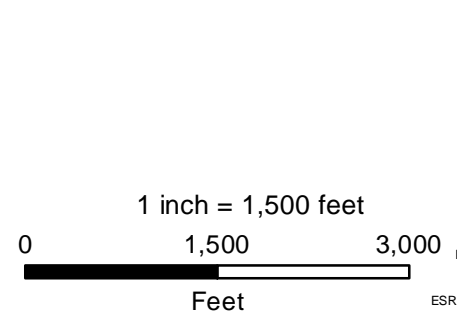
Page 18 of 18

Source: -RIGIS
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i-cubed, DeLorme, NAVTEQ,
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IGP, IGN, Kadaster NL, Ordnance
Survey, ESRI Japan, METI, ESRI
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1 inch = 100 feet



- Legend**
- Approximate Line V148N
 - Streams
 - Project Study Area
 - Town Boundary



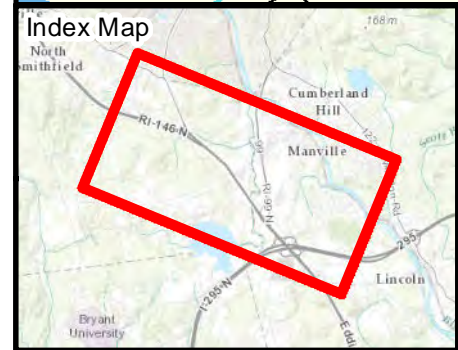
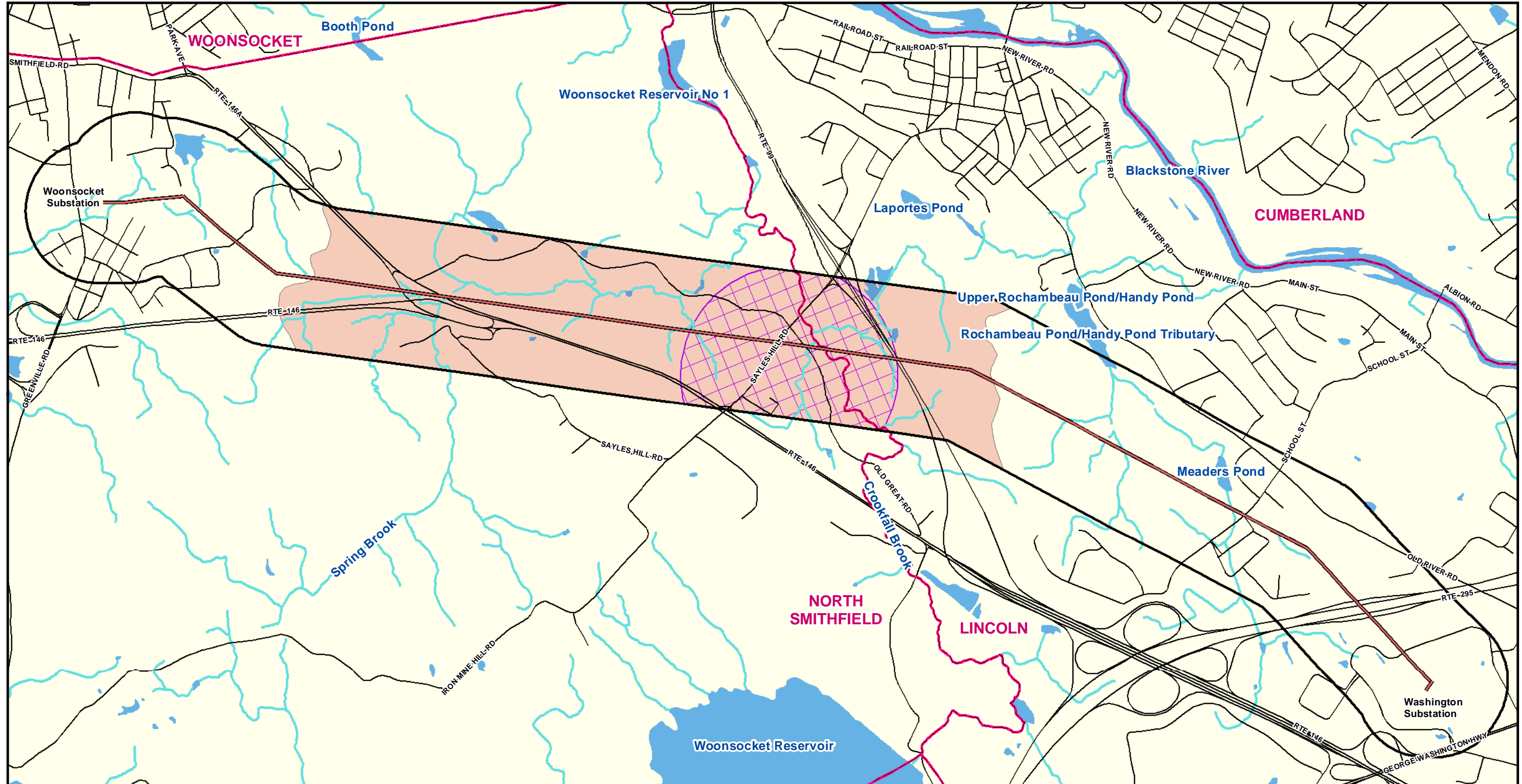
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 Ordnance Survey, ESRI Japan, METI,
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**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

