

Appendix 32

Natural Resource Mitigation Report

Northern Pass Transmission Project

Natural Resource Mitigation Plan

Prepared For:

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and
Public Service Company of New Hampshire
d/b/a Eversource Energy

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1 Introduction

The Northern Pass Transmission Project (Northern Pass or the Project) extends from Pittsburg to Deerfield, New Hampshire (NH), and includes additional upgrades of existing substations and transmission lines south of Deerfield to Londonderry, NH. The project includes 192 miles of new transmission line, 80.5 miles of transmission and distribution line relocations in existing right-of-way (ROW), approximately 37 acres of substation/transition station/converter terminal construction, and modification of several existing structures in the ROW south of Deerfield.

The project will bring 1,000 MW of renewable energy to the New England power grid.

Permanent impacts to natural resources including wetlands, wildlife, rare plants and rare natural communities have been quantified and documented in Natural Resource Technical Reports (Appendices B through E in the NH DES Wetland Permit Application and Appendices B, E, F, and G in the Federal Section 404/ 10 Permit Application). The impacts are small relative to the overall scope of this large project. There will be only 2.5 acres of permanent wetland impacts for the entire project. Still, great care is being taken to address permanent, temporary, and secondary impacts. The compensatory mitigation plan described in this report greatly exceeds the 15:1 federal compensatory mitigation ratio for all wetland impacts.

The approach for mitigating wetland impacts is, in part, codified in state and federal law, and the plan for mitigating wetland impacts associated with the project was developed in accordance with the NH Wetland Rules (Env-Wt 800), federal regulatory rules for mitigation in New England under Section 404 of the Clean Water Act (40 CFR Part 230), and additional guidance from state and federal regulatory agencies. There are fewer regulatory guidelines for mitigating impacts to other natural resources (wildlife; wildlife habitat; rare and exemplary communities; and rare, threatened, and endangered (RTE) plants and wildlife). The plan for mitigating wetland and other natural resource impacts presented herein incorporates guidance provided by state and federal regulators with the NH Department of Environmental Services (NHDES) Wetlands Bureau, the U.S. Army Corps of Engineers (USACE), the U.S. Environmental Protection Agency (USEPA), the NH Fish and Game Department (NHFGD), and the U.S. Fish and Wildlife Service (USFWS), and NH Natural Heritage Bureau (NHNHB), as discussed during pre-application meetings, e-mails and phone conversations. (See Appendix A).

In accordance with state and federal wetland mitigation requirements, the initial steps of avoiding and minimizing wetland impacts must be demonstrated in applications for wetland permits. A similar approach is also required for other natural resources. The proposed compensatory wetland mitigation package for the Project combines land preservation (by conveying fee ownership of parcels or conservation easements) and a payment to the NH Aquatic Resource Mitigation (ARM) fund. In conformance with DES rules, Northern Pass is submitting a NHDES Preliminary Mitigation Agreement Form with the NH Wetland Permit Application while the mitigation details are finalized. Northern Pass expects that the preserved land will also compensate for any unavoidable impacts to wildlife, wildlife habitat, and RTE plant species and exemplary communities. In the event that an easement holder for the conservation lands cannot be secured, then an ARM fund payment for the full mitigation

obligation will be made, and mitigation for wildlife impacts will be determined during the permitting process.

2 Impact Avoidance and Minimization

A summary of the steps followed by Northern Pass project scientists and engineers to avoid and minimize impacts to wetlands and other natural resources, during both the route selection and the detailed configuration of structures and access roads, follows.

2.1 Route Selection

In its initial consideration of siting options, Northern Pass sought to minimize impacts to natural resources by, among other things, maximizing the use of existing ROW, avoiding conservation areas, and identifying the shortest route feasible. Specifically, the original routing effort conducted by Northern Pass included examining publicly available information databases and data collected through meetings with state and federal natural resource agencies, nongovernmental organizations and other interested stakeholders. Primary sources of data were color aerial photographs, field identification of residences, businesses and public facilities, and geographic information system (GIS) data from various state and local agencies. The GIS data included federal and state lands, conservation easements, historic and archeological resources, parks, surface waters, and other resources. Most of the data was quantified using GIS software; additional data was calculated by measuring information directly from the aerial photography. Using GIS software, all of this information was incorporated into maps of the project area so that the locations of known constraints, such as publicly or privately held conservation areas, could be identified and taken into consideration and constraint maps could be developed. The objective of this desktop exercise was to identify routes that began at the international border between Canada and NH, extended to a converter terminal location then to the Deerfield Substation, while avoiding or minimizing impacts to population centers and natural resources.

Route segments were then laid out within the project area to create hundreds of potential route variations, avoiding known constraints to the extent possible, and taking advantage of opportunities to follow existing linear facilities such as transmission line corridors, roads, and railroads where the project could share existing ROW. The potential routes consisted of individual segments that could be combined to form a continuous path between endpoints. This step included consideration of multiple alternatives through each section of the project area. A first level review of these initial alternatives resulted in the elimination or modification of some alternatives because of either potential impacts to human or natural resources, or engineering barriers, such as steep slopes.

Northern Pass then conducted a second level review in which it quantified the social and environmental resources that might be affected by the remaining route alternatives. This evaluation of the routes included applying a numeric value to each of the alternative segments based on the potential effects on resources in that segment. The quantitative data were totaled for all of the potential routes. These data were used in evaluating the remaining alternatives, through the application of a mathematical comparison of the routes, to identify the routes with the least overall social and environmental impacts. This process resulted in the route and the alternative segments Northern Pass proposed in October 2010.

Northern Pass subsequently undertook a partial rerouting effort focused on the portion of the North Section where there is no existing transmission ROW. This reconfiguration focused on routing options in less populated areas to the extent possible, and Northern Pass undertook an extensive property acquisition effort, negotiating the purchase of property rights with willing landowners. Over 70 parcels were reviewed for environmental issues, and where practicable, the ROW was relocated to reduce the potential for natural and visual impacts and to minimize impacts to high elevation areas (above 2,700 feet). The resulting northern segment of the route is located further east than the original route, continues to maximize use of existing ROW, traverses a far less populated portion of northern NH, and relies in large part on property that an affiliate of Northern Pass has acquired in fee or by way of lease or easement for project purposes from willing property owners, as well as public road ROW. The northern section also includes approximately 8 miles of underground cable almost entirely along public roadway rights of way. By designing the line to be buried within already disturbed portions of the roadways, the Project largely avoided natural resource impacts there.

In August of 2015 the Project modified the route further by deciding to place an additional 52 miles underground along public roads, avoiding impacts from the overhead design in and around the White Mountain National Forest. This substantially reduces impacts on sensitive plant communities, wildlife habitat, wetlands, and streams along that entire stretch of the route.

Slight shifts in the project route were also made after initial corridor design. Shifts were based on impacts to specific landowners; visual impacts; and natural resource impacts (for example, a ridge near Nathan Pond with steep slopes, shallow soils, and substantial moose wintering evidence). Alternative alignments were reviewed in the vicinity of a potential Exemplary Natural Community (Northern Hardwood Seepage Forest with watch list plant species), and the least impacting alternative was selected.

2.2 ROW Clearing Width

To minimize the amount of additional tree clearing within the existing ROW that would be needed for the Project, all proposed direct current (DC) structures were reconfigured with a V-string insulator design. This design modification reduces the amount of clearing needed to meet the required safety and operational clearances.

The recent decision to place approximately 52 miles of the Project underground in roadways and shoulders from Bethlehem to Bridgewater reduced direct, permanent wetland impacts by approximately 0.6 acres, reduced temporary impacts by over 30 acres, and reduced secondary impacts to wetlands, streams and vernal pools by over 70 acres. Almost 2 acres of impacts to sensitive plant communities and state-listed plants were also avoided by placing this portion of the line underground. The change to a V-string insulator design for all HVDC overhead structures allows for a narrower cleared ROW, further reducing secondary impacts, plant community impacts, and wildlife habitat impacts. These route and design changes reduced the area of proposed forest clearing by approximately 160 acres.

2.3 Structure Locations and Design

Avoiding and minimizing impacts to rivers, streams, lakes, ponds, floodplains, and wetlands crossed by the project is an important objective. The Project corridor contains several large wetland systems and many smaller ones; several large rivers and floodplains; many ephemeral, intermittent, and perennial streams; ponds; and vernal pools. Wetlands, floodplains, and streams along the proposed route are listed and described in the Wetlands, Rivers, Streams, and Vernal Pools Resource Report and Impact Analysis report (Appendix B to the NHDES Wetland Permit Application and Appendix B to the Federal Section 404/10 Permit Application).

The Project has been designed to minimize impacts to these features, and many will be avoided completely, but engineering constraints preclude total avoidance. The constraints that most affect the placement of structures within the ROW include maximum span distance (which is also a factor of structure height), terrain (rivers, ravines, high points) and transportation features (roads, highways, railroads). The design engineers collaborated with Normandeau Associates during structure location to avoid and minimize impacts to the extent practicable, adjusting an initial structure layout based on maximum spacing and avoidance of existing developments and rivers, with shifts to avoid some of the smaller natural and cultural features that can be avoided, such as wetlands, vernal pools, small streams, stone walls, archeological sites, and RTE plants. Plans were refined after “constructability walkdowns” by a transmission construction manager and wetland/wildlife scientist in the fall and winter of 2012 and spring of 2013. The walkdown team reviewed structure locations for constructability issues and particularly sensitive localized resources. Notes were recorded on electronic tablets in the field and later incorporated into project design. Suggestions were also made to the engineers by the Project’s environmental scientists, archeologist, and historians to modify the location of proposed structures, access routes and work pads that were in or near sensitive natural and cultural resources during several rounds of design plan review.

Northern Pass transmission structures include monopole, H-frame, and lattice designs. Structure selection was based on several considerations, including ROW width, resource impacts, structure height/visibility concerns, and construction issues. Monopole structures are anchored to concrete foundations approximately 7 to 12 feet in diameter. H-Frame structures have a combination of direct embed and concrete foundations. Concrete foundations for the H-frame structures are approximately 3 to 4 feet in diameter, and the direct embed foundations consist of placing a portion of the poles into a 3- to 4-foot diameter hole and backfilling the hole with either native material, crushed rock, or a mixture of the two, which is compressed to provide a rigid support system. Lattice structures are anchored to four concrete foundations at the corners of the base approximately 3 to 5 feet in diameter. These structure foundations, along with the site developments described in Section 2.6, represent the permanent impacts for the project.

The construction of the structures and their foundations will require temporary construction pads, or crane pads, that are level and stable for the cranes and other equipment needed. The size of the crane pad is determined by the size of the structure, and these have been configured to minimize resource impacts where possible, while still allowing the contractors flexibility of

movement and equipment. For example, if access to all sides of a structure during construction is not necessary, the crane pad location was shifted to the most accessible side with the least impacts to wetlands. Access roads locations were also shifted, where possible, to incorporate necessary crane pads, thereby avoiding additional impacts. Crane pads may require grading or temporary timber matting for leveling; any such areas will be restored to original grades with native soil materials after construction, in accordance with project restoration plans (Section 4). These work areas will then be stabilized with native seed mixes, except where it is inadvisable due to the presence of sensitive plant species or communities. The transplantation of plants and the collection and sowing of seed to re-establish plants in affected populations of rare plants may also be conducted with the input of the NH Natural Heritage Bureau.

2.4 Transmission Conductors

Electrical transmission infrastructure can cause mortality to a wide range of avian species when flying birds collide with transmission lines, or when perching birds contact electrical equipment either phase-to-phase or phase-to-ground. These phenomena have been relatively well documented and are summarized in publications by the Avian Power Line Interaction Committee (APLIC 2006, 2012). Based on the lack of published reports in New England as compared to other regions of the United States, avian electrocution and collision with power lines does not appear to be a notable source of avian mortality in this region.

New England is largely covered by mature forest types, and the birds most susceptible to power line collisions are generally associated with open lands (grasslands, wetlands, open water), rather than forested landscapes. Most of the common avian species in NH spend most of their time under the forest canopy, or flying substantially above it, minimizing their exposure to power lines in cleared ROWs. Although the risk of mortality from avian/transmission line collisions appears to be relatively low in the project area, it is not necessarily zero. Electrocution occurs when birds make contact between energized and grounded components of power line structures. . Larger birds are most likely to be electrocuted, as their greater height and wingspan puts them at greatest risk for simultaneous phase-to-phase or phase-to-ground contact. Electrocution typically occurs on distribution lines with voltages of less than 60 kV, as the separation between energized components is smaller on these types of structures. Electrocution is most common in habitats where power poles provide attractive perches, either because there are few alternative perches (e.g., in grassland habitats), or because the structures are ideally positioned for hunting (e.g., overlooking open water). The possibility of electrocuting all types of raptors and other large birds will be minimized by following the bird-safe designs recommended by the Avian Power Line Interaction Committee (APLIC 2006).

A qualitative assessment of avian-transmission collision risk was conducted, and recommendations were given to design engineers relative to locations on the preferred project alignment with the greatest potential risk of collision. These locations include lines that pass near the larger marshes and ponds where flight paths of resident waterfowl, including loons, may take them into the airspace around lines as they fly between habitat areas (see Wildlife Report, Appendix E to the NHDES Wetland Permit Application and Appendix G to the Federal Section 404/10 Permit Application). These locations will be assessed after project construction to

determine if there is a need to incorporate flappers or bird diverters on some or all of these lines.

2.5 Converter Terminal, Substation Expansions, Transition Stations

Selection criteria for the Converter Terminal Site where DC power is converted to AC power included proximity to the existing ROW, sufficient size (>50 acres), buffering from residential development, accessibility for construction, and absence of sensitive resources. Several parcels of land in the City of Franklin and Town of Deerfield were screened for suitability. The Deerfield site is adjacent to the Lamprey River (a Designated River) and contains a high quality complex of vernal pools and other wetlands, making it less than ideal for the construction of a converter terminal. The site ultimately selected in Franklin was previously developed as a campground and has minimal natural and cultural resource sensitivity. In fact, the converter terminal can be constructed on the site with no direct impacts to wetlands, streams, vernal pools, RTE species or habitats, or areas of cultural sensitivity. The site is also buffered from other inhabited locations, so visual and sound effects will be minimal.

The Deerfield Substation and Scobie Pond Substation (in Londonderry) will be modified and expanded to accommodate the additional power from the Project. GIS screening and site reconnaissance was conducted to identify locations that minimized resource impacts while maintaining suitable equipment configurations and proximity to the substation proper. In the case of the Scobie Pond site, the Project purchased an adjacent property to minimize stream and wetland impacts. Complete avoidance was not possible, as a driveway across the parcel has to be relocated to provide property access to a neighbor. The alignment of the road was selected to avoid isolating a vernal pool from adjacent forest, but some direct impacts to the pool will occur. The Deerfield Substation expansion was placed in an upland area, but a small swale must be crossed by an access road. A detention basin, originally designed in the wetland swale, was relocated to an upland location.

At either end of each of the three underground segments of the transmission line a transition station will be constructed to accommodate the materials essential to the transition between overhead line and underground cable. These fenced-in structures resemble small substations. Available parcels for the construction of these six facilities were screened for sensitive resources, but location options are limited as they must be located very close to the intersections of roads and overhead transmission lines. The precise locations of each facility on the selected parcels were shifted to the extent practicable to minimize resource impacts. Transition Stations 1 and 5 will have the greatest wetland impacts of any of the nine development sites, due to the additional constraints of steep slopes, floodplains, and the high potential for visual impacts.

2.6 Access Road Locations

Access roads for construction are a critical component of the Project. Given the length of the project and the remoteness of many of the structure locations, temporary natural resource impacts from construction access roads are considerably larger than the permanent impacts associated with structure foundations. Access roads will be temporary, although some existing upland roads used for access will be restored to their current condition. Access through

wetlands will be take place using temporary timber mats to reduce the chance of soil compaction and vegetation damage. Northern Pass carefully considered the locations of access roads necessary for the construction of the project, both on and off the existing and proposed ROWs, in an effort to minimize natural resource impacts.

To the extent possible, on-ROW access roads proposed for Northern Pass construction follow existing access roads or trails that are already in the ROW and generally visible on aerial photographs. These are noted on the project permitting plans. Their use conforms to guidance from the NHDES for other transmission projects and is intended to prevent new wetland crossings, even if a new wetland crossing might be shorter. Some of these roads/trails are currently used by Public Service Company of New Hampshire d/b/a Eversource Energy (PSNH) for maintenance access to existing transmission lines, some are off-road-vehicle trails, some are landowner logging roads, and some are multifunctional. On-ROW access roads were reviewed, confirmed, or adjusted by the constructability walkdown team. Where safety issues such as line clearance, steep grades, or tight corners could preclude access by large cranes or other construction equipment, or where particularly sensitive resources were observed, alternative on-ROW access routes were identified by the walkdown team.

On-ROW access routes were identified for the entire project corridor, except where parcels owned by PSNH or a Northern Pass subsidiary abut public roads and offer less impacting off-ROW access.

Northern Pass identified and screened potential off-ROW access roads (ORARs) with GIS. The initial screening process involved the following steps:

- Development of a table of potential access routes from aerial photo review and field walkdowns
- Ranking of off-ROW access by necessity/desirability
- Natural resource modeling and access road ranking
- Team meetings to review and revise the list

Normandeau developed natural resource risk ratings for the ORARs by looking at the plot of the access roads on GIS screening maps, and determining the highest risk value along each labeled access road. The risk values are based on the overlapping quantity of natural/cultural resources and jurisdictional areas, called hot spots. ORARs were then ranked for resource issues, and the roads that were considered most critical for construction purposes, least likely to have sensitive resources, and located on parcels accessible to or under agreement with the project, were surveyed in the field for natural and cultural resources. One road with an endangered plant was eliminated from consideration. Those that offer reduced resource impacts or critical ROW access are included in the project permit applications. Other ORARs may be pursued during the construction phase of the project, if they reduce resource impacts.

2.7 Construction Methods

There are a number of best management practices (BMPs) and industry standards and guidelines that are applicable for transmission line construction activities, including Best Management Practices Manual for Utility Maintenance in and adjacent to Wetlands and Waterbodies in NH (NHDES 2010a); Rock Blasting and Water Quality Measures That Can Be Taken To Protect Water Quality and Mitigate Impacts (NHDES 2010b); Best Management Practices for Erosion Control on Timber Harvesting Operations in NH (NHDES 2004), and the BMP worksheets provided on the Alteration of Terrain website (NHDES 2015). In addition, Eversource has a BMP training program for its employees and subcontractors.

The primary goal for construction is to use techniques that protect natural resources from unnecessary impacts. In addition to BMPs, there are many Project-specific or species specific timing restrictions, preconstruction surveys, and monitoring techniques that can be used to avoid direct impacts to certain plant and wildlife species. Northern Pass has committed to following BMPs as well as additional avoidance and minimization methods as outlined in Appendix B, and these will be incorporated into the draft Project Execution Plan and contractor bid documents. Some of the highlights include:

- Seasonal Restrictions such as scheduling work in rare plant areas or sensitive wetlands during frozen ground or low flow periods as much as possible; avoiding tree clearing when and where threatened northern long-eared bats may be roosting with pups, etc.
- Timber mat use in sensitive areas
- Helicopter-based conductor stringing to avoid unnecessary travel over fragile steep slopes or significant resource areas
- Fenced exclusion zones and wildlife survey areas for wildlife such as reptiles and ground-nesting birds
- On-site construction monitoring by wetland and wildlife scientists to insure permit compliance, protection of resources, and adequate BMP maintenance

Appendix B provides a detailed list of the proposed construction-related natural resource avoidance and minimization methods that Northern Pass has committed to. In addition to the Project Construction Plan and the permitting plans, all BMPs, standard and project-specific permit conditions, specific guidance for working in sensitive areas, erosion and sedimentation controls, etc. will be provided to every contractor on digital tablets for instant site specific requirements throughout the duration of the project. Environmental professionals will also be in the field monitoring construction to ensure compliance with plans and permits and to address unanticipated natural and cultural resource issues that may arise.

3 Unavoidable Impacts

The resource impacts that will occur despite efforts to avoid and minimize are considered unavoidable impacts. Unavoidable impacts include temporary, secondary, and permanent impacts. Temporary impacts are generally associated with timber matting across wetlands and bridging of streams for temporary access to work locations, crane pads around structures during construction, and trenching wetlands and/or streams to lay underground cable. The vast majority of the unavoidable impacts are temporary, and will be subject to restoration activities. (See Section 4). Temporary impacts to wetlands are not generally subject to compensatory mitigation requirements if successful restoration of vegetation, functions, and values is likely.

Removal of trees within wetlands, along streams, and in vernal pool buffers will be necessary to establish or maintain the ROW. This has a secondary impact, in that it may change the structure and function of the habitat, but is not a direct loss of resource area. In addition, temporary crossings of deep organic soils may also represent secondary impacts, given the potential for soil compression. Based on pre-application meetings with the federal regulatory agencies, secondary wetland, stream and vernal pool impacts for the project include the conversion of forested wetlands to scrub-shrub or emergent wetlands through tree clearing; clearing of upland forest within 100 feet of perennial streams, 50 feet of intermittent streams, and 25 feet of ephemeral streams; clearing of upland forest within the 100 foot "envelope" associated with all vernal pools; and temporary impacts to deep organic soils. Wetlands with deep organic soils were identified using USDA Natural Resource Conservation Service soil mapping (very poorly drained soils); the 2005 NH Wildlife Action Plan (NH F&G 2005) identified peatlands; and/or field observations.

For calculating the amount of secondary wetland impacts that must be compensated for in the mitigation package, the following guidance was provided by the federal agencies:

- 5% of temporary impacts on deep organic soils
- 15% of forested wetland conversion in existing ROW
- 15% of stream and vernal pool buffers in existing ROW
- 20% of forested wetland conversion in new ROW
- 20% of stream and vernal pool buffers in new ROW

The resulting quantities for secondary impacts were added to the direct permanent impacts, and this represents the wetland impacts that will be compensated for at the specified federal mitigation ratios.

Permanent wetland impacts result from grading, fill, or excavation for installation of a structure foundation or transition station in a wetland, where restoration cannot occur. Permanent impacts to wetlands require compensatory mitigation, once the state-specified impact threshold of 10,000 square feet is reached. There are no proposed new culverts or culvert replacements, or other permanent impacts to streams. If existing culverts encountered during trenching in the

underground segments are found to be in poor condition, replacements will be designed and installed in compliance with NHDES stream rules and permitting requirements.

For other natural resources, including wildlife habitats and listed plants, direct, temporary, and indirect impacts may be defined differently, and these impacts are described in greater detail in the Wildlife Report and Rare, Threatened and Endangered Plant Report (Appendices E and D of the NHDES Wetland Permit Application, and Appendices G and F of the Federal Section 404/10 Permit Application). The unavoidable impacts to natural resources that are addressed in the restoration and mitigation plan are summarized in Table 1. The quantities in this table are adjusted to reflect:

- The percentages taken on secondary wetland impacts as directed by the federal agencies
- The likelihood and magnitude of potential impacts to wildlife and wildlife habitats, based on assessment by project Certified Wildlife Biologists and consultation with state and federal agencies

Table 1. Summary of Natural Resource Impacts with Anticipated Mitigation

Natural Resource	Unavoidable Impact Type and/or Quantity to be Mitigated	Proposed Mitigation Method Notes
Wetland Resources		
Permanent Wetland/Stream/VP impacts	Fill for structure foundations/sites (2.48 acres)	Compensatory Preservation (15:1 USACE ratio) and/or ARM fund payment
Secondary – Wetland Conversion	Clearing, Functional Change (11.56 acres)	Compensatory Preservation (15:1 USACE ratio) and/or ARM fund payment
Secondary – VP and Stream Buffers, organic soils	Clearing, Functional Change (14.98 acres)	Compensatory Preservation (15:1 USACE ratio) and/or ARM fund payment
Temporary Wetland/Stream Impacts	Grading, clearing for construction (140 acres)	Restoration in place
Wetland Total	31.14 acres for compensatory mitigation	At 15:1, preservation of 1,668 acres of upland buffer/wetland, and/or ARM fund payment
Wildlife Resources		
Karner blue butterfly	Direct mortality (take to be determined with NHF&G and USFWS)	Compensatory Preservation in Concord/Pembroke; management funding; and/or ROW mgmt. agreement with NHFGD and USFWS;
Frosted elfin	Direct mortality and habitat loss (impact to be determined with NHF&G)	Compensatory Preservation in Concord/Pembroke; management funding; and/or ROW mgmt. agreement with NHFGD and USFWS;
Persius duskywing	Direct mortality and habitat loss (impact to be determined with NHF&G)	Compensatory Preservation in Concord/Pembroke; management funding; and/or ROW mgmt. agreement with NHFGD and USFWS;
Pine pinion moth	Direct mortality and habitat loss (impact to be determined with NHF&G)	Compensatory Preservation in Concord/Pembroke; management funding; and/or ROW mgmt. agreement with NHFGD and USFWS;
Forest habitat species*	Forest Clearing (731 acres)	Compensatory Preservation of forest
Wetland nesting migratory	Wetland permanent impacts (2.5 acres)	Compensatory Preservation (included in wetland mitigation)

Natural Resource	Unavoidable Impact Type and/or Quantity to be Mitigated	Proposed Mitigation Method Notes
birds		and/or ARM fund payment
Moose Concentration Areas	Permanent Clearing (about 47 acres)	Compensatory Preservation and/or ARM Fund/Management contribution
Deer Wintering Areas	Permanent Clearing (about 28 acres)	Compensatory Preservation and/or ARM Fund/Management contribution
High Elevation Habitat	Permanent Clearing (10.01 acres)	Compensatory Preservation
RTE Plant Species and Potential Exemplary Natural Communities	Square feet of Permanent Loss of RTE Plant or Community	
Licorice Goldenrod	1,726	TBD
Wild Lupine	1,221	Compensatory Preservation and/or ARM Fund/Management contribution (included in Karner Blue Butterfly mitigation)
Spiked Needle Grass <i>(Aristida longespica var. geniculata)</i>	207	TBD, will likely re-establish
Butterfly Milkweed <i>(Asclepias tuberosa)**</i>	33	None Planned
Northern White Cedar – Balsam Fir Swamp	23,770	Compensatory Preservation and/or ARM Fund/Management contribution
Northern Hardwood Seepage Forest	643,393	Compensatory Preservation and/or ARM Fund/Management contribution

* Forest habitat is assumed to support nesting migratory birds, lynx, marten, northern long-eared bats, and other more common wildlife species.

**Probably an introduced garden plant

The calculation of permanent wetland impact also addresses the principal functions and values that are lost or reduced. An evaluation of the present and principal functions and values of each wetland was conducted according to the USACE “Highway Methodology” (USACE, 1999). The eight functions and five values and their abbreviations as used in Table 2 are as follows:

- **GWR - Groundwater Recharge/Discharge**—This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. Recharge relates to the potential for the wetland to contribute water to an aquifer. Discharge relates to the potential for the wetland to serve as an area where groundwater can be discharged to the surface.
- **FFA - Floodflow Alteration**—This function considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events.
- **FSH - Fish/Shellfish Habitat**—This function considers the effectiveness of seasonal or permanent waterbodies associated with the wetland in question for fish habitat.
- **STR - Sediment/Toxicant Retention**—This function relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens.
- **NR - Nutrient Removal**—This function relates to the effectiveness of the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, or rivers.
- **PE - Production Export**—This function relates to the effectiveness of the wetland to produce food or usable products for humans or other living organisms.
- **SSS - Sediment/Shoreline Stabilization**—This function relates to the effectiveness of a wetland to stabilize streambanks and shorelines against erosion.
- **WH - Wildlife Habitat**—This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge.
- **REC - Recreation**—This value considers the effectiveness of the wetland and associated watercourses to provide recreational opportunities such as canoeing, boating, fishing, hunting, and other active or passive recreational activities.
- **ESV - Educational/Scientific Value**—This value considers the effectiveness of the wetland as a site for an “outdoor classroom” or as a location for scientific study or research.
- **UH - Uniqueness/Heritage**—This value relates to the effectiveness of the wetland or its associated waterbodies to produce certain special values. Special values may include such things as archaeological sites, unusual aesthetic quality, historical events, or unique plants, animals, or geologic features.
- **VQA - Visual Quality/Aesthetics**—This value relates to the visual and aesthetic qualities of the wetland.

- **ETS - Endangered or Threatened Species Habitat** – This value relates to the effectiveness of the wetland or associated waterbodies to support threatened or endangered species.

The installation of one or two small foundation structures in each of hundreds of wetlands is not expected to have substantial effects on the functioning of any of those wetlands on the ROW, but the cumulative impact on principal wetland functions along the entire project length was calculated. In addition, there are four site developments (Deerfield and Scobie Pond Substation expansions and Transition Stations 1 and 5) that have larger footprints, and proportionally greater wetland impacts. The functions and values of the impacted wetlands at those facilities were individually considered in Table 2.

Table 2. Principal Wetland Functions and Values for Mitigation of Permanent Impacts by Facility

	Wetlands/ Streams	Wetland/Stream Classification	Perm. Impact Area	Principal Wetland Functions and Values
Structure foundations	Multiple Wetlands	PFO: 12.2% PSS: 52.7% PEM: 34.1% PUB: 1.1%	12,296 SF	GWR, FFA, FSH, STR, NR, SSS, PE, WH, REC, UH, VQA, ETS
	Multiple Streams	R4SB: 54.5% R2UB: 3.0% Ephemeral: 45.5%	33 SF	
Transition Station 1	PB10 PB15	PFO1/4E: 80% PEM1E: 20%	46,362 SF	GWR, PE (suitable for multiple – disturbed)
	PB16S	R4SB: 100%	99 SF	
Transition Station 5	BHU5	PEM: 100%	16,378 SF	None (suitable for multiple – disturbed wetland)
Deerfield Substation expansion	DFS7	PFO: 86.4% PSS: 13.5% PEM: 0.06%	28,651 SF	None (suitable for multiple – partially degraded)
	DFS14S	R4SB3: 100%	854 SF	
Scobie Pond Substation expansion	LO1 LO2	PFO: 69.2% PSS: 30.8%	4,383 SF	GWR, SSS, WH (Vernal Pools)
	LOVP1 LOVP2		1,188 SF	
Total			110,244 SF or 2.53 acres	

4 Restoration of Temporary Impacts

Wetland and upland areas temporarily disturbed for construction access, overhead structure installation, and underground cable installation activities will be restored. Restoration areas correspond to the location of crane pads at pole installation sites, timber mats in wetlands and at stream crossings, temporary upland access paths, and trenches, jacking pits, and similarly disturbed areas for underground construction, as shown on Project plans. Once permits have been granted, Northern Pass will develop a Project Execution Plan with final specifications for site restoration that reflect the applicant-proposed methods for restoration described below, as modified or enhanced with relevant permit conditions that may be issued by the SEC and federal agencies, and input from the contractors.

Northern Pass may plant shrubs or small trees in selected locations where visual screening is desirable. Native shrubs adapted to the local conditions will be selected unless the screening is replacing ornamental shrubs on private property at the landowner's request. If shrubs are installed in shoreland locations, native species recommended in the NHDES Native Shoreland/Riparian Buffer Plantings for New Hampshire (2006).

In all locations, construction and restoration will be done under the supervision of the Engineer and Restoration Specialist to ensure all disturbed areas are properly graded, seeded, mulched if appropriate, and stabilized as soon as possible after work is complete. Temporary seeding and mulching shall be required while construction is active and shall be maintained by the contractor regularly as required in project permits. No fertilizers will be used within 25 feet of wetlands or waterbodies. The vast majority of restoration areas are in the transmission ROW, and will be mechanically mowed every 3 to 5 years to maintain line clearances for safety reasons.

4.1 General Restoration in Wetlands

Access roads through wetlands follow existing paths (where present) to the extent possible. Wetlands will be restored to preconstruction conditions, whether access roads were present or not. Wetlands on mineral or shallow organic soils that support typical wetland species (typical wetlands) will be restored as follows. Once swamp mats, temporary bridging materials, and/or other temporary construction materials (e.g., geotextile and temporary fill) have been removed, any displaced topsoil will be loosened, smoothed, or graded to match previous or adjacent soil elevations. In the event that additional soil is needed to meet grades, commercially acquired wetland topsoil or salvaged wetland topsoil will be evaluated for project use. Soils must be free of invasive species and harmful chemicals and have similar textures and organic material levels to the targeted restoration area. Soils will be spread to match adjacent grades, and moderately compacted. No fertilizers will be applied in wetlands.

These typical wetland areas will be stabilized with wetland seed mix of native species. The seed mix will be obtained from a commercial source acceptable to the Project Representative; contain grasses, sedges, rushes or bulrushes, and flowering wetland plants adapted to northern New England; and be applied at the recommended rates. An example of a native seed mix that is

acceptable for many wetland restoration locations is the New England Erosion Control/Restoration Mix for Detention Basins and Moist Sites (from New England Wetland Plants, Inc.), or similar. Over time, it is expected that natural recruitment of native seedlings from the adjacent habitats and the seed bank will provide additional species diversity and wetland functional development. However, temporarily impacted wetlands with deep organic soils, rare plants, exemplary natural communities, and specific locations within the WMNF will be restored as described in the Sensitive Area Restoration locations, as described in Section 4.4, below.

4.2 General Restoration in Uplands

In temporarily disturbed upland locations that will not be maintained as cultivated areas, lawns, or gravel roads, restoration will include grading or smoothing as required, and, if necessary, application of topsoil that is free of invasive species, chemicals and debris, and similar in texture and organic matter to the targeted restoration area. These typical upland locations will be seeded with an upland conservation seed mix of native species, free of invasive species, inclusive of wildflowers of benefit to monarch butterflies in particular and native pollinators in general, and adapted to northern New England. An example of an acceptable seed mix is the New England Conservation /Wildlife Mix (from New England Wetland Plants, Inc.), or similar. Alternative seed mixes or stabilization methods may be negotiated with individual landowners for upland areas, as long as these alternatives have equivalent soil stabilization properties and do not contain invasive species. For locations with rare plants and locations in the WMNF, please see Section 4.4 for restoration recommendations.

4.3 Restoration in Cultivated Areas

When restoring cultivated portions of the project area, the contractor shall chisel plow to a depth of 18 inches, all areas traversed by construction equipment, to alleviate compaction impacts on farming operations, unless the landowner specifies other acceptable arrangements. The appropriate seed mix and fertilization requirements will be determined through consultation with the landowner to insure compatibility with agricultural activities.

4.4 Restoration in Sensitive Areas

Temporarily impacted locations where threatened or endangered plants or exemplary natural communities are present, whether upland or wetland, will be restored without commercial seed mix. In these locations the application of commercial seed mixes engineered for soil stabilization may out-compete rare plants and hinder recolonization of native plant communities. In these sensitive locations, restoration will be site specific, and may include no seeding at all, sowing of seed collected from listed plant species before construction, or other site specific treatments determined through consultation with the NH Natural Heritage Bureau. Specific locations are identified on permitting and construction plans with a “sensitive site” bar. The contractors will then be referred to construction management documents that include specific work restrictions and restoration requirements that are protective of the resource present. If the resource is a rare plant or natural community, the work restrictions and restoration details will reflect the guidance obtained from consultation with the NH Natural Heritage Bureau.

Likewise, narrow or small areas of disturbed earth in the existing transmission ROW within the WMNF should not be sown with commercial seed mix, per the general preferences of WMNF biologists (unless necessary due to steep slopes or other factors). These areas will be allowed to self-seed with native sources from the adjacent forest and the seed bank.

Wetlands with deep organic soils or peatlands are also a special wetland type to which few commercial seed mixes are adapted. Within these sensitive areas, care must be taken during construction to insure that the surficial soil is, to the extent possible, not compacted and is the native topsoil that was present prior to construction. This will be the matrix for the re-establishment of native vegetation that is either contained in the topsoil as a seed bank, or moves in from surrounding undisturbed vegetation as volunteer seed, runners, etc. Erosion controls will need to be maintained until the native vegetation is re-established.

4.5 Restoration Maintenance and Monitoring

The Environmental Monitors will assure compliance with permit conditions during and after the construction activities, in accordance with permit conditions. The monitoring will include a site inspection, cover estimates in restored wetlands and uplands by species, photographs, and wildlife observations. Areas with less than 80% cover at the end of two post-construction growing seasons will require additional care or seed. Any areas with erosion will be repaired. Non-biodegradable erosion control materials will be removed as soon as they are no longer necessary. Other potential maintenance issues, such as erosion gullies or vandalism, will be documented and reported immediately to Northern Pass for repair.

4.5.1 Invasive Species

Non-native, invasive species are generally present at low frequencies in the Project area, especially in the northern segment; they are most frequent and abundant near roads in developed areas and agricultural fields. Invasive species were rarely encountered within the proposed ROW in the N1 section of the project where the new ROW will be located. Two invasive species were observed in the forested areas subject to timber management: coltsfoot (*Tussilago farfara*) and reed canary grass (*Phalaris arundinacea*). Coltsfoot, reed canary grass, and forget-me-not (*Myosotis scorpioides*) were observed along the banks of the Connecticut River in the vicinity of the proposed underground cable section of the project area. The weedy wall hawkweed (*Hieracium murorum*) was observed on transition station sites 1 and 2 in Pittsburg and Clarksville. Japanese knotweed (*Fallopia japonica*), reed canary grass, and goutweed (*Aegopodium podagraria*) were observed along the proposed underground section in Clarksville and Stewartstown.

In the N2 section of the Project area along the existing ROW between Dummer and Whitefield, invasive plants were infrequently encountered and included reed canary grass, glossy buckthorn (*Frangula alnus*), forget-me-not, and purple loosestrife (*Lythrum salicaria*). Invasive plant species in the road ROW of the underground segment between Bethlehem and Bridgewater include reed canary grass, Japanese knotweed, and burning bush (*Euonymus alatus*). Reed canary grass was observed in a few wetlands in this section. Extensive infestations of Japanese knotweed were encountered along Route 3 in Plymouth. Burning bush was also observed along Route 3, although mainly as an ornamental shrub. Within the overhead line

from Bridgewater to Franklin, invasive plants include glossy buckthorn, reed canary grass, autumn olive (*Elaeagnus umbellata*), and honeysuckles (*Lonicera* spp.).

Finally, in the southern portion of the Project south of Franklin to Deerfield Substation, invasive, non-native species observed include purple loosestrife, reed canary grass, autumn olive, honeysuckles, glossy buckthorn, oriental bittersweet (*Celastrus orbiculatus*), Japanese barberry (*Berberis thunbergii*), multiflora rose (*Rosa multiflora*), burning bush, and leafy spurge (*Euphorbia esula*). Between Deerfield and Scobie Pond substations purple loosestrife, reed canary grass, burning bush, spotted knapweed (*Centaurea stoebe*), autumn olive, glossy buckthorn, black locust (*Robinia pseudoacacia*), and honeysuckles were observed.

Care will be taken during construction to clean mats and construction equipment operating in locations with invasive species before relocating them to new areas. This will be the responsibility of the Contractors. The Environmental Monitor will assist the Contractors in identifying locations with invasive species, and Contractors will also be educated to recognize some of the more common invasive species. Invasive plants will be mechanically removed from construction work areas and disposed of in a manner and location to preclude their survival or spread.

5 Compensatory Mitigation

To meet the state and federal wetland goals of “in-kind” and “in-place” mitigation, i.e., replacing wetland hydrogeomorphic types, features, and wetland functions in the same towns and watersheds as the impacts to the extent possible, a package of multiple mitigation projects along the project route is needed. A similar approach is also required for rare plant and animal species, as the range of most of these species is by definition limited and habitat preservation or restoration to benefit them must be focused in their area of known distribution, unless out-of-kind mitigation for wildlife has been requested by the resource agencies.

