Appendix U

Construction Access Plan

Construction Access Plan

Merrimack Valley Reliability Project

PREPARED FOR

Eversource and National Grid

PREPARED BY

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Bedford, New Hampshire
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May 8, 2015

Introduction

VHB has prepared the following report to summarize the results of preliminary analysis of potential water quality impacts related to the construction of the Proposed Transmission Line related to the Merrimack Valley Reliablity Project. This analysis focuses on the portions of the project within the State of New Hampshire, for both the National Grid transmission lines, through Pelham, Windham, and Hudson, as well at the Eversource transmission line, through Hudson and Londonderry. A key plan has been attached for reference.

Methodology

For the purposes of this analysis, VHB prepared a set of plans that consists of data compiled from multiple sources to show the location of the proposed and existing transmission lines, including primary access and construction work pads, in relation to water resource areas including wetlands and streams. In addition, existing contour information was included in the plan to develop a general understanding of the existing drainage patterns and access road slopes. Below is a list of sources utilized for the analysis.

- **NHGRANIT:** Imagery, contours, town boundaries, USGS Streams, USGS topo
- **National Grid:** ROW Boundary, NEP property boundaries
- **Eversource:** ROW Boundary
- **Black & Veatch:** Transmission Lines, Structure Locations, Guy Locations
- **Beals & Thomas:** Transmission Lines, Structure Locations, Guy Locations
- **Normandeau:** Wetlands, Vernal Pools
- **VHB:** Field ID'd Vernal Pool, Work pads, pull sites, guard protection areas, stone aprons, delineated streams and wetlands, access, culverts

Once the base plan was developed, VHB analyzed the full length of the project to determine areas of potential water quality concern due to the proximity of proposed work to water resource areas. These designated areas may require additional erosion control measures in addition to implementation of the standard BMP's referenced in "Best Management Practices Manual for Utility Maintenance in and Adjacent to Wetlands and Waterbodies in New Hampshire". Based on the preliminary analysis, it appears the most common concern is in areas where either a long straight section of road, or an excessively steep section of road, or both, leads directly to a water resource area. The concern is related to the velocities and erosion associated with the slopes. These areas have identified on the attached key plan and described in additional detail below.

Assumptions

For the purposes of this evaluation, VHB has assumed the following general roadway design parameters are to be utilized for the improvements to the existing access road.

- Proposed roadway profiles to match existing grades to the maximum extent possible.
- Gravel will be utilized in areas of unsuitable materials as determined in field.
- Cut/fill side slopes will be graded at 2:1 to minimize disturbance. Slopes to be stabilized with erosion control blankets during construction.
- Roadside ditches will not be constructed, as the intent of the design will be to sheet flow across the roadway to maintain existing drainage patterns and minimize impacts due to concentrated flow.
- Temporary wetland impacts to utilize mats.
- Permanent access road wetland impacts to use permeable roadway methods, such as stone fords.

BMPs

The entirety of the project shall adhere to the standard BMP's referenced in "Best Management Practices Manual for Utility Maintenance in and Adjacent to Wetlands and Waterbodies in New Hampshire". The following is a list of available BMPs that can be used in conjunction with the access roads (BMP #'s correspond to details located in Appendix A of the manual):

- Stabilization (BMP #9)
- Silt Fence and other Perimeter Controls (BMPs #1, 2, and 3)
- Surface Water Diversions (BMPs #12 and 13)
- Temporary Crossings of Wetlands
    - Corduroy (BMP #7)
    - Mats (BMP #6)
    - Other Methods (BMP #8)
- Appropriate Mulching Materials (BMP #5)

- Seed – Temporary and Permanent (BMP #4)

  For the areas identified below, VHB recommends additional measures be taken including the following:

- Water bars be installed along roadway grades with slopes of 10% or greater.
- Level spreaders be installed at water bars to disperse the flow away from the roadway.
- In areas where roadside ditches are required, stone check dams should be incorporated to reduce velocity.

Areas of Supplemental BMPs

As described above, a number of areas were identified as locations that may require additional water quality measures. The individual sheets have been attached for reference.

- **Proposed Structure 77 (National Grid - Page 33)** – The access road north of Structure 77 has an approximately 19% slope grading towards Wetland WA 36.
- **Proposed Structure 121 (National Grid- Page 52)** – The access road north of Structure 121 has an approximately 13% slope grading towards the existing pond adjacent to Wetland WA 59H.
- **Proposed Structure 66 (National Grid – Page 56)** - The construction work pad for Structure 66 of the Relocated Line Y-151 is located on a steep slope of approximately 16% grading towards Wetland WA 61.
- **Proposed Structure (National Grid – Page 56)** – The access road in this area has an approximate 19% slope grading towards the permanent wetland crossing (stone ford) at Wetland WA 62.
- **Existing Structure 78 (National Grid – Page 60)** – The construction work pad overlaps Wetland WA 69. In addition the access road has an approximate 13% slope grading towards Wetland WA 69.
- **Existing Structure 82 (National Grid – Page 62)** – There is an excessive slope south of Structure 82 adjacent to Wetland WA 72. The access road from Bockes Road to the structure has an approximate 14% slope approaching the construction work pad.
- **Proposed Structure 202 (Eversource – Page 65)** – The access road heading south towards Structure 202 has an approximate 14% slope grading towards the unnamed intermittent street and WA 77C.

- **Proposed Structure 207 (Eversource – Page 67)** – The access road heading north from Structure 207 has an excessive slope grading towards Howards Brook (WA 85).
- **Proposed Structure 208 (Eversource – Page 68)** – The access road heading south from Structure 208 has an excessive slope grading towards Howards Brook (WA 85).
- **Proposed Structure 253 (Eversource – Page 87)** – The access road heading west towards Structure 253 from High Range Road has an excessive slope grading towards Wetland WA 128.