Figure 5-1: Project Study Area

North Smithfield & Lincoln, RI






Legend

- Approximate Line V148N
- Streams
- Project Study Area
- Town Boundary
- Waterbodies
- Surface Water Protection Area - Crookfall Brook

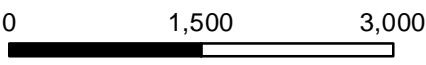
Well Information

- Community Wellhead Protection Area



Source:
 -RIGIS
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 -Aerial & Topo Imagery
 ESRI, DigitalGlobe, GeoEye,
 -Foubed, DeLorme, NAVTEQ,
 TomTom, Intermap, increment P Corp.,
 AEX, GEBCO, USDA, USGS, FAO,
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 ESRI China (Hong Kong), swisstopo, & the
 GIS User Community

1 inch = 1,500 feet



0 1,500 3,000
Feet

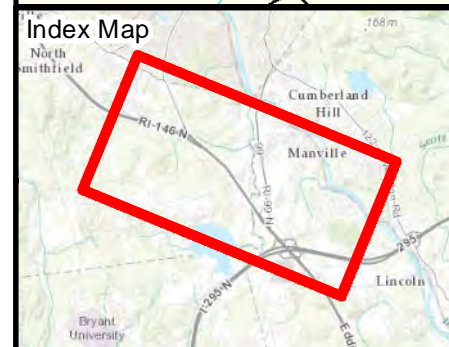
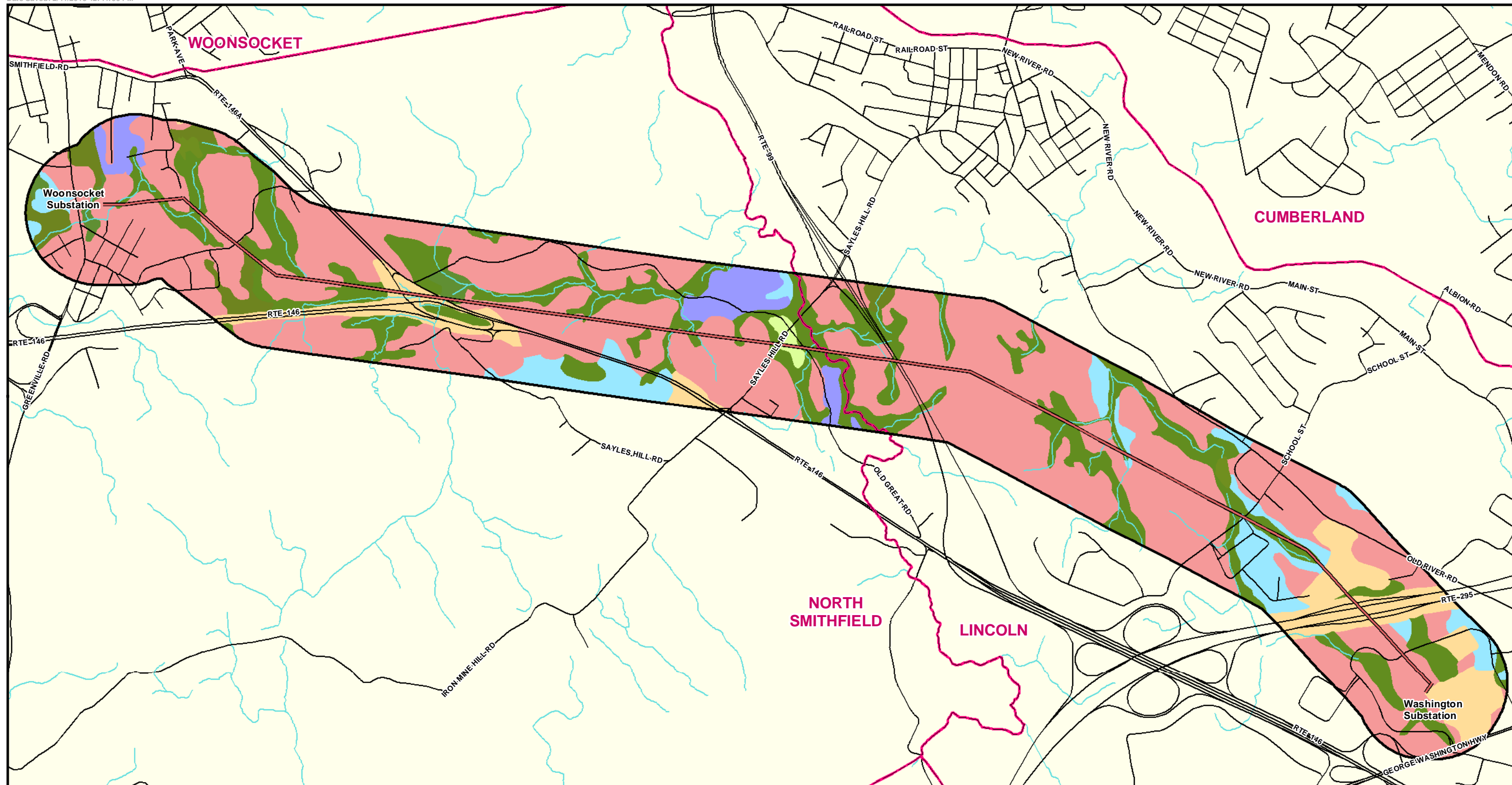
**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

