



Town of Greenfield

Conservation Commission

NATURAL RESOURCES INVENTORY

PREPARED BY:

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LIST OF ACRONYMS

FEMA	Federal Emergency Management Administration
FIRM	Flood Insurance Rate Map
GIS	Geographic Information Systems
NH GRANIT	New Hampshire Geographically Referenced Analysis and Information Transfer System
NHB	Natural Heritage Bureau
NHD	National Hydrography Dataset
NHDES	New Hampshire Department of Environmental Services
NHDNR	New Hampshire Department of Natural Resources
NHDOT	New Hampshire Department of Transportation
NHOSI	New Hampshire Office of Strategic Initiatives
NPS	National Parks Service
NRCS	Natural Resources Conservation Service
NRI	Natural Resources Inventory
Q2C	Quabbin to Cardigan
SWRPC	Southwest Region Planning Commission
USDA	United States Department of Agriculture
USGS	United States Geological Survey
VLAP	Volunteer Lake Assessment Program
WAP	Wildlife Action Plan

1 INTRODUCTION



Photo 1 - Winn Mountain Brook (next to Old Lyndeborough Mountain Road)

Broadly defined, a natural resource inventory (NRI) is a listing and description of naturally-occurring entities vital to present and future growth and changes in land use for the Town of Greenfield. Specifically this inventory consists of maps, databases, and descriptive information on naturally-occurring features. Those features addressed include, but are not limited to: topography, watersheds and surface waters, wetlands, flora and fauna, forest resources, farmlands, geological resources, historic sites, scenic areas, protected lands, and recreational lands.

New Hampshire's most valuable assets are its rural and sylvan characteristics. Farming, widespread in the early history of the Town, has gradually decreased over the years to a very small land use. As a result, the untilled lands reverted back to forest lands. The rapid population growth and movement of the 1970's and 1980's also exerted pressure on the natural resources of Southern New Hampshire, and uncontrolled growth made serious inroads into the rural character of some areas. As growth continues, our ability to protect open space and maintain healthy bio-diversity will depend upon our understanding present conditions.

This inventory is intended as a companion document to Greenfield's Master Plan. As such, it can be used to update the Master Plan as well as to guide future changes to the Zoning Ordinance. The intent of this inventory is to flag those parts of the environment that are fragile as well as to indicate those which may best sustain future activities or growth.

This inventory is the product of the entire Town and represents a large effort on the part of many dedicated citizens. The Greenfield Conservation Commission welcomes suggestions for updating or revising this document.

1.1 PURPOSE AND NEED

The primary goal of this Natural Resource Inventory is to provide the Town of Greenfield with a directory of information pertaining to natural and cultural assets which fall under the legal description of the responsibilities of a Conservation Commission in New Hampshire. Although previous efforts to compile this information occurred, none were published or formally adopted. Recent planning initiatives, such as the Town's Master Plan Update, supported a concerted effort to publish and make this important information available to Town boards, officials, staff, consultants, and the general public.

1.2 CONSERVATION COMMISSION

The Town of Greenfield created a Conservation Commission according to NH RSA 36A:2 (below) in 1976. The seven-member commission is made up solely of volunteers who work to protect natural resources in a variety of ways.

1.2.1 RSA 36-A:2

New Hampshire law outlines the purpose and major duties of conservation commissions (RSA 36-A:2):

A city or town which accepts the provisions of this chapter may establish a conservation commission, hereinafter called the commission, for the proper utilization and protection of the natural resources and for the protection of watershed resources of said city or town. Such commission shall conduct researches into its local land and water areas and shall seek to coordinate the activities of unofficial bodies organized for similar purposes, and may advertise, prepare, print and distribute books, maps, charts, plans and pamphlets which in its judgment it deems necessary for its work. It shall keep an index of all open space and natural, aesthetic or ecological areas within the city or town, as the case may be, with the plan of obtaining information pertinent to proper utilization of such areas, including lands owned by the state or lands owned by a town or city. It shall keep an index of all marshlands, swamps and all other wet lands in a like manner, and may recommend to the city council or selectmen or to the department of resources and economic development a program for the protection, development or better utilization of all such areas. It shall keep accurate records of its meetings and actions and shall file an annual report which shall be printed in the annual town or municipal report. The commission may appoint such clerks and other employees or subcommittees as it may from time to time require.

1.3 PROJECT OVERVIEW

Early in 2017, the Conservation Commission and Southwest Region Planning Commission (SWRPC) kicked off the development of a natural resources inventory by discussing priority themes to investigate, data and mapping needs, as well as public outreach and education. The development of a public opinion survey on conservation priorities was developed and published during the spring of 2017, which provided an additional source of information relating to potential conservation priorities, important areas, and public attitudes (see *Appendix B*).

1.4 BRIEF EXPLANATION OF MAPS

A wide variety of maps were prepared to facilitate descriptions and discussion of notable natural resources and potential concerns. Each map was created using available Geographic Information Systems (GIS) data from a variety of federal, State of New Hampshire, and other sources. The following descriptions are intended as a guide to understanding to content and purpose of individual maps. Further discussion of each map can be found within the document.

1.4.1 Map 1 - Aerial Imagery

Map 1 depicts political boundaries, transportation networks, and surface water features along with aerial photography taken in 2015 and made available through NH GRANIT, New Hampshire's statewide GIS clearinghouse. This "birds-eye" view of Greenfield is helpful in identifying developed versus undeveloped or forested areas. For more information, see 2.1 .

1.4.2 Map 2 - Road Inventory

Map 2 depicts the transportation network. The road network is symbolized based on the legislative classification of each route. The map also shows locally-designated scenic roads, Class A trails, rail lines, and bridges. For more information, see 2.2 .

1.4.3 Map 3 - Bedrock Geology

Map 3 depicts the major bedrock formations in Greenfield and in surrounding areas. For more information, see 2.3 .

1.4.4 Map 4 - Topography

Map 4 depicts 20-foot and 100-foot elevation contours in Greenfield, according to the United States Geological Survey (USGS). The map also shows the location of named summits within and nearby. For more information, see 2.4 .

1.4.5 Map 5 - Forest Soils

Map 5 depicts areas of soils most suitable for timber production, according to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Hillsborough County Soil Survey. Categories 1A, 1B, and 1C are considered to be most suitable for timber production. For more information, see 3.1 .

1.4.6 Map 6 - Agriculture Soils

Map 6 depicts areas within and nearby to Greenfield most suitable for agricultural crop production, according to the USDA NRCS Hillsborough County Soil Survey. The map does not show which areas are actively being farmed. For more information, see 3.2 .

1.4.7 Map 7 - Steep Slopes and Erodible Soils

Map 7 depicts USDA NRCS Hillsborough County Soil Survey map units whose representative slope is equal or greater to 20% (the next lowest slope found in the study area was determined to be 12%). *The susceptibility* of certain areas to erosion was examined using the K factor, a relative index of susceptibility or bare soil to erosion from water. Values can range from 0.02 to 0.69, with higher values being more susceptible to erosion by water. For more information, see 3.3 .

1.4.8 Map 8 - Sand Source

Map 8 depicts USDA NRCS Hillsborough County Soil Survey map units based its relative quality as a source of sand (good, fair, or poor). A rating of "good" or "fair" means that sand is likely to be in or below the soil. For more information, see 3.4 .

1.4.9 Map 9 - Gravel Source

Map 9 depicts USDA NRCS Hillsborough County Soil Survey map units based its relative quality as a source of sand (good, fair, or poor). A rating of "good" or "fair" means that sand is likely to be in or below the soil. For more information, see 3.4 .

1.4.10 Map 10 - Watersheds

Map 10 shows the three watersheds which divide the Town according to the USGS National Hydrography Dataset (NHD): Piscataquog River, Souhegan River, and Upper Contoocook River. When land protection, water resource, or other issue crosses municipal boundaries there is the potential to participate in a broader conversation on a land or water concern. For more information, see 4.1 .

1.4.11 Map 11 - Subwatersheds

Within the watersheds shown in Map 10, Map 11 provides additional detail about drainage patterns in and around Greenfield. For more information, see 4.1 .

1.4.12 Map 12 - Surface Waters and Wetlands

Map 12 depicts areas identified as wetlands as part of the National Wetland Inventory, soil types associated with wetlands, and other surface water (including New Hampshire Designated Rivers according to NH RSA 483). Each data source does not represent a property-specific evaluation of wetlands. Currently, there is no comprehensive source for this information. However, the combination of the National Wetland Inventory and soil survey data provide a useful way to predict the presence of wetlands for further study. For more information, see 4.2 , 4.3 , and 4.4 .

1.4.13 Map 13 - Floodplain and Dams

Map 13 depicts Federal Emergency Management Administration (FEMA) flood hazard areas depicted on Flood Insurance Rate Maps (FIRMs) to show the areas of Greenfield within both 100-year and 500-year floodplains. An inventory of dams, maintained by the New Hampshire Department of Environmental Services (NHDES) Dam Bureau (along with their current status) are also shown. For more information, see 4.5 Floodplains.

1.4.14 Map 14 - Stratified Drift Aquifers and Public Water Supplies

Map 14 depicts the location and relative productivity of stratified drift aquifers within and nearby to Greenfield, along with public water supply wells (as defined by the Federal Safe Drinking Water Act) and if applicable their designated wellhead protection areas. Each public water supply is labeled by its NHDES-assigned system identifier. For more information, see 4.6 .

1.4.15 Map 15 - Known and Potential Contamination Sites

Map 15 depicts a variety of concerns relevant to water resources, habitat, and human health. These features include the locations of underground storage tanks registered with NHDES, current or former automobile salvage yards, hazardous waste generators, solid waste facilities, and other sources. For more information, see 4.7 .

1.4.16 Map 16 - Wildlife Action Plan Land Cover

Map 16 depicts the New Hampshire Fish & Game Department (NHFG) 2015 Wildlife Action Plan (WAP) land cover types which show the location and size of different habitat types in and around Greenfield. For more information, see 5.1 .

1.4.17 Map 17 - Wildlife Action Plan Priority Tiers

Map 17 depicts NHFG WAP priority tiers or highest ranked wildlife habitat in and around Greenfield. For more information, see 5.1 .

1.4.18 Map 18 - Unfragmented Habitat

Map 18 depicts one of the results of the NHFG Coarse Filter Wildlife Habitat Mapping Project. As part of the project, unfragmented habitat areas (referred to as “blocks”) were delineated and scored based on their total land area and area/perimeter ratio. For more information, see 5.2 .

1.4.19 Map 19 - Natural Heritage Bureau Data

Map 19 depicts the approximate location of rare or exemplary natural communities tracked by the New Hampshire Department of Natural Resources (NHDNR). Within this agency, the Division of Forest and Lands Natural Heritage Bureau (NHB) tracks and facilitates the protection of rare plants and exemplary natural communities. Because the precise location of such information cannot be revealed publically, it has been depicted as a 1-mile diameter circle as an indicator of spatial accuracy. Exemplary natural communities represent the best remaining examples of New Hampshire's biological diversity. For more information, see 5.3 .

1.4.20 Map 20 - Quabbin to Cardigan Partnership

Map 20 depicts Quabbin to Cardigan Partnership priority areas (along with existing protected land) in and around the Town of Greenfield. For more information, see 5.4.2 .

1.4.21 Map 21 - Tax Parcels and Conservation Land

Map 21 is designed to show the size and geographic distribution of protected land in and around Greenfield. The map depicts tracts of land according to their ownership and labels any tract appearing within or partially-within Greenfield. Tax parcel boundaries are also included as a reference. This feature is frequently helpful when reviewed with other inventory maps. For more information, see 5.5 .

1.4.22 Map 22 - Invasive Plant Control Strategy

Map 22 depicts priority areas to implement invasive plant species controls. For more information, see 5.6

1.4.23 Map 23 - Recreation

Map 23 depicts recreational trails and other amenities based on a variety of sources, including NH GRANIT, New Hampshire Department of Transportation (NH DOT), the NH Office of Strategic Initiatives (NHOSI), and NHFG. For more information, see 6.1 .

1.4.24 Map 24 - Historic Sites

Map 24 depicts sites within and nearby to the Town of Greenfield that are listed on the National Parks Service (NPS) National Registry of Historic Places. For more information, see 6.2 .

2 CONTEXT



Photo 2 - Winter view of North Pack Monadnock as seen from Pine Ridge Road

The Town of Greenfield, New Hampshire is located in Hillsborough County along the Contoocook River. The major land cover of Greenfield's more than 16,000 acres is forest. Some of this land is wetland or very steep reducing but probably not eliminating its value as commercial forest. Open agricultural land accounts for another 1,000 acres. Recreational land (publicly owned) amounts to nearly 2,000 acres including 1,358 acres in the North Pack Preserve. Information on wetlands is incomplete but perhaps 500 acres of the Town's wetlands are not forest productive. The remaining 2,200 acres is generally considered to be the existing built up area of the Town including roadways. Within this imprecise accounting is about 200 acres of surface water dotting the Town. Major land holdings are scattered throughout the Town and represent opportunities for land (resources and habitat) protection while directing inevitable development toward more desirable areas.

2.1 AERIAL IMAGERY

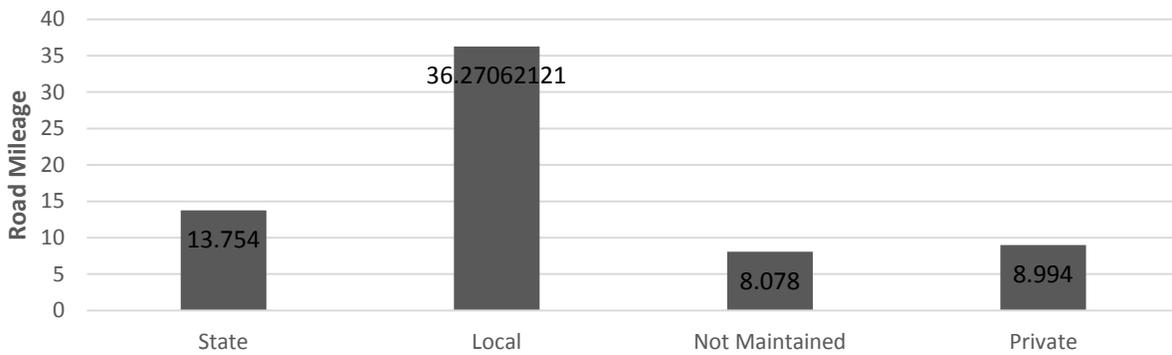
According to the United States Census Bureau, Greenfield contains about 25.6 square miles of land area and 0.6 miles of inland water area. The most recent high resolution color photographs, taken in 2015, are depicted on *Map 1 - Aerial Imagery*. Aerial photographs are useful for updating maps, describing specific properties, examining changes in land use over time, and supporting more detailed studies, such as wetland delineation. In the past, aerial photographs were only available in printed format. Today,

interactive mapping platforms (including those offered by the USDA, NH GRANIT, and others) have made this information much more accessible.

2.2 ROAD INVENTORY

NHDOT is responsible for maintaining an inventory of every publicly owned road, street, and highway in the state. The inventory contains many fields which document physical characteristics, ownership, and maintenance responsibilities. The Department routinely updates this information with assistance from the Town. According to these and other records, there are over 67 miles of State, local, and private roads in Greenfield (see *Map 2 - Road Inventory*). These routes not only meet basic transportation needs and connect regional population centers. They also provide access to recreational opportunities, conservation lands, and natural resources.

Figure 1 - Greenfield Road Mileage



State routes, also referred to as legislative Class II highways, include not only the numbered routes of NH 31 and NH 136, but also two unnumbered State routes: Crotched Mountain Road and Fox Meadow Lane. All of these routes have a paved surface (Table 1).

Table 1 - Inventory of Legislative Class II Highways (State Routes) and Mileage

ROAD NAME	MILEAGE	DESCRIPTION
CROTCHED MOUNTAIN RD	1.601	From NH 31 (Forest Rd) north to Crotched Mountain Rehabilitation Center
FOREST RD (NH 31/NH 136)	6.986	From Hancock town line to Lyndeborough town line
FOX MEADOW LN	0.267	South from the end of Crotched Mountain Rd
FRANCESTOWN RD (NH 136)	1.2	North from NH 31 (Forest Rd) to Greenfield Rd
GREENFIELD RD (NH 136)	0.155	North from NH 136 (Francestown Rd) to Francestown town line
PETERBOROUGH RD (NH 136)	0.531	South from NH 136 (Forest Rd) to Peterborough town line
SAWMILL RD (NH 31)	3.014	North from NH 31/NH 136 (Forest Rd) to Bennington town line
GRAND TOTAL	13.754	

Both local and private roads are not always paved. Through a town meeting vote, all unpaved Class V highways in Greenfield have been designated as scenic, under the authority of RSA 231:157 (Table 2). According to the terms of RSA 231:158, any “repair, maintenance, reconstruction, or paving work done . . . by the state or municipality, or any action taken by any utility or other person acting to install or maintain poles, conduits, cables, wires, pipes or other structures pursuant to RSA 231:159-189 shall not involve the cutting, damage or removal of trees, or the tearing down or destruction of stone walls, or portions thereof, except with the prior written consent of the planning board . . . after a public hearing.”

Figure 2 - Greenfield Road Mileage for Class V (Local) and Private Roads by Surface Type

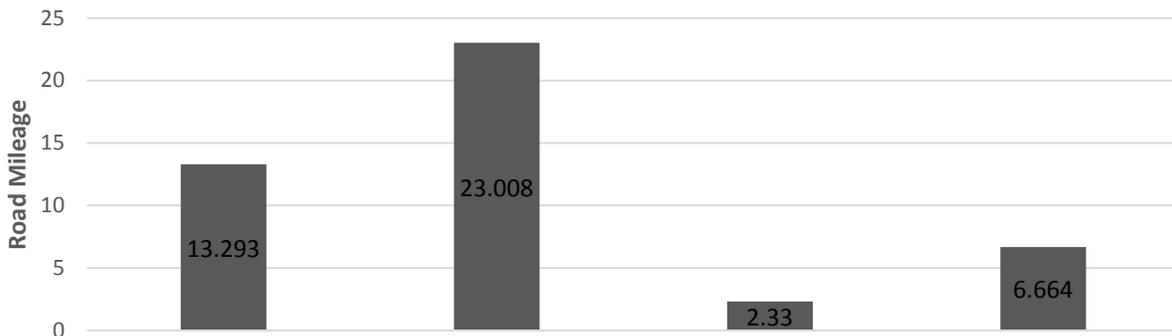


Table 2 - Inventory of Legislative Class V Highways (Maintained Local Roads) and Mileage

ROAD NAME	MILEAGE	DESCRIPTION	SCENIC
BLANCHARD HILL RD	0.327	From New Boston Rd north to Fletcher Farm Rd	Yes
BRANTWOOD CAMP RD	0.739	North from Mountain Rd	Yes
BROOKS DR	0.097	West from NH 31 (Sawmill Rd)	Yes
CAVENDER RD	1.537	From Hancock town line to Old Bennington Rd	Yes
COACH RD	0.392	South from Thomas Dr	Yes
COLONIAL DR	0.229	East from Riverbend Dr	Yes
CORNWELL RD	1.349	North from Gulf Rd to Slip Rd	Yes
COUNTY RD	1.361	North from Forest Rd	Yes
DEPOT DR	0.096	West from Slip Rd	No
DODGE RD	0.707	South from S Francestown Rd to Rand Brook	Yes

ROAD NAME	MILEAGE	DESCRIPTION	SCENIC
DRISCOLL RD	0.86	South from Mountain Rd	Yes
DUNKLEE HILL RD	0.25	West from New Boston Rd	Yes
EARLY AMERICAN DR	0.094	South from East Rd	No
EAST RD	2.686	From NH 31 (Forest Rd) east to New Boston Rd	No
ETNA DR	0.47	From Miner Rd east to Fletcher Farm Rd	Yes
FLETCHER FARM RD	0.533	North from Miner Rd	Yes
GOULD HILL RD	0.529	South from Zephyr Lake Rd	No
GULF RD	0.347	From Peterborough town line east to Slip Rd	Yes
HOLDEN RD	0.51	From NH 31 (Forest Rd) north to Old Lyndeborough Mtn Rd	Yes
ICE HOUSE LN	0.09	North from Zephyr Lake Rd	Yes
KNOTWOOD DR	0.238	South from NH 136 (Peterborough Rd)	No
LAKE VIEW CIR	0.301	North from Zephyr Lake Rd	Yes
LONGWOOD DR	0.283	South from Gould Hill Rd	No
MINER RD	1.373	From NH 31 (Forest Rd) to New Boston Rd	Yes
MOUNTAIN RD	2.351	From Peterborough town line east to Russell Station Rd	No
MUZZEY HILL RD	1.483	North from County Rd	Yes
NEW BOSTON RD	2.705	From NH 31 (Forest Rd) at Russell Station Rd north to Francestown town line	No
OLD BENNINGTON RD	2.972	From Bennington town line south to Peterborough town line	Yes
OLD LYNDEBOROUGH MTN RD	0.57	South from New Boston Rd	Yes
PINE RIDGE RD	0.483	East from NH 136 (Francestown Rd)	Yes
RIVERBEND DR	0.222	North from Cavender Rd	Yes
RUSSELL STATION RD	1.193	North from Lyndeborough town line to NH 31 (Forest Rd)	No
S FRANCESTOWN RD	1.451	From NH 136 (Francestown Rd) east to Francestown town line	Yes
SCHOOL HOUSE RD	0.407	East from Russell Station Rd to NH 31 (Forest Rd)	Yes
SLIP RD	3.241	Forest Rd to Peterborough town line	Yes
SUNDINE FARM RD	0.254	North from East Rd to Rand Brook	
SUNSET LAKE RD	0.5	East from Crotched Mountain Rd	Yes
SWAMP RD	1.237	East from Old Bennington Rd to NH 136 (Peterborough Rd)	Yes
THOMAS DR	0.238	East from New Boston Rd at Blanchard Hill Rd	Yes
WHITNEY DR	0.127	South from Mountain Rd	Yes
WOODLAND HILL RD	0.438	North from NH 31 (Forest Rd)	Yes
YANKEE WAY	0.052	North from Zephyr Lake Rd	Yes
ZEPHYR LAKE RD	0.948	West from NH 31 (Forest Rd) to Slip Rd	No
GRAND TOTAL	36.301		23.296

Approximately six miles of roads in Greenfield are unmaintained local roads, also referred to as Class VI (Table 3).

Table 3 - Inventory of Legislative Class VI Highways (Unmaintained Local Roads) and Mileage

ROAD NAME	MILEAGE	DESCRIPTION
BURKE RD	0.164	South from Cavender Rd to Peterborough town line
CART LN	0.627	North from Crotched Mountain Rd to Rogers Rd
CAVENDER RD	0.036	West from maintained portion of Cavender Rd to Hancock town line
ELLA MAY WAY	0.16	East From NH 31 (Forest Rd) at Zephyr Lake Rd to Miner Rd
FRENCH RD	0.178	East from New Boston Rd to Lyndeborough town line
GULF RD	1.496	East from maintained portion of Gulf Rd at Sip Rd to maintained portion of Slip Rd
OLD LYNDEBOROUGH MTN RD	0.272	East from maintained portion of Old Lyndeborough Mtn Rd to Lyndeborough town line
PINE RIDGE RD	0.858	South from maintained portion of Pine Ridge Rd to East Rd
ROGERS RD	1.258	North from Crotched Mountain Rd
SAVAGE RD	0.867	West from Dodge Rd to unmaintained portion of Pine Ridge Rd
GRAND TOTAL	5.916	

About two miles of former public rights-of-way were turned into Class A trails as authorized by NH RSA 231-A:1 (Table 4). A Class A trail is one of two types permitted. In this version, access to existing buildings, forestry, and agriculture can be continued, but not expanded (New Hampshire Municipal Association 2015, 173-174).

Table 4 - Inventory of Class A Trails and Mileage

ROAD NAME	MILEAGE	DESCRIPTION
BLANCHARD HILL RD	0.105	North from maintained portion of Blanchard Hill Rd
DUNKLEE HILL RD	1.194	North from maintained portion of Dunklee Hill Rd to East Rd
FLETCHER FARM RD	0.863	North from maintained portion of Fletcher Farm Rd to Blanchard Hill Rd
GRAND TOTAL	2.162	

Table 5 - Inventory of Private Roads and Mileage

ROAD NAME	MILEAGE	DESCRIPTION
BEACH RD	0.63	West from Campground Rd to Otter Lake in Greenfield State Park
BLANCHARD HILL RD	0.087	North from unmaintained portion of Blanchard Hill Rd Class A trail
BRASHLYN LN	0.025	East from NH 31 (Forest Rd)
BROOKS DR	0.036	North from maintained portion of Brooks Dr
BROWNE LN	0.125	East from Brantwood Camp Rd
CAMERON'S WY	0.339	East from NH 31 (Forest Road) near Lyndeborough town line
CAMP UNION LN	0.036	South from Otter Lane Ln
CAMPGROUND RD	0.293	North from Forest Rd to Greenfield State Park
CART LN	0.209	West from Crotched Mountain Rd and north of Cart Ln (Class VI)
COACH RD	0.326	South from maintained portion of Coach Rd to unmaintained portion of Holden Rd
COOK LN	0.06	North from Browne Ln
CORLISS LN	0.044	North from unmaintained portion of Holden Rd

ROAD NAME	MILEAGE	DESCRIPTION
CROTCHED MOUNTAIN RD	0.419	East from Fox Meadow Ln to Verney Dr
EWING LN	0.203	North from NH 136 (Francestown Rd)
GEORGE LN	0.094	West from Higgins Ln to Winamac Ln
GIBBONS LN	0.064	East from Slip Rd
HALL WAY	0.02	East from NH 31 (Forest Rd)
HEBE LN	0.055	Off Sunset Lake Rd
HIGGINS LN	0.115	West from NH 31 (Sawmill Rd)
HOLDEN RD	0.41	North from Old Lyndeborough Mtn Rd to unmaintained portion of Coach Rd
HOPKINS LN	0.038	East from NH 136 (Francestown Rd)
HOYT LN	0.121	North from Swamp Rd
HUGH GREGG LN	0.263	East from Crotched Mountain Rd
KEYES LN	0.074	Off Sunset Lake Rd
MAGOON LN	0.018	South from NH 136 (Forest Rd)
MAINTENANCE RD	0.134	East from Campground Rd in Greenfield State Park
NO NAME	0.035	South from end of Depot Dr
NORTH PACK LN	0.159	South from Mountain Rd
OTTER LAKE LN	0.86	West from Wally Stone Ln to Otter Lake
PS 409 ENTRANCE	0.105	South from NH 31 (Sawmill Rd)
ROBSON LN	0.222	West from NH 136 (Greenfield Rd)
ROCKY LN	0.093	South from NH 31 (Forest Rd)
ROGERS RD	0.024	North from Crotched Mountain Rd
SOUTH VIEW RD	0.634	South from Verney Dr and Crotched Mountain Rd
STAFF HOUSE CIR	0.341	West from Fox Meadow Ln to Verney Dr
TODD LN	0.041	West from NH 136 (Peterborough Rd) just south of Swamp Rd
TOWER PL	0.21	West from Wally Stone Ln
VERNEY DR	0.673	East from maintained portion of Crotched Mountain Rd just south of Rogers Rd
WALLY STONE LN	0.756	South from NH 31 (Sawmill Rd)
WESTAWAY LN	0.012	East from NH 31 (Forest Rd)
WINAMAC LN	0.591	West from George Ln to Bennington town line
GRAND TOTAL	8.994	

2.3 BEDROCK GEOLOGY

According to (Hopkins 1977, 1-3):

Greenfield occupies a bit of the backbone of the Appalachian Mountain system. The gray, craggy rocks that form ledges and outcrops and the rocky slopes of the low mountains were once mud and sand at the bottom of the sea several hundred million years ago. Since then, these rocks have been buried miles beneath the surface of the earth, squeezed, heated, soaked in hot solutions, and partly melted. In the course of these events, the original mud and sand were so modified that their original character can hardly be recognized by an imaginative geologist, to say nothing of a settler whose first concern was to try to find enough soil to raise a crop.

The remote and deep-seated processes that created the granite and schist bedrock left a couple of legacies for the settlers, however. One bed of sediment that was originally rich in limey seashells ultimately became soapstone. An enterprising Yankee found the soapstone, quarried it in a pit east of Francestown village, and milled it in Greenfield into small slabs for winter bedwarmers and larger slabs were then fabricated into sinks and stoves. When the quarry ran out of good soapstone, the mill had to close.

Quartz, injected in a deep-seated fracture in Lyndeborough, just east of the Greenfield town line, was also discovered and quarried. It furnished the glass sand for the Lyndeborough glass factory of colonial times; much more recently the same thick quartz vein furnished raw material for exposed aggregate on the sides of a new classroom building at Harvard University.

During the ice age, southern New Hampshire was overwhelmed by a part of the continental glacier that some 18,000 years ago, covered all of Canada, all of New England, and a good bit of the rest of northern United States. Greenfield mostly sprawls across the crest of a rocky ridge, whose peaks are Crotched Mountain, Winn, Rose, and Piscataquog Mountains, and North and South Pack Monadnock. [Of the peaks, only North Pack Monadnock is within Greenfield.] The glacier moved southward over this ridge, smoothing the north sides of the higher peaks and plucking and quarrying at the south or lee sides to make rugged, cliffy slopes such as the steep mountainside where Crotched Mountain Rehabilitation Center overlooks Sunset Lake. The smoothed and polished ledges scattered about Greenfield are a silent testimony to the abrasive power of the gigantic mass of ice that moved over southern New England during the age of the mammoths.

Sometime between 10,000 and 14,000 years ago, the climate warmed abruptly, and much of the glacial ice began to melt in place without further movement. North Pack Monadnock Mountain emerged, Greenfield's Mount Ararat, still surrounded by a sea of ice. As the ice melted down, drainage outlets developed across the emerging ridges. Some of these are now preserved as miniature canyons such as that followed by the Gulf Road. When much of the ice was gone from Greenfield, remnants still lay further north in the Contoocook Valley. The north-flowing river was blocked and the valley was occupied by a lake much larger and much deeper than the present day millpond that spans the Greenfield-Bennington town line. The former shoreline is marked by old deltas and many of the sand plains around Greenfield, for example at Greenfield State Park, were formed by meltwater rivers that carried sand to fill in the margins of the lake. Ice remnants buried beneath the newly-deposited gravel eventually disappeared, and the sites of these persisting ice remnants are marked by hollows and depressions now occupied by our lakes.

The glacier was responsible for our lovely scenery and for the tumbling brooks that offered mill sites to our earliest settlers, but . . . The moving ice scraped the soil from the highlands and deposited most of it far to the south in Massachusetts and Connecticut, leaving Greenfield's farmers a legacy of boulders and ledges and a landscape with very few flat spots.

The geology of an area literally underlies and helps to explain many of the surficial formations found in Greenfield, including topography, groundwater resources, and soils. The following information and accompanying map depicts the geological history in Greenfield, by categorizing and naming rock formations (see *Map 3 - Bedrock Geology*, Table 6). The data was digitized for modern mapmaking applications by the State of New Hampshire from its original source (Lyons, Moench and Thompson 1991) and includes all three of the major types of rock: igneous, sedimentary, and metamorphic. Each type is

defined based on how they were formed. **Igneous rocks**, such as Kinsman Granodiorite, are formed when molten rock crystallizes. **Sedimentary rocks**, such as those comprised of the Upper part of the Rangeley Formation, are formed from pre-existing rocks or once-living organisms. Any rock can become a **metamorphic rock**. There are multiple examples of these formations in Greenfield, which started out as either igneous or sedimentary but were substantially changed by heat, pressure, mineral-rich fluids, or a combination of these factors.

Table 6 - Greenfield Bedrock Formations

ROCK TYPE CODE	MAJOR / MINOR TYPE	FORMATION NAME	DESCRIPTION
DK2X	Plutonic and Associated Volcanic Rocks / New Hampshire Plutonic Suite (Late to Early Devonian)	Kinsman Granodiorite (Early Devonian) (Kinsman Quartz Monzonite of Billings, 1955)	Foliated granite, granodiorite, tonalite, and minor quartz diorite; large megacrysts of potassium feldspar characteristic; garnet locally abundant
DL	Metasedimentary and Metavolcanic Rocks of the Central Maine Trough	Littleton Formation , undivided (Lower Devonian; Siegenian)	Gray metapelite and metawacke and subordinate metavolcanic rocks; generally, but not everywhere, conformable with the underlying Fitch or Madrid Formations. Fossiliferous in western New Hampshire
DS1-6	Plutonic and Associated Volcanic Rocks / New Hampshire Plutonic Suite (Late to Early Devonian)	Spaulding Tonalite (Early Devonian) (Spaulding Quartz Diorite of Fowler-Billings, 1949)	Weakly foliated to nonfoliated, spotted biotite quartz diorite, tonalite, granodiorite, and granite; garnet and muscovite may not be present
SM	Metasedimentary and Metavolcanic Rocks of the Central Maine Trough	Madrid Formation (Upper Silurian?)	Not Available
SP	Metasedimentary and Metavolcanic Rocks of the Central Maine Trough	Perry Mountain Formation , undivided (Middle? to Lower? Silurian)	Sharply interbedded quartzites, light-gray nongraphitic metapelite, and "fast-graded" metaturbidites. Coticule layers common
SRU	Metasedimentary and Metavolcanic Rocks of the Central Maine Trough	Upper part of Rangeley Formation	Rusty-weathering, pelitic schist, metasandstone, and local coarse-grained metasandstone lentils; calc-silicate pods common; minor coticule. Probably equivalent to member C of Rangeley Formation of Maine
SS	Metasedimentary and Metavolcanic Rocks of the Central Maine Trough	Smalls Falls Formation, undivided (Upper to Middle Silurian; Ludlovian and Wenlockian)	Very rusty weathering, thinly bedded sulfidic-graphitic schist and pyrrhotitic calc-silicate granofels. Eastern facies equivalent to lower part of the Fitch Formation. Locally mapped as Franchestown Formation of Nielson (1981) in southern New Hampshire

2.4 TOPOGRAPHY

The USGS lists three summits in Greenfield (the highest being North Pack Monadnock Mountain). There are also several notable summits in surrounding communities (see *Map 4 – Topography*, Table 7, Table 8).

Table 7 - Greenfield Summits, Elevations above Sea Level, and Locations

NAME	ELEVATION (FEET)	LATITUDE	LONGITUDE
BLANCHARD HILL	1,171	42.935083	-71.837855
GOULD HILL	1,096	42.928416	-71.861744
NORTH PACK MONADNOCK MOUNTAIN	2,264	42.886195	-71.865633

Table 8 - Nearby Summits, Elevations above Sea Level, and Locations

NAME	ELEVATION (FEET)	TOWN	LATITUDE	LONGITUDE
BULLARD HILL	1,270	Francestown	42.9936933	-71.8464665
CAMPBELL HILL	1,289	Francestown	43.0031376	-71.843411
CROTCHED MOUNTAIN	2,054	Francestown	42.9984152	-71.8736895
LYNDEBOROUGH MOUNTAIN	1,621	Lyndeborough	42.9289726	-71.7981317
NORWAY HILL	1,125	Hancock	42.9711928	-71.9673025
OAK HILL	1,329	Peterborough	42.8661951	-71.9050783
PACK MONADNOCK MOUNTAIN	2,287	Peterborough	42.8620287	-71.8786887
PISCATAQUOG MOUNTAIN	1,253	Lyndeborough	42.9306394	-71.773409
ROSE MOUNTAIN	1,726	Lyndeborough	42.932028	-71.8047986
THE PINNACLE	1,696	Lyndeborough	42.9278616	-71.7928538
WINN MOUNTAIN	1,657	Lyndeborough	42.9106395	-71.8103541

3 SOILS OF SPECIAL IMPORTANCE



Photo 3 - Wetlands as seen from NH 136 one mile north of Greenfield

Greenfield has a wide variety of soils ranging from steep to shallow slopes, arid to wet conditions, varying degrees of fertility, and from very stony to clear of stones. The stones range in size from less than two feet in diameter to the size of a large vehicle.

