

STATE OF NEW HAMPSHIRE

Inter-Department Communication

DATE: February 3, 2021

AT (OFFICE): NHPUC

FROM: Kenneth Walsh *KGW*
Utility Analyst IV – Safety Division

SUBJECT: Docket No. DE 20-119 Public Service New Hampshire d/b/a Eversource Energy
Petition for License to Construct and Maintain Electric Lines Over and Across the North Branch of the Sugar River in the Town of Croydon; State Owned Land in Croydon and Newport; and State Owned Land in Claremont; the Sugar River in Claremont; and the Connecticut Tiver in Claremont, New Hampshire
Staff Recommendation

TO: Debra Howland, Executive Director
Thomas Frantz, Director, Electric Division
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The Safety Division's review of the above petition consisted of the following elements:

- Petition contents and Replacement Petition contents and history;
- Applicable State Statute;
- Review of the existing crossing(s) previously licensed by the PUC;
- Review of land ownership of existing pole structures;
- Review of NESC code requirements as described in Puc 300;
- Review of public need and public impact, including applicability of other State regulations; and
- Conclusions and Recommendations.

1. Petition contents and history

On July 27, 2020, Public Service New Hampshire d/b/a Eversource Energy (ES), filed a petition for a license pursuant to RSA 371:17 to construct, maintain and operate the Eversource K174 line, which is a three phase 115kV transmission line, over a number of public waters and state owned lands in Croydon, Newport, and Claremont.

Due to complex issues requiring further coordination and research by ES with Vermont Electric Power Company and the U.S. Army Corps of Engineers (USACOE), Safety Staff recommended that ES withdraw its petition for approval of the line crossings over the Connecticut River and the Sugar River in Claremont.

On January 27, 2021 and February 1, 2021, ES submitted supplemental filings to correct certain errors identified by the Safety Division in the original petition and to exclude the proposed crossing modifications over public waters in the City of Claremont at this time.

On February 1, 2021, ES filed a second replacement petition resulting from errors identified by Safety Staff in the Company's January 27 replacement petition.

The public water crossing of the North Branch of the Sugar River in Croydon and the state owned lands in Croydon, Newport, and Claremont have not been previously licensed by the PUC as the lands involved were either in private ownership when the line was constructed or due to oversight by ES, but will be fully licensed under this petition. It is also noted four (4) structures had been replaced in 2018 and these structures are now after-the-fact inclusions to this petition.

Analysis of this final revised replacement petition will divide the K174 line into three segments for review: (1) the North Branch of the Sugar River in Croydon, (2) State owned lands in Croydon and Newport, and (3) State owned lands in Claremont.

This is a project to replace twenty-two (22) wood structures with weathered steel as ES asserts these 1967 wood structures require replacement in order to maintain system reliability. The three (3) existing conductors will be transferred to the new steel structures. One of two existing static wires will be replaced with communications fiber optical ground wire (OPGW) with both being vertically attached above the conductors.

Segment 1 North Branch of the Sugar River, Croydon Crossing – Structures 57 – 58:

The scope of this project in Croydon begins at Structure #57, which is west of Route 10 and Cross Road intersection then traversing west across the North Branch of the Sugar River to Structure # 58. See a detailed NHPUC Safety Division map/schematic in the Attachment of this recommendation.

Common to all these noted structures, all three (3) existing ACSR 795 kcmil conductors will be transferred to the new steel structures. One of two existing 7#8 Alumoweld static wires will be replaced with communications 48 fiber optical ground wire (OPGW) with both being vertically attached above the conductors. The conductor cable clearance requirements were met using the National Electrical Safety Code (NESC) conditions at 285 deg F. for all crossings within this segment. This scenario was the governing condition, which yielded the greatest sag and lowest clearance.

In ES Exhibit #2, existing wood structure #57 will be replaced with a two (2) pole, Type T, Class H1 AGH 65.5 ft. weathered steel structure. In its petition, ES provides sufficient detail to show how the required clearance from the conductor cables to the 100-year flood elevation water surface will be maintained (at 36.7 feet). Staff verified the computed sags with SAG 10 commercial software using inputs as stated in the petition. Only 18.6 feet clearance is required by the NESC Table 232-1 for water areas not suitable for sail boating.