Figures

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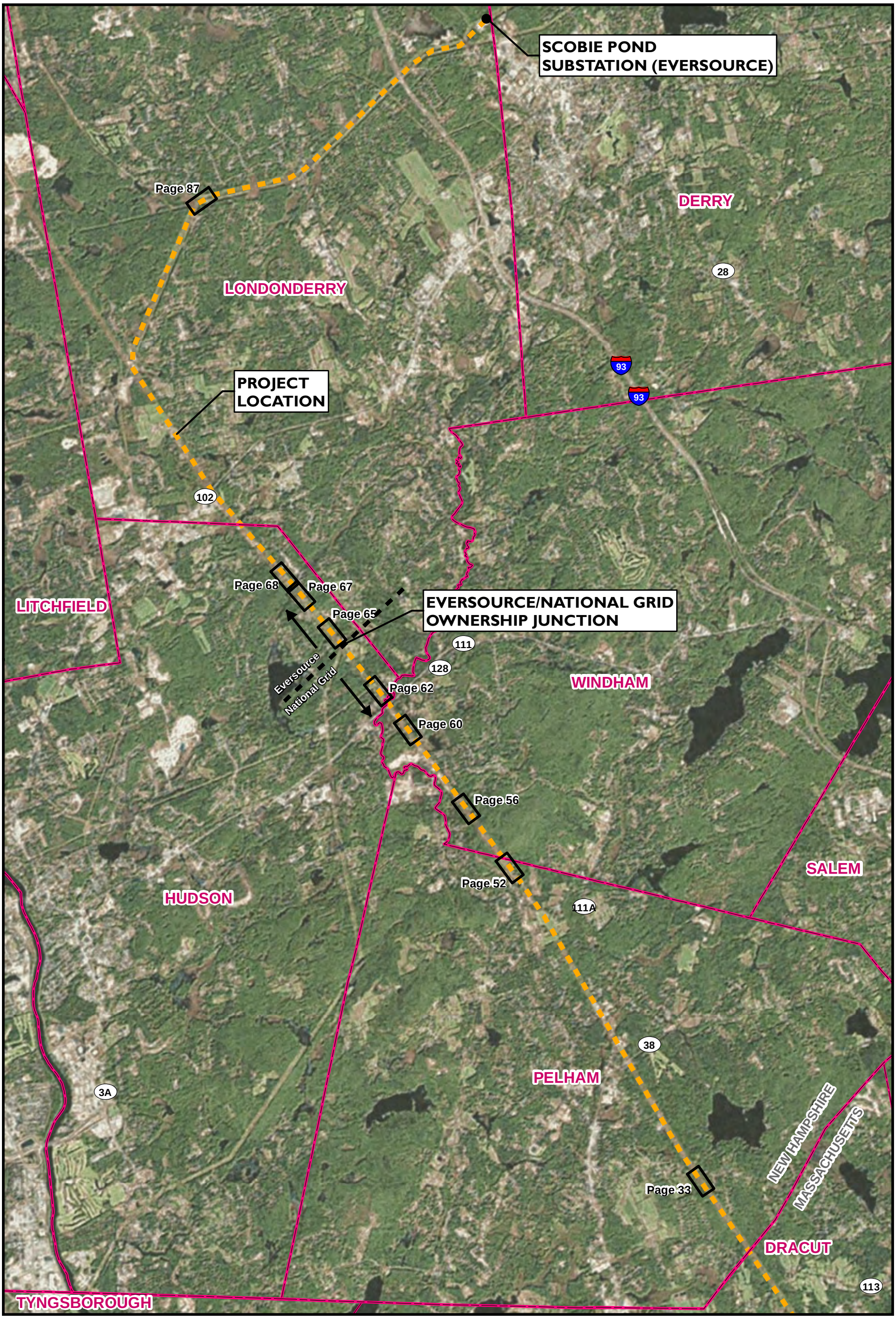
Last Updated Date & Revisions: VHB, 4/7/2015



1 inch = 5,500 feet

Merrimack Valley Reliability Project
Tewksbury Substation MA to
Scobie Pond Substation NH

