DE 15-041

STATE OF NEW HAMPSHIRE

Inter-Department Communication

DATE: March 23, 2015
AT (OFFICE): NHPUC

NHPUC 23MAR'15PM3:13

FROM: Randy Knepper
Director of Safety

SUBJECT: Review of Unitil Petition for Existing Circuits 3342 and 3353
Crossings of the Tide Mill Creek, Hampton at a single location
Docket No. DE 15-041, including proposed alteration of previous crossings

TO: Debra Howland, Executive Director
Tom Frantz, Director, Electric Division
Les Stachow, Assistant Director, Electric Division
Rorie Patterson, Staff Attorney

The Safety Division review of the above petition consisted of the following elements:

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

1. Petition contents and history.

- On January 31, 2015, Unitil Energy Systems Inc. (Unitil) filed a petition to alter two existing water crossings associated with the 34.5 kV circuits designated 3342 and designated 3353. The water crossings are existing crossings of the Tide Mill Creek and the existing marshlands on the east side of the NH Route 101 Bridge crossing of the Tide Mill Creek in Hampton. The circuits' primary functions are to connect the Hampton Beach Substation located at the termination of NH Route 101 near the Hampton Water Tower on Church St to the Hampton Substation located near the NH Route 101 South off ramp to Lafayette Rd (US Route 1).

- Tide Mill Creek in Hampton confluences with the Hampton River in the vicinity of the proposed crossing. The petition references the Hampton River in Hampton but also refers to it as the Tide Mill Creek in Hampton. Staff's review of NH DOT documents as well as NH DES documents conclude the appropriate crossing should be referenced as Tide Mill Creek.

- The new water crossing will consist of the alteration and relocation of two existing water crossings over the Tide Mill Creek. The relocation is necessary to allow for timelier and more economical repairs of these segments of the above mentioned circuits when faults are encountered. The newly altered crossings will be located in within the New Hampshire Department of Transportation Right of Way as currently the existing crossings are not.

- Span 1 consists of a single 7 strand Number 6 Alumoweld functioning as a messenger wire) and three electrical conductors (447 kcmil ACSR_18/1) which make up the 34.5 kV circuit designated as 3342. The material, height, location of both support structures adjacent as well as conductor size and material to the water crossing are being relocated and significantly altered from a configuration that currently exists. Span 1 is approximately 300 feet and starts at single class H1, 70' foot tall southern yellow pine wooden pole (Structure 502) on the northern bank of the Tide Mill Creek and terminates at the 70 foot tall western red cedar wooden pole structure labeled as Structure 503 on the southern bank of the Tide Mill Creek. The span of the Tide Mill Creek itself will be approximately 100 feet with setbacks of Structure 502 from the northern edge of the river of approximately 78 feet from 100 year flood level intersection with the banking and setbacks of Structure 503 from the southern edge of the river of approximately 22feet at the intersection of the 100 year flood level and existing banking.

- Span 2 of the same water crossing consists of a single 7 strand Number 6 Alumoweld functioning as a messenger wire) and three electrical conductors (447 kcmil ACSR 18/1) which make up the 34.5 kV circuit designated as 3353. The material, height, location of both support structures adjacent as well as conductor size and material to the water crossing are being relocated and significantly altered from a configuration that currently exists. The 3353 circuit will be physically located directly below the 34.5 kV 3342 by approximately 8.5 feet. This is significantly altered from a configuration that previously existed. Span 2 is identical to Span 1 in all regards except for clearances above water because of the lower position on the supporting structures. Span 2 is also approximately 300 feet and starts at the same single class H1, 70' foot tall southern yellow pine wooden pole (Structure 502) on the northern bank of the Tide Mill Creek and terminates at the 70 foot tall western red cedar wooden pole labeled as Structure 503 on the southern bank of the Tide Mill Creek. The span of the Tide Mill Creek itself will be approximately 100 feet with setbacks of Structure 502 from the northern edge of the river of approximately 78 feet from 100 year flood level intersection with the banking and setbacks of Structure 503 from the southern edge of the river of approximately 22feet at the intersection of the 100 year flood level and existing banking.

- Span 3 consists of a single neutral conductor using a 336.4 KCM AA, 19 strand (Tulip) and will be 9'6" below the lowest messenger wire. It is 31 inches below the lowest conductor attachment which meets the required 20.5 inch (16 + 4.5) clearance of the NESC for a 34.5 kV cable (19.9 kV phase to ground). It will be tensioned at 2000 pounds.