In ES Exhibit #2, existing wood structure #58 will be replaced with a two (2) pole, Type T, Class H1 AGH 56.5 ft. weathered steel structure. This crossing spans 384 feet between Structures # 57 and #58 with 85 feet spanning public waters.

The water clearances to the projected 100-year flood elevations were confirmed by Safety Division staff. The water clearances are taken from the projected 100 year flood levels. This is more conservative than the 10 year flood levels allowed by the NESC (note 18 to Table 232-1).

Segment 2 State Owned Land in Croydon and Newport Crossing – Structures 74 to 104:

The scope of this project in Croydon begins at Structure #74, which is approximately 0.45 miles west of Fletcher Road in Croydon then heading westerly ending at Structure # 104. See a detailed NHPUC Safety Division map/schematic in the Attachment of this recommendation.

For clarity, Safety Staff summarized the thirty-one (31) structures with a PUC-noted reference number, which will be found on the attached Safety Division maps. Common to all these noted structures, all three (3) existing ACSR 795 kcmil conductors will be transferred to the new steel structures. One of two existing 7#8 Alumoweld static wires will be replaced with communications 48 fiber optical ground wire (OPGW) with both being vertically attached above the conductors. The conductor cable clearance requirements were met using the National Electrical Safety Code (NESC) conditions at 285 deg F. for all crossings within this segment. This scenario was the governing condition, which yielded the greatest sag and lowest clearance. Only 20.1 feet clearance is required by the NESC Table 232-1 for these crossings. Refer to ES exhibits 3 through 11.

Structure Ref #	Structure	Type	SPAN (pole to pole)	Distance (feet)	ES Vertical Design Clearance (ft.)	Complies with NESC Table 232-1
1	74	56.5' Steel 2-pole ; T ; CL H1	1 to 2	395	23.5	YES
2	75	52.0' Steel 2-pole ; T ; CL H1	2 to 3	344	24.5	YES
3	76	43.0' Wood 2-pole ; A ; CL 3	3 to 4	390	20.4	YES
4	77	43.0' Wood 2-pole ; A2 ; CL 3	4 to 5	619	20.9	YES
5	78	43.0' Wood 2-pole ; A ; CL 3	5 to 6	368	31.4	YES
6	79	43.0' Wood 2-pole ; A ; CL 3	6 to 7	386	23.7	YES
7	80	43.0' Wood 2-pole ; A ; CL 3	7 to 8	336	25.9	YES
8	81	43.0' Wood 2-pole ; A2 ; CL 3	8 to 9	456	23.3	YES
9	82	47.5' Wood 3-pole ; DA ; CL 3	9 to 10	247	25.3	YES
10	83	43.0' Wood 2-pole ; A2 ; CL 3	10 to 11	363	24.5	YES
11	84	61.0' Steel 2-pole ; THS ; CL H1	11 to 12	447	22.4	YES
12	85	56.5' Steel 2-pole ; THS ; CL H1	12 to 13	387	26.3	YES
13	86	61.0' Steel 2-pole ; THS ; CL H1	13 to 14	506	27.6	YES
14	87	65.5' Steel 2-pole ; THS ; CL H1	14 to 15	518	22.0	YES
15	88	56.5' Steel 2-pole ; T ; CL H1	15 to 16	498	24.2	YES
16	89	65.5' Steel 2-pole ; T ; CL H1	16 to 17	595	23.4	YES
17	90	56.5' Steel 2-pole ; T ; CL H1	17 to 18	340	27.0	YES
18	91	52.0' Steel 2-pole ; T ; CL H1	18 to 19	380	23.0	YES
19	92	56.5' Steel 2-pole ; T ; CL H1	19 to 20	589	23.3	YES
20	93	61.0' Steel 2-pole ; T ; CL H1	20 to 21	528	27.2	YES
21	94	61.0' Steel 2-pole ; T ; CL H1	21 to 22	309	28.1	YES
22	95	52.0' Steel 2-pole ; T ; CL H1	22 to 23	385	21.7	YES
23	96	56.5' Steel 2-pole ; T ; CL H1	23 to 24	574	28.9	YES
24	97	52.0' Steel 2-pole ; T ; CL H1	24 to 25	302	26.7	YES
25	98	52.0' Steel 2-pole ; T ; CL H1	25 to 26	302	22.7	YES
26	99	43.0' Wood 2-pole ; A2 ; CL 3	26 to 27	314	20.5	YES
27	100	43.0' Wood 2-pole ; A ; CL 3	27 to 28	459	21.5	YES
28	101	47.5' Wood 2-pole ; A ; CL 3	28 to 29	406	21.3	YES
29	102	56.5' Steel 2-pole ; T ; CL H1	29 to 30	424	23.4	YES
30	103	56.5' Steel 2-pole ; T ; CL H1	30 to 31	342	27.8	YES
31	104	56.5' Steel 2-pole ; T ; CL H1	Total Span	12,509		