Figure 5-3: Surface and Groundwater Resources

North Smithfield & Lincoln, RI

nationalgrid

BSC GROUP



Legend

- Approximate Line V148N
- Project Study Area
- Town Boundary
- Hydric Soils

Erodability Hazard

- Excessively Drained
- Moderately Well Drained
- Poorly Drained
- Poorly Drained & Very Poorly Drained
- Somewhat Excessively Drained
- Permanently Submerged Soil
- Variable
- Very Poorly Drained
- Well Drained

1 inch = 1,500 feet

0 1,500 3,000 Feet

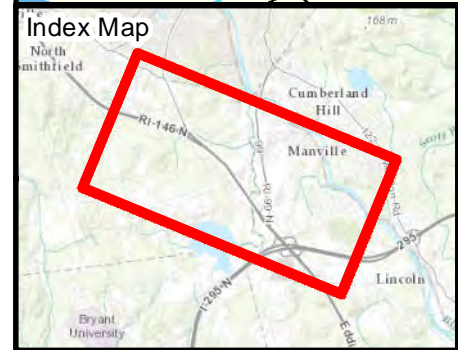
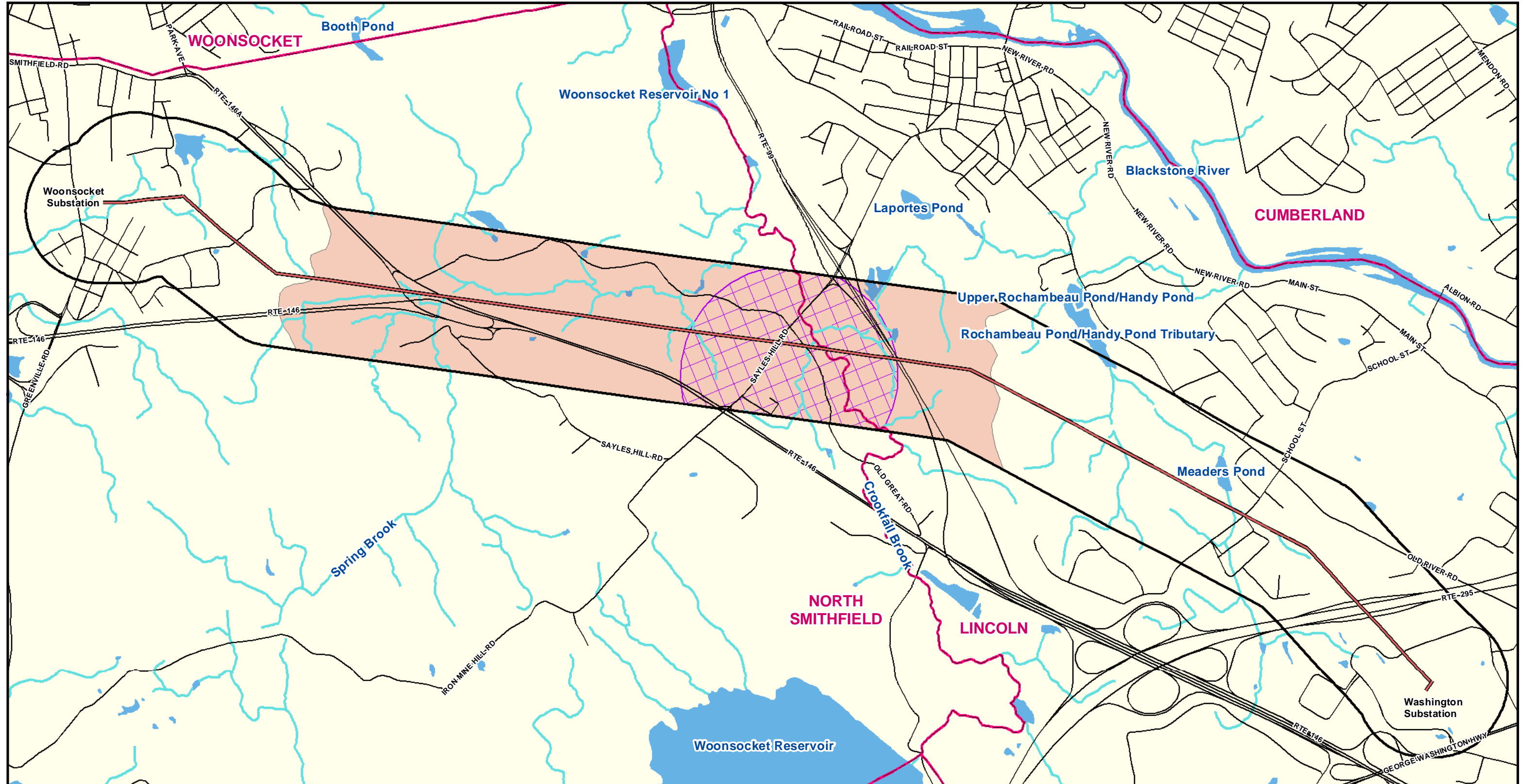
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**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

Figure 5-2: Soil Drainage Classes

North Smithfield & Lincoln, RI






Legend

- Approximate Line V148N
- Streams
- Project Study Area
- Town Boundary
- Waterbodies
- Surface Water Protection Area - Crookfall Brook

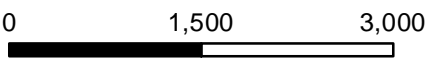
Well Information

- Community Wellhead Protection Area



Source:
 -RIGIS
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1 inch = 1,500 feet