- The water clearances are taken from the 100 year flood elevation level of 9 feet that was derived by Unitil based on NAVD 1929 datum and FEMA flood map # 437P for the Tide Mill Creek. The 100 year flood level is more conservative than the 10 year flood level required by the NESC. Tide Mill Creek is considered non-sailable as a result of the low clearance level between the bridge beams below the deck of 10.6 feet and the water level. Unitil also used information from panel 437 of 687 of map Number33015C0437E dated 5/17/2005 of FEMA flood maps. The lowest water clearance is 26'2" from the 100 year flood level based on the maximum sag of the neutral wire. This is in compliance with the 17 feet clearance of the NESC.

- Unitil requested a completed new licensure for these crossings because of the difficulty in getting to and maintaining the existing poles and circuitry when faults occur given the large number of customers that are fed off this circuit.

2. **New Hampshire statute referenced in petition.**

TITLE XXXIV
PUBLIC UTILITIES

CHAPTER 371
PROCEEDINGS TO ACQUIRE PROPERTY OR RIGHTS

Rights in Public Waters and Lands

371:17 Petition. – 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.

3. **Review of existing license(s) and permissions previously granted by the PUC for this location of the Tide Mill Creek in Hampton and ownership of marshlands.**

   A previous license was granted for Hampton River crossing and marshland crossing for unidentified transmission lines in 1970 by Commission Order No. 9958, in Docket DE 5837.

   This portion of the Tide Mill Creek is considered tidal water on the DES official list of public rivers as all tidal waters are considered public waters. The petition also references the crossing as the Hampton River in Hampton which is considered a public river and listed on the DES official list of public rivers and streams.
   http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/olpw.pdf

   These portions of the Tide Mill Creek are not considered navigable per the US Army Corp of Engineers.

4. **Review of land ownership of existing pole structures.**

   Both crossings of the Tide Mill Creek are located within the State proposed right of way and on the northern side. The orientation, structures and distances from the existing 3342 and 3353 transmission route are significantly altered from the previous crossings.

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

N.H. Code of Administrative Rules PART Puc 306 requires each utility shall construct, install, operate and maintain its plant, structures and equipment and lines, as follows:
(1) In accordance with good utility practice;
(2) After weighing all factors, including potential delay, cost and safety issues, in such a manner to best accommodate the public; and
(3) To prevent interference with other underground and above ground facilities, including facilities furnishing communications, gas, water, sewer or steam service.
"Good utility practice" means in accordance with the standards established by:
(1) The National Electrical Safety Code C2-2012…

A New Hampshire DES permit is also not required per Administrative Rule Wq 1406.04 (d) (7). There will not be any alteration of terrain, thus no permit is required.

The Safety Division reviewed 13 supporting statements contained in the petition, the attached Exhibits 1, 2, 3, and 4, and found them to be in conformance with the applicable sections of the NESC code C2-2012.

Review of public need and public impact.

Unitil states the distribution line crossings of 3342 and 3353 are an integral part of the Unitil distribution system and feed power in the Hampton Beach area of Hampton. The relocation will reduce the number of poles across this section of the marshland from two to one as a single set of poles will hold two circuits. It has also been designed to allow a single future attaching entity sufficient space on the pole to add a wire crossing and maintain sufficient vertical clearance from the water and highway. If multiple future attaching entities require use the proposed structures then the poles would need to be raised.

Unitil states the proposed crossings "may be granted without affecting any public rights in said waters. Minimum safe line clearances above the Hampton River (Tide Mill Creek) and affected shoreline will be maintained at all times. The use and the enjoyment by the public of the River will not be diminished in any material respect as a result of the relocated overhead line crossing.

The Safety Division concludes the impact to the public will be *de minimus* and not measurable.

6. **Recommendations and Conclusions.**

The Safety Division recommends full approval of Unitil's petition to the Commission without any conditions but notes there is future allowance for other attachees to this pole line other than a single line contemplated for FairPoint.