Segment 2 crossing spans 12,509 feet between Structures #74 to #104 with 11,861.7 feet spanning state owned lands.

Segment 3 State Owned Land in Claremont Crossing – Structures 153 to 156:

The scope of this project in Claremont begins at Structure #153, which is approximately 0.37 miles north of the River Valley Community College and approximately 634 feet east of Route 120 then traversing west ending at Structure #156 across Route 120. See a detailed NHPUC Safety Division map/schematic in the Attachment of this recommendation.

Common to all these noted structures, all three (3) existing ACSR 795 kcmil conductors will be transferred to the new steel structures. One of two existing 7#8 Alumoweld static wires will be replaced with communications 48 fiber optical ground wire (OPGW) with both being vertically attached above the conductors. The conductor

cable clearance requirements were met using the National Electrical Safety Code (NESC) conditions at 285 deg F. for all crossings within this segment. This scenario was the governing condition, which yielded the greatest sag and lowest clearance.

In ES Exhibit #12, existing wood structure #153 will be replaced with a two (2) pole, Type T, Class 1 AGH 52.0 ft. weathered steel structure. In its petition, ES provides sufficient detail to show how the required clearance from the conductor cables to the ground elevation surface will be maintained (at 29.2 feet). Staff verified the computed sags with SAG 10 commercial software using inputs as stated in the petition. Only 20.1 feet clearance is required by the NESC Table 232-1 for this crossing.

In ES Exhibit #12, existing wood structure #154 will be replaced with a two (2) pole, Type T, Class 1 AGH 52.0 ft. weathered steel structure. In its petition, ES provides sufficient detail to show how the required clearance from the conductor cables to the ground elevation surface will be maintained (at 27.1 feet). Staff verified the computed sags with SAG 10 commercial software using inputs as stated in the petition. Only 20.1 feet clearance is required by the NESC Table 232-1 for this crossing. This crossing spans 403 feet between Structures # 153 and #154 with 82 feet spanning state owned lands.

In ES Exhibit #12, existing wood structure #155 will be replaced with a two (2) pole, Type T, Class 1 AGH 61.0 ft. weathered steel structure. In its petition, ES provides sufficient detail to show how the required clearance from the conductor cables to the ground elevation surface will be maintained (at 42.0 feet). Staff verified the computed sags with SAG 10 commercial software using inputs as stated in the petition. Only 20.1 feet clearance is required by the NESC Table 232-1 for this crossing. This crossing spans 403 feet between Structures # 154 and #155 with 403 feet spanning public lands.

In ES Exhibit #12, existing wood structure #156 will be replaced with a two (2) pole, Type T, Class 1 AGH 52.0 ft. weathered steel structure. This crossing spans 573 feet between Structures # 155 and #156 with 149 feet spanning public lands.

Segment 3 crossing spans 1,379 feet between Structures #153 to #156 with 634 feet spanning state owned lands.

2. New Hampshire statute referenced in petition

371:17 Licenses for New Poles. – Whenever it is necessary, in order to meet the reasonable requirements of service to the public, that any public utility should construct a pipeline, cable, or conduit, or a line of poles or towers and wires and fixtures thereon, over, under or across any of the public waters of this state, or over, under or across any of the land owned by this state, it shall petition the commission for a license to construct and maintain the same. For the purposes of this section, "public waters" are

defined to be all ponds of more than 10 acres, tidewater bodies, and such streams or portions thereof as the commission may prescribe. Every corporation and individual desiring to cross any public water or land for any purpose herein defined shall petition the commission for a license in the same manner prescribed for a public utility.

Source. 1921, 82:1. PL 244:8. RL 294:16. 1951, 203:48 par.17. 1953, 52:1, eff. March 30, 1953. 2013, 82:1, eff. June 19, 2013.