The compensatory mitigation proposal developed for the Project addresses not only wetland impacts as calculated following state and federal protocols, but also impacts to wildlife habitat and habitat for rare, threatened, and endangered plant and animal species. During development of the proposal, consideration was also given to local and regional conservation priorities that were identified through a comprehensive public outreach effort (Section 5.2). The mitigation package includes 1,668 acres of conservation land (not including the proposed ROW or transition stations which are present on some parcels) with wetlands and upland buffers, streams, and wildlife habitats. These lands along with the potential for additional land of up to 3,400 acres that an Eversource Energy subsidiary owns in Coös County will also provide recreational opportunities,, an important economic benefit for this region of the state. A payment to the NH ARM fund will also be made to cover impacts in locations without proposed conservation lands.

The following sections describe the ratio calculations used to determine the compensatory mitigation required for wetlands, the outreach efforts made to local and regional conservation groups, as well as the mitigation approaches discussed above and how they will be applied to the project.

5.1 Calculating Wetland Mitigation Ratios

Only after avoidance and minimization steps have been taken may an applicant for NHDES wetland permit and U.S. Army Corps of Engineers permit propose compensatory wetland mitigation for residual permanent wetland impacts, should they exceed 10,000 square feet in area. A payment to the ARM fund is an option, as are several permittee-responsible mitigation approaches, including aquatic resource restoration or creation projects in accordance with Env-Wt 804, or preservation projects in accordance with Env-Wt 805, and possibly other project-specific approaches approved by the agencies. The mitigation plan is implemented by the permittee, and the permittee retains full responsibility. The state and federal Compensatory Mitigation requirements for nontidal wetlands are summarized in Table 3.

Table 3. New Hampshire and Federal Wetland Compensatory Mitigation Requirements

Resource Type	New Hampshire Requirements			U.S. Army Corps of Engineers Requirements			
	Creation	Restoration	Preservation of Upland Buffer	Creation	Restoration	Enhancement	Preservation
Bog	N/A	2:1	15:1				
Forested	1.5:1	1.5:1	10:1	3:1 to 4:1	2:1 to 3:1	5:1 to 10:1	15:1
All Other Jurisdictional Areas	1.5:1	1:1	10:1	2:1 to 3:1	2:1	3:1 to 10:1	15:1

Using just the most stringent values provided in the regulatory guidance, the quantification of wetland mitigation for the Northern Pass impacts to wetlands is shown in Table 4. As the project will exceed the impact threshold after avoiding and minimizing impacts, several compensatory mitigation options were explored to address the residual impacts.

Table 4. Quantification of Wetland Mitigation for Northern Pass Impacts to Wetlands

Resource Type	Impact Area to be Mitigated	Options for Potential Mitigation Requirements (Acres)					ARM Fund Payment
		Creation 4:1	Restoration 3:1	Enhancement 10:1	Preservation 15:1		
All Jurisdictional Wetlands and Streams	31.14 acres	124.6	93.4	311.4	467.1	\$4,844,773	

5.2 Mitigation Research and Outreach

Normandeau reviewed conservation priorities described in local master plans, open space plans, and regional plans, including those associated with North Country Council; Lakes Region Planning Commission; Central NH Regional Planning Commission; Southern NH Regional Planning Commission; and the Nashua Regional Planning Commission (Appendix C). The 2008 Lower Merrimack River Corridor Management Plan, 2013 Lamprey Rivers Management Plan, and 2012 Exeter-Squamscott River Management Plan were also reviewed.

The 2005 NH WAP (NHF&G 2005) was consulted for specific wildlife habitat priorities relevant to the project area, which include:

- 701—Protect riparian/shoreland habitat and other wildlife corridors: turtles, amphibians, common loon, bald eagle, terns, bear, bobcat, New England cottontail, and mussels will benefit.
- 702—Protect unfragmented blocks and other key wildlife habitats: virtually all wildlife and habitats will directly or indirectly benefit from habitat protection, and the land

protection strategy should be viewed as one of the most important ways to ensure long-term wildlife protection.

In accordance with NHDES wetland mitigation rules (Env-Wt 803.01 (a)5 and 6) and in consultation with DES, Northern Pass contacted towns and the Local River Advisory Committees in the project area in an effort to identify potential mitigation projects (Appendix D). Given the number of municipalities in the Project area, Northern Pass contacted those with more than 10,000 SF of impacts to be mitigated, by phone or in person, and by mail and/or e-mail in the winter and spring of 2015.

Local Land Trusts were also contacted for information on projects in their conservation territory that Northern Pass could assist with as part of the mitigation package (Appendix D). Eversource representatives also discussed the Northern Pass project with regional land conservation organizations such as the Society for the Protection of NH Forests, NH Audubon, and The Nature Conservancy at various stages of the project.

Normandeau also conducted a GIS review of the HUC 8 watersheds and Towns surrounding the project area and developed a screening model to evaluate the parcels already owned by PSNH or a subsidiary of Northern Pass and identify other high value conservation lands (Appendix E).

5.3 Preservation

Preservation of applicant-identified land (by conveying fee ownership of parcels or conservation easements) that meets wetland regulatory specifications is a primary focus of the Northern Pass mitigation package for several reasons; 1) the greatest impacts are secondary impacts from cutting trees in wetlands and stream and/or vernal pool buffers, and protecting buffers and forested wetlands would be in-kind mitigation; 2) preservation also brings an opportunity to mitigate for wildlife habitat impacts, and to enhance the value of existing conservation land in close proximity to the project; and 3) an Eversource Energy and a subsidiary already own numerous parcels with functions and values similar to those affected by the Project. Regulatory specifications include compensating for lost area, functions, and values of the impacted wetlands and meeting upland buffer width requirements and upland-to-wetland ratios. Conservation easements must be held by a third party, such as a regional land trust, conservation organization, state agency, town, or other agency-approved organization.

5.3.1 Parcel Identification and Screening Level Assessment

Land parcels potentially suitable as mitigation parcels were identified from several sources. One source is the land already purchased by a subsidiary and available to the project or owned by the parent company, Eversource Energy. The project currently has access to over 5,000 acres, primarily in the north section of the project area (Coös County). Not all of these parcels are suitable for mitigation, and they should not be put into conservation unless merited given their conservation value. For that reason, these parcels were ranked on resource values and the top-ranked parcels combined into sites and considered for mitigation. Parcels identified through

outreach efforts were also evaluated, including several parcels in the Concord Pine Barrens area recommended by agency personnel.

Northern Pass has identified approximately 1,668 acres of primarily undeveloped land to preserve as mitigation for project-related impacts to wetlands, streams, vernal pools, riparian/shoreland habitat, and wildlife habitat. While many of these parcels were originally purchased for possible construction of the new project ROW, others were specifically selected to meet one or more Project and/or regional conservation goals.

5.3.2 Preservation Parcel Descriptions

Table 5 lists the sites currently included in the mitigation package. Each mitigation site is comprised of one or more parcels that have been evaluated for natural resource values. Each site has a draft data sheet and map (Appendix F) summarizing the resource value. In most cases, detailed resource mapping was not conducted, but GIS and aerial photo review and some level of field reconnaissance was conducted. Assumptions about wetland acreage were made in some cases based on the relative abundance of wetlands mapped in on-site or nearby corridors or parcels. Some of the selected sites may be divided into management units to accommodate other objectives, including recreational opportunities and forest management. Management plans will be subject to state and federal agency approval.

The total acreage proposed for preservation (not including the project ROW and transition station footprints on those sites that would include such facilities) is approximately 1,668 acres. This greatly exceeds the 15:1 federal compensatory mitigation ratio for all wetland impacts on the Project (which would require preservation of 460.5 acres). However, the mitigation sites are located in the following HUC 8 watersheds—Upper Connecticut, Pemigewasset, and Merrimack River. Impacts in the Piscataqua-Salmon Falls, Upper Androscoggin, and Waits watersheds will be addressed through the ARM fund (see Table 5 and Section 6).

Table 5. Mitigation Sites included in the Northern Pass Mitigation Package

Parcel Information					Mitigation Values			Anthropogenic Features			Management
Mitigation Site Town/Parcel LL#	Cover Types	Max Elevat. (ft)	Watershed HUC 8	Acres*	Major Natural Features	Regional/Local Goals met**	Project-Specific Goals Met**	T- Line	Other Structures	Development Rights/Threats/ Notes	Easement Holder and Stewardship
A Pittsburg/167,168, 171	Hemlock-Hardwood-Pine, Grasslands, Wet Meadow/Shrub Wetland, Northern Hardwood-Conifer, peatland, lowland spruce-fir	1,160	Upper Connecticut 01080101	51.3 (46.5)	Halls Stream, floodplain, oxbow wetlands, wet meadow/shrub wetland; agricultural land; Nearby from NHNHB: Vasey's pondweed, satiny willow	NCC: River corridor protection, rural farm protection, wetland buffer protection WAP: Protect Riparian/shoreland habitat	High quality wetlands with 100-ft buffer; peatland; stream/floodplain; agricultural land; vernal pools; potential marsh bird habitat and northern long-eared bat habitat.	X	None	Upland Frontage on Rt 9 with good residential development potential	TBD
B Pittsburg/200, 200.01, 201, 202, 158, and 158.01	Northern Hardwood-Conifer, Lowland Spruce-Fir, Hemlock-Hardwood-Pine, Forested Floodplain, Wet Meadow/Shrub Wetland, Grassland	1,850	Upper Connecticut 01080101	567 (549.2)	Ridge, rich woods, seeps, Rich Mesic Forest, CT River edge, oxbow pond; Nearby from NHNHB: satiny willow, northern white cedar seepage forest, satiny willow, Calcareous sloping fen system	NCC: River corridor protection, Forest block protection, wetland buffer protection WAP: Protect Riparian/shoreland habitat and other wildlife corridors; Protect unfragmented blocks	High quality wetlands with 100-ft buffer; stream/floodplain. Potential northern long-eared bat habitat. Across CT River from SPNHF land	X	1 transition station and a temporary access road	Planned ATV recreational corridor; Frontage on Old Canaan Road with residential development potential	TBD
C Clarksville/402, 404	Lowland Spruce-Fir, Northern Hardwood-Conifer, Wet Meadow/Shrub Wetland	1,750	Upper Connecticut 01080101	161.3 (153.2)	Mapped Deer Wintering Areas, lowland spruce-fir forest, northern hardwood-conifer, wet meadow, shrub wetland, old field, orchard, small pond, and Favreau Brook. Nearby from NHNHB: satiny willow, rich mesic forest, northern white cedar seepage forest, Calcareous sloping fen system	NCC: Forest block protection. WAP: Protect unfragmented blocks	Deer wintering area; northern long-eared bat habitat; forest migratory bird habitat; contiguous forest block. Perennial stream	X	House, camp and barn (to be removed)	Planned recreational corridor, redevelopment and expansion potential	TBD
E Clarksville/424	Grasslands, Lowland Spruce-Fir, Northern Hardwood-Conifer, Wet Meadow/Shrub Wetland	2,320	Upper Connecticut 01080101	215.5 (206.5)	Half old field, half lowland spruce-fir/northern hardwood-conifer. From NHNHB Nearby: lesser tussock sedge, Taiga bluet, greater yellow lady's slipper, common loon, showy lady's slipper, ovoid spikesedge, Lyre-tipped spreadwing, tufted yellow-loosestrife, black	NCC: Forest block protection, wetland buffer protection WAP: Protect unfragmented blocks	Threatened/endangered species, wetlands, and buffer protection; regenerating forest northern harrier; wetlands and vernal pools	X	Transition Station 4 and underground cable crossing	Planned recreational corridor. Frontage on Rt 145 and Wiswell Road, residential development potential	TBD

Parcel Information					Mitigation Values			Anthropogenic Features			Management
Mitigation Site Town/Parcel LL#	Cover Types	Max Elevat. (ft)	Watershed HUC 8	Acres*	Major Natural Features	Regional/Local Goals met**	Project-Specific Goals Met**	T- Line	Other Structures	Development Rights/Threats/ Notes	Easement Holder and Stewardship
					meadowhawk, marsh valerian, northern white cedar-balsam fir swamp						
K Dixville/ Columbia/ 11007, 15010	High Elevation Spruce-Fir, Lowland Spruce-Fir, Northern Hardwood-Conifer	2,880	Upper Connecticut 01080101	444.2	High elevation, Adjacent to Nash Stream Forest and SPNHF conservation land; Nearby from NHNHB:: brook lobelia, broad-leaved twayblade	NCC: Forest block protection; WAP: Protect unfragmented blocks	Wetland preservation and buffer protection, Contiguous conservation land, high elevation; potential moose concentration, northern long-eared bat, three-toed woodpecker, lynx, and marten habitat.		none	Undeveloped, low threat	TBD
N Stewartstown/ 10665	Lowland Spruce-Fir, Northern Hardwood-Conifer, Wet Meadow/Shrub Wetland	1,850	Upper Connecticut 01080101	128.7	Cedar Brook beaver wetland complex; adjacent forest cleared (early successional). Nearby From NHNHB: golden-fruited Sedge, northern harrier, brook lobelia, few-flowered spikesedge, Calcareous sloping fen system	NCC: Pond, wetland, and upland buffer protection	High value wetland (marsh/shrub and WAP Tier 1 Highest Ranked habitat) and buffer present; stream and buffer; potential habitat for northern long-eared bat and marsh birds.		none	Existing Snowmobile trail present; residential development potential	TBD
Z1 Concord (TBD)	Pine Barrens	TBD	Merrimack River 01070006	TBD 15 approx	Pine barrens is Highest Ranked Habitat (Tier 1);	USFWS Karner blue butterfly conservation; WAP Tier 1; CNHRPC: conserve high ranking habitats	Karner blue butterfly, frosted elfin, Persius duskywing, pine pinion moth habitat;	TBD		A parcel or easement must be purchased.	TBD—USFWS with management by NHFGD possible.
Z2 New Hampton/ 6145.02	Hemlock-Hardwood-Pine and Forest Floodplain	530	Pemigewasset 01070001	40 (38.4)	Pemigewasset River frontage, Tier 2 WAP (floodplain forest), restoration and management potential, adjacent to conservation land, small stream	LRPC: Conservation of land near lakes, rivers, streams, shoreline (to protect from development) and connectivity with larger conservation areas	Forested Riparian area on river and stream.	X		PSNH-owned. Prime riverfront along Rt. 132	TBD
Z3 Pembroke/8981, 8984	Hemlock-Hardwood-Pine	650	Merrimack River 01070006	92.2 (86.5)	Well-managed hardwood/pine forest with vernal pools, perennial streams, and a beaver pond/marsh	CRPC: Preserve open space outside the urban growth boundary to limit growth and wetland conservation	Wetland mitigation	X	Residence would be removed	Frontage on Brush Road with residential development potential	TBD
			Total acres*	1,715.2 (1,668)							

*total acres - and in parentheses, total acres with the proposed Northern Pass ROW and facilities subtracted where appropriate.

**NCC – North Country Council; SPNHF – Society for the Protection of New Hampshire Forests

5.3.3 Preservation Values for Mitigation

The proposed conservation lands will compensate for many of the wetland impacts within the same watersheds as the conservation lands, and for many of the wildlife impacts for the whole project route, as described below. The final analysis of impact and compensation is summarized in Section 6.0.

Wetlands and Vernal Pools

Several of the mitigation sites (particularly A, B, N and Z3) have multifunctional wetlands, including peatlands; beaver flowages with shallow and deep marshes for marshland birds; floodplains with oxbow wetlands and vernal pools. These wetlands more than compensate for the principal functions of the impacted wetlands, in particular providing groundwater recharge, floodflow alteration, sediment retention, shoreline stabilization, wildlife habitat, and production export functions (Table 6). Most of the other sites have forested seepage wetlands similar to the impacted wetlands throughout the project area. Many of the wetlands have adjacent upland buffers exceeding 100-ft in width with frontage on local roads, which would be ideal development sites. The initial estimated wetland quantity on the preservation parcels is over 90 acres, based on remote sensing. If total wetland area was extrapolated from mapped locations, the quantity would be substantially higher, as it would include forest seeps and other wetlands not readily discernible from aerial photos. This will more than compensate for the 11 acres of project-related, unavoidable, permanent, and secondary wetland impacts within those same HUC 8 watersheds. The remaining unavoidable wetland impacts within the rest of the project area (approximately 20 acres) will be addressed through an ARM fund payment.

Table 6. Wetland Mitigation Sites by Watershed (Excludes Site Z1)

Mitigation Site	Identifier	Approx. Area (acres)*	HUC 8 Watershed	Preservation Area by Watershed (acres)	Approx. Wetland Area (acres) and Principal Functions and Values
A	Halls stream	47	Upper Connecticut	1,529	36 acres GWR, FFA, SFH, SSS, PE, WH, REC, UH
B	CT River	549			24+acres GWR, FFA, SFH, SSS, PE, WH, REC, UH
C	Deer Wintering Areas	153			2.4+ acres GWR, PE, WH
E	Wiswell Rd old field	207			7+acres No principal F&V

Mitigation Site	Identifier	Approx. Area (acres)*	HUC 8 Watershed	Preservation Area by Watershed (acres)	Approx. Wetland Area (acres) and Principal Functions and Values
K	High Elevation	444			7
N	Cedar Brook	129			20 acres GWR, FFA, STR, NR, PE, WH
Z2	Pemi-New Hampton	38	Pemigewasset	38	(N/A) River frontage only
Z3	Pembroke Timber	87	Merrimack River	87	4 acres STR, NR, PE, WH
Total Preservation Area (acres)		1,654		1,654	Approx. 93 acres

*With ROW and site developments subtracted

Streams

The preservation sites include several perennial streams and frontage on large rivers. Site A contains over 1,800 feet of Hall’s Stream in Pittsburg (both banks); Site B has over 4,800 feet of frontage on the Connecticut River in Pittsburg; Site C has over 2,400 feet of Favreau Brook in Clarksville; Site N includes about 3,800 feet of Cedar Brook in Stewartstown; and Parcel Z2 has approximately 5,000 feet of shoreline along the Pemigewasset River in New Hampton. Many of the sites contain other un-named perennial and intermittent streams. Permanent project impacts to streams are minimal, but shoreline is excellent habitat and contributes favorably to any mitigation project.

Uncommon plant communities—Site B includes some seepage plant communities on somewhat calcareous soils which support less common species of plants, such as white baneberry (*Actaea pachypoda*), blue cohosh (*Caulophyllum thalictroides*) and silvery false spleenwort (*Deparia acrostichoides*). Additionally, RTE plant surveys in 2014 identified the state watch list species swamp buttercup (*Ranunculus caricetorum*) and wild leek (*Allium tricoccum* var. *tricoccum*). This parcel will be partially impacted by Transition Station 1.

Large, Forest Blocks

Sites B, C, E and K have large blocks of spruce-fir and/or hardwood forest with suitable habitat for the northern long-eared bat, Eastern pipistrelle, lynx, marten, and migratory forest breeding

birds, among other forest species. Parcel Z3, although only 92 acres in size, also provides good forest habitat, potentially benefitting northern long-eared bats, reptiles, and amphibians.

Pine Barrens

Northern Pass is seeking to protect a privately-owned site within the Concord Pine Barrens with potential value for the threatened and endangered lepidoptera of the pine barrens, including Karner blue butterfly, pine pinion moth, Persius dusky wing skipper, and frosted elfin. This site would also be potential habitat for the state-threatened wild lupine. Impacts to all of these species are likely during project construction in the ROW, however, the permanent loss of habitat will be minimal. Eversource also owns property in and near the pine barrens in Concord and Pembroke, and there are several existing ROW locations that have potential to be managed for Karner blue butterflies. Northern Pass continues to evaluate these potential conservation parcels, and has included 15 acres in the preservation package for pine barrens habitat.

Open Field and Shrublands

The project is expected to have a long-term beneficial effect on shrubland and field breeding birds, through the addition of new ROW, and inclusion of sites C and E in the preservation package. The ROW and parcels include managed and unmanaged open field and shrubland of potential value for kestrel, harrier, and other shrubland breeding birds.

Deer Wintering Areas (DWAs)

Site C includes a mapped deer wintering area that is approximately three times larger than the 28 acres of known DWAs that would require some additional clearing along the project ROW.

High Elevation Forest

Site K includes approximately 220 acres of forest land above 2,500 feet in elevation, and approximately 77 acres of that land is above 2,700 feet. This will compensate for the 10 acres of clearing of high elevation forest needed for the ROW, and is likely to support moose concentration areas, three-toed woodpecker habitat, and marten and lynx habitat.

5.3.4 Parcel Easements and Stewardship Funds

Northern Pass is working to identify appropriate third party easement holders for the mitigation sites, or entities to acquire the fee interest in conservation parcels. Once identified, information regarding the qualifications of the organization(s) and draft conservation easement(s) will be provided. Donation of stewardship funds will be determined during easement negotiations. Should this effort to identify easement holders be unsuccessful for any or all of the proposed mitigation parcels, the mitigation package will include an ARM fund payment that would adequately compensate for all Project-related impacts, including wildlife and listed plants, if acceptable to all resource agencies.

5.3.5 Parcel (and ROW) Management

Pre-application meetings and consultations with state and federal agencies were held to discuss the mitigation of project-related impacts, as well as the priorities identified in the WAP.

Managing relatively large forested areas with minimal tree cutting and long rotations will increase the wildlife mitigation value of forested parcels over time, particularly given that trees will be cut on most private and many public lands across the north country, often with short timber rotations, and uncut, mature, and over mature forest stands will continue to be relatively rare. High elevation wildlife species are known to depend on mature forests, and these are the public lands most likely to be left uncut. Mature forests at lower elevations may be very uncommon now and in the future, making this type of resource especially valuable.

However, forest operations are a critical part of the economy of northern NH, and given that Northern Pass owns over 5,000 acres of land, a good portion of this land will be made available for forest management without compromising mitigation priorities.

The mitigation approach includes expectations for preservation site management and ROW management that directly support the priorities of the WAP:

- Management of the ROW and portions of Site E as grassland and shrubland, benefiting migratory songbirds, and potential populations of wood turtles, and coordinating management needs at specific locations with NHFGD and NHNHB;
- Establishing low-canopy connections across the ROW where possible, to enhance travel between habitats of value, such as deer wintering areas, large forest blocks, known travel corridors, etc. These areas are most easily located in ravines where slightly taller trees can be accommodated without safety issues, and could be maintained permanently in accordance with Company policy and regulatory compliance.
- Managing portions of Sites B, C, and K as late successional forest, which benefits marten, three-toed woodpecker, spruce grouse, deer, moose and bear and many invertebrates;
- Managing approximately 15 acres of pine barrens in Concord/Pembroke as habitat for Karner blue butterfly, to mitigate impacts under the Endangered Species Act, and benefiting a suite of rare lepidoptera, common nighthawks, whip-poor-wills, wild lupine, and other species.

Draft management plans will be developed should the preservation sites be part of the final mitigation plan for the project. These would be reviewed with state and federal resource agencies and updated prior to implementation.

5.4 Payment to the Aquatic Resource Mitigation (ARM) Fund

Wetland impacts area calculations were entered into the on-line calculator for the NH in-lieu-fee program, called the ARM fund (separately for each of the towns/cities in the project area). Table 7 summarizes the total payments by town that would be expected without consideration of the other portions of the proposed mitigation package. This figure can provide a sense of the magnitude of the mitigation requirements associated with the project. Through consultations with state and federal regulatory agencies, it was determined that a payment to the ARM fund could be used in towns/watersheds with no preservation proposed (Appendix A). The ARM

fund payment will be used to mitigate impacts primarily in the towns and watersheds in central and southern parts of the project area where few or no conservation parcels are proposed, and no other suitable local projects were identified.

There are substantial preservation sites in Pittsburg, Clarksville, Stewartstown, and Dixville that will sufficiently mitigate wetland impacts for towns in the same HUC 8 Upper Connecticut watershed, including Lancaster, Stark and Northumberland, and for most of the general wildlife habitat impacts. Conservation lands in New Hampton and Pembroke will also mitigate for impacts in those towns in the Pemigewasset and Merrimack River watersheds. ARM fund payments are proposed for the remaining towns with unavoidable permanent or secondary wetland impacts. The ARM fund calculation sheets for those towns are attached (Appendix G). Based on these calculations, the ARM fund payment portion of the mitigation package will be \$3,070,336 assuming that the preservation package can be finalized. (See Table 8 in Section 6 for the distribution of preservation and ARM fund mitigation across Project watersheds). If some or all elements of the preservation package cannot be finalized, the ARM fund payment would increase to cover the impacts not addressed by preservation.

Table 7. ARM Fund Calculation Results for the Northern Pass Project by Town

Town	Secondary Impacts						Permanent wetland Impacts (sq ft)	Total impacts for mitigation (sq ft) (Secondary + Permanent)	Total ARM Fund Payment (in dollars)
	Forested Wetland Conversion - existing ROW (sq ft)	Forested Wetland Impact - (15% (existing ROW) or 20% (new ROW) of total area)	Stream and VP Buffer clearing - existing ROW (sq ft)	Stream and VP Buffer Impact - (15% (existing ROW) or 20% (new ROW) of total area)	Temporary Impacts to Deep Organic Soils (sq ft)	Organic Soils Impact (5% of total area)			
Allenstown	386	58	26,069	3,910	57,418	2,871	148	6,987	\$25,959.02
Ashland	3	1	18,360	2,754		0		2,755	\$10,819.73
Bethlehem		0	399	60	116,964	5,848	16,908	22,816	\$80,634.12
Bridgewater	72,103	10,815	86,074	12,911		0	50	23,776	\$93,448.00
Bristol	23,747	3,562	91,144	13,672		0	64	17,297	\$67,641.20
Campton		0	0	0		0		0	
Canterbury	3,804	571	41,011	6,152	22,089	1,104	42	7,869	\$28,625.53
Chester		0	0	0	9,935	497		497	\$1,932.21
Clarksville	136,245	27,249	77,606	15,521		0	101	42,871	\$150,848.12
Concord	704	106	18,931	2,840	110,513	5,526	501	8,972	\$41,174.36
Dalton		0	386	58	54,198	2,710	369	3,136	\$11,170.81
Deerfield	68,939	10,341	131,784	19,768	214,212	10,711	29,134	69,953	\$262,852.69
Dixville	469,051	93,810	1,259,159	251,832		0	421	346,063	\$1,215,869.25
Dummer	3,927	589	9,091	1,364	84,504	4,225	1,035	175,600	\$616,957.45
	475,192	95,038	366,742	73,348					
Easton		0	0	0		0		0	
Franconia									
Franklin	3,674	551	78,387	11,758	89,460	4,473	381	17,164	\$65,247.22
Hill		0	18,355	2,753	295	15	13	2,781	\$9,904.02
Lancaster	5,008	751	16,905	2,536	346,675	17,334	1,356	21,976	\$78,647.66
Londonderry	3,035	455	26,373	3,956		0	4,383	8,794	\$42,451.01
Millsfield	399,583	79,917	738,241	147,648		0	694	228,259	\$801,973.60
New Hampton	3,622	543	108,030	16,205		0	88	16,836	\$61,884.08
Northfield	182	27	25,213	3,782		0	7	3,816	\$13,944.70
Northumberland	14,821	2,223	47,433	7,115	269,197	13,460	1,164	23,961	\$84,692.61
Pembroke	319	48	41,360	6,204		0	199	6,451	\$25,708.87
Pittsburg	261,133	52,227	67,091	13,418		0	46,548	112,193	\$395,383.65
Plymouth									
Raymond		0	0	0	3,583	179		179	\$736.76
Stark	922	138	73,553	11,033	81,529	4,076	1,391	16,638	\$58,547.36
Stewartstown	623,188	124,638	106,237	21,247		0	433	146,318	\$517,577.73
Sugar Hill		0	0	0		0		0	
Thornton		0	0	0		0		0	
Whitefield		0	3,334	500	384,278	19,214	2,641	22,355	\$80,141.66
Woodstock		0	0	0		0		0	
Total (SF)	2,569,589	503,658	3,477,268	652,344	1,844,849	92,242	108,069	1,356,314	
Total (Acres)	58.99	11.56	79.83	14.98	42.35	2.12	2.48	31.14	\$4,844,773.42

ARM Fund Calculator

5.5 Funding for the National Fish and Wildlife Foundation

Above and beyond the mitigation package associated with the project permit applications, Northern Pass and Eversource have entered into a partnership with the National Fish and Wildlife Foundation (NFWF), committing \$3 million to NFWF over a three-year period. NFWF (<http://www.nfwf.org>) is a qualified 501(c)(3) nonprofit organization dedicated to supporting science-based conservation projects throughout the country. NFWF and its partner organizations in NH (the Wildlife Management Institute, USFWS, NHFGD, Town of Londonderry, Trout Unlimited, and the Connecticut River Watershed Council) have ongoing initiatives aimed at restoring and sustaining healthy forests and rivers in NH. These include the Early Successional Forest Initiative, Northeast Rivers Initiative (Eastern Brook Trout), and Trust for Public Land's White Mountain Initiative. It is expected that this grant will be matched by other funding sources to be secured by NFWF, and will result in an even greater commitment to this important area of environmental stewardship for NH. The first round of grants, awarded in July of 2015, provided funding for several riparian habitat restoration projects and surveys for Bicknell's thrush in VT and NH.

5.6 Stewardship Funds for Easement Holders

Northern Pass will provide stewardship funds to the identified easement holders for preservation parcels. The amount will be determined during easement negotiations, and may include funding for specific site management activities if they are essential to the mitigation package. For example, the management of a site for the benefit of Karner blue butterflies and wild lupine may require a slightly greater donation to assist with tree clearing, prescribed burning, mowing, or annual monitoring. A copy of any legally binding documents regarding the stewardship/management funds will be attached to the final mitigation plan.

5.7 Other Mitigation Elements Considered

During project development, several additional mitigation opportunities were explored to address actual or potential project-related impacts. These opportunities were generated from several sources, including:

- Unsolicited requests for funding or in-kind assistance for environmental projects within or near the project area
- Discussions with resource managers regarding environmental research funding or labor need
- Outreach to community leaders with knowledge of local environmental projects, etc.

The potential projects identified during local outreach efforts, primarily culvert replacements, bank stabilization, habitat improvements, and water quality survey work, were evaluated by the Project team and the regulatory agencies for relevance to Northern Pass impacts, project design status and cost, and consistency with regional conservation priorities. The local projects were not selected for inclusion in the mitigation plan as each failed to meet one or more of the criteria listed above. (See Appendix D).

NHDES also suggested funding for the Upper Connecticut River Mitigation and Enhancement Fund—this fund was created as part of the settlement agreement between the parties involved in the federal process to award a new operating license for three hydroelectric dams on the Connecticut River at Fifteen Mile Falls near Littleton, NH, and Ryegate, VT. The fund supports restoration, protection, and enhancement of the river, wetlands, and shore lands within the Connecticut River watershed upstream of the confluence of the White River and the Connecticut River. Support for this fund was also recommended by NHDES. Northern Pass would be willing to provide a donation to this fund but considered that the preservation parcels already adequately mitigate for impacts to the Connecticut River watershed portion of the Project and the NFWF donation more directly mitigates for project-related impacts elsewhere in the Project area.

6 Mitigation Package Summary

Table 8 summarizes the way that preservation and ARM fund payments have been identified to compensate for wetland, stream, and vernal pool impacts in each of the project watersheds. Table 9 summarizes the complete mitigation package for all natural resources.

Table 8. Preservation and ARM Fund Payments for Impacts by Primary HUC 8 Watershed

Project Town/City	Total Impacts for Mitigation (SF)	ARM Fund Equivalent of Total Impacts	Preservation Sites in Same Watershed	Impact to Preservation ratio (actual acres) or ARM Fund Amount
Merrimack River Watershed				
Allenstown	6,987	\$25,959.02	Z3	1:110 (0.79:87)
Canterbury	7,869	\$28,625.53	Z3	
Concord	8,972	\$41,174.36	Z3	
Londonderry	8,794	\$42,451.01	Z2	
Northfield	3,816	\$13,944.70	Z3	
Pembroke	6,451	\$25,708.87	Z3	
Chester	497	\$1,932.21	Mostly Z3	
Total	34,592	\$179,795.70		
Pemigewasset Watershed				
Ashland	2,755	\$10,819.73	Z2	1:20 (1.9:38)
Bridgewater	23,776	\$93,448.00	Z2	
Bristol	17,297	\$67,641.20	Z2	
Franklin	17,164	\$65,247.22	Mostly Z2	
Hill	2,781	\$9,904.02	Z2	
New Hampton	16,836	\$61,884.08	Z2	
Total	80,609	\$308,944.25		
Piscataqua-Salmon Falls Watershed				
Deerfield	69,953	\$262,852.69	Minimal	\$263,589.45
Raymond	179	\$736.76	None	
Total	70,132	\$263,589.45		
Upper Androscoggin Watershed				
Dixville	346,063	\$1,215,869.25	None	\$2,634,800.30
Dummer	175,600	\$616,957.45	Minimal	
Millsfield	228,259	\$801,973.60	None	
Total	749,922	\$2,634,800.30		
Upper Connecticut Watershed				

Project Town/City	Total Impacts for Mitigation (SF)	ARM Fund Equivalent of Total Impacts	Preservation Sites in Same Watershed	Impact to Preservation ratio (actual acres) or ARM Fund Amount
Clarksville	42,871	\$150,848.12	A,B,C,E,K,N	1:182 (8.4:1,530)
Lancaster	21,976	\$78,647.66	A,B,C,E,K,N	
Northumberland	23,961	\$84,692.61	A,B,C,E,K,N	
Pittsburg	112,193	\$395,383.65	A,B,C,E,K,N	
Stark	16,638	\$58,547.36	A,B,C,E,K,N	
Stewartstown	146,318	\$517,577.73	A,B,C,E,K,N	
TOTAL	363,957	\$1,285,697.13		
Waits Watershed				
Bethlehem	22,816	\$80,634.12	none	\$171,946.59
Dalton	3,136	\$11,170.81	none	
Whitefield	22,355	\$80,141.66	Minimal	
Total	48,307	\$171,946.59		
Total ARM Fund amount (without preservation):		\$4,844,773.42	Total ARM Fund amount (with Preservation of 1,530 Acres):	\$3,070,336.34

Table 9. Summary of Impacts and Compensation

Natural Resource	Unavoidable Impact Type and/or Quantity to be Mitigated	Proposed Preservation Package
Wetland Resources		
Permanent and Secondary wetland, stream, and vernal pool impacts	Fill for structure foundations/sites and secondary clearing impacts (31.14 acres)	1,530 acres of preservation and \$3,070,366.34 ARM fund payment
Wildlife Resources		
Karner blue butterfly and state-listed lepidopterans	Direct mortality (estimated take TBD, small but significant)	Compensatory preservation in Concord/ROW mgmt. agreement with NHFGD and USFWS (15 acres);
Forest habitat species (migratory birds, lynx, marten, bats, etc.)	ROW Clearing (731 acres)	Compensatory preservation (1,530 acres)
Wetland Nesting Migratory Birds	Wetland permanent impacts (2.5 acres)	Compensatory preservation (about 200 acres) and/or ARM

Natural Resource	Unavoidable Impact Type and/or Quantity to be Mitigated	Proposed Preservation Package
		fund payment
Deer Wintering Areas	Permanent Clearing (about 28 acres)	Compensatory preservation (80 ac)
High Elevation Habitat (>2,700 ft)	Permanent Clearing (10.01 acres)	Compensatory preservation (approx. 77 acres)
RTE Plant Species and Potential Exemplary Natural Communities	Square feet of Permanent Loss of RTE Plant or Community	
Licorice Goldenrod	1,726	TBD
Wild Lupine	1,221	Compensatory Preservation and/or ARM Fund/Management contribution (included in Karner Blue Butterfly mitigation)
Spiked Needle Grass (<i>Aristida longespica</i> var. <i>geniculata</i>)	207	TBD, will likely re-establish
Butterfly Milkweed (<i>Asclepias tuberosa</i>)**	33	None Planned
Northern White Cedar – Balsam Fir Swamp	23,770	Compensatory Preservation and/or ARM Fund/Management contribution
Northern Hardwood Seepage Forest	643,393	Compensatory Preservation and/or ARM Fund/Management contribution

* Forest habitat is assumed to support nesting migratory birds, lynx, marten, northern long-eared bats, and other more common wildlife species. **Probably an introduced garden plant

7 References

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New Hampshire Department of Environmental Services (NHDES). 2004. Best Management Practices for Erosion Control on Timber Harvesting Operations in New Hampshire.

New Hampshire Department of Environmental Services (NHDES). 2010a. Best Management Practices Manual for Utility Maintenance in and adjacent to Wetlands and Waterbodies in New Hampshire.

New Hampshire Department of Environmental Services (NHDES). 2010b. Rock Blasting and Water Quality Measures That Can Be Taken To Protect Water Quality and Mitigate Impacts.

New Hampshire Department of Environmental Services (NHDES). 2015. Alteration of Terrain Best Management Practices (BMP) Worksheets. Available online at: http://des.nh.gov/organization/divisions/water/aot/documents/bmp_worksh.xls

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8 Appendices

Appendix A. Agency Correspondence



New Hampshire Natural Heritage Bureau

DRED - Division of Forests & Lands
172 Pembroke Road, Concord, NH 03301
(603) 271-2214

To: Lee Carbonneau, Normandeau Associates, Inc.
From: Amy Lamb, Ecological Information Specialist
Date: October 5, 2015
Subject: Northern Pass Pre-Application Meeting Summary (NHB15-0611)

On March 30, 2015, Melissa Coppola issued a NH Natural Heritage Bureau (NHB) memo (NHB15-0611) to Normandeau Associates, Inc. that listed Threatened and Endangered species populations that will potentially be impacted by the proposed Northern Pass project. Since that date, NHB and Normandeau have met on several occasions to discuss project impacts, avoidance and minimization measures, route changes, and the remaining survey work to be completed.

This memo summarizes the most recent pre-application meeting, which took place on October 1, 2015. This meeting was held in order to review current rare plant and natural community information, refine avoidance and minimization measures, and determine additional steps to be taken in preparation for permit application submittal at the end of October, 2015.

The meeting resulted in the following determinations regarding data and documentation:

- NHB last provided digital data to Normandeau in February of 2015, and will continue to provide any new data (i.e., new plant surveys within the project area) as they become available.
- Normandeau will provide the final reports on Vegetation and Threatened and Endangered species to NHB upon completion.
- Normandeau will provide NHB a table summarizing the anticipated impacts to all rare plants and exemplary natural communities within the selected corridor. This table will distinguish between the different types of impacts and their resulting (long-term) effects on rare plants and exemplary natural communities.

- Any reports that are filed as publicly available information will not contain specific locations of rare plants; this information will be restricted to an appendix and treated as confidential, and will be removed from publicly available reports.
- The rare plant avoidance and minimization measures that the applicant has proposed were developed in consultation with NHB. NHB will provide additional species-specific avoidance and minimization guidance during the permit review period. This will consist of a table with prioritized actions for each species.
- As any new areas for access, staging, etc. become known, Normandeau (or any subsequent contractor) will conduct rare plant surveys in the areas and provide the results to NHB.
- Normandeau identified Lee Carbonneau as the point person for future Natural Heritage communications, and the NHB point person will be Amy Lamb.

The meeting also resulted in the determination of several measures to avoid and minimize impacts to Natural Heritage resources during construction:

- Meetings will be held among contractors, environmental monitors, and inspectors, prior to contractors working in or near areas where listed plants are located, that will include making contractors aware of sensitive areas and the appropriate best management practices for each area.
- Plans that are provided to contractors will contain a color-coded bar indicating the extent of a sensitive area; no further information will be revealed on such plans.
- Normandeau (or any subsequent contractor) will have “Sensitive Area” signs installed around rare plant populations and exemplary natural communities to alert work crews to their presence.
- It was agreed that it is critical that environmental monitors have the power and authority to stop work immediately if they become aware that any action will violate agreed-upon BMPs.
- NHB will make a recommendation to NHDES regarding qualifications of Environmental Monitors, to be included as a permit condition.

NHB and Normandeau will continue to communicate as the project progresses, in particular as any route changes or new impacts to rare plants become known.