Appendix A

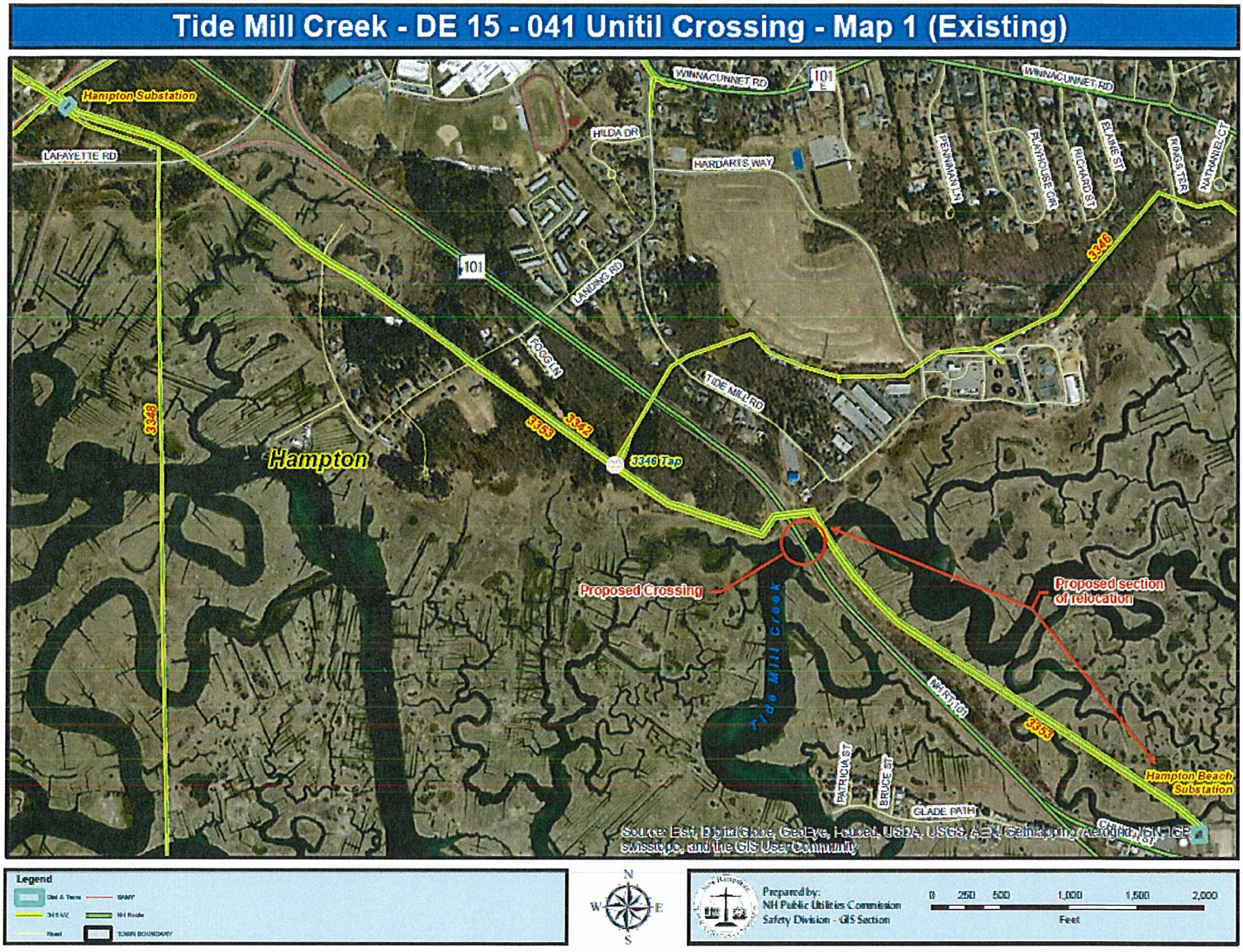

Figure 1: Tide Mill Creek in the marshland area of Hampton looking north with all the Hampton Substation and Hampton Beach substation shown. There are no other attaching entities to these poles as proposed. Route 101 is an existing crossing of the Tide Mill Creek. This shows the existing circuits 3353 and 3342 as they cross the marshland. They will be relocated to the eastern edge of Route 101.