The soils and their distribution are a result of the glacier and 10,000 years of environmental development since the melting of the glacier. They have developed from a parent material of glacial till left by the withdrawing glacier and from many years of wind and water erosion as well as an accumulation of broken down organic material on the surface. As a result of the scouring action of the glacier, there are many areas exhibiting rock and ledge outcrops.

In the central and north central parts of Town, there are many areas of sand and gravel deposits. It is here that the action of the glacier is most noticeable. The sand and gravel deposits are a result of swift rivers and streams which flowed under the glacier.

In the mid-nineteenth century much of Greenfield was cleared and used for agricultural pursuits. The predominantly rocky soil, the high seasonal water tables, and steep slopes all made agricultural endeavors difficult. Much of the land was allowed to revert to forest growth.

Much of the northwestern section of Town has a soil which is classified as Marlow-Peru with varying degrees of stoniness and slope. The names of soil types are taken from the town where a particular soil series was first encountered. Marlow-Peru soils are characterized as moderately well-drained soils with

slopes varying between zero and 25 percent, and tends to be very stony. Because of hard pan at depths of 30 inches, it creates a perched water table (a ground water level that is higher than surrounding water tables) during spring runoff and the early growing period.

The north central and central section of Town has Colton-Adams soils. These soils are characterized as deep soil deposits with flat to steep slopes and excessively drained (rapid infiltration of water). It is unsuitable for agriculture because of drought and lack of fertility. Conifers thrive in this soil.

The east central parts of Greenfield contain a Monadnock soil type. These soils are located in rolling to hilly areas and are deep, well drained soils containing many stones. It is formed in loamy glacial till over a sandy glacial till. In areas where the slope is flat to moderate and the rocks minimal, this soil is well suited for agriculture.

Wetland soils are scattered throughout the Town with two extensive areas in the north central and south central parts. The soils in the wetland areas extend from poorly drained to very poorly drained permeability. Flat terrain and shallow marshy areas describe this soil's distribution and consists of such soil types as Searsport Muck, Chocorua, Rumney, Borohemists, Naumberg, Lyne, Ossipee, and Greenwood. These soils are also found in small shallow depressions throughout the remainder of the town.

3.1 FOREST SOILS

Soils information is an important consideration in land use and conservation planning since the various characteristics of soils can have such an impact on natural resources – such as steepness, wetness, flood susceptibility, etc. Forest lands and therefore forest soils are also an important economic consideration both privately and for the Town. For example, the Town collects revenue in accordance with New Hampshire's Timber Tax law (RSA 79).

One measure of Greenfield's forest land is through the Town's assessing database and land use description for parcels of land. According to the Master Plan, 2012 acreage of "managed forest" was 669.0 acres and acreage of "unmanaged forest" was 3,436.5 acres, a total of 4,105.5 acres (and about 24% of a total of 17,128.7 acres).

Except for Town-owned forest land, state and federal land, the forest land in Greenfield is privately owned. There are also forests identified as tree farms in Greenfield. A tree farm designation verifies that a landowner has and will continue to use good forestry practices. There are nine certified tree farms in Town. Tree farms have an improved dollar per acre. Forest harvest tends to be cyclical with harvest volume increasing as stumpage price increases.

The species of trees present generally reflects the 74 species that are native to New Hampshire. The most common are oak, maple, beech, ash, birch, poplar, ironwood, cherry, white and red pine, hemlock, and spruce. According to a "Forest Facts" publication by the New Hampshire Cooperative Extension Service the average static condition of an acre of forest land includes about 1600 cubic feet of growing stock or, in another measure, about 3500 board feet of lumber. We have no indication that Greenfield would vary significantly from the state averages. Growth rate, of course, is variable and depends on soil and annual weather conditions. Again referencing the Cooperative Extension information, a conservative estimate of forest growth in this area of the state would be a half cord of wood or 250 board feet of lumber.

Managed forest would be expected to do much better. State-wide the "Forest Facts" publication indicated that forest volume is increasing both per acre and on an acreage basis. There is some question about the quality of the forest volume increase.

The economic benefit of forest land to the Town is significant. Over the past ten years the Town's yield tax revenue has ranged from \$7,000 to \$26,000 with an average of about \$12,000 per year. This also implies at least \$120,000 of income from timber sales to Greenfield landowners. Excluded from this accounting is wood and lumber used by the owner or on the farm and wood for maple syrup production. Firewood sales from Greenfield forests are not substantial and most often involve home use and neighborhood sales. Maple syrup production, while not large, is an excellent harbinger of spring and adds a little hard-earned income for some ambitious folks with access to sugar or hard maple trees. Greenfield is also home to New England Forest Products, a major processor of saw logs and seller of lumber, sawdust, firewood, mulch, and bark.

It would appear that the average annual harvest has been quite a bit greater than estimated annual growth. Using an arguable \$100 per 1,000 board feet value for stumpage and referencing the annual yield tax revenue, an average annual harvest of over 12 million board feet of lumber over the past 10 years is reasonable. However, 10,000 acres of forest land with an average annual growth of 250 board feet per year will only yield a total of 2.5 million board feet of lumber. Clearly the Town's forests cannot long sustain the rate of harvest seen in recent years.

There are a number of state laws that impact forest harvest. The most significant is the requirement that anyone planning to harvest more than 20 cords of firewood or 10,000 board feet of logs must file an Intent to Cut with the Town. A slash law requires the removal of branches and other debris from certain sensitive areas and slash must be cut to 4 feet in height within 150 feet of those areas. A 50% cut law restricts harvesting to no more than one half the basal area (not number of trees) within 50 feet of small ponds, streams, and brooks and within 150 feet of larger ponds, rivers, and public roads. Wetlands protection is also required. The operator must identify any wetlands and if disturbance is anticipated proper safeguards are required.

Wildlife and vegetative conditions are discussed in a separate chapter but clearly the presence of forest land is beneficial and contributes to a variety of wild plants and animals. This allows and encourages a great many recreational pursuits that have both pleasure and economic implications. Again referencing the 1985 Master Plan, our forests provide the necessary background for the rural and scenic character that the Town desires.

No clear policy implications are evident in this review. Some possible needs include strategies to improve harvest opportunities on small lots, incentives to carry out timber stand improvement, and encouraging harvests that take the long view.

3.1.1 Forest Soil Groups

The USDA NRCS Hillsborough County Soil Survey qualifies soils by the suitability for a variety of uses, including forest management for timber harvest. The resulting "Forest Soil Groups" provide insight into both the natural tendencies of forest community composition (mix of tree species) and effective timber management strategies (see *Map 5 - Forest Soils*).

Forest Soil Groups IA, IB and IC tend to be well-drained upland situations, with A and B supporting a preponderance of mixed hardwoods, and C supporting mixed forest dominated by pine and hemlock. These three groups are considered suitable for a range of timber management regimens and mechanized harvest. Groups IA and IB are the most common groups soils here, with 8,438 acres comprising about 48.8% of the Town. Group IC soils make up only 14.6% of the Town (2,522 acres).

Groups IIA and IIB tend to indicate wetter settings, erodible soils and forest communities dominated by pine, hemlock, spruce and fir. These groups are considered not suitable for timber management, or for limited management and harvest activity. These groups combined cover 27.9% Greenfield's total area (4,830 acres).

Some soils are not classified as being in any of these groups due to patent unsuitability for timber harvest due to steepness, rockiness, erodibility, or wetness – or due to highly variable conditions within the soil unit. About 8.7% of Greenfield (1,514 acres) is not classified.

3.1.1.1 Groups IA, IB and IC

Forest Soil Groups IA, IB and IC tend to be well-drained upland situations, with A and B supporting a preponderance of mixed hardwoods, and C supporting mixed forest dominated by white pine and hemlock. These three groups are considered suitable for a range of timber management regimens and mechanized harvest. They are also more suitable for development, having fewer limitations such as steep slopes or wetness.

3.1.1.2 Groups IIA and IIB

Groups IIA and IIB tend to indicate wetter settings, erodible soils and forest communities dominated by pine, hemlock, spruce and fir. These groups are considered not suitable for timber management, or for limited management and harvest activity. Some soils are "Not Classified" due to patent unsuitability for timber harvest due to steepness, rockiness, erodibility, or wetness – or due to highly variable conditions within the soil unit (Table 9).

Table 9 - Greenfield Forest Soils Groups as a Percentage of Total Area

FOREST SOILS GROUP	TOTAL AREA (ACRES)	PERCENT TOTAL AREA	CONSERVED AREA (ACRES)	PERCENT OF FOREST GROUP TOTAL
GROUP I	10,960	63.3%	2,787	25.4%
IA	4,958	28.7%	1,568	31.6%
IB	3,480	20.1%	786	22.6%
IC	2,522	14.6%	433	17.2%
GROUP II	4,830	27.9%	1,818	37.6%
IIA	3,294	19.0%	1,394	42.3%
IIB	1,536	8.9%	425	27.6%
NOT CLASSIFIED	1,514	8.7%	330	21.8%
GRAND TOTAL	17,304	100%	4,936	

3.2 AGRICULTURAL SOILS

The Hillsborough County Soil Survey provides a great deal of information about natural landscape conditions (e.g. hydrology and predominant forest types), suitability for different kinds of resource management (e.g. farming, timber management and gravel mining) and development (e.g. buildings, roads, and septic systems). The USDA classifies soils relative to suitability for farming in three levels (see *Map 6 - Agricultural Soils*, Table 10) (Soil Science Division Staff 2017):

3.2.1 Prime Farmland Soils

Prime Farmland Soils are recognized nationally for their fertility and ease of management for grazing, forage crops or till crops.

3.2.2 Farmland Soils of Statewide Importance

Farmland Soils of Statewide Importance are designated by individual states by virtue of their fertility and ease of management and importance to, or suitability for the predominant agricultural activities in that state.

3.2.3 Farmland Soils of Local Importance

Farmland Soils of Local Importance are designated by individual County Conservation Districts by virtue of their fertility and ease of management and importance to, or suitability for the predominant agricultural activities in that county.

Table 10 - Greenfield Farmland Soils as a Percentage of Total Area

ALL FARMLAND SOIL	5,853 ACRES	34%
PRIME FARMLAND SOIL	377 acres	2%
FARMLAND OF STATEWIDE IMPORTANCE	417 acres	2%
FARMLAND OF LOCAL IMPORTANCE	5,059 acres	29%

3.2.4 Tree Farms

Greenfield hosts 11 tree farms that a part of the American Tree Farm System, a nationwide program that encourages active and sustainable forest management (4 of these farms happen to cross the Greenfield town line). In total, 4,456 acres of these properties are within or partially within Greenfield (Carroll 2018).

3.3 STEEP SLOPES

Areas where slopes exceed 15% are typically more costly to develop. Steep slopes can also be unstable and prone to erosion depending on the properties of the soil. The erosion and runoff from improper development of these areas can create adverse effects on water quality. And, these steep areas are not only an environmental quality concern, the same areas are frequently those valued for views or aesthetics. When examining the representative slope of soil units making up the Hillsborough County Soil Survey, more than half of the total land area in Greenfield was found to be in areas of 12% slope or greater (see *Map 7 - Steep Slopes and Erodible Soils*, Table 11). The susceptibility of certain areas to erosion was mapped using the K factor, a relative index of susceptibility or bare soil to erosion from water. Values can range from 0.02 to 0.69, with higher values being more susceptible to erosion by water. Areas with the highest K factor values and slopes are the most likely to erode.

Table 11 - Representative Slopes as a Percentage of Total Land Area

REPRESENTATIVE SLOPE (%)	AREA (ACRES)	% OF TOTAL LAND AREA	CUMULATIVE % OF TOTAL LAND AREA
0	934	5.4%	5.4%
1	431	2.5%	7.9%
2	1,103	6.4%	14.3%
3	910	5.3%	19.5%
4	1,654	9.6%	29.1%
6	2,080	12.0%	41.1%
9	618	3.6%	44.7%
12	4,256	24.6%	69.3%
20	124	0.7%	70.0%
25	4,347	25.1%	95.1%
30	63	0.4%	95.5%
33	784	4.5%	100.0%
TOTAL	17,303		

3.4 SAND AND GRAVEL

According to the Greenfield Master Plan, earth excavation has not been an actively sought land use in Greenfield. The following properties are shown in Town records as having active or potentially-active gravel pits as of March 1997 (Table 12):

Table 12 - Active or Potentially-Active Gravel Pits

OWNER	TAX MAP AND LOT	ACREAGE
STEVE ROBERTSON (NOW CILLEY)	R1-1	56 acres
JOHN "SKIP" PARKER	R7-5.2	3.4 acres
GENE MITCHELL	R2-17	2 acres
STATE DEPARTMENT OF TRANSPORTATION	R1-28	5 acres
STANLEY FINK	R7-23.1	2 acres

Today, there are four excavation sites of which only two are considered to be active (Table 13).

Table 13 - Current Inventory of Active and Inactive Sand and Gravel Pits

LOCATION	NAME	STATUS	COMMENTS
R7/LOT 28 FOREST RD	Forest Road Town Pit	Active	First Excavated in 2013
R2/LOT 17.1 SAWMILL RD	Sawmill Road	Inactive	Revegetated
R1/LOT 3	Muzzy Hill Road (Class VI Portion)	Active	Only commercial pit in town
R1/LOT 28	DOT Garage	Inactive	Not excavated for many years

The properties used to evaluate the relative likelihood of encountering sand and gravel soils using Hillsborough County Soil Survey data include the thickness of the material, the size of the grain, and the content of rock fragment. In addition, the material must be at least three feet thick and have less than 50%, by weight, large stones. The soils are rated "good," "fair," or "poor" as potential sources of sand or gravel. A rating of "good" or "fair" means that sand is likely to be in or below the soil. The bottom layer and the thickest layer of the soil are assigned numerical ratings which can range from "good" to "poor" (see *Map 8 - Sand Source* and *Map 9 - Gravel Source*).

4 WATER RESOURCES



Photo 4 - Sunset Lake in the fall

Perennial streams, ponds, lakes, wetlands, floodplains, and stratified drift aquifers are some of our most sensitive natural resource areas - susceptible to loss due to small size, fragile conditions, poor prospects

for regeneration once disturbed, vulnerability for water contamination, and areas with a high potential for special communities or species. We are familiar with the legacy of degraded water quality and aquatic habitats, the loss of riparian habitat, the diversion of rain water and snow melt from natural courses of meandering through low lands or recharging ground water. Just as the ubiquity of trees along country roads in subdivisions throughout our Region may belie the degradation of natural forest communities, so the abundance of water may perpetuate a false sense of security about the well-being of the aquatic patches of the landscape mosaic.

4.1 WATERSHEDS

A watershed is a land area from which all the surface run-off drains at a single point. Watersheds can be any size, from a parking lot to half a continent. Watersheds are meaningful units for conservation planning because of the pervasive nature of water – it continuously moves through the natural and manmade environments and our water quality is the net product of everything it encounters - air, soil, pavement, forests – and in the event that a water quality problem is identified, the cause is probably within the same watershed.

Greenfield is unique in that it lies within three watersheds: the Piscataquog River in the northeast, the Upper Contoocook River in the west, and the Souhegan River in the extreme south. These three watersheds are a part of the primary Merrimack River Watershed (see *Map 10 - Watersheds*). The USGS uses the following classification system that divides the country into a total of six successively smaller river basins (Table 14).

Table 14 - United States Geological Survey Watershed Boundary Dataset

NAME	LEVEL	DIGIT	TOTAL NUMBER
REGION	1	2	21
SUBREGION	2	4	222
BASIN	3	6	352
SUBBASIN	4	8	2,149
WATERSHED	5	10	22,000
SUBWATERSHED	6	12	160,000

4.1.1 Region

Regions are the largest drainage basins. All of New Hampshire is located in the New England Region (01), which ultimately discharges into: (a) the Bay of Fundy; (b) the Atlantic Ocean within and between the states of Maine and Connecticut; (c) Long Island Sound north of the New York-Connecticut state line; and (d) the Riviere St. Francois, a tributary of the St. Lawrence River.

4.1.2 Subregion and Basin

Greenfield is located within the Merrimack Subregion (0107) which is about 4,980 square miles in size. The Merrimack River Basin (010700) is identical to the subregion cataloging unit.

4.1.3 Subbasin

Greenfield is located on the dividing line between the Contoocook Subbasin (01070003), about 757 square miles in size, and the Merrimack River Subbasin (01070006), about 2,300 square miles in size.

4.1.4 Watershed

Three separate watersheds occur in Greenfield: Souhegan River Watershed (0107000609), the Upper Contoocook River Watershed (0107000301), and the Piscataquoq River Watershed (0107000606) (Table 15).

Table 15 - Greenfield Watersheds

WATERSHED NAME	UNIT	TOTAL SIZE (ACRES)	AREA IN GREENFIELD (ACRES)	% OF GREENFIELD TOTAL AREA
PISCATAQUOG RIVER	0107000606	139,191	3,842	22.2
SOUHEGAN RIVER	0107000609	141,060	4,338	25.1
UPPER CONTOOCCOOK RIVER	0107000301	141,730	9,123	52.7

4.1.5 Subwatershed

The final unit for which there is data available, subwatersheds, includes seven examples (see *Map 11 – Subwatersheds*, Table 16).

Table 16 - Greenfield Subwatersheds

WATERSHED NAME	UNIT	TOTAL SIZE (ACRES)	AREA IN GREENFIELD (ACRES)	% OF GREENFIELD TOTAL AREA
FERGUSON BROOK-CONTOOCCOOK RIVER	010700030106	10,774	1,183	6.8%
GREAT BROOK-CONTOOCCOOK RIVER	010700030108	23,725	480	2.8%
GRIDLEY RIVER-CONTOOCCOOK RIVER	010700030104	28,114	231	1.3%
HEADWATERS SOUTH BRANCH PISCATAQUOG RIVER	010700060604	19,936	3,842	22.2%
MOOSE BROOK-CONTOOCCOOK RIVER	010700030107	11,819	1,231	7.1%
OTTER BROOK	010700030105	9,538	5,998	34.7%
STONY BROOK	010700060903	21,467	4,338	25.1%

The flows of the groundwater in the area generally determined by area topography, which accounts for the formation and location of the secondary watersheds. The Contoocook River Watershed is the largest with an area of approximately 9,123 acres followed by the Souhegan River Watershed with approximately 4,338 acres and finally the Piscataquoq River Watershed with approximately 3,842 acres.

Groundwater, which is the water contained in the soil, is in constant motion and acts as a hydraulic connector between streams, rivers, lakes, ponds, swamps, and aquifers. Water flow in an aquifer is static unless water is drawn from the natural reservoir. It would be correct to say that the water in Greenfield's aquifers has been there for in excess of ten thousand years. The water table, which is a measurement of the level of saturated soil, varies greatly throughout the Town. Much of the Town's soil exhibits a water table of six inches or less. The rock structure in Town is predominantly fractured limestone which also permits the flow of groundwater as well as acting as a storage medium.

There are three aquifers of limited capacity in Greenfield. The largest is located just west of the village as a part of the gravel deposits. A second aquifer of smaller capacity is situated in an area in the extreme southern end of Town near the intersection of Forest and Russell Station Roads. Another small aquifer is

located at the extreme northern part of Town straddling the border with Bennington to the east of Old Bennington Road. There are many other aquifers in Greenfield but their capacities are too small to be of any value as water sources.

The groundwater surfaces as swamps or marshes, streams, rivers, lakes, and ponds. Greenfield is well watered and these manifestations are many.

4.2 LAKES AND PONDS

The Monadnock Region of New Hampshire includes over 20,000 acres of lakes, river and wetlands. The region includes 156 lakes or great ponds, some of which participate in the Volunteer Lake Assessment Program (VLAP). Currently, no Greenfield lakes participate in VLAP. However, many lakes are monitored via the NHDES Lake Trophic Survey Program. There are three comparatively shallow lakes in Greenfield (see *Map 12 - Surface Waters and Wetlands*).

4.2.1 Piscataquoq River Watershed Lakes and Ponds

All eight lakes and ponds are located within the Piscataquoq River Watershed:

4.2.1.1 Hogback Pond

Hogback Pond is located in a deep depression just east of Otter Lake and west of Bennington Road. It measures nine acres in area. Bathymetry is not currently available. It is a deep cold water pond suitable for stocking trout. However, it is no longer stocked.

4.2.1.2 Mud Pond

Mud Pond is also located in a deep depression just south of Hogback Pond, north of Forest Road. It measures five acres in area. Although close together, the two ponds are in separate depressions and not connected at the surface.

4.2.1.3 Otter Lake

Otter Lake is located northwest of the village and just north of Forest Road with public access through Greenfield State Park and its associated boat launch. It measures one hundred thirty-five acres in area and has a maximum depth of sixteen feet. The average depth is 10 feet. Tests by the State indicate that Otter Lake is one of the cleanest and healthiest lakes in the State. Otter Lake is classified as oligotrophic, which indicates low phosphorus enrichment, limited rooted plant growth, low algal growth, and adequate dissolved oxygen. It is considered a warmwater fishery. Fish species present include large mouth bass, small mouth bass, chain pickerel, brown bullhead, bluegill, pumpkinseed, and yellow perch. Otter Lake is one of ten waterbodies in the Monadnock Area infested with an exotic species, the majority of which have variable milfoil, which was discovered here in 2012. Since, 2012 NH Department of Environmental Services has done extensive mitigation of the problem.

4.2.1.4 Powder Mill Pond

Powder Mill Pond is located at the Hancock town line. It extends north of the town line with Bennington. In total, it measures four hundred nineteen acres in size, the majority of which is located in Hancock. The maximum depth is seventeen feet, and the average depth is three feet, according to bathymetry. It is considered a warmwater fishery. Fish species present include small mouth bass, large mouth bass, chain pickerel, brown bullhead, black crappie, bluegill, and yellow perch. Powder Mill Pond is classified

eutrophic. A gravel boat ramp is available and is accessed through a small parking lot on Forest Road. Access was acquired in 1989 by the New Hampshire Fish and Game Department.

4.2.1.5 *Sunset Lake (Gould Pond)*

Sunset Lake, also known as Gould Pond, is located north of the village and east of the Bennington Road with public access from Crotched Mountain Road. It measures thirty-three acres in area and has a maximum depth of twenty feet. The average depth is twelve feet. It is spring fed. Water quality tests show this lake to be clean and healthy for fishing and swimming. Sunset Lake is classified as oligotrophic, which indicates low phosphorus enrichment, limited rooted plant growth, low algal growth, and adequate dissolved oxygen. It is considered a warmwater fishery. Fish species present include large mouth bass, small mouth bass, brown bullhead, and yellow perch.

4.2.1.6 *Whittemore Lake*

Only a very small portion of Whittemore Pond is located in Greenfield. Primary access to the lake is in Bennington, off NH 31 where a gravel ramp and limited parking is available. In total, it measures forty-one acres. The maximum depth is fifty-five feet, and the average depth is twenty-five feet. Whittemore Pond is classified as oligotrophic and a coldwater fishery. Whittemore Lake is a stocked trout pond. Fish species include brook trout, rainbow trout, brown trout, and brown bullhead.

4.2.1.7 *Zephyr Lake*

Zephyr Lake is located southeast of the village adjacent to Forest Road with public access from Zephyr Lake Road just west of its intersection with Forest Road. It measures thirty-five acres in area and has a maximum depth of seventeen feet. The average depth is 7 feet. Zephyr Lake is classified as a mesotrophic lake, an intermediate category between larger, deeper lakes with clear water (oligotrophic) and smaller, shallower ponds with mucky bottoms (eutrophic). Algae and weeds are beginning to take over. Although not healthy and exhibiting spotty coliform, it is still suitable for swimming and fishing. It is considered a warmwater fishery. Fish species present include large mouth bass, chain pickerel, black crappie, yellow perch, and pumpkinseed.

There are two small ponds just east of Otter Lake as well as many very small ponds where the flow of streams is interrupted by beaver activity. The overall effect of this ponding is the enlargement or creation of wetland areas.

4.3 RIVERS AND STREAMS

There are many streams crisscrossing Greenfield ranging in size from large rapid flow streams to small seasonal creeks. Although only four named rivers and streams are recognized by the United States Geological Survey (Contoocook River, Otter Brook, Stony Brook, and Rand Brook) there are many smaller stretches in Greenfield, both intermittent and perennial. Because local names, descriptions, and spellings sometimes differ when compared to national sources, discrepancies are noted below.

4.3.1 Piscataquoq River Watershed Rivers and Streams

4.3.1.1 *Hardy Brook*

Hardy Brook rises in a wetland off Francetown Road and flows south to East Road then east to Dodge Road and into Francetown where it becomes Rand Brook.

4.3.1.2 *Laconti Brook*

Laconti Brook rises at the eastern end of New Boston Road and flows north from the Beaver Works and over the Francestown town line and eventually to Rand Brook.

4.3.1.3 *Rand Brook*

Rand Brook, also called South Francestown Brook rises in the north in Francestown, crosses Francestown Road in Greenfield and flows south through the Fleck Memorial Land and the Town Forest toward the South Branch Piscataquoq River in Francestown.

4.3.2 Upper Contoocook River Watershed Rivers and Streams

4.3.2.1 *Alexander Brook*

Alexander Brook rises on the southwest flank of Crotched Mountain and flows southwest into Otter Lake.

4.3.2.2 *Contoocook River*

The Contoocook River flows north into Powder Mill Pond where both form the western boundary with Hancock. Its ultimate origin is Poole Pond in Rindge, NH and it enters into the Merrimack River 71 miles later in Concord. The river includes one major tributary, the North Branch River, which flows for 16 miles from Stoddard to join the Contoocook River in Hillsborough. Both rivers received designated status with the New Hampshire Rivers Management and Protection Program in June of 1991. In general, the designation increased protections related to water quality, dam construction, channel alterations, and siting of solid and hazardous waste facilities. A management plan (dated February 2011) created with assistance from Central New Hampshire Regional Planning Commission and Southwest Region Planning Commission is available.

4.3.2.3 *Holt Brook*

Holt Brook rises on the west side of Gould Hill and crosses under Slip Road. From there it flows into Otter Brook in Diamond Swamp.

4.3.2.4 *Otter Brook*

Otter Brook begins at the outlet of Zephyr Lake and flows southwest about 2.7 miles to join the Contoocook River in Peterborough.

4.3.2.5 *Sunset Lake Brook*

Sunset Lake Brook flows from the west side of Sunset Lake and flows west into Alexander Brook.

4.3.3 Souhegan Watershed Rivers and Streams

4.3.3.1 *Gulf Brook*

Gulf Brook rises near the intersection of Gulf and Slip Roads and flows parallel to Gulf Road and the Russell Station Road. It crosses under Russell Station Road just west of Route 31 and flows south into Stoney Brook.

4.3.3.2 *Stony Brook*

Stony Brook rises on the northern flank of North Pack Monadnock Mountain, north of Mountain Road. It flows east under the railroad track and crosses under Route 31 near the Lyndeborough town line.

4.3.3.3 Reynolds Brook

Reynolds Brook rises in the wetlands east of Mountain Road and flows under School House Road, Route 31, and Holden Road, and into Stoney Brook.

4.3.3.4 Winn Mountain Brook

Winn Mountain Brook rises on the northwestern flank of Winn Mountain in Lyndeborough, and flows under Route 31 at the town line, and into Stoney Brook. Current data provided by the United State Geological Survey refers to this description of Winn Mountain Brook as Stony Brook.

4.4 WETLANDS

In general, a wetland refers to areas of land that are periodically flooded or inundated with water. They are characterized by the appearance of specific types of vegetation that can grow in these conditions. Two resources have been utilized to depict these areas (see *Map 12 - Surface Waters and Wetlands*).

4.4.1 Wetland Soils

Through an analysis of USDA NRCS Hillsborough County Soil Survey data, the Southwest Region Natural Resources Inventory found that there were 2,702 acres of hydric soil in Greenfield, about 16 percent of total land area (Southwest Region Planning Commission 2003). This designation means that the soil was formed under conditions that included flooding and ponding during the growing season; conditions favorable to the formation of wetlands. However, that study found that hydric soil data tends to over-represent wetlands area due to the resolution of the soil survey.

Similar to the hydric rating, a soil's drainage class (rated from excessively drained to very poorly drained) provides an indicator of potential wetlands. Drainage class refers to the frequency and duration of wet periods, which is defined over seven categories by the United States Department of Agriculture. The poorly drained and very poorly drained categories in particular share the most similarity with wetland soils and are consistent with soils rated hydric or predominantly hydric. In a soil rated as poorly drained, the soil is defined as being wet at shallow depths periodically during the growing season. However, the soil is not continuously wet below plow-depth and certain crops may be grown if the soil can be artificially drained. Very poorly drained soils are defined as having water at or near the ground surface throughout most of the growing season. These areas are also likely to be level or depressed, and frequently ponded (see *Map 12 - Surface Waters and Wetlands*).

4.4.2 National Wetland Inventory

The United States Fish and Wildlife Service is the principal Federal agency charged with tracking trends in wetlands through the National Wetland Inventory (NWI). It does not represent a comprehensive assessment of Greenfield wetlands, which would require additional study. The NWI includes delineations and corresponding wetland classification codes which can be used to provide detailed habitat descriptions. The inventory shows that approximately ten percent of the total area of Greenfield is classified as a wetland (see *Map 12 - Surface Waters and Wetlands*, Table 17).

Table 17 - National Wetland Inventory Classes, Subclasses, and Dominance Types

SYSTEM CLASSES, SUBCLASSES, AND DOMINANCE TYPES	AREA (ACRES)
LACUSTRINE SYSTEM	343.5
L1UBH	38.6
L1UBHH	286.0
L2UBFB	19.0
PALUSTRINE SYSTEM	1,429.8
PEM1/FO5FB	2.4
PEM1/SS1E	74.7
PEM1/SS1EB	70.9
PEM1/SS1EH	6.8
PEM1B	8.0
PEM1E	89.9
PEM1EB	40.0
PEM1EH	0.5
PEM1FB	4.6
PEM1FH	3.9
PFO1/4E	71.7
PFO1/EM1EB	3.0
PFO1/SS1E	5.5
PFO1/SS1EB	18.8
PFO1E	99.4
PFO1EB	13.0
PFO4/1E	95.4
PFO4/SS1E	1.0
PFO4E	394.9
PFO5/EM1EB	11.8
PFO5/UBFB	18.8
PFO5EB	0.7
PFO5FB	15.9
PFO5FH	0.7
PSS1/3B	4.6
PSS1/3BA	2.4
PSS1/3E	3.3
PSS1/3EB	23.2
PSS1/4B	6.4
PSS1/4E	4.7
PSS1/EM1E	51.0
PSS1/EM1EB	31.3
PSS1/FO4E	29.6

SYSTEM CLASSES, SUBCLASSES, AND DOMINANCE TYPES	AREA (ACRES)
PSS1/FO4EB	0.5
PSS1/FO5EB	24.1
PSS1B	2.9
PSS1E	67.9
PSS1EB	11.0
PSS1EH	17.3
PSS1FH	2.2
PSS3/1BA	2.7
PSS3BA	12.9
PSS4/1E	0.8
PSS4E	5.8
PUB/EM1FB	15.4
PUBF	2.6
PUBFB	20.6
PUBFH	2.8
PUBH	14.7
PUBHH	16.4
PUBHX	0.5
RIVERINE SYSTEM	6.1
R2UBH	6.1
GRAND TOTAL	1,779.4

4.5 FLOODPLAINS AND DAMS

Floodplains, sometimes called the 100-year floodplain, is mapped by the Federal Emergency Management Agency (FEMA). These areas are depicted on *Map 13 - Floodplain and Dams*.

Greenfield is host to five dams, as inventoried by the NHDES Dam Bureau (Table 18). According to New Hampshire's definition (NH RSA 482:2), a dam is any artificial barrier which impounds or diverts water which: has a height of 6 feet or more; is located at the outlet of a great pond, regardless of height or storage; or is an artificial barrier which impounds liquid Industrial or liquid commercial wastes, or septage or sewage, regardless of height or storage. Note that the hazard classification of each dam is determined by a review of the downstream damages that would result from a failure of the dam. It is not based on the structural condition of the dam.

Table 18 - List of Dams in Greenfield

NAME OF DAM	RECREATION POND	BEAVER POND	WILDLIFE POND	GEORGE PROCTOR RECREATION AREA	REGAN POND
NHDES CODE	98.01	98.02	98.03	98.04	98.05
HAZARD CLASSIFICATION	Non-menace	Non-menace	Non-menace	Not Applicable	Non-menace
RIVER	South Branch Piscataquoq River	Unnamed Stream	Stoney Brook	Rand Brook	Rand Brook
STATUS	Active	Active	Active	Breached	Active
TYPE	Earth	Concrete	Earth	Concrete	Earth
USE	Recreation	Recreation	Conservation / Agriculture	Recreation	Conservation / Agriculture
OWNERSHIP	Private	State	Private	Town of Greenfield	Private
IMPOUNDMENT	0.33 acres	3 acres	0.03 acres	2 acres	3.40 acres
MAXIMUM HEIGHT	8	4	10	12	4.5
DRAINAGE AREA	0.06 sq. mi.	0.01 sq. mi.	0.2 sq. mi.	3 sq. mi.	0.6 sq. mi.
LATITUDE	42.910517	42.955939	42.957838	42.958716	42.949493
LONGITUDE	-71.828337	-71.890333	-71.857052	-71.835350	-71.851914

4.6 GROUNDWATER AND AQUIFERS

Stratified Drift Aquifers are geological formations of sand and gravel deposited by the melting glaciers 10,000 years ago. Some are vast and extend through several towns. Having been sorted by running water, the deposits can be made up of stones or particles of sand that have very uniform size and therefore a great deal of open space. Stratified Drift can store and yield vast volumes of ground water. These aquifers are also highly susceptible to pollution due to the ease with which contaminants can spread through the porous formations. The data mapped in this NRI were from a study conducted by the USGS and NHDES.

A map included in an appendix to this document depicts stratified drift aquifers, and their transmissivity, as well as public water supplies and their associated wellhead protection areas (see *Map 14 - Stratified Drift Aquifers and Public Water Supplies*). Stratified drift aquifers are present over 5,365 acres, or about 31%, of Greenfield’s total area.

In 2012, the Town of Greenfield adopted language as part of its Zoning Ordinance in an effort to protect groundwater within designated areas (determined by the location of stratified drift aquifers and the wellhead protection areas of public water supply wells). Section XIII of the Zoning Ordinance, entitled “Groundwater Protection Ordinance” defines prohibited uses which pose a potential threat to water quality and water resources.

4.7 KNOWN AND POTENTIAL CONTAMINATION SITES

Known and potential water contamination sites in Greenfield exist in a variety of areas, according to databases maintained by NHDES (see *Map 15 - Known and Potential Contamination Sites*). Because data sources were compiled at varying times, scales, and accuracies, there may be inaccuracies in the site names, tax map and lot information, or locations.