Northern Pass Transmission Project

DRAFT Pre-application Meeting – NHDES Offices, Concord, NH – 9/10/15

Wetland Impacts and Mitigation Plan Meeting

1:00 PM to 3:00 PM

Attendees:

Collis Adams – NHDES

Lori Sommer – NHDES

Tim Drew – NHDES

Mark Kern – USEPA

Dave Keddell – USACE

Lee Carbonneau – Normandeau

Jake Tinus - Burns & McDonnell

Dana Bisbee – Devine Millimet

Lee Carbonneau provided an overview of the project, including the new route alignment with 52 miles of additional underground, fieldwork status (now largely complete), the current status of the filing schedule, and the overall components of the mitigation package.

Mark Kern requested a map showing the segments of the underground cable and overhead transmission lines, existing ROW, new ROW and area requiring clearing or not requiring clearing. He explained that this would help him in his alternatives analysis as he is reviewing the Draft EIS. Jake Tinus said that Burns & McDonnell is presently working on map figures for the SEC application and that he would forward it to Mark when it is ready.

Dana Bisbee described the project in more detail starting at the international border in Pittsburg.

Lee Carbonneau distributed impact tables and described how permanent, temporary and secondary impacts were calculated for wetlands, stream and vernal pools. She summarized impacts as follows:

- Approximately 50 perennial stream crossings would involve trenchless, horizontal direction drill (HDD) in order to avoid permanent impacts to streams.
- Only very minor temporary impacts are proposed to streams from underground cable installation.
- Other temporary impacts, mostly to wetlands, are associated with matting for equipment access and from construction work pads around structures. There are approximately 140 acres of temporary impacts to wetlands.

- Tree clearing alone is not tallied in temporary impact numbers, unless timber matting is proposed. Secondary impacts from tree clearing in wetlands, and stream and vernal pool buffers, totals approximately 180 acres.
- The quantity of permanent impacts plus the agency-required secondary impact percentages that must be included in the mitigation package is approximately 30 acres.
- Some unavoidable vernal pool impacts are being proposed to accommodate necessary upgrades at the Scobie Pond substation. The site is very constrained and a small adjacent parcel was acquired by NPT to accommodate the expansion.

Mark stated that NPT will need to assume a “worst case scenario” and account for full impacts to the vernal pools even if only partially permanently or temporarily impacted, as these habitats would likely be diminished or possibly eliminated by the construction activities, except perhaps where the impact is a single pole in an otherwise intact pool. He also noted that clearing shrubs in a pool may temporarily reduce the amount of egg attachment sites and limit productivity. Lee will revisit these calculations for the impacted pools in the project area.

Lori Sommer requested that a narrative be provided in the permit application to describe how impacts were calculated. Lee said that a separate narrative report is being provided that describes wetlands, streams and vernal pools, and impacts to them, and there are other reports for wildlife, aquatic resources, RTE species and mitigation.

Dave Keddell suggested that NPT needs to address federally listed species as well as state listed species as USFWS will review and comment on the SEC application. Lee indicated that federally listed species are addressed in the wildlife report. Further, she explained that acoustic surveys for Northern Long-eared bat and Small-footed bat were performed during summer 2015 and that there are a few “hits” in the data, particularly in the southern part of the project. The survey data is presently being reviewed by an expert. As such, NPT will need to avoid impacts to roost trees in the areas where the species are confirmed. Dave suggested that NPT refer to the federal highway guidance for the bats as the NPT is a similar to a highway project in that it is linear.

Dave asked if NPT has a list of locations for Karner blue butterfly. Lee indicated that NPT trained with NH F&G to identify Kbb eggs, has conducted Kbb egg surveys, and is working with USFWS and NHF&G on determining how to quantify the impacts to Kbb where a take will occur. Dave noted that DOE did not fully address federally endangered species in the Draft EIS. He said that Tony Tur (USFWS) asked how information will be provided to them with respect to these species and indicated that USFWS is likely going to request quite a bit of additional information from DOE, thereby requiring a Supplemental EIS.

Lori requested that the impact table show linear measurements of streams. This will help DES in their review of the Draft EIS. Mark indicated that there is a big difference in the data presented for stream impacts in the Draft EIS compared to what NPT is calculating for impacts and this is representative of the different methodologies used to calculate impacts for different purposes.

Lee then explained the major components of the mitigation package, i.e. conserved properties in the north, potentially conserved properties in the Concord area for Kbb and ARM fund payment to compensate for the remaining impacts. Alternatively, if easement holders cannot be identified, an ARM fund payment of \$4.7 million would be provided. Lee mentioned that NPT has been having focused discussions with a regional conservation group, but that group is not ready to commit at this time.. Lee mentioned that she and Lori had discussed the Eversource Land Trust (ELT); however, Lori had indicated that ELT might not be a good fit as a holder of the conservation easements. She compared the situation whereby a town proposes to hold its own conservation easements. As explained by Lori, this arrangement is not acceptable to NHDES. Dave stated that ELT has been approved by the USACE as a mitigation easement holder in Connecticut and that ELT had produced a “justification paper” to explain how they operate and how they would steward the easements. Dana added that ELT may fully qualify under the mitigation rules and that Northern Pass would like to keep this option open as a fall back option if needed.

Dana said that NPT would like to formalize the proposed mitigation package by using the Mitigation Agreement Form. Lori indicated that the new wetland rules currently being revised would not likely allow use of the form. Rather, an applicant would be required to meet with NHDES and USACE to discuss mitigation. Lori said that DES would allow use of the Mitigation Agreement Form with NPT for the project since current rules allow for it. Dave indicated that the USACE is okay with the mitigation package as discussed stipulating that the agency wouldn’t issue the Section 404 wetlands permit until the mitigation package is finalized. Mark suggested that NPT submit the mitigation as in-lieu fee in total, with options for land as a backup position. Dana stated that NPT would probably propose as described by Lee, as NPT feels that a lot of the land up north does have good conservation value, with the full ARM payment as an alternative option. Either way, all agreed that the final package would be resolved as the permit process continues. Mark pointed out that NPT will need to identify development threat to any parcels that are proposed to be conserved by easement. Regardless of the final scenario, Jake explained that the ARM fund would be receiving a large sum of money, likely in the millions of dollars, for compensatory mitigation. Regarding payment into the ARM fund, Lori indicated that NHDES requires that the check be provided within 120 days of issuance of the NHDES letter.

Dana indicated that he wanted to confirm our understanding of the abutter notification requirements. For abutters adjacent to the transmission line ROWs, notification is not required. For abutters adjacent to the substations and transition stations and converter terminal, notification is required. Collis Adams confirmed that Dana stated the requirements correctly and indicated that NHDES does want copies of tax maps provided with the abutter information, per the wetlands rules.

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Follow-up Action Items:

- Tim Drew requested a second copy of the entire SEC application, in addition to the one the Commissioner receives as a member of the SEC.
- Lori requested that Lee provide a copy of the meeting minutes from the 9/3/15 meeting with NHF&G.
- Lori suggested that NPT contact the Trust for Public Lands to determine if they would be a willing conservation partner.

DRAFT

NHB Comments Regarding:

Northern Pass – RTE Plant Impact Avoidance and Minimization Measures

**Note: Numbers before comments refer to section numbers in original document.*

2. Add “structure removal and installation” as a bullet point
3. Can data be available electronically (as GPS data) for Environmental Monitors?
4. - Not having rare plants on construction plans could result in accidental impacts.
 - Are all staging areas included on impacts plans?
 - Locations of rare plants should either be on construction plans used in the field (but treated as confidential on public documents). Or, they could be depicted as “Rare plant area #X”, with environmental monitors having corresponding fact sheets for each area.
5. Similarly, would there be a vague ‘sensitive area’ noted on plans directing construction workers to more information?
6. Pondicherry was not mentioned explicitly in previous documents about project impacts. Are there T&E species or exemplary natural communities here that will be impacted? A 2013 document noted impacts in the White Mountain National Forest, but this was not included in the May 2015 impacts document. What is the status in the White Mountain National Forest?
7. - Add “vehicle traffic” to bulleted list.
 - More details are needed regarding seed collecting and transplanting. This is species-specific and warrants further discussion.
8. A schedule should be developed, in consultation with NHB, that prioritizes where winter work should occur (focusing on disturbance-sensitive plants), in the event that it is not practicable in all rare plant locations.
9. Mats should only be used on certain plants, ie perennials with large root systems that could recover after being covered in matting. Please demonstrate exact locations of proposed mat usage.
12. Who will be doing the monitoring?
13. Cut invasive plants when dormant, or at least prior to seed set.
17. - This differs in rare plant areas versus non-T&E areas.
 - In non-T&E areas, please use a native seed mix, approved by NHB.

- In areas where T&E species occur, NHB requests that impacted areas be allowed to naturally revegetate. Seed mix species, by their nature, can often outcompete the rare species whose seeds occur naturally in the seed bed.

18. As noted above, NHB requests electronic data about the threatened and endangered species and exemplary natural communities that occur in the White Mountain National Forest.

19. Contact NHB prior to purchasing seed mix for approval.

In summary, please provide more information about project impacts and scheduling in order to develop species-specific recommendations and scheduling priorities for work near T&E species and exemplary natural communities.

We appreciate the continued efforts of Normandeau Associates, Inc. and Northern Pass Transmission, LLC to best protect rare plants and exemplary natural communities. NHB would be willing to meet to discuss our comments and concerns.

Best,

Amy Lamb
Ecological Information Specialist, NH Natural Heritage Bureau



NEW HAMPSHIRE NATURAL HERITAGE BUREAU

DIVISION OF FORESTS & LANDS - DRED
172 PEMBROKE ROAD, CONCORD, NH 03301
(603) 271-2214 WWW.NHDFL.ORG

To: Lee Carbonneau, Normandeau Associates, Inc.
From: Amy Lamb, Ecological Information Specialist/Environmental Reviewer
Date: September 4, 2015
Subject: Northern Pass Plant Survey Follow-Up Questions

Hello Lee,

I wanted to check in with you about the rare plant and natural community surveys that have been done for this project to date, as well as surveys that were planned for this summer that we have not yet discussed.

First, I would like to clarify a summary table in the “Rare, Threatened, and Endangered Plants and Exemplary Natural Communities” document submitted on November 22, 2013. The summary table is on page 26 and is entitled “Summary of Rare, Threatened, and Endangered Species and Exemplary Natural Communities Verified in 2010, 2011, or 2013 within the Project Area.” In this table, there is a list of several endangered and threatened plants and two exemplary natural communities, as well as several state watch or indeterminate species. Several of the species listed on this table are not included in the Northern Pass Botanical Survey Summary impacts document of 2015. Would you explain the exclusion of the plant species listed below? For example, was it determined that none of the plants occurring between the Deerfield and Scobie Substations would be impacted?

Wiegand's Sedge (<i>Carex wiegandii</i>)	State Endangered	Lincoln (WMNF)
Medium Level Fen System	Exemplary natural community	Lincoln (WMNF)
Poor Level Fen/Bog System	Exemplary natural community	Lincoln (WMNF)
Blunt-leaved Milkweed (<i>Asclepias amplexicaulis</i>)	State Threatened	Concord/Pembroke
Spiked Needle Grass (<i>Aristida longespica</i> var. <i>geniculata</i>)	State Endangered	Raymond
Hairy Thoroughwort (<i>Eupatorium</i> cf. <i>pubescens</i>)	State Endangered	Derry

Second, NHB requests the results of the additional surveys referenced in the May 2014 Addendum, including those for small (*Isotria medeoloides*) and large whorled pogonia (*Isotria verticillata*), peatland areas, and poor level fen/bogs. Additionally, I'd like to inquire about the status of the additional surveys in ROW expansion areas and proposed access roads, as discussed in previous meetings and communications. Please send NHB any data resulting from these additional surveys.

I also wanted to inquire whether a determination was made in regards to the classification of the circumneutral hardwood forest seep/northern hardwood seepage forest?



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(603) 271-2214 WWW.NHDFL.ORG

Please send any new survey results and the other information requested above to the Natural Heritage Bureau, either electronically or to our office at:

NHB – DRED

Attn: Amy Lamb, Ecological Information Specialist

172 Pembroke Road

Concord, NH 03301

We would also like to schedule a meeting to discuss the implications of the newly proposed route, namely the new 52-mile section of underground lines extending from Bethlehem to Bridgewater. Thank you for your continued cooperation, and I look forward to hearing from you.

Best,

Amy Lamb

Ecological Information Specialist

NH Natural Heritage Bureau

Northern Pass Transmission Project

Pre-application Meeting – NH Fish & Game Office, Concord, NH – 9/3/15

<u>Attendees: F&G</u>	<u>Northern Pass (NPT) Team</u>
Glenn Normandeau	Lee Carbonneau - Normandeau
Carol Henderson	Sarah Barnum - Normandeau
Mark Ellingwood	Dana Bisbee – Devine Millimet
Evan Mulholland	Jake Tinus – Burns & McDonnell
Heidi Holmann	
John Magee	
Will Staats	
Mike Marchand	
John Kanter	
Kim Tuttle	
Jillian Kilborn	

- Lee provided an overview of the project and status of the wildlife studies, and Sarah Barnum went through the highlights of the draft Wildlife Resources and Impact Assessment Report. This document will be finalized and included in the SEC Application submittal (anticipated in October, 2015).
- John Magee asked about the fisheries studies and Mike suggested it could be combined with the wildlife report into one document or alternatively an aquatics report that also included freshwater mussel results. Lee will send Fisheries report to John Magee for initial review.
- Sarah began a more detailed presentation of the results of the field surveys, starting with federally listed species.
- Lynx - Sarah asked about the State view of breeding lynx? Will – Pittsburg breeding, yes; expanding west of Rte 3.
- NPT NLEB acoustic surveys – calls detected in perhaps 10% of project area. NPT is awaiting clear guidance from federal government on habitat issues, but don't have it yet. John Kanter indicated that a thoughtful review of roosting habitat would be good to include in our report. Perhaps compare habitat in and out of locations with NLEB hits.
- Karner blue butterfly –
 - Lee mentions negotiations with a landowner in Concord potentially willing to sell a conservation easement to the project. Dana asks for details about management approach. Heidi and John describe that they would remove all but 10-30% of tree canopy; leave shrubs; requires 4-5 years of folks doing heavy management, then every

2-4 years thereafter for management. Expect 2 weeks of monitoring per summer with several people.

- Kbb – F&G notes that it is important to make sure that the parcel is suitable for Kbb and not currently an exemplary natural community. It will also be necessary to do an archeological survey before management. A fund for management would also be needed. This would go into the non-game account on an annual basis – similar to the New England cottontail fund related to the Eversource Scrubber.
- Reptiles – Normandeau surveyed higher sensitivity areas for reptiles – plus known locations. Mike notes that wetland impacts could affect turtles in the active or inactive season depending on the type of wetland impacted. In turtle sensitive areas, upland habitat work will be most impacting during April-October. Wood turtles hibernate in streams and rivers from Nov – March but are active in the uplands from March – October. Dense vegetation is preferred and wood turtles can be difficult to detect and therefore direct mortality during construction is a concern. For snakes (black racers, hognose), impacts to hibernacula can be most impacting and eliminate a local population, so active season work may be less impacting. A few hibernacula are known from NHFG work but most areas have not been surveyed by NHFG. There are no known good predictors for hibernacula, could be in openings or forests. To minimize impact to reptiles, detailed best management plans should be developed for each species and applied in the most likely habitats for those species. Future ROW management and maintenance is also very important. A map of Eversource ownership vs easement parcels was requested and additional discussion on construction and maintenance/management BMPS.
- Grassland Bird. Normandeau indicated no habitat for at risk grassland bird specialists.
- Common nighthawk – NH Audubon indicate these nest in ROW. Normandeau confirmed presence in Concord Project area.
- Jill notes that Bicknell’s Thrush have been recorded on lower slopes of spruce-fir.
- Wetland birds – 1 rusty blackbird nest seen in ROW.
- F&G would like to have shapefiles for stream crossings. John M. mentioned that he expects that NHDOT will need to upgrade many of the stream crossings in the WMNF underground route, and this project should take that into consideration in the design of the cable locations at stream crossings.
- F&G requested that NP provide safe alternative nest locations, perhaps place nest platforms on structures where they would not interfere with operations. Osprey, ravens, red-tails are most common structure nests.

- To address the state listed lepidopterans in Kbb habitat, NP could state that there may be impacts, but their needs are diverse, and there are no good solutions for mitigation. Kbb management is more relevant to this project.
- Small Footed Bats – F&G requested that we investigate blasting effects and be specific about locations and impacts.
- Lynx and marten – Calculate the cover type area that will be altered by clearing in the new ROW
- Deer Wintering Areas, Moose Concentration areas and bear scarred beech were discussed. Will requested that NP consider vegetated crossings on the ROW that are permanent. The vegetation should be as tall as possible given the topography, at least 100' wide, and located to connect habitats (DWA, locations where lynx tracks were observed, etc.) for maximum value. Valleys provide good opportunities. A long term commitment/contract to preserve and maintain these crossings is essential. Placing crossings to connect protected lands that will not be developed would also increase their value.
- Will is concerned that cleared ROWs become de facto motorized vehicle corridors, regardless of intent. He is concerned about the impacts adding another motorized corridor will have on wildlife.
- Dana asks about the willingness of NHF&G to hold easements. Glenn says their preference is to own land in fee. Funding for management is critical in every case, even fee ownership. When asked about an amount, Glenn mentioned that OEP has a formula used for determining an appropriate amount.
- For easements, it was noted by John K. that the Garvins Falls parcel was an important parcel to consider for conservation because of its landscape context and potential habitat for many of the species potentially impacted by the project in southern NH, but Dana noted that Eversource must keep in mind future infrastructure needs. As for the 5,000 acres that NP holds in Coos County, the best parcels for F&G would be those that are easily monitored and have habitat value. Management and monitoring funds would also be needed. A long-term contract regarding management of the new ROW would be needed.
- F&G is also interested in research/assessment of the success of protection and mitigation measures, as a contribution to the overall mitigation package. This should be part of future mitigation discussions.

Northern Pass Transmission Project

Pre-application Meeting – NHDES Offices, Concord, NH – 7/15/15

Compensatory Mitigation Meeting

Attendees:

Lori Sommer – NHDES

Tim Drew – NHDES

Mark Kern – USEPA

Mike Marchand – NHF&G

Amy Lamb – NHDRED-NHB

Lee Carbonneau – Normandeau

Jake Tinus - Burns & McDonnell

Dana Bisbee – Devine Millimet

Lee Carbonneau provided an overview of the project status, schedule, and ongoing fieldwork, including bat surveys, Karner blue butterfly egg surveys, rare plant surveys, and site walks with the Army Corps of Engineers (Army Corps) to review wetland delineations. Components and details of the mitigation package are still being prepared. Lee indicated the upcoming filing milestones include issuance of the Draft Environmental Impact Statement (DEIS) likely to be issued the week of July 20 and submittal of the New Hampshire Site Evaluation Committee (SEC) application by the end of September 2015. Lee handed out a number of documents for reference and discussion with the group and indicated that none would be left behind as they are all in draft form and subject to change.

Avoidance and Minimization

Lee reviewed the table summarizing efforts by Northern Pass Transmission (NPT) System to avoid and minimize impacts to various habitats and species and for compensating for unavoidable impacts.

- Northern Long-eared Bats (NLEB)
 - Lee explained that Normandeau Associates, Inc. (Normandeau) is performing acoustic monitoring and that a few hits have been recorded. Due to the limited distribution of the species, mist netting is likely not going to be performed, rather, time-of-year clearing restrictions would prevent incidental take. Lori Sommer inquired if the survey would need to be repeated prior to construction and Lee responded that the U.S. Fish & Wildlife Service (USFWS) had previously indicated to the NPT team that that would not be necessary, as NLEB populations are expected to continue declining in New Hampshire.
- Mike Marchand indicated that he would like to review the avoidance and minimization criteria table prior to the SEC filing as that would provide information to help New Hampshire Fish & Game (NHF&G) make recommendations to the NPT team ahead of filing. (Prior to the start of

the meeting Mike also suggested that NPT meet with NHF&G at its next project review meeting to be held on August 6, 2015 from 9 am to 12 pm. Where?) Lee indicated that the NPT team would discuss this request and would likely provide the requested information and attend the meeting on August 6.

Preliminary Permanent, Temporary and Secondary Impact Calculations

Lee said that permanent jurisdictional wetland impacts amount to less than three acres. Temporary and secondary impacts amount to approximately 160 acres and 30 acres, respectively. Lee described the methods used and assumptions made by NPT to arrive at these numbers.

- Wetland, Stream and Vernal Pool Buffer Impacts
 - Mark Kern indicated that direct wetland impacts are not likely to be the biggest issue for NPT. Mark explained that the percentages of secondary impacts that must be mitigated (15% of wetland conversion, stream and vernal pool buffers and 5% for temporary impacts on organic soil) are appropriate for portions of the project located along an existing right-of-way (ROW). However, for a new ROW, the Army Corps and the U.S. Environmental Protection Agency (EPA) are now requesting that 20% be used for wetland conversion, stream and vernal pool buffers calculations for secondary impacts along new ROW. Mark suggested contacting Ruth Ladd or Paul Minkin at the Army Corps with questions or comments.

- Vernal Pools
 - Lee explained that vernal pools were surveyed along the project corridor during the appropriate time of year and pools were ranked in accordance with the methodology similar to that used by the State of Maine. Lee indicated this was consistent with the approved work plan. Mark indicated that buffer impacts to vernal pools cannot be just calculated for “high value” pools. EPA would like most vernal pools to be included in the secondary impact calculation but would entertain excluding very low value vernal pools which would require further justification and review at a follow-up pre-application meeting. Mike indicated that he had concerns about ranking vernal pools based on egg mass counts and a single field visit and said that ideally surveys are performed over multiple years as there is variability in vernal pools from year to year. Lee explained that a lot of data was collected for each vernal pool in addition to egg mass counts, including hydrology, vegetation, temperature, inlets and outlets, etc. Jake Tinus suggested that Normandeau could review its data again to see which of the other pools might be ranked higher and therefore included in buffer impact calculations.

- Streams/Fisheries/Aquatic Organisms
 - Lee described the types of fisheries surveys and modeling that was performed to assess potential impacts to brook trout and cold water fisheries habitat. The primary risks to streams include sedimentation, which is minimized through best management practices,

and thermal impacts associated with tree canopy removal. Results of the assessment indicate there are a few locations in the new ROW where daily mean water temperatures would rise at the hottest time of the year, and one location where the temperature rise might cause brook trout to avoid that small segment of the stream for a short period of time. Lee stated that the following buffer distances were assumed and used to calculate secondary impacts: perennial streams, 100 feet; intermittent streams, 50 feet; ephemeral streams, 25 feet. Mark indicated that these assumptions are fine with EPA, but NPT should contact the Army Corps for concurrence. Lori indicated that she would like to see a breakout of the amount (acreage) of tree clearing in the riparian areas associated with perennial, intermittent and ephemeral streams included in the wetlands permit application. Mike requested reports associated with fisheries and aquatic organisms. Jake indicated that natural resource reports were provided to agencies previously in 2014. Lee indicated that the previous reports included existing conditions descriptions but did not address impacts. Further, she said that the reports are in the process of being updated to be included in the SEC filing.

Animal Surveys

- Lee indicated that no dwarf wedge mussels or eastern pearlshells were observed during mussel surveys.
- Lee stated that surveys for Bicknell's thrush in likely habitats, i.e. high elevation spruce-fir forest, were conducted and no Bicknell's thrush were observed.
- Lee mentioned that winter tracking surveys were conducted for Canada Lynx, Bobcat and Marten. Potential denning habitat was observed for Canada Lynx in one location.

NPT's Approach to Wetlands Mitigation

- Lee explained that NPT has been contacting towns along the Project route that would see 10,000 square feet or greater of mitigatable wetland impacts (permanent and secondary) for their ideas on potential mitigation projects. Out of 31 towns along the route, 15 towns were contacted that meet this threshold. In addition, five Local River Advisory Committees and seven land trusts were contacted, most of which did not offer specific ideas for mitigation.
 - Only a few towns responded with project ideas; mostly culvert replacement projects or streambank stabilization projects. There was general concurrence that these ideas were likely to be unsuitable, as Project stream impacts are minimal, the culverts are not priorities based on the watershed survey by the New Hampshire Department of Environmental Services (NHDES), and most of the projects suggested were not in the project area. Lee indicated that she had conferred with Kevin Nyhan at the New Hampshire Department of Transportation (NHDOT) regarding the statewide culvert assessment project, but Kevin indicated that he did not think there was a mechanism to enable third party funding, i.e. from NPT, to assist with this program, and that funding

through the New Hampshire Aquatic Resource Mitigation (ARM) Fund was more appropriate.

- Other ideas that were dismissed by the state or EPA included a Japanese knotweed removal project (in Mark's opinion, not viable unless monitoring and maintenance were included for several years) and an educational project involving wetlands assessments.
 - The City of Franklin (Franklin), within the Webster Lake watershed (currently phosphorus-limited), proposed several conceptual stormwater improvement projects that would be helpful in reducing phosphorus loading into the lake. Franklin indicated that it was looking to obtain funding from NPT to assist with this effort, possibly using the money to match money from other grant sources. Mark indicated that this type of arrangement was not really appropriate or supportable by EPA unless the work was being performed by the applicant, or there was a specific defined shovel-ready project such as wetland restoration or installation of stormwater infrastructure enhancements. Mark felt that if the project was not shovel-ready, a contribution to the ARM fund was probably more appropriate, and the city could apply for funding from this source.
- Lee reviewed the maps of properties in the northern part of the state in Coos County which are the centerpiece of the mitigation package. She said that these properties were purchased for the project and that many of them have good conservation value, including intact buffers to aquatic resources and wildlife habitat to offset project-related impacts. Some are logged and in various states of regeneration. Others include rare species or provide good wildlife habitat.
 - In addition to conservation values, other folks on the NPT team are working with ATV/snowmobile trails groups to potentially use portions of these properties to enhance the network of existing trails used for recreational activities. Tim Drew pointed out that he was familiar with the "Ride the Wilds" effort. Lori and Mark indicated concern about trail development for motorized vehicles as being potentially at odds (due to potential "wandering" riders) with conservation efforts unless the parcels to be conserved could be separated from ATV trails through deed restrictions (reserved rights) or by segregating the recreational activities from the conserved areas. Mark indicated that "commercial forestry" is also viewed as contrary to conservation efforts.
 - Mark indicated that the federal mitigation rules require a demonstration that a proposed conservation parcel is under threat of development. He also emphasized that it would not be appropriate to conserve land only in the northern part of the state for the impacts from the Project without additional conserved parcels near where the impacts are located or payment to the ARM fund for these impacts.
 - Lee explained that the project is looking at other parcels in other parts of the state but they are smaller parcels of land suitable for preserving land for Karner blue butterfly in the Concord area. She indicated that Normandeau is presently resurveying parcels along the right-of-way for wild lupine and Karner blue butterfly. However, if suitable parcels are not available, alternative mitigation for impacts to pine barren species would be needed. Lee asked if a contribution to

the Wildlife Foundation of NH would be appropriate, and Mike indicated that it would need to be considered by the NHF&G Department.

- Given the lack of suitable parcels identified along the southern portions of the route, an ARM Fund contribution would be necessary to compensate for impacts in that part of the Project route. Mark and Lori indicated that they are receptive to the idea of conserving land as long as it can be shown to compensate for lost functions and values and habitat.
- Lori asked about an easement holder, and Lee indicated that NPT is working confidentially with an organization with which to potentially team as a conservation easement holder for the various parcels of land. However, should the organization decide not to team with NPT, Lee asked if an ARM fund payment could be made for the entire project. Lori and Mark indicated that this would be acceptable to the agencies should it come to bear.
- Other agency guidance included:
 - The level of effort expended by NPT to identify potential mitigation projects is satisfactory as far as NHDES and EPA are concerned.
 - Lori indicated that HUC8 (modified) watersheds could be used to classify the location of impacts vis-à-vis designated conservation parcels if it is not possible to find a suitable conservation property to mitigate for impacts in each of the towns where they are located.
 - NPT should use the DES template to determine setback distances from aquatic resources.
 - Lori said that the conservation deed language should require management plans for the conservation parcels.
 - Lori indicated that for any conserved parcels, the DES Baseline Conservation Reports are not necessary for the filing but must be completed prior to the Project receiving approval.
 - Lori stated that the ARM fund calculator was recently updated and that the current version should be used to calculate payment, and Mark concurred that the ARM fund calculation worksheet would be suitable from the federal agency perspective also.
 - Lori indicated that the ARM fund payments could also be used for mitigating wildlife and listed plant impacts, as NHDES is able to specify what types of projects for which the ARM funds are available. Amy Lamb concurred that this could work for listed plant impacts.
 - Mike indicated that NHF&G has newly conferred authority to charge for environmental reviews and that this is likely to be mentioned in the meeting on August 6 should NPT attend.

Other Mitigation Package Components

- Lee and Jake described the donation to the National Fish and Wildlife Foundation (NFWF) on behalf of NPT. They specified that this \$3 million donation, half of which is contingent upon permit issuance, would be used for existing NFWF initiatives in New Hampshire related to

forests, streams and wildlife habitat, and could also be used for other NH projects that are relevant to NPT mitigation.

- Jake stated that the Project is still open to hearing of any other mitigation opportunities that the agencies deem as potentially suitable for inclusion in the NPT mitigation package.

Action Items:

- NHF&G requested GIS shapefiles of the potential conservation parcels to enable its biologists to overlay its information onto that presented by NPT.
- NHF&G requested additional information on the natural resource assessments that were performed by NPT. NPT to consider how best to approach this given that documents are still being revised to be included in SEC application. Perhaps a summary document could be prepared.
- NPT should consider attending the meeting on August 6 as invited by NHF&G. Other agencies to attend?
- Mike Marchand will inquire whether a Wildlife Heritage Foundation of New Hampshire donation would be a possible mitigation option for wildlife impacts.
- Mike requested that the wetland permit application indicates that black racers and other (rare, threatened, or endangered) RTE species will be protected during construction.

Follow up:

- Lee Carbonneau sent the Northern Pass wetland impact categories (direct, temporary, and secondary) and methods being used to calculate these impacts to Dave Keddell, Ruth Ladd and Paul Minkin of the Army Corps, and received a note back from Dave Keddell that they concur with the approach.

Phone Conversation: Lee Carbonneau, Normandeau Associates, Inc, and Lori Sommer, NH DES Wetland Mitigation Specialist, June 12, 2015, 1:15 PM

I spoke with Lori about our mitigation outreach efforts, preliminary feedback from the towns, and the project-acquired lands for conservation. Lori agreed that our approach of reaching out only to towns with >10,000 square feet of mitigatable impacts was a reasonable one. We discussed the concept of culvert replacements and bank stabilization projects as mitigation, and I mentioned that the NPT project stream impacts are all either temporary crossings, or buffer clearing. She said that for NHDES to accept culvert replacements and bank stabilization as mitigation they would need an analysis of the associated benefits to the watershed. She mentioned the work with NHDOT to collect culvert data and apply a model to prioritize remediation efforts that would enhance stream function, which is still a work in progress, and directed me to Shane Csisky in DES for any available data. I will Call Shane to see if there are high priority culverts in NPT Project towns that match the requests we have received. We also discussed the red-listed bridge in Deerfield. Lori indicated that given the importance of the Lamprey River, if the bridge replacement could be shown to improve aquatic habitat somehow (relieve scouring, or something similar), then it might be relevant for mitigation. If remediating the deficiency does not protect or enhance the ecological resource, then that would not be a great fit for the mitigation package. And it would be expensive. Lee will visit the site to see if there is an argument to be made. Lori wished me luck setting up the mitigation meeting, and offered to review any interim mitigation information we have and provide feedback.

Appendix B. Northern Pass Commitments for Impact Avoidance and Minimization

Appendix B. Northern Pass Commitments for Wildlife Impact Avoidance and Minimization

Northern Pass Resource Sensitivity		Construction Restrictions		Additional Avoidance, Minimization, Compensation Strategies	
Resource	Regulatory Nexus	Location	Time of Year Restriction?	Avoidance/Minimization	Restoration/Compensation
High Elevation (>2,700 ft)	Restrictions/mitigation may be requested as part of general permit conditions	Structures DC 137-140	Avoid summer clearing (May-August)	Avoid as possible; winter clearing; BMPs; low impact harvest/construction equipment	Restore and manage for low, dense spruce-fir; compensatory preservation
Deer Wintering Areas— as mapped by NHFG	Restrictions/mitigation may be requested as part of general permit conditions	In or adjacent to locations listed in Table A (below)	Limit work when deep/crusted snow conditions prevail if practicable (most commonly in January and February)	Minimize clearing in known DWAs; leave cut twiggy browse near edge of ROW for deer if clearing during winter	Compensatory preservation
Moose Concentration Area— based on field observation	Restrictions/mitigation may be requested as part of general permit conditions	Structures DC 174-178, 197-203, 216-18, 260-263, 330-340	Limit work when deep/crusted snow conditions prevail if practicable (most commonly in January and February)	Minimize clearing in known MCA areas; leave cut twiggy browse near edge of ROW for moose if clearing during winter	Compensatory preservation
Raptor Nesting Areas— active raptor nests and a surrounding buffer area	Migratory Bird Treaty Act (Federal)	None currently known (survey conducted in April 2014)	No work within ¼ mi. of active nests from 3/1 to 7/31	Under guidance from USFWS, remove nests during the non-nesting season	Provide alternative nesting structures
Mast Habitat— beech stands	Mitigation may be requested as part of general permit conditions	Structures DC 218 - 230, 1178 - 1185	None	Avoid as possible	Compensatory planting or preservation of existing beech stands

Northern Pass Resource Sensitivity		Construction Restrictions		Additional Avoidance, Minimization, Compensation Strategies	
Resource	Regulatory Nexus	Location	Time of Year Restriction?	Avoidance/Minimization	Restoration/Compensation
Turtle Nesting Habitat - Blanding's, Spotted, and Wood	State-listed species; avoidance may be requested as part of general permit conditions	Sandy soils within 1,000m of suitable ponds/wetlands, Canterbury southwards	None, if avoidance measures are followed	Field surveys prior to construction for nests, hatchlings, adults; relocate and exclude turtles as needed	Create or protect suitable nesting habitat
Marten Habitat - Forested areas from the White Mountains northward	State-listed species; avoidance may be requested as part of general permit conditions	Whitefield northward	None	Minimize duration of temporary disturbance	Compensatory preservation
Canada Lynx Denning Habitat	State-listed species; avoidance may be requested as part of general permit conditions	Structures 171, 197-202, and 274-276	None, unless an area is occupied; avoid occupied areas for duration of use; lynx den from May through mid-July	Minimize duration of temporary disturbance; occupancy survey may be appropriate just prior to construction	Maintain low dense conifer cover post construction
Hognose/Black Racer Snake Habitat	State-listed species; avoidance may be requested as part of general permit conditions	Pembroke southward; NHFG has specific locations based on radio telemetry data (requested, should be forthcoming)	None, if avoidance measures are followed	Avoid known hibernacula, surveys prior to work for nests, adults; relocate and excluded snakes as needed	Create or protect suitable snake habitat
Northern Long-eared Bat	Listed as Federally Threatened in April 2015	In and around locations in Table C, below.	No cutting May 1 – Sept 30	Avoid disturbance to summer roost trees; avoid disturbance to hibernacula (caves)	Habitat preservation, land management

Northern Pass Resource Sensitivity		Construction Restrictions		Additional Avoidance, Minimization, Compensation Strategies	
Resource	Regulatory Nexus	Location	Time of Year Restriction?	Avoidance/Minimization	Restoration/Compensation
Small-footed bat— rocky out crops directly in structure/work pad footprint	State-listed species; avoidance may be requested as part of general permit conditions	DC-1185, F 138-325, 3132-258, unless bat absence is verified	If bats are present, avoid construction May 1-Sept 30	Avoid blasting during summer/winter roost periods at known or estimated bat locations	New clearing near rocky outcrops will provide additional roost locations.
Potential Avian Powerline Collision areas	APLIC Guidelines	See Table B (below)	None	None	Install bird diverters on highest lines in the designated line spans if necessary

Table A. NHFG-mapped DWAs Intersected by the Project Area

Town	NHFG Name	Structure Numbers	Total Size (acres)	Clearing (acres)	Percent Cleared
Pittsburg	N/A – not previously mapped	DC 11 - 14	unknown	2.71	unknown
Lancaster/Northumberland	Lancaster/Northumberland	DC 496-535	7,806	2.3	0.03
Bethlehem	Indian Creek	DC 699 - 711	342	No additional clearing	-
Clarksville	West Road North	DC 25 - 29	297	6.7	2.26
Lancaster	Prospect Road S	DC 553 - 559	255	1.0	0.38
Bethlehem	Baker Brook	DC 686 - 690	253	No additional clearing	-
Bridgewater	River Road/Drew Pond	DC 1098 - 1099	193	0.3	0.17
Canterbury	Bryant Brook	3138-30 - 32	180	0.7	0.36
Millsfield	Potential Yard 2	DC 281 - 282	155	No additional clearing	-
Dalton	Chase Brook/Powerlines	DC 623 - 629	143	0.1	0.07
New Hampton	Coolidge Woods Road NE	DC 1184 - 1186	142	0.4	0.29
Whitefield	Powerlines Route 116 N	DC 604 - 606	139	No additional clearing	-
Bridgewater	Abel Brook	DC 1153- 1151	85	No additional clearing	-
Whitefield	E Whitefield Road E	DC 564 - 567	85	0.3	0.33
Bristol	Bristol/Bridgewater town	DC 778 - 779	75	6.4	8.53

Town	NHFG Name	Structure Numbers	Total Size (acres)	Clearing (acres)	Percent Cleared
	line				
Bethlehem	Route 116	DC 655 - 660	74	No additional clearing	-
Bridgewater	Abel Brook	DC 1152 - 1156	69	7.4	10.75
Bristol	Bristol/Bridgewater town line	DC 1156 - 1157	69	No additional clearing	-
Total			10,362	25.6	0.25

Table B. Location along the proposed Northern Pass ROW that may have a higher risk of avian collision

Location by Structure Number	Resource	Potential or Known Species	Town	Structure Type	Height (ft)	Number of Transmission Lines
Structure 150-151	Nathan Pond and Sugar Hill Brook	Waterfowl, loon	Dixville	Lattice	105, 110	1
Structure 407-417	Christine Pond	NHNHB loon location	Stark	Lattice	85-100	2
Structure 433-434	Upper Ammonoonsuc River, large hay fields	Waterfowl, red-tailed hawk	Stark	Monopole	90, 85	2
Structure 519-520	Open water wetland	Osprey, waterfowl	Lancaster	Lattice	85, 75	2
Structure 535-539	Pasture, hayfields	Red-tailed hawk	Lancaster	Lattice	85, 90	2
Structure 640-650	Between Forest Lake and Burns Pond	NHNHB Loon location	Whitefield	Lattice	90, 95, 100	3
Structure 1095	Pemigewasset River	NHNHB osprey location	Bridgewater	Lattice	90	2
Structure 1109-1113	Ashland sewage ponds, Pemigewasset River	Waterfowl, gulls	Ashland	Lattice	80, 90, 95	2
Structure 1247-1248	Unnamed Pond (beaver flowage?)	NHNHB osprey location	Franklin	Lattice	120, 100	2
Structure 1254-1266	Webster Lake and Pemigewasset River	Waterfowl, Loon	Franklin	Lattice	85-115	3
Structure (3132) 112-116	Turtle Pond	Waterfowl, herons, gulls, Osprey, Bald Eagle	Concord	Lattice	90, 95, 105	4
Structure (3132)-218	Suncook River	Waterfowl	Pembroke	Monopole	130	2
Structure (3132) 298-302	Unnamed pond	Waterfowl, great blue heron, osprey	Deerfield	Monopole	120, 125, 135	3
Structure (3132) 310-313	Unnamed pond	Waterfowl, great blue heron, NHNHB osprey location	Deerfield	Monopole	120, 125, 135	3

Table C. Location along the proposed Northern Pass ROW where NLEBs are potentially or confirmed present.