0 1,500 3,000
Feet

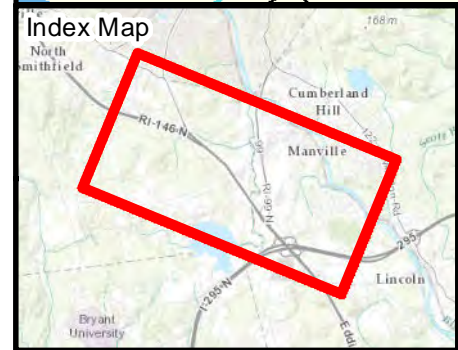
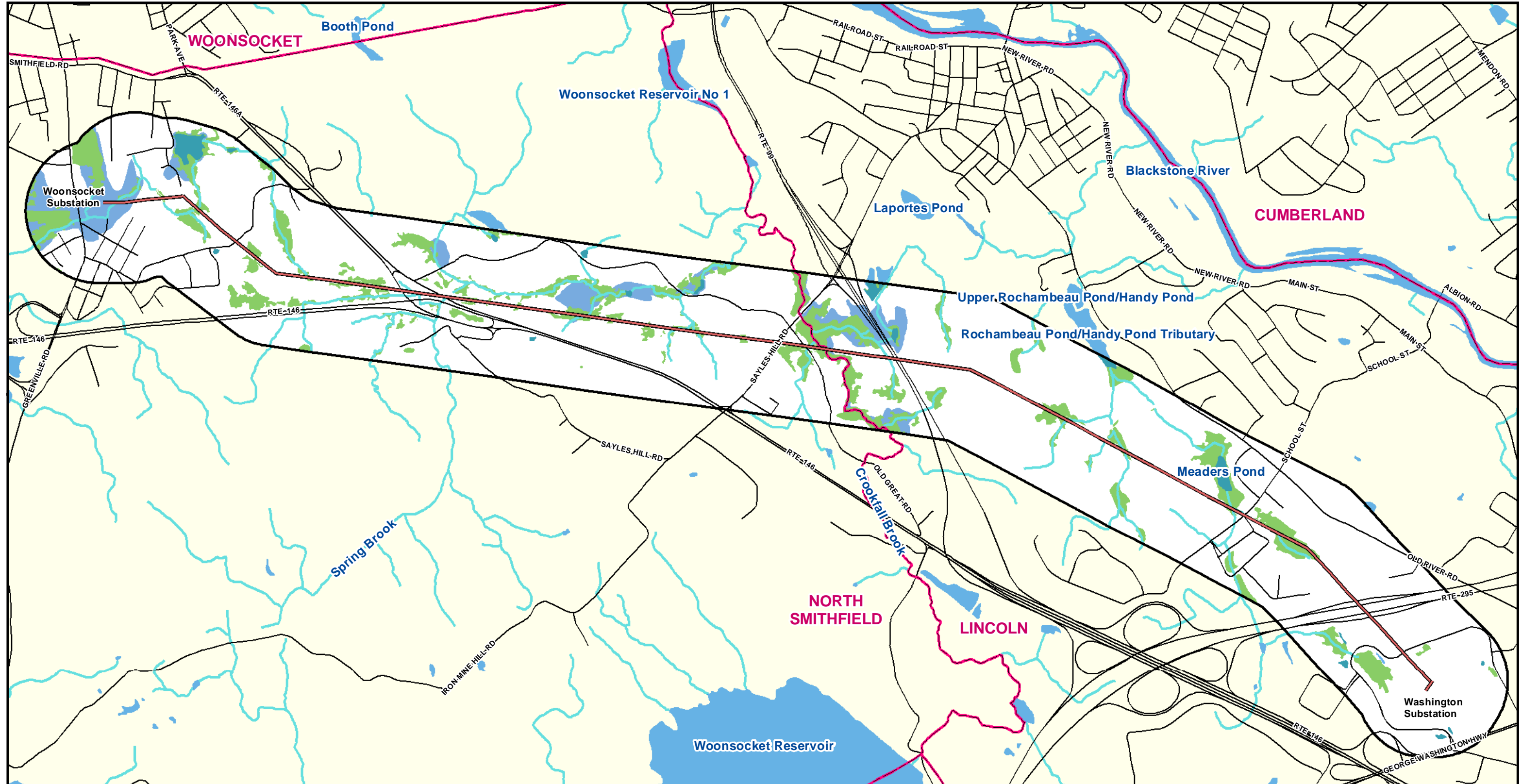
**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

Figure 5-3: Surface and Groundwater Resources


North Smithfield & Lincoln, RI

nationalgrid

BSC GROUP

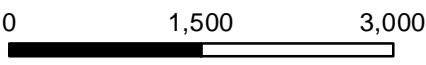


- Legend**
- Approximate Line V148N
 - Streams
 - Project Study Area
 - Town Boundary
 - Wetlands
 - FEMA Floodplain