4.7.1 NHDES Local Potential Contamination Source Inventory

The NHDES Local Potential Contamination Source Inventory was one of a number of data sources used to identify current or former potential contamination sources. These sites represent a potential threat to drinking water supplies because they may use, handle, or store hazardous substances or have done so in the past (Table 19). Preparing an inventory does not require special training and is supported by a NHDES Fact Sheet provided by the Drinking Water and Groundwater Bureau (Drinking Water and Groundwater Bureau 2015).

Table 19 - NHDES Local Potential Contamination Source Inventory

NHDES ID	NAME	ADDRESS	MAP	LOT
PCS00803	KEMP AUTO	RUSSELL STATION RD	R9	17
PCS01552	LS + NM REPAIR SERVICES	RT 136	V3	1
PCS01553	FORMERLY CHUCK'S AUTO REPAIRS	RT 136	V3	7
PCS01554	FORMERLY GREENFIELD AUTO	RT 136	V1	10

4.7.2 Underground Storage Tank Sites

The purpose of the NHDES underground storage tank program is to prevent and minimize contamination of the land and waters of the state due to the storage and handling of heating oils, hazardous substances, lubricating oils, motor fuels, other petroleum and petroleum contaminated liquids. The following sites represent the locations of at least one underground storage tank regulated by NHDES (Table 20). Notably, tanks were removed from Delay Town & Country (currently Harvester Market), the Greenfield Town Offices, and Rymes Heating Oils Inc sites.

Table 20 - NHDES Underground Storage Tank Program Inventory

NHDES ID	NAME	ADDRESS	FACILITY TYPE	MAP	LOT
198708004	CROTCHED MOUNTAIN FOUNDATION	1 VERNEY DR	OTHER	R2	11
199701003	NH DOT PS 409	265 SAWMILL RD	STATE GOVERNMENT	R1	28
199911016	PUBLIC WORKS GARAGE	DPW DR	LOCAL GOVERNMENT	R2	19

4.7.3 Hazardous Waste Generators

Resource Conservation and Recovery Act (RCRA) hazardous materials and waste generators are an additional site included in the list of known or potential contamination sites (Table 21).

Table 21 - NHDES Hazardous Waste Generators

NHDES ID	NAME	ADDRESS	MAP	LOT
10056	TOWN OF GREENFIELD	RTE 31	R2	15-1
13103	G W Y INC	217 FOREST RD	R9	15-2
14434	NH DOT DISTRICT 4	265 SAW MILL RD RTE 31	R1	28
14435	CROTCHED MOUNTAIN REHAB CTR INC	1 VERNEY DR	R2	11
14436	KEMP AUTO	434 RUSSELL STATION RD	R9	17
14437	TOWN OF GREENFIELD HWY DEPT	27 DPW RD	R2	15-1
16893	AMERICAN STEEL FABRICATORS	328 SAWMILL RD	R2	15-1

4.7.4 Remediation Sites

The following records are provided as a supplement to the sites above (Table 22). Although some site names have changed (Camp Union is now the Barbara C. Harris Camp) or may in fact no longer exist (such as East Coast Steel), they continue to be used as the NHDES reference name for each site.

Table 22 - NHDES Remediation Sites

NHDES ID	SITE NAME	ADDRESS	TYPE	RISK	MAP	LOT
198708004	CROTCHED MOUNTAIN FOUNDATION	1 VERNEY DR	Subsurface wastewater disposal system receiving > 20,000 gallons/day	In wellhead protection area or within 1000' of well.	R2	11
198708004	CROTCHED MOUNTAIN FOUNDATION	1 VERNEY DR	Underground injection control: discharges of benign wastewaters not requiring a groundwater discharge permit or request to cease a discharge (i.e. floor drain closure requests)	In wellhead protection area or within 1000' of well.	R2	11
198708004	CROTCHED MOUNTAIN FOUNDATION	1 VERNEY DR	Leaking underground storage tank project	No sources, no ambient groundwater quality standard violations onsite.	R2	11
198708004	CROTCHED MOUNTAIN FOUNDATION	1 VERNEY DR	Leaking residential or commercial heating oil tanks	Free product or high level source.	R2	11
199104015	FORMERLY EAST COAST STEEL	RR 1 BOX 560 RTE 31	Oil spill or release	No sources, no ambient groundwater quality standard violations onsite.	R2	151

NHDES ID	SITE NAME	ADDRESS	TYPE	RISK	MAP	LOT
199104015	FORMERLY EAST COAST STEEL	RR 1 BOX 560 RTE 31	Underground injection control: discharges of benign wastewaters not requiring a groundwater discharge permit or request to cease a discharge (i.e. floor drain closure requests); Site has non-petroleum related contamination (i.e. chlorinated solvents). This type does not indicate severity of contamination, it is only an identifier of the type of contamination; Leaking residential or commercial heating oil tanks; Ether contamination from an unknown source	No sources, no ambient groundwater quality standard violations onsite.	R2	151
199209001	WAREHOUSE	RTE 31 (FOREST ROAD)	Leaking underground storage tank project; Underground injection control: discharges of benign wastewaters not requiring a groundwater discharge permit or request to cease a discharge (i.e. floor drain closure requests).	No sources, no ambient groundwater quality standard violations onsite.	R9	15.4
199507002	REDEMSKE PROPERTY	446 FOREST RD (RT 31)	Leaking residential or commercial heating oil tanks	No sources, no ambient groundwater quality standard violations onsite.	R9	77.1

NHDES ID	SITE NAME	ADDRESS	TYPE	RISK	MAP	LOT
199605024	ROEDER PROPERTY	361 FOREST RD	Leaking residential or commercial heating oil tanks	No sources, no ambient groundwater quality standard violations onsite.	R3	1.1
199701003	NH DOT PS 409	265 SAWMILL RD	Non-hazardous, non-sanitary holding tank registration	Not yet defined.	R1	28
199701003	NH DOT PS 409	265 SAWMILL RD	Underground injection control: discharges of benign wastewaters not requiring a groundwater discharge permit or request to cease a discharge (i.e. floor drain closure requests).	No sources, no ambient groundwater quality standard violations onsite.	R1	28
199801051	SLIP ROAD DEPOT	DEPOT STREET	Site has non-petroleum related contamination (i.e. chlorinated solvents). This type does not indicate severity of contamination, it is only an identifier of the type of contamination.	No sources, no ambient groundwater quality standard violations onsite.	V4	2
199911016	PUBLIC WORKS GARAGE	DPW DR	Non-hazardous, non-sanitary holding tank registration	In wellhead protection area or within 1000' of well.	R2	19
200109015	HALL PROPERTY	732 KNOTTWOOD DRIVE	Leaking residential or commercial heating oil tanks	No sources, no ambient groundwater quality standard violations onsite.	R4	62
200206057	BARBARA C. HARRIS CAMP PROPERTY	WALLY STONE ROAD	Oil spill or release	No sources, no ambient groundwater quality standard violations onsite.	R1	11
200504004	HILL PROPERTY	14 EAST RD	Leaking residential or commercial heating oil tanks	No sources, no ambient groundwater quality standard violations onsite.	V5	14

4.7.5 Solid Waste Facilities

Solid waste facilities were the final potential contamination source inventoried and mapped (Table 23). The acronym C/S/T is used to define a Collection, Storage, and Transfer Facility according to New Hampshire Department of Environmental Services rules.

Table 23 - Solid Waste Facilities

NHDES ID	TYPE	STATUS	NAME	ADDRESS	MAP	LOT
1831	UNLINED LANDFILL	NOT OPERATING	CROTCHED MOUNTAIN REHABILITATION CENTER LANDFILL	1 VERNEY DR	R2	11
14857	UNLINED LANDFILL	NOT OPERATING	GREENFIELD MUNICIPAL LANDFILL	DPW DR	R2	19
51210	C/S/T	OPERATING	GREENFIELD TRANSFER STATION & RECYCLING FACILITY	29 DPW ROAD	R2	17-3
53987	C/S/T	NOT OPERATING	KEMP'S AUTO	40 RUSSELL STATION RD	R9	49

5 WILDLIFE AND HABITATS



Photo 5- Contoocook River as viewed from conservation land

5.1 WILDLIFE ACTION PLAN

As part of the NHFG 2015 Wildlife Action Plan a predictive GIS model was used to map major habitat types. Eleven distinct habitat types occur in Greenfield. Those land cover types are summarized in the table

below (see *Map 16 - Wildlife Action Plan Land Cover*). According to the Wildlife Action Plan, the total area and land area were published as 17,303.4 acres and 16,864 acres, respectively (Table 24).

Table 24 - Wildlife Action Plan Habitat Type in Greenfield

HABITAT TYPE	ACRES	PERCENT TOTAL ACRES
NORTHERN HARDWOOD-CONIFER	229.5	1.3%
HEMLOCK-HARDWOOD-PINE	7,537.8	43.6%
APPALACHIAN OAK-PINE	5,725.8	33.1%
CLIFF AND TALUS SLOPE	25.6	0.1%
ROCKY RIDGE	48.3	0.3%
MARSH AND SHRUB WETLAND	743.7	4.3%
PEATLAND	541.8	3.1%
NORTHERN SWAMP	6.7	0.0%
TEMPERATE SWAMP	332.7	1.9%
FLOODPLAIN FOREST	20.0	0.1%
GRASSLAND	933.4	5.4%
WATER	318.9	1.8%
DEVELOPED OR BARREN	839.1	4.8%

The forest land cover types shown (Appalachian Oak-Pine, Hemlock Hardwood Pine, Northern Hardwood Conifer and Lowland Spruce Fir) are larger-scale Natural Community Systems which include smaller-scale natural communities. The remaining systems (grassland, floodplain, pine barren, meadow, peatland) are smaller habitats that are unique and that provide conditions for wildlife that are very different from typical forest conditions.

The table below compares how conservation of Wildlife Action Plan top-ranked habitat in Greenfield compares to the State (see *Map 17 - Wildlife Action Plan Priority Tiers*, Table 25).

Table 25 - Wildlife Action Plan Top-ranked Habitat Tiers

TOP-RANKED HABITAT TIERS	TOWN OF GREENFIELD	STATE OF NEW HAMPSHIRE
TIER 1 ACRES	2,103.0	1,389,863
TIER 1 CONSERVED (ACRES)	1,245.6	570,480
TIER 1 CONSERVED (PERCENT)	59.2	41.0
TIER 2 ACRES	2,667.8	1,050,918
TIER 2 CONSERVED (ACRES)	654.3	498,095
TIER 2 CONSERVED (PERCENT)	24.5	47.4
TIER 3 ACRES	5,171.6	1,549,335
TIER 3 CONSERVED (ACRES)	1,067.0	509,517
TIER 3 CONSERVED (PERCENT)	20.6	32.9

5.2 FRAGMENTATION

Fragmentation of wildlife habitat is a major concern for certain species. New Hampshire Fish & Game's Coarse Filter Wildlife Habitat Mapping Project sought to identify and rank unfragmented areas with the goal of informing local conservation efforts. As part of the project, unfragmented habitat areas, referred

to as blocks, were delineated and scored based on their total land area and area/perimeter ratio (see *Map 18 - Unfragmented Habitat*).

5.3 NATURAL HERITAGE BUREAU DATA

The presence of rare or exemplary natural communities throughout the State is tracked by the New Hampshire Department of Natural Resources. Within this agency, the Division of Forest and Lands Natural Heritage Bureau records the locations of and facilitates the protection of rare plants and exemplary natural communities. Because the precise location of such information cannot be revealed publically, it has been depicted as a 1-mile diameter circle as an indicator of spatial accuracy (see *Map 19 - Natural Heritage Bureau Data*). The Bureau also maintains a town by town listing of these species and communities, which includes the following entries in Greenfield (New Hampshire Natural Heritage Bureau 2013, 76). Note that the Bureau uses the “Town Flag” attribute to rank an occurrence on a scale based on 1) how rare the species or community is, and 2) how large or healthy its examples are in that town. The scale ranges from “Highest importance” to “Extremely high importance” to “Very high importance” to “High importance” (Table 26)

Table 26 - Natural Heritage Bureau Rare Plants, Rare Animals, and Exemplary Natural Communities

TOWN FLAG	SPECIES OR COMMUNITY NAME	LISTED?		NUMBER REPORTED LAST 20 YEARS	
		Federal	State	Town	State
VERY HIGH IMPORTANCE	Rich red oak rocky woods	No	No	1	20
NONE	Northern sweet-coltsfoot (<i>Petasites frigidus var. palmatus</i>)	No	Endangered	Historical	9
VERY HIGH IMPORTANCE	Bald Eagle (<i>Haliaeetus leucocephalus</i>)	No	Threatened	2	88
VERY HIGH IMPORTANCE	Ebony Boghaunter (<i>Williamsonia fletcheri</i>)	No	Special Concern	1	27

5.4 CONSERVATION PRIORITY AREAS

5.4.1 Regional Environmental Planning Program Local Resource Protection Priorities

In 1998, SWRPC submitted a regional report of local resource protection priorities which included those listed below (Table 27) (Southwest Region Planning Commission 1998). The local resource protection priorities data layer was created during the first two years of the Regional Environmental Planning Program, in anticipation of what became the Land & Community Heritage Investment Program (LCHIP) and also to improve resource protection through planning. These regional reports were compiled into a statewide report for use by a commission established under SB 493 to investigate and report to the State Legislature on: “the feasibility of a new public-private partnership to address” the need to couple sustained economic growth with “conservation of priority forest and farmlands, public water supply lands, cultural and historical landscapes and features, special wildlife habitats, lands of ecological significance, lands with high recreational value, and other natural, historical, and cultural resources of local and regional importance” in as much as the “state’s economy and quality of life are inextricably linked to our valuable natural resources and historical and cultural heritage.” The Legislature found that “[was] necessary to act decisively to safeguard New Hampshire’s natural and cultural legacy”.

Table 27 - Greenfield Local Resource Protection Priorities

NAME	NATURAL	CULTURAL	DESCRIPTION
PUBLIC LIBRARY	No	Yes	HISTORIC PRESERVATION
MEETING HOUSE	No	Yes	HISTORIC PRESERVATION
AGRICULTURAL LAND	Yes	Yes	AESTHETICS, TOWN WIDE
FORMER ELEMENTARY SCHOOL ¹	No	Yes	HISTORIC PRESERVATION
CONTOOCOOK RIVER	Yes	Yes	BIODIVERSITY, WATER RESOURCE PROTECTION, PUBLIC ACCESS

5.4.2 Quabbin to Cardigan Partnership Priorities

The Quabbin to Cardigan Initiative, sometimes referred to as “Q2C” was launched in 2003 as a voluntary landscape-scale conservation effort stretching from north-central Massachusetts through western New Hampshire with goal of coordinating habitat conservation. Similar to past efforts by the State of New Hampshire, Q2C mapped and ranked unfragmented forest blocks throughout the study area to identify high-quality habitat. This led to the delineation of final “conservation focus areas” (an area considered to be of exceptional significance for the protection of large forest blocks with significant embedded ecological features) and “supporting landscapes.” The Town of Greenfield is located on the eastern edge of the study area (see *Map 20 - Quabbin to Cardigan Partnership*).

5.5 CONSERVATION LAND

Conservation land refers to land which is generally undeveloped and protected in some way from future development. In New Hampshire, the New Hampshire Geographically Referenced Analysis and Information Transfer System (NH GRANIT) Conservation/Public Lands data layer contains parcels of two or more acres in size that meet these basic criteria (see *Map 21 - Tax Parcels and Conservation Land*). Some smaller parcels are included, too. According to NH GRANIT, three main levels of protection are recognized (Table 28). The database includes properties publicly-owned as well as private land not accessible to the public.

Table 28 - NH GRANIT Levels of Protection

Permanent conservation land	Land permanently protected from development through legally enforceable conservation easement, deed restriction, or outright ownership by an organization whose mission emphasizes protecting land in perpetuity.
	More than 50% of the area will remain undeveloped.
Unofficial conservation land	Not permanently protected through any legal mechanisms. Owned by a public institution, public agency, or other organization whose mission may not be focused on conservation, but whose clear intent is to keep land for conservation, recreation or educational purposes and in mostly natural and cover.
Unprotected water supply land	Not permanently protected through any legal mechanisms.
	Owned or controlled by suppliers of public drinking water, including unprotected supplies owned by municipalities, subdivisions of municipalities, and private water systems serving 500 people or more.

¹ Currently Town Offices

Currently, all conservation land in Greenfield falls into the first category, and is legally protected through ownership, easement, or deed restriction. Specific tracts are listed below and reference the following map. Tracts extending into or from neighboring communities were included (Table 29).

Table 29 - Tract Name, Alternate Tract Name, Primary Protection Type and Agency/Organization

TRACT IDENTIFIER	TRACT NAME (ALTERNATE TRACT NAME)	PARCEL NAME (ALTERNATE PARCEL NAME)	PRIMARY PROTECTION TYPE	PRIMARY PROTECTING AGENCY/ORGANIZATION	TAX PARCEL(S)
177-002-001	Powder Mill Pond WMA	Powder Mill Pond WMA	Fee Ownership	New Hampshire Fish & Game	R3-1
177-004-001	Greenfield State Park	Greenfield State Park	Fee Ownership	New Hampshire Department of Natural and Cultural Resources	R4-52
177-004-002	Greenfield State Park	Greenfield State Park	Fee Ownership	New Hampshire Department of Natural and Cultural Resources	R4-52
177-004-003	Greenfield State Park	Greenfield State Park	Fee Ownership	New Hampshire Department of Natural and Cultural Resources	R4-61
177-004-004	Greenfield State Park	Greenfield State Park	Fee Ownership	New Hampshire Department of Natural and Cultural Resources	R4-61
177-008-001	Powder Mill Pond WMA - Dillon Tract	Powder Mill Pond WMA	Fee Ownership	New Hampshire Fish & Game	R3-24
177-017-001	Lincoln-Davis Mem. Forest-Greenfield Tract	Lincoln-Davis Mem. Forest-Greenfield Tract	Fee Ownership	New England Forestry Foundation	R8-11
177-069-001	Field, Joanne	Field, Joanne	Conservation Easement	New England Forestry Foundation	R8-10
177-083-001	Thomas 4	Thomas 4	Conservation Easement	The Monadnock Conservancy	R10-1
177-090-001	Contoocook River	Inglestrom	Conservation Easement	Harris Center for Conservation Education	R1-19
177-090-002	Contoocook River	Inglestrom (Kelley)	Conservation Easement	Harris Center for Conservation Education	R1-18
177-093-001	Otter Brook Farm	Otter Brook Farm	Conservation Easement	The Monadnock Conservancy	R4-53 R4-66 R4-67 R4-71 R4-70 R4-68 R4-69 R6-1 R6-2 R6-2-1 R6-3-4 R6-3-5 R6-3-6 R6-3-8 R6-25 R6-26 R6-27 R6-32 R6-33 R6-34 R6-35 R6-35-1 R6-36 R6-37 R8-1
177-093-003	Otter Brook Farm	Otter Brook Farm	Conservation Easement	The Monadnock Conservancy	R6-25-1-1
177-093-004	Otter Brook Farm	Otter Brook Farm	Conservation Easement	The Monadnock Conservancy	R6-24-1
177-093-005	Otter Brook Farm	Otter Brook Farm	Conservation Easement	The Monadnock Conservancy	R6-24-2

TRACT IDENTIFIER	TRACT NAME (ALTERNATE TRACT NAME)	PARCEL NAME (ALTERNATE PARCEL NAME)	PRIMARY PROTECTION TYPE	PRIMARY PROTECTING AGENCY/ORGANIZATION	TAX PARCEL(S)
177-093-006	Otter Brook Farm	Otter Brook Farm	Conservation Easement	The Monadnock Conservancy	R6-24-3 R6-24-4 R6-24-5 R6-24-6 R8-5
177-095-001	Robertson Farm (now Cilley)	Robertson Farm	Conservation Easement	US Dept. of Agriculture, Natural Resources Conservation Service	R1-1
177-101-001	Belmore, Maurice	Belmore, Maurice	Conservation Easement	Harris Center for Conservation Education	R4-42
177-108-001	Crotched Mountain	Forest Legacy Easement	Conservation Easement	New Hampshire Department of Natural and Cultural Resources	R2-5 R2-6 R2-11-4
177-108-002	Crotched Mountain	Forest Legacy Easement	Conservation Easement	New Hampshire Department of Natural and Cultural Resources	R2-11-4 R2-13
177-108-003	Crotched Mountain	Forest Legacy Easement	Conservation Easement	New Hampshire Department of Natural and Cultural Resources	R2-6 R2-8 R2-10 R2-11-1
177-108-004	Crotched Mountain	Forest Legacy Easement	Conservation Easement	New Hampshire Department of Natural and Cultural Resources	R2-11-1
177-108-005	Crotched Mountain	Forest Legacy Easement	Conservation Easement	New Hampshire Department of Natural and Cultural Resources	R2-10
177-108-006	Crotched Mountain	Forest Legacy Easement	Conservation Easement	New Hampshire Department of Natural and Cultural Resources	R2-10
177-108-007	Crotched Mountain	Forest Legacy Easement	Conservation Easement	New Hampshire Department of Natural and Cultural Resources	R2-6
177-111-001	Wetlands Reserve Program	Wetlands Reserve Program	Conservation Easement	US Dept. of Agriculture, Natural Resources Conservation Service	R1-1
178-008-001	Dorothy T. Foss Forest	Dorothy T. Foss Forest	Fee Ownership	New England Forestry Foundation	R8-4
178-016-001	Wapack National Wildlife Refuge	Wapack National Wildlife Refuge	Fee Ownership	US Dept. of Interior, Fish & Wildlife Service	R10-3 R10-4
178-019-001	Fleck Memorial Land	Fleck Memorial Land	Fee Ownership	Town of Greenfield	R5-8-2
178-020-001	Greenfield Town Forest	Greenfield Town Forest	Fee Ownership	Town of Greenfield	R5-18
178-021-001	Koch/Brown Land	Koch/Brown Land	Fee Ownership	Town of Greenfield	R6-24
178-022-001	Gipson Forest	Gipson Forest	Fee Ownership	Society for the Protection of NH Forests	V4-12
178-024-001	Adams	Reynolds Field	Conservation Easement	Town of Greenfield	V4-18
178-026-001	Gipson/Union Congregational Church	Gipson/Union Congregational Church	Deed Restriction	Society for the Protection of NH Forests	V3-38
178-031-005	Rand Brook Forest 3 (Seamans)	Rand Brook Forest	Fee Ownership	Francetown Land Trust	R5-14
178-031-009	Rand Brook Forest 4 (Lorden)	Rand Brook Forest	Fee Ownership	Francetown Land Trust	R5-13
178-031-015	Rand Brook Forest 7 (Greenfield)	Rand Brook Forest	Fee Ownership	Francetown Land Trust	R5-14-1
178-035-001	Woodland Hill Farm	Woodland Hill Farm	Conservation Easement	The Monadnock Conservancy	R7-5 R7-25
178-036-001	Blanchard Hill Farm I	Blanchard Hill Farm I	Conservation Easement	The Monadnock Conservancy	R7-24-3
178-037-001	Blanchard Hill Farm II	Blanchard Hill Farm II	Conservation Easement	The Monadnock Conservancy	R7-24-1
178-038-001	Rand Brook I	Rand Brook I	Conservation Easement	The Monadnock Conservancy	R5-27 R7-10
178-038-002	Rand Brook I	Rand Brook I	Conservation Easement	The Monadnock Conservancy	R5-27

TRACT IDENTIFIER	TRACT NAME (ALTERNATE TRACT NAME)	PARCEL NAME (ALTERNATE PARCEL NAME)	PRIMARY PROTECTION TYPE	PRIMARY PROTECTING AGENCY/ORGANIZATION	TAX PARCEL(S)
178-038-003	Rand Brook I	Rand Brook I	Conservation Easement	The Monadnock Conservancy	R5-17
178-039-001	Rand Brook II	Rand Brook II	Conservation Easement	The Monadnock Conservancy	R5-34-2 R5-34-3
178-041-001	Greenfield 02-00042	Greenfield 02-00042	Conservation Easement	Town of Greenfield	R9-25 R9-25-1 R9-32-2
178-042-001	Blanchard Hill Farm III	Blanchard Hill Farm III	Conservation Easement	The Monadnock Conservancy	R7-24-1-3
178-043-003	Bicknell - Greenfield	Bicknell	Fee Ownership	Piscataquog Land Conservancy	R7-14
178-047-001	Schneider CE	Schneider CE	Conservation Easement	Piscataquog Land Conservancy	R5-34-1
178-051-001	Castle Trust South	Castle Trust South	Conservation Easement	The Monadnock Conservancy	R10-5 R10-14
178-052-001	Castle Trust North	Castle Trust North	Conservation Easement	The Monadnock Conservancy	R9-73
178-053-001	Dubois - Maille	Dubois - Maille	Conservation Easement	The Monadnock Conservancy	R8-18
178-054-001	Dubois - Russell	Dubois - Russell	Conservation Easement	The Monadnock Conservancy	R9-71-1
178-055-001	Dubois - Cox	Dubois - Cox	Conservation Easement	The Monadnock Conservancy	R9-72
178-065-001	Bever & Witherby	Bever & Witherby	Conservation Easement	The Monadnock Conservancy	R7-6
178-066-001	"Parcel A"	Seigars	Conservation Easement	Town of Greenfield	R9-20
178-066-002	"Parcel B"	Seigars	Conservation Easement	Town of Greenfield	R9-18-1
178-082-001	Carbee CE	Carbee CE	Conservation Easement	The Monadnock Conservancy	R5-28
178-082-002	Carbee CE	Carbee CE	Conservation Easement	The Monadnock Conservancy	R7-39

5.5.1 Management Status

The table below describes the level of land management applicable to conservation lands in Greenfield.

Table 30 - Greenfield Conservation Land Management Status Categories (NH GRANIT)

CODE	DESCRIPTION
1	A tract entirely protected from conversion of natural land cover and with a management plan or deed restrictions in operation to maintain land in a natural state. Natural processes and disturbance events are allowed to proceed without interference or are mimicked through management practices.
3	A tract protected from conversion of natural cover for more than 50% of area, but subject to extractive uses of either a broad-scale low-moderate intensity type (such as timber harvest) or localized-scale high intensity type (e.g., mining).
4	A tract with more than 50% of area unprotected from conversion of natural cover or planned or in use for agriculture or for active recreation purposes (e.g. ball fields, golf courses). Natural processes are altered or replaced by human use and management of land.
9	Unknown

5.5.2 Level of Public Access

Table 31 - Greenfield Conservation Land Level of Public Access Categories (NH GRANIT)

CODE	DESCRIPTION
1	Allowed (Minor use restrictions may apply, such as fees charged, vehicular access, etc.)
2	Restricted to Certain Areas (Access restricted to specific areas or times, or member/resident use only.)
3	Not allowed

CODE	DESCRIPTION
4	Unknown
5	No response to access survey received

5.5.3 Gap Status

Table 32 - Greenfield Conservation Land Gap Status Categories (NH GRANIT)

CODE	DESCRIPTION
1	Permanent, legal protection. Managed to maintain a natural state. No motorized recreation, natural processes are unhindered, and no extractive uses. Examples include federal wilderness areas, most Nature Conservancy Preserves, SPNHF Natural Areas, and forever wild easements.
3	Permanent, legal protection. Managed to maintain natural land cover, allows extractive uses of renewable resources (e.g. timber harvesting), and allows higher intensity or density of recreational uses. Examples include most conservation easements in New Hampshire, majority of SPNHF Reservation lands, and some town forests.
4	No legal protection. Allows conversion of >50% of property to unnatural land cover. Examples include small town parks and many other town or county-owned open lands.
9	Unknown

The table below summarizes the legal protection, management, and access characteristics of conservation lands in Greenfield (Table 33).

Table 33 - Size, Management Status, Level of Public Access, and Gap Status by Tract Identifier

TRACT IDENTIFIER	PARCEL NAME (ALTERNATE PARCEL NAME)	SIZE OF TRACT	SIZE OF PARCEL	MANAGEMENT STATUS	LEVEL OF PUBLIC ACCESS	GAP STATUS	COUNTY BOOK AND PAGE	TAX PARCEL(S)
177-002-001	Powder Mill Pond WMA	98.3	98.3	3	1	3		R3-1
177-004-001	Greenfield State Park	364.4	381.3	3	1	3		R4-52
177-004-002	Greenfield State Park	4.0	413.4	3	1	3		R4-52
177-004-003	Greenfield State Park	0.2	413.4	3	1	3		R4-61
177-004-004	Greenfield State Park	409.1	413.4	3	1	3		R4-61
177-008-001	Powder Mill Pond WMA	30.6	30.6	3	1	3	11/5547/11	R3-24
177-017-001	Lincoln-Davis Mem. Forest-Greenfield Tract	36.7	36.7	3	1	3	11/1632/190	R8-11
177-069-001	Field, Joanne	153.2	153.2	3	1	3		R8-10
177-083-001	Thomas 4	53.8	53.8	9	5	9	11/8041/0633	R10-1
177-090-001	Inglestrom	26.1	69.4	3	4	3	11/6834/2026	R1-19
177-090-002	Inglestrom (Kelley)	43.3	69.4	3	4	3	11/6841/1698	R1-18
177-093-001	Otter Brook Farm	728.5	1,004.0	9	5	9	11/8164/0141	R4-53 R4-66 R4-67 R4-71 R4-70 R4-68 R4-69 R6-1 R6-2 R6-2-1 R6-3-4 R6-3-5 R6-3-6

TRACT IDENTIFIER	PARCEL NAME (ALTERNATE PARCEL NAME)	SIZE OF TRACT	SIZE OF PARCEL	MANAGEMENT STATUS	LEVEL OF PUBLIC ACCESS	GAP STATUS	COUNTY BOOK AND PAGE	TAX PARCEL(S)
								R6-3-8 R6-25 R6-26 R6-27 R6-32 R6-33 R6-34 R6-35 R6-35-1 R6-36 R6-37 R8-1
177-093-003	Otter Brook Farm	5.0	1,005.3	9	4	9	11/8164/0141	R6-25-1-1
177-093-004	Otter Brook Farm	5.0	1,004.0	9	5	9	11/8164/0141	R6-24-1
177-093-005	Otter Brook Farm	12.3	1,004.0	9	5	9	11/8164/0141	R6-24-2
177-093-006	Otter Brook Farm	38.8	1,004.0	9	5	9	11/8164/0141	R6-24-3 R6-24-4 R6-24-5 R6-24-6 R8-5
177-095-001	Robertson Farm (now Cilley)	56.6	56.6	3	4	3		R1-1
177-101-001	Belmore, Maurice	16.2	16.2	3	5	9	11/8372/0001	R4-42
177-108-001	Forest Legacy Easement	898.2	1,226.1	3	1	3		R2-5 R2-6 R2-11-4
177-108-002	Forest Legacy Easement	278.3	1,226.1	3	1	3		R2-11-4 R2-13
177-108-003	Forest Legacy Easement	29.3	1,226.1	3	1	3		R2-6 R2-8 R2-10 R2-11-1
177-108-004	Forest Legacy Easement	16.7	1,226.1	3	1	3		R2-11-1
177-108-005	Forest Legacy Easement	1.2	1,226.1	3	1	3		R2-10
177-108-006	Forest Legacy Easement	0.9	1,226.1	3	1	3		R2-10
177-108-007	Forest Legacy Easement	1.5	1,226.1	3	1	3		R2-6
177-111-001	Wetlands Reserve Program	2.5	2.5	3	4	3		R1-1
178-008-001	Dorothy T. Foss Forest	44.8	44.8	3	1	3	11/2891/785	R8-4
178-016-001	Wapack National Wildlife Refuge	1,684.3	1,684.3	3	1	3		R10-3 R10-4
178-019-001	Fleck Memorial Land	10.2	10.2	3	5	3		R5-8-2
178-020-001	Greenfield Town Forest	93.5	93.5	3	5	3		R5-18
178-021-001	Koch/Brown Land	32.0	32.0	3	5	3		R6-24
178-022-001	Gipson Forest	17.8	17.8	3	1	3		V4-12
178-024-001	Adams	16.5	16.5	3	5	3	11/5709/1322	V4-18

TRACT IDENTIFIER	PARCEL NAME (ALTERNATE PARCEL NAME)	SIZE OF TRACT	SIZE OF PARCEL	MANAGEMENT STATUS	LEVEL OF PUBLIC ACCESS	GAP STATUS	COUNTY BOOK AND PAGE	TAX PARCEL(S)
178-026-001	Gipson/Union Congregational Church	1.7	1.7	3	3	3	11/5870/1926	V3-38
178-031-005	Rand Brook Forest	10.3	606.3	3	1	3	11/7651/2784	R5-14
178-031-009	Rand Brook Forest	24.7	606.3	3	1	3	11/7721/0415	R5-13
178-031-015	Rand Brook Forest	2.2	606.3	3	1	3	11/8325/1102	R5-14-1
178-035-001	Woodland Hill Farm	407.9	407.9	1	2	1	11/6553/1767	R7-5 R7-25
178-036-001	Blanchard Hill Farm I	12.0	12.0	1	2	1	11/6553/1807	R7-24-3
178-037-001	Blanchard Hill Farm II	100.4	100.3	1	2	1	11/6553/1820	R7-24-1
178-038-001	Rand Brook I	180.0	282.6	9	5	9		R5-27 R7-10
178-038-002	Rand Brook I	78.2	282.6	9	5	9		R5-27
178-038-003	Rand Brook I	24.4	282.6	9	5	9		R5-17
178-039-001	Rand Brook II	31.1	31.1	9	5	9		R5-34-2 R5-34-3
178-041-001	Greenfield02-00042	5.8	5.8	1	1	1	11/7320/334	R9-25 R9-25-1 R9-32-2
178-042-001	Blanchard Hill Farm III	19.8	19.8	1	1	1	11/7595/0041	R7-24-1-3
178-043-003	Bicknell	6.5	153.7	3	1	3	11/7666/805	R7-14
178-047-001	Schneider CE	19.1	19.1	3	3	3	11/7728/1995	R5-34-1
178-051-001	Castle Trust South	71.3	71.3	9	5	9		R10-5 R10-14
178-052-001	Castle Trust North	58.8	58.8	9	5	9		R9-73
178-053-001	Dubois - Maille	27.2	27.2	9	5	9		R8-18
178-054-001	Dubois - Russell	18.2	18.2	9	5	9		R9-71-1
178-055-001	Dubois - Cox	79.2	79.2	9	5	9		R9-72
178-065-001	Bever & Witherby	77.6	77.7	9	5	9	11/8166/2468	R7-6
178-066-001	Seigars	13.0	16.3	4	3	4	11/6977/2830	R9-20
178-066-002	Seigars	3.3	16.3	4	3	4	11/6977/2830	R9-18-1
178-082-001	Carbee CE	63.6	68.3	3	2	3		R5-28
178-082-002	Carbee CE	4.8	68.3	3	2	3		R7-39

5.5.4 Current Use

New Hampshire RSA 79-A outlines a tax incentive to maintain open space throughout the State. Among the incentives cited by the statute include (RSA 79-A:1): "...a healthful and attractive outdoor environment for work and recreation of the state's citizens, maintaining the character of the state's landscape, and conserving the land, water, forest, agricultural and wildlife resources." Data from the 2016 tax year available through the New Hampshire Department of Revenue Administration show that 10,713.05 acres out of 16,950.96 acres (63.2% of all land) have this designation (New Hampshire Department of Revenue Administration 2017):

Table 34 - Current Use Acreage

	ACRES	PERCENT
FARM LAND	836.10	7.80
FOREST LAND	7,687.92	71.76
FOREST LAND WITH DOCUMENTED STEWARDSHIP	1,319.17	12.31
UNPRODUCTIVE	19.50	0.18
WETLAND	850.36	7.94
GRAND TOTAL	10,713.05	

5.5.5 Specific Properties

5.5.5.1 Powder Mill Pond Wildlife Management Area (WMA)

According to New Hampshire Fish and Game, a 98.5 acre parcel containing a developed boat ramp and frontage along the Contoocook River was purchased in 1989 with both federal and state funds, as well as a generous contribution by the former landowner. An additional 28 acres was purchased with state and federal funds in 1994. It is the only WMA owned by New Hampshire Fish and Game in Greenfield, which was purchased to protect and improve habitat, but also open land for recreation, hunting, fishing, and trapping.