Construction Access Plans

nationalgrid

EVERSOURCE ENERGY

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

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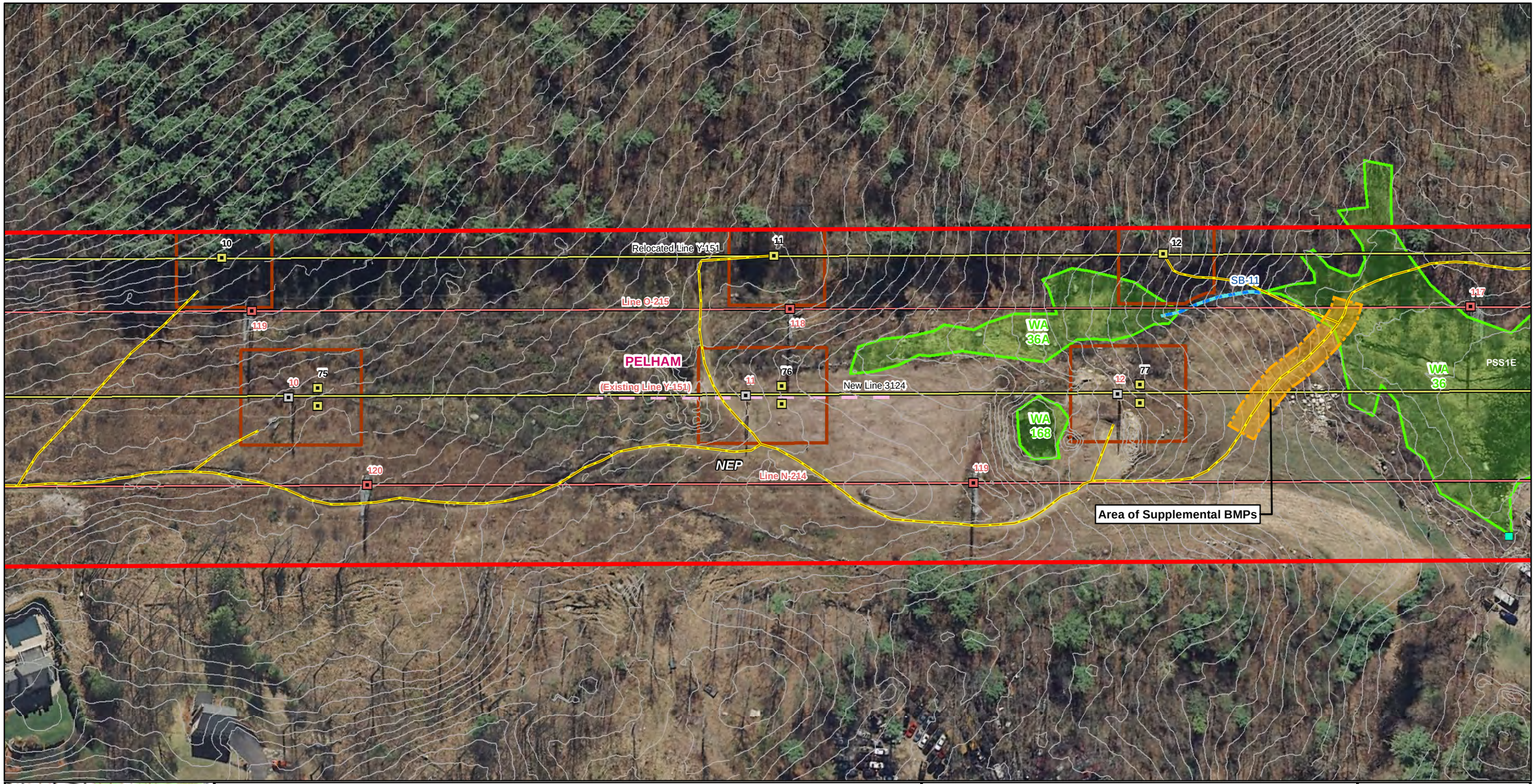

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0 50 100 200

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PRELIMINARY PROGRESS PRINT

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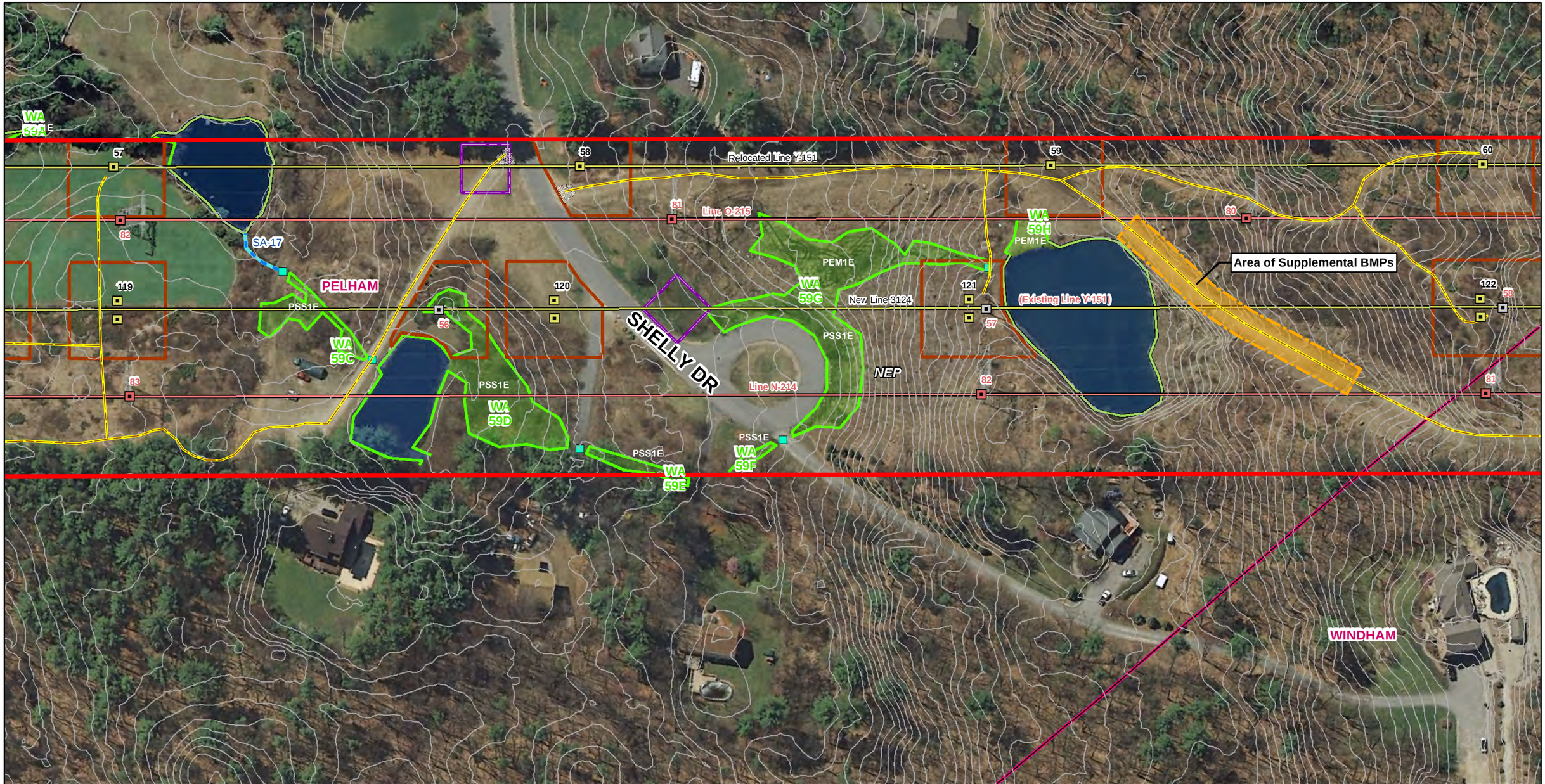