Town	Survey Segment	Corresponding Structures	NLEB Presence
Millsfield	Access Road EE	Located at Structure DC 292	Unconfirmed, but cannot rule out
Stark	Segment 206	DC 392-386	Unconfirmed, but cannot rule out
Whitefield	Segment 237	D142 392-396	Unconfirmed, but cannot rule out
New Hampton	Segment 576	DC 1186-1191	Unconfirmed, but cannot rule out
New Hampton	Segment 590	DC 1115-1120	Potential NLEB
Northfield	Segment 551	3123 11-17	Unconfirmed, but cannot rule out
Canterbury	Segment 542	3132 67-73	Unconfirmed, but cannot rule out
Concord	Segment 539	3132 90-95	Unconfirmed, but cannot rule out
Allentown	Segment 513	3132 242-247	Unconfirmed, but cannot rule out
Allentown	Segment 517	3132 220-226	Unconfirmed, but cannot rule out
Deerfield	Segment 500	3132 315-318	Unconfirmed, but cannot rule out
Deerfield	Segment 502	3132 306-312	Unconfirmed, but cannot rule out
Deerfield	Segment 507	3132 271-276	Potential NLEB
Deerfield	Segment 510	3132 257-262	Confirmed NLEB

Appendix B - Northern Pass Commitments for Rare Plant and Natural Community Impact Avoidance and Minimization

Pre-Construction

1. Avoid impacts to rare species and communities wherever practicable
2. If impacts to threatened and/or endangered are unavoidable - Flag populations/sensitive areas prior to work to minimize impacts. Fence off RTE habitat areas adjacent to impact areas as needed to prevent impacts beyond the permitted work zone. Provide contractors with site-specific requirements for limiting activities to approved work areas, maintaining or rebuilding fences, securing gates at access points, etc. Have the project's Environmental Monitor inspect these areas prior to construction. Any changes to the "Project area" will require complete resource assessment and permitting as required by law. Construction activities that may impact RTE plants include:
 - Tree clearing
 - Excavation/fill
 - Structure removal and installation
 - Vehicle access
 - Staging and laydown of materials
3. Identify locations on project plans where contractors will be required to adjust construction schedules or employ special techniques to protect rare, threatened or endangered species, Forest Service Sensitive Species, and Exemplary Natural Communities. This information will also be provided electronically for each construction crew and environmental monitor.
4. Treat locations of rare, threatened and endangered species or their habitat as confidential. The identity and precise location of rare species will not be shown on permitting drawings available to the public. Location indicators on the plans will be linked to a separate table describing the resource and protective measures required at that location. This table will be developed once permit conditions are finalized, and will be provided to the contractors and Environmental Monitors.
5. Develop a contractor training program prior to construction activities to familiarize the crews with the locations and species that will require special consideration.
6. Install signs along construction access roads alerting Contractors that they are entering an area of resource sensitivity.
7. Construction activities and ROW vegetation restoration and maintenance activities on state and federal conservation lands will be coordinated with the relevant agencies and will comply with current management plans, as appropriate.
8. If advised by NH NHB, collect seed (and/or transplant plants) from the species that will be impacted prior to construction, including:
 - Threatened and Endangered plant species that will be impacted by construction activities involving excavation/fill, or vehicular traffic;
 - Threatened and Endangered plant species associated with forests that will be adversely impacted by tree clearing;

A Seed collection or transplanting plan will be developed for relevant impacted species for review and approval by NH NHB prior to construction activities, if recommended by NH NHB.

Construction

- 9 The Environmental Monitor will discuss threatened and endangered plant issues at the morning tailboard meetings with Contractors for work taking place in sensitive areas.
- 10 Perform construction activities (including tree clearing and vehicle access) in sensitive plant locations during winter, when the ground is frozen to the extent practicable. A draft project schedule will be provided in the SEC application. A final project work schedule will be provided to state and federal resource agencies for review prior to construction.
- 11 If project constraints (e.g., permit requirements) require construction to be performed during the growing season, perform work after the plant has set seed, especially if the plant is an annual, to the extent practicable. If the RTE plant to be impacted is a perennial and construction activities consist of vehicle access or tree clearing (and the plant normally occurs in open conditions), perform construction as late in the growing season as possible and use point-load reducing matting to cover the ground in the areas of perennial RTE plants to minimize impacts.
- 12 Limit removal of vegetation to that necessary for construction of the project. Limit tree clearing to the minimum required width to meet safety clearances, leave root systems in place, except over underground installations or where other earthwork must be conducted. Leave herbaceous and shrub vegetation intact wherever practicable.
- 13 Where practicable, fell trees parallel to and within the ROW to minimize the potential for off-ROW vegetation damage. Take care to maintain vegetation along stream banks and within wetlands to the extent possible.
- 14 Have Northern Pass Environmental Monitors work with the construction contractors to identify and take the necessary steps to avoid or minimize the transport and propagation of invasive species along the Project route.
- 15 Follow these protocols for controlling the spread of invasive plants:
 - Use soil from local sources. To the extent possible, match soil texture with soil texture found in impacted habitat (e.g. sandy soils in impacted *Aristida longespica* habitat). Any soil fill or topsoil used in impacted RTE plant or natural community impact areas will be inspected at the source and be certified as weed free by the Environmental Monitor before being brought on site.
 - Use certified weed and invasive-free straw bales for erosion and sediment control.
 - Perform regular inspection and cleaning of construction equipment and vehicles on the right-of-way as appropriate where invasive species are present.
 - Train construction contractors to identify common invasive plant species.
 - Re-vegetate disturbed areas quickly using seed mixes that are devoid of invasive species in accordance with New Hampshire Department of Agriculture regulations.

- If invasive species are removed due to construction activity, cut when dormant or prior to seed set, and dispose of appropriately in a manner and location that precludes spread.
- 16 Perform environmental monitoring during construction to ensure impacts are limited to designated areas, and BMPs and other protocols are followed. Inspect erosion controls during construction, especially during significant precipitation events.
 - 17 Follow Best Management Practices (BMPs) during construction. Sediment and erosion control plans will be developed that specify the types of BMPs necessary. Depending on the site, BMPs may include installation of silt fence, straw wattles, mulch/stump grinding berms, straw bales, or check dams, and covering bare soils with mulch, blown straw, bonded fiber matrix or fiber rolls to protect drainage ways and streams from sediment runoff.
 - 18 Use BMPs for minimizing soil rutting and compaction in sensitive plant locations.
 - 19 Within sensitive areas, take care during construction to insure that the surficial soil is, to the extent practicable, not compacted. At the conclusion of construction in a particular area, seek to restore the native topsoil that was present prior to construction.
 - 20 Allow RTE plant locations to reseed naturally without seed mix, unless directed by NH NHB to collect seed from adjacent (unimpacted plants) for use during restoration.

Restoration

- 21 When restoring impact areas without RTE plant species, use seed mix containing all native plants. Seed mix should be selected based on conditions (e.g., upland vs wetland) and should contain common native species associated with the impacted habitat. Provide NH NHB with a description of the proposed seed mix prior to use in the project area.
- 22 Revegetate disturbed areas in a timely manner once construction is complete in specific areas.
- 23 Insure operation and construction of the project within the WMNF will comply with the 2005 or other most recent version of the WMNF Land and Resource Management Plan as it applies to rare, threatened and endangered species.
- 24 Carry out any necessary revegetation within the White Mountain National Forest in a manner that is consistent with the 2005 or other most recent of the White Mountain National Forest Land and Resource Management Plan.

Post-Construction

- 25 Perform post-construction inspection or monitoring in restored sensitive plant locations for a period of two years following completion of construction activities in that location.
- 26 Northern Pass anticipates that vegetation management activities will be performed by Eversource Energy (formerly PSNH) under a services agreement with Eversource. Work will be performed in accordance with Eversource's vegetation management program, and all vegetation management and maintenance will be carried out in accordance with the New Hampshire Division of Forest and Lands "Best Management Practices Manual for Utility Maintenance in and Adjacent to Wetlands and Waterbodies in New Hampshire."

Appendix C. Regional and Local Conservation Priorities

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Conservation Priorities as Described in Regional Plans

(highlight denotes congruence with Northern Pass mitigation package)

1. North Country Council¹

- Forest fragmentation prevention
- River corridor protection
- WMNF integrity
- Rural Farm/forest Preservation
- Lakes, pond, wetland and upland buffer protection from development

2. Lakes Region Planning Commission

- Restoration of impaired waters (Pemigewasset River) (water quality parameters, invasive milfoil)²
- Lakes, pond, wetland and buffer protection²
- Facilitate purchase/removal of flood-prone structures³
- Retain land in forest production⁴
- Retain large, unfragmented blocks of land through conservation⁴
- Priority: Conservation of land near lakes, rivers, streams, shoreline (to protect from development) and connectivity with larger conservation areas⁴

3. Central New Hampshire Regional Planning Commission

- Conserve high ranking habitat areas (WAP Tier 1)⁵
- Shoreland protection/buffers especially along Merrimack River⁶
- Preserve wildlife habitat dependent upon Contoocook and North Branch Rivers, especially areas that contain particularly valuable and/or fragile habitat⁷
- Concord: preserve open space outside the urban growth boundary to limit growth⁷
- Wetland conservation⁷

¹ Appendix B, Review of regional plans

² <http://lakesrpc.org/PRLAC/files/PemiCorrMgmentPlan2013.final.pdf>

³ <http://www.lakesrpc.org/GSF/Elements/CD/5e%20-%20Natural%20Hazards%20and%20Climate%20Change.pdf>

⁴ <http://www.lakesrpc.org/GSF/Elements/CD/5d%20-%20Environment.pdf>

⁵ http://www.merrimackriver.org/planning-resources/UMRLAC_Regional_Dev_Report_FINAL_11-19-12.pdf

⁶ <http://merrimackriver.org/publications/umrlacbuffer7.19.10.pdf>

⁷ http://des.nh.gov/organization/divisions/water/wmb/rivers/documents/management_plan_contoocook.pdf

4. Southern New Hampshire Regional Planning Commission (Deerfield and AC Support Project Area)

- Protection of lakes and surface waters, protection of forested areas, open fields, prime wetlands, especially in areas of dense development or at risk of development⁸
- Auburn Priority areas: farmland soils, steep slopes, wetlands, rivers, lakes, shorelines, aquifers, floodplains, forest resources, open space/land conservation⁸
- Candia priorities: connectivity, layered framework based on water, soils, habitat, forests, etc.⁹
- Conservation focus area: lamprey river (Deerfield), Fordway Brook Headwaters (Candia, Chester, Raymond), Lower Fordway Brook (Raymond, Chester), Pawtuckaway Mountains (Deerfield, Raymond), Pawtuckaway River (Raymond), Saddleback Mountain (Deerfield), Thurston Pond/Hartford Brook (Deerfield), Upper Exeter River (Chester), Upper North Branch River (Candia, Deerfield)¹⁰
- Chester: protection of rivers and streams with natural buffers¹¹
- Local priorities: Island Pond, Contoocook River, Piscataquog River¹²

5. Lamprey Rivers Management Plan¹³ (Deerfield and AC Support Project Area)

- River corridor protection
- Conservation of small headwater streams, wetlands, shorelines
- Priority conservation lands
 - Lands adjacent to Lamprey River or its tributaries, significant acreage, highly ranked parcels, un-fragmented undeveloped land
- streamside buffer protection

Conservation Priorities as Described in Local Documents of High Impact Towns

Pittsburg¹⁴

- Maple Ridge Farm? 1/3 property characterized as tier 1 by NHFGD, frontage along Indian Stream (Recently conserved with help from SPNHF)

⁸ http://www.auburnnh.us/master_plan/masterplanfinalnomaps.pdf

⁹ http://www.candianh.org/docs/candia_open_space_plan.pdf

¹⁰ http://www.epa.gov/owow_keep/estuaries/pivot/habitat/pdf/piscataqua_land_conservation_plan.pdf

¹¹ http://www.snhpc.org/pdf/Chester%20Master%20Plan_maps.pdf

¹² http://des.nh.gov/organization/divisions/water/wmb/repp/documents/1998_local_res_prot_priorities.pdf

¹³ http://www.lampreyriver.org/UploadedFiles/Files/full_draft_04112013.pdf

¹⁴ <http://www.forestsociety.org/howyoucanhelp/special-projects.asp?id=maple-ridge-farm>

Dixville/Millsfield¹⁵

- Development that would interfere with timber/wood harvest
- Protect environmentally sensitive areas (ie. High elevation, above 2,700 ft) (parcel 11007)
- Protect undeveloped recreational areas (rivers streams ponds trails lakes)
- Maintain water quality standards
- Lakes, ponds, rivers and shoreland buffer protection

Dummer¹⁶

- Candidate wetland restoration site- Upper Ammonoosuc River

Sugar Hill¹⁷

- Protect high quality habitat areas (pg 35) and corridors (map below)
- Conservation of undeveloped lands along the Gale River, the north end of Streeter Pond, Coffin Pond, and Peckets Pond (Bowen Brook Dam), as well as high priority wetlands.
- Create linkages between existing conservation areas
- Designation of Streeter Pond and associated wetland complex as 'prime wetland'
- Protect/restore vegetated buffers along smaller brooks and Gale River

Conservation Priorities as Described in Other Plans

New Hampton¹⁷

- Pemigewasset River, important wildlife areas, shorelines, wetlands

Concord¹⁸

- Priority conservation areas: land belonging to Unitil below Sewalls Falls Dam on east bank of river; portion of the PSNH holdings on Garvins Falls Road; NH Department of Corrections agriculture lands on west shoreline; lands in floodplain not already protected
 - Priority areas
 - Merrimack River Corridor - trail linkages; boat ramp/canoe launch sites
 - Contoocook River Corridor - trail linkages; boat ramp/canoe launch site; expansion of Lehtinen Park
 - Broken Ground— all land not already publicly owned or otherwise protected (large blocks of privately –owned property)

¹⁵ Master plan doc

¹⁶ file:///C:/Users/jobrien/Downloads/UpperConnecticutWatershedReport.pdf

¹⁷ <http://www.new-hampton.nh.us/newhampton/documents/masterplan/EntireMasterPlanwoutAppendices.pdf>

¹⁸ <http://www.concordnh.gov/DocumentCenter/View/1422>

- Oak Hill & Hot Hole Pond—additional access to, and remainder of ridgeline of, Oak Hill; frontage on Hot Hole Pond
- Northern East Concord & Hoit Road Marsh—one parcel linking the Snow Pond Road open space and trails to the Riley lot and the trails related to the Hoit Road Marsh
- Horse Hill - peak of Horse Hill; shoreline of Little Pond; access to both from Blackwater and Weir Roads
- The Great Bog—abandoned railroad rights-of-way to complete the trail connections
- Penacook Lake Watershed—additional land as may become available, evaluated on a case by case basis
- West Parish, District #5, and Dimond Hill—linkages from Rossvie Farm to West Parish Road and to Currier Road
- Turkey Ponds and Turkey River—area for parking on Clinton Street for access to the Turkey Ponds; parcel between Memorial Field and State land

Deerfield¹⁹

- Sensitive areas including prime wetlands, aquifers, vernal pools, streams and lakes, wildlife habitats and corridors, old forest stands, agricultural soils
- Connectivity of un-fragmented areas
- Areas that are threatened by development
- Pg 27 lists high preservation interest areas
 - Southeast
 - Lamprey River corridor east of Cottonwood Estates Easement
 - Lamprey River corridor along Rte. 107
 - Riparian corridor along the brook north of Reservation Road
 - Southwest
 - North Branch River corridor south of South Road
 - Area north of Bear Brook State Park by Rockingham/Merrimack County border
 - Central
 - Area along Ridge Road in Drinking Water Protection Area
 - Area immediately west of Old Center Road North
 - Northeast
 - Land west of Curry protected area

¹⁹ http://www.townofdeerfieldnh.com/Pages/DeerfieldNH_BComm/Conservation/osp.pdf

- Back Creek riparian corridor
- Undeveloped shore lands of Freese's Pond (lower portion)
- Lamprey River riparian corridor
- Northwest
 - Mud Pond and surrounding riparian corridor
 - Riparian corridor north of Pleasant Lake
 - Riparian corridor west of Griffin Road

Appendix D. Mitigation Outreach Summary

Appendix D. Mitigation Outreach Summary

Natural Resource Mitigation – Outreach Plan

October 12, 2015

Regional Land Trusts

Organization	Org. Contact	Outreach Dates/Methods	Project Contact	Response Summary
1. Ammonoosuc Conservation Trust	Rebecca Brown, Director (603) 823-7777	3/31/15 discussion	Lee Carbonneau	Suggestion that a meeting led by NHDES to describe the mitigation process and basis for the Northern Pass outreach would be helpful for all land trusts. Follow up with NHDES indicates that no such meeting would be held without a pending application.
2. Pemi-Baker Land Trust	Charles Chandler (603)986-9814	March and April 2015	Jake Tinus	Left two voice messages and email, no response
3. Squam Lakes Association	603 968-7336		Jake Tinus	Anti-Northern Pass Website—no contact planned
4. Squam Lakes Conservation Society	Zak Brohinsky Land Protection; Pete Helm, Stewardship Director 603-968-7900	Call/email to Pete Helm on 4/21/15. Phone conversation on 4/29/15	Lee Carbonneau	Mentioned project that would be perfect except for the timeline. Will keep in touch if other opportunities are identified.
5. Lakes Region Conservation Trust	David R. Mallard, Land/Stewardship Director 603-253-3301	Two voice messages and email, March and April 2015	Jake Tinus	No response
6. Five Rivers Conservation Trust	Beth McGuinn, Ex. Director, Ken Stern 603-225-7225	Call to Ken Stern on 3/24/15; Letter to Beth McGuinn on 4/13/15	Lee Carbonneau	General conservation priorities in the Concord area were discussed, but no opportunities to assist 5RCT on projects were identified, and no response from the Director was received.

Organization	Org. Contact	Outreach Dates/Methods	Project Contact	Response Summary
7. Bear-Paw Regional Greenways	Dan Kern, Director; Phil Auger, Land Protection Specialist (603) 463-9400	Meeting with Dan on 3/9/15	Sarah Barnum	Sensitivities with Towns in service area opposed to Northern Pass discussed; also project timing issues; but will be in touch in opportunities arise.
8. Southeast Land Trust of NH	Brian Hart, Executive Director, Phil Auger, Duane Hyde (603) 778-6088	Phone messages in March and April, email on 4/21/15	Jake Tinus	No projects in Deerfield, the small area of overlap with the Northern Pass project.

Municipalities

Municipality	Local Contact	Outreach Dates/Methods	Project Contact	Response Summary
1. Pittsburg	Bing Judd, former Selectmen; Asst to selectmen	3/5/15 meeting; 4/17/15 hand delivered new letter	Scott Mason	Fund for culvert replacements on private properties; fund for private apple tree release; NHFGD and DRED funding for wildlife habitat management; Japanese knotweed control. No official response from current town officials. All options were dismissed from further consideration by state and federal agencies.
2. Clarksville	Helen Dionne, Asst to selectmen	3/5/15 meeting; 4/17/15 hand delivered new letter	Scott Mason	No response
3. Stewartstown	Allen Coats, Chair Selectmen	3/5/15 meeting; 4/17/15 hand delivered new letter	Scott Mason	Bishop Brook Road Culvert replacement; not highly recommended for the following reasons: <ul style="list-style-type: none"> • Almost no expected Permanent Project-related impacts to fish and aquatic habitat;

Municipality	Local Contact	Outreach Dates/Methods	Project Contact	Response Summary
				<ul style="list-style-type: none"> • Lee and Jake observed in the field that there are serious grazing issues that contribute to stream degradation. • culvert is not on the NHDES watershed priority list. • Engineering study and cost estimate would be needed. • Town cooperation may be limited <p>Project was dismissed from further consideration by state and federal agencies.</p>
4. Dixville	Fred King, Vice Chair Coös Co. Planning Board	3/7/15 meeting; 4/17/15 hand delivered new letter	Scott Mason	No Response
5. Millsfield	Fred King, vice chair Coös Co. Planning Board	3/7/15 meeting; 4/17/15 hand delivered new letter	Scott Mason	No Response
6. Dummer	Marianne Letarte, Asst to Selectmen; Roger Corriveau, Select Chair	3/4/15 meeting	Scott Mason and Kathleen Lewis	<p>Culvert replacements on Holt Road and Blake Road– Not highly recommended for the following reasons:</p> <ul style="list-style-type: none"> • Minimal project impacts to streams; • No engineering study currently available; • Culverts are not on NHDES priority list generated by the watershed study. <p>Projects were dismissed from further consideration by state and federal agencies.</p>
7. Stark	Albert Cloutier, Selectmen chair	3/5/15 phone; 4/17/15 hand delivered new letter	Scott Mason	<p>Bank stabilization project at 33 Emerson Road - Ammonoosuc River. Not highly recommended for the following reasons:</p> <ul style="list-style-type: none"> • Risk is primarily to private property, and possibly town road

Municipality	Local Contact	Outreach Dates/Methods	Project Contact	Response Summary
				<ul style="list-style-type: none"> No engineering estimate available at this time Available funds are likely insufficient to remedy the problem; agencies concur, project was dismissed from further consideration by state and federal agencies.
8. Northumberland	Ed Mellett, - ConCom Chair, CT River LRAC (Headwaters); Coös PB	3/4/15 meeting; Discussed by Selectmen 3/30/15; 4/17/15 hand delivered new letter	Scott Mason	Engineering Plan to stabilize Connecticut River bank at town cemetery provided to Northern Pass; preferred solution is \$520,000. Dismissed due to cost, poor match to impacts; agencies concur, and project was dismissed from further consideration by state and federal agencies.
9. Lancaster	Paul Crane chair Lancaster ConCom; Ed Samson Lancaster town manager; Kim Votta, Concom	3/4/15 meeting; 4/2/15 meeting with Ed Samson; 4/17/15 new letter hand delivered; Lee call with Kim Votta on 7/9/15.	Scott Mason, Lee Carbonneau	Meeting with Lancaster set for June 18, 10 AM was not attended by town. New wetland assessment project proposed by ConCom; agencies not inclined to allow for mitigation plan.
10. Whitefield	Judith Ramsdell Charlie Baylies	3/6/15 meeting; follow up on 4/2/15 with phone call, and 4/17/15 with new letter, hand delivered.	Scott Mason	No projects.
11. Bridgewater	Kathy Gickas	3/4/15 phone call; email follow up on 3/16/14; follow up letter on 4/15/15	Jim Wagner, Donna Keeley	No response
12. Bristol	Mike Capone	3/4/15 phone; email followup on 3/16; follow up letter on 4/15/15.	Jim Wagner, Donna Keeley	Red Fox Village Stormwater improvements - not highly recommended, ARM fund quantity does not meet the project estimate of \$212,177, and the project is not in the watershed of Newfound Lake. Project was also

Municipality	Local Contact	Outreach Dates/Methods	Project Contact	Response Summary
				dismissed from further consideration by state and federal agencies.
13. New Hampton	Barbara Lucas	3/4/15 phone; email followup on 3/16; follow up letter on 4/15/15.	Jim Wagner, Donna Keeley	No thank you.
14. Franklin	Elizabeth Dragon	3/4/15 phone; email followup on 3/16; follow up letter on 4/15/15. Phone conversation on	Jim Wagner, Donna Keeley, Lee Carbonneau	1.Haynes Brook Culvert Replacement Project \$72K - dismissed due to poor match to impacts; agencies concur. 2. Macosko Foundry Brownfields Clean-up— dismissed due to likely cost; poor match to impacts; agencies concur. 3. Stormwater improvements \$100K near Webster Lake, possible match; USEPA does not favor, prefers ARM fund payment.
15. Deerfield	Jan Foisy, financial resources	3/4/15 meeting; Follow-up letter-handout with extended response period sent 4/15/15; 5/26/15 Lee C. and Catalina C. met with Jan and Mark Young (Road agent).	Jim Wagner, Catalina Celentano	Red listed bridge on Blakes Hill Rd over Lamprey - USACE deems project unacceptable as mitigation during field review, as rehabilitation will have substantial resource impacts, and is not in-kind mitigation.

Local River Advisory Committees

Local River Advisory Committee	Comm. Contact	Outreach Dates/Methods	Project Contact	Response Summary
Connecticut River Headwaters Local Advisory Subcommittee	Edwin Mellett, Chair 1165 Lost Nation Road Groveton, NH 03582 goldenrockfarm@hotmail.com 636-2630	3/11/15—next meeting is in May, but will email team	Lee Carbonneau	<ul style="list-style-type: none"> Japanese knotweed along CT River CT river /cemetery stabil. \$800K-1,000K Dismissed for cost, lack of relevance to impacts, agencies concur.
Ammonoosuc River Local Advisory Committee	Charlie Ryan, Chair 95 Dodge Road Littleton, NH 03561-3426 cryan1940@gmail.com 444-2398 991-3913 (cell)	3/17/15—next meeting is April 1, will discuss with his committee and get back to me	Lee Carbonneau	No response
Pemigewasset River Local Advisory Committee	Max Stamp, Chair 2110 Summer St. Bristol, NH 03222 hmstamp@metrocast.net http://www.lakesrp.com/pemi 744-8223	3/17/15—left message and sent flyer.	Lee Carbonneau	No response
Upper Merrimack	Michele L.	3/10/15 - MT	Lee Carbonneau	Website indicates many volunteers, and several projects

Local River Advisory Committee	Comm. Contact	Outreach Dates/Methods	Project Contact	Response Summary
River Local Advisory Committee	Tremblay, Chair PO Box 3019 Boscawen, NH 03303 MLT@naturesource.net www.merrimackriver.org/ 796-2615	Suggests checking Mgmt plan on website; e-mailed outreach handout		are funded by grants: monitoring water quality, bank stabilization, outreach and education. Grants from NHDES non-point source, NHDES Merrimack Watershed Restoration Fund. Eversource is already an Adopt-a-River site sponsor. Recommend NFWF as a funding source
Lamprey Rivers Local Advisory Committee	Richard Snow, Chair P.O. Box 10037 Candia, NH 03040-0037 rherbertsnow@netscape.net www.lampreyriver.org/ 483-2722	3/11/15—sent flyer and he will discuss with committee and respond before the 27 th . Lee declines invite to joint meeting with Oyster River LRAC. Lee follows up on 4/21 with email query and revised response date.	Lee Carbonneau	No response

Appendix E. GIS Modeling

The Northern Pass Mitigation Model

1 Purpose

To determine suitable areas for conservation that could potentially be used in The Northern Pass mitigation plan.

2 Methods

A GIS based model was used to identify prospective conservation areas in the vicinity of the proposed transmission line route. The study areas were derived from the New Hampshire HUC 12 watersheds and from political boundaries that intersected the route. A total of 44 HUC 12 watersheds (999,838 acres) and 31 political boundaries (1,029,958 acres) spanning from the southern to northern extent of the state were analyzed in a custom model (See Figures 1 and 2). Each model involved the same parameters, tools, classifications, and transformations but was performed across the two different study areas. The final output of the mitigation model produced a masked, weighted, raster dataset for each of the two study areas displaying land conservation suitability ranks. Normandeau used Environmental Systems Research Institute, Inc (ESRI) GIS software ArcMap 10.2, Model Builder, and several ArcToolboxes and Spatial Analyst extensions to complete the mitigation analysis. In addition, all GIS analyses were performed in New Hampshire State Plane, NAD83 (U.S. feet). Below the workflow from initial inputs to the final mitigation raster output are outlined.

2.1 Defining Inputs

Framework

A total of 20 input data layers were used in the mitigation model. Each parameter was either negatively or positively related to conservation suitability within the State of New Hampshire. These parameters were then assigned to one of five different goals for analysis (See Tables 1 and 2). Inventory tables facilitate organization in the data collection process.

2.2 Vector to Raster Conversion

Geoprocessing

All parameters were converted from vector to raster datasets using the conversion toolbox (See Figure 3). The converted raster datasets were set to a cell size of X=100, Y= 100 (feet) to display enough detail in the expansive study areas, yet also be efficient in

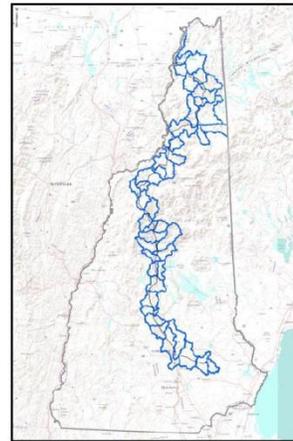


Figure 1. NH transmission line right of way

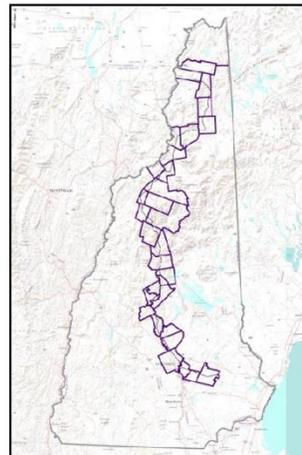


Figure 2. NH transmission line right of way political boundaries.

data processing and management. One cell therefore represents approximately one quarter of an acre (0.23) or 10,000 ft². These geo-processed raster datasets enable analysis through the overlay of several raster's at one time.

2.2.1 Featured Vector to Raster Conversion Tools

- Feature to Raster – Converts a feature using an individual field from the vectors attribute table. The field selected assigns values to the generated raster pixels.
- Polygon to Raster – Converts a polygon input to a raster dataset from the vectors attribute table.
- Euclidean Distance – Calculates the Euclidean Distance to the closest source raster for each pixel.
- Line Density – Calculates the magnitude of a set unit area from a polyline feature that falls within an assigned search radius.

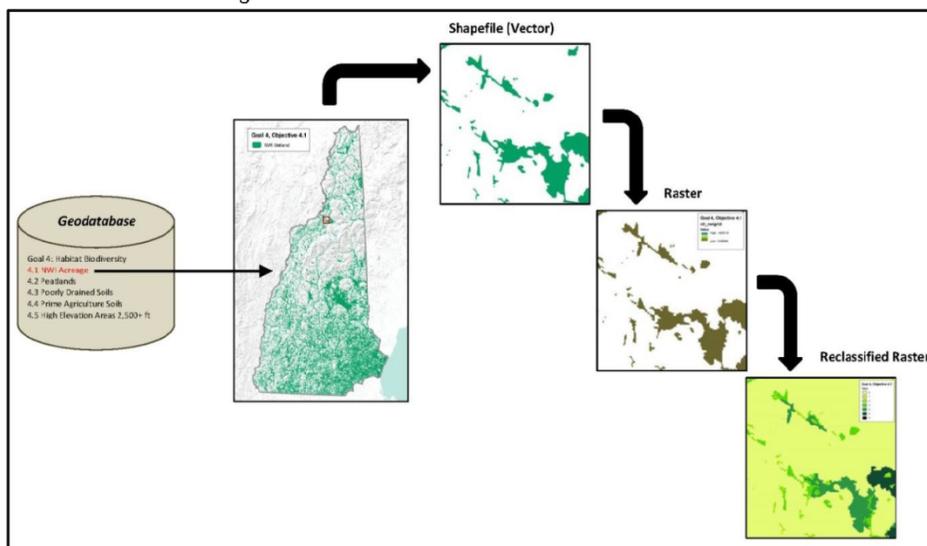


Figure 3. Geoprocessing workflow transforming vector inputs (shapefiles) to reclassified raster datasets.

2.3 Reclassification

The reclassify tool reassigned pixel values to a common numeric scale. The reclassified values were based on the source raster data and put into numeric categories. The numeric categories represent a suitability scale for determining potential conservation areas within the Northern Pass transmission line passes. The scale ranged from 0 (low priority) to 8 (high priority). Each raster dataset was reviewed by Normandeau scientists and were assigned a specific numeric category based upon the significance of the resource in the State of New Hampshire regulatory review process. After reclassification the rasters were extracted by a mask using the transmission line right of way HUC 12 watershed and political boundaries of New Hampshire.

2.4 Weighted Overlay (Objectives & Goals)

Modeling

Weighted Overlay was used in two cases for the conservation suitability model. This tool was first used to output five raster's each representing one of the five conservation suitability goals. For each individual goal the objective rasters were overlaid, reclassified under a common evaluation scale of 0-8 and weighted according to the objectives importance (See Figure 4). The weighting process multiplies each cell within an objective's raster by the assigned preference weight. The preference weight was determined by Normandeau scientists (See Table 1) based on the strength of the feature as an indicator of resource presence/sensitivity, and the expected project impacts and mitigation goals. Weighted Overlay was used a second time to combine the five goals into the conservation suitability analysis raster. The previous workflow was adopted except for the preference weights assigned to the individual objectives. The weighted values changed according to each individual goals importance (See Table 2).

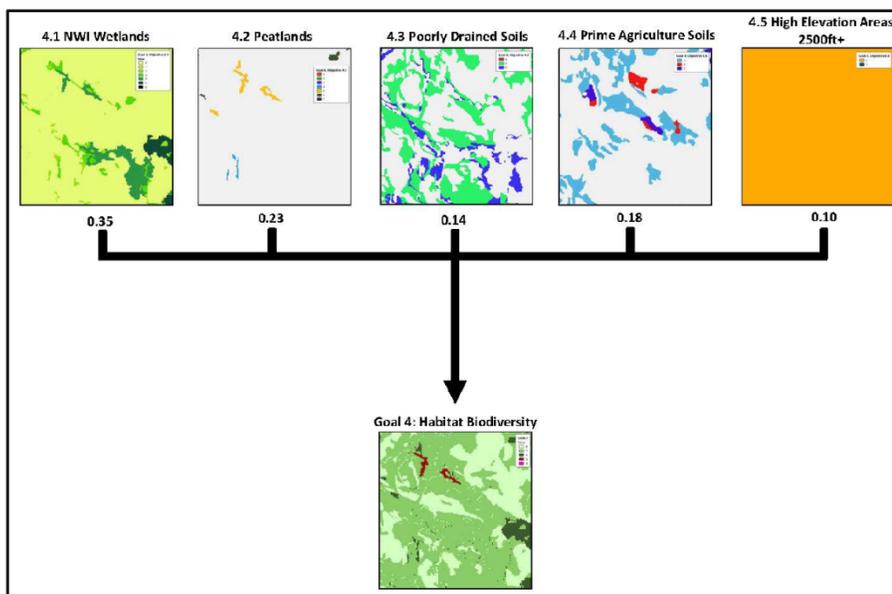


Figure 4. Weighted overlay workflow of individual objectives to output a final goal that will be used to create the conservation suitability raster for the two study areas.

Weighted overlay helped prioritize certain landscapes suitable for conservation related to the Northern Pass project.

2.5 Zonal Statistics

Parcel Classification

This tool calculated several statistics based on the final conservation suitability raster within The Northern Pass mitigation parcel boundaries. Each parcel (total of 85) was ranked by the following statistics: Mean, Sum, Maximum and Variety. Zonal Statistics defines bounding areas based off of a field within a features dataset. Once the boundary is set the tool calculates the statistics within the assigned boundaries and outputs a rank relevant to the raster's pixel data (See Figure 5).

NOTE: All tool pathways used in analyses can be found in Table 3.

3 Results

The output of the model produced a conservation suitability raster for both right of way New Hampshire HUC 12 watersheds and political boundaries. The suitability analysis maps show color-coded areas of high to low conservation potential. The Zonal Statistic maps aid the conservation suitability raster by ranking all of the owned Northern Pass parcels (Renewable Properties Inc. and Properties Inc.). High value parcels should be consideration first for land conservation-based mitigation. In addition, the overall suitability raster helps point out priority conservation areas where The Northern Pass could potentially purchase additional parcels to fulfill their mitigation needs.

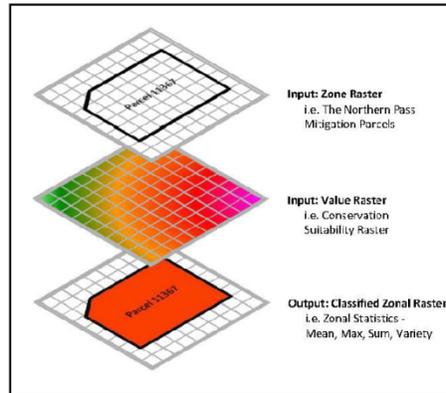


Figure 5. Zonal statistics example of The Northern Pass parcel ranking system

Table 1. Mitigation Model Goals, Objectives and Weights	
Goal 1: Connectivity	
	Preference Weights
1.1 Adjacency to Conserved Land ⁵	0.30
1.2 Un-fragmented Habitat Score ²	0.15
1.3 Wildlife Action Plan ²	0.35
1.4 Road Density within One Mile Radius ¹	0.20
Total	1
Goal 2: Water Resources	
	Preference Weights
2.1 Aquifer Acreage ⁸	0.30
2.2 100-Year Floodplains ⁶	0.40
2.3 Designated Rivers ¹⁰	0.30
Total	1
Goal 3: Species Biodiversity	
	Preference Weights
3.1 Deer Wintering Areas ²	0.22
3.2 Brook Trout Presence ²	0.22
3.3 NHB Rare Threatened and Endangered Spp. ⁹	0.40
3.4 Calcium Rich Bedrock ⁸	0.16
Total	1
Goal 4: Habitat Biodiversity	
	Preference Weights
4.1 NWI Acreage ⁴	0.35
4.2 Peatlands ²	0.23
4.3 Poorly Drained Soils ⁷	0.14
4.4 Prime Agriculture Soils ⁷	0.18
4.5 High Elevation Areas 2,500+ ft ⁸	0.10
Total	1
Goal 5: Recreation	
	Preference Weights
5.1 Fishing Access ³	0.25
5.2 Boating Access ³	0.25
5.3 NH Parks ³	0.25
5.4 White Mountain National Forest ⁵	0.25
Total	1
Normandeau Associates ¹ New Hampshire Fish and Game ² New Hampshire Office of Energy and Planning ³ U.S Fish and Wildlife Service ⁴ Society for the Protection of NH Forests and other Land Trusts ⁵ Federal Emergency Management Agency ⁶ Natural Resources Conservation Service ⁷ United States Geological Survey ⁸ New Hampshire Natural Heritage Bureau ⁹ New Hampshire Department of Environmental Services ¹⁰	

Conservation Suitability	Preference Weights
Goal 1: Connectivity	0.31
Goal 2: Water Resources	0.18
Goal 3: Species Biodiversity	0.24
Goal 4: Habitat Biodiversity	0.20
Goal 5: Recreation	0.07
Total	1

<i>Toolbox Pathways</i>
Path: Toolboxes\System Toolboxes\Spatial Analyst Tools.tbx\Extraction\Extract by Mask
Path: Toolboxes\System Toolboxes\Spatial Analyst Tools.tbx\Reclass\Reclassify
Path: Toolboxes\System Toolboxes\Spatial Analyst Tools.tbx\Distance\Euclidean Distance
Path: Toolboxes\System Toolboxes\Spatial Analyst Tools.tbx\Density\Line Density
Path: Toolboxes\System Toolboxes\Spatial Analyst Tools.tbx\Zonal\Zonal Statistics
Path: Toolboxes\System Toolboxes\Analysis Tools.tbx\Proximity\Buffer
Path: Toolboxes\System Toolboxes\Conversion Tools.tbx\To Raster\Polygon to Raster
Path: Toolboxes\System Toolboxes\Conversion Tools.tbx\To Raster\Feature to Raster

Appendix F. Preservation Parcel Data

Mitigation Parcel Summary Sheet

Preservation Area ID: A **Town(s):** Pittsburg **County:** Coos
HUC 12: 10801010303 **Ecological Region:** North Country **Max Elev:** 1,160

Coordinates (Site Centroid Lat/Long): 45^o 00'58.77 N; 71^o29'51.38" W.