Powder Mill Pond WMA contains old pasture woodlands of white pine, red maple and gray birch; old fields dominated by grasses, alder, aspen, cherry and birch; riverine habitat and its associated grass, sedge and red maple wetlands along the Contoocook River; and uplands of Appalachian oak/pine and hemlock/hardwood/pine forests. Approximately 29 acres of the tract lies within the flood zone.

The river edge and old field habitat provide for a variety of wildlife species. Common wildlife includes white-tailed deer, American woodcock, wood ducks, mallards, black ducks, snowshoe hare and other small furbearing mammals. Powder Mill Pond is a typical warm water fishery hosting largemouth and smallmouth bass, eastern chain pickerel, hornpout, black crappie, and bluegill.

5.6 INVASIVE PLANT AND ANIMAL SPECIES

Greenfield is just one of many communities throughout the State dealing with an aquatic invasive species infestation, in the form of variable milfoil. Although variable milfoil is the primary invasive plant, other concerns include fanwort, Eurasian water milfoil, and water chestnut. Some invasive aquatic animal species of concern in the State include the Chinese mystery snail and the Asian clam. According to records as of October 2017, bodies of water are included: Powder Mill Pond and Otter Pond (New Hampshire Department of Environmental Services n.d.). To combat invasive plants in particular, the New Hampshire Fish and Game Department developed the Landscape Scale Upland Invasive Plant Control Strategy: Priority Areas for Invasive Plant Management to identify areas meeting three major criteria: 1) areas have high ecological significance, 2) areas that provide ecological services to human activities, and 3) areas that, if invasive plants are present, have a higher risk of spreading. A higher score indicates that management will both prevent the spread of an invasive to new areas as well as protect natural resources (see *Map 22 - Invasive Plant Control Strategy*).

6 HISTORIC AND CULTURAL RESOURCES



Photo 6 - Rand Brook flows between former foundation of the Savage and Grimes Mill

Greenfield was settled over 200 years ago and for the next one hundred and fifty years the Town, like its neighbors, was primarily an agricultural community. The first farms were subsistent farms, providing almost all the needs of the owners. Later, as more and more land was cleared and improved roads provided better transportation to the coastal cities, Greenfield farmers prospered by selling grain and meat animals in the city markets. The 1830s saw the beginning of the wool boom and over 80% of Greenfield's land was cleared for sheep pastures and hay fields.

The wool market collapsed after the Civil War and Greenfield farmers turned to dairying, selling butter and cheese to the industrial cities to the east. The railroad arrived in 1874 and the dairy farmers could now sell milk to the Nashua and Boston markets. In addition, other agricultural products such as apples, potatoes, cordwood, and lumber were shipped by rail. Greenfield's economy was booming.

By the early 1900s, America had developed an extensive and efficient system of railroads. This, coupled with advances in refrigeration, enabled perishable agricultural products to be shipped long distances. Greenfield's dairy farms, working the rocky and hilly New Hampshire soils, found themselves competing with the agriculturally-rich Midwest. It was a competition they could not meet and over the years many farms were abandoned. A few turned to poultry farming.

Because of a lack of swift rivers and brooks necessary for the water-powered mills of the 1800s, Greenfield never developed an industrial base. There were from time to time many small mills, but their primary purpose was to support the needs of the local community.

For the most part, Greenfield is now a bedroom community. The poultry farms are gone, victims of the industry's trends towards super farms. With the exception of one industrial business employing sixty people, industry in Greenfield is small and home based. Some have found employment at Croched Mountain Rehabilitation Center but the majority of working residents are employed out of town.

6.1 RECREATION

Greenfield is host to a wide variety of recreational amenities available year round. There are a large number of additional unmapped trails, including many private trails that are not open to the public. Since 1999, Greenfield Trails Association has worked to map, maintain, and connect Greenfield's trail system (see *Map 23 - Recreation*).

6.1.1 Recreation Inventory

The New Hampshire Office of Energy and Planning Recreation Inventory points include parks, playing fields, water recreation, and other amenities in New Hampshire. The information below has been modified from its original source based on updates shared by the Town (Table 35, Table 36). The first two tables refer to points depicted on *Map 23 - Recreation*. The third table refers to other areas depicted on *Map 23 - Recreation*.

Table 35 - Office of Energy and Planning Recreation Inventory - Points

	WHITEMORE LAKE ACCESS / TOWN BEACH	SUNSET LAKE TOWN BEACH (RESIDENTS ONLY)	OAK PARK	ZEPHYR LAKE TOWN BEACH (RESIDENTS ONLY)	BRANTWOOD CAMP
TOWN	Bennington	Greenfield	Greenfield	Greenfield	Greenfield
OPERATOR	NH Dept of Fish & Game	Town of Greenfield	Town of Greenfield	Town of Greenfield	Brantwood Camp Trustees
OWNER	State	Municipal	Municipal	Municipal	Private Non-profit
PRIMARY USE	Water Sports Area	Water Sports Area	Field Sports	Water Sports Area	Summer Camp
ACRES	1	1	20	1	223
NUMBER OF PARKING SPACES	0	0	30	0	0
ESTIMATED NUMBER OF UNMARKED PARKING SPACES	20	15	2	10	0
ACCESSIBILITY	Handicapped access exists		Handicapped access exists		Handicapped access exists

	WHITTEMORE LAKE ACCESS / TOWN BEACH	SUNSET LAKE TOWN BEACH (RESIDENTS ONLY)	OAK PARK	ZEPHYR LAKE TOWN BEACH (RESIDENTS ONLY)	BRANTWOOD CAMP
ACTIVITIES	Boat Launch Ramp, Fishing (Access Point), Beach Swimming	Beach Swimming, Picnicking, Boat Ramp	Bandstand, Baseball, Softball, Basketball, Fairgrounds, Football, Horseshoe Pits, Picnicking, Playground, Track & Field Area, Outdoor Tennis	Beach Swimming, Picnicking, Boat Launch Ramp, Fishing (Access Point)	Resident Camp, Basketball, Baseball, Softball, Soccer, Beach Swimming, Canoeing, All Girl Camp, Outdoor Swimming Pool

Table 36 - Office of Energy and Planning Recreation Inventory - Other Areas

TOWN	NAME	OPERATOR	OWNER	PRIMARY USE	ACTIVITIES
FRANCESTOWN	Town Forest	Town of Francestown	Municipal	Natural Area	Natural Area
GREENFIELD	Fleck Conservation Area	Town of Greenfield	Municipal	Hunting Area	Hiking Trail, Natural Area
GREENFIELD	Greenfield State Park	NH Dept of Resources & Econ Dev	State	Park	Camping, Fishing, Hunting Area, Natural Area, Picnicking, Hike Trail, Beach Swimming, Boat Launch Ramp, Snowmobile Trail
FRANCESTOWN	Town Forest	Town of Francestown	Municipal	Natural Area	Natural Area
GREENFIELD	Fleck Conservation Area	Town of Greenfield	Municipal	Hunting Area	Hiking Trail, Natural Area
GREENFIELD	Powdermill Pond Wildlife Mgmt. Area	NH Dept of Fish & Game	State	Hunting Area	Natural Area, Hunting Area
GREENFIELD	Emma Gipson Forest		Priv NP	Natural Area	Natural Area
GREENFIELD	Dorothy T. Foss Forest	New England Forestry Foundation	Priv NP	Natural Area	Natural Area
GREENFIELD	Lincoln-Davis Memorial Forest	New England Forestry Foundation	Priv NP	Natural Area	Natural Area
GREENFIELD	Wapack National Wildlife Refuge	US Forest Service	Federal	Natural Area	Hiking Trail, Natural Area

6.1.2 Public Access Fishing and Boating

The Town of Greenfield hosts seven public seven water access sites according to a directory available from the New Hampshire Fish and Game Department (see *Map 23 – Recreation*, Table 37).

Table 37 - New Hampshire Fish and Game Inventory of Public Access Fishing and Boating Sites

WATERBODY	FACILITY	ACCESS	PARKING	RAMP	NOTES
SUNSET LAKE	Town Beach	Beach/Picnic	Gravel	Gravel	Beach - town residents only
OTTER LAKE	Greenfield State Park	Trailer/Ramp	Gravel	Concrete log	Limited parking; Narrow ramp; Trolling speed only

WATERBODY	FACILITY	ACCESS	PARKING	RAMP	NOTES
CONTOOCCOOK RIVER (POWDER MILL POND)	Powdermill Pond Access	Trailer/Ramp	Gravel	Concrete	
ZEPHYR LAKE	Zephyr Lake	Boat Ramp	Gravel	Gravel	Picnic area/beach for residents only
WHITTEMORE LAKE	Town Beach and Launch Area	Trailer	Gravel	Gravel	No motors, trout waters; beach - town residents only
HOGBACK POND	Hogback Pond	Walk-in	Unimproved	None	
OTTER LAKE	Greenfield State Park Beach	Swimming	Gravel	None	

6.2 HISTORIC SITES

Greenfield has an active historical society with an extensive collection and several events throughout the year, including a visiting railcar. There is also a Harness and Drawbar club. An inventory of historic roads and cellar holes was completed in 2017 and presented to the Historical Society.

Greenfield hosts a variety of historic sites on both the National Parks Service National Registry of Historic Places as well as the New Hampshire State Register of Historic Place. Authorized by the National Historic Preservation Act of 1966, the National Park Service's National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources (see *Map 24 - Historic Sites*).

6.2.1 Old Greenfield Elementary School

The property, located at 7 Sawmill Road, was officially listed in 2003 to the New Hampshire State Register of Historic Places and currently hosts the Town Offices.

6.2.2 Greenfield Meeting House

The Meeting House, located on Forest Road, was officially listed in 1983 to the National Register of Historic Places.

6.2.3 Hancock-Greenfield Bridge

The covered bridge, located on Forest Road (over the Contoocook River) was officially listed in 1981 to the National Register of Historic Places. The existing bridge was constructed in 1937, which replaced a 1852 Long truss style covered damaged during flooding in March of 1936.

6.2.4 Cemeteries

The Town of Greenfield Community Facilities Chapter of the Master Plan lists one active cemetery, four inactive cemeteries, and two other notable burial sites (Town of Greenfield 2013, 13-14):

6.2.4.1 Old Coach Lane/Fletcher

The oldest cemetery is situated on the east side of Coach Road and north of Old Lyndeborough Mountain Road. The land was given to the Town about 1755 by Simeon Fletcher, who was buried here with many of his descendants and others of the neighborhood. When Greenvale Cemetery opened some interred were moved from Fletcher to Greenvale. Three stones remain: John Fletcher who died in 1772 and Mr. and Mrs. John Savage who died in 1821 and 1825 respectively.

6.2.4.2 *Whittemore*

On the farm originally owned by the Major Amos Whittemore, near the end of New Boston Road, is a family burying-lot, although names on the headstones show that others have been permitted to be buried there, among whom were Rev. Charles Whiting and wife. Major Amos Whittemore, one of the first three settlers of Greenfield is buried there as is a Revolutionary War veteran. The earliest dated stone is that of Abraham Burnham who died March 14, 1780. The cemetery is approximately 50' x 50', with fewer than 30 burial sites.

6.2.4.3 *Old Cemetery*

The cemetery behind the meetinghouse was laid out *circa* 1794 by the following committee: John Reynolds, Amos Whittemore, Elijah Broadstreet and Joshua Holt, the land being owned by the town. The clearing of the graveyard was let to the lowest bidder - William Darrah, for \$8.83. He was to clear bushes, logs and trees and sow with grass seed and fence it on the east and west with a log fence and on the north with a "gamb" fence. The Old Cemetery is less than 2 acres with 450 grave sites. A town receiving tomb is accessible from the road. The inscription on the earliest marked stone is for "Mrs. Eunice Pollard, wife of Benjamin Pollard, Jr. May 2, 1794 in the 26th year of her age."

6.2.4.4 *Greenvale*

The Town voted on Sept. 28, 1878 "that eight acres be enclosed within a suitable fence, and laid out in lots in a good, substantial manner, at an expense of not exceeding three hundred dollars, and that hereafter it be called Greenvale Cemetery." It currently is 15 acres, with 800 burial sites, situated about one mile east of the village on Forest Road (NH 31). It is the only active cemetery in Town. The stone wall was repaired shortly after 2003.

6.2.4.5 *Shea*

The earliest date of interment is 1886 in this small family burial lot on Slip Road, across from the Post Office. It contains eight graves of members of the Knight and Shea families. This was never a Town cemetery, but a burial plot for relatives that died of a plague.

6.2.4.6 *Butterfield Graves*

In the northwest part of town, in a remote pasture, once owned by Harry Dorr, are the graves of two Butterfield children apparently the victims of a contagious disease.

7 THE FLORA OF GREENFIELD, NH



Photo 7 - Common butterfly

The following content is transcribed from *The Wild Flora of Greenfield, NH* (Winchester 1994), a continuation of a cataloging project by Larry Winchester. Although some records date back to 1983, the resource is considered to be the most current available. The section information included with each occurrence corresponds to a map published in the original document which is otherwise only available in hardcopy format:

Cataloging the wild flora of Greenfield was a Greenfield Historical Society project begun in 1983 which lists the flora found and sections identified to date. It has been prepared for the Greenfield Conservation Commission for its use in recording the natural resources of Greenfield.

For purposes of this survey, wild flora are identified as plants growing in an uncultivated environment. From the time of the early settlers to today, garden plants have escaped cultivation and gone wild or have survived when cultivation has been abandoned.

As habitats change due to development, logging, abandonment of farm areas, natural forest growth and other reasons, new flora may emerge and some disappear. Flora found in past years may not exist today. The lists have not been updated for any of these changes.

Identification of flora is frequently time consuming. Identification of some species in some families such as the violet, mustard, mint, and composite requires considerable knowledge and

experience. Even with experience, grasses and sedges are difficult and not well covered by this project. Finally, some plants require the knowledge of a botanist to make positive identification.

Flowers are frequently necessary for plant identification and many plants flower for only a short time. Some plants grow, blossom, and die in a short time. Exploring an area once in a season could miss some of the plants. Less than half of Greenfield has been explored and as more and more land in Town is being posted against trespassing, exploration possibilities are being reduced. All of these factors require more time than is available for this project.

This section lists plants by family using the system in Gray's Manual of Botany. Both common names and botanical name are shown for each plant. Botanical names are italicized. The listing is organized by family with the family name printed in bold face capital letters, followed by a listing of all of the plants that are found in Greenfield belonging to that family.

The identification number assigned in Gray's Manual of Botany for that particular species follows the species' name. The line after the species' name line has the following information:

- The number of locations where the species has been found; one, two, several (three to five), or many (more than five).
- A map of Greenfield is included to locate sightings. If a plant is found in only one or two locations, and alphanumeric coordinate code from the map is shown to identify the general location where the plant was found.
- Page number in a reference where a description of the species can be found.

References used are listed below:

"N"	Newcomb's Wildflower Guide, Lawrence Newcomb (1977)
"G"	Gray's Manual of Botany – Eighth Edition, Merritt Lyndon Fernald (1950)
"S"	The Flora of New England – Second Edition, Frank Conkling Seymour (1985)
"M"	How to Know the Ferns and Fern Allies, John T. Mickel (1979)
"P"	A Field Guide to Trees and Shrubs -Second Edition, George A.Petrides (1972)
"H"	How to Know the Grasses – Third Edition, Richard W. Pohl (1968)
"C"	Aquatic Vascular Plants of New England - Parts 1-8, G. E. Crow and C. B. Hellquist (1981-1985)
"A"	- A Field Guide to Wildflowers, Roger Tory Peterson and Margaret McKenny (1968)

COMMON NAME	BOTANICAL NAME	IDENT.	NUMBER	SECTION	YEAR	REF.
FLOWERING FERN	OSMUNDACEAE					
ROYAL FERN	<i>Osmunda regalis var spectabilis</i>	60101	Two	H10	1985	M154
INTERRUPTED FERN	<i>Osmunda claytoniana</i>	60102	Several		1985	M155
CINNAMON FERN	<i>Osmunda cinnamomea</i>	60103	Several		1985	M154
FERN	POLYPODIACEAE					
SENSITIVE FERN	<i>Onoclea sensibilis</i>	90401	Several		1985	M149
CHRISTMAS FERN	<i>Polystichum acrostichoides</i>	90601	Several		1985	M176
BRACKEN	<i>Pteridium aquilinum var latiusculum</i>	91801	Several		1984	M181
COMMON POLYPODY	<i>Polypodium virginianum forma chondriodes</i>	91901	Many		1985	M173
YEW	TAXACEAE					
AMERICAN YEW	<i>Taxus canadensis</i>	120101	Two	D8	1985	P38

COMMON NAME	BOTANICAL NAME	IDENT.	NUMBER	SECTION	YEAR	REF.
PINE	PINACEAE					
BALSAM FIR	<i>Abies balsamea</i>	130101	Many		1985	P38
EASTERN HEMLOCK	<i>Tsuga canadensis</i>	130201	Many		1987	P38
RED SPRUCE	<i>Picea rubens</i>	130302	Several		1985	P40
BLACK SPRUCE	<i>Picea mariana</i>	130303	Two	E9	1985	P40
AMERICAN LARCH	<i>Larix laricina</i>	130401	Several		1987	P36
WHITE PINE	<i>Pinus strobus</i>	130501	Many		1984	P34
RED PINE	<i>Pinus resinosa</i>	130502	Many		1984	P36
DWARF JUNIPER	<i>Juniperus communis v. depressa</i>	130901	Many		1984	P42
RED CEDAR	<i>Juniperus virginiana v. crebra</i>	130903	Several		1984	P42
CATTAIL	TYPHACEAE					
COMMON CATTAIL	<i>Typha latifolia</i>	140101	Several		1983	N410
NARROW-LEAVED CATTAIL	<i>Typha angustifolia</i>	140102	One	C8	1987	N410
BUR-REED	SPARGANIACEAE					
LESSER BUR-REED	<i>Sparganium americanum</i>	150103	Two	G7	1984	N410
ARROW GRASS	JUNCAGINACEAE					
NONE	<i>Scheuchzeria palustris var americana</i>	180201	One	E9	1985	G83
ARROWHEAD	ALISMATACEAE					
COMMON ARROWHEAD	<i>Sagittaria latifolia</i>	190414	Several	G7	1983	N118
GRASS	GRAMINEAE					
REDTOP	<i>Agrostis gigantea</i>	224903		C10	1989	H84
MOUNTAIN RICE	<i>Oryzopsis asperifolia</i>	225701		C10	1988	H109
SEDGE	CYPERACEAE					
	<i>Carex pennsylvanica</i>	2318117		C10	1989	G333
ARUM	ARACEAE					
JACK-IN-THE-PULPIT	<i>Arisaema atrorubens</i>	240101	Many		1984	N36
SMALL JACK-IN-THE-PULPIT	<i>Arisema triphyllum</i>	240101		H8	1987	N36
WATER ARUM	<i>Calla palustris</i>	240301	Several	I6	1983	N20
SKUNK CABBAGE	<i>Symplocarpus foetidus</i>	240401	Two	G6	1984	N16
DUCKWEED	LEMNACEAE					
DUCKWEED	<i>Spirodela polyrhiza</i>	250101		A10	1987	G385
DUCKWEED	<i>Lemna minor</i>	250204		A10	1987	G386
PIPEWORT	ERIOCAULACEAE					
COMMON PIPEWORT	<i>Eriocaulon septangulare</i>	270103	Several		1985	N398
PICKERELWEED	PONTEDERIACEAE					
PICKERELWEED	<i>Pontederia cordata</i>	300201	Several	D10	1983	N50
LILY	LILIACEAE					
SESSILE-LEAVED BELLWORT	<i>Uvularia sessilifolia</i>	321104	Many		1984	N340
DAY LILY	<i>Heemerocallis fulva</i>	321401	One	D9	1983	N336

COMMON NAME	BOTANICAL NAME	IDENT.	NUMBER	SECTION	YEAR	REF.
WOOD LILY	<i>Lilium philadelphicum</i>	321601	Two	F12	1984	N352
CANADA LILY	<i>Lilium canadense</i>	321605	One	I5	1984	N352
TROUT LILY	<i>Erythronium americanum</i>	321701	Two	J8	1985	N338
ASPARAGUS	<i>Asparagus officinalis</i>	322201	One	G8	1985	N342
YELLOW CLINTONIA	<i>Clintonia borealis</i>	322301	Many		1984	N338
FALSE SOLOMON'S SEAL	<i>Smilacina racemosa var racemosa</i>	322401	Many		1984	N346
THREE-LEAVED SOLOMON'S SEAL	<i>Smilacina trofolia</i>	322403	One	E9	1985	N346
CANADA MAYFLOWER	<i>maianthemum canadense</i>	322501	Many		1983	N130
ROSYBELLS	<i>Streptopus roseus var perspectus</i>	322702	Two	C10	1986	N342
FALSE HELLEBORE	<i>Veratrum viride</i>	322801	Several		1984	N342
HAIRY SOLOMON'S-SEAL	<i>Polygonatum pubescens</i>	322803	Several		1984	N342
GREAT SOLOMON'S-SEAL	<i>Polygonatum canaliculatum</i>	322804	One	G8	1985	N342
LILY-OF-THE-VALLEY	<i>Convallaria majalis</i>	322901			1985	N336
INDIAN CUCUMBER-ROOT	<i>Medeola virginiana</i>	323001	Several		1984	N352
WAKE ROBIN	<i>Trillium erectum</i>	323108	Several	C11	1984	N124
LARGE FLOWERED TRILLIUM	<i>Trillium grandiflorum</i>	323109	One	J9	1987	N124
PAINTED TRILLIUM	<i>Trillium undulatum</i>	323112	Several		1984	N124
CARRION FLOWER	<i>Smilax herbacea</i>	323303	One	F8	1990	N348
IRIS	IRIDACEAE					
COMMON BLUE-EYED GRASS	<i>Sisyrinchium montanum</i>	360306	Several		1983	N332
LARGER BLUE FLAG	<i>Iris versicolor</i>	360405	Several	G8	1984	N120
YELLOW IRIS	<i>Iris Pseudacorus</i>	360407	One	A8	1989	N120
ORCHID	ORCHIDACEAE					
PINK LADY'S SLIPPER	<i>Cypripedium acaule</i>	390105	Many		1984	N22
ROSE POGONIA	<i>Pogonia ophioglossoides</i>	390401	Two	C10	1988	N38
HELLEBORINE	<i>Epipactis helleborine</i>	391001	Two	F9	1984	N48
NODDING LADIES TRESSES	<i>Spiranthes cernua</i>	391107	One	G8	1988	N26
WILLOW	SALICACEAE					
QUAKING ASPEN	<i>Populus tremuloides</i>	410201	Several		1984	P322
BIGTOOTH ASPEN	<i>Populus grandidentata</i>	410202	Two	B12	1987	P322
WAX-MYRTLE	MYRICACEAE					
SWEET GALE	<i>Myrica gale</i>	420101	Several	G7	1985	P348
SWEETFERN	<i>Comptonia perigrina</i>	420201	Several		1985	P348
HAZEL	CORYLACEAE					
AMERICAN HAZLENUT	<i>Corylus americana</i>	450101	Many		1984	P336
BEAKED HAZLENUT	<i>Corylus cornata</i>	450102	One	G7	1985	P336
HOPHORNBEAM	<i>Ostrya virginiana</i>	450201	Several		1985	P336
BLACK BIRCH	<i>Betula lenta</i>	450401	Several		1984	P338
YELLOW BIRCH	<i>Betula lutea</i>	450402	Many		1984	P338
GRAY BIRCH	<i>Betula populifolia</i>	450404	Many		1984	P231

COMMON NAME	BOTANICAL NAME	IDENT.	NUMBER	SECTION	YEAR	REF.
AMERICAN WHITE BIRCH	<i>Betula papyrifera</i>	450409	Many		1984	P231
BEECH	FAGACEAE					
BEECH	<i>Fagus grandifolia</i>	460101	Many		1984	P348
WHITE OAK	<i>Quercus alba</i>	460301	Several		1984	P348
RED OAK	<i>Quercus rubra</i>	460311	Many		1984	P326
WATER BEECH	<i>Carpinus Caroliniana</i>		Many		1985	
HEMP	CANNABINACEAE					
COMMON HOP	<i>Humulus lupulus</i>	490210	One	A8	1985	N326
NETTLE	URTICACEAE					
STINGING NETTLE	<i>Urtica dioica</i>	500104	Several		1984	N438
BUCKWHEAT	POLYGONACEAE					
FIELD SORREL	<i>Rumex acetosella</i>	540317	Several		1985	N402
DOORWEED	<i>Polygonum aviculare</i>	540512	One	A9	1987	N192
SWAMP SMARTWEED	<i>Polygonum coccineum</i>	54051	One	A10	1987	N192
NODDING SMARTWEED	<i>Polygonum lapathifolium</i>	540523	Several		1984	N190
ARROW-LEAVED TEARTHUMB	<i>Polygonum sagittatum</i>	540538	One	C10	1987	N402
HALBRED-LEAVED TEARTHUMB	<i>Polygonum arifolium</i>	540539	One	G8	1987	N402
CLIMBING FALSE BUCKWHEAT	<i>Polygonum scandens</i>	540543	Several		1984	N322
JAPANESE KNOTWEED	<i>Polygonum cuspidatum</i>	540544	Several		1990	N190
SAND JOINTWEED	<i>Polygonella articulata</i>	540701	One	G6	1986	N172
GOOSEFOOT	CHENOPODIACEAE					
PIGWEED	<i>Chenopodium album</i>	550511	Several		1985	N422
POKEWEED	PHYTOLACCACEAE					
POKEWEED	<i>Phytolacca americana</i>	580101	Several		1983	N200
CARPETWEED	AIZOACEAE					
CARPETWEED	<i>Mollugo verticillata</i>	590401	Several		1985	N272
PURSLANE	PORTULACACEAE					
PURSLANE OR PUSLEY	<i>Portulaca oleracea</i>	600101	Several		1985	N186
PINK	CARYOPHYLLACEAE					
COMMON CHICKWEED	<i>Stellaria media</i>	610901	Several		1985	N274
LESSER STITCHWORT	<i>Stellaria graminea</i>	610904	Several		1983	N274
MOUSE-EARED CHICKWEED	<i>Cerastium vulgatum</i>	611004	Several		1985	N274
WHITE CAMPION	<i>Lychnis alba</i>	611303	Several	C11	1985	N260
BLADDER CAMPION	<i>Silene cucubalus</i>	611402	One	G10	1986	N260
DEPTFORD PINK	<i>Dianthus armeria</i>	611702	One	G8	1988	N258
MAIDEN PINK	<i>Dianthus deltoides</i>	611704	Several		1984	N258
WATER LILY	NYMPHAEACEAE					
SPATTERDOCK	<i>Nuphar variegatum</i>	630103	Several		1983	N176
SWEET-SCENTED WATER LILY	<i>Nymphaea odorata</i>	630201	Two	D10	1983	N358
WATER SHIELD	<i>Brasenia schreberi</i>	630401	One	H8	1987	N348

COMMON NAME	BOTANICAL NAME	IDENT.	NUMBER	SECTION	YEAR	REF.
CROWFOOT	RANUNCULACEAE					
SMALL-FLOWERED CROWFOOT	<i>Ranunculus abortivus</i>	640121	One	C10	1990	N244
HOOKEED CROWFOOT	<i>Ranunculus recurvatus</i>	640125		D10	1987	N204
CREEPING BUTTERCUP	<i>Ranunculus repens</i>	640132	One	B11	1990	N242
TALL BUTTERCUP	<i>Ranunculus acris</i>	640133	Many		1983	N242
BULBOUS BUTTERCUP	<i>Ranunculus bulbosus</i>	640134	Two	F9	1984	N242
TALL MEADOW-RUE	<i>Thalictrum polygomonum</i>	640410	Several		1984	N146
WOOD ANEMONE	<i>Anemone quinquefolia</i>	640710	Many		1984	N288
VIRGIN'S BOWER	<i>Clematis Virginiana</i>	640801	One	F8	1984	N170
MARSH MARIGOLD	<i>Caltha palustris</i>	641001	Two	G9	1984	N204
GOLDTHREAD	<i>Coptis groenlandica</i>	641201	Many		1984	N184
WILD COLUMBINE	<i>Aquilegia canadensis</i>	641301	Two	F12	1984	N228
WHITE BANEBERRY	<i>Actaea pachypoda</i>	641702	Two	I10	1984	N424
BARBERRY	BERBERIDACEAE					
COMMON BARBERRY	<i>Berberis vulgaris</i>	650502	Two	F9	1990	N354
JAPANESE BARBERRY	<i>Berberis thunbergii</i>	650503	Several		1985	N354
LAUREL	LAURACEAE					
SPICEBUSH	<i>lindera benzoin</i>	700401	Several		1986	N442
POPPY	PAPAVERACEAE					
BLOODROOT	<i>Sanguinaria canadensis</i>	710101	One	C10	1984	N364
CELANDINE	<i>Chelidonium majus</i>	710301	Several		1983	N142
PALE CORYDALIS	<i>Corydalis sempervirens</i>	711001	Two	H7	1984	N70
MUSTARD	CRUCIFERAE					
HOARY ALYSSUM	<i>Berteroa incana</i>	730201	One	H7	1985	N130
FIELD PENNYCRESS	<i>Thlaspi arvense</i>	730601	Several		1985	N136
FIELD PEPPERGRASS	<i>Lepidium campestre</i>	730803	Several		1984	N136
SHEPHERD'S PURSE	<i>Capsella bursa-pastoris</i>	731301	Several		1984	N150
WILD RADISH	<i>Raphanus raphanistrum</i>	731901	One	I9	1983	N142
HEDGE MUSTARD	<i>Sisymbrium officinale</i>	732001	Several		1985	N144
TUMBLE MUSTARD	<i>Sisymbrium altissimum</i>	732602	Two	H7	1985	N144
DAME'S VIOLET	<i>Hesperis matronalis</i>	733001	Two	J8	1984	N138
WORMSEED	<i>Erysimum cheiranthoides</i>	733101	Two	H7	1985	N132
MARSH YELLOW CRESS	<i>Rorippa islandica</i>	733208	Several		1985	N144
WATERCRESS	<i>Nasturtium officinale</i>	733301	Two	C10	1984	N148
COMMON WINTER CRESS	<i>Barbarea vulgaris</i>	733501	Several		1984	N144
CUCKOOFLOWER	<i>Cardamine pratensis</i>	734106	One	H8	1990	N148
PENNSYLVANIA BITTERCRESS	<i>Cardamine pensylvanica</i>	734110	Two	G7	1984	N148
SMALL-FLOWERED BITTERCRESS	<i>Cardamine parviflora</i>	734111	One	C10	1990	N150
TOWER MUSTARD	<i>Arabis glabra</i>	734303	Two	B11	1990	N136
PITCHER PLANT	SARRACENIACEAE					

COMMON NAME	BOTANICAL NAME	IDENT.	NUMBER	SECTION	YEAR	REF.
PITCHER PLANT	<i>Sarracenia purpurea</i>	750101	Several		1984	N182
SUNDEW	DROSERACEAE					
SPATULATE-LEAVED SUNDEW	<i>Drosera intermedia</i>	760101	Two	G7	1985	N174
ROUND-LEAVED SUNDEW	<i>Drosera rotundifolia</i>	760104	Several		1984	N174
ORPINE	CRASSULACEAE					
LIVE-FOR-EVER	<i>Sedum telephoides</i>				1985	N216
SAXIFRAGE	SAXIFRAGACEAE					
FOAMFLOWER	<i>Tiarella cordifolia</i>	790601	Several		1984	N178
GOLDEN SAXIFRAGE	<i>Chrysosplenium americanum</i>	790801	One	D10	1987	N162
SKUNK CURRANT	<i>Ribes glandulosum</i>	791509	One	C11	1986	N306
GARDEN CURRANT	<i>Ribes sativum</i>	791511	One		1984	N306
WITCH HAZEL	HAMAMELIDACEAE					
WITCH HAZEL	<i>Hamamelis virginiana</i>	800101	Many		1985	N166
ROSE	ROSACEAE					
MEADOWSWEET	<i>Spiraea latifolia</i>	820202	Several		1983	N310
BLACK CHOKEBERRY	<i>Pyrus melanocarpa</i>	820611	Several		1990	N312
STEEPLEBUSH	<i>Spiraea tomentosa</i>	820703	Several		1983	N310
SWAMP SHADBUSH	<i>Amelanchier canadensis</i>	820715			1985	N314
SMOOTH SHADBUSH	<i>Amelanchier laevis</i>	820718			1985	N314
MOUNTAIN SHADBUSH	<i>Amelanchier bartramiana</i>	820719	One		1985	N314
HAWTHORNS	<i>Crataegus sp.</i>	820800	Many		1990	N308
THREE-TOOTHED CINQUEFOIL	<i>Potentilla tridentata</i>	821502	One	F12	1984	N230
ROUGH-FRUITED CINQUEFOIL	<i>Potentilla recta</i>	821515	Several		1983	N240
ROUGH CINQUEFOIL	<i>Potentilla norvegica</i>	821521	Several		1983	N240
COMMON CINQUEFOIL	<i>Potentilla simplex</i>	821531	Several		1983	N240
WATER AVENS	<i>Geum rivale</i>	821807		D10	1987	N228
DWARF RASPBERRY	<i>Rubus pubescens</i>	821902	Two	D10	1987	N330
PURPLE-FLOWERING RASPBERRY	<i>Rubus odoratus</i>	821905	One	F11	1984	N308
WILD RED RASPBERRY	<i>Rubus idaeus</i>	821909	Many		1990	N232
BLACK RASPBERRY	<i>Rubus occidentalis</i>	821910	Several		1990	N232
COMMON BLACKBERRY	<i>Rubus allegheniensis</i>	821913	Many		1990	N232
SWAMP DEWBERRY	<i>Rubus hispidus</i>	821960	Many		1990	N330
DALIBARDA	<i>Dalibarda repens</i>	822001	Several		1985	N182
MULTIFLORA ROSE	<i>Rosa multiflora</i>	822402	Several		1984	N318
SHINING ROSE	<i>Rosa nitida</i>	822410			1984	N316
PASTURE ROSE	<i>Rosa carolina</i>	822413			1984	N316
SMOOTH ROSE	<i>Rosa blanda</i>	822424			1984	N316
CANADA PLUM	<i>Prunus nigra</i>	822506	Two	I4	1985	P310
BIRD CHERRY	<i>Prunus pensylvanica</i>	822515	Several		1985	N312
CHOKECHERRY	<i>Prunus virginiana</i>	822520	Several		1985	N314