Source:
 -RIGIS
 Basemap & Environmental Data
 -Aerial & Topo Imagery
 ESRI, DigitalGlobe, GeoEye,
 -Foubed, DeLorme, NAVTEQ,
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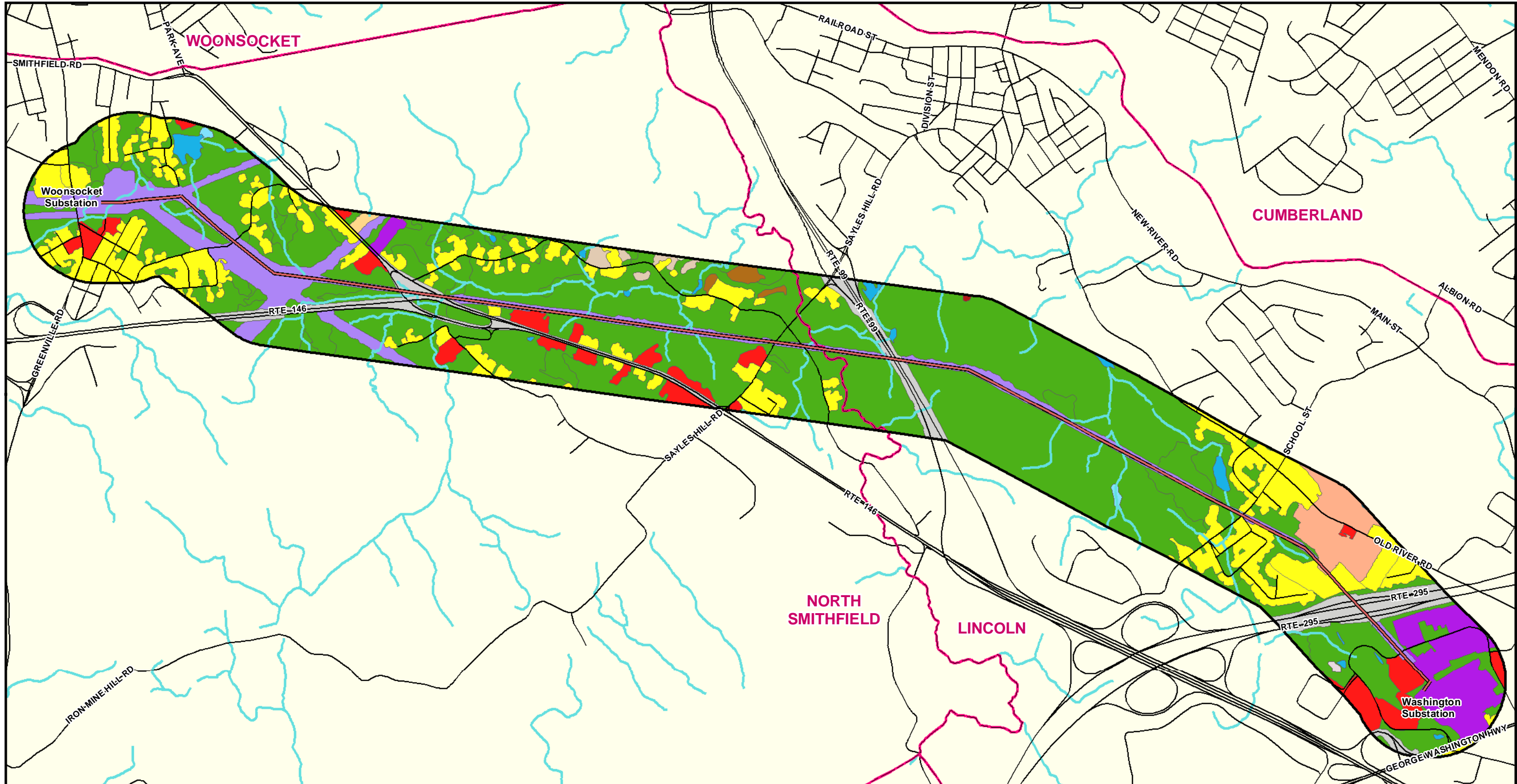
0 1,500 3,000
Feet

**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

Figure 5-4: Wetlands and Waterbodies

North Smithfield & Lincoln, RI





Legend	
Approximate Line V148N	Forest
Project Study Area	Developed Recreation
Town Boundary	Residential
Landuse	
Commercial	Power Lines
Industrial	Transportation
Cropland	Transitional Areas
Pasture	Vacant Land
Brushland (shrub and brush areas, reforestation)	Waste Disposal
	Water
	Wetland

1 inch = 1,500 feet

0 1,500 3,000
Feet

Source:
 -RIGIS
 Basemap & Environmental Data
 -Aerial & Topo Imagery
 ESRI, DigitalGlobe, GeoEye,
 -Foubed, DeLorme, NAVTEQ,
 TomTom, Intermap, increment P Corp.,
 AEX, GEBCO, USDA, USGS, FAO,
 NPS, NRCAN, GeoBase, Getmapping,
 Aerogrid, IGP, IGN, Kadaster NL,
 Ordnance Survey, ESRI Japan, METI,
 ESRI China (Hong Kong), swisstopo, & the
 GIS User Community

**V148N 115 kV TRANSMISSION LINE
 RECONDUCTORING PROJECT**

Figure 6-1: Land Use

North Smithfield & Lincoln, RI