LL#s: 167, 168, 171

Site Description: Site A is located in the floodplain of Hall's Stream, with good stream frontage, 3 acres of hayfield, multiple wetland types including oxbow wetlands with vernal pools and peatlands, and recreational trails. Northern hardwood-conifer and lowland spruce-fir forests are also present. This area was once part of a separate country identified as the Indian Stream Republic, lying between the US and Canada.

West of Hall's Stream Road (Parcels 167 and 168) the Site consists of a flat hayfield which then drops steeply into the floodplain complex of Hall's Stream. This floodplain is a mix of hardwood forested wetland and oxbow ponds with shrub, emergent and aquatic bed vegetation, and pockets of vernal pools. East of Hall's stream (Parcel 171) is a peat wetland with dense conifers except for an emergent/low shrub strip in the existing utility ROW. The land slopes gently up to the east into managed lowland spruce fir forest, with intermittent streams and seeps converging into the wetland and draining across to Hall's Stream.

Surrounding Land Use/Risks: Hall's Stream Road divides Site A in half. The area adjacent to the Site is a mixture of undeveloped woodlands, residential properties, and agricultural properties. Site A's upland hayfields are along the road, and could easily be developed into multiple house lots. The area surrounding the Site is serviced by individual sub-surface septic systems and water supply wells. Electric and telephone service are provided to the adjacent properties via overhead utility lines.

Man-made Features (existing/planned): No structures are located on the site. A natural gas pipeline is located along a 60 ft wide utility Right-of-Way in a north to south direction, crossing the open fields and Hall's Stream Road. A small unpaved parking area is centrally located on the site with dirt ATV trails stemming north from this location. The site is not developed with any septic system, water, or other utilities. A 120 ft wide transmission corridor with 4 lattice structures is planned.

Mitigation Goals Met: High quality shrub and emergent oxbow and floodplain wetlands with 100 ft buffer; peatland; stream/floodplain; agricultural land; vernal pools; potential marsh bird habitat and northern long-eared bat habitat.

Conservation Priorities Matched: NCC – protection of river corridors, rural farms, wetland buffers. WAP - Protect Riparian/shoreland habitat.

Mitigation Parcel Summary Sheet

Natural Resource Inventory Summary (quantities are +/-):

Feature	Measurement/Classification
Total Site Area	51.3 acres
Wetlands	36.3 acres; (PSS1C (4.8); PFO1E (13.5); PFO1/4 (10.7); PEM1E/PUB/AB (7.3)
Waterbody	3.1 acres (Hall's Stream, R2UB2)
Shoreline Length	3,630 lf on Hall's Stream (2 sides)
Stream Length	1,875, Linear feet;
Agricultural	3 acres - hayfield

Wetland Functions & Values

Function/Value	Present	Principal	Notes
Groundwater Rech/Disch.	X	X	Substantial discharge from east
Floodflow Alteration	X	X	Floodplain of Hall's Stream
Fish/Shellfish Habitat	X	X	F&G guide- Brook and Rainbow Trout
Sed/Tox Retention	X		
Nutrient Removal	X		
Sed/Shore Stabilization	X	X	Meandering stream bank
Production Export	X	X	Mast/berries, VPs, stream export
Wildlife Habitat	X	X	Shrub swamps, VPs, stream corridor
Recreation	X	X	Snowmobile trails
Educate/Science Value	X		
Uniqueness/Heritage	X	X	Indian Stream Republic; Peatland
Visual Qual/Aesthetic	X		
End/Threatened Species			
Other:			

Proposed Conservation/Management Plan:

Within the ROW, vegetation will be maintained as either wet or dry shrub/meadow. Agricultural use will be allowed in currently farmed locations. Snowmobile and ATV trail use will also be allowed, unless habitat damage becomes an issue. The natural habitats will be protected without active management.

Photos – following pages.

Mitigation Parcel Summary Sheet



Figure 1. View from northeast corner of LL 167 to the south along Halls Stream Road.



Figure 2. View from the northeast corner of LL 167 to the west towards Hall's Stream floodplain.



Figure 3. View to south along the eastern property boundary from the northeast corner of LL 168



Figure 4. View from northwest corner to the south along the western boundary of LL 167.

Mitigation Parcel Summary Sheet



Figure 5. June 18, 2015. Hayfields of Parcel A above the floodplain of Hall's Stream. Gas Pipeline crosses Hall's Stream Road in this location.



Figure 6. View from southeast corner of LL 168 to the west along the southern property boundary.



Figure 7. June 18, 2015. Intermittent stream channel at toe of slope of Parcel 171 just east of Hall's Stream Road, looking south.



Figure 8. June 30, 2015. Intermittent stream on Parcel 171 within spruce-fir forest.

Mitigation Parcel Summary Sheet



Figure 9. June 9, 2015. PEM1 within the pipeline corridor on Parcel 171, west of Hall's Stream Road.

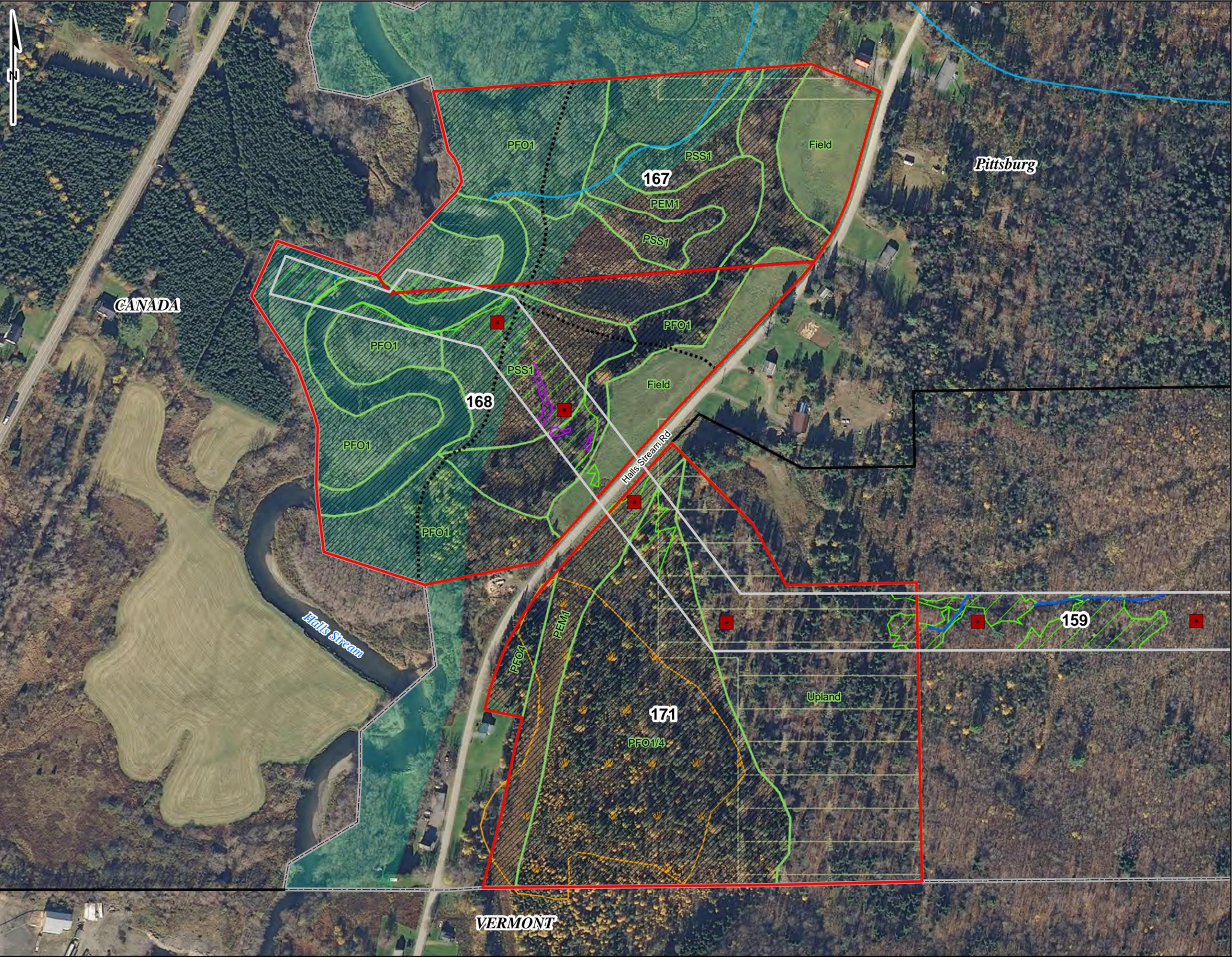


Figure 10. June 9, 2015. PFO1/4 on Parcel 171, west of Hall's Stream Road.

Mitigation Parcel Summary Sheet

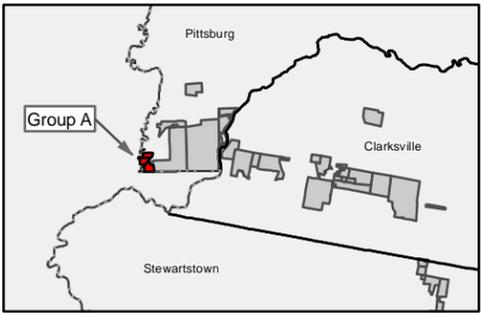
MITIGATION PARCEL 171

POINT/ STREAM #	# PHOTOS	COMMENTS
1	2	PFO, cinnamon fern, black spruce, tamarack, balsam fir, sphagnum moss (W); sphagnum moss, balsam fir, tamarack, birch saplings, northern white cedar (E)
S1	3	R-ephemeral, 5-10' wetted width mostly over vegetation (overflow from persistent rain); meadow rue, horsetail, jewelweed, bristly dewberry
2	5	Large patch of sensitive fern, swamp buttercup? 10 ft east of gps pt in 50'x20' patch
3	3	Larger diameter trees including red maple, white spruce, American beech; also interrupted fern, buttercup, raspberry
S2	2	Ephemeral stream (R-ephemeral) at western end, intermittent stream on eastern end; braided at junction between the two. Disperses into wetland
S3	2	Intermittent stream connecting to s2 point (R4SB3,5; 4' wetted width, banks 3-10")
S4	5	PEM/PFO surrounding braided network of ephemeral flow, likely a main channel containing intermittent flow, but hard to determine main channel with overflow
4	4	Upland island of bunchberry, sarsaparilla, surrounded by yellow birch (6"=10" dbh, eastern hemlock (26" dbh)
5	3	Near wetland boundary point PB12-2; balsam fir, American beech, yellow birch, interrupted fern. To N looks to be an old skid road now filled with raspberry, carex sp. and jewelweed
6	3	Some deeper pools (1'), possible VPs but unlikely due to bottom substrate; entirely contained in wetland of blue joint, jewelweed, cinnamon fern. W of point contains northern white cedar and tamarack
7	3	Northern cedar, sphagnum moss, cinnamon fern
8	2	Tamarack, northern cedar, carex sp. Cinnamon fern, sphagnum, jewelweed, wood fern, white spruce, yellow birch
9	1	White pine snags surrounded by northern cedar, cinnamon fern, birch. Deeper pools dispersed in cluster near point- possible VP (good bottom substrate but shallow ~6", no primary indicator species observed)
10	3	Yellow birch, interrupted fern, balsam fir, red maple, wood fern
11	3	PFO/PEM boundary
12	1	Ephemeral drainage near PFO/PEM boundary
<p>Other notes:</p> <ul style="list-style-type: none"> • Overall wet parcel with some upland plant; mostly dominated by wetland plant species. • Birds were quite due to rain, occasional songs included: Brown Creeper, Blackburnian Warbler, Black-throated Blue Warbler, Black-capped Chickadee, American Redstart, Northern Parula, White-throated Sparrow, Red-eyed Vireo 		



Northern Pass Mitigation Analysis

Mitigation Group: A

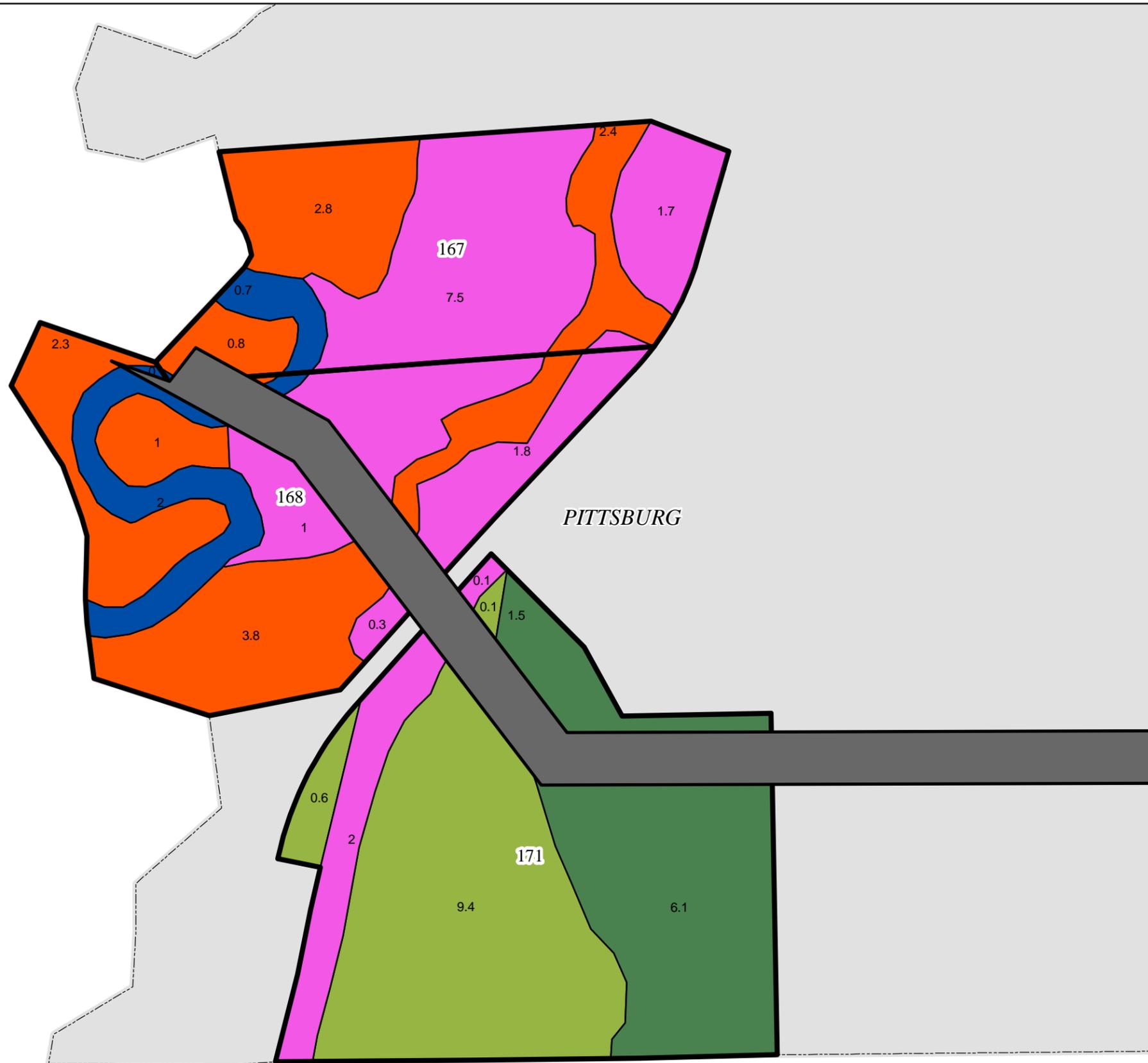


Group A Site Summary	
Town:	Pittsburg
County:	Coos
HUC 12 Watersheds:	10801010303
Eco Region:	Connecticut Lakes
Total Site Acreage:	51.3

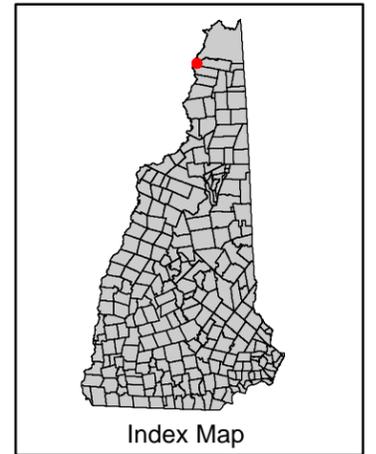
- ### Site Features
- Proposed Transmission Structures
 - ROW Access Routes
 - - - Existing Trails
 - NHD Delineated Streams
 - Delineated Streams
 - Proposed ROW
 - Group A Parcels
 - Political Boundaries
 - Delineated Vernal Pools
 - Delineated Wetlands
 - Photointerpreted Wetlands
 - Peatland
 - Lowland Spruce Fir
 - FEMA Flood Zone

Data Provided By: GRANIT, NHDES, NHHNB, NRCS, USFWS & ESRI

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Northern Pass Mitigation Analysis



Group: A

Photointerpreted Cover Types

- | | |
|---------------------------|----------------------------------|
| Open Habitat | Lowland Spruce Fir |
| Clear Cut | Hardwood / Softwood |
| River | Hemlock Hardwood Pine |
| Stream | High Elevation 2500 + |
| Pond | High Elevation Spruce Fir 2700 + |
| Residential | |
| Northern Hardwood Conifer | |
| Mixed Hardwoods | |

*Note: open habitat includes wetland marshes, wet meadows, shrub swamps and fields.

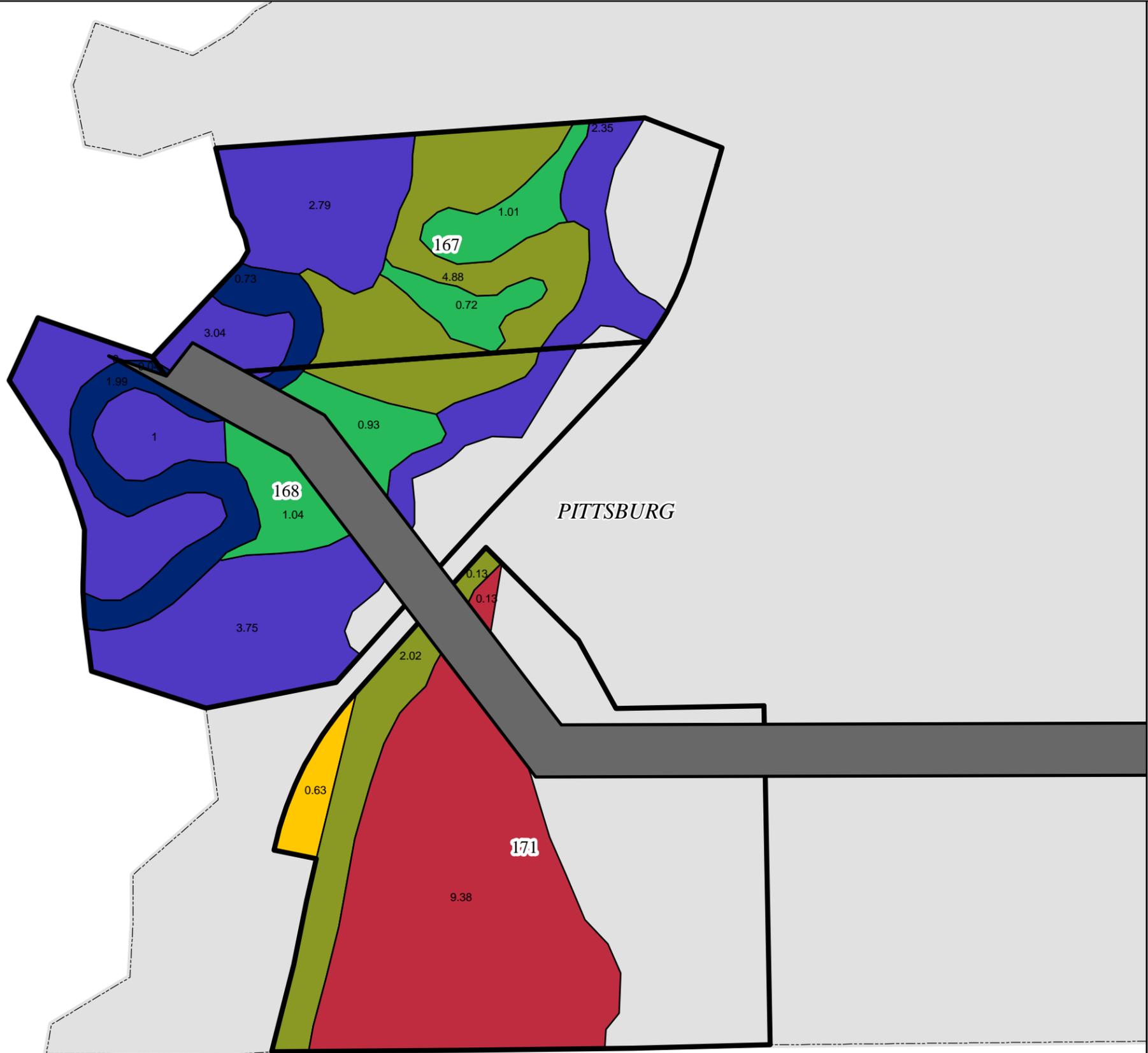
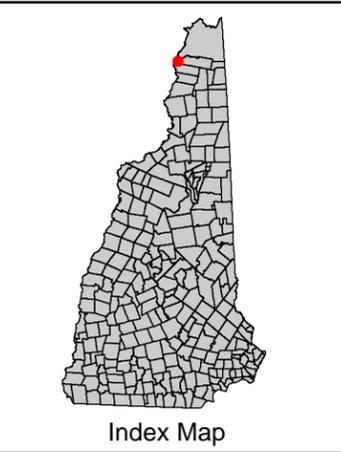
Data Provided By: GRANIT, NHDES, NHHNB, NRCS, USFWS & ESRI



Normandeau Associates, Inc
25 Nashua Road,
Bedford, NH, USA
03110



Northern Pass Mitigation Analysis



Group: A

Photointerpreted Wetland Cover Types

- | | | | |
|--|--------|--|----------------|
| | PEM1 | | PUB |
| | PFO1 | | PVP |
| | PFO1/4 | | River |
| | PFO4 | | Stream Channel |
| | PSS1 | | |

Data Provided By: GRANIT, NHDES, NHNH, NRCS, USFWS & ESRI



Normandeau Associates, Inc
25 Nashua Road,
Bedford, NH, USA
03110



Mitigation Parcel Summary Sheet

Preservation Area ID: B **Town(s):** Pittsburg **County:** Coos
HUC 12: 10801010303; **Ecological Region:** North Country **Max Elev:** 1,850
10801010203

Coordinates (Site Centroid Lat/Long): 45°01'12.75"N; 71°28'33.41 W.

LL#s: 158, 158.01, 200, 200.01, 201, 202

Site Description: Site B is located within and to the west of the Connecticut River floodplain, with approximately 4,897 linear feet of stream frontage along the Connecticut River, and multiple wetland types including seeps, forested floodplains, wet meadow/Shrub wetlands and an oxbow pond. Parcel B includes somewhat calcareous soils which support less common species of plants, such as white baneberry (*Actaea pachypoda*), blue cohosh (*Caulophyllum thalictroides*) and silvery false spleenwort (*Deparia acrostichoides*). Additionally, RTE plant surveys in 2014 identified the state watch list species swamp buttercup (*Ranunculus caricetorum*) and wild leek (*Allium tricoccum* var. *tricoccum*). Northern Hardwood-conifer, lowland spruce-fir, hemlock-hardwood-pine, and grassland cover types are also present. This parcel is steeply sloping and includes a high ridge.

Surrounding Land Use/Risks: The area adjacent to the site is a mixture of residential/camp properties, undeveloped woodlands, and a sand and gravel pit. The area surrounding the site is serviced by individual sub-surface septic systems or outhouses and private water supply wells or springs. Electric service is provided by overhead utility lines that run along Route 3 and Old Canaan Road. Site B will be across the Connecticut River from other conservation land (Washburn Family Forest- Society for the Protection of NH Forests). Road frontage on Beecher Falls Road (aka River Road in VT) is potentially developable, and several residences are present north and south of this Site. The Connecticut River Frontage is narrow and either steep or within the floodplain, and is not developable.

Man-made Features (existing/planned): No primary buildings are currently located on the site. A collapsed wooden and metal shed was observed on the southeast corner of the site during the walkover. Existing roadways on the site include, skidder trails and dirt logging roads which are used for snowmobiling. A dirt roadway runs across the northern portion of parcel LL 200 in an east to west direction providing access to a parcel to the west (LL 157). An old roadway is also located on parcel LL 202. No other roadways or improvements are located on the site. No utilities (i.e., electric, water, sewer) are provided to the site. However, an electrical line does run from the northeast to the southwest across parcel LL 200. Utility lines also run along Route 3 and Beecher Falls Road. Two dug wells are also located along the property boundaries of the site; one along the northern property boundary of LL 208, which is used to supply water to the

Mitigation Parcel Summary Sheet

private residence on that parcel and one along the eastern boundary of the site abutting LL 203 or LL 204. A 120 ft wide transmission corridor with 4 lattice structures and a transition station is planned. A short segment of the transmission line will also run underground along Route 3 and under the Connecticut River.

Mitigation Goals Met: Numerous seepage wetlands with buffers and some calciphile plants; an oxbow pond wetland; stream/floodplain. Potential long-eared bat habitat, large forest blocks for forest breeding birds, undeveloped ridge travel corridor.

Conservation Priorities Matched: NCC – protection of river corridors, high quality wetlands with 100 ft buffer, forest block protection. WAP - Protect Riparian/shoreland habitat and other wildlife corridors; Protect unfragmented blocks.

Natural Resource Inventory Summary (quantities are +/-):

Feature	Measurement/Classification
Total Site Area	567 acres
Waterbody	30,061.33 sq ft? (Connecticut River, R3RB2)
Shoreline Length	905.31 lf on Connecticut River (one side)
Stream Length	21,389.47 linear feet
Wetlands	24 acres (7.6 PEM; 6.8 PFO1/4; 9.5 PSS1) – low estimate

Wetland Functions & Values – CT River, Oxbow wetland and adjacent forested wetland seeps

Function/Value	Present	Principal	Notes
Groundwater Rech/Disch.	X	X	Seepage slopes discharging to CT River
Floodflow Alteration	X	X	Floodplain of Connecticut River
Fish/Shellfish Habitat	X	X	CT River nationally recognized trout river – stocked; shad, alewife
Sed/Tox Retention	X		
Nutrient Removal	X		
Sed/Shore Stabilization	X	X	Oxbow wetland at base of steep slope
Production Export	X	X	From oxbow wetland to CT River
Wildlife Habitat	X	X	travel corridor, forest block, waterfowl
Recreation	X	X	Potential CT River access
Educate/Science Value			
Uniqueness/Heritage	X	X	Uncommon calciphile plants
Visual Qual/Aesthetic	X		
End/Threatened Species			
Other:			

Mitigation Parcel Summary Sheet

Conservation/Management Plan: Within the ROW, vegetation will be maintained as either wet or dry shrub/meadow. The forest habitats will be lightly managed to benefit Northern Long-eared bats and other forest species.

Mitigation Parcel Summary Sheet

Photos



Figure 1. Upslope view on parcel LL 158.



Figure 2. Downslope view on parcel LL 158.



Figure 3. View of ridge on parcel LL 158.



Figure 4. Side slope view on parcel LL 158.

Mitigation Parcel Summary Sheet



Figure 5. View north along US route 3 and Connecticut River towards parcel LL 200.



Figure 6. View east across US route 3 toward parcel LL 202 from Old Canaan Road.



Figure 7. View east along US route 3 of old roadway on northern portion of parcel LL 202.

Figure 8. View east along US route 3 of old roadway on southern portion of parcel LL 202.

Mitigation Parcel Summary Sheet



Photo 9. June 18, 2015. Oxbow wetland on Parcel 201.



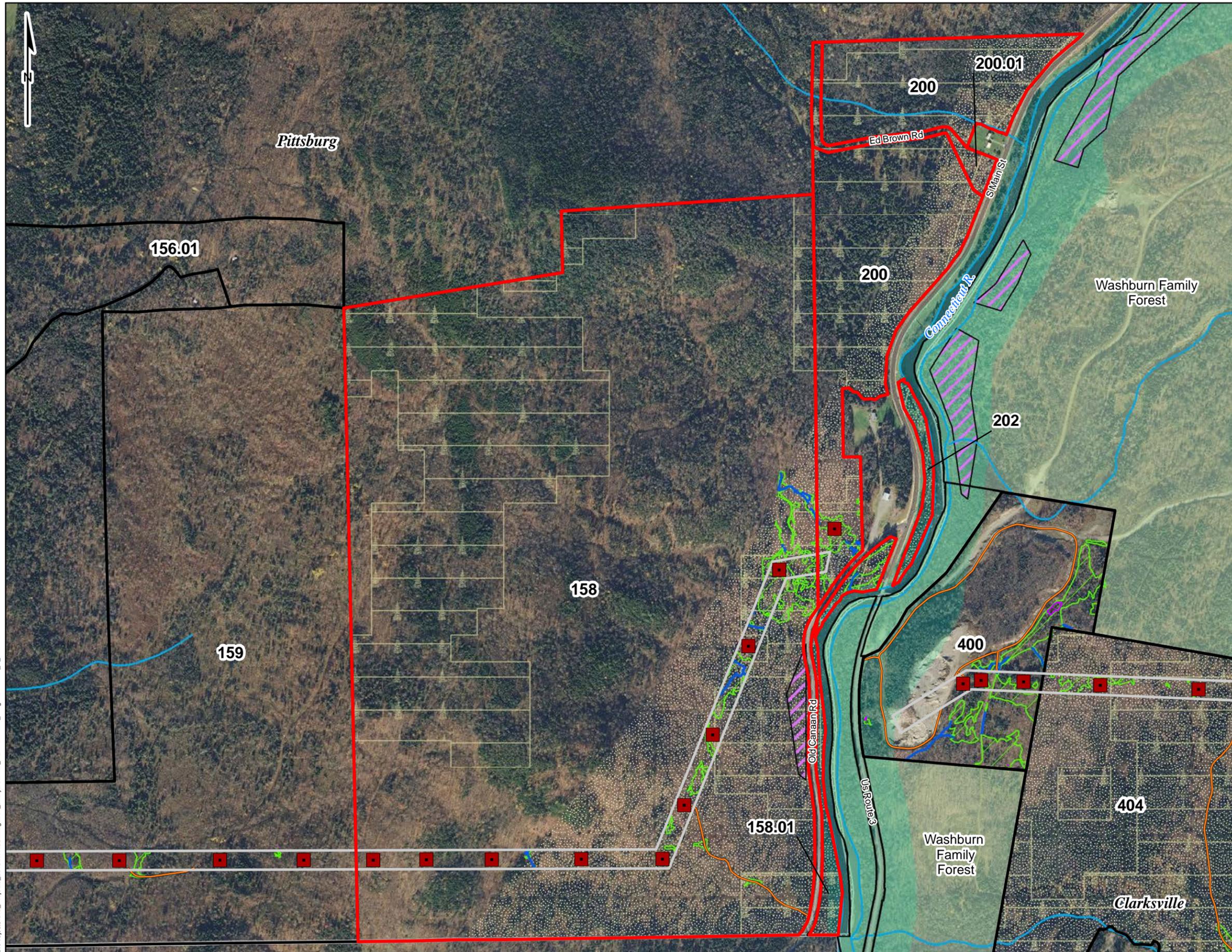
Photo 10. June 18, 2015. The Connecticut River looking downstream from the Route 3 Bridge. Parcels 201 and 158.01 are on the right side of the River.



Photo 11. June 18, 2015. The Connecticut River shoreline on parcel 158.01, looking south.

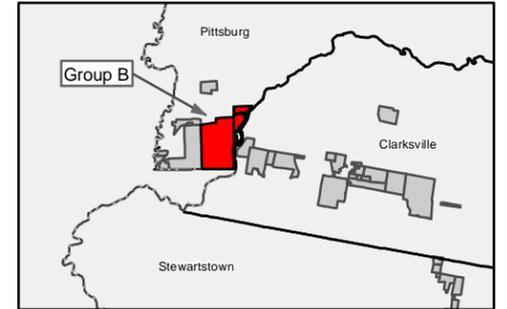


Photo 12. June 18, 2015. A View of Parcel 158 in Site B from the across the River and Route 3, looking west. Group B includes the ridge line in the photo.



Northern Pass Mitigation Analysis

Mitigation Group: B

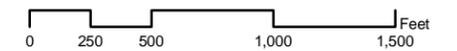


Group B Site Summary	
Town:	Pittsburg
County:	Coos
HUC 12 Watersheds:	10801010203 0801010303
Eco Region:	Connecticut Lakes
Total Site Acreage:	567

Site Features

- Proposed Transmission Structures
- ROW Access Routes
- NHD Delineated Streams
- Delineated Streams
- Proposed ROW
- Group B Parcels
- Political Boundaries
- Delineated Vernal Pools
- Delineated Wetlands
- Calcium Rich Bedrock
- Lowland Spruce Fir
- WAP Tier 2 Top ranked in region
- FEMA Flood Zone
- NH Conservation Land

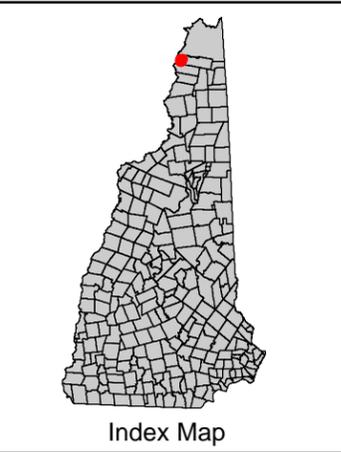
Data Provided By: GRANIT, NHDES, NHNHB, NRCS, NHD, USFWS & ESRI



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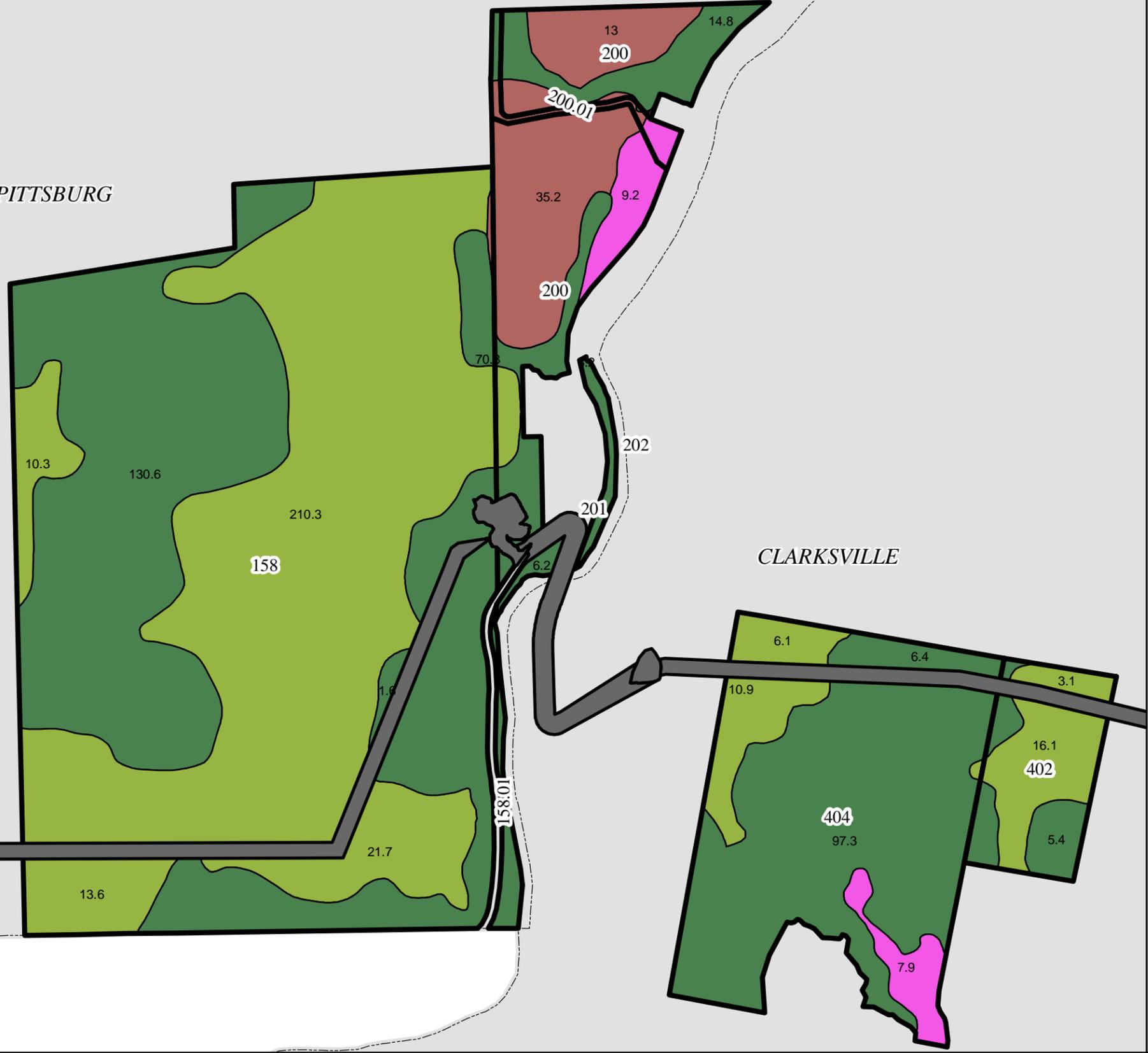


Northern Pass Mitigation Analysis



PITTSBURG

CLARKSVILLE



- Group: B**
Photointerpreted Cover Types
- Open Habitat
 - Clear Cut
 - River
 - Stream
 - Pond
 - Residential
 - Northern Hardwood Conifer
 - Mixed Hardwoods
 - Lowland Spruce Fir
 - Hardwood / Softwood
 - Hemlock Hardwood Pine
 - High Elevation 2500 +
 - High Elevation Spruce Fir 2700 +

*Note: open habitat includes wetland marshes, wet meadows, shrub swamps and fields.

Data Provided By: GRANIT, NHDES, NHNHB, NRCS, USFWS & ESRI



Mitigation Parcel Summary Sheet

Preservation Area ID: C **Town(s):** Clarksville **County:** Coos
HUC 12: 10801010203 **Ecological Region:** North Country **Max Elev:** 1,750

Coordinates (Site Centroid Lat/Long): 45°00'57.51" N; 71°26'58.22" W

LL#s: 402, 404

Site Description: Site C consists of two adjacent parcels (LL404 and LL402) dominated by northern hardwood-conifer and lowland spruce-fir forests. Wet meadow/shrub wetlands are also present. The site is mostly forested with several acres of open fields, a small farm pond, old orchards, and a perennial stream and wetland complex (Favreau Brook). The forests have been managed. Most of the site has been mapped by NH Fish and Game as a Deer Wintering Area (DWA). Recent logging operations took place on the northeastern portion of the site. The ground surface at the site generally slopes downhill from east to west.

Surrounding Land Use/Risks: Site C is partially bordered on two sides by the Washburn Family Forest, held by the Society for the Protection of NH Forests. The area adjacent to the site is a mixture of undeveloped woodlands and residential/camp properties. The site is bounded by wooded properties to the north, east, and west and by residential/wooded properties to the south. A large sand and gravel pit is located on a portion of the parcel to the northwest (LL 400), while a small sand and gravel pit is located on the parcel to the southeast (LL 410). The area surrounding the site is serviced by individual sub-surface septic systems or outhouses and private water supply wells or springs. Electric service is supplied to the area via overhead power lines that run along West Road and Haynes Road.

Man-made Features (existing/planned): The site contains an unoccupied private residence, a barn, an animal storage shed, and an old camp building. The private residence is located on the southeast portion of the site and consists of a two-story wood frame structure that was listed as being constructed in 1900. The building is supplied with electricity by overhead utility lines that enter the building on the south side. The building is reported to be connected to a sub-surface septic system although the system was not observed during the walkover of the site. A water supply well and pump house are located to the west of the building along Favreau Brook, which flows along the southern property boundary.