COMMON NAME	BOTANICAL NAME	IDENT.	NUMBER	SECTION	YEAR	REF.
PULSE	LEGUMINOSAE					
CAROLINA LUPINE	<i>Thermopsis mollis</i>	831001	One	E11	1985	G888
DYER'S GREENWEED	<i>Genista tinctoria</i>	831401	One	F12	1987	N104
RABBIT-FOOT CLOVER	<i>Trifolium arvense</i>	831801	Several		1984	N60
RED CLOVER	<i>Trifolium pratense</i>	831806	Many		1984	N60
WHITE CLOVER	<i>Trifolium repens</i>	831809	Many		1984	N36
ALSIKE CLOVER	<i>Trifolium hybridum</i>	831812	Two	J9	1984	N60
HOP CLOVER	<i>Trifolium agrarium</i>	831815	Several		1983	N58
YELLOW SWEET CLOVER	<i>Melilotus officinalis</i>	831901	Two	H7	1985	N58
WHITE SWEET CLOVER	<i>Melilotus alba</i>	831904	Two	H7	1984	N60
BLACK MEDIC	<i>Medicago lupulina</i>	832003	Two	H7	1985	N58
BIRDSFOOT TREFOIL	<i>Lotus corniculatus</i>	832201	One	F12	1983	N66
CROWN VETCH	<i>Coronilla varia</i>	833701	One	F8	1985	N66
POINTED LEAVED TICK TREFOIL	<i>Desmodium glutinosum</i>	833902	One	C11	1983	N102
SHOWY TICK TREFOIL	<i>Desmodium canadense</i>	833915	Two	C11	1983	N62
SLENDER VETCH	<i>Vicia tetrasperma</i>	834407	Two	H7	1985	N114
COW VETCH	<i>Vicia cracca</i>	834412	Several		1990	N112
PURPLE VETCH	<i>Vicia americana</i>	834415	Many		1984	N112
GROUNDNUT	<i>Apios americana</i>	834601	One	I6	1984	N108
HOG PEANUT	<i>Amphicarpa bracteata</i>	835401	Several		1983	N110
WOOD SORREL	OXALIDACEAE					
COMMON WOOD SORREL	<i>Oxalis montana</i>	850101	Several		1984	N184
YELLOW WOOD SORREL	<i>Oxalis stricta</i>	850104	Several		1985	N246
YELLOW WOOD SORREL	<i>Oxalis europaea</i>	850107	Several		1985	N246
MILKWORT	POLYGALACEAE					
FRINGED POLYGALA	<i>Polygala paucifolia</i>	910101	Many		1984	N40
RACEEMED MILKWORT	<i>Polygala polygama</i>	910102	Two	G7	1985	N46
PURPLE MILKWORT	<i>Polygala sanguinea</i>	910106	Two	I6	1983	N46
SPURGE	EUPHORBIACEAE					
CYPRESS SPURGE	<i>Euphorbia cyparissias</i>	921108	One	F11	1984	N408
CASHEW	ANACARDIACEAE					
STAGHORN SUMAC	<i>Rhus typhina</i>	970201	Several		1985	N320
SMOOTH SUMAC	<i>Rhus glabra</i>	970202		C10	1987	N320
POISON SUMAC	<i>Rhus Vernix</i>	970205	One	D10	1987	N320
POISON IVY	<i>Rhus radicans</i>	970206	Many		1984	N330
HOLLY	AQUIFOLIACEAE					
WINTERBERRY	<i>Ilex verticillata</i>	990107	Several		1985	N396
MOUNTAIN HOLLY	<i>Nemopanthus mucronata</i>	990201	Several	E9	1984	N168
STAFF TREE	CELASTRACEAE					
ASIATIC BITTERSWEET	<i>Celastrus orbiculatus</i>	1000302	Several		1990	N326

COMMON NAME	BOTANICAL NAME	IDENT.	NUMBER	SECTION	YEAR	REF.
MAPLE	ACERACEAE					
MOUNTAIN MAPLE	<i>Acer spicatum</i>	1020102	One	G5	1988	P120
STRIPED MAPLE	<i>Acer pensylvanicum</i>	1020103	Many		1984	P120
SUGAR MAPLE	<i>Acer saccharum</i>	1020105	Many		1984	P120
RED MAPLE	<i>Acer rubrum</i>	1020108	Many		1984	P120
TOUCH-ME-NOT	BALSAMINACEAE					
SPOTTED TOUCH-ME-NOT	<i>Impatiens capensis</i>	1050102	Several		1983	N54
BUCKTHORN	RHAMNACEAE					
COMMON BUCKTHORN	<i>Rhamnus cathartica</i>	1060202	One	H8	1987	N168
VINE	VITACEAE					
WOODBINE	<i>Perthenocissus quinquefolia</i>	1070301		H8	1987	N444
FOX GRAPE	<i>Vitis labrusca</i>	1070401	Many		1990	N444
LINDEN	TILIACEAE					
AMERICAN BASSWOOD	<i>Tilia americana</i>	1080101	Two	C11	1985	P320
MALLOW	MALVACEAE					
COMMON MALLOW	<i>Malva neglecta</i>	1090102	One	H7	1985	N206
MUSK MALLOW	<i>Malva moschata</i>	1090106	Two	F9	1984	N234
ST. JOHNSWORT	GUTTIFERAE					
COMMON ST. JOHNSWORT	<i>Hypericum perforatum</i>	1110202	Several		1984	N268
SPOTTED ST. JOHNSWORT	<i>Hypericum punctatum</i>	1110203	Two	G7	1985	N268
PALE ST. JOHNSWORT	<i>Hypericum ellipticum</i>	1110211		G8	1985	N268
CANADIAN ST. JOHNSWORT	<i>Hypericum canadense</i>	1110220			1984	N268
ORANGE GRASS	<i>Hypericum gentianoides</i>	1110223	Two	C11	1990	N172
MARSH ST. JOHNSWORT	<i>Hypericum virginicum</i>	1110224			1984	N270
ROCKROSE	CISTACEAE					
NARROW-LEAVED PINWEED	<i>Lechea tenuifolia</i>	1140303	One	A9	1987	N408
VIOLET	VIOLACEAE					
MARSH BLUE VIOLET	<i>Viola cucullata</i>	1150202	Several		1984	N30
LECONTE'S VIOLET	<i>Viola affinis</i>	1150208	One	C10	1990	N30
NORTHERN BLUE VIOLET	<i>Viola septentrionalis</i>	1150211	Several		1990	N30
SWEET WHITE VIOLET	<i>Viola blanda</i>	1150232	Several		1984	N28
LANCED-LEAVED VIOLET	<i>Viola lanceolata</i>	1150234	Two	G7	1984	N28
ROUND-LEAVED VIOLET	<i>Viola rotundifolia</i>	1150236	One	F5	1985	N28
DOG VIOLET	<i>Viola conspersa</i>	1150245	Several		1984	N56
SAND VIOLET	<i>Viola adunca</i>	1150246	One	H7	1987	N56
MEZEREUM	THYMELAECEAE					
LEATHERWOOD	<i>Dirca palustris</i>	1190101	One	H8	1987	N442
LOOSESTRIFE	LYTHRACEAE					
PURPLE LOOSESTRIFE	<i>Lythrum salicaria</i>	1210505	Two	A10	1983	N351

COMMON NAME	BOTANICAL NAME	IDENT.	NUMBER	SECTION	YEAR	REF.
EVENING PRIMROSE	ONAGRACEAE					
FIREWEED	<i>Epilobium angustifolium</i>	1250301	Several		1983	N130
NARROW-LEAVED WILLOW HERB	<i>Epilobium leptophyllum</i>	1250306	Several		1990	N156
PURPLE-LEAVED WILLOW HERB	<i>Epilobium coloratum</i>	1250312		G7	1985	N160
NORTHERN WILLOW HERB	<i>Epilobium glandulosum</i>	1250313		G7	1983	N160
COMMON EVENING PRIMROSE	<i>Oenothera biennis</i>	1250401	Several		1983	N134
CROSS-SHAPED EVENING PRIMROSE	<i>Oenothera cruciata</i>	1250404	One	F8	1987	N134
SUNDROPS	<i>Oenothera fruticosa</i>	Two	I9		1983	N134
DWARF ENCHANTER'S NIGHTSHADE	<i>Circaea alpina</i>	Two	C10		1984	N116
GINSENG	ARALIACEAE					
BRISTLY SARSAPARILLA	<i>Aralia hispida</i>	Several			1984	N224
WILD SARSAPARILLA	<i>Aralia nudicaulis</i>	Many			1984	N182
DWARF GINSENG	<i>Panax trifolius</i>	Several			1984	N286
PARSLEY	UMBELLIFERAE					
GOLDEN ALEXANDER	<i>Zizia aurea</i>	1291503	One	E12	1990	N226
WATER HEMLOCK	<i>Cicuta maculata</i>	1291602		C11	1985	N222
WATER PARSNIP	<i>Sium suave</i>	1292401	Two	I5	1983	N222
QUEEN ANNE'S LACE	<i>Daucus carota</i>	1294501	Several		1983	N220
DOGWOOD	CORNACEAE					
BUNCHBERRY	<i>Cornus canadensis</i>	1300101	Many		1984	N152
RED-OSIER DOGWOOD	<i>Cornus stolonifera</i>	1300104	Several		1985	P106
ALTERNATE-LEAVED DOGWOOD	<i>Cornus alternifolia</i>	1300112	Several		1990	N166
WINTERGREEN	PYROLACEAE					
PIPSISSEWA	<i>Chimaphila umbellata</i>	1320101	Several		1984	N284
ONE-FLOWERED PYROLA	<i>Moneses uniflora</i>	1320201	One	G9	1984	N182
GREENISH-FLOWERED PYROLA	<i>Pyrola virens</i>	1320304	Several		1984	N178
SHINLEAF	<i>Pyrola elliptica</i>	1320305	Several		1984	N178
PINESAP	<i>Monotropa hypopithys</i>	1320401	Many		1986	N172
INDIAN PIPE	<i>Monotropa uniflora</i>	1320601	Many		1984	N172
HEATH	ERICACEAE					
LABRADOR TEA	<i>Ledum groenlandicum</i>	1330101	One	E9	1987	N292
RHODORA	<i>Rhododendron canadense</i>	1330204	Several	G12	1984	N104
MOUNTAIN AZALEA	<i>Rhododendron roseum</i>	1330207		H10	1984	N300
MOUNTAIN LAUREL	<i>Kalmia latifolia</i>	1330601	Two	F11	1985	N292
SHEEP LAUREL	<i>Kalmia angustifolia</i>	1330602	Several		1984	N292
PALE LAUREL	<i>Kalmia polifolia</i>	1330603	Two	E9	1985	N292
BOG ROSEMARY	<i>Andromeda glaucophylla</i>	1330801	Two	E9	1985	N292
MALEBERRY	<i>Lyonia ligustrina</i>	1331103	Several		1985	N296
LEATHERLEAF	<i>Chamaedaphne calyculata</i>	1331401	Several		1985	N292
MAYFLOWER	<i>Epigaea repens</i>	1331601	Several		1984	N198

COMMON NAME	BOTANICAL NAME	IDENT.	NUMBER	SECTION	YEAR	REF.
CHECKERBERRY	<i>Gaultheria procumbens</i>	1331701	Many		1983	N212
BEARBERRY	<i>Arctostaphylos uva-ursi</i>	1331801	One	E9	1990	N198
BLACK HUCKLEBERRY	<i>Gaylussacia baccata</i>	1332104	One	E9	1985	N298
VELVETLEAF BLUEBERRY	<i>Vaccinium myrtilloides</i>	1332211	Many		1990	N298
LATE LOW BLUEBERRY	<i>Vaccinium angustifolium</i>	1332213	Several		1990	N308
HIGHBUSH BLUEBERRY	<i>Vaccinium corymbosum</i>	1332214	Several		1990	N298
SMALL CRANBERRY	<i>Vaccinium oxycoccus</i>	1332220	One	E9	1985	N128
LARGE CRANBERRY	<i>Vaccinium macrocarpon</i>	1332221	Several		1985	N126
PRIMROSE	PRIMULACEAE					
SWAMP CANDLES	<i>Lysimachia terrestris</i>	1350405	Several		1983	N266
MONEYWORT	<i>Lysimachia Nummularia</i>	1350406	One	C10	1987	N266
FRINGED LOOSESTRIFE	<i>Lysimachia ciliata</i>	1350410	Several		1983	N266
WHORLED LOOSESTRIFE	<i>Lysimachia quadrifolia</i>	1350413	Several		1984	N266
STAR FLOWER	<i>Trientalis borealis</i>	1350501	Many		1984	N386
GENTIAN	GENTIANACEAE					
CLOSED GENTIAN	<i>Gentiana clausa</i>	1430316	One	C11	1983	N252
NARROW-LEAVED GENTIAN	<i>Gentiana linearis</i>	1430323	Several		1984	N252
YELLOW BARTONIA	<i>Bartonia virginica</i>	1430701	One	H8	1987	N126
DOGBANE	APOCYNACEAE					
PERIWINKLE	<i>Vinca minor</i>	1440201	One	J9	1987	N256
SPREADING DOGBANE	<i>Apocynum androsaemifolium</i>	1440401	Many		1983	N250
MILKWEED	ASCLEPIADACEAE					
SWAMP MILKWEED	<i>Asclepias incarnate</i>	1450205	One	G7	1985	N262
COMMON MILKWEED	<i>Asclepias syriaca</i>	1450214	Many		1983	N264
MORNING GLORY	CONVOLVULACEAE					
HEDGE BINDWEED	<i>Convolvulus sepium</i>	1460602	Two	F12	1983	N324
FIELD BINDWEED	<i>Convolvulus arvensis</i>	1460605	One	C10	1988	N324
POLEMONIUM	PALEMONIANACEAE					
WILD SWEET WILLIAM	<i>Phlox maculata</i>	1470412	One	F8	1987	N248
VERVAIN	VERBENACEAE					
BLUE VERVAIN	<i>Verbena hastata</i>	1500106	Two	B9	1985	N282
MINT	LABIATAE					
BLUE CURLS	<i>Trichostema dichotomum</i>	1510201	One	C10	1985	N76
HYSSOP SKULLCAP	<i>Scutellaria integrifolia</i>	1510605			1983	N76
MAD DOG SKULLCAP	<i>Scutellaria lateriflora</i>	1510609			1984	N98
MARSH SKULLCAP	<i>Scutellaria epilobiifolia</i>	1510610			1983	N98
CATNIP	<i>Nepeta cataria</i>	1511001	One	H7	1985	N88
GILL-OVER-THE-GROUND	<i>Glechoma hederacea</i>	1511101	One	I10	1985	N86
SELFHEAL	<i>Prunella vulgaris</i>	1511301	Several		1984	N78
MOTHERWORT	<i>Leonurus cardiaca</i>	1511701			1983	N86

COMMON NAME	BOTANICAL NAME	IDENT.	NUMBER	SECTION	YEAR	REF.
HEMP NETTLE	Galeopsis tetrahit	1511801			1983	N88
VIRGINIA BUGLEWEED	Lycopus virginicus	1513301			1984	N90
NORTHERN BUGLEWEED	Lycopus uniflorus	1513302			1984	N90
NIGHTSHADE	SOLANACEAE					
BITTERSWEET NIGHTSHADE	Solanum Dulcamara	1520101	One	B10	1988	N328
BLACK NIGHTSHADE	Solanum nigrum	1520105	Several		1983	N202
HORSE NETTLE	Solanum carolinense	1520108		I9	1983	N216
CLAMMY GROUND CHERRY	Physalis heterophylla	1520316	One	A9	1987	N204
FIGWORT	SCROPHULARIACEAE					
COMMON MULLEIN	Verbascum thapsus	1530101	Several		1984	N188
MOTH MULLEIN	Verbascum blattaria	1530104	One	C10	1983	N206
SNAPDRAGON	Antirrhinum orontium	1530400	One	C10	1986	A268
BUTTER AND EGGS	Linaria vulgaris	1530403	Two	F8	1984	N48
BLUE TOADFLAX	Linaria canadensis	1530404	Two	C11	1985	N50
TURTLEHEAD	Chelone glabra	1530801	Two	I6	1983	N94
MONKEY FLOWER	Mimulus ringens	1531101	Two	G7	1983	N100
GOLDEN HEDGE HYSSOP	Gratiola aurea	1531303	One	G7	1985	N76
THYME-LEAVED SPEEDWELL	Veronica serpyllifolia	1532204		C11	1984	N74
COMMON SPEEDWELL	Veronica officinalis	1532206		E11	1984	N96
MARSH SPEEDWELL	Veronica scutellata	1532209		G7	1985	N74
PURSLANE SPEEDWELL	Veronica peregrina	1532214	One	C10	1990	N74
COWWHEAT	Melampyrum lineare var americanum	1532801	Several		1983	N76
BROOM-RAPE	OROBANCHACEAE					
BEECH DROPS	Epifagus virginiana	1560101	Several		1985	N18
BLADDERWORT	LENTIBULARIACEAE					
NONE	Utricularia geminiscapia	1570103	One	H8	1987	C8-10
FLAT-LEAVED BLADDERWORT	Utricularia intermedia	1570109	One	D10	1983	N16
HORNED BLADDERWORT	Utricularia cornuta	1570111	One	G7	1985	N16
ACANTHUS	ACANTHACEAE					
WATER WILLOW	Justica americana	1580101	One	E9	1987	N78
MADDER	RUBIACEAE					
SWEET-SCENTED BEDSTRAW	Galium triflorum	1610203	Two	G7	1985	N154
LANCE-LEAVED WILD LICORICE	Galium lanceolatum	1610207	Two	C11	1984	N154
CLAYTON'S BEDSTRAW	Galium tinctorium	1610218		G7	1985	N126
ROUGH BEDSTRAW	Galium asprellum	1610226		I6	1983	N152
PARTRIDGE BERRY	Mitchella repens	1610601	Several		1984	N156
BUTTONBUSH	Cephalanthus occidentalis	1610701	Two	G7	1985	N164
BLUETS	Houstonia caerulea	1610801	Many		1984	N156
HONEYSUCKLE	CAPRIFOLIACEAE					
BUSH HONEYSUCKLE	Diervilla Lonicera	1620101	Two	C10	1984	N304

COMMON NAME	BOTANICAL NAME	IDENT.	NUMBER	SECTION	YEAR	REF.
EUROPEAN FLY HONEYSUCKLE	Lonicera xylostium	1620203	One	F7	1990	N104
MORROW'S HONEYSUCKLE	Lonicera Morrowi	1620204	One	F7	1990	N294
AMERICAN FLY HONEYSUCKLE	Lonicera canadensis	1620207		C11	1986	N294
SNOWBERRY	Symphoricarpos albus	1620301	One	G7	1985	N296
HOBBLE BUSH	Viburnum alnifolium	1620602	Several		1984	N302
WILD RAISIN	Viburnum cassinoides	1620603	Several		1990	N302
SWEET VIBURNUM	Viburnum lentago	1620605	Several		1985	N302
ARROWWOOD VIBURNUM	Viburnum recognitum	1620611	Several		1985	N302
MAPLE LEAVED VIBURNUM	Viburnum acerifolium	1620612	Several		1985	N304
COMMON ELDER	Sambucus canadensis	1620702	One	E6	1985	N320
RED-BERRIED ELDER	Sambucus pubens	1620704	One	F12	1985	N320
BLUEBELL	CAMPANULACEAE					
CREEPING BELLFLOWER	Campanula rapunculoides	1670203	Two	C11	1983	N212
HAREBELL	Campanula rotundifolia	1670206	One	E12	1983	N196
CARDINAL FLOWER	Lobelia cardinalis	1670401	Several		1983	N52
SPIKED LOBELIA	Lobelia spicata	1670408	One	B11	1987	N52
INDIAN TOBACCO	Lobelia inflata	1670410	One	C10	1983	N52
DAISY	COMPOSITAE					
EASTERN JOE-PYE WEED	<i>Eupatorium dubium</i>	1680401	One	H8	1987	N436
SWEET SCENTED JOE-PYE WEED	<i>Eupatorium purpureum</i>	1680404		C10	1983	N436
BONESET	<i>Eupatorium perfoliatum</i>	1680419	Two	C10	1983	N434
SILVERROD	<i>Solidago bicolor</i>	1681409	Several		1987	N382
DOWNY GOLDENROD	<i>Solidago puberla</i>	1681411			1987	N452
SWAMP GOLDENROD	<i>Solidago uliginosa var levipes</i>	1681437		B9	1987	N446
GRAY GOLDENROD	<i>Solidago nemoralis</i>	1681448		H6	1987	N446
ROUGH STEMMED GOLDENROD	<i>Solidago rugosa</i>	1681456			1987	N448
CANADA GOLDENROD	<i>Solidago canadensis var canadum</i>	1681458			1987	N448
TALL GOLDENROD	<i>Solidago altissima</i>	1681459				
LATE GOLDENROD	<i>Solidagogigantea</i>	1681464	One	D9	1987	N448
LANCE-LEAVED GOLDENROD	<i>Solidago graminifolia</i>	1681472			1987	N450
SLENDER-LEAVED GOLDENROD	<i>Solidago tenuifolia</i>	1681473		I9	1983	N450
WHITE WOOD ASTER	<i>Aster divaricatus</i>	1681902		H8	1987	N454
LARGE-LEAVED ASTER	<i>Aster macrophyllus</i>	1681906	Several		1990	N454
PURPLE-STEMMED ASTER	<i>Aster puniceus</i>	1681923		H8	1983	N456
ROUGH-LEAVED ASTER	<i>Aster radula</i>	1681933		F8	1984	N456
BUSHY ASTER	<i>Aster dumosus</i>	1681940		I9	1983	N458
SMALL WHITE ASTER	<i>Aster vinimeus</i>	1681941		C10	1983	N458
SHARP-LEAVED ASTER	<i>Aster acuminatus</i>	1681961			1987	N456
FLAT-TOPPED ASTER	<i>Aster umbellatus</i>	1681963		A8	1984	N462
ROBIN PLANTAIN	<i>Erigeron pulchellus</i>	1682005		H8	1984	N382

COMMON NAME	BOTANICAL NAME	IDENT.	NUMBER	SECTION	YEAR	REF.
DAISY FLEABANE	<i>Erigeron annuus</i>	1682008	Two	I9	1984	N382
LESSER DAISY FLEABANE	<i>Erigeron strigosus</i>	1682009	Two	I9	1984	N382
HORSEWEED	<i>Erigeron canadensis</i>	1682015		C10	1984	N384
NARROW-LEAVED WHITE-TOPPED ASTER	<i>Seriocarpus linifolius</i>	1682102		C10	1983	N202
SMALLER PUSSYTOES	<i>Antennaria neodioica</i>	1682522	Two	C12	1984	N400
PLANTAIN-LEAVED PUSSYTOES	<i>Antennaria plantaginifolia</i>	1682531	Several		1990	N400
PEARLY EVERLASTING	<i>Anaphalis margaritacea</i>	1682601	Two	E12	1983	N368
OXEYE	<i>Heliopsis helianthoides</i>	1684101	One	E9	1985	N390
BLACK-EYED SUSAN	<i>Rudbeckia serotina</i>	1684418	Several		1983	N374
NODDING BUR MARIGOLD	<i>Bidens cernua</i>	1685502	One	D9	1987	N392
BEGGAR TICKS	<i>Bidens frondosa</i>	1685513	Several	B10	1987	N440
QUICKWEED	<i>Galinsoga ciliata</i>	1685901			1985	N284
YARROW	<i>Achillea millefolium</i>	1686904	Several		1983	N220
PINEAPPLE WEED	<i>Matricaria matricariodes</i>	1687103		C10	1985	N426
OX EYE DAISY	<i>Chrysanthemum leucanthemum</i>	1687201		C10	1985	N426
COLTSFOOT	<i>Tussilago farfara</i>	1687601	Two	F11	1990	N358
TANSY RAGWORT	<i>Senecio jacobaea</i>	1688104	One	I10	1985	N378
GOLDEN RAGWORT	<i>Senecio aureus</i>	1688119	Several		1984	N378
BULL THISTLE	<i>Cirsium vulgare</i>	1688501		A8	1984	N430
PASTURE THISTLE	<i>Cirsium pumilum</i>	1688615		E12	1983	N430
CHICORY	<i>Cichorium intybus</i>	1689201	One	E11	1984	N382
YELLOW GOAT'S BEARD	<i>Tragopogon pratensis</i>	1689702	Two	I9	1984	N366
COMMON DANDELION	<i>Taraxacum officinale</i>	1689910	Many		1984	N362
SPINY-LEAVED SOW THISTLE	<i>Sonchus asper</i>	168100o4		C10	1984	N370
WILD LETTUCE	<i>Lactuca canadensis</i>	16810104	Several		1990	N372
WHITE LETTUCE	<i>Prenanthes alba</i>	16810606		F10	1984	N384
TALL RATTLESNAKE ROOT	<i>Prenanthes trifoliata</i>	16810608	Several		1990	N384
MOUSE EAR	<i>Hieracium pilosella</i>	16810701	One	G7	1985	N360
DEVIL'S PAINTBRUSH	<i>Hieracium aurantiacum</i>	16810703	Several		1983	N360
KING DEVIL	<i>Hieracium pratense</i>	16810705	Several		1984	N360
PANICLED HAWKWEED	<i>Hieracium paniculatum</i>	16810716		I6	1983	N372
ROUGH HAWKWEED	<i>Hieracium scabrum</i>	16810717	One	F12	1987	N368

8 BIRDS OF GREENFIELD, NH



Photo 8 - Turkey along Pine Ridge Road

Birds of Greenfield, NH (Ohlson 1998) was begun by Fred Briscoe and augmented a great deal (with help from other residents) by Linda Ohlson:

Thirty years ago Fred Briscoe began to keep a list of birds for the Town of Greenfield, When he died, I took it over and asked for input from other birders, whether residents or visitors. Care has been taken to check and document unusual species. As a result, over 150 species have been recorded.

There are two reasons for the large number. Greenfield has a variety of habitats and we are on a major migratory route, the Atlantic Flyway. The number and variety of species fluctuate from season to season and year to year.

The entire list is included. During the narrative, examples and partial lists will be given. It is impossible to write about each species.

Birds fall into four groups - (1) year-round residents; (2) summer residents who breed here; (3) winter residents that spent the breeding season farther north, and (4) migratory birds that stop for a short time, in spring and fall, to rest and eat.

(1) Year Round birds include: woodpeckers, hairy, downy and pileated; blue jays, chickadees, barred owls, ruffed grouse, nuthatches, tufted titmice, finches and others.

- (2) Summer Residents include the great blue heron, killdeer, hummingbirds, phoebes, swallows, catbirds, robins, bluebirds, scarlet tanagers, rose breasted grosbeaks, song sparrows, and warblers.
- (3) Winter Residents include the goshawk, rough legged hawk, snowy owl, Bohemian waxwing, red poll, pine siskin, evening grosbeak, pine grosbeak, and tree sparrows.
- (4) Migratory Visitors - During the fall, hawks can be seen migrating in large numbers. Hawk watches are held all along the flyway, from the tops of mountains, including Crotched Mountain. Veers of Canada geese crossing the sky are recognized by most folks. The majority of birds fly at night so we don't see them in large numbers. Warblers are tiny, colorful birds that move quickly and are easier to identify in the spring when the males are in breeding plumage. A flash of yellow as a bird takes off from the road's edge identifies a flicker. As soon as there is open water, various water fowl stop to rest, Canada and occasional snow geese, mergansers, grebes, teals, bufflehead and ringnecked duck. Other visitors include crossbills, ruby crowned kinglets, pine grosbeaks, and fox sparrows.

Greenfield has a varied habitat to attract birds: open water, swamps and marshes, streams, conifer, deciduous or mixed woods, hay fields, meadows, shrubby thickets and high elevations.

Some birds can be seen or heard on many habitats while others live under more specialized circumstances.

- (1) **Feeders** - chickadee, blue jay, downy woodpecker, finches, grosbeaks, nuthatches, etc.
- (2) **Under the Feeders** - mourning dove, junco, sparrows, etc.
- (3) **Gardens and Dooryards** - hummingbird, robin, phoebe, chipping sparrow, song sparrow
- (4) **Open Areas Like the Village** - starling, house sparrow, cardinal, pigeon, mourning dove, chickadee, blue jay.
- (5) **Any Type of Wetland** - crow, blue jay, chickadee, red winged blackbird, swallows, phoebe, great blue heron, yellow throat, song sparrow, catbird, phoebe, etc.
 - A. Open water: mergansers, ducks, kingfishers, geese.
 - B. At the Water's Edge: spotted sandpipers, water thrushes.
 - C. Marshy Areas: Snipe, bittern, marsh wrens.
- (6) **Farmland and Open Areas** - kingbird, sparrows, swallows, mockingbird, bluebird, mourning dove, phoebe, cardinal.
 - A. Hay Fields that are not cut until July: bobolink, meadowlark, indigo bunting.
 - B. Areas that are mowed or grazed –killdeer
 - C. Thickets at the edge of fields -warblers, sparrows

(7) **Woodlands** - barred owl, pileated woodpecker, wood and hermit thrush, yellow rumped and black throated green warbler, great crested flycatcher, kinglet, vireos, ovenbird, grosbeaks, ruffed grouse, red shouldered hawk.

I kept a record for years at my home which is located on the outskirts of the village, on half an acre of cleared ground, surrounded by mixed woods. There are gardens and feeders to attract various species.

Winter: chickadee, hairy downy and pileated woodpeckers, white breasted nuthatch, evening grosbeak, barred owl, cross golden crown kinglet, finches, pine siskin, red poll.

Spring: fox sparrow, flicker, ruby crowned kinglet, bay breasted warbler, pine grosbeak

In summer, the permanent residents are joined by robins, phoebes, goldfinches, song and chipping sparrows, ovenbirds, rose breasted grosbeaks, scarlet tanagers, wood and hermit thrushes, veerys, vireos, warblers, winter wrens, mourning doves, hummingbirds, towhees

In the fall, birds that bred north of here pass through again and the summer residents head out leaving the permanent residents behind.

Bird populations have changed in the past 25 years for several reasons:

- (1) As the rain forests are being cleared in Central America, birds lose their winter residences and die off. Twenty-five years ago, whippoorwills were fairly common. Their numbers gradually dropped off and they have been gone now for 12-15 years.
- (2) The food supply and/or weather can change migrations. Some winters snowy owls and northern finches come down here. If we have a late fall, waterfowl will stay until the water freezes over. If our acorn crop is poor, bluejays will head south. At the other end, birds may head north early in the spring and then be caught by a later snowstorm.
- (3) Some birds are expanding their territories. As more and more people feed the birds, they are able to stay and breed. Because they have territorial requirements, their range must expand as the population does. This is true of house finches, cardinals, tufted titmice, mourning doves, etc. Canada geese have become pests in industrial parks and golf courses. Gulls used to stick to the seacoast and ravens came up the Connecticut River. Now both can be found throughout the state because they are feeding at landfills. Mockingbirds were in Wilton 20 years ago and gradually became residents in Greenfield in the village and open areas. NH Fish & Game stocked wild turkeys in Town. They have found several sites they like and are thriving.

Many people contributed to the following list of birds in Greenfield.

The Harris Center for Conservation in Hancock conducts an annual Christmas Bird Count. The Audubon Society of NH oversees a Backyard Bird Count in late winter. These are vital in tracking bird populations and are enjoyable to do.