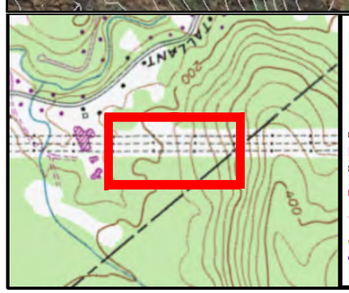

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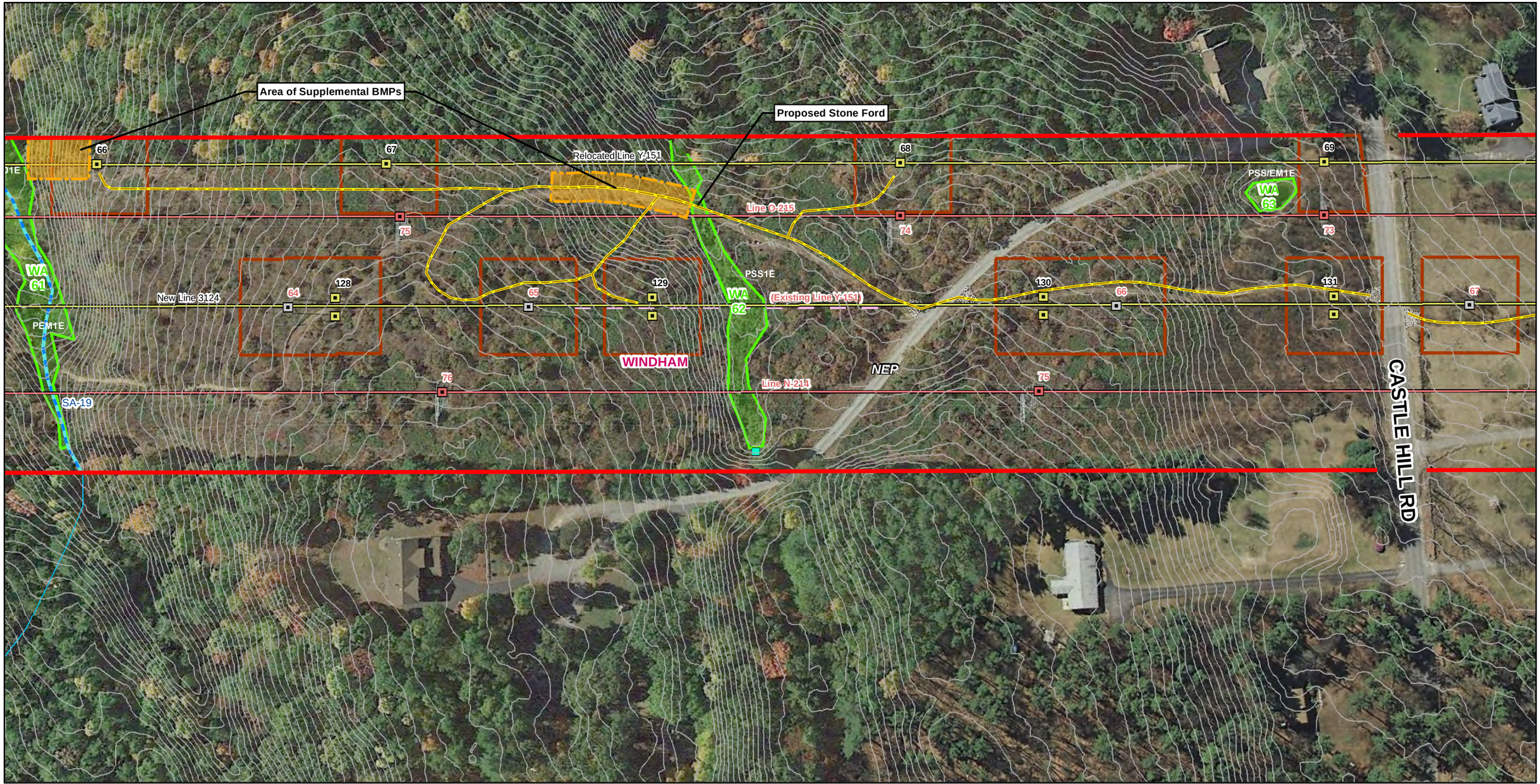