The site is accessed on the southeast corner via Haynes Road. A 50-foot right-of-way is located along the southern property boundary. Several old logging roads/skidder trails from timber harvesting are also present on the site. A snowmobile trail runs across a portion of the southwest corner of the site. A 120 foot wide transmission corridor with 4 lattice structures is planned along the northern end of Site C.

Mitigation Parcel Summary Sheet

Mitigation Goals Met: Deer wintering area; Northern Long-eared bat habitat; forest migratory bird habitat; contiguous forest block.

Conservation Priorities Matched: NCC – Forest block protection. WAP- late successional lowland spruce-fir habitat for marten, three-toed woodpecker, spruce grouse, deer, moose and bear and many invertebrates.

Natural Resource Inventory Summary (quantities are +/-):

Feature	Measurement/Classification
Total Site Area	161.3 acres
Waterbody	Small pond 0.25 acres; Favreau Brook
Shoreline Length	325 ft (pond)
Stream Length	2,400 lf Favreau Brook
Wetlands	2.38 acres (0.81 ac PSS1E, 0.10 ac PSS1B, 0.01 ac PFO1,4E, 1.01 ac PF01E, 0.02 ac PEM1B, 0.43 ac PFO4E) plus many un-mapped wetlands

Wetland Functions & Values of delineated wetlands and Favreau Brook

Function/Value	Present	Principal	Notes
Groundwater Rech/Disch.	X	X	Groundwater seeps along western portion of site
Floodflow Alteration			
Fish/Shellfish Habitat			
Sed/Tox Retention	X		
Nutrient Removal	X		
Sed/Shore Stabilization	X		
Production Export	X	X	Perennial outlet, pond
Wildlife Habitat	X	X	Pond and brook , DWA
Recreation	X		Snowmobile trail
Educate/Science Value			
Uniqueness/Heritage			
Visual Qual/Aesthetic	X		
End/Threatened Species			
Other:			

Conservation/Management Plan:

Within the ROW, vegetation will be maintained as either wet or dry shrub/meadow. The natural habitats will be lightly managed for Northern Long-eared bats and deer wintering habitat.

Mitigation Parcel Summary Sheet

Photos



Photo 1. View of recent logging activity on parcel LL 402.



Photo 2. View of interior landscape cover on parcel LL 402.



Photo 3. View facing north from Haynes Road of private residence on parcel LL 404.



Photo 4. View facing southwest of storage barn on parcel LL 404.

Mitigation Parcel Summary Sheet



Photo 5. June 18, 2015. Wetland along Favreau Brook.



Photo 6. Favreau Brook on parcel LL 404.



Photo 7. View of interior landscape cover on parcel LL 404.



Photo 8. View of interior landscape cover on parcel LL 404.

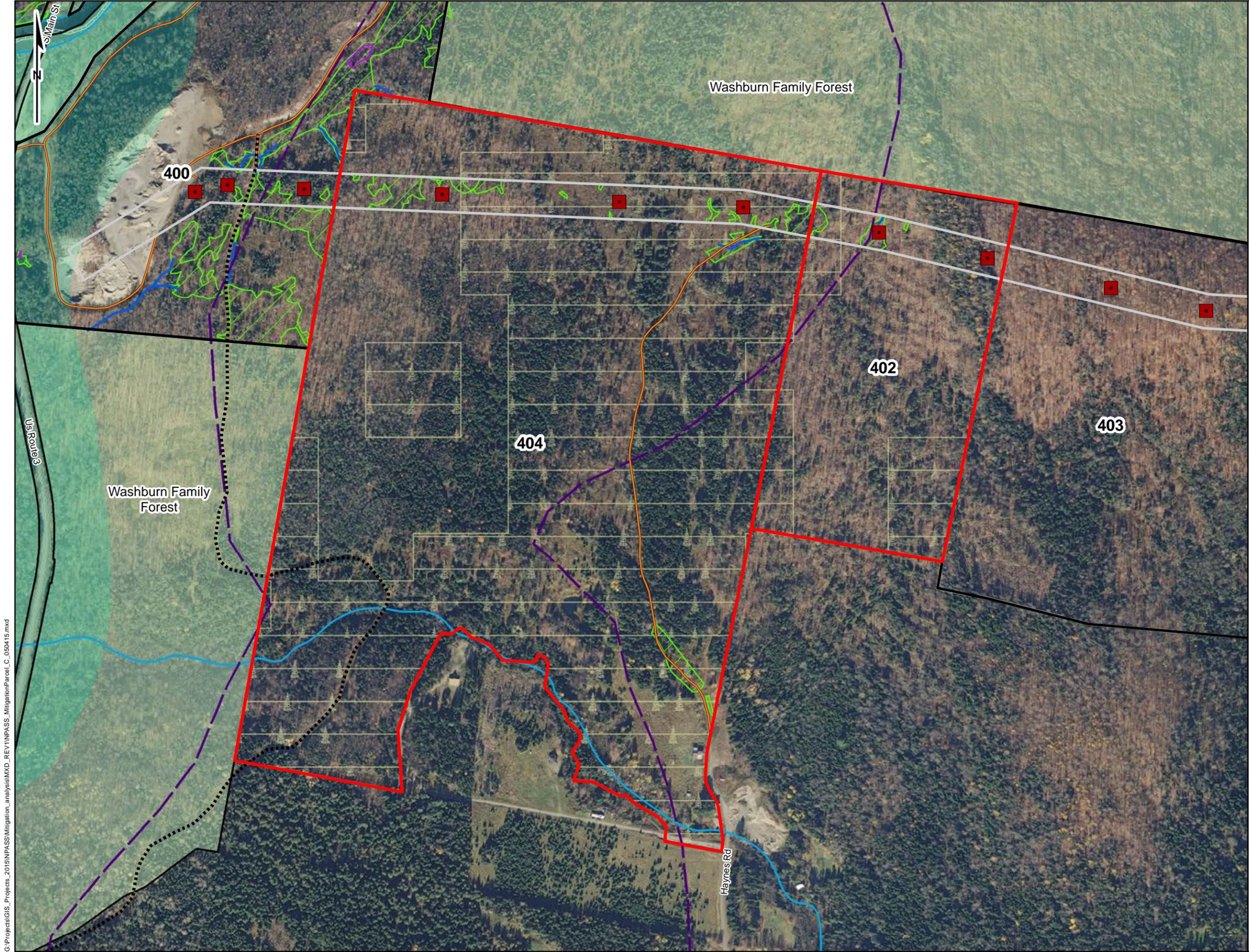
Mitigation Parcel Summary Sheet



Photo 9. June 18, 2015. Small farm pond on Parcel 404.

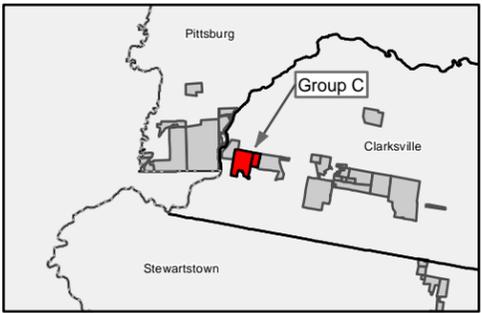


Photo 10. June 18, 2015. Old field with apple trees on Parcel 404.



Northern Pass Mitigation Analysis

Mitigation Group: C

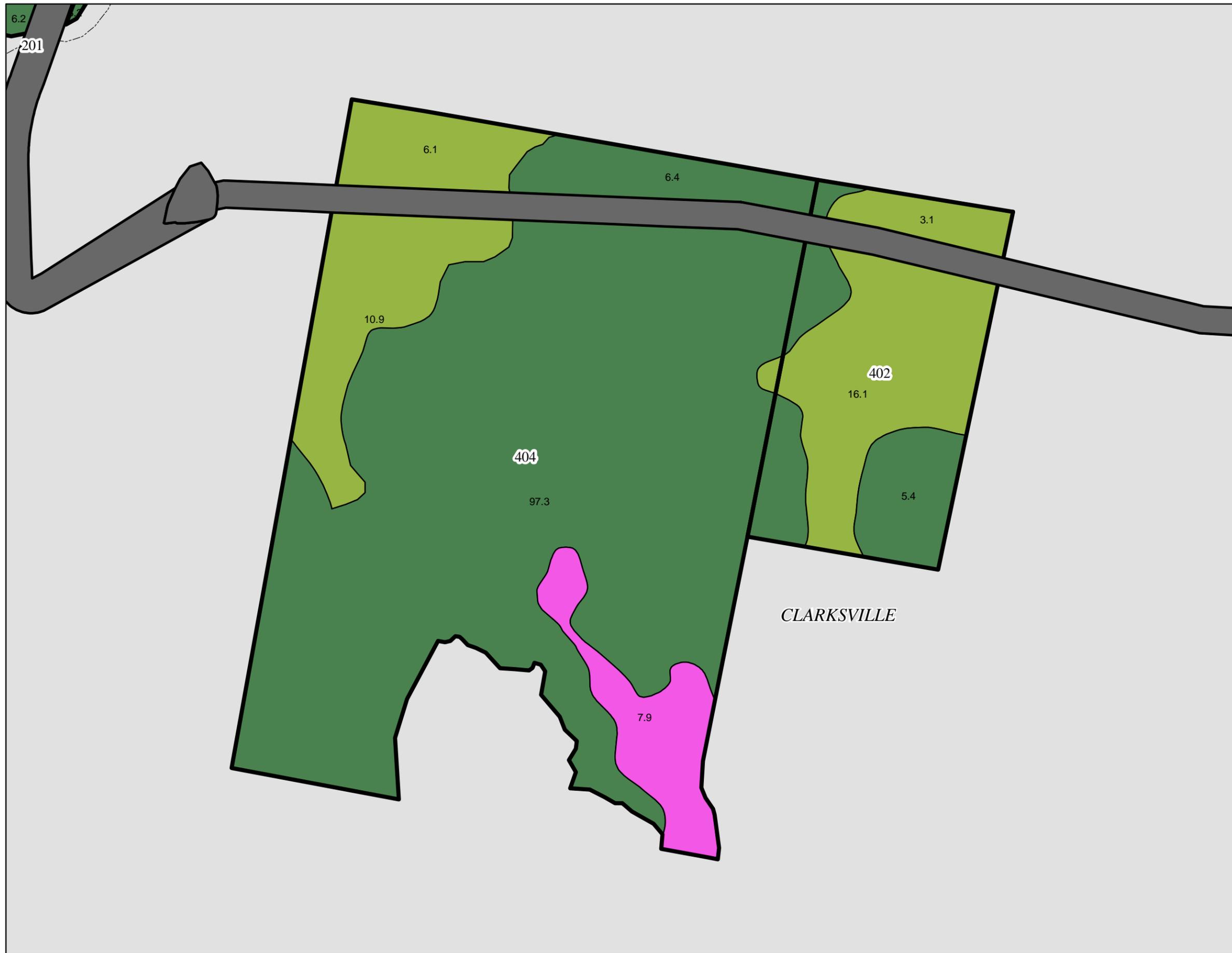


Group C Site Summary	
Town:	Clarksville
County:	Coos
HUC 12 Watersheds:	10801010203
Eco Region:	Connecticut Lakes
Total Site Acreage:	161.3

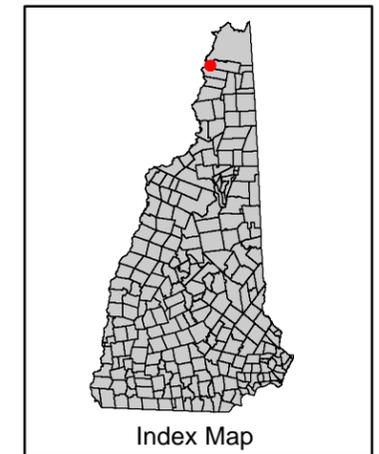
- Site Features**
- Proposed Transmission Structures
 - ROW Access Routes
 - NHD Delineated Streams
 - Delineated Streams
 - Proposed ROW
 - Group C Parcels
 - Deer Wintering Areas
 - Political Boundaries
 - Delineated Vernal Pools
 - Delineated Wetlands
 - Lowland Spruce Fir
 - FEMA Flood Zone
 - NH Conservation Land

Data Provided By: GRANIT, NHDES, NHHNB, NRCS, NHD, USFWS & ESRI

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Northern Pass Mitigation Analysis



Group: C

Photointerpreted Cover Types

 Open Habitat	 Lowland Spruce Fir
 Clear Cut	 Hardwood / Softwood
 River	 Hemlock Hardwood Pine
 Stream	 High Elevation 2500 +
 Pond	 High Elevation Spruce Fir 2700 +
 Residential	
 Northern Hardwood Conifer	
 Mixed Hardwoods	

*Note: open habitat includes wetland marshes, wet meadows, shrub swamps and fields.

Data Provided By: GRANIT, NHDES, NHHNB, NRCS, USFWS & ESRI



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03110



Mitigation Parcel Summary Sheet

Preservation Area ID: E **Town(s):** Clarksville **County:** Coos
HUC 12: 10801010301 **Ecological Region:** North Country **Max Elev:** 1,950

Coordinates (Site Centroid Lat/Long): 45°00'35.84" N; 71°24'05.68" W

LL#s: 424

Site Description: The current use of the site is a mixture of open fields, early successional forest regeneration, and woodlands. Site E's cover types consist of lowland spruce-fir and northern hardwood-coniferous forests. Grasslands and wet meadow/shrub wetlands are also present. The site has approximately 3,400 feet of frontage along the west side of NH Route 145 along the eastern property boundary and approximately 1,600 feet of frontage on the south side of Wiswell Road along the northwestern property boundary. The ground surface at the site is hilly with a ridge that is oriented in a southwest to northeast direction located on the western portion of the site. The ridge generally slopes downhill to the northwest and the southeast. The northeast portion of the site is also elevated and slopes downhill to the southwest. A stream and associated wetlands flows to the southwest along the bottom of the ridge.

Surrounding Land Use/Risks: The area adjacent to the site is a mixture of woodlands, open fields, agricultural fields, and residential properties. The area surrounding the site is serviced by individual sub-surface septic systems or outhouses and private water supply wells or springs. Electric service is provided to some of the adjacent properties via overhead utility lines that run along Route 145 to the east, West Road to the south, and Wiswell Road to the north. Site E has excellent road frontage, lovely views, and much open upland terrain that could easily be developed into multiple house lots.

Man-made Features (existing/planned): NH Route 145 is located along the eastern property boundary of the site, while Wiswell Road is located along the northwestern property boundary. A couple of gravel roadways also lead to wooded and open fields located on the southwest portion of the site. A transition station (#3) is planned for the northern edge of the parcel, and underground electrical cable with a narrow maintained corridor will extend southeast to Route 145.

Mitigation Goals Met: Threatened/endangered species, deer wintering area, WAP tier 1 habitat; wetlands and buffer protection; regenerating forest, potential northern long-eared bat habitat protection.

Conservation Priorities Matched: NCC: Forest block protection, rural farm protection, wetland buffer protection; WAP: Protect unfragmented blocks

Mitigation Parcel Summary Sheet

Natural Resource Inventory Summary (quantities are +/-):

Feature	Measurement/Classification
Total Site Area	215.5 acres
Waterbody	None
Shoreline Length	N/A
Stream Length	1055.96 lf
Wetlands	6.89 acres (0.69 ac PFO1,4E, 0.01 ac PSS1E, 0.07 ac PSS1, 5.98 ac PEM1E, 0.06 ac PEM1J, 0.08 ac PEM1E/SS1E) low estimate

Wetland Functions & Values

Function/Value	Present	Principal	Notes
Groundwater Rech/Disch.	X		
Floodflow Alteration			
Fish/Shellfish Habitat			
Sed/Tox Retention	X		
Nutrient Removal	X		
Sed/Shore Stabilization			
Production Export			
Wildlife Habitat	X		
Recreation	X		
Educate/Science Value			
Uniqueness/Heritage			
Visual Qual/Aesthetic	X		
End/Threatened Species	X		Possible Northern Harrier
Other:			

Conservation/Management Plan:

Within the ROW, vegetation will be maintained as either wet or dry shrub/meadow. Agricultural use will be allowed in currently farmed locations by reserved right, providing habitat for harrier and kestrel. Kestrel nest boxes may be installed. The recently cutover area will be allowed to regenerate, providing a block of early successional habitat. The lowland spruce-fir forest will be protected without active management for northern long-eared bats, marten and lynx.

Mitigation Parcel Summary Sheet

Photos



Photo 1. View of gravel roadway on the interior of parcel LL 424.



Photo 2. View of the interior cover type on parcel LL 424.



Photo 3. View of the interior cover type on parcel LL 424.



Photo 4. View facing north from the northwest corner of parcel LL 424.

Mitigation Parcel Summary Sheet

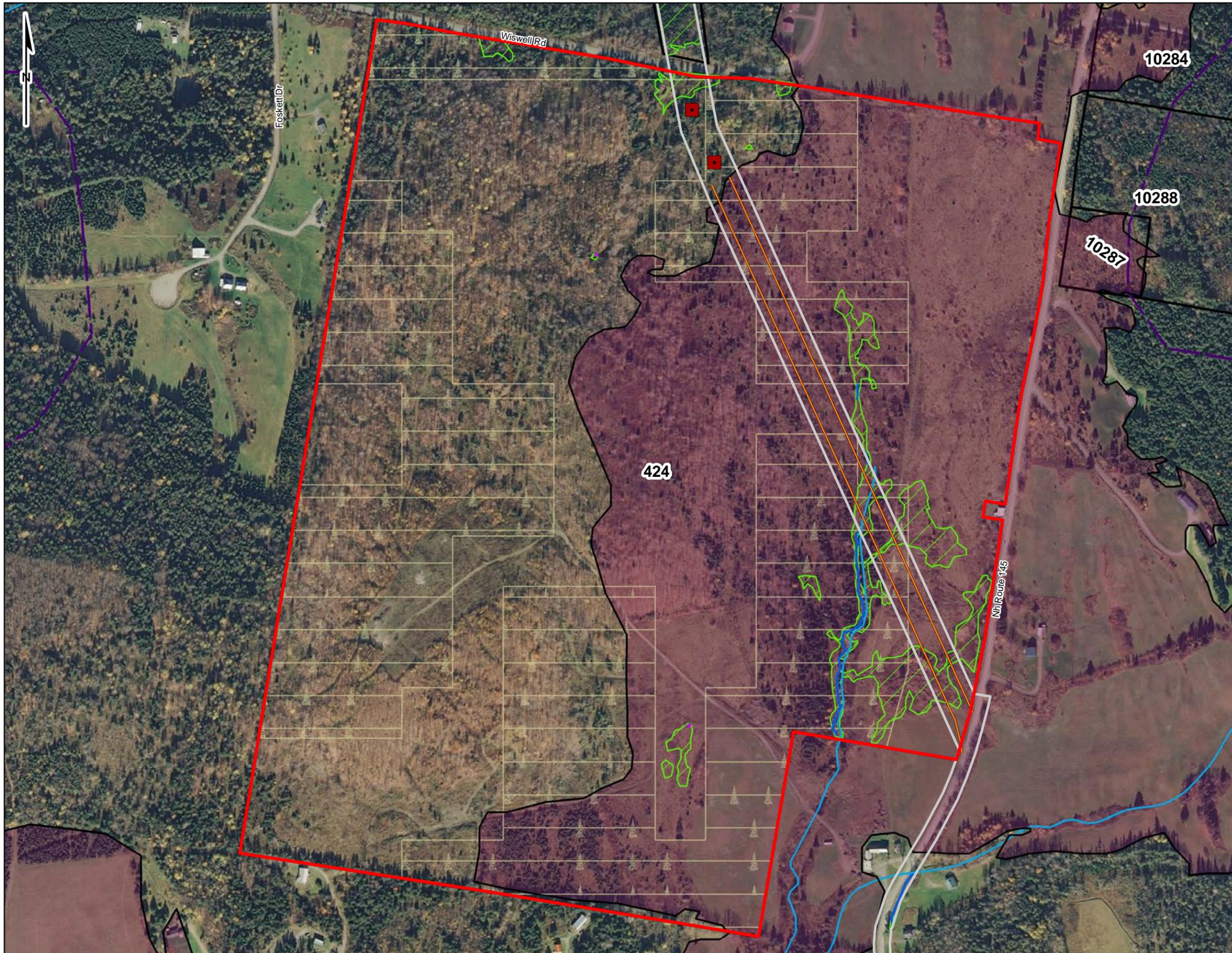


Photo 5. View facing south from the northeast boundary of LL 424.



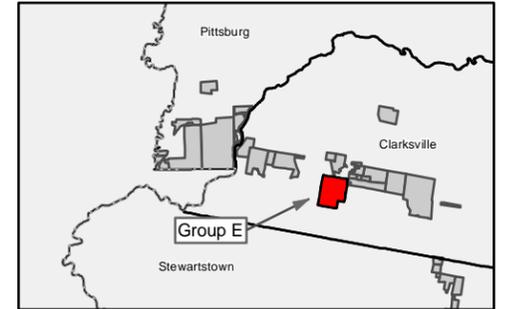
Photo 6. View facing west from the northeast corner of LL 424.

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Northern Pass Mitigation Analysis

Mitigation Group: E



Group E Site Summary	
Town:	Clarksville
County:	Coos
HUC 12 Watersheds:	10801010301
Eco Region:	Connecticut Lakes
Total Site Acreage:	215.5

Site Features

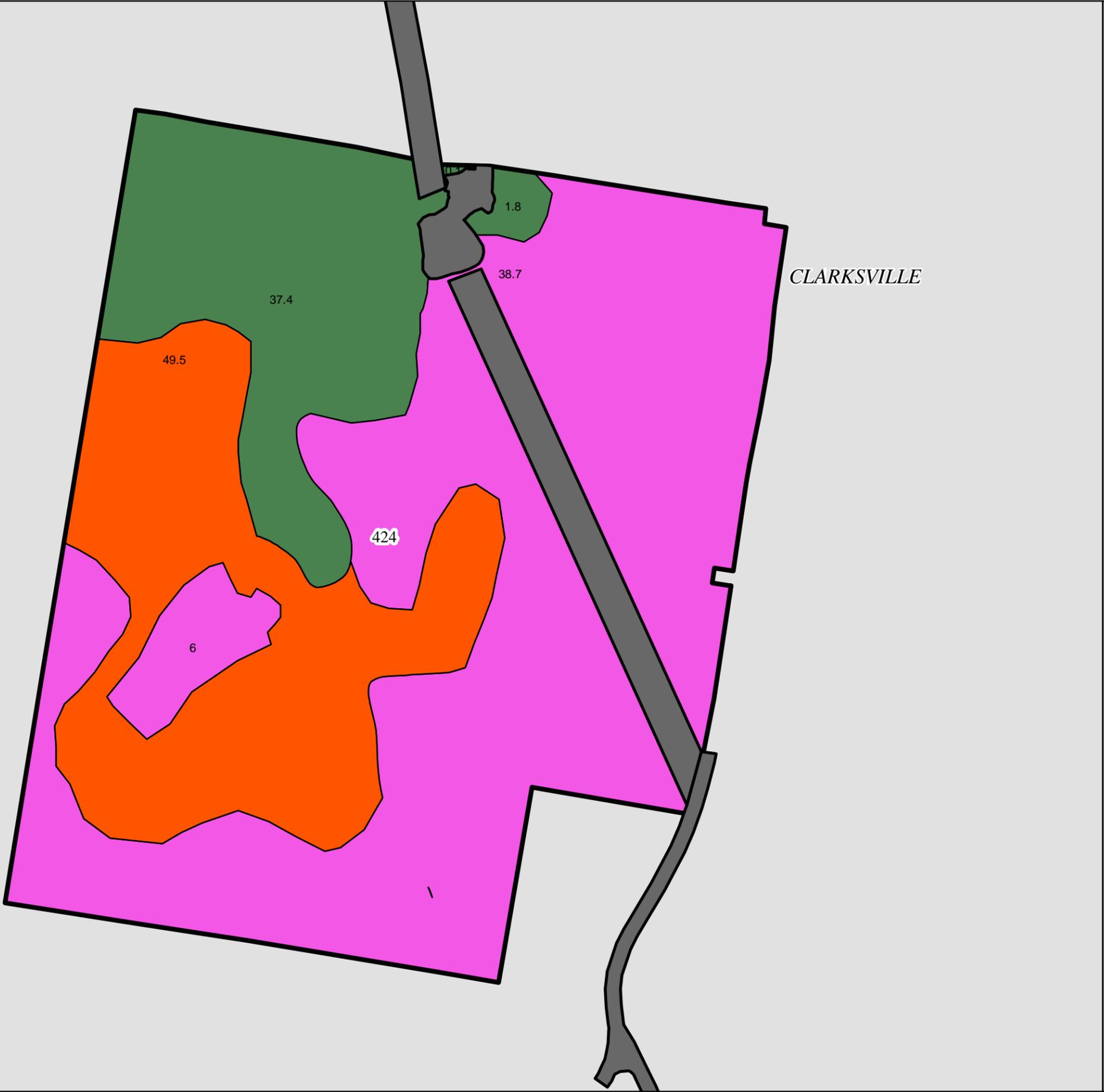
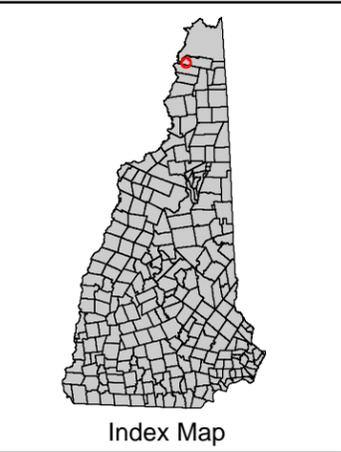
- Proposed Transmission Structures
- ROW Access Routes
- NHD Delineated Streams
- Delineated Streams
- Proposed ROW
- Group E Parcels
- Political Boundaries
- Deer Wintering Areas
- Delineated Vernal Pools
- Delineated Wetlands
- Lowland Spruce Fir
- RTE NHB Wildlife

Data Provided By: GRANIT, NHDES, NHNHB, NRCS, NHD, USFWS & ESRI

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 Bedford, NH, USA
 03110



Northern Pass Mitigation Analysis



Group: E
Photointerpreted Cover Types

- | | |
|---------------------------|----------------------------------|
| Open Habitat | Lowland Spruce Fir |
| Clear Cut | Hardwood / Softwood |
| River | Hemlock Hardwood Pine |
| Stream | High Elevation 2500 + |
| Pond | High Elevation Spruce Fir 2700 + |
| Residential | |
| Northern Hardwood Conifer | |
| Mixed Hardwoods | |

*Note: open habitat includes wetland marshes, wet meadows, shrub swamps and fields.

Data Provided By: GRANIT, NHDES, NHHNB, NRCS, USFWS & ESRI



Mitigation Parcel Summary Sheet

Preservation Area ID: K **Town(s):** Dixville and Columbia **County:** Coos
HUC 12: 10801010401; **Ecological Region:** North Country **Max Elev:** 2,880

Coordinates (Site Centroid Lat/Long): 44°50'30.68" N; 71°20'36.33" W

LL#s: 11007, 15010

Site Description: Site K is located in high elevation spruce-fir, lowland spruce-fir and northern hardwood-conifer forest on the western flank of Dixville Peak.

Surrounding Land Use/Risks: Adjacent land use is predominantly conservation land. Nash Stream Forest is adjacent to the southwest and conservation land managed by SPNHF associated with the Lewis family and the Balsams lies to the north, northeast, and east. The south east portion of the site abuts the managed forests of the Wagner Company.

Man-made Features (existing/planned): There are no man-made features existing or planned on this site.

Mitigation Goals Met: Wetland preservation and buffer protection, Contiguous conservation land, high elevation habitat, and potential habitat for northern long-eared bats, three-toed woodpeckers, lynx, marten, and potential moose concentration areas.

Conservation Priorities Matched: NCC: Forest block protection; WAP: Protect unfragmented blocks

Natural Resource Inventory Summary (quantities are +/-):

Feature	Measurement/Classification
Total Site Area	444.2 acres
Waterbody	Perennial tributary to Roaring Brook and several intermittent tribs
Shoreline Length	N/A
Stream Length	Perennial – approx.. 2,200 ft. Additional intermittent streams
Wetlands	Not documented –area of poorly drained soils, app. 80 acres

Mitigation Parcel Summary Sheet

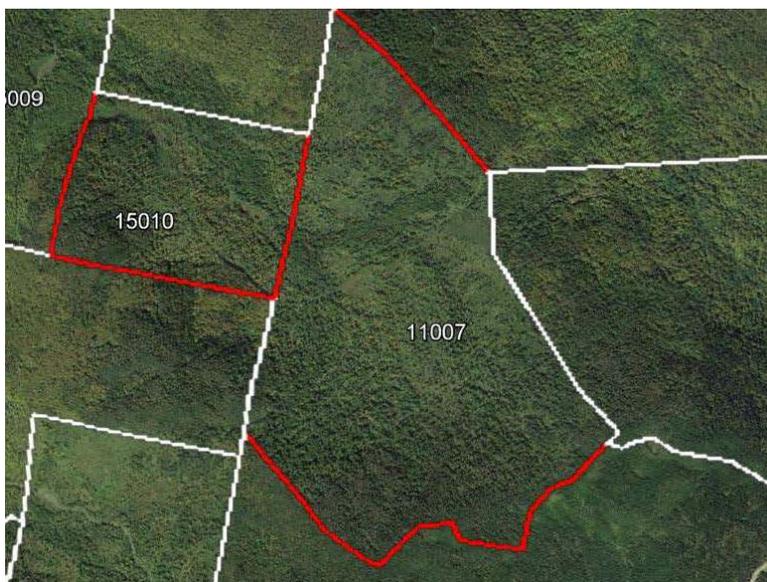
Wetland Functions & Values – TBD in field: approximations from aerials

Function/Value	Present	Principal	Notes
Groundwater Rech/Disch.	X		
Floodflow Alteration			
Fish/Shellfish Habitat			
Sed/Tox Retention			
Nutrient Removal			
Sed/Shore Stabilization			
Production Export			
Wildlife Habitat	X	X	
Recreation			
Educate/Science Value			
Uniqueness/Heritage			
Visual Qual/Aesthetic			
End/Threatened Species			
Other:			

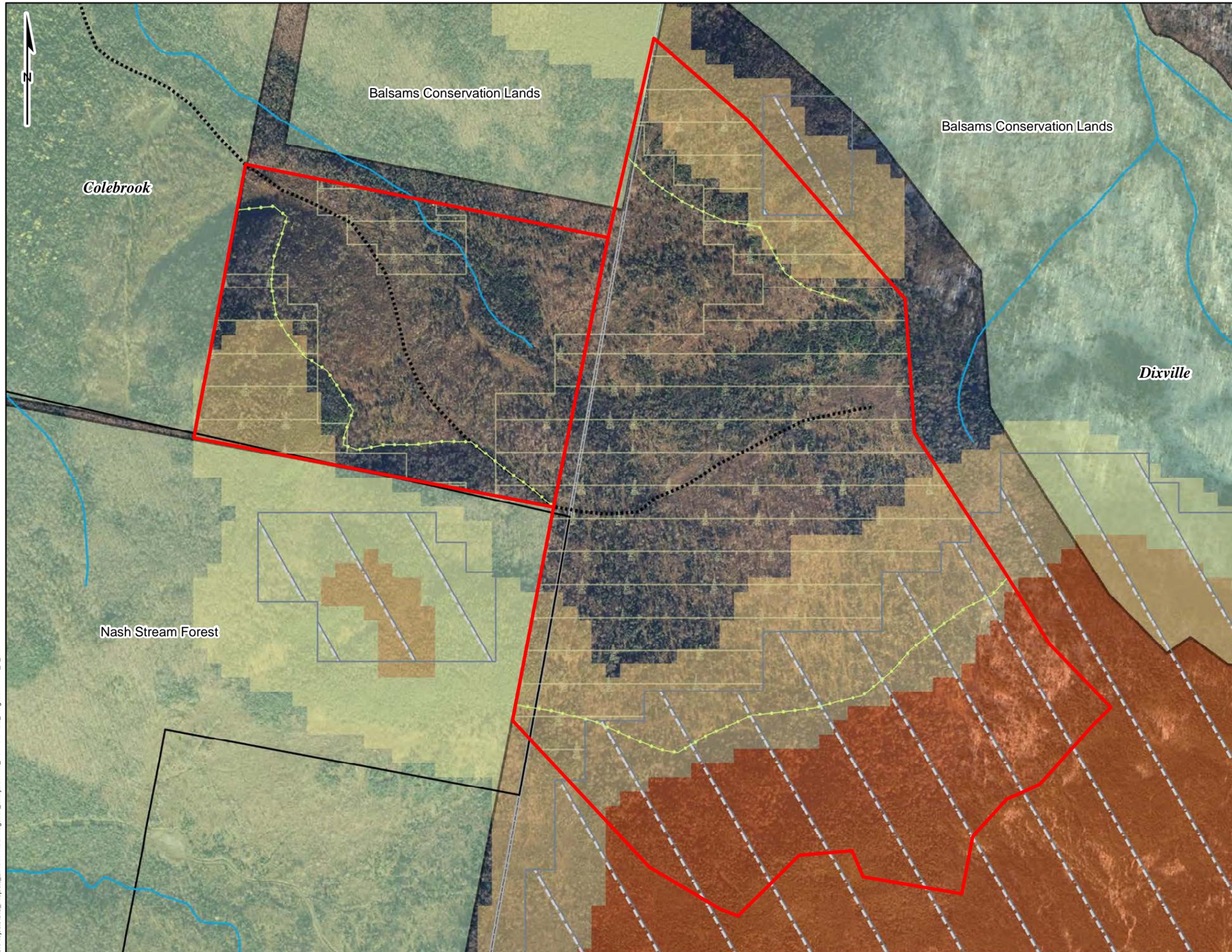
Conservation/Management Plan:

The natural habitats will be protected with light management only.

Photos - none presently.

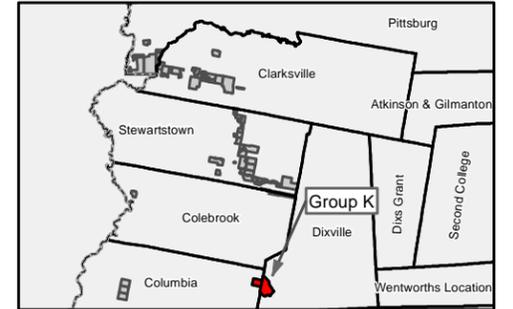


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Northern Pass Mitigation Analysis

Mitigation Group: K



Group K Site Summary	
Town:	Dixville & Columbia
County:	Coos
HUC 12 Watersheds:	10801010401
Eco Region:	Mahoosic-Rangely Lakes
Total Site Acreage:	444.2

Site Features

- Existing Trails
- NHD Delineated Streams
- Ridge Habitat
- Group K Parcels
- Political Boundaries
- High Elevation Spruce Fir
- Lowland Spruce Fir
- NH Conservation Land

Elevation (feet)

- 31 - 2,500
- 2,500 - 2,700
- 2,700 - 6,284

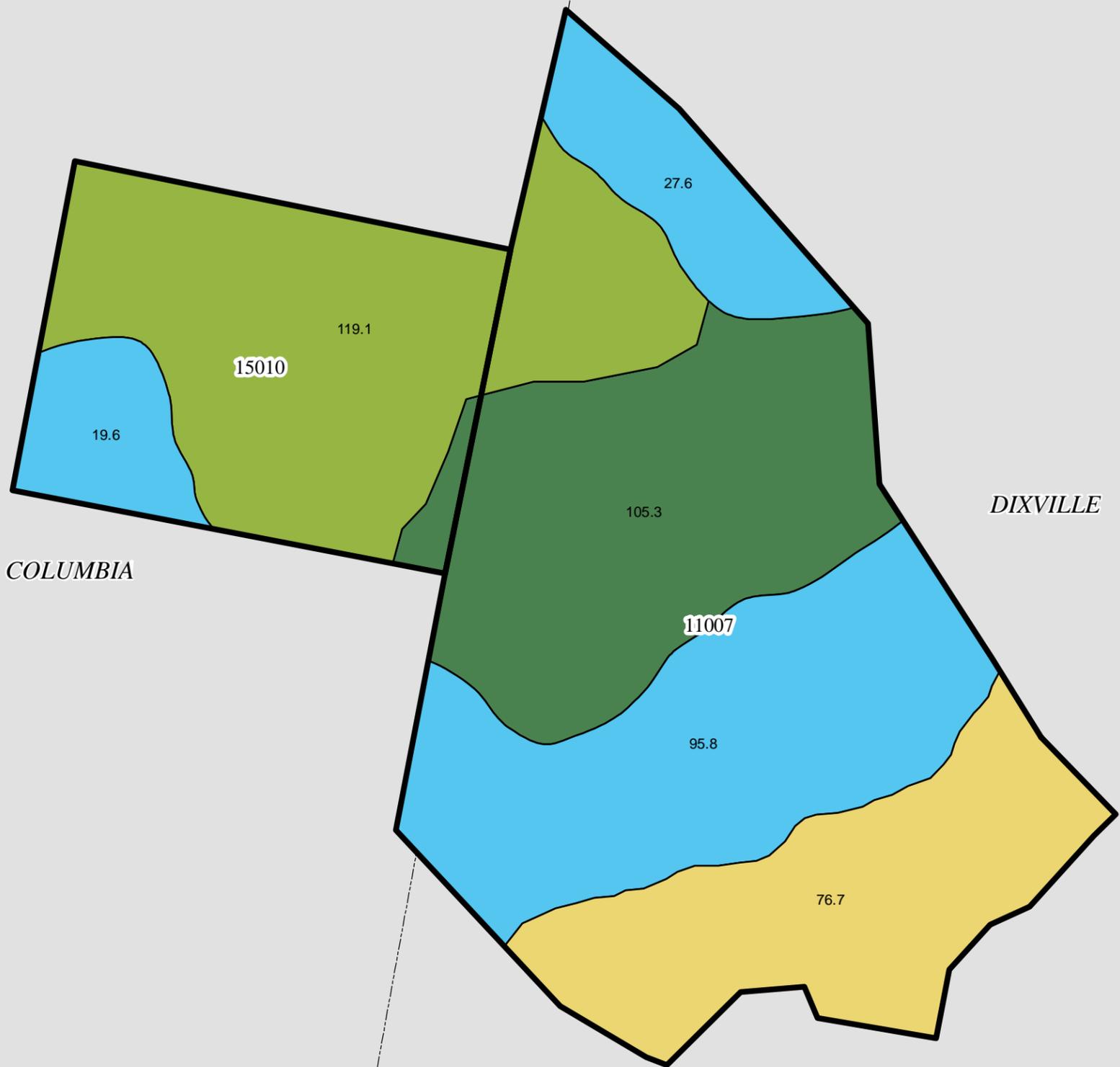
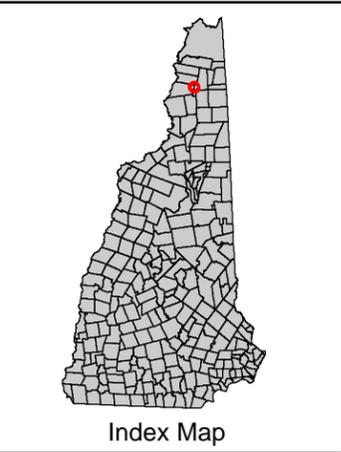
Data Provided By: GRANIT, NHDES, NHHNB, NRCS, NHD, USFWS & ESRI



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Northern Pass Mitigation Analysis



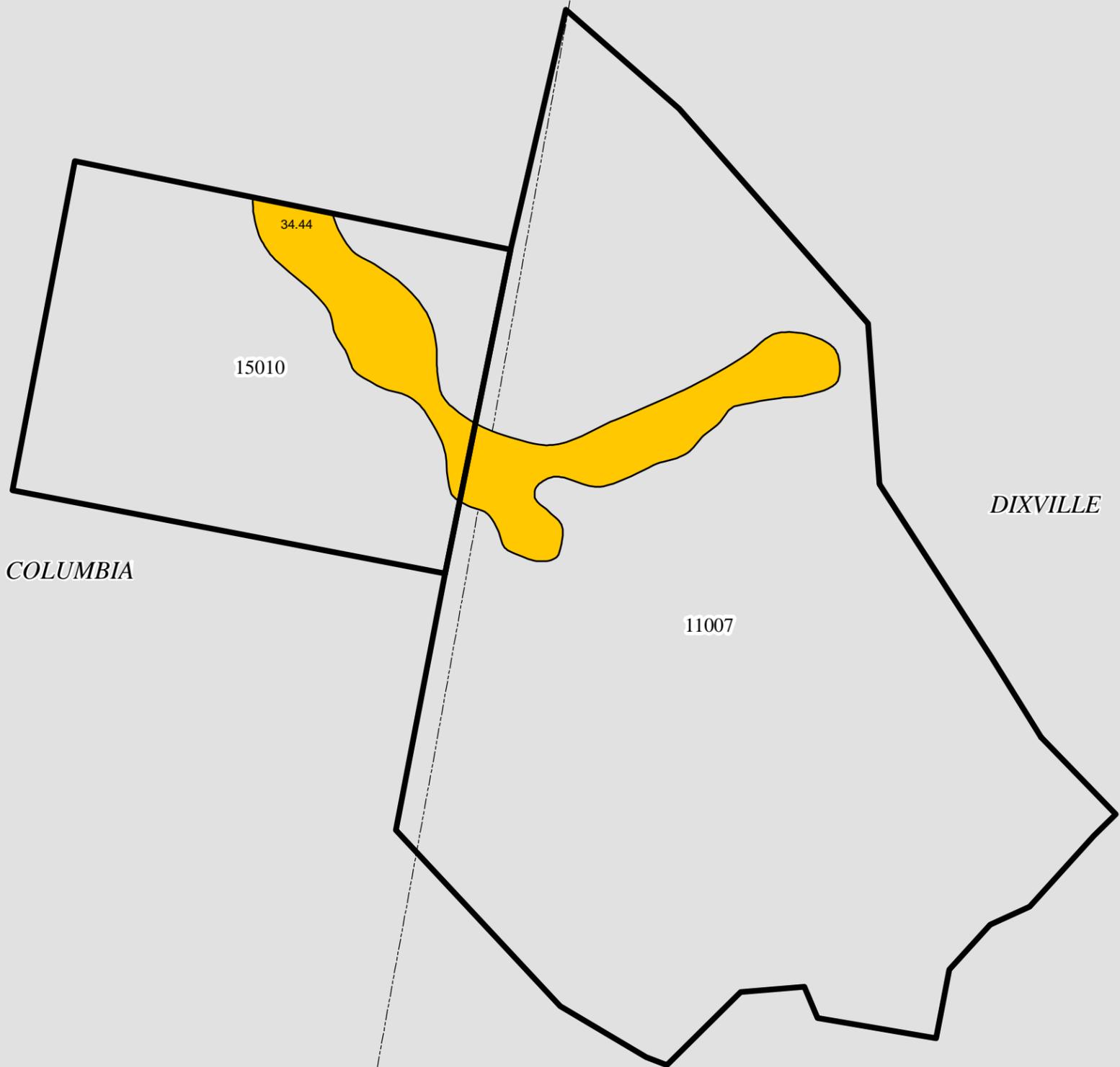
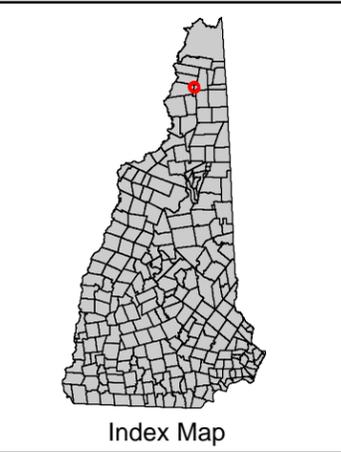
- Group: K**
Photointerpreted Cover Types
- Open Habitat
 - Clear Cut
 - River
 - Stream
 - Pond
 - Residential
 - Northern Hardwood Conifer
 - Mixed Hardwoods
 - Lowland Spruce Fir
 - Hardwood / Softwood
 - Hemlock Hardwood Pine
 - High Elevation 2500 +
 - High Elevation Spruce Fir 2700 +

*Note: open habitat includes wetland marshes, wet meadows, shrub swamps and fields.