3. Review of existing license(s) and permissions previously granted by the PUC for this location of the North Branch of the Sugar River in Croydon.

The single public water crossing over the North Branch of the Sugar River was never licensed.

The North Branch of the Sugar River, from the juncture of Sawyer Brook and Stocker Brook in Grantham is listed under the category “Public Rivers and Streams” in the Official List of Public Waters (OLPW), under the category “List of freshwater Public Rivers and Streams”. The entire list of public waters can be accessed through the following web link:

<https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/olpw.pdf>

ES asserts environmental impacts from this project will require permits from the NH Department of Environmental Services and that ES will obtain these before commencing work.

The U.S. Army Corps of Engineers (USACOE) does not regulate the subject portion of the North Branch of the Sugar River in Croydon as federal-designated navigable waters. Therefore, no crossing permit is required from USACOE.

4. Review of land ownership of proposed pole structures

In its petition, ES specifies that the replacement of the structures and static wire with OPGW is over state owned lands in the Towns of Croydon and Newport, and the City of Claremont, New Hampshire.

5. Review of NESC code requirements as described in Puc 300

Under N.H. Code Admin. Rules Puc 306, each utility is required to construct, install, operate and maintain its plant, structures and equipment and lines, as follows:

In accordance with good utility practice;

After weighing all factors, including potential delay, cost and safety issues, in such a manner to best accommodate the public; and

To prevent interference with other underground and above ground facilities, including facilities furnishing communications, gas, water, sewer or steam service.

For purposes of that section, “good utility practice” means in accordance with the standards established by the “National Electrical Safety Code C2-2012.”

ES states that the current crossings have been designed and will be re-constructed, maintained, and operated in accordance with the NESC C2-2012.

Safety Division Staff reviewed the specifications related to the design and re-construction of this crossing project as described in the petition, the attachments, and all supplemental support documents, and found them to be in conformance with the applicable sections of NESC C2-2012 and Puc 300.

6. Review of public need and public impact

In order to meet the reasonable requirements of electric service to the public, ES proposes to replace existing wood structures with weathered steel structures, transfer existing conductors and replace one of two static wires with fiber optic communication cables and maintain a three-phase 115 kV transmission line designated as the K174 line over and across public waters of the North Branch of the Sugar River in the Town of Croydon and across state owned lands in the Towns of Croydon and Newport and the City of Claremont, New Hampshire. This transmission line is an integral part of ES’s electric transmission system in this area.

ES asserts in the petition that the existing crossings will be exercised without substantially affecting the rights of the public in the public waters of the North Branch of the Sugar River in Croydon as well as the state owned lands in Croydon, Newport, and Claremont. Minimum safe line clearances above the river surfaces and affected shorelines and lands will be maintained at all times. The use and enjoyment of the rivers and the state owned lands by the public will not be diminished in any material respect as a result of the overhead line crossings.

Safety Division Staff concludes the impact to the public will be de minimis and not measurable. The crossings do not appear to affect the rights of the public in the public waters and state owned lands because minimum safe line clearances above the water and land surfaces will be maintained at all times.

Staff Recommendation:

Based on the results of its review of the petition, its attachments, and all other supporting documents filed to this docket, the Safety Division Staff recommends that the Commission:

- 1) Find that the license ES requests in this docket may be exercised without substantially affecting the public rights in public waters and state owned lands, which are the subject of the petition;
- 2) Grant ES a license to construct, operate and maintain electric lines and telecommunication cables over and across the public waters of the North Branch of the Sugar River in the Town of Croydon and state owned lands in the Towns of Croydon and Newport and the City of Claremont, New Hampshire, as specified in the petition;
- 3) This recommendation does not include approval for a license to cross the Sugar River and the Connecticut River in the City of Claremont; however, Safety Staff recommend an order for ES to provide all design information and USACE approvals for the Connecticut River span.
- 4) Issue an Order Nisi and orders for its publication.