Swimmers

American Black Duck

Bufflehead

Canada Goose

Common Goldeneye

Common Loon
Common Merganser
Double-crested Cormorant
Hooded Merganser
Mallard

Pied-billed Grebe
Ring-necked Duck
Ruddy Duck
Snow Goose
Wood Duck

8.1 Gulls and Gull-like Birds

Greater Black-backed Gull
Herring Gull

Ring-billed Gull

8.2 Long-legged Waders

American Bittern
American Woodcock
Black-crowned Night Heron

Great Blue Heron
Green Heron
Killdeer
Lesser Yellowlegs

8.3 Smaller Waders

Common Snipe
Solitary Sandpiper

Spotted Sandpiper

8.4 Fowl-like Birds

Wild Turkey
Ruffed Grouse

Ring-necked Pheasant

8.5 Birds of Prey

American Kestrel
Bald Eagle
Barred Owl
Broad-winged Hawk
Cooper's Hawk
Great Horned Owl,
Northern Goshawk
Northern Harrier

Osprey
Red-shouldered Hawk
Red-tailed Hawk
Saw-whet Owl
Sharp-shinned Hawk
Short-eared Owl
Snowy Owl
Turkey Vulture

8.6 Land Birds

Belted Kingfisher
Black-billed Cuckoo
Chimney Swift
Common Nighthawk
Downy Woodpecker
Hairy Woodpecker

Mourning Dove
Pileated Woodpecker
Ruby-throated Hummingbird
Whip poor will
Yellow-bellied Sapsucker
Yellow-billed Cuckoo
Yellow-shafted Flicker

8.7 Perching Birds

Alder Flycatcher
American Crow
American Robin
Bank Swallow
Barn Swallow
Black-capped Chickadee
Blue Jay
Blue-gray Gnatcatcher
Bohemian Waxwing
Brown Creeper
Brown Thrasher
Cedar Waxwing
Cliff Swallow
Common Raven
Eastern Bluebird
Eastern Kingbird
Eastern Phoebe
Eastern Wood Pewee,
Golden-crowned Kinglet
Gray Catbird
Great-crested Flycatcher
Hermit Thrush

House Wren
Least Flycatcher
Marsh Wren
Northern Mockingbird
Northern Rough-winged Swallow
Northern Shrike
Olive-sided Flycatcher
Philadelphia Vireo
Red-breasted Nuthatch
Red-eyed Flycatcher
Ruby-crowned Kinglet
Solitary Vireo
Tree Swallow,
Tufted Titmouse
Veery
Warbling Vireo
Water Pipit
White-breasted Nuthatch
Willow Flycatcher
Winter Wren
Wood Thrush
Yellow-bellied Flycatcher
Yellow-throated Vireo

8.8 Warblers

American Goldfinch
American Red Start
American Tree Sparrow
Baltimore Oriole
Bay-breasted Warbler
Black and white Warbler
Blackburnian Warbler
Blackpoll Warbler
Black-throated Blue Warbler
Black-throated Green Warbler
Blue-winged Warbler
Bobolink
Brown-headed Cowbird
Canada Warbler
Cape May Warbler
Chestnut-sided Warbler
Chipping Sparrow
Common Grackle
Common Redpoll

Common Yellow-throat
Dark-eyed Junco
Eastern Meadowlark
European Starling
Evening Grosbeak
Field Sparrow
Fox Sparrow
House Finch
House Sparrow
Indigo Bunting
Louisiana Waterthrush
Magnolia Warbler
Mourning Warbler
Nashville Warbler
Northern Cardinal
Northern Parula Warbler
Northern Waterthrush
Orchard Oriole
Ovenbird
Palm Warbler

Pine Grosbeak
Pine Siskin
Pine Warbler
Purple Finch
Red Crossbill
Red-winged Blackbird,
Rose-breasted Grosbeak
Rufous-sided Towhee
Savannah Sparrow
Scarlet Tanager
Snow Bunting
Song Sparrow
Swamp Sparrow
Tennessee Warbler
White-crowned Sparrow
White-throated Sparrow
White-winged Crossbill
Wilson's Warbler
Yellow Warbler
Yellow-rumped Warbler
Yellow-throated Warbler

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Appendix A

Map 1 - Aerial Imagery

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Map 3 - Bedrock Geology

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Map 20 - Quabbin to Cardigan Partnership

Map 21 - Tax Parcels and Conservation Land

Map 22 - Invasive Plant Control Strategy

Map 23 - Recreation

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Aerial Imagery



Highway

Legislative Class

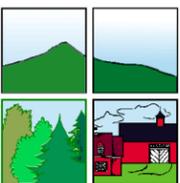
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-  Class II
-  Class V
-  Class VI
-  Private
-  Summit
-  Municipal Boundary
-  Rail

Water Body

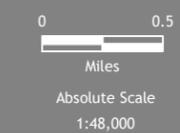
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River or Stream

-  Intermittent Stream
-  Perennial Stream



SWRPC



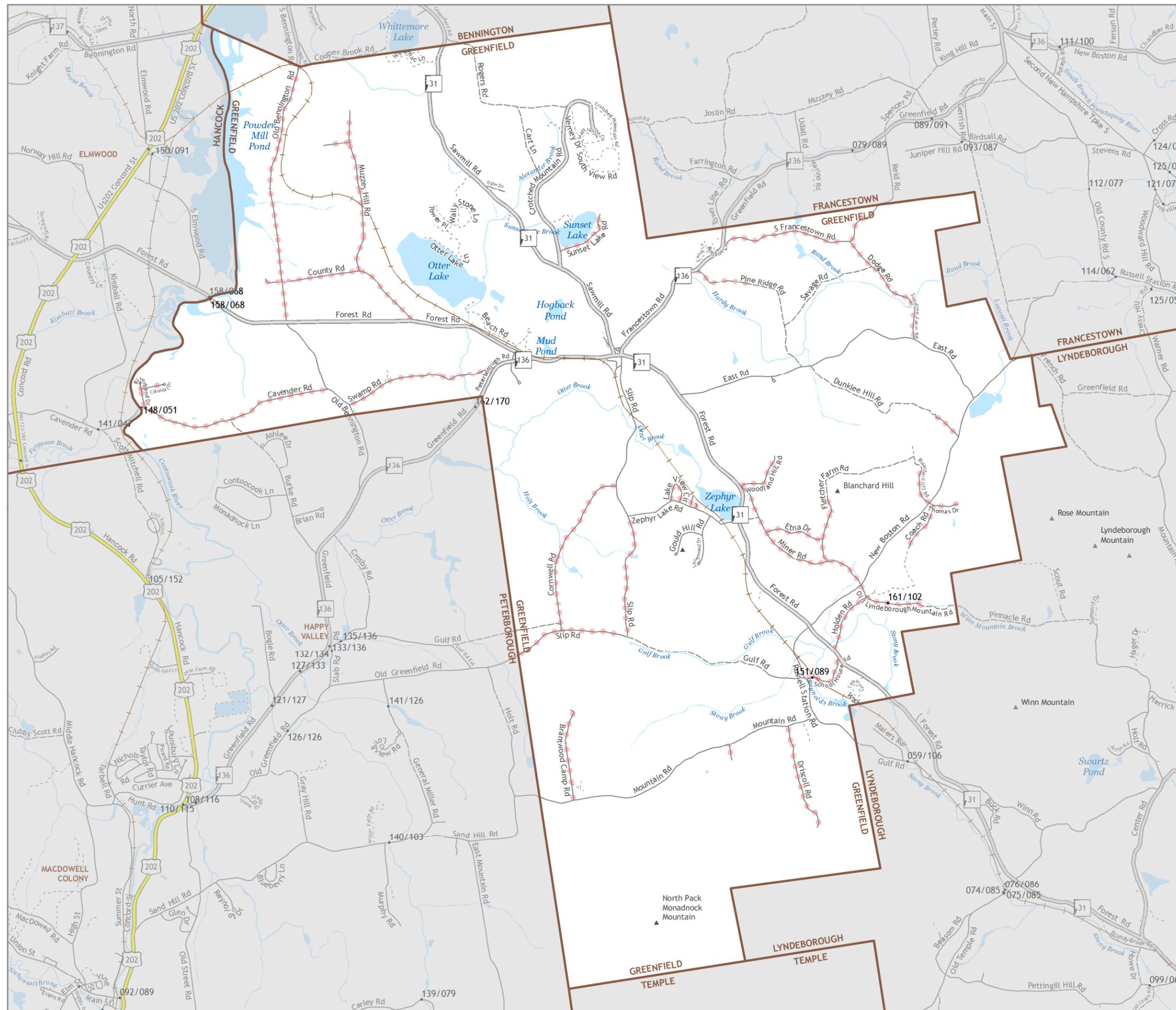
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TOWN OF GREENFIELD

NATURAL RESOURCES INVENTORY

MAP 2

Road Inventory



Highway

Legislative Class

- Class I
- Class II
- Class V
- Class VI
- Private
- Bridge
- Summit
- Municipal Boundary
- Rail
- Scenic Road

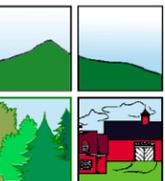
Water Body

- Lake, Pond, or Reservoir

River or Stream

- Intermittent Stream
- Perennial Stream

4/18/2019 Y:\Projects\2017\Greenfield\NRI\Map 2 - Road Inventory.mxd



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Bedrock Geology

Bedrock Geology

Formation

-  Kinsman Granodiorite
-  Littleton Formation
-  Madrid Formation
-  Perry Mountain Formation
-  Rangeley Formation
-  Smalls Falls Formation
-  Spaulding Tonalite

Highway

Legislative Class

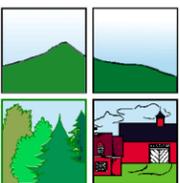
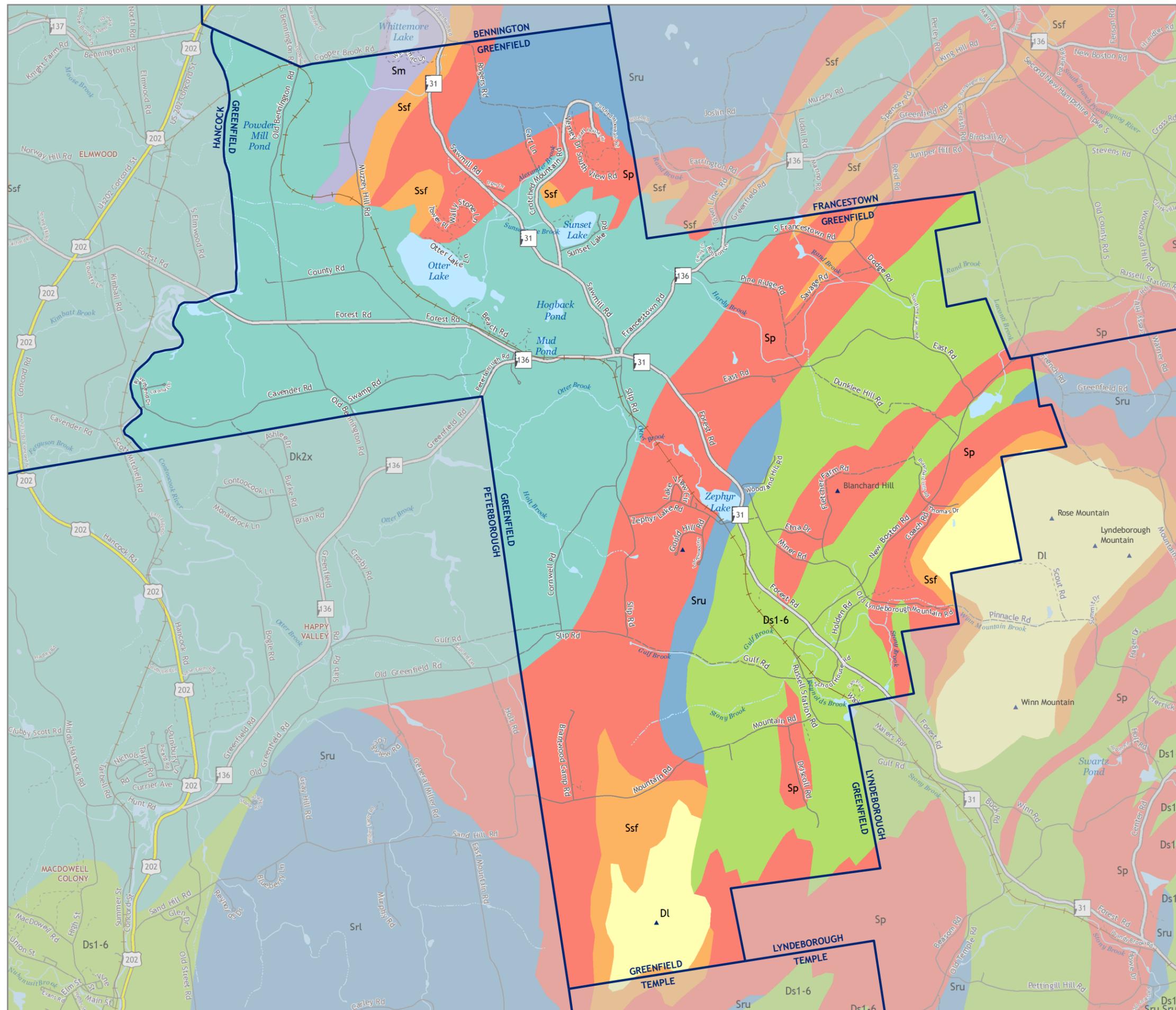
-  Class I
-  Class II
-  Class V
-  Class VI
-  Private
-  Summit
-  Municipal Boundary
-  Rail

Water Body

-  Lake or Pond

River or Stream

-  Intermittent Stream
-  Perennial Stream



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Topography

Elevation Contour

-  100 ft. Contour
-  20 ft. Contour

Highway

Legislative Class

-  Class I
-  Class II
-  Class V
-  Class VI
-  Private
-  Summit

Municipal Boundary

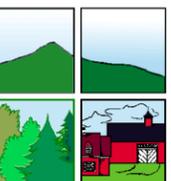
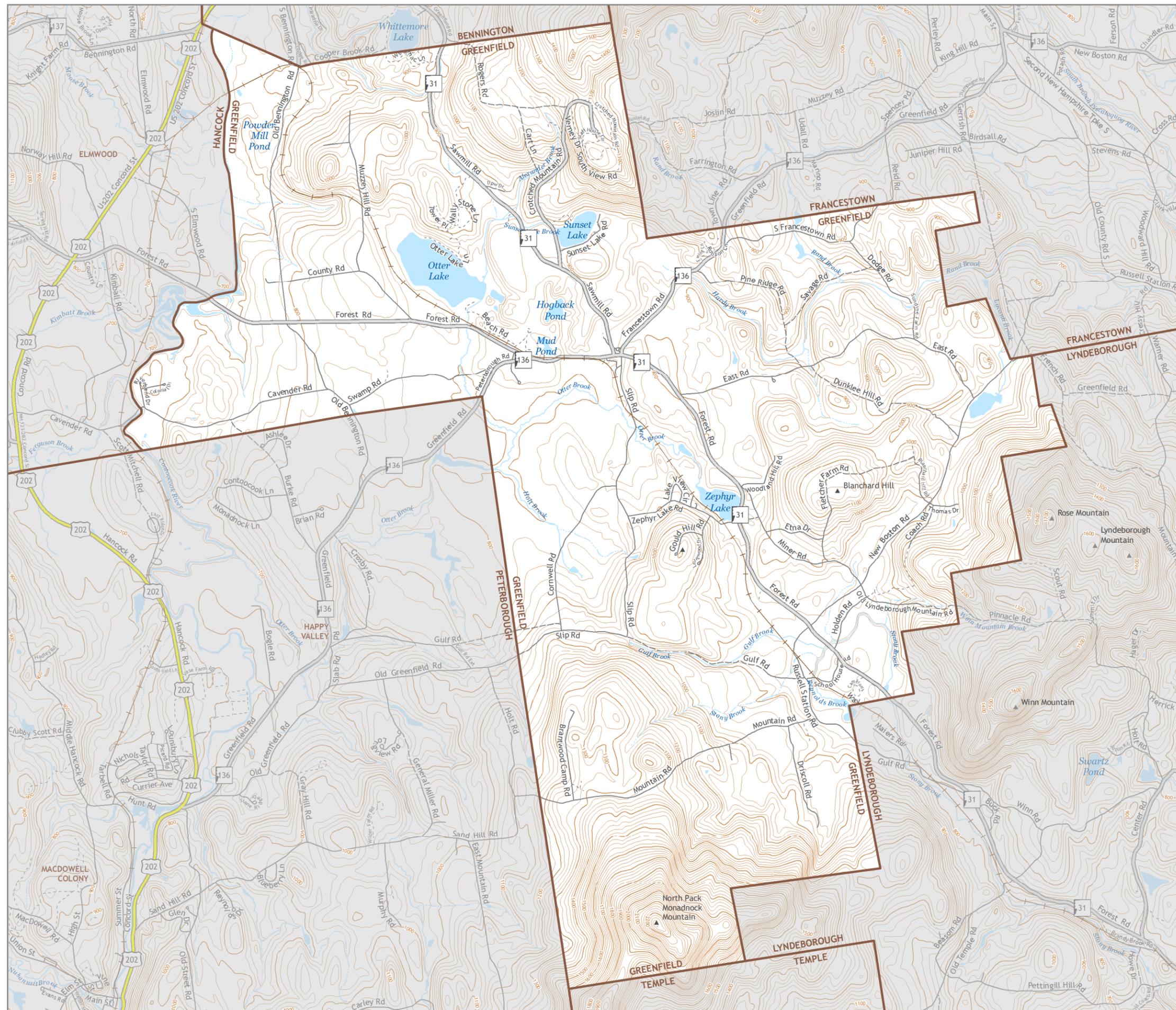
-  Rail

Water Body

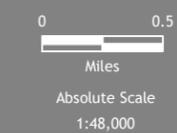
-  Lake or Pond

River or Stream

-  Intermittent Stream
-  Perennial Stream



SWRPC



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Forest Soils

Forest Soils

- Group IA
- Group IB
- Group IC
- Group IIA
- Group IIB
- Not Classified

Highway

Legislative Class

- Class I
- Class II
- Class V
- Class VI
- Private
- Summit

Municipal Boundary

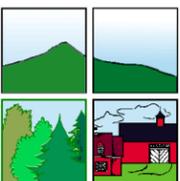
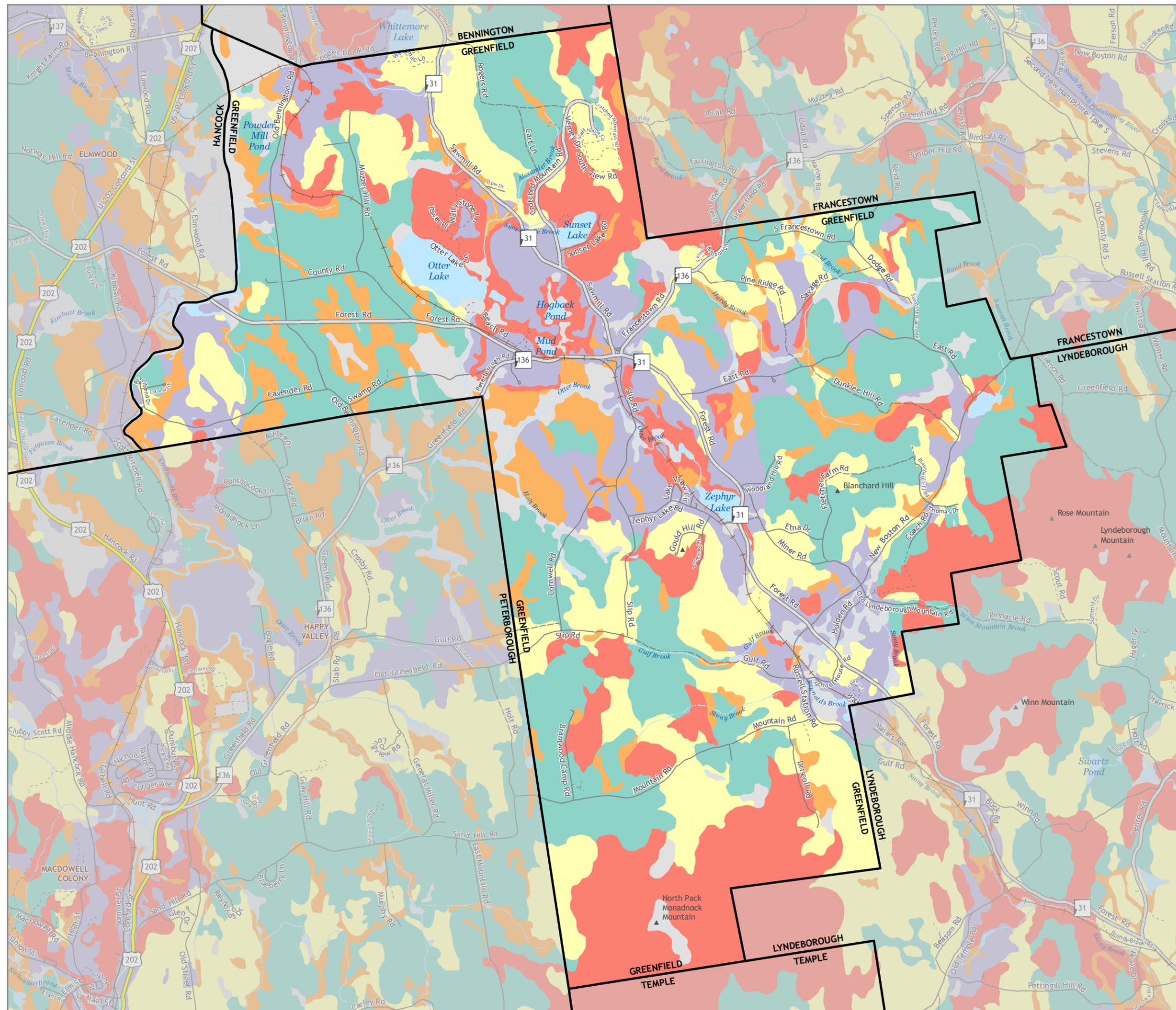
Rail

Water Body

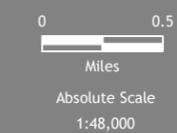
- Lake or Pond

River or Stream

- Intermittent Stream
- Perennial Stream



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Agricultural Soils

Farmland Classification

- Not prime farmland
- All areas are prime farmland
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance
- Farmland of local importance

Highway

Legislative Class

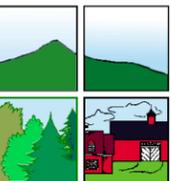
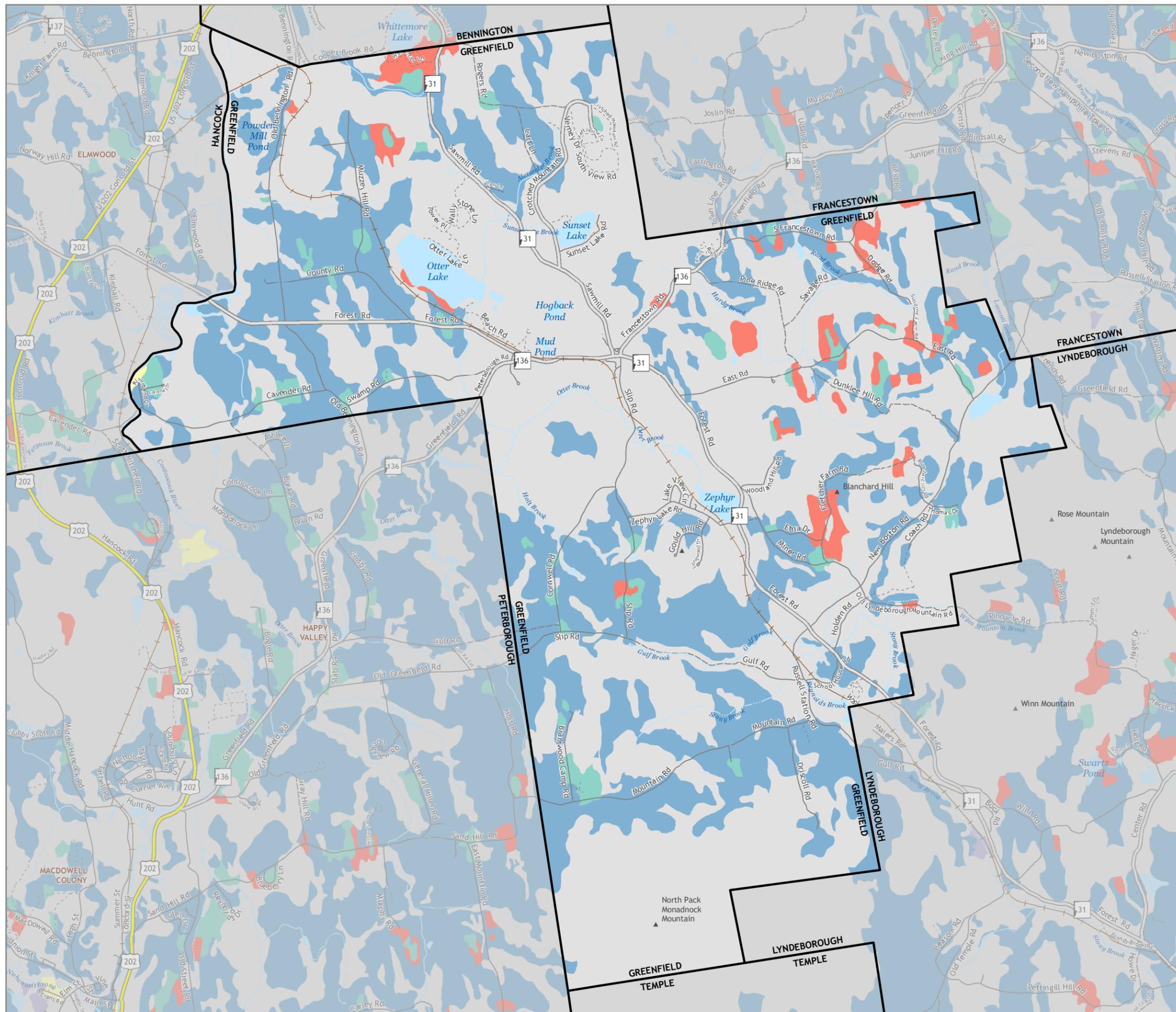
- Class I
- Class II
- Class V
- Class VI
- Private
- Summit
- Municipal Boundary
- Rail

Water Body

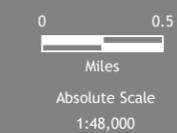
- Lake or Pond

River or Stream

- Intermittent Stream
- Perennial Stream



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Steep Slopes AND Erodible Soils

Hillsborough County Soil Survey

Representative Slope

 20% to 33%

K Factor (Whole Soil)

-  .10
-  .17
-  .20
-  .24
-  .28
-  .32
-  .37

 Not rated or not available

Highway

Legislative Class

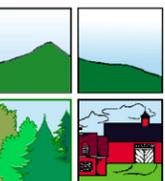
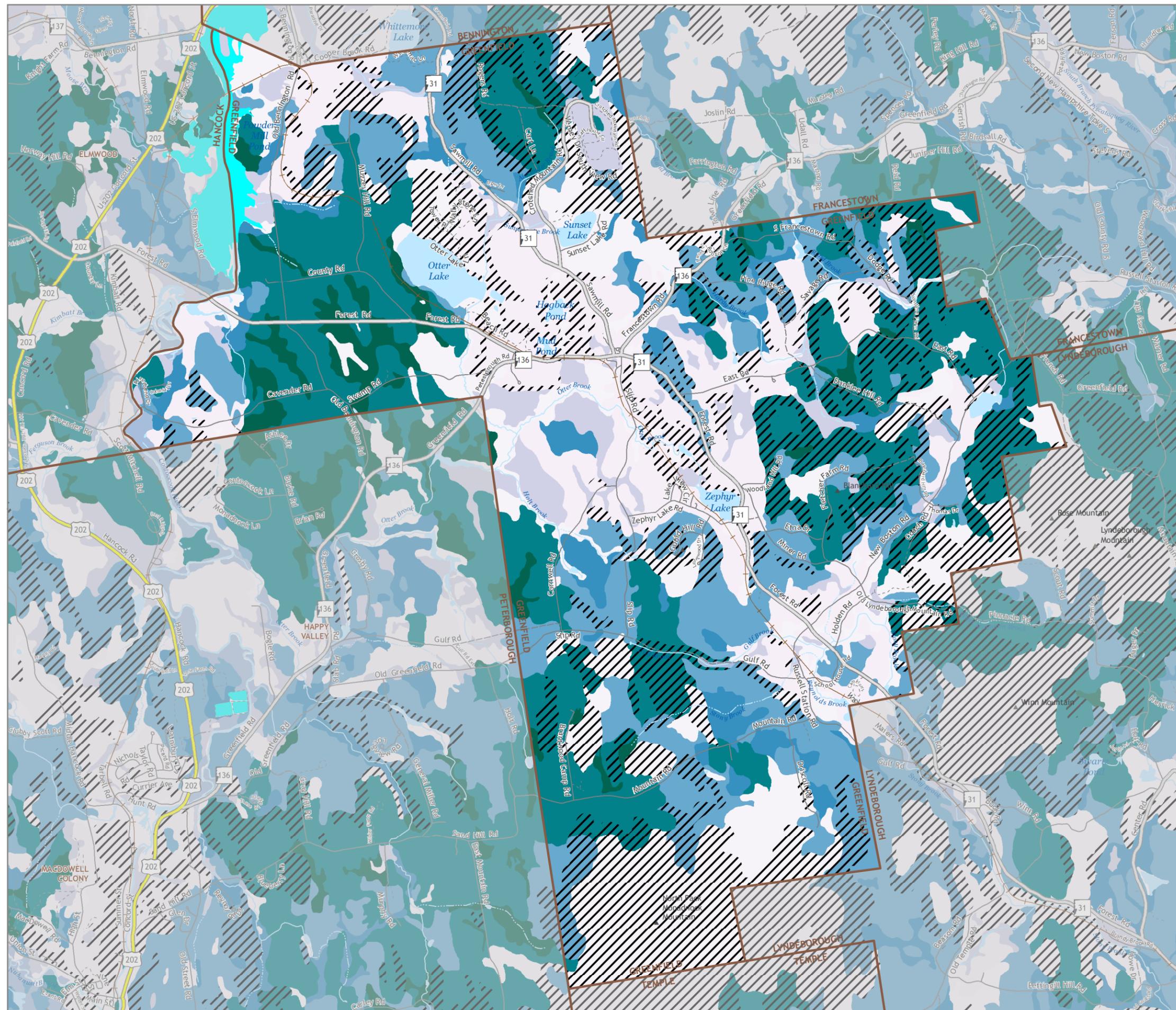
-  Class I
-  Class II
-  Class V
-  Class VI
-  Private
-  Summit
-  Municipal Boundary
-  Rail

Water Body

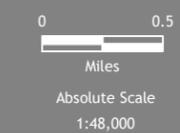
-  Reservoir
-  Lake or Pond

River or Stream

-  Intermittent Stream
-  Perennial Stream



SWRPC



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Sand Source

Sand Source

- Good
- Fair
- Poor
- Not rated

Highway

Legislative Class

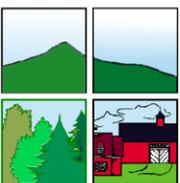
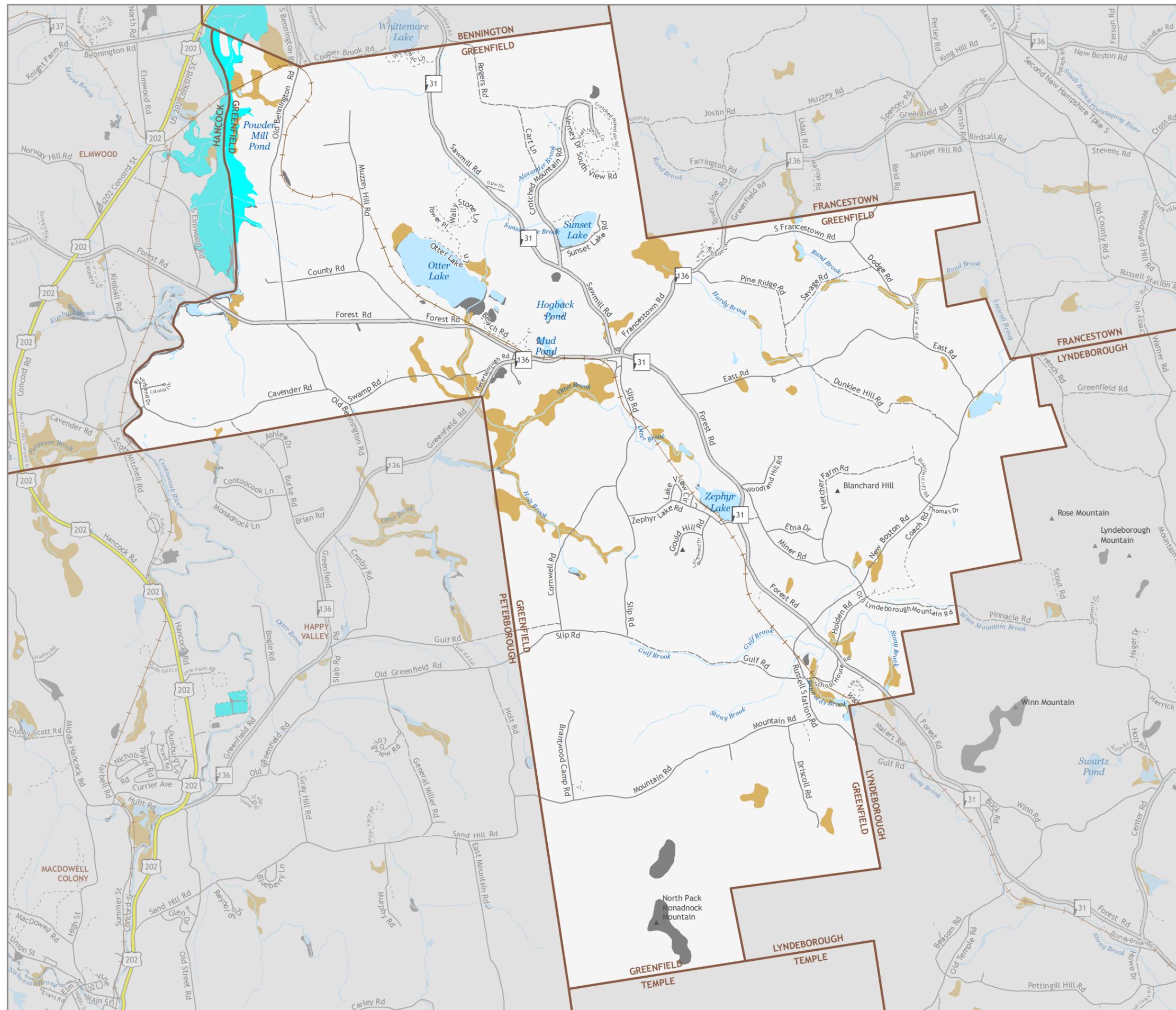
- Class I
- Class II
- Class V
- Class VI
- Private
- Summit
- Municipal Boundary
- Rail

Water Body

- Reservoir
- Lake or Pond

River or Stream

- Intermittent Stream
- Perennial Stream



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Gravel Source

Gravel Source

- Good
- Fair
- Poor
- Not rated

Highway

Legislative Class

- Class I
- Class II
- Class V
- Class VI
- Private
- Summit

Municipal Boundary

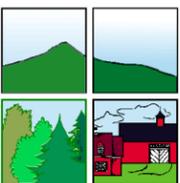
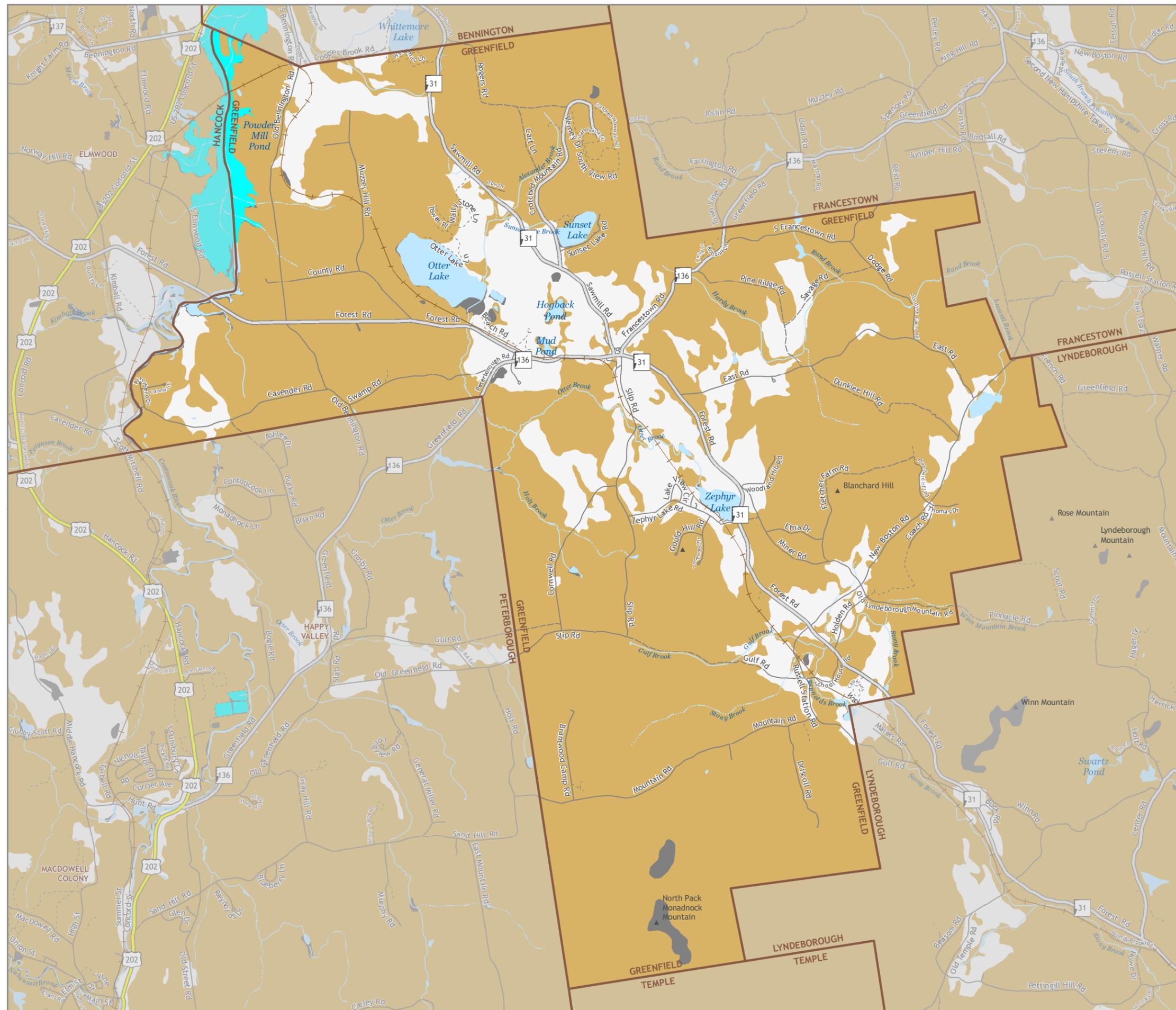
Rail