Data Provided By: GRANIT, NHDES, NHNHB, NRCS, USFWS & ESRI



Northern Pass Mitigation Analysis



Group: K

Photointerpreted Wetland Cover Types

- | | |
|--------|----------------|
| PEM1 | PUB |
| PFO1 | PVP |
| PFO1/4 | River |
| PFO4 | Stream Channel |
| PSS1 | |

Data Provided By: GRANIT, NHDES, NHNHB, NRCS, USFWS & ESRI



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Mitigation Parcel Summary Sheet

Preservation Area ID: N **Town(s):** Stewartstown **County:** Coos

HUC 12: 10801010301 **Ecological Region:** North Country **Max Elev:** 1,850

Coordinates (Site Centroid Lat/Long): 44°56'38.41" N; 71°23'51.42" W

LL#s: 10665

Site Description: Site N is located in cutover lowland spruce-fir and northern hardwood-conifer forests. The current use of the site is undeveloped woodlands, with small clusters of mixed forest and individual trees left over developing seedlings and saplings. A high quality 20 acre beaver wetland complex and wet meadow/shrub wetlands along Cedar Brook are also present. The site is located on the south side of Bear Rock Road.

The ground surface at the site slopes downhill from the south to the north; towards the wetlands and stream that drains east to west parallel to Bear Rock Road. Several seepage wetlands are also present. The elevation of the site ranges from approximately 1,840 feet on the southeast corner to 1,560 feet on the northwest corner at the outlet of the stream.

Surrounding Land Use/Risks: The area adjacent to the site is a mixture of undeveloped woodlands, open fields, and residential/camp properties. The site is bounded by wooded parcels to the east, south, southwest, and west and by wooded residential/camp properties to the north. The McAllaster Property to the east along Cedar Brook is conservation land held by the Society for the Protection of New Hampshire Forests, which also holds over 1,000 acres of land just behind three small parcels on the north side of Bear Rock Road. Electric service is provided to some of the adjacent properties via overhead utility lines that run along Bear Rock Road and McAllaster Road. There is approximately 3,150 feet of frontage on Bear Rock Road, a portion of which could be developed for residential use.

Man-made Features (existing/planned): The tax card shows a one-story 280 square foot brown camp building that was built in 1980. An unregistered 8 foot by 26 foot camp trailer (with a note of "Yellowstone") and a 6 foot by 8 foot lean-to are also listed on the card. This tax card is listed as LL 10665 by RPI. However, based on information gathered during the walkover, this card lists the building located on the south central portion of LL 10664 and the camp trailer located on the eastern side of LL 10664. A snowmobile trail leads from Bear Rock Road to the south across LL 10665 and exits the parcel along the southern property boundary. An old woods road also leads across the east central portion of LL 10665.

Mitigation Goals Met: High value wetland (marsh/shrub and WAP Tier 1 Highest Ranked habitat) and buffer present; stream and buffer; potential habitat for northern long-eared bat and marsh birds.

Mitigation Parcel Summary Sheet

Conservation Priorities Matched: NCC – Forest block protection and wetland and upland buffer protection. WAP – Tier

Natural Resource Inventory Summary (quantities are +/-):

Feature	Measurement/Classification
Total Site Area	128.7 acres
Waterbody	Approx. 3.26 acres of Beaver Ponds (see PUB below)
Shoreline Length	Approx. 1,500 feet along beaver ponds
Stream Length	approx.. 3,800 linear feet
Wetlands	Approx. 19.5 acres (12.3 PFO4; 4 PEM1; 3.26 PUB), including beaver ponds

Wetland Functions & Values

Function/Value	Present	Principal	Notes
Groundwater Rech/Disch.	X	X	Seepage slopes
Floodflow Alteration	X	X	Beaver dams and floodplain
Fish/Shellfish Habitat			
Sed/Tox Retention	X	X	Flow slows in ponds
Nutrient Removal	X	X	Robust vegetation in marsh
Sed/Shore Stabilization	X		
Production Export	X	X	Perennial flow and food sources
Wildlife Habitat	X	X	Snags, marsh birds, forest birds
Recreation	X		
Educate/Science Value			
Uniqueness/Heritage			
Visual Qual/Aesthetic	X		
End/Threatened Species			
Other:			

Conservation/Management Plan:

Within the ROW, vegetation will be maintained as either wet or dry shrub/meadow. The natural habitats will be protected without active management and allowed to regenerate into mature forest.

Photos

Mitigation Parcel Summary Sheet



Figure 1. View facing west along Bear Rock Road and the northern property boundary of LL 10665.



Figure 2. View of snowmobile trail passing through the interior of parcel LL 10665.



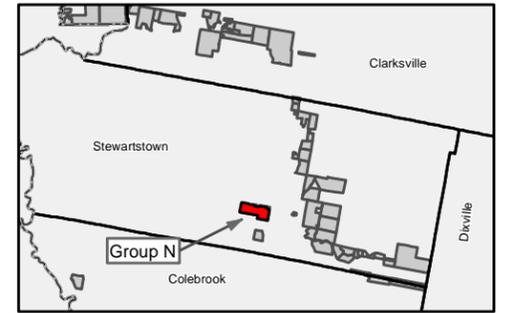
Figure 3. View of forest cover on parcel LL 10665.



Figure 4. View of forest cover on parcel LL 10665.

Northern Pass Mitigation Analysis

Mitigation Group: N

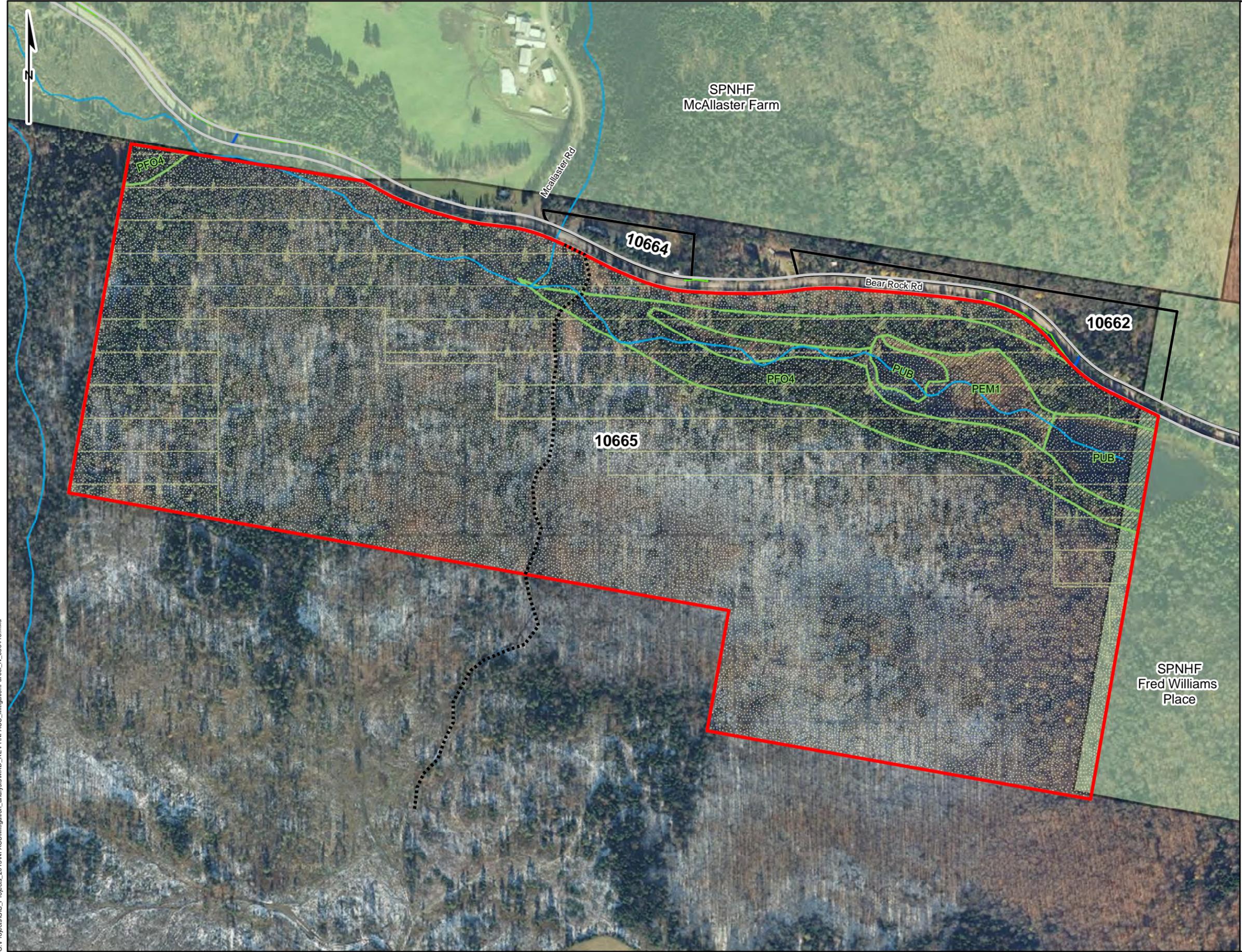


Group N Site Summary	
Town:	Stewartstown
County:	Coos
HUC 12 Watersheds:	10801010301
Eco Region:	Connecticut Lakes
Total Site Acreage:	128.7

Site Features

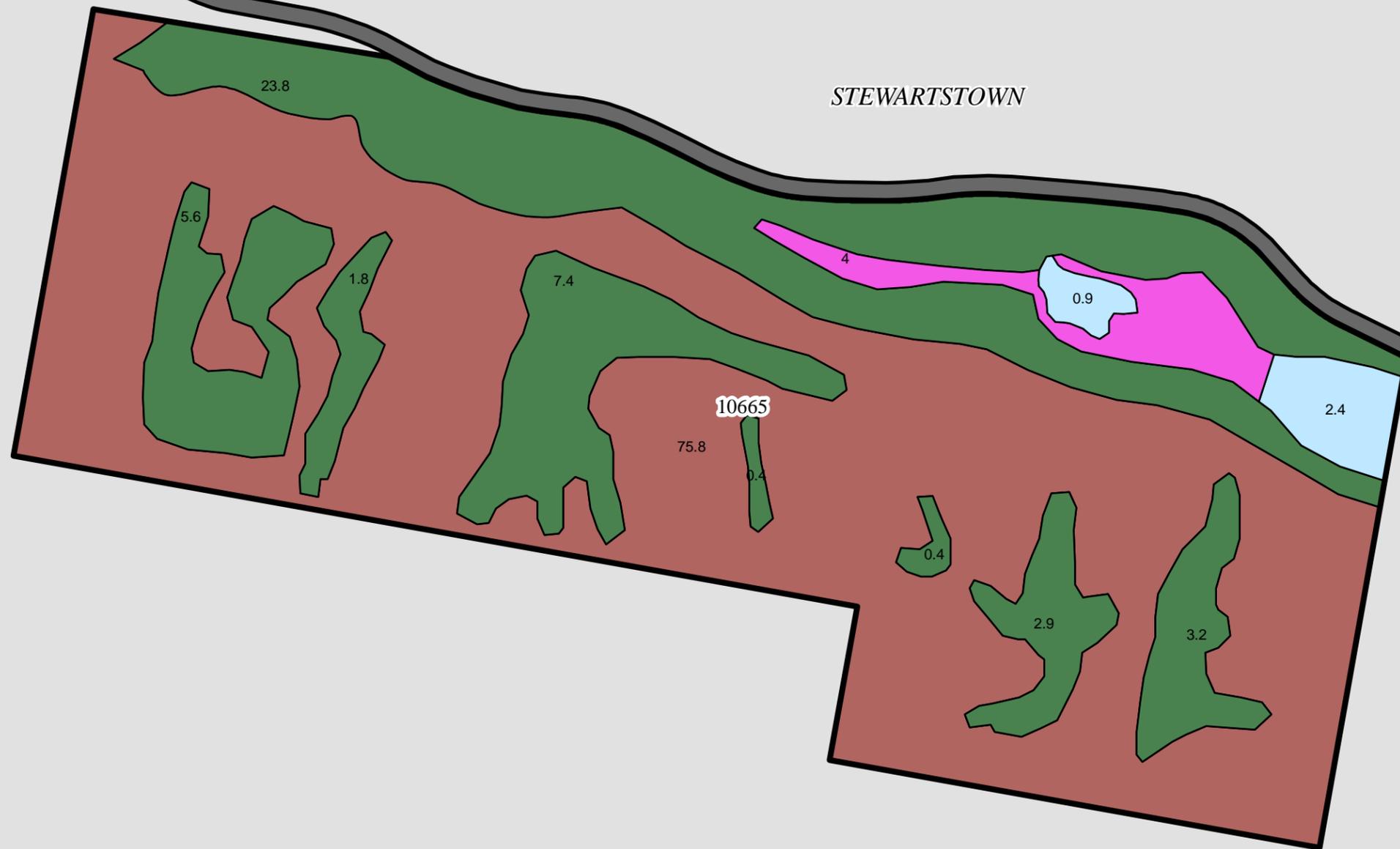
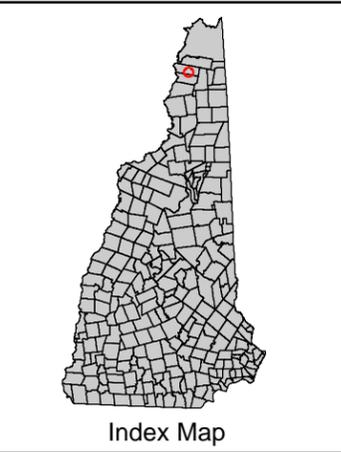
- Existing Trails
- NHD Delineated Streams
- Delineated Streams
- Proposed ROW
- Group N Parcels
- Political Boundaries
- NH Conservation Land
- Delineated Vernal Pools
- Delineated Wetlands
- Photointerpreted Wetlands
- Calcium Rich Bedrock
- Lowland Spruce Fir

Data Provided By: GRANIT, NHDES, NHHB, NRCS, NHD, USFWS & ESRI



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Northern Pass Mitigation Analysis



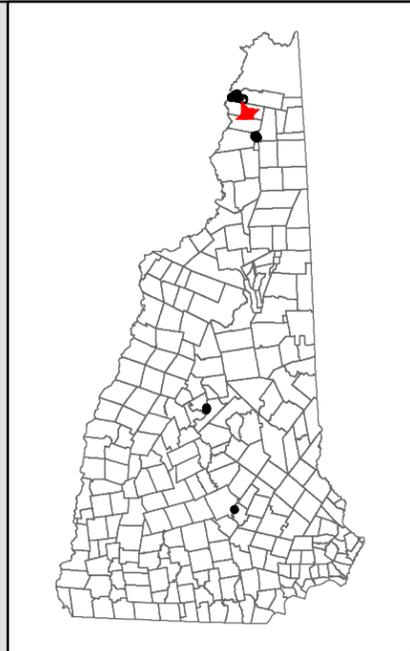
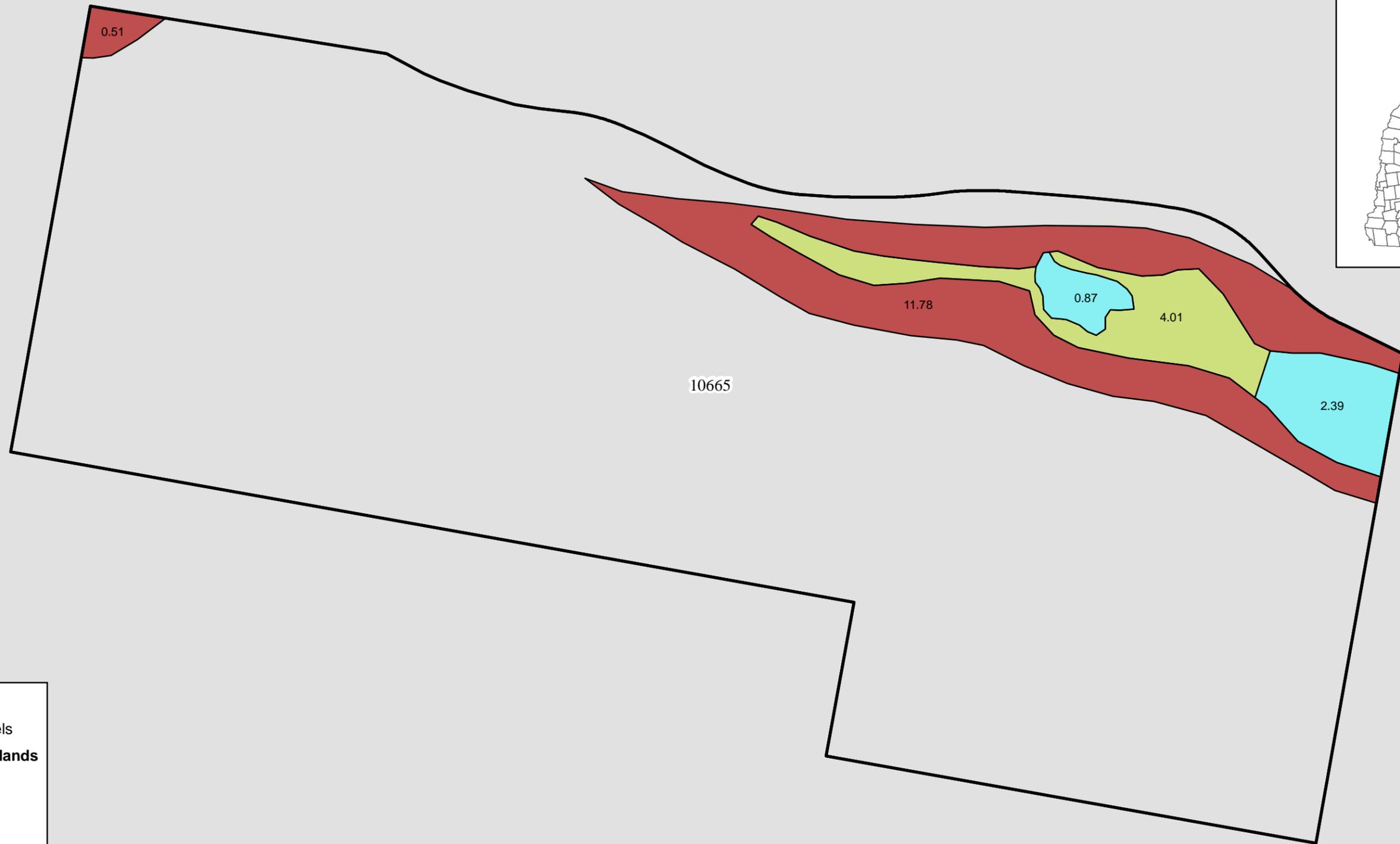
- Group: N**
Photointerpreted Cover Types
- | | |
|---------------------------|----------------------------------|
| Open Habitat | Lowland Spruce Fir |
| Clear Cut | Hardwood / Softwood |
| River | Hemlock Hardwood Pine |
| Stream | High Elevation 2500 + |
| Pond | High Elevation Spruce Fir 2700 + |
| Residential | |
| Northern Hardwood Conifer | |
| Mixed Hardwoods | |

*Note: open habitat includes wetland marshes, wet meadows, shrub swamps and fields.

Data Provided By: GRANIT, NHDES, NHNHB, NRCS, USFWS & ESRI



GROUP: N



Features

- Mitigation Parcels

Photointerpreted Wetlands

- PEM1
- PSS1
- PFO1
- PFO1/4
- PFO4
- PUB
- River

Mitigation Parcel Summary Sheet

Preservation Area ID: Z2 **Town(s):** New Hampton **County:** Belknap

HUC 10: 0107000108 **Ecological Region:** Lakes Region **Max Elev:** 650 ft

Coordinates (Site Centroid Lat/Long): 43° 38'41.38" N, 71°38'57.17" E

LL#s: 6145.02

Site Description: Site Z2 is a 38 acre parcel situated between Route 132 and the state-designated Pemigewasset River in New Hampton. This parcel has approximately 5,000 linear feet of frontage on the River, and includes an upland buffer approximately 350 to 600 feet in width between Route 132 and the River. Un-named streams border the parcel to the north and south. The northern half and southern tip of the parcel are primarily Hemlock-beech-oak-pine forest, and a WAP Tier 2 floodplain forest is mapped in this location. There is also a Dry River Bluff (S3)(vulnerable) community along the River edge, and a dry, sandy relatively open area with red pine in the center. One state indeterminate species, *Aristida basiramea*, was observed on the parcel.

Surrounding Land Use/Risks: This parcel is prime riverfront property with a western view that would quickly be developed for residential homes. There is residential development to the north and east of the parcel. The conservation land, New Hampton Bridgewater Scenic Easement (NHDOT) borders the parcel to the south. Across the Pemi to the west is residential and farm land, and additional conservation land.

Man-made Features (existing/planned): An existing PSNH transmission line crosses the parcel near the southern end, and there is a small round-a-bout at the southern tip. There is evidence of ATV use, and some trash has been dumped in the central cleared portion of the property. The proposed NP line would be constructed within the existing PSNH ROW. The existing line and the two existing structures would be relocated, and the new NP line will have two new structures.

Mitigation Goals Met: This parcel provides Pemigewasset River frontage, forest block habitat for bats and other forest species, wildlife corridor protection, and opportunities for restoration of an important upland buffer along a major Designated River.

Conservation Priorities Matched: LRPC: Conservation of land near lakes, rivers, streams, shorefront (to protect from development) and connectivity with larger conservation areas

Mitigation Parcel Summary Sheet

Natural Resource Inventory Summary (quantities are +/-):

Feature	Measurement/Classification
Total Site Area	38 acres
Waterbody	Pemigewasset River
Shoreline Length	Approx.. 5,000 feet
Stream Length	Approx.. 1,325
Wetlands	None

Conservation/Management Plans: TBD

Map

Photos

Mitigation Parcel Summary Sheet

Photos



Photo 1. March 25, 2015. Hemlock-Beech-Oak-Pine forest.



Photo 3. The S3 Dry Riverbluff community looking north along the shore of the Pemigewasset River.



Photo 2. March 25, 2015. There is an open disturbed area within the parcel that has some trash that would be cleaned up. The access would be secured.



Photo 4. March 25, 2015. The S3 Dry River Bluff at an opening, looking west across the Pemigewasset River.

Mitigation Parcel Summary Sheet



Photo 5. March 25, 2015. An un-named stream that forms the northern parcel boundary, looking west into the Pemigewasset River.



Photo 6. March 25, 2015. A woods road near the stat-indeterminate plant found on the parcel

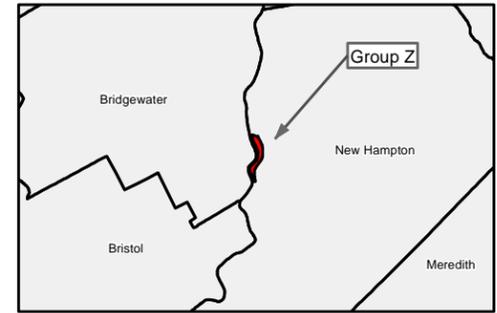


Photo 7. March 25, 2015. The forested edge of the Pemigewasset River.



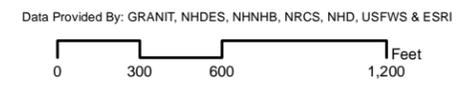
Northern Pass Mitigation Analysis

Mitigation Group: Z



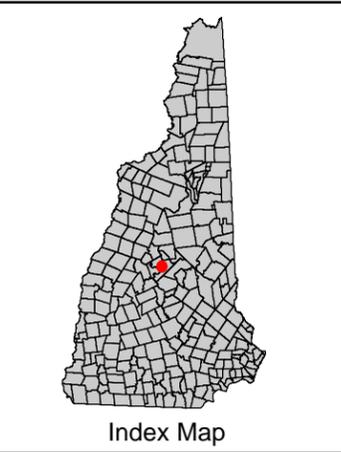
Group Z Site Summary	
Town:	New Hampton
County:	Belknap
HUC 12 Watersheds:	010700010801
Eco Region:	Hillsboro Inland Hills & Plains
Total Site Acreage:	15.3

- Site Features**
- Proposed Transmission Structures
 - ▨ Delineated Vernal Pools
 - ~ ROW Access Routes
 - ▨ Delineated Wetlands
 - ~ NHD Delineated Streams
 - ◻ WAP Tier 1 Top ranked in region
 - ~ Delineated Streams
 - Calcium Rich Bedrock
 - ◻ Proposed ROW
 - FEMA Flood Zone
 - ◻ Group Z Parcels
 - ▨ NH Conservation Land
 - ◻ Political Boundaries



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Northern Pass Mitigation Analysis



Group: Z - New Hampton
Photointerpreted Cover Types

- | | |
|---------------------------|----------------------------------|
| Open Habitat | Lowland Spruce Fir |
| Clear Cut | Hardwood / Softwood |
| River | Hemlock Hardwood Pine |
| Stream | High Elevation 2500 + |
| Pond | High Elevation Spruce Fir 2700 + |
| Residential | |
| Northern Hardwood Conifer | |
| Mixed Hardwoods | |

*Note: open habitat includes wetland marshes, wet meadows, shrub swamps and fields.

Data Provided By: GRANIT, NHDES, NHNH, NRCS, USFWS & ESRI



Mitigation Parcel Summary Sheet

Preservation Area ID: Z3 **Town(s):** Pembroke **County:** Merrimack

HUC 10: 01070006 **Ecological Region:** Merrimack Valley **Max Elev:** 650

Coordinates (Site Centroid Lat/Long): 43°11'22.10" N; 71°27'38.87" W

LL#s: 8981, 8984

Site Description: Site Z3 is a 92 acre hemlock-hardwood-pine forest. A perennial stream and multiple wetland types are also present, including a beaver flowage wetland system, with PSS, PFO and PEM cover types. Several vernal pools are present, and the buffering forest is well-managed second growth hemlock, pine and oak forest.

Surrounding Land Use/Risks: Adjacent land use is forestry and residential. Brush Road is located between Parcels 8981 and 8984, bisecting Site Z3. Several rare species are located within one mile of Site Z (8981), including Eastern Hognose Snake, Smooth Green Snake, Pine Devil, Spiny Oakworm, Graceful Clearwing, Noctuid Moth, and Wild Lupine. There are some residences close by, and the parcel is accessible for development.

Man-made Features (existing/planned): There is an existing PSNH ROW, and the new NP structures will be added to the ROW.

Mitigation Goals Met: Wetland with 100 foot buffers, streams, vernal pools, forest block with forest wildlife habitat value.

Conservation Priorities Matched: CRPC: Preserve open space outside the urban growth boundary to limit growth and wetland conservation

Natural Resource Inventory Summary (quantities are +/-):

Feature	Measurement/Classification
Total Site Area	92.2 acres
Waterbody	Small beaver pond
Shoreline Length	N/A
Stream Length	178.33 linear feet
Wetlands	4 acres (0.8 ac PSS1E, 2.0 PEM1E; 1.1 PFO1)

Mitigation Parcel Summary Sheet

Wetland Functions & Values

Function/Value	Present	Principal	Notes
Groundwater Rech/Disch.	X		
Floodflow Alteration			
Fish/Shellfish Habitat			
Sed/Tox Retention	X	X	Beaver pond along prerennial stream slows flow draining nearby ag-land
Nutrient Removal	X	X	Beaver pond along prerennial stream slows flow draining nearby ag-land
Sed/Shore Stabilization			
Production Export	X	X	Productive marsh on stream
Wildlife Habitat	X	X	High quality wetlands of various classes
Recreation	X		
Educate/Science Value			
Uniqueness/Heritage			
Visual Qual/Aesthetic	X		
End/Threatened Species			
Other:			

Conservation/Management Plan:

The ROW will continue to be maintained as low shrub and herbaceous cover. The natural habitats will be protected with light forest management.

Mitigation Parcel Summary Sheet

Photos



Photo 1. May 21, 2015. Vernal Pool on Parcel 8984.



Photo 2. May 21, 2015. One of several Vernal Pools on Parcel 8981. Wood frog and spotted salamander eggs present.



Photo 3. May 21, 2015. Perennial stream that crosses Parcel 8981, and flows into a beaver pond on the property.

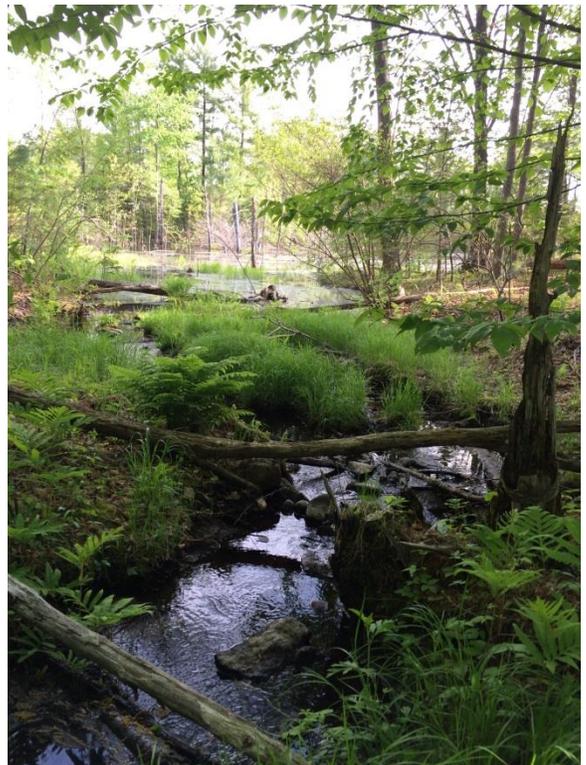


Photo 4. The stream as it enters the beaver pond/marsh on Parcel 8981.

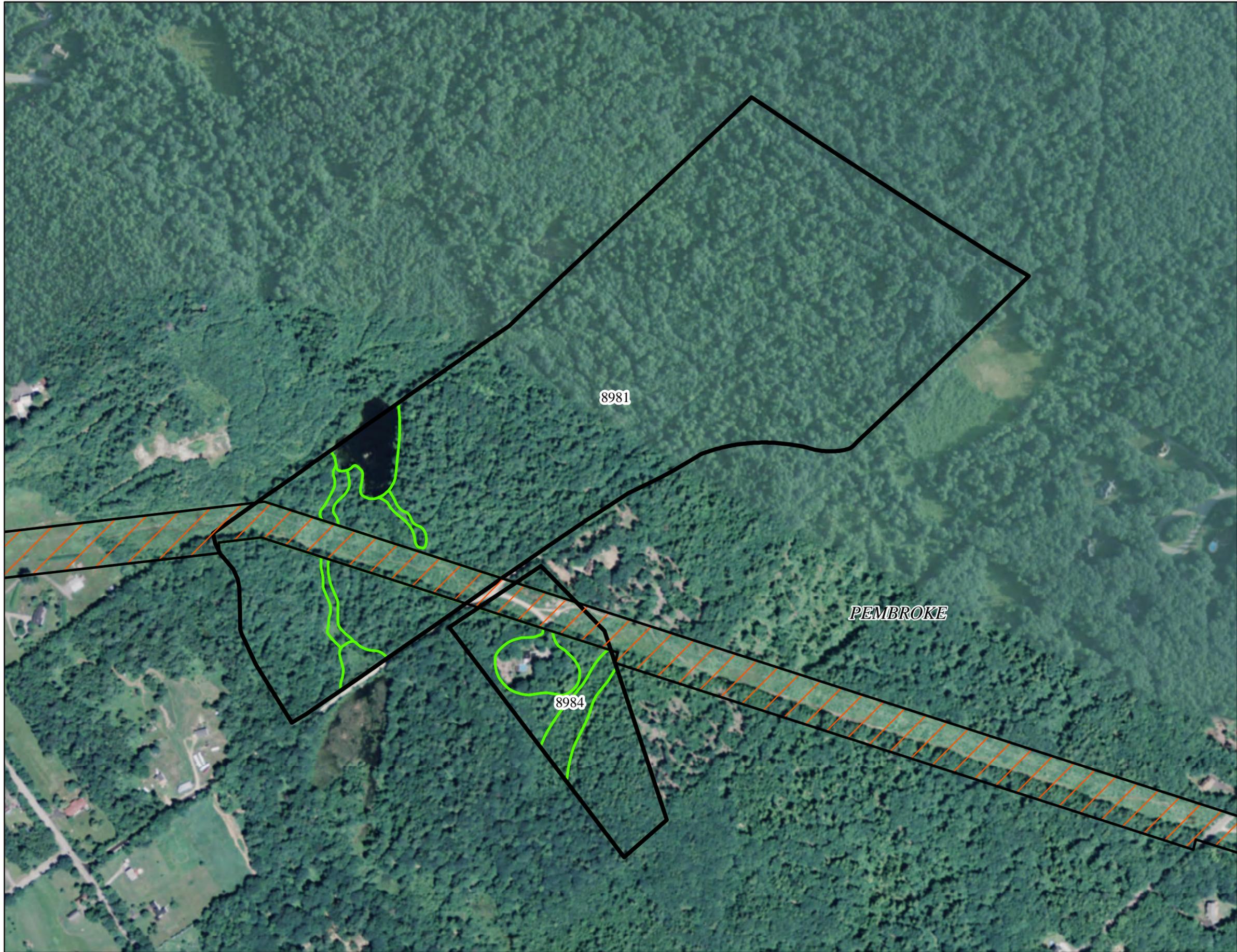
Mitigation Parcel Summary Sheet



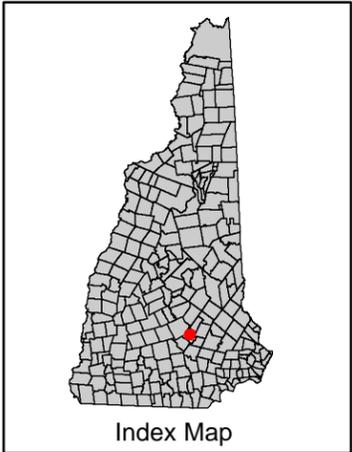
Photo 5. May 21, 2015. A view of the well-managed mixed pine/oak forest present in the buffers of the wetlands and vernal pools.



Photo 6. May 21, 2015. The perennial stream also flows through other wetlands, including this small emergent marsh.



Northern Pass Mitigation Analysis



Group: Z - Pembroke

Photointerpreted Site Features

-  Coertype Boundaries
-  Mitigation Parcels
-  Political Boundaries
-  Limits of Disturbance

*Note: open habitat includes wetland marshes, wet meadows, shrub swamps and fields.