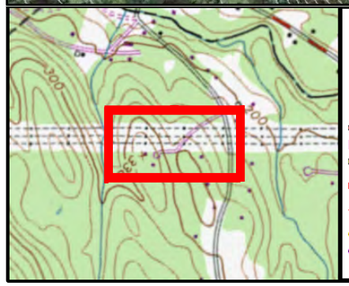

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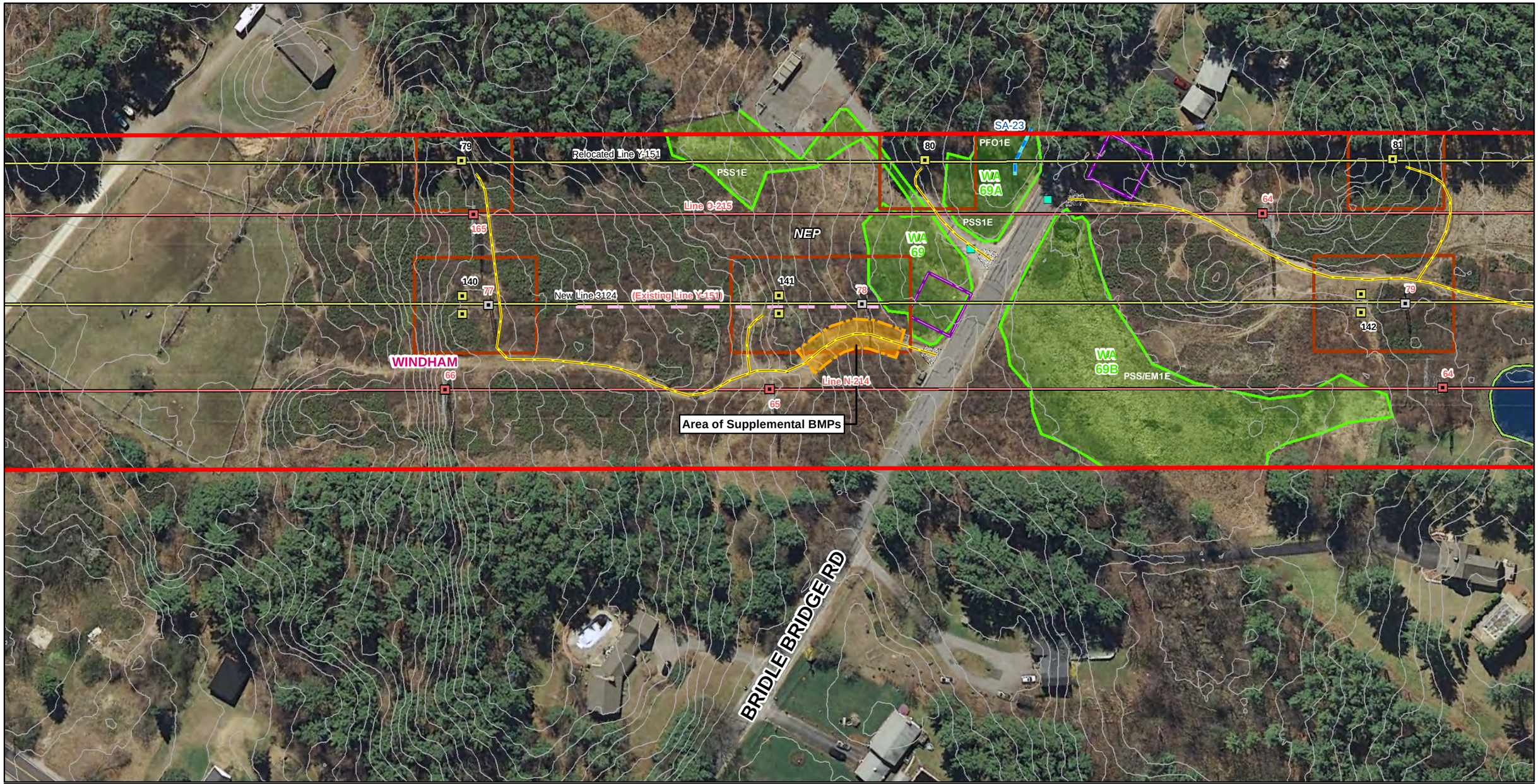

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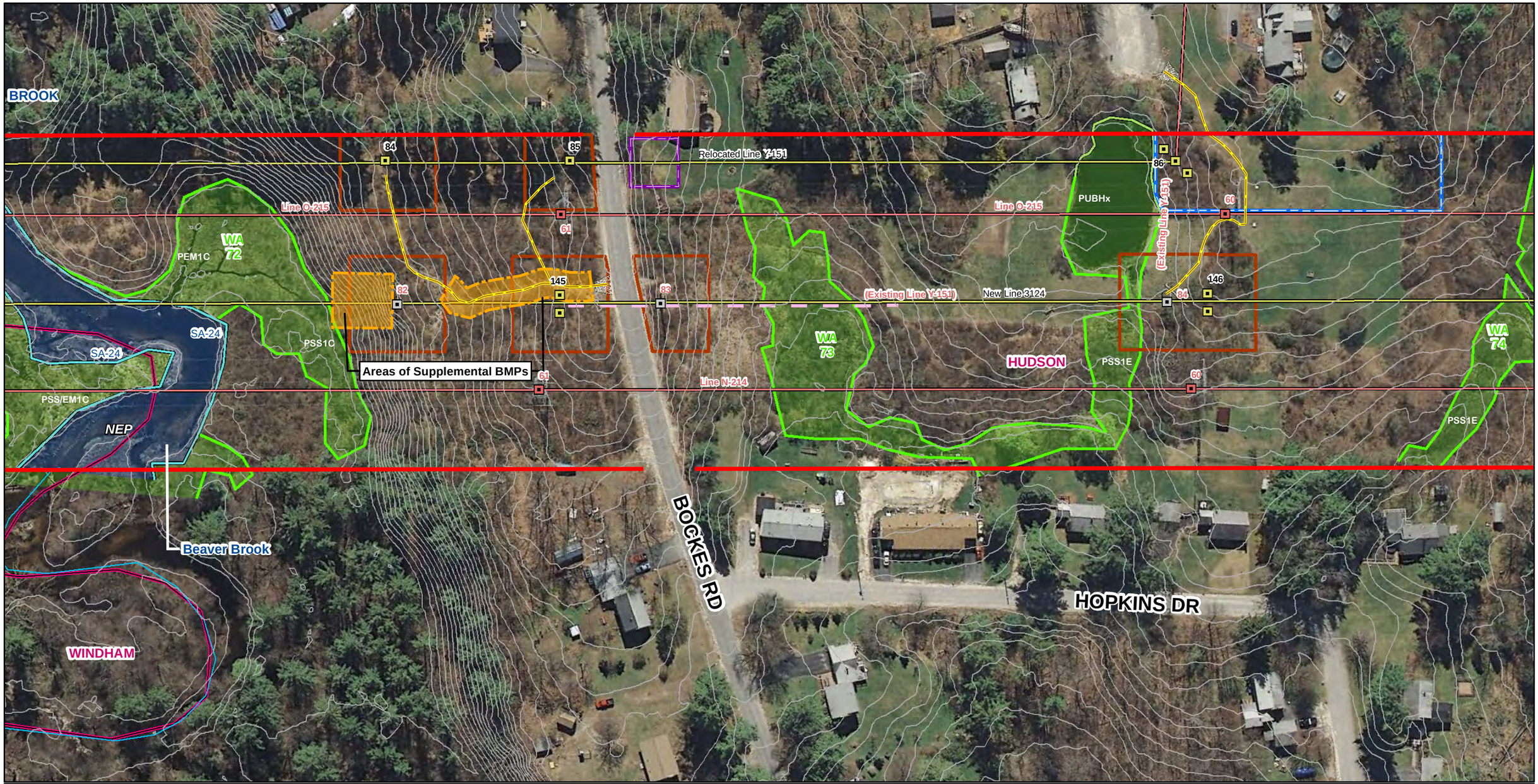