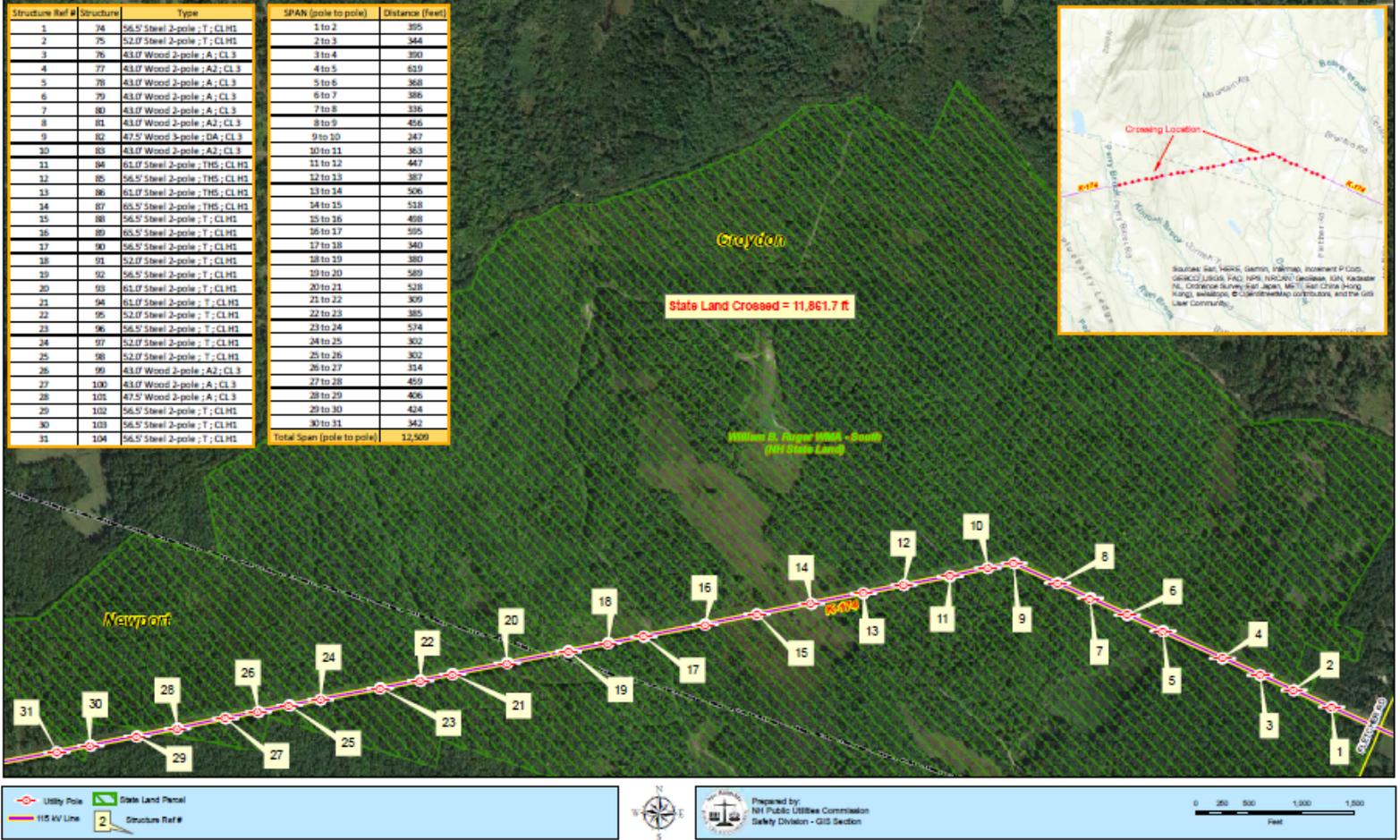
Attachment

Sugar River North Branch - DE 20-119 Eversource Crossing Map 1



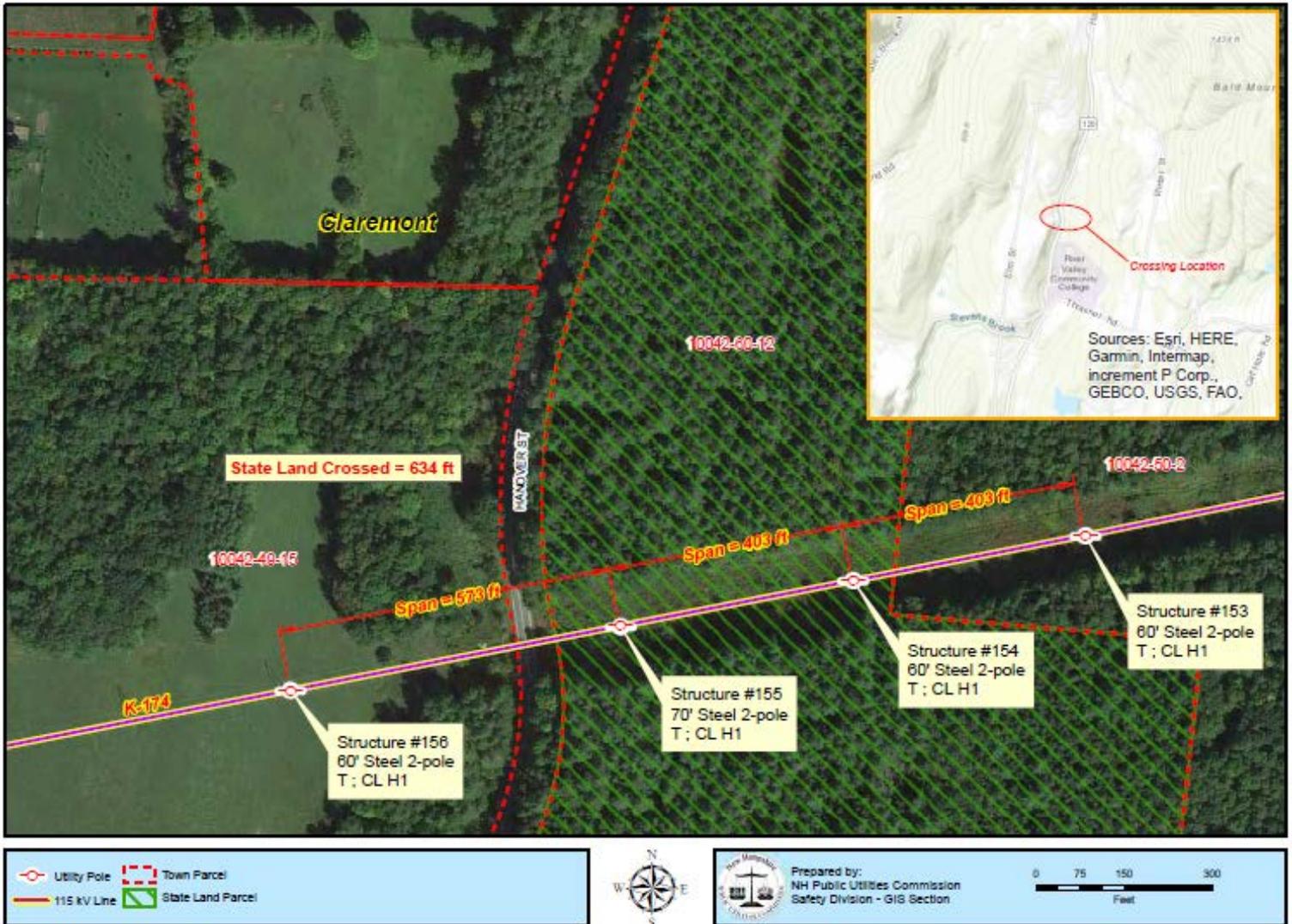
Public Water as shown above identified in the petition and engineering drawings as State of New Hampshire and located in the Town of Croydon. The project will require the Commission to grant a water crossing license related to this project. The license will be for the 115 kV K174 transmission line from Structure #57 west to Structure #58. This crossing spans approximately 384 feet with 85 feet crossing public waters over the North Branch of the Sugar River.

NH State Land - DE 20-119 Eversource Crossing - Map 2



State Owned Land as shown above identified in the petition and engineering drawings as State of New Hampshire and located in the Towns of Croydon and Newport. The project will require the Commission to grant a water crossing license related to this project. The license will be for the 115 kV K174 transmission line from Structure #74 west to Structure #104. This crossing spans approximately 12,509 feet with 11,861.7 feet crossing state owned land.

NH State Land - DE 20-119 Eversource Crossing Map 3



State Owned Land as shown above identified in the petition and engineering drawings as State of New Hampshire and located in the City of Claremont. The project will require the Commission to grant a license related to this project. The license will be for the 115 kV K174 transmission line from Structure #153 west to Structure #156. This crossing spans approximately 1379 feet with 634 feet crossing state owned lands.

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