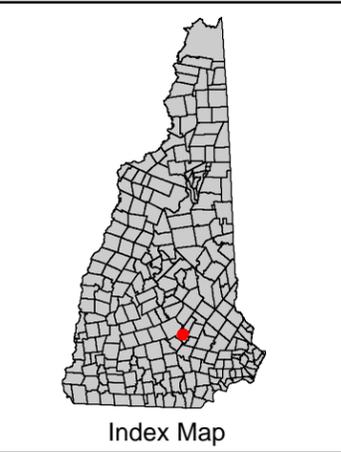
Data Provided By: GRANIT, NHDES, NHHNB, NRCS, USFWS & ESRI



Normandeau Associates, Inc
 25 Nashua Road,
 Bedford, NH, USA
 03110



Northern Pass Mitigation Analysis



Group: Z - Pembroke

Photointerpreted Cover Types

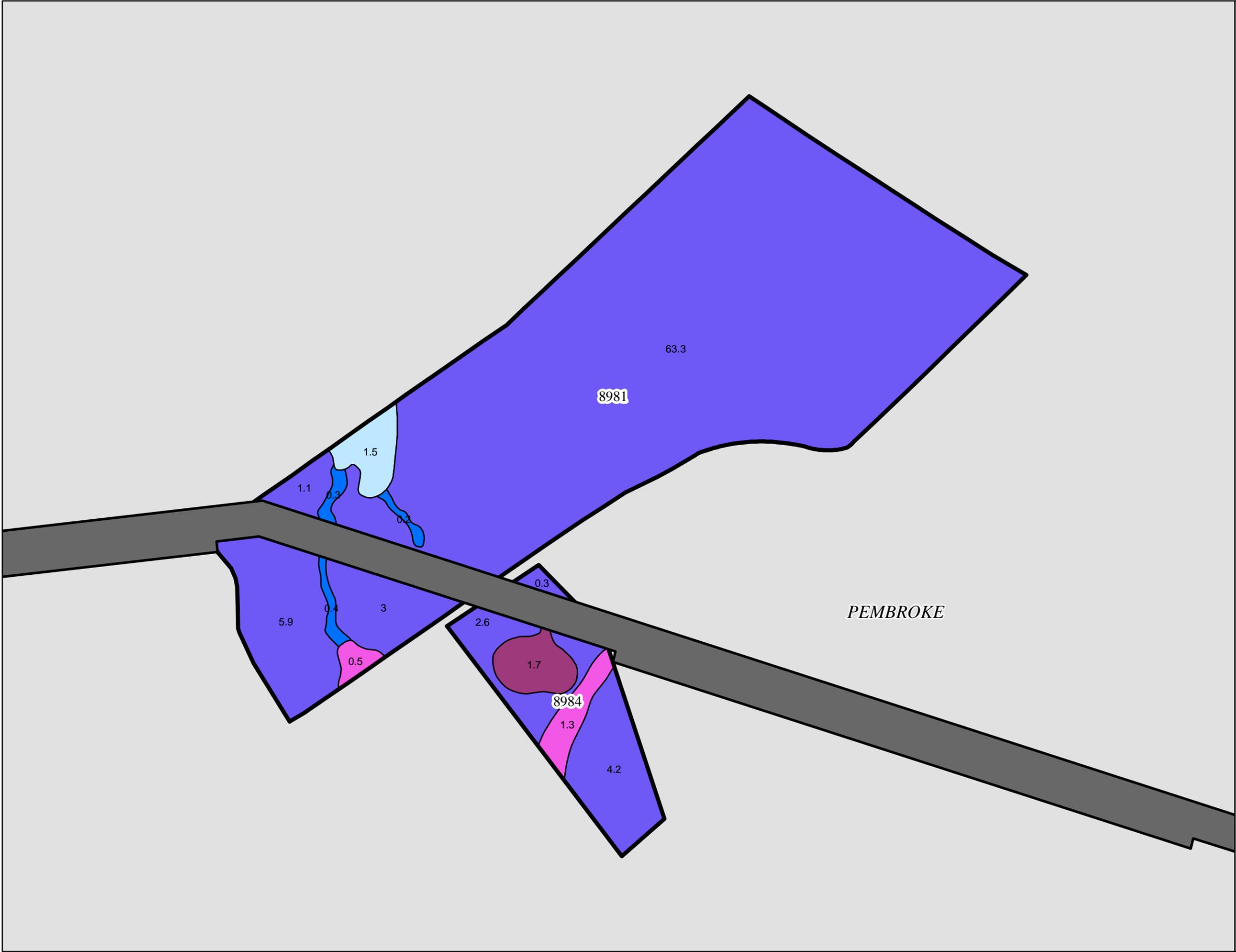
- | | |
|---------------------------|----------------------------------|
| Open Habitat | Lowland Spruce Fir |
| Clear Cut | Hardwood / Softwood |
| River | Hemlock Hardwood Pine |
| Stream | High Elevation 2500 + |
| Pond | High Elevation Spruce Fir 2700 + |
| Residential | |
| Northern Hardwood Conifer | |
| Mixed Hardwoods | |

*Note: open habitat includes wetland marshes, wet meadows, shrub swamps and fields.

Data Provided By: GRANIT, NHDES, NHHNB, NRCS, USFWS & ESRI

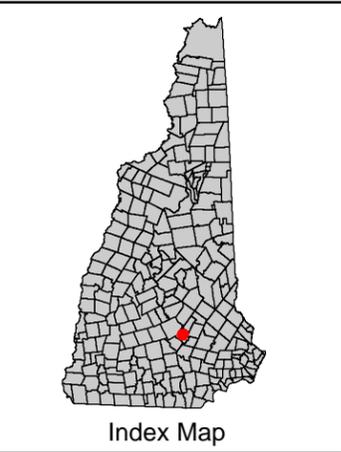


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 25 Nashua Road,
 Bedford, NH, USA
 03110



PEMBROKE

Northern Pass Mitigation Analysis



Index Map

Group: Z - Pembroke

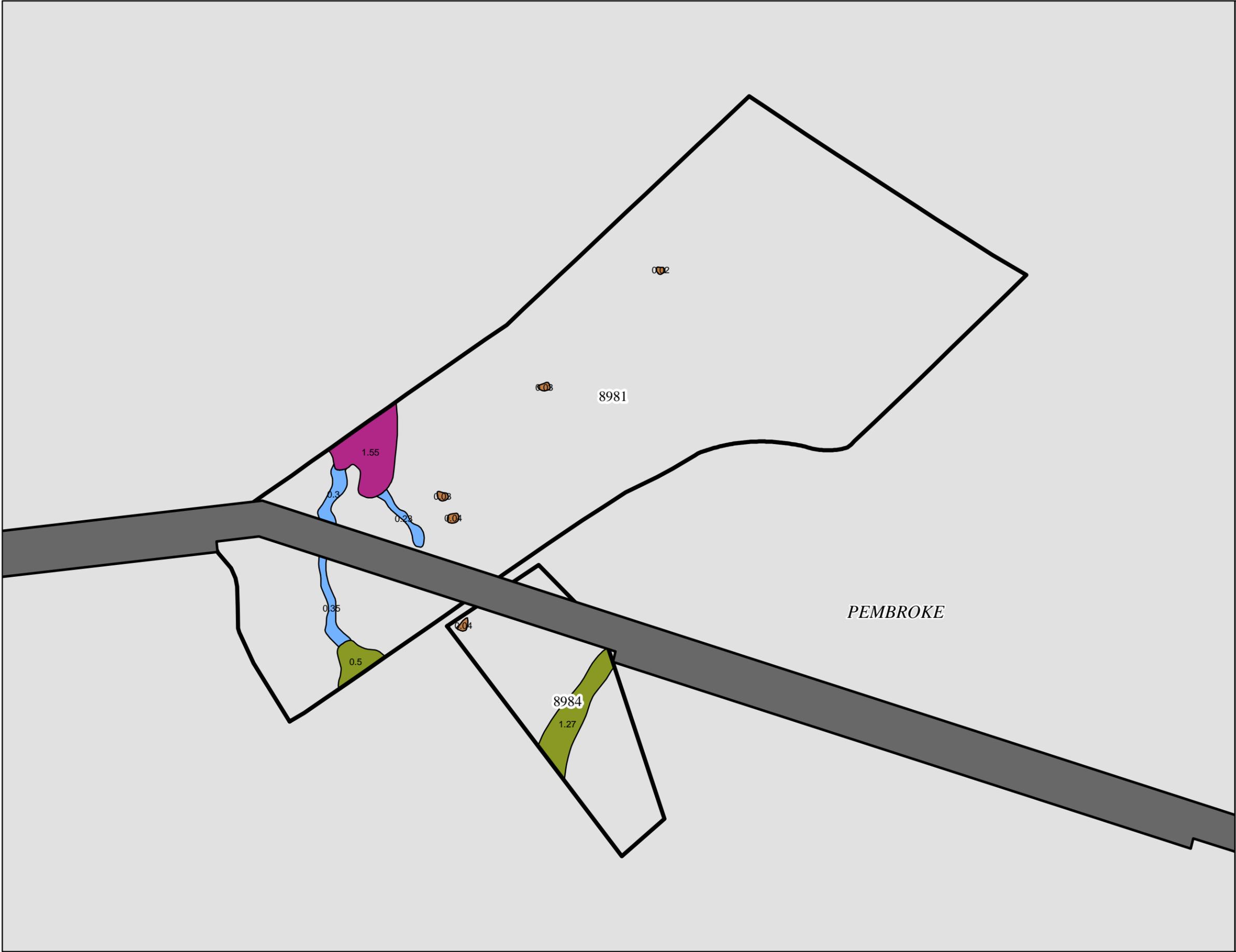
Photointerpreted Wetland Cover Types

- | | |
|--|--|
|  PEM1 |  PUB |
|  PFO1 |  PVP |
|  PFO1/4 |  River |
|  PFO4 |  Stream Channel |
|  PSS1 | |

Data Provided By: GRANIT, NHDES, NHNHB, NRCS, USFWS & ESRI



Normandeau Associates, Inc
25 Nashua Road,
Bedford, NH, USA
03110



Appendix G. ARM Fund Calculation Sheets

ALLENSTOWN

**DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION**
INSERT AMOUNTS IN YELLOW CELLS

1 Convert square feet of impact to acres:

INSERT SQ FT OF IMPACT	Square feet of impact	6,987
		43560.00
	Acres of impact =	0.1604

2 Determine acreage of wetland construction:

	Forested wetlands:	0.2406
	Tidal wetlands:	0.4812
	All other areas:	0.2406

3 Wetland construction cost:

	Forested wetlands:	\$20,370.14
	Tidal Wetlands:	\$40,740.27
	All other areas:	\$20,370.14

4 Land acquisition cost (See land value table):

INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	5247
	Forested wetlands:	\$1,262.38
	Tidal wetlands:	\$2,524.77
	All other areas:	\$1,262.38

5 Construction + land costs:

	Forested wetland:	\$21,632.52
	Tidal wetlands:	\$43,265.04
	All other areas:	\$21,632.52

6 DES Administrative cost:

	Forested wetlands:	\$4,326.50
	Tidal wetlands:	\$8,653.01
	All other areas:	\$4,326.50

******* TOTAL ARM PAYMENT*******

	Forested wetlands:	\$25,959.02
	Tidal wetlands:	\$51,918.04
	All other areas:	\$25,959.02

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106
CHATHAM	433

ASHLAND

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURC	359
CHARLESTOWN	2,106
CHATHAM	433

DES AQUATIC RESOURCE MITIGATION FUND WETLAND PAYMENT CALCULATION ***INSERT AMOUNTS IN YELLOW CELLS***			
1 Convert square feet of impact to acres:			
INSERT SQ FT OF IMPACT	Square feet of impact	2,755	
		43560.00	
	Acres of impact =	0.0632	
2 Determine acreage of wetland construction:			
	Forested wetlands:	0.0949	
	Tidal wetlands:	0.1897	
	All other areas:	0.0949	
3 Wetland construction cost:			
	Forested wetlands:	\$8,030.80	
	Tidal Wetlands:	\$16,061.61	
	All other areas:	\$8,030.80	
4 Land acquisition cost (See land value table):			
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	10,391	
	Forested wetlands:	\$985.64	
	Tidal wetlands:	\$1,971.27	
	All other areas:	\$985.64	
5 Construction + land costs:			
	Forested wetland:	\$9,016.44	
	Tidal wetlands:	\$18,032.88	
	All other areas:	\$9,016.44	
6 DES Administrative cost:			
	Forested wetlands:	\$1,803.29	
	Tidal wetlands:	\$3,606.58	
	All other areas:	\$1,803.29	
***** TOTAL ARM PAYMENT*****			
	Forested wetlands:	\$10,819.73	
	Tidal wetlands:	\$21,639.46	
	All other areas:	\$10,819.73	

BETHLEHEM

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106
CHATHAM	433

DES AQUATIC RESOURCE MITIGATION FUND WETLAND PAYMENT CALCULATION ***INSERT AMOUNTS IN YELLOW CELLS***			
1 Convert square feet of impact to acres:			
INSERT SQ FT OF IMPACT	Square feet of impact	22,816	
		43560.00	
	Acres of impact =	0.5238	
2 Determine acreage of wetland construction:			
	Forested wetlands:	0.7857	
	Tidal wetlands:	1.5713	
	All other areas:	0.7857	
3 Wetland construction cost:			
	Forested wetlands:	\$66,519.45	
	Tidal Wetlands:	\$133,038.90	
	All other areas:	\$66,519.45	
4 Land acquisition cost (See land value table):			
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	860	
	Forested wetlands:	\$675.65	
	Tidal wetlands:	\$1,351.29	
	All other areas:	\$675.65	
5 Construction + land costs:			
	Forested wetland:	\$67,195.10	
	Tidal wetlands:	\$134,390.19	
	All other areas:	\$67,195.10	
6 DES Administrative cost:			
	Forested wetlands:	\$13,439.02	
	Tidal wetlands:	\$26,878.04	
	All other areas:	\$13,439.02	
***** TOTAL ARM PAYMENT*****			
	Forested wetlands:	\$80,634.12	
	Tidal wetlands:	\$161,268.23	
	All other areas:	\$80,634.12	

BRIDGEWATER

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION

INSERT AMOUNTS IN YELLOW CELLS

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact	23,776
		43560.00
	Acres of impact =	0.5458
2 Determine acreage of wetland construction:		
	Forested wetlands:	0.8187
	Tidal wetlands:	1.6375
	All other areas:	0.8187
3 Wetland construction cost:		
	Forested wetlands:	\$69,320.21
	Tidal Wetlands:	\$138,640.42
	All other areas:	\$69,320.21
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	10447
	Forested wetlands:	\$8,553.12
	Tidal wetlands:	\$17,106.24
	All other areas:	\$8,553.12
5 Construction + land costs:		
	Forested wetland:	\$77,873.33
	Tidal wetlands:	\$155,746.66
	All other areas:	\$77,873.33
6 DES Administrative cost:		
	Forested wetlands:	\$15,574.67
	Tidal wetlands:	\$31,149.33
	All other areas:	\$15,574.67
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$93,448.00
	Tidal wetlands:	\$186,896.00
	All other areas:	\$93,448.00

BRISTOL

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
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BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
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BENNINGTON	3,293
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BERLIN	1,597
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BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

DES AQUATIC RESOURCE MITIGATION FUND WETLAND PAYMENT CALCULATION ***INSERT AMOUNTS IN YELLOW CELLS***		
1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact	17,297
		43560.00
	Acres of impact =	0.3971
2 Determine acreage of wetland construction:		
	Forested wetlands:	0.5956
	Tidal wetlands:	1.1913
	All other areas:	0.5956
3 Wetland construction cost:		
	Forested wetlands:	\$50,430.03
	Tidal Wetlands:	\$100,860.07
	All other areas:	\$50,430.03
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	9969
	Forested wetlands:	\$5,937.63
	Tidal wetlands:	\$11,875.26
	All other areas:	\$5,937.63
5 Construction + land costs:		
	Forested wetland:	\$56,367.67
	Tidal wetlands:	\$112,735.33
	All other areas:	\$56,367.67
6 DES Administrative cost:		
	Forested wetlands:	\$11,273.53
	Tidal wetlands:	\$22,547.07
	All other areas:	\$11,273.53
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$67,641.20
	Tidal wetlands:	\$135,282.40
	All other areas:	\$67,641.20

CANTERBURY

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION

INSERT AMOUNTS IN YELLOW CELLS

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact	7,869
		43560.00
	Acres of impact =	0.1806
2 Determine acreage of wetland construction:		
	Forested wetlands:	0.2710
	Tidal wetlands:	0.5419
	All other areas:	0.2710
3 Wetland construction cost:		
	Forested wetlands:	\$22,942.18
	Tidal Wetlands:	\$45,884.35
	All other areas:	\$22,942.18
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	3367
	Forested wetlands:	\$912.43
	Tidal wetlands:	\$1,824.87
	All other areas:	\$912.43
5 Construction + land costs:		
	Forested wetland:	\$23,854.61
	Tidal wetlands:	\$47,709.22
	All other areas:	\$23,854.61
6 DES Administrative cost:		
	Forested wetlands:	\$4,770.92
	Tidal wetlands:	\$9,541.84
	All other areas:	\$4,770.92
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$28,625.53
	Tidal wetlands:	\$57,251.06
	All other areas:	\$28,625.53

CHESTER

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

**DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION**

INSERT AMOUNTS IN YELLOW CELLS

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact	497
		43560.00
	Acres of impact =	0.0114
2 Determine acreage of wetland construction:		
	Forested wetlands:	0.0171
	Tidal wetlands:	0.0342
	All other areas:	0.0171
3 Wetland construction cost:		
	Forested wetlands:	\$1,448.23
	Tidal Wetlands:	\$2,896.46
	All other areas:	\$1,448.23
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	9467
	Forested wetlands:	\$161.94
	Tidal wetlands:	\$323.88
	All other areas:	\$161.94
5 Construction + land costs:		
	Forested wetland:	\$1,610.17
	Tidal wetlands:	\$3,220.34
	All other areas:	\$1,610.17
6 DES Administrative cost:		
	Forested wetlands:	\$322.03
	Tidal wetlands:	\$644.07
	All other areas:	\$322.03
*****	TOTAL ARM PAYMENT*****	
	Forested wetlands:	\$1,932.21
	Tidal wetlands:	\$3,864.41
	All other areas:	\$1,932.21

CLARKSVILLE

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

DES AQUATIC RESOURCE MITIGATION FUND WETLAND PAYMENT CALCULATION ***INSERT AMOUNTS IN YELLOW CELLS***		
1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact :	42,871
		43560.00
	Acres of impact =	0.9842
2 Determine acreage of wetland construction:		
	Forested wetlands:	1.4763
	Tidal wetlands:	2.9525
	All other areas:	1.4763
3 Wetland construction cost:		
	Forested wetlands:	\$124,989.55
	Tidal Wetlands:	\$249,979.09
	All other areas:	\$124,989.55
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	486
	Forested wetlands:	\$717.22
	Tidal wetlands:	\$1,434.44
	All other areas:	\$717.22
5 Construction + land costs:		
	Forested wetland:	\$125,706.77
	Tidal wetlands:	\$251,413.54
	All other areas:	\$125,706.77
6 DES Administrative cost:		
	Forested wetlands:	\$25,141.35
	Tidal wetlands:	\$50,282.71
	All other areas:	\$25,141.35
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$150,848.12
	Tidal wetlands:	\$301,696.25
	All other areas:	\$150,848.12

CONCORD

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURC	359
CHARLESTOWN	2,106
CHATHAM	433

DES AQUATIC RESOURCE MITIGATION FUND WETLAND PAYMENT CALCULATION ***INSERT AMOUNTS IN YELLOW CELLS***			
1 Convert square feet of impact to acres:			
INSERT SQ FT OF IMPACT	Square feet of impact	8,972	
		43560.00	
	Acres of impact =	0.2060	
2 Determine acreage of wetland construction:			
	Forested wetlands:	0.3089	
	Tidal wetlands:	0.6179	
	All other areas:	0.3089	
3 Wetland construction cost:			
	Forested wetlands:	\$26,157.34	
	Tidal Wetlands:	\$52,314.69	
	All other areas:	\$26,157.34	
4 Land acquisition cost (See land value table):			
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	26395	
	Forested wetlands:	\$8,154.62	
	Tidal wetlands:	\$16,309.25	
	All other areas:	\$8,154.62	
5 Construction + land costs:			
	Forested wetland:	\$34,311.97	
	Tidal wetlands:	\$68,623.93	
	All other areas:	\$34,311.97	
6 DES Administrative cost:			
	Forested wetlands:	\$6,862.39	
	Tidal wetlands:	\$13,724.79	
	All other areas:	\$6,862.39	
***** TOTAL ARM PAYMENT*****			
	Forested wetlands:	\$41,174.36	
	Tidal wetlands:	\$82,348.72	
	All other areas:	\$41,174.36	

DALTON

**DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION**
INSERT AMOUNTS IN YELLOW CELLS

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact	3,136
		43560.00
	Acres of impact =	0.0720

2 Determine acreage of wetland construction:		
	Forested wetlands:	0.1080
	Tidal wetlands:	0.2160
	All other areas:	0.1080

3 Wetland construction cost:		
	Forested wetlands:	\$9,143.97
	Tidal Wetlands:	\$18,287.94
	All other areas:	\$9,143.97

4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	1528
	Forested wetlands:	\$165.03
	Tidal wetlands:	\$330.07
	All other areas:	\$165.03

5 Construction + land costs:		
	Forested wetland:	\$9,309.00
	Tidal wetlands:	\$18,618.01
	All other areas:	\$9,309.00

6 DES Administrative cost:		
	Forested wetlands:	\$1,861.80
	Tidal wetlands:	\$3,723.60
	All other areas:	\$1,861.80

***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$11,170.81
	Tidal wetlands:	\$22,341.61
	All other areas:	\$11,170.81

DEERFIELD

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

DES AQUATIC RESOURCE MITIGATION FUND WETLAND PAYMENT CALCULATION ***INSERT AMOUNTS IN YELLOW CELLS***			
1 Convert square feet of impact to acres:			
INSERT SQ FT OF IMPACT	Square feet of impact :	69,953	
		43560.00	
	Acres of impact =	1.6059	
2 Determine acreage of wetland construction:			
	Forested wetlands:	2.4089	
	Tidal wetlands:	4.8177	
	All other areas:	2.4089	
3 Wetland construction cost:			
	Forested wetlands:	\$203,948.26	
	Tidal Wetlands:	\$407,896.53	
	All other areas:	\$203,948.26	
4 Land acquisition cost (See land value table):			
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	6267	
	Forested wetlands:	\$15,095.64	
	Tidal wetlands:	\$30,191.29	
	All other areas:	\$15,095.64	
5 Construction + land costs:			
	Forested wetland:	\$219,043.91	
	Tidal wetlands:	\$438,087.81	
	All other areas:	\$219,043.91	
6 DES Administrative cost:			
	Forested wetlands:	\$43,808.78	
	Tidal wetlands:	\$87,617.56	
	All other areas:	\$43,808.78	
***** TOTAL ARM PAYMENT*****			
	Forested wetlands:	\$262,852.69	
	Tidal wetlands:	\$525,705.38	
	All other areas:	\$262,852.69	

DIXVILLE

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

**DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION**

INSERT AMOUNTS IN YELLOW CELLS

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact:	346,063
		43560.00
	Acres of impact =	7.9445
2 Determine acreage of wetland construction:		
	Forested wetlands:	11.9168
	Tidal wetlands:	23.8335
	All other areas:	11.9168
3 Wetland construction cost:		
	Forested wetlands:	\$1,008,946.26
	Tidal Wetlands:	\$2,017,892.52
	All other areas:	\$1,008,946.26
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	359
	Forested wetlands:	\$4,278.12
	Tidal wetlands:	\$8,556.23
	All other areas:	\$4,278.12
5 Construction + land costs:		
	Forested wetland:	\$1,013,224.38
	Tidal wetlands:	\$2,026,448.76
	All other areas:	\$1,013,224.38
6 DES Administrative cost:		
	Forested wetlands:	\$202,644.88
	Tidal wetlands:	\$405,289.75
	All other areas:	\$202,644.88
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$1,215,869.25
	Tidal wetlands:	\$2,431,738.51
	All other areas:	\$1,215,869.25

DUMMER

**DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION**
INSERT AMOUNTS IN YELLOW CELLS

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact:	175,600
		43560.00
	Acres of impact =	4.0312

2 Determine acreage of wetland construction:		
	Forested wetlands:	6.0468
	Tidal wetlands:	12.0937
	All other areas:	6.0468

3 Wetland construction cost:		
	Forested wetlands:	\$511,962.57
	Tidal Wetlands:	\$1,023,925.14
	All other areas:	\$511,962.57

4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	359
	Forested wetlands:	\$2,168.64
	Tidal wetlands:	\$4,337.27
	All other areas:	\$2,168.64

5 Construction + land costs:		
	Forested wetland:	\$514,131.21
	Tidal wetlands:	\$1,028,262.41
	All other areas:	\$514,131.21

6 DES Administrative cost:		
	Forested wetlands:	\$102,826.24
	Tidal wetlands:	\$205,652.48
	All other areas:	\$102,826.24

***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$616,957.45
	Tidal wetlands:	\$1,233,914.90
	All other areas:	\$616,957.45

FRANKLIN

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

DES AQUATIC RESOURCE MITIGATION FUND WETLAND PAYMENT CALCULATION ***INSERT AMOUNTS IN YELLOW CELLS***		
1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact =	17,164
		43560.00
	Acres of impact =	0.3940
2 Determine acreage of wetland construction:		
	Forested wetlands:	0.5910
	Tidal wetlands:	1.1821
	All other areas:	0.5910
3 Wetland construction cost:		
	Forested wetlands:	\$50,040.68
	Tidal Wetlands:	\$100,081.37
	All other areas:	\$50,040.68
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	7330
	Forested wetlands:	\$4,332.00
	Tidal wetlands:	\$8,664.00
	All other areas:	\$4,332.00
5 Construction + land costs:		
	Forested wetland:	\$54,372.68
	Tidal wetlands:	\$108,745.36
	All other areas:	\$54,372.68
6 DES Administrative cost:		
	Forested wetlands:	\$10,874.54
	Tidal wetlands:	\$21,749.07
	All other areas:	\$10,874.54
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$65,247.22
	Tidal wetlands:	\$130,494.44
	All other areas:	\$65,247.22

HILL

**DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION**
INSERT AMOUNTS IN YELLOW CELLS

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact	2,781
		43560.00
	Acres of impact =	0.0638

2 Determine acreage of wetland construction:		
	Forested wetlands:	0.0958
	Tidal wetlands:	0.1915
	All other areas:	0.0958

3 Wetland construction cost:		
	Forested wetlands:	\$8,106.87
	Tidal Wetlands:	\$16,213.74
	All other areas:	\$8,106.87

4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	1530
	Forested wetlands:	\$146.48
	Tidal wetlands:	\$292.96
	All other areas:	\$146.48

5 Construction + land costs:		
	Forested wetland:	\$8,253.35
	Tidal wetlands:	\$16,506.70
	All other areas:	\$8,253.35

6 DES Administrative cost:		
	Forested wetlands:	\$1,650.67
	Tidal wetlands:	\$3,301.34
	All other areas:	\$1,650.67

***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$9,904.02
	Tidal wetlands:	\$19,808.04
	All other areas:	\$9,904.02

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

LANCASTER

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

**DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION**

INSERT AMOUNTS IN YELLOW CELLS

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact :	21,976
		43560.00
	Acres of impact =	0.5045
2 Determine acreage of wetland construction:		
	Forested wetlands:	0.7568
	Tidal wetlands:	1.5135
	All other areas:	0.7568
3 Wetland construction cost:		
	Forested wetlands:	\$64,072.42
	Tidal Wetlands:	\$128,144.84
	All other areas:	\$64,072.42
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	1939
	Forested wetlands:	\$1,467.29
	Tidal wetlands:	\$2,934.59
	All other areas:	\$1,467.29
5 Construction + land costs:		
	Forested wetland:	\$65,539.71
	Tidal wetlands:	\$131,079.43
	All other areas:	\$65,539.71
6 DES Administrative cost:		
	Forested wetlands:	\$13,107.94
	Tidal wetlands:	\$26,215.89
	All other areas:	\$13,107.94
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$78,647.66
	Tidal wetlands:	\$157,295.31
	All other areas:	\$78,647.66

LONDONDERRY

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

**DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION**

INSERT AMOUNTS IN YELLOW CELLS

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact	8,794
		43560.00
	Acres of impact =	0.2019
2 Determine acreage of wetland construction:		
	Forested wetlands:	0.3028
	Tidal wetlands:	0.6056
	All other areas:	0.3028
3 Wetland construction cost:		
	Forested wetlands:	\$25,638.65
	Tidal Wetlands:	\$51,277.30
	All other areas:	\$25,638.65
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	32155
	Forested wetlands:	\$9,737.19
	Tidal wetlands:	\$19,474.39
	All other areas:	\$9,737.19
5 Construction + land costs:		
	Forested wetland:	\$35,375.84
	Tidal wetlands:	\$70,751.69
	All other areas:	\$35,375.84
6 DES Administrative cost:		
	Forested wetlands:	\$7,075.17
	Tidal wetlands:	\$14,150.34
	All other areas:	\$7,075.17
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$42,451.01
	Tidal wetlands:	\$84,902.02
	All other areas:	\$42,451.01

MILLSFIELD

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

DES AQUATIC RESOURCE MITIGATION FUND WETLAND PAYMENT CALCULATION ***INSERT AMOUNTS IN YELLOW CELLS***			
1 Convert square feet of impact to acres:			
INSERT SQ FT OF IMPACT	Square feet of impact:	228,259	
		43560.00	
	Acres of impact =	5.2401	
2 Determine acreage of wetland construction:			
	Forested wetlands:	7.8602	
	Tidal wetlands:	15.7203	
	All other areas:	7.8602	
3 Wetland construction cost:			
	Forested wetlands:	\$665,489.54	
	Tidal Wetlands:	\$1,330,979.08	
	All other areas:	\$665,489.54	
4 Land acquisition cost (See land value table):			
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	359	
	Forested wetlands:	\$2,821.80	
	Tidal wetlands:	\$5,643.60	
	All other areas:	\$2,821.80	
5 Construction + land costs:			
	Forested wetland:	\$668,311.34	
	Tidal wetlands:	\$1,336,622.67	
	All other areas:	\$668,311.34	
6 DES Administrative cost:			
	Forested wetlands:	\$133,662.27	
	Tidal wetlands:	\$267,324.53	
	All other areas:	\$133,662.27	
***** TOTAL ARM PAYMENT*****			
	Forested wetlands:	\$801,973.60	
	Tidal wetlands:	\$1,603,947.21	
	All other areas:	\$801,973.60	

NEW HAMPTON

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION

INSERT AMOUNTS IN YELLOW CELLS

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact =	16,836
		43560.00
	Acres of impact =	0.3865
2 Determine acreage of wetland construction:		
	Forested wetlands:	0.5797
	Tidal wetlands:	1.1595
	All other areas:	0.5797
3 Wetland construction cost:		
	Forested wetlands:	\$49,084.83
	Tidal Wetlands:	\$98,169.66
	All other areas:	\$49,084.83
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	4287
	Forested wetlands:	\$2,485.24
	Tidal wetlands:	\$4,970.48
	All other areas:	\$2,485.24
5 Construction + land costs:		
	Forested wetland:	\$51,570.07
	Tidal wetlands:	\$103,140.14
	All other areas:	\$51,570.07
6 DES Administrative cost:		
	Forested wetlands:	\$10,314.01
	Tidal wetlands:	\$20,628.03
	All other areas:	\$10,314.01
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$61,884.08
	Tidal wetlands:	\$123,768.16
	All other areas:	\$61,884.08

NORTHFIELD

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

**DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION**

INSERT AMOUNTS IN YELLOW CELLS

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact	3,816
		43560.00
	Acres of impact =	0.0876
2 Determine acreage of wetland construction:		
	Forested wetlands:	0.1314
	Tidal wetlands:	0.2628
	All other areas:	0.1314
3 Wetland construction cost:		
	Forested wetlands:	\$11,126.46
	Tidal Wetlands:	\$22,252.91
	All other areas:	\$11,126.46
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	3760
	Forested wetlands:	\$494.13
	Tidal wetlands:	\$988.26
	All other areas:	\$494.13
5 Construction + land costs:		
	Forested wetland:	\$11,620.59
	Tidal wetlands:	\$23,241.17
	All other areas:	\$11,620.59
6 DES Administrative cost:		
	Forested wetlands:	\$2,324.12
	Tidal wetlands:	\$4,648.23
	All other areas:	\$2,324.12
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$13,944.70
	Tidal wetlands:	\$27,889.40
	All other areas:	\$13,944.70

NORTHUMBERLAND

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

**DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION**

INSERT AMOUNTS IN YELLOW CELLS

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact	23,961
		43560.00
	Acres of impact =	0.5501
2 Determine acreage of wetland construction:		
	Forested wetlands:	0.8251
	Tidal wetlands:	1.6502
	All other areas:	0.8251
3 Wetland construction cost:		
	Forested wetlands:	\$69,859.71
	Tidal Wetlands:	\$139,719.42
	All other areas:	\$69,859.71
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	870
	Forested wetlands:	\$717.47
	Tidal wetlands:	\$1,434.94
	All other areas:	\$717.47
5 Construction + land costs:		
	Forested wetland:	\$70,577.18
	Tidal wetlands:	\$141,154.36
	All other areas:	\$70,577.18
6 DES Administrative cost:		
	Forested wetlands:	\$14,115.44
	Tidal wetlands:	\$28,230.87
	All other areas:	\$14,115.44
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$84,692.61
	Tidal wetlands:	\$169,385.23
	All other areas:	\$84,692.61

PEMBROKE

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

DES AQUATIC RESOURCE MITIGATION FUND WETLAND PAYMENT CALCULATION ***INSERT AMOUNTS IN YELLOW CELLS***		
1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact	6,451
		43560.00
	Acres of impact =	0.1481
2 Determine acreage of wetland construction:		
	Forested wetlands:	0.2221
	Tidal wetlands:	0.4443
	All other areas:	0.2221
3 Wetland construction cost:		
	Forested wetlands:	\$18,807.49
	Tidal Wetlands:	\$37,614.98
	All other areas:	\$18,807.49
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	11779
	Forested wetlands:	\$2,616.57
	Tidal wetlands:	\$5,233.13
	All other areas:	\$2,616.57
5 Construction + land costs:		
	Forested wetland:	\$21,424.06
	Tidal wetlands:	\$42,848.11
	All other areas:	\$21,424.06
6 DES Administrative cost:		
	Forested wetlands:	\$4,284.81
	Tidal wetlands:	\$8,569.62
	All other areas:	\$4,284.81
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$25,708.87
	Tidal wetlands:	\$51,417.74
	All other areas:	\$25,708.87

PITTSBURG

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

**DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION**

INSERT AMOUNTS IN YELLOW CELLS

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact	112,193
		43560.00
	Acres of impact =	2.5756
2 Determine acreage of wetland construction:		
	Forested wetlands:	3.8634
	Tidal wetlands:	7.7268
	All other areas:	3.8634
3 Wetland construction cost:		
	Forested wetlands:	\$327,099.53
	Tidal Wetlands:	\$654,199.06
	All other areas:	\$327,099.53
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	618
	Forested wetlands:	\$2,386.85
	Tidal wetlands:	\$4,773.69
	All other areas:	\$2,386.85
5 Construction + land costs:		
	Forested wetland:	\$329,486.38
	Tidal wetlands:	\$658,972.75
	All other areas:	\$329,486.38
6 DES Administrative cost:		
	Forested wetlands:	\$65,897.28
	Tidal wetlands:	\$131,794.55
	All other areas:	\$65,897.28
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$395,383.65
	Tidal wetlands:	\$790,767.30
	All other areas:	\$395,383.65

RAYMOND

**DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION**
INSERT AMOUNTS IN YELLOW CELLS

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact =	179
		43560.00
	Acres of impact =	0.0041

2 Determine acreage of wetland construction:		
	Forested wetlands:	0.0062
	Tidal wetlands:	0.0123
	All other areas:	0.0062

3 Wetland construction cost:		
	Forested wetlands:	\$522.31
	Tidal Wetlands:	\$1,044.62
	All other areas:	\$522.31

4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	14858
	Forested wetlands:	\$91.66
	Tidal wetlands:	\$183.32
	All other areas:	\$91.66

5 Construction + land costs:		
	Forested wetland:	\$613.97
	Tidal wetlands:	\$1,227.94
	All other areas:	\$613.97

6 DES Administrative cost:		
	Forested wetlands:	\$122.79
	Tidal wetlands:	\$245.59
	All other areas:	\$122.79

***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$736.76
	Tidal wetlands:	\$1,473.52
	All other areas:	\$736.76

STARK

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION

INSERT AMOUNTS IN YELLOW CELLS

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact:	16,638
		43560.00
	Acres of impact =	0.3820
2 Determine acreage of wetland construction:		
	Forested wetlands:	0.5730
	Tidal wetlands:	1.1459
	All other areas:	0.5730
3 Wetland construction cost:		
	Forested wetlands:	\$48,509.49
	Tidal Wetlands:	\$97,018.98
	All other areas:	\$48,509.49
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	489
	Forested wetlands:	\$279.98
	Tidal wetlands:	\$559.95
	All other areas:	\$279.98
5 Construction + land costs:		
	Forested wetland:	\$48,789.47
	Tidal wetlands:	\$97,578.93
	All other areas:	\$48,789.47
6 DES Administrative cost:		
	Forested wetlands:	\$9,757.89
	Tidal wetlands:	\$19,515.79
	All other areas:	\$9,757.89
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$58,547.36
	Tidal wetlands:	\$117,094.72
	All other areas:	\$58,547.36

STEWARTSTOWN

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION

INSERT AMOUNTS IN YELLOW CELLS

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact	146,318
		43560.00
	Acres of impact =	3.3590
2 Determine acreage of wetland construction:		
	Forested wetlands:	5.0385
	Tidal wetlands:	10.0770
	All other areas:	5.0385
3 Wetland construction cost:		
	Forested wetlands:	\$426,590.82
	Tidal Wetlands:	\$853,181.64
	All other areas:	\$426,590.82
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	938
	Forested wetlands:	\$4,723.95
	Tidal wetlands:	\$9,447.91
	All other areas:	\$4,723.95
5 Construction + land costs:		
	Forested wetland:	\$431,314.77
	Tidal wetlands:	\$862,629.55
	All other areas:	\$431,314.77
6 DES Administrative cost:		
	Forested wetlands:	\$86,262.95
	Tidal wetlands:	\$172,525.91
	All other areas:	\$86,262.95
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$517,577.73
	Tidal wetlands:	\$1,035,155.46
	All other areas:	\$517,577.73

WHITEFIELD

2015 VALUES

TOWN	Equalized Value per Acre
ACWORTH	1,372
ALBANY	819
ALEXANDRIA	2,873
ALLENSTOWN	5,247
ALSTEAD	2,684
ALTON	16,596
AMHERST	25,792
ANDOVER	3,587
ANTRIM	3,142
ASHLAND	10,391
ATKINSON	32,155
AUBURN	17,218
BARNSTEAD	7,145
BARRINGTON	10,256
BARTLETT	4,128
BATH	1,774
BEAN'S GRANT	359
BEAN'S PURCHASE	359
BEDFORD	32,155
BELMONT	9,661
BENNINGTON	3,293
BENTON	359
BERLIN	1,597
BETHLEHEM	860
BOSCAWEN	4,536
BOW	15,756
BRADFORD	4,481
BRENTWOOD	13,874
BRIDGEWATER	10,447
BRISTOL	9,969
BROOKFIELD	2,182
BROOKLINE	12,709
CAMBRIDGE	359
CAMPTON	3,421
CANAAN	3,189
CANDIA	7,281
CANTERBURY	3,367
CARROLL	2,326
CENTER HARBOR	22,125
CHANDLER'S PURCH	359
CHARLESTOWN	2,106

**DES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION**

INSERT AMOUNTS IN YELLOW CELLS

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact :	22,355
		43560.00
	Acres of impact =	0.5132
2 Determine acreage of wetland construction:		
	Forested wetlands:	0.7698
	Tidal wetlands:	1.5396
	All other areas:	0.7698
3 Wetland construction cost:		
	Forested wetlands:	\$65,175.94
	Tidal Wetlands:	\$130,351.89
	All other areas:	\$65,175.94
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT	Town land value:	2090
	Forested wetlands:	\$1,608.78
	Tidal wetlands:	\$3,217.55
	All other areas:	\$1,608.78
5 Construction + land costs:		
	Forested wetland:	\$66,784.72
	Tidal wetlands:	\$133,569.44
	All other areas:	\$66,784.72
6 DES Administrative cost:		
	Forested wetlands:	\$13,356.94
	Tidal wetlands:	\$26,713.89
	All other areas:	\$13,356.94
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$80,141.66
	Tidal wetlands:	\$160,283.33
	All other areas:	\$80,141.66