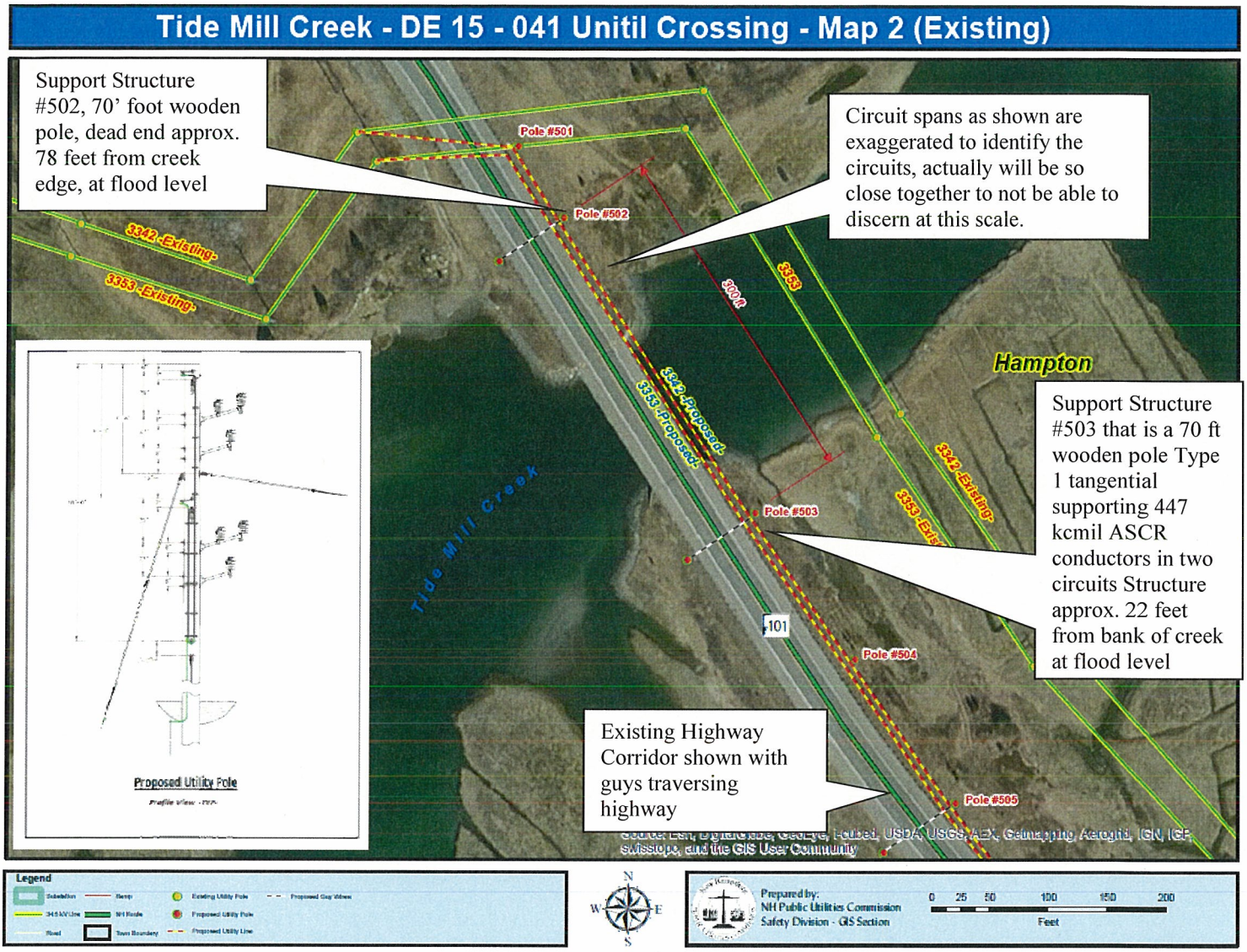

Figure 2: Close up of Tide Mill Creek in the marshland area of Hampton looking north with all the structures and relocated locations shown.

SERVICE LIST - EMAIL ADDRESSES - DOCKET RELATED

Pursuant to N.H. Admin Rule Puc 203.11 (a) (1): Serve an electronic copy on each person identified on the service list.

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FILING INSTRUCTIONS:

a) **Pursuant to N.H. Admin Rule Puc 203.02 (a), with the exception of Discovery, file 7 copies, as well as an electronic copy, of all documents including cover letter with:**

DEBRA A HOWLAND
EXECUTIVE DIRECTOR
NHPUC
21 S. FRUIT ST, SUITE 10
CONCORD NH 03301-2429

b) **Serve an electronic copy with each person identified on the Commission's service list and with the Office of Consumer Advocate.**

c) **Serve a written copy on each person on the service list not able to receive electronic mail.**