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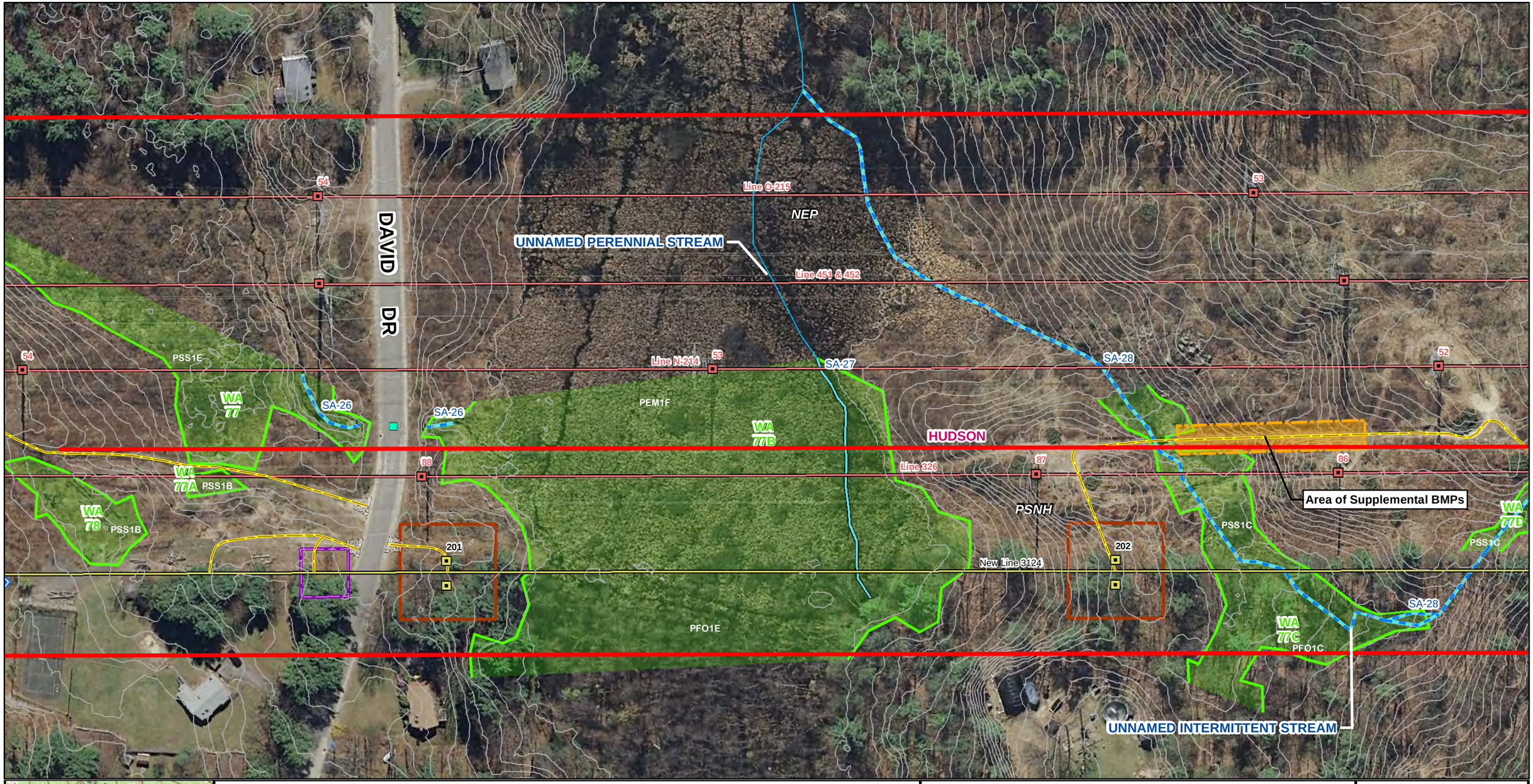