Water Body

- Reservoir
- Lake or Pond

River or Stream

- Intermittent Stream
- Perennial Stream



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Watersheds

10-digit Hydrologic Unit Code

Watershed Name

- Piscataquog River (0107000606)
- Souhegan River (0107000609)
- Upper Contoocook River (0107000301)

Boundary Line

Hydrologic Unit Code

- 8-digit (Subbasin)
- 10-digit (Watershed)
- 12-digit (Subwatershed)

Highway

Legislative Class

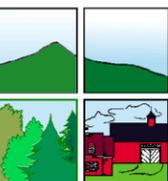
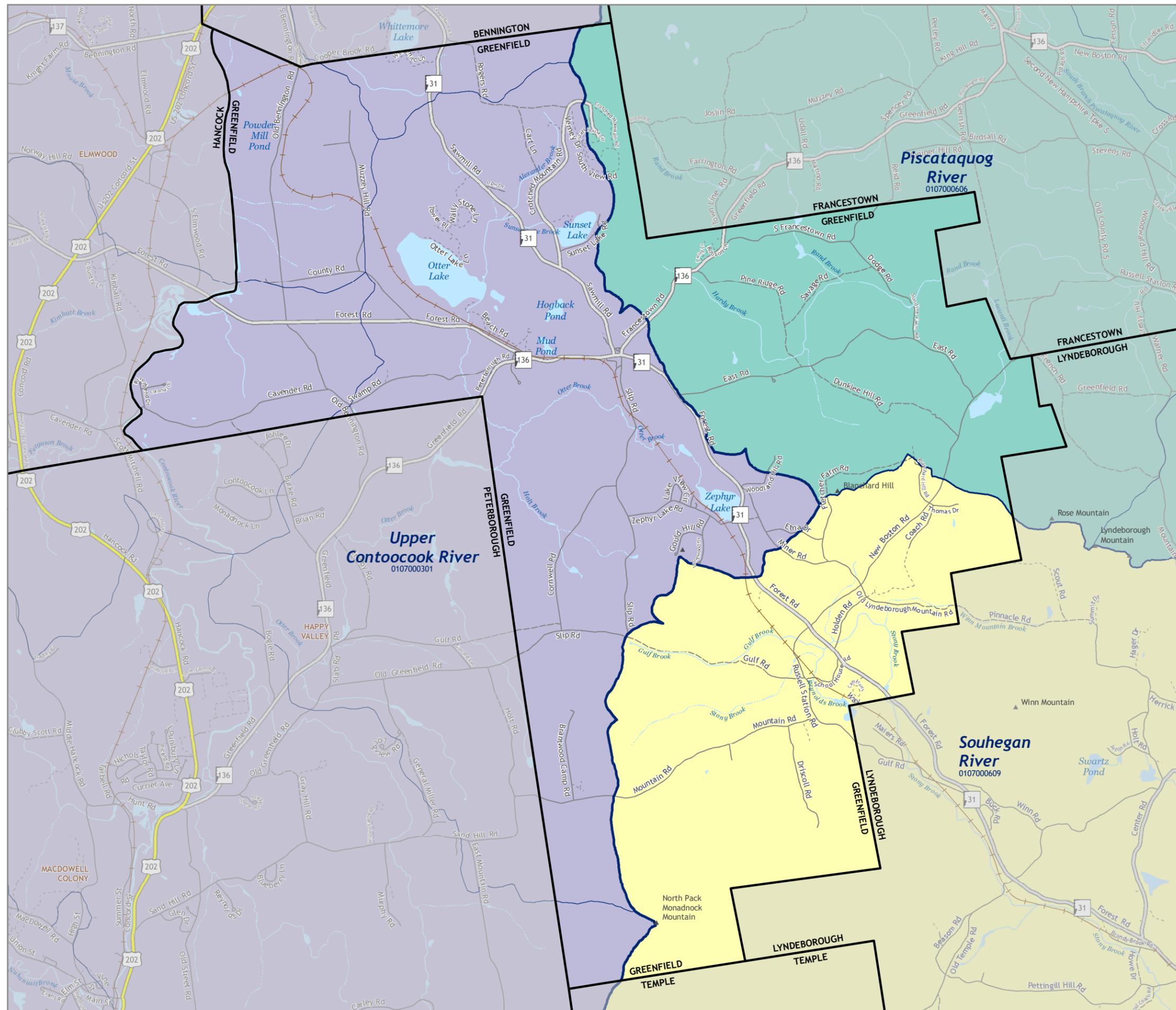
- Class I
- Class II
- Class V
- Class VI
- Private
- Summit
- Municipal Boundary
- Rail

Water Body

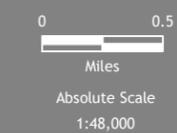
- Lake or Pond

River or Stream

- Intermittent Stream
- Perennial Stream

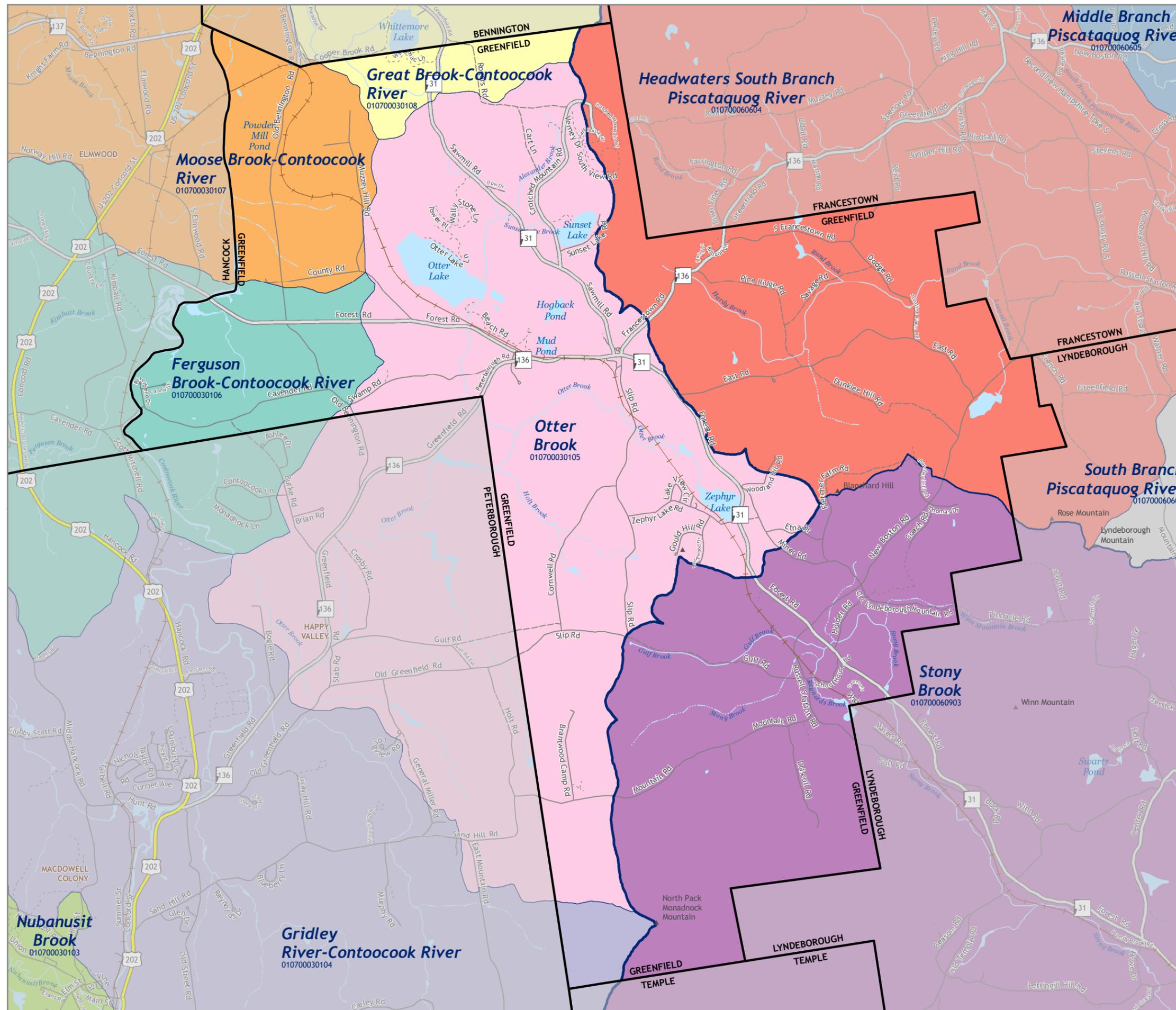


SWRPC



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Subwatersheds



12-digit Hydrologic Unit Code

Subwatershed Name

- Ferguson Brook-Contoocook River (010700030106)
- Great Brook-Contoocook River (010700030108)
- Gridley River-Contoocook River (010700030104)
- Headwaters South Branch Piscataquog River (010700060604)
- Middle Branch Piscataquog River (010700060605)
- Moose Brook-Contoocook River (010700030107)
- Nubanusit Brook (010700030103)
- Otter Brook (010700030105)
- South Branch Piscataquog River (010700060606)
- Stony Brook (010700060903)

Boundary Line

Hydrologic Unit Code

- 8-digit (Subbasin)
- 10-digit (Watershed)
- 12-digit (Subwatershed)

Highway

Legislative Class

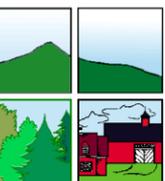
- Class I
- Class II
- Class V
- Class VI
- Private
- Summit
- Municipal Boundary
- Rail

Water Body

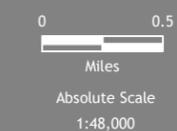
- Lake or Pond

River or Stream

- Intermittent Stream
- Perennial Stream



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Surface Waters AND Wetlands

National Wetland Inventory



Hillsborough County Soil Survey

Drainage Class

- Poorly drained
- Very poorly drained

Highway

Legislative Class

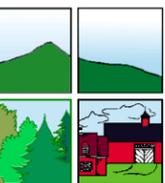
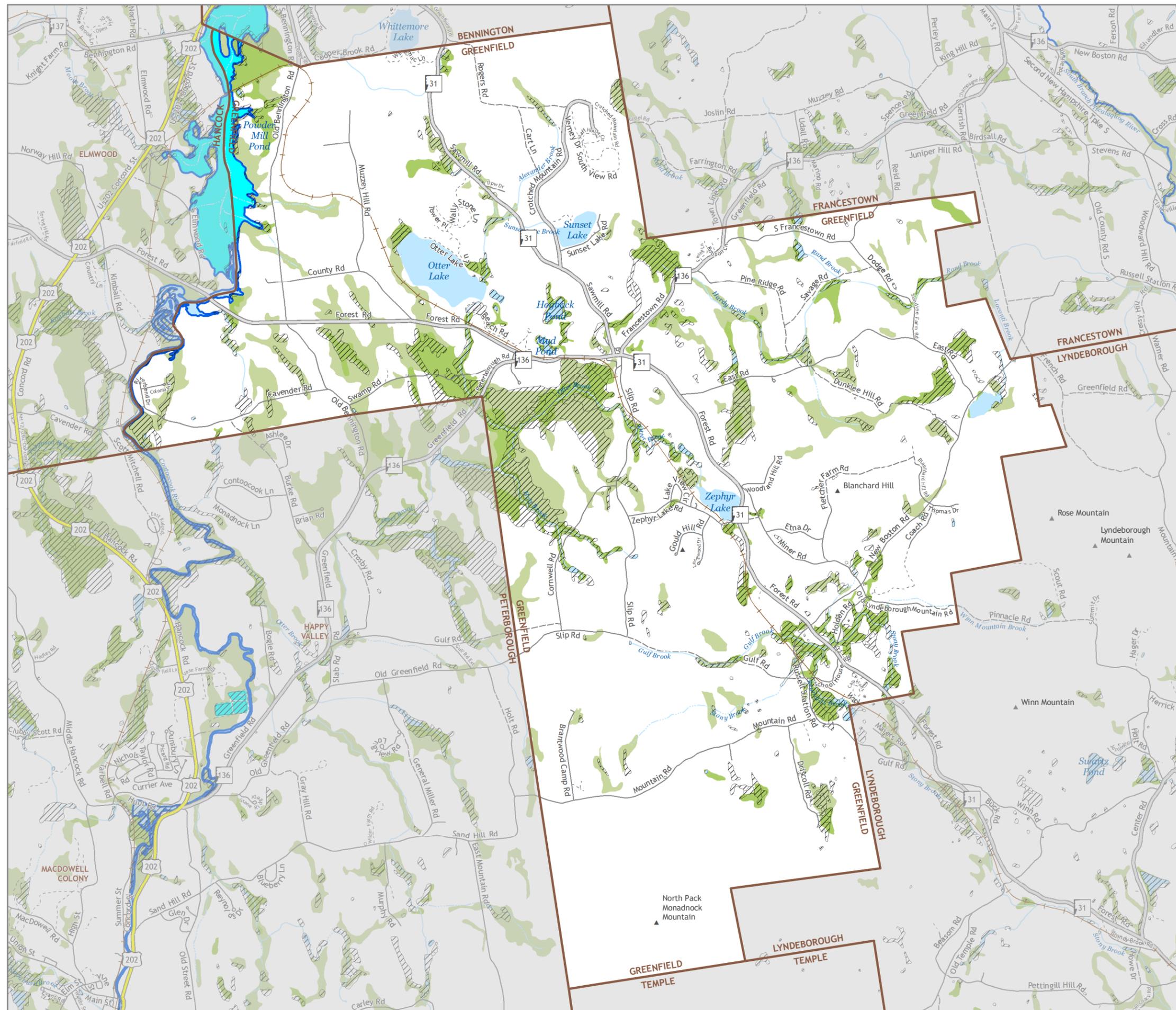
- Class I
- Class II
- Class V
- Class VI
- Private
- Summit
- Municipal Boundary
- Rail

Water Body

- Reservoir
- Lake or Pond

River or Stream

- Intermittent Stream
- Perennial Stream
- Designated River (NH RSA 483)

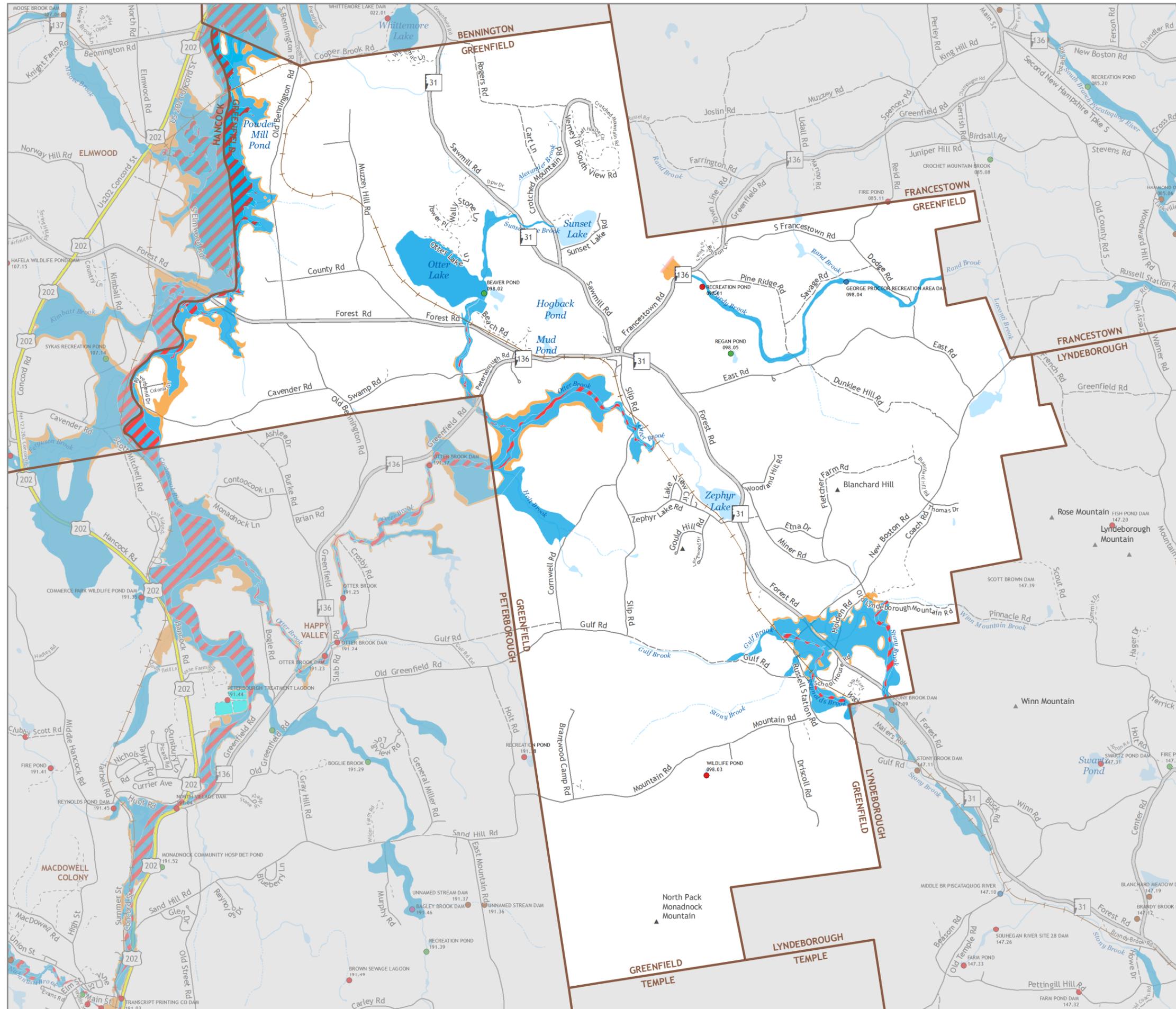


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Floodplain and Dams



Dam

Status

- Active
- Breached
- Exempt
- Not Built
- Ruins

Flood Hazard Area

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- 0.2% Annual Chance Flood Hazard

Flood Hazard Boundary

- Limit Line
- Special Flood Hazard Area / Flood Zone

Highway

by Legislative Class

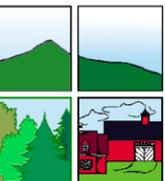
- Class I
- Class II
- Class V
- Class VI
- Private
- ▲ Summit
- Municipal Boundary
- Rail

Water Body

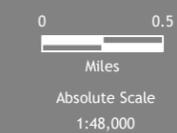
- Reservoir
- Lake or Pond

River or Stream

- Intermittent Stream
- Perennial Stream

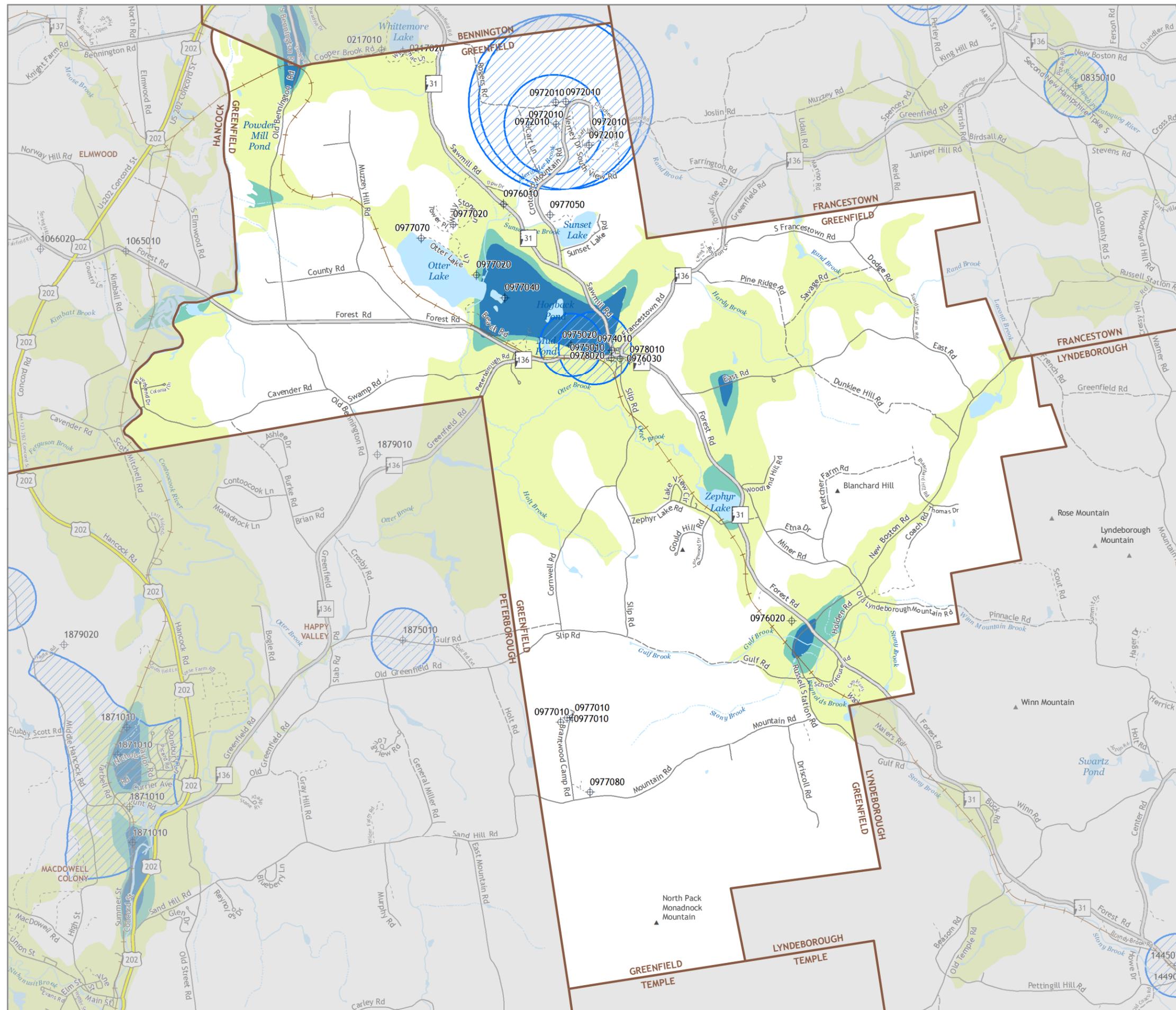


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Stratified Drift Aquifers AND Public Water Supplies



Stratified Drift Aquifer

Transmissivity (square feet per day)

- Greater than 4,000
- 2,000 - 4,000
- Less than 2,000

Public Water Supply

- Public Water Supply
- Wellhead Protection Area

Highway

Legislative Class

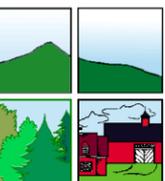
- Class I
- Class II
- Class V
- Class VI
- Private
- Summit
- Municipal Boundary
- Rail

Water Body

- Lake or Pond

River or Stream

- Intermittent Stream
- Perennial Stream



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Known and Potential Contamination Sites

Known and Potential Contamination Sites

- Local Potential Contamination Sources
- Hazardous Waste Generators
- Remediation Sites
- Underground Storage Tank
- Ⓣ Solid Waste Facility

Highway

Legislative Class

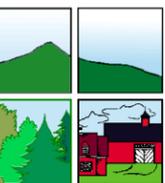
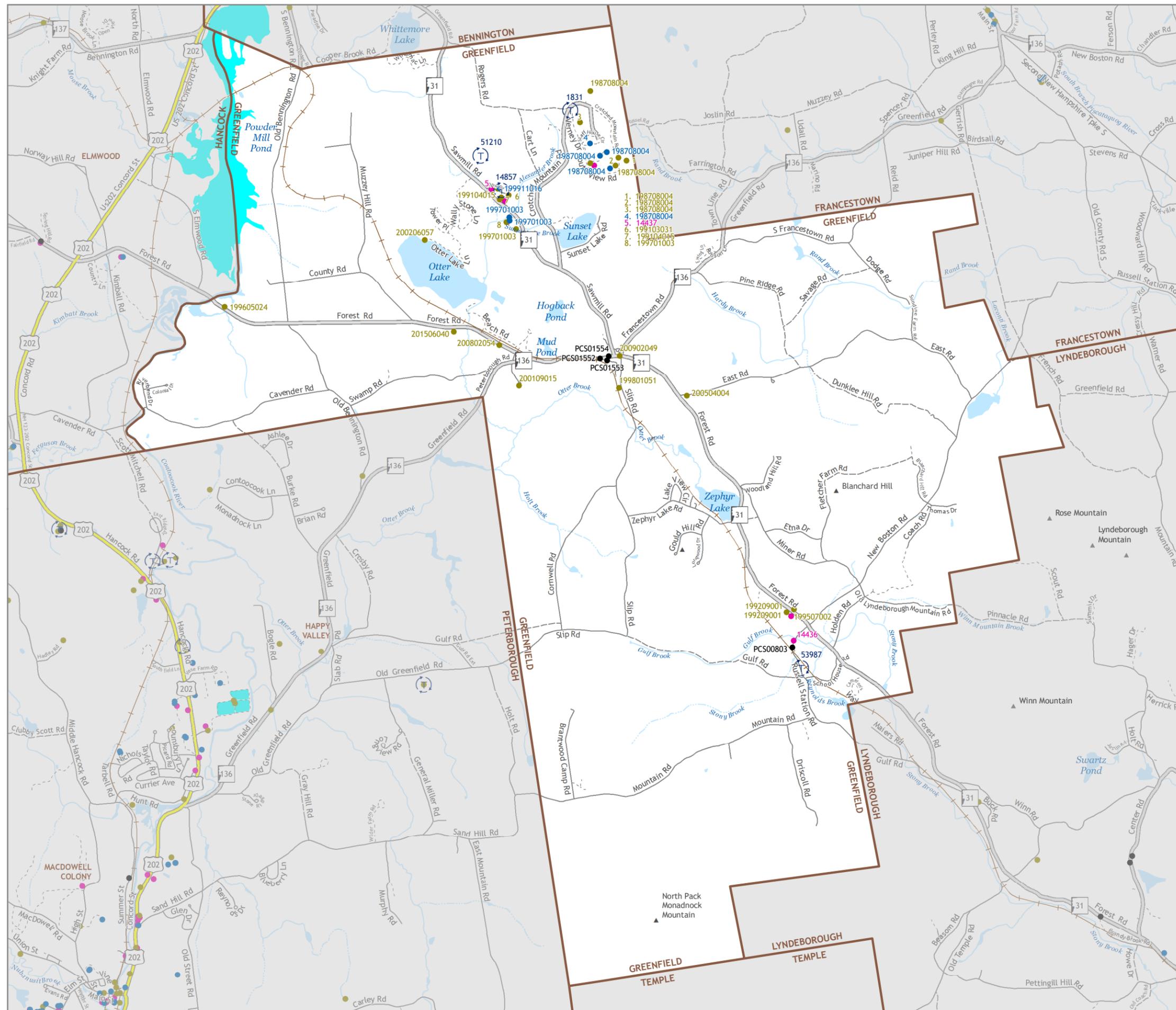
- Class I
- Class II
- Class V
- Class VI
- - - Private
- ▲ Summit
- Municipal Boundary
- Rail

Water Body

- Reservoir
- Lake or Pond

River or Stream

- - - Intermittent Stream
- Perennial Stream



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Wildlife Action Plan Land Cover

2015 Wildlife Action Plan

Wildlife Habitat Land Cover

-  Appalachian oak-pine
-  Cliff and Talus slope
-  Floodplain forest
-  Grassland
-  Hemlock-hardwood-pine
-  NLCD Barren or Developed
-  Northern hardwood-conifer
-  Northern swamp
-  Open water
-  Peatland
-  Rocky ridge
-  Temperate swamp
-  Marsh and shrub wetland

Highway

Legislative Class

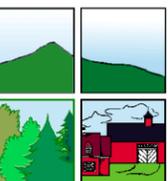
-  Class I
-  Class II
-  Class V
-  Class VI
-  Private
-  Summit
-  Municipal Boundary
-  Rail

Water Body

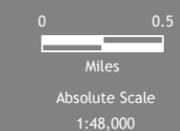
-  Lake or Pond

River or Stream

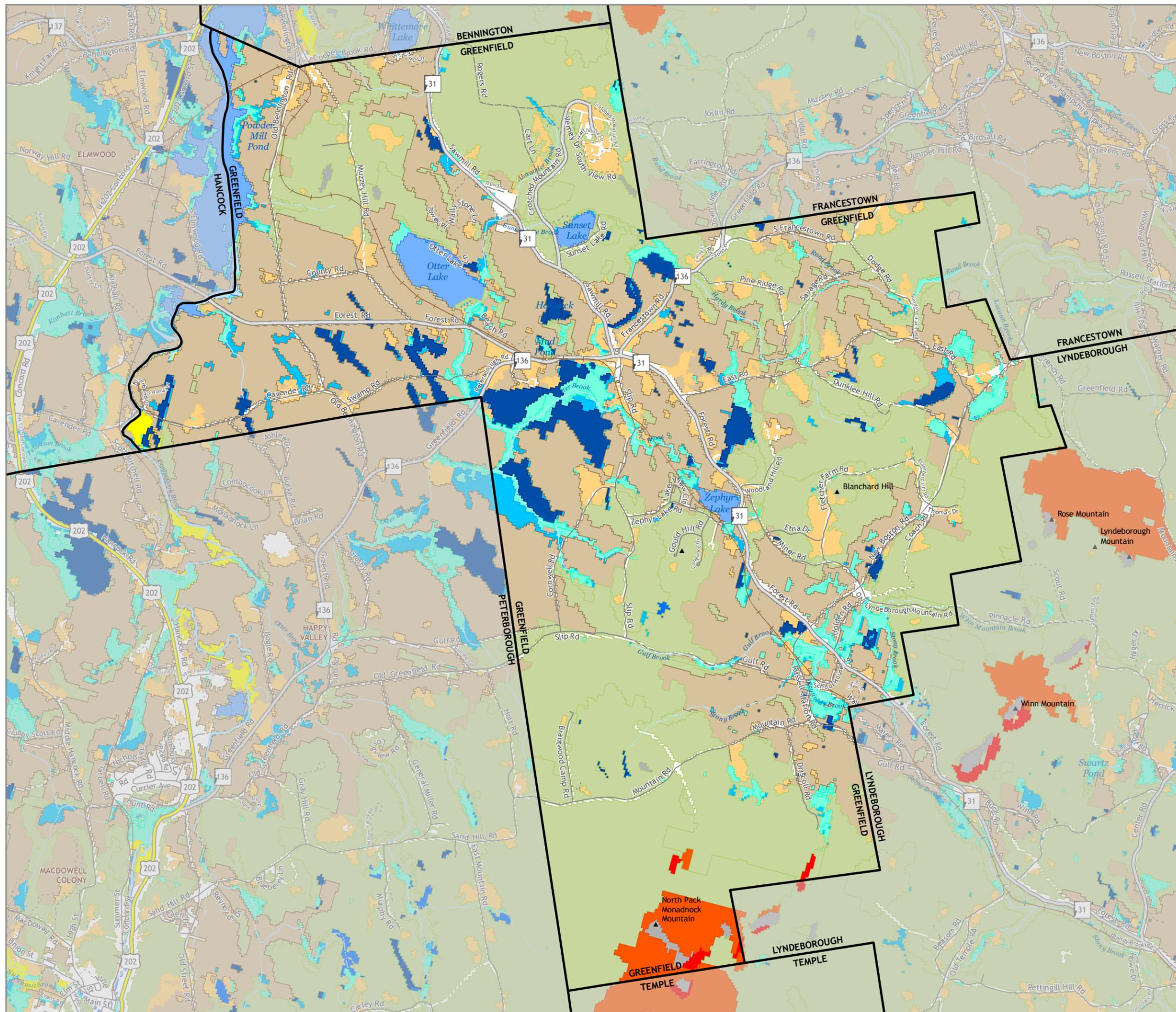
-  Intermittent Stream
-  Perennial Stream



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Wildlife Action Plan Priority Tiers

2015 Wildlife Action Plan

- Tier 1: Highest Ranked Habitat in New Hampshire
- Tier 2: Highest Ranked Habitat in Biological Region
- Tier 3: Supporting Landscapes
- Conservation Land

Highway

Legislative Class

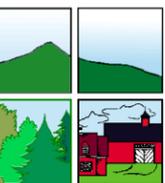
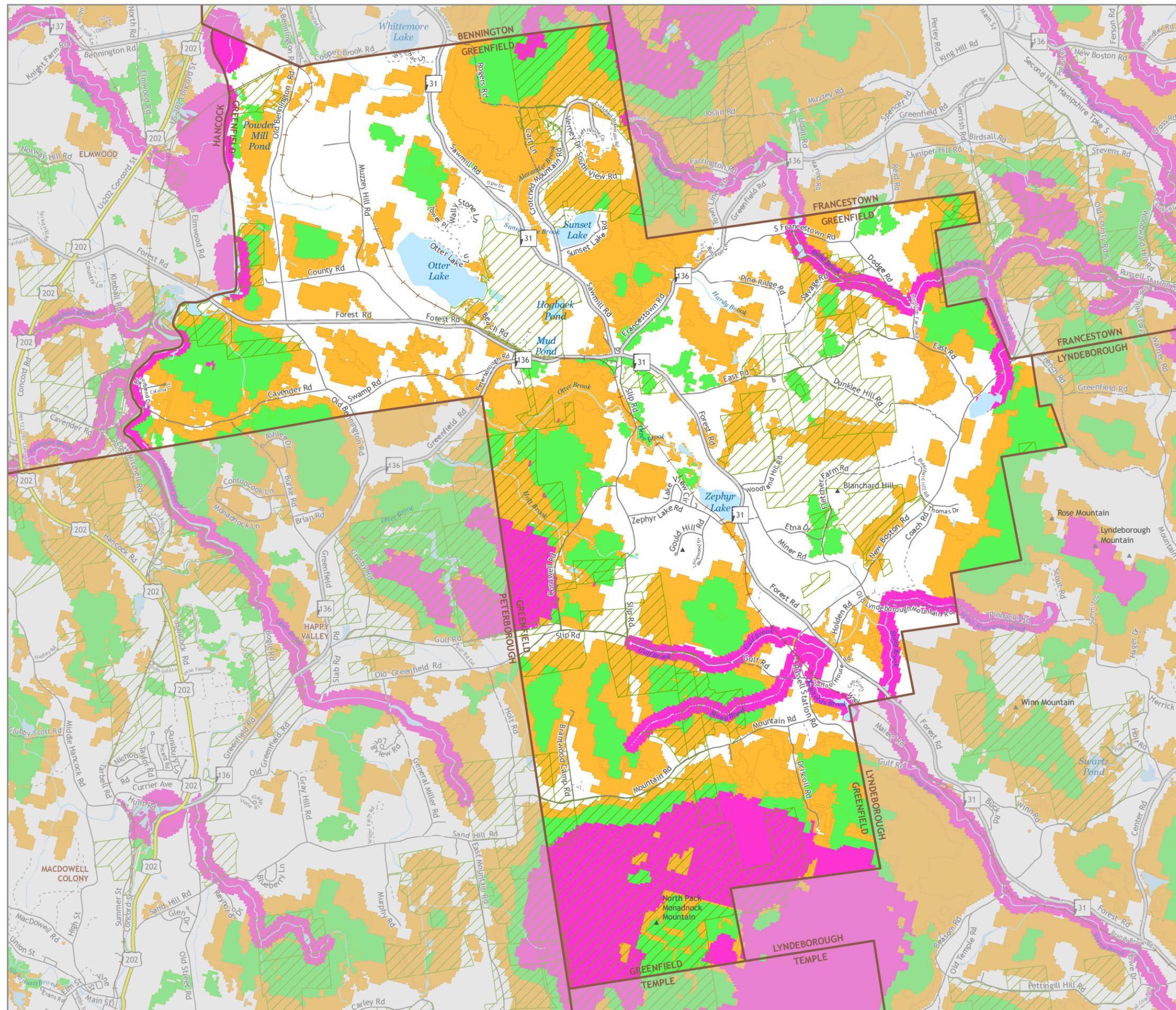
- Class I
- Class II
- Class V
- Class VI
- Private
- Summit
- Municipal Boundary
- Rail