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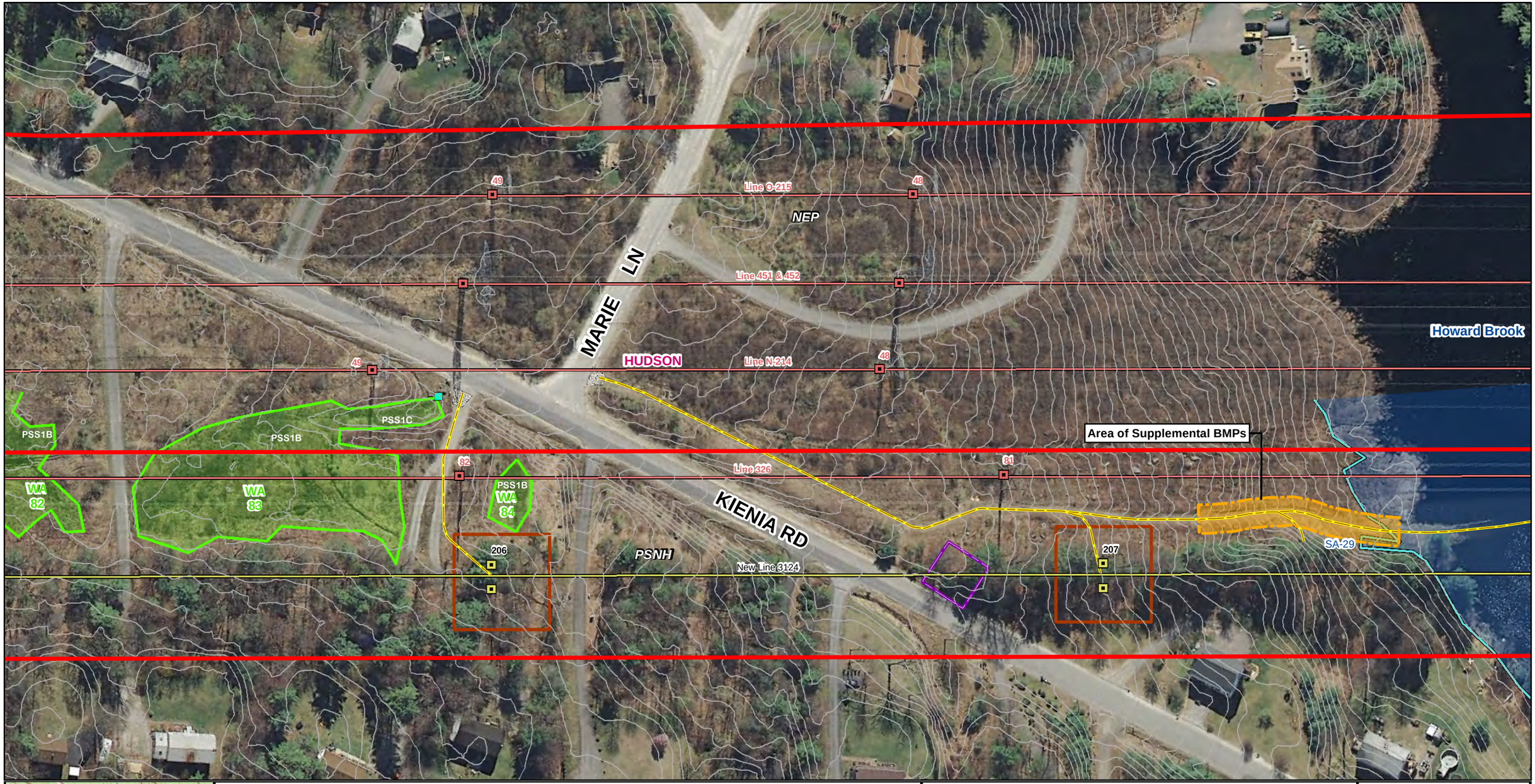

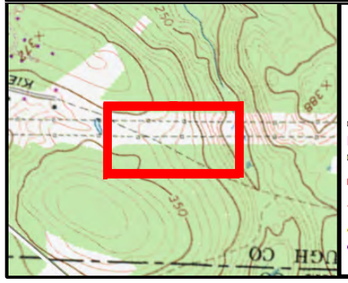

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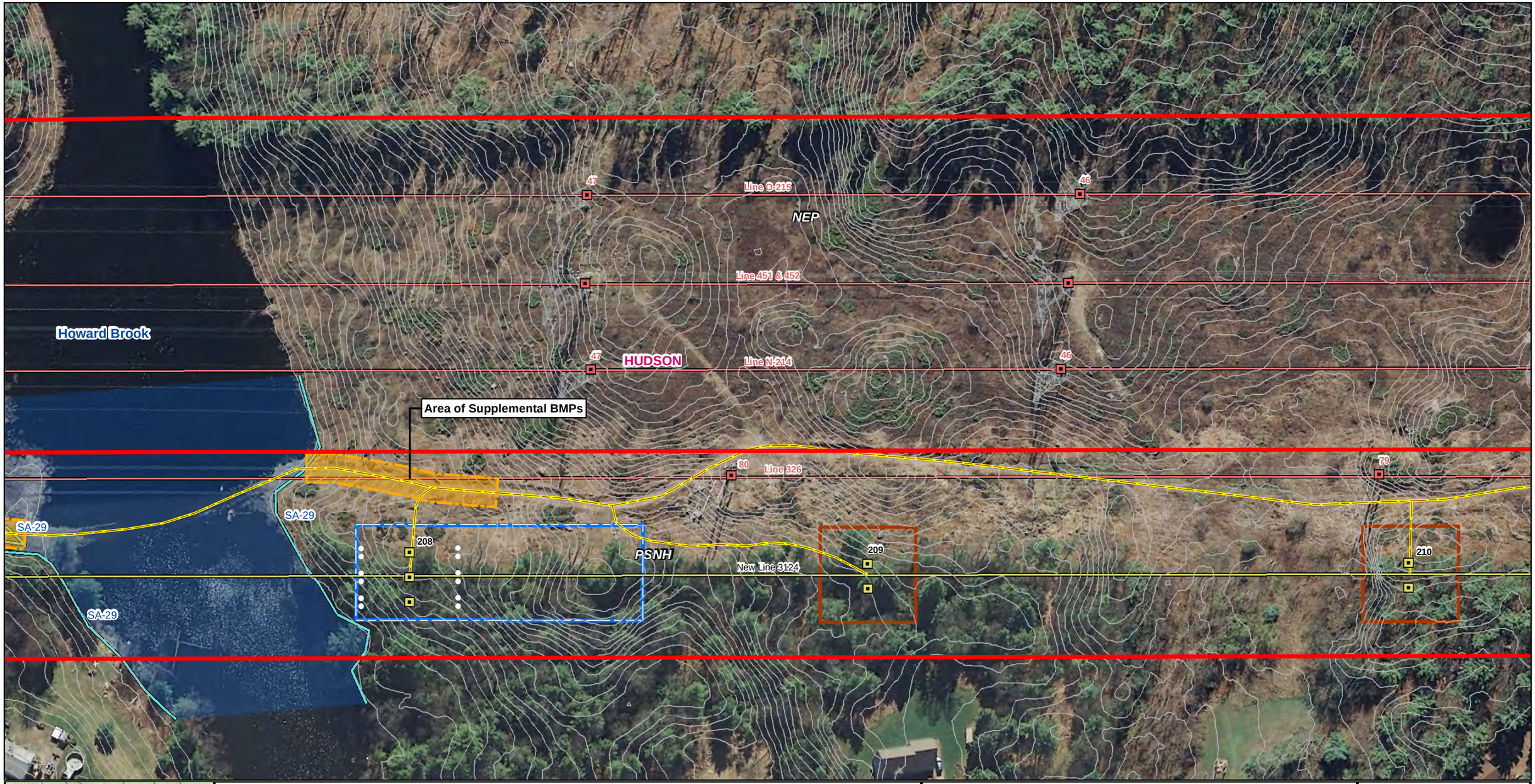

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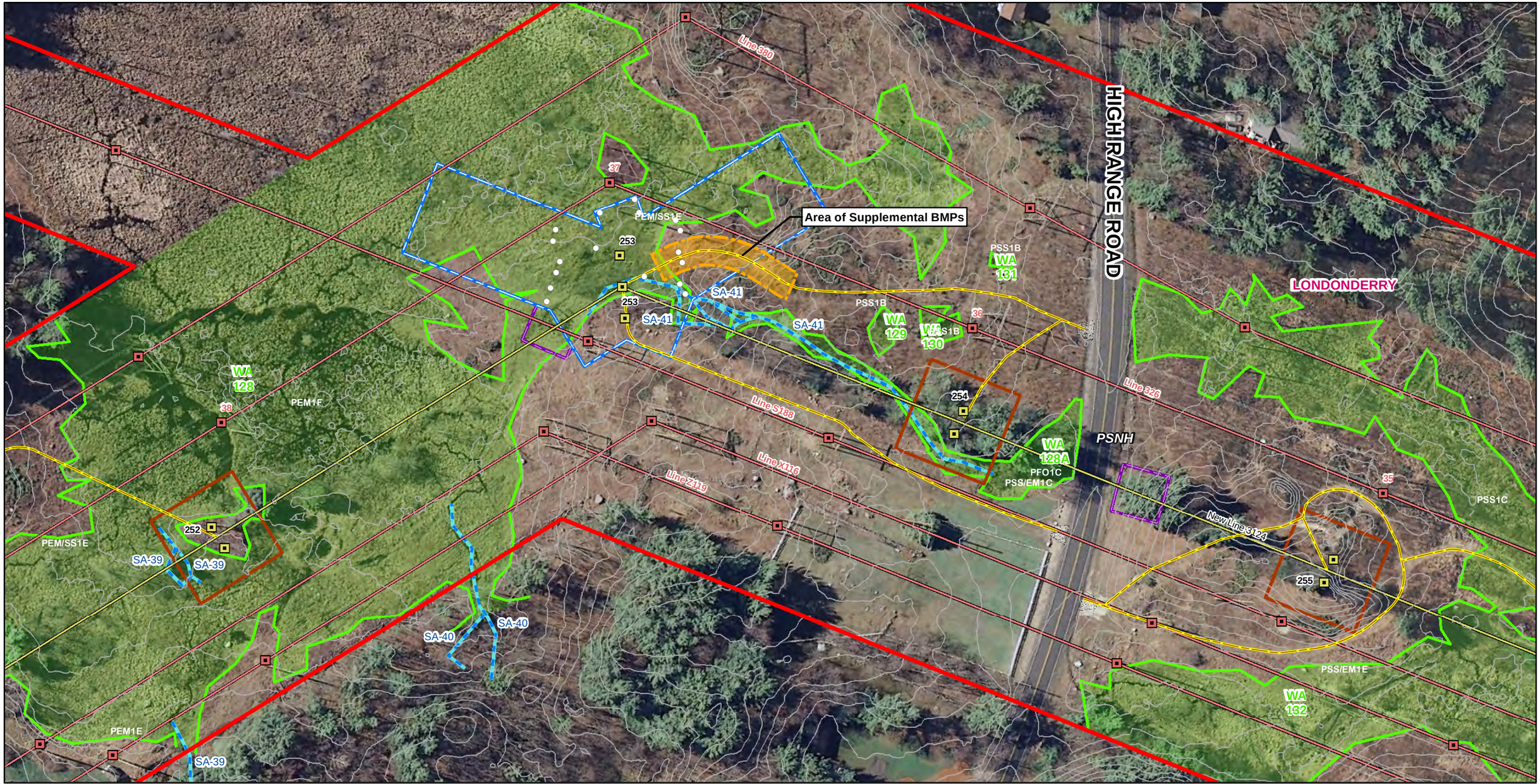

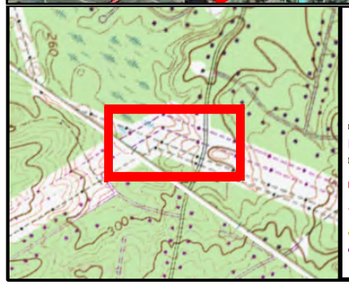

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