Water Body

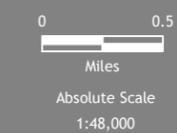
- Lake or Pond

River or Stream

- Intermittent Stream
- Perennial Stream



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TOWN OF GREENFIELD

NATURAL RESOURCES INVENTORY

MAP 18

Unfragmented Habitat

Unfragmented Habitat Blocks

Block Score (Higher is Better)

- 0 (less than 25 acres)
- 1 - 4
- 5 - 7
- 8 - 10
- 11 - 15

Highway

Legislative Class

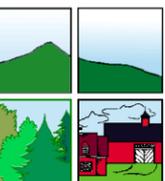
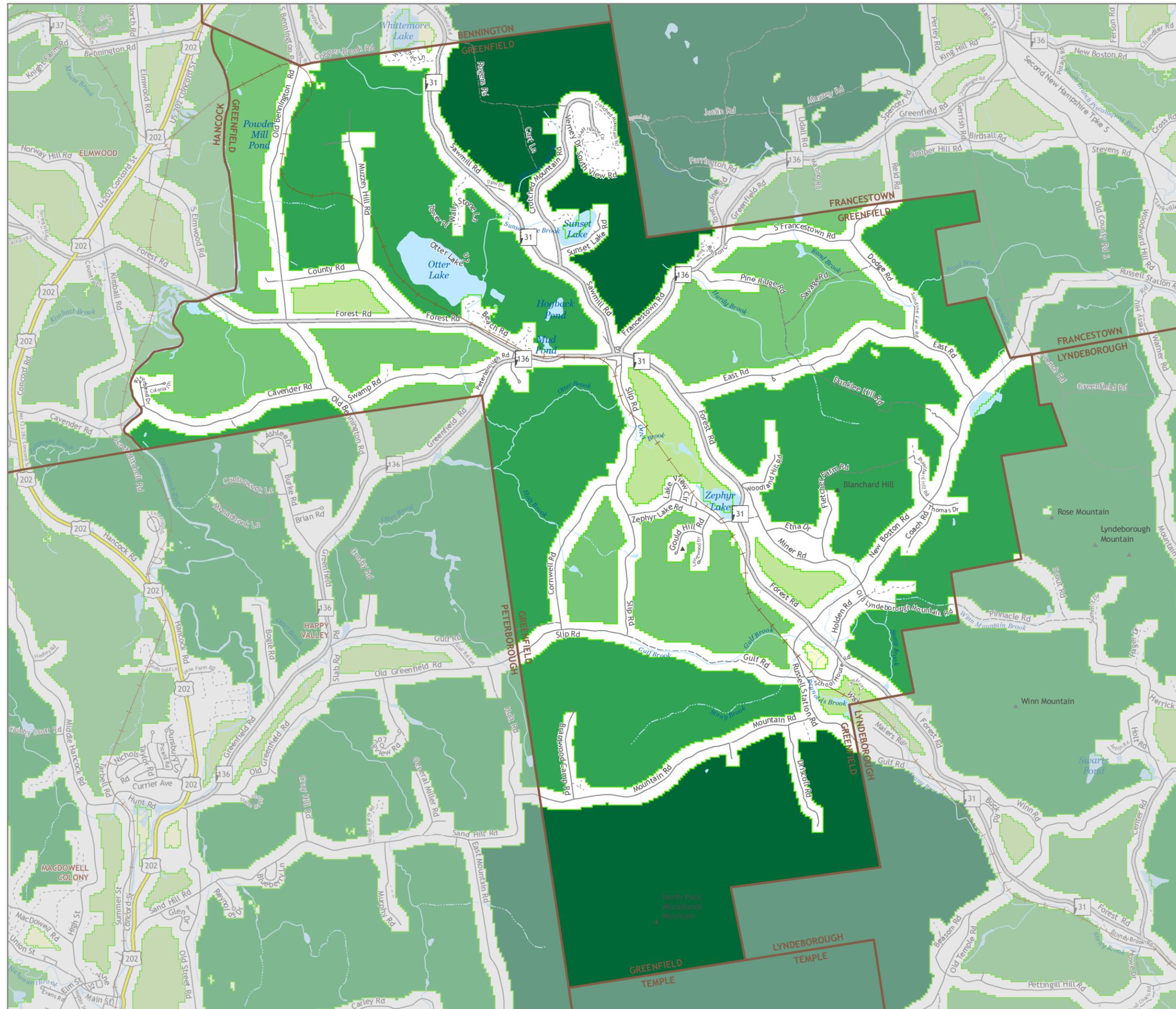
- Class I
- Class II
- Class V
- Class VI
- Private
- Summit
- Municipal Boundary
- Rail

Water Body

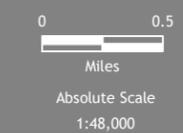
- Lake or Pond

River or Stream

- Intermittent Stream
- Perennial Stream



SWRPC



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Natural Heritage Bureau Data

New Hampshire Natural Heritage Bureau

 Rare or Exemplary Natural Community

Highway

Legislative Class

-  Class I
-  Class II
-  Class V
-  Class VI
-  Private

 Summit

 Municipal Boundary

 Rail

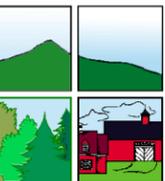
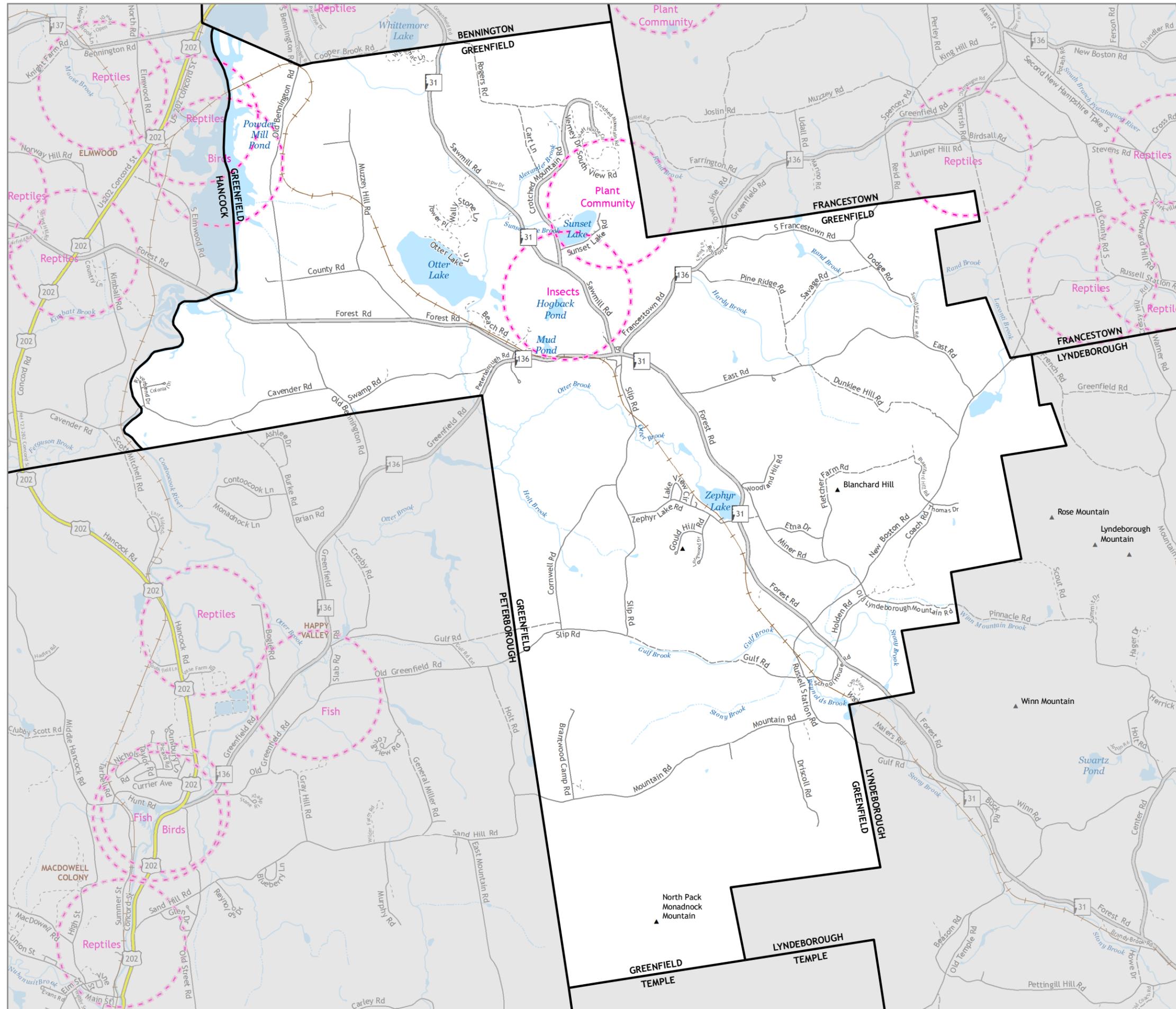
Water Body

 Lake, Pond, or Reservoir

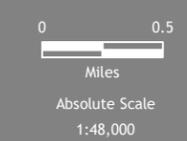
River or Stream

 Intermittent Stream

 Perennial Stream



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Quabbin to Cardigan Partnership Priorities

Quabbin to Cardigan Partnership Priorities

- Conservation Focus Area
- Supporting Landscape

Conservation Land



Highway

Legislative Class

- Class I
- Class II
- Class V
- Class VI
- Private
- Summit

Municipal Boundary

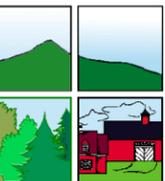
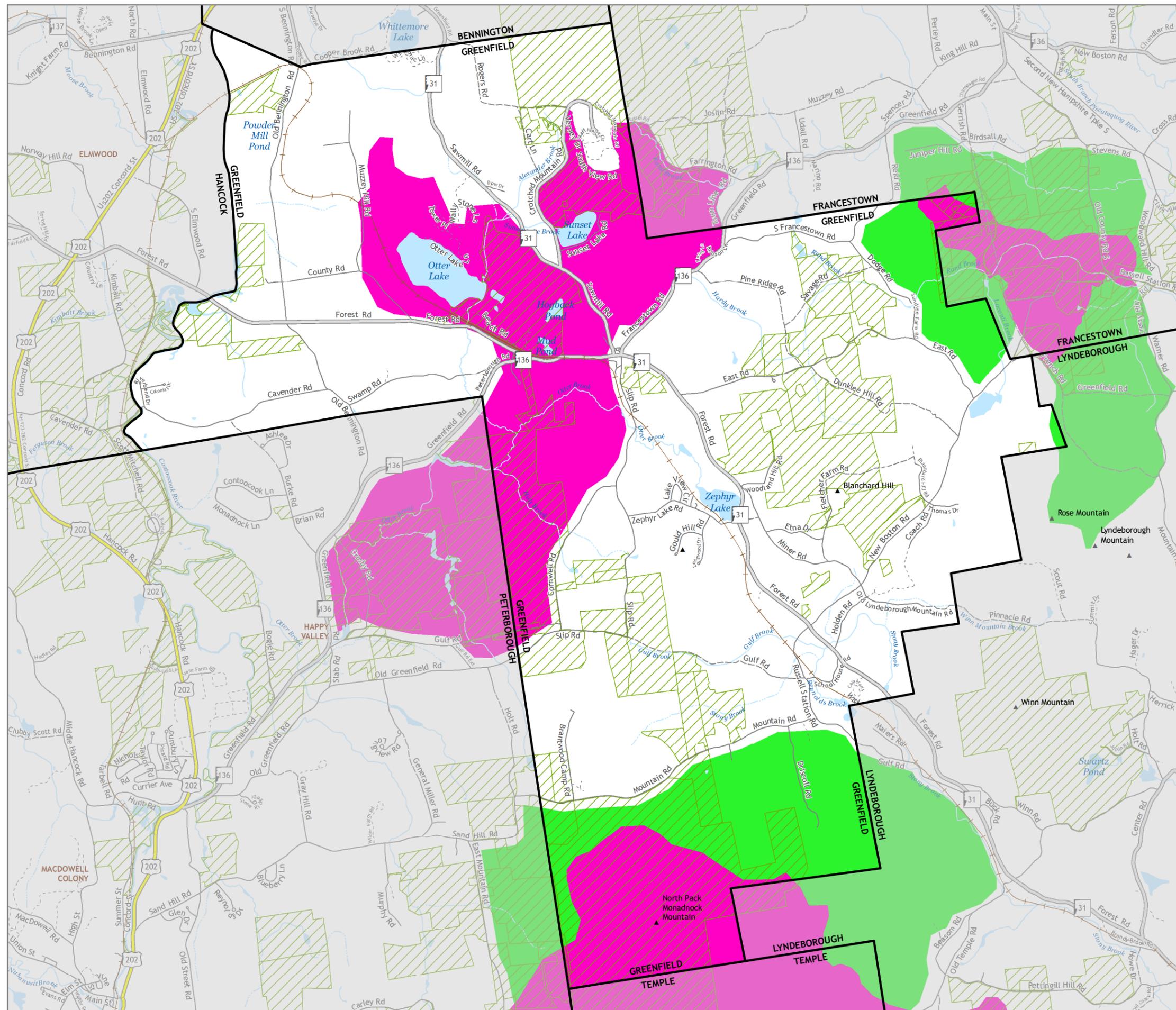


Water Body

- Lake or Pond

River or Stream

- Intermittent Stream
- Perennial Stream



SWRPC



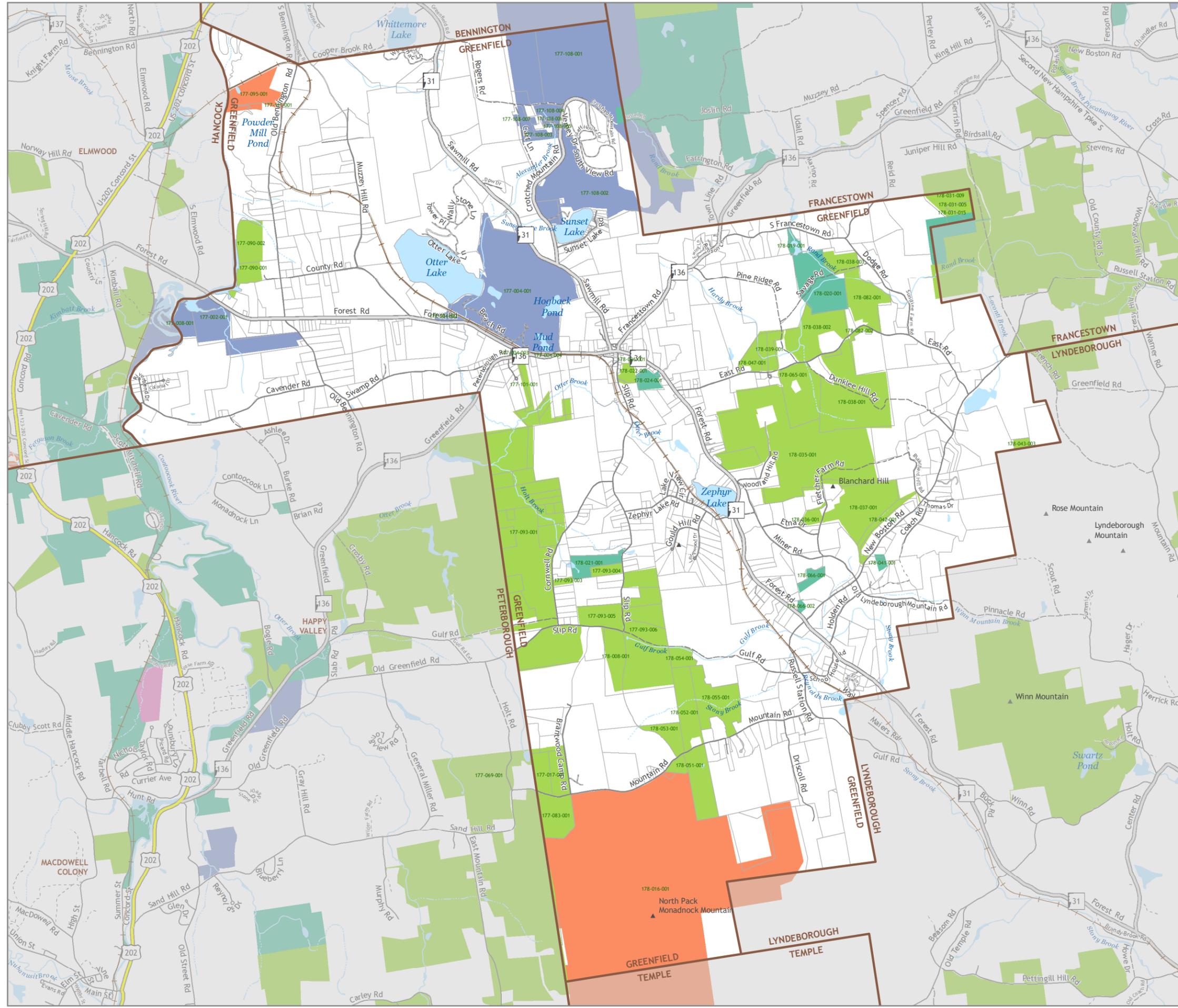
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TOWN OF GREENFIELD

NATURAL RESOURCES INVENTORY

MAP 21

Tax Parcels AND Conservation Land



Tax Parcel



Conservation Land

- Municipal/County
- Federal
- State
- Other Public/Quasi-Public Entity
- Private

Highway

Legislative Class

- Class I
- Class II
- Class V
- Class VI
- Private

Summit



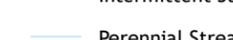
Municipal Boundary



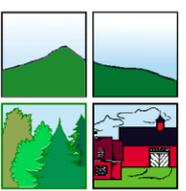
Rail



Water Body



River or Stream



SWRPC

0 0.5



Miles
Absolute Scale
1:48,000



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Invasive Plant Control Strategy

Priority Areas



Highway

Legislative Class

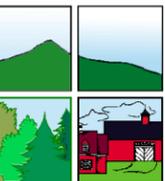
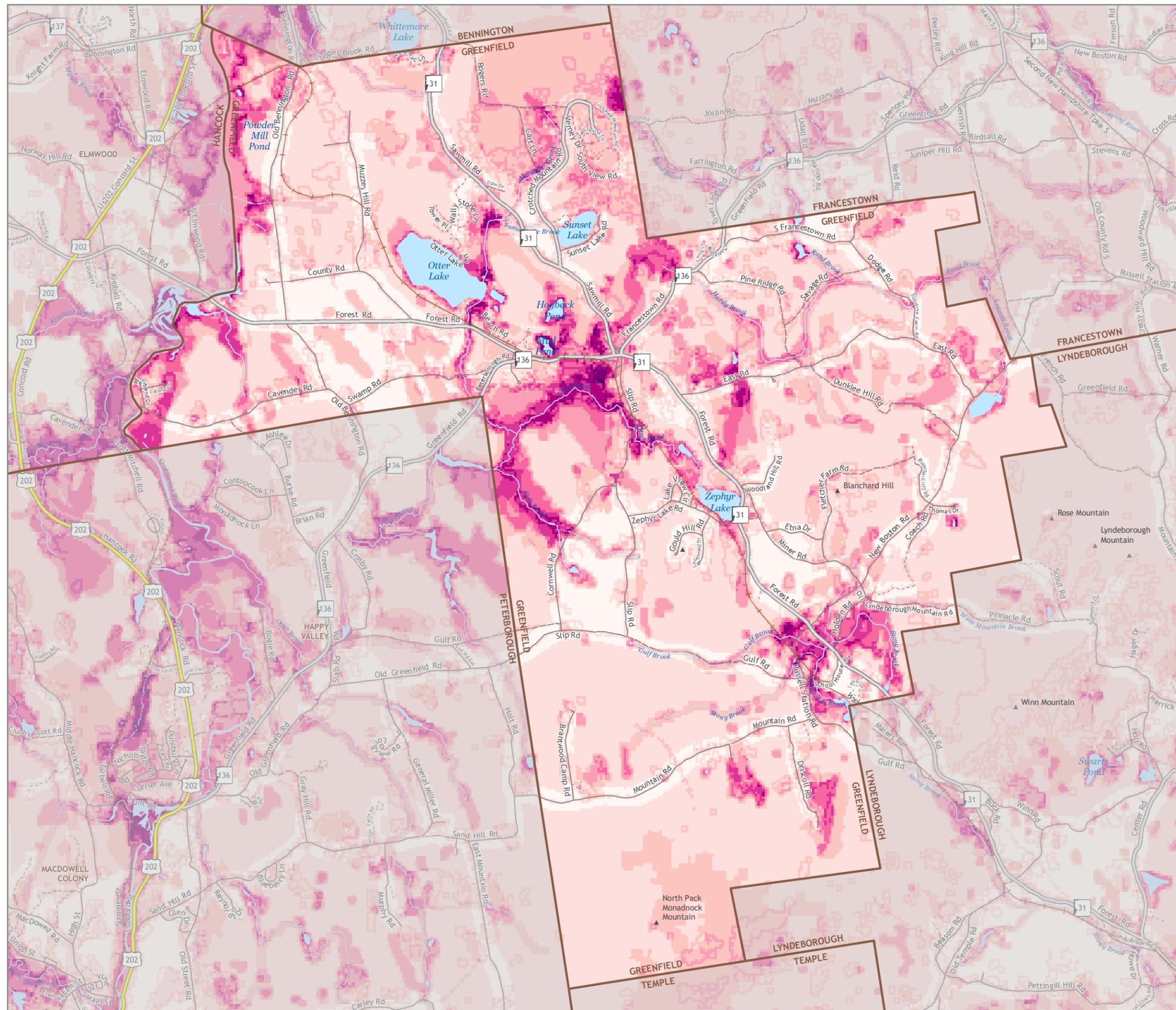
- Class I
- Class II
- Class V
- Class VI
- Class A Trail
- Private
- Summit
- Municipal Boundary
- Rail

Water Body

- Lake or Pond

River or Stream

- Intermittent Stream
- Perennial Stream



SWRPC



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Recreation

Office of Energy and Planning Recreation Inventory

Primary Use

- Field Sports
- Summer Camp
- Water Sports Area
- Other Areas
- Designated Bicycle Route
- Recreational Bicycle Loop
- Recreational Trails in New Hampshire

New Hampshire Fish and Game Public-access Fishing and Boating

Access Type

- Beach/Picnic
- Ramp
- Swimming
- Walk-in

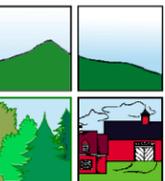
Highway

Legislative Class

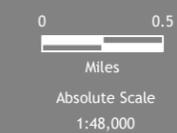
- Class I
- Class II
- Class V
- Class VI
- Class A Trail
- Private
- Summit
- Municipal Boundary
- Rail

Water Body

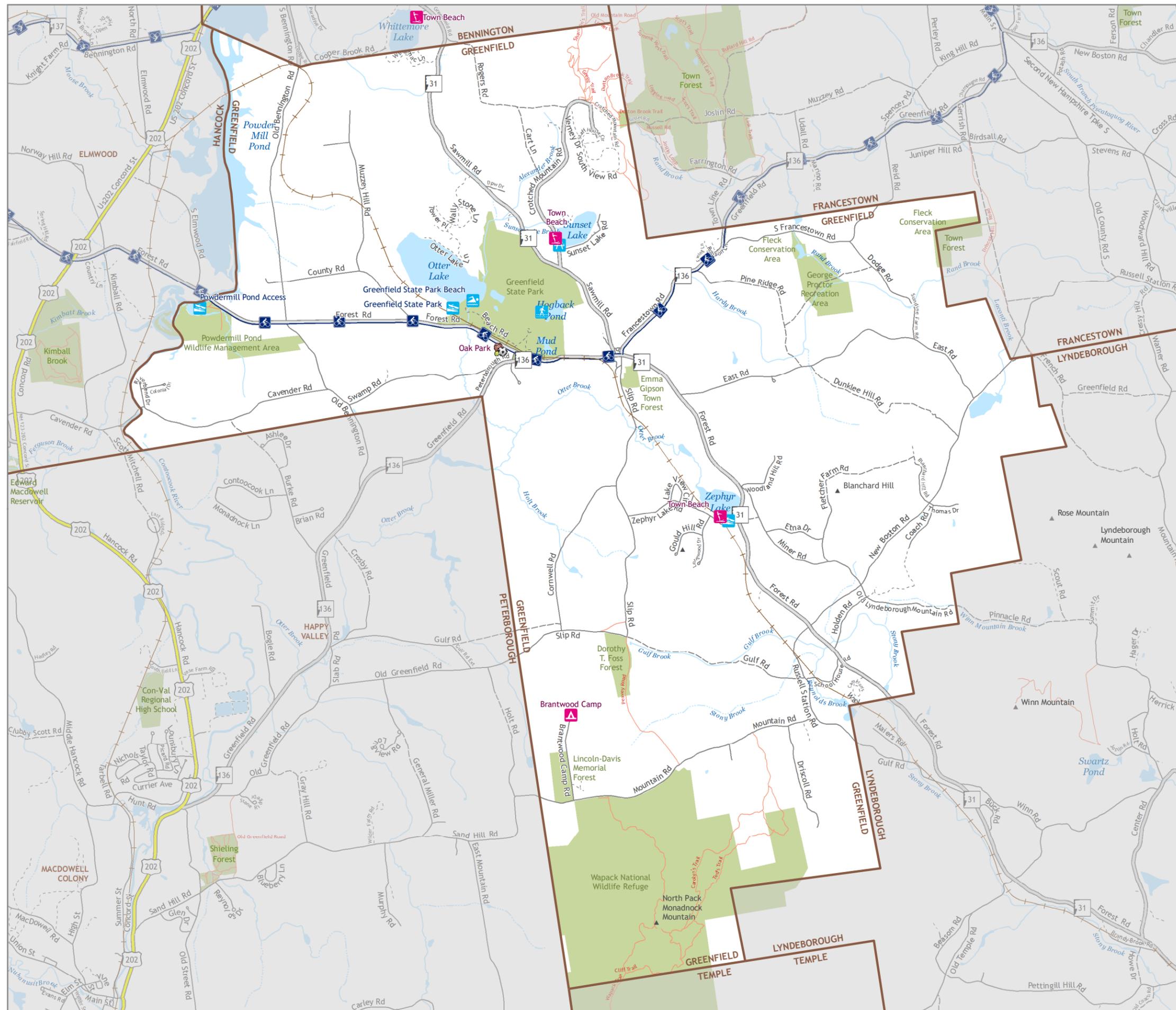
- Lake, Pond, or Reservoir
- Intermittent Stream
- Perennial Stream



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Historic Sites

National Register of Historic Places

- Cultural Resource Building
- Cultural Resource Structure
- Cultural Resource District

State Register of Historic Places



Cemetery



Highway

Legislative Class

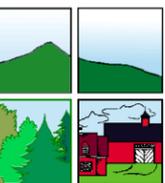
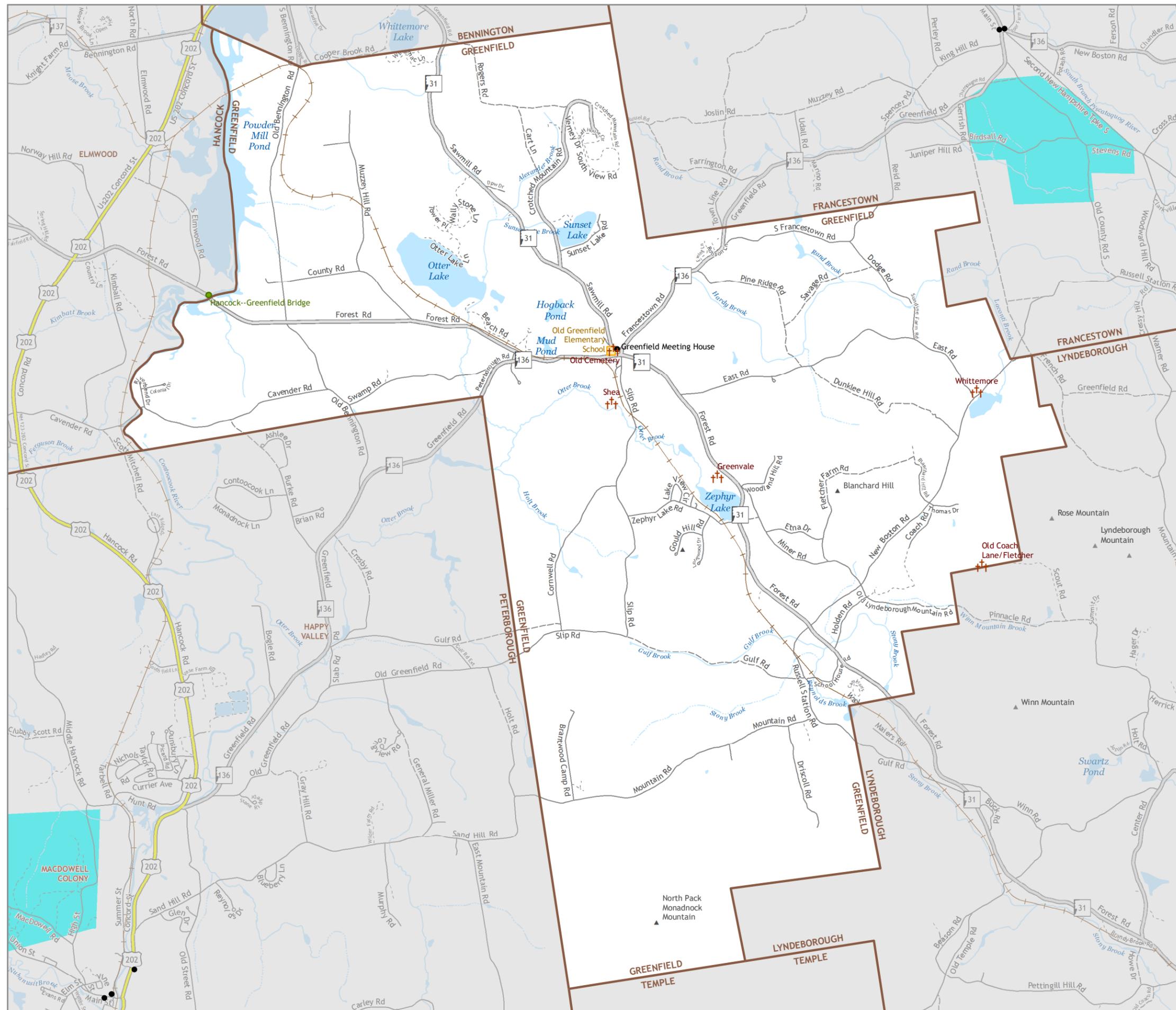
- Class I
- Class II
- Class V
- Class VI
- Private
- ▲ Summit
- Municipal Boundary
- + Rail

Water Body

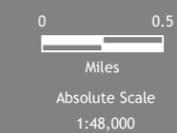
- Lake, Pond, or Reservoir

River or Stream

- Intermittent Stream
- Perennial Stream



SWRPC



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Appendix B

Greenfield Conservation Priorities Survey Questionnaire
Survey Results

Greenfield Conservation Priorities

Welcome

Thank you for participating in our survey, which is open to residents of Greenfield only. Your feedback is very important and will directly benefit the Conservation Commission and the Town. Responses are anonymous.

Greenfield Conservation Priorities

1. Do you feel that areas in Greenfield should be protected for recreation or conservation?

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Greenfield Conservation Priorities

2. Do you support the acquisition of lands for conservation purposes?

- Yes
- No
- No opinion

Greenfield Conservation Priorities

3. Do you believe that historic places (or areas) should be preserved in the Town?

- Yes
- No
- No opinion

Greenfield Conservation Priorities

4. If the Town could acquire **one** area for permanent protection against development, what or where would it be and why?

Greenfield Conservation Priorities

5. A fee incurred by taking land out of current use is a variable but important way for the Conservation Commission to invest in land protection. Currently, only the first \$5,000 of proceeds from the land use change tax are directed to the Commission for this purpose. Would you support raising the maximum amount allocated to the Conservation Commission for land protection?

- Yes
- No
- No opinion

Greenfield Conservation Priorities

6. Beyond \$5,000, what percent of proceeds from the land use change tax should be allocated to land protection?

0 100

Greenfield Conservation Priorities

7. Please indicate how important the preservation of open space in Greenfield is to you:

- Extremely important
- Very important
- Somewhat important
- Not so important
- Not at all important

Greenfield Conservation Priorities

8. Please rank Greenfield's features below of importance to you:

	Extremely important	Very important	Somewhat important	Not so important	Not at all important
Fields/agriculture	<input type="radio"/>				
Fish/wildlife management	<input type="radio"/>				
Wetlands	<input type="radio"/>				
Forest	<input type="radio"/>				
Rivers/streams	<input type="radio"/>				
Scenic views	<input type="radio"/>				
Ponds	<input type="radio"/>				
Open space	<input type="radio"/>				

Greenfield Conservation Priorities

9. Rank the following categories:

	Extremely important	Very important	Somewhat important	Not so important	Not at all important
Preserving land for water quality protection	<input type="radio"/>				
Preserving our forest land and working forests	<input type="radio"/>				
Preserving wildlife habitat	<input type="radio"/>				
Preserving farmland	<input type="radio"/>				
Preserving historic and cultural sites	<input type="radio"/>				
Preserving land for recreation, such as for hiking, snowmobiling, fishing, and hunting	<input type="radio"/>				
Improving and expanding State parks	<input type="radio"/>				
Improving or expanding local parks	<input type="radio"/>				

Greenfield Conservation Priorities

10. Please rank the importance of the following priorities. Think about the short term (the next 5 years).

	Extremely important	Very important	Somewhat important	Not so important	Not at all important
Protection of farms and agricultural land	<input type="radio"/>				
Protection of well sites, aquifers, water bodies, etc.	<input type="radio"/>				
Land acquisition for organized recreation (i.e. ball fields, soccer fields, playgrounds, etc.)	<input type="radio"/>				
Land acquisition for conservation (i.e. trails, education, hunting)	<input type="radio"/>				
Preservation of historical sites and buildings	<input type="radio"/>				
Protection of land for wildlife habitat	<input type="radio"/>				

Greenfield Conservation Priorities

11. Please rank the following methods of acquiring or restoring land:

	Rank 1	Rank 2	Rank 3
Town purchases land	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Town purchases conservation easement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Apply for grants to purchase land or conservation easement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Greenfield Conservation Priorities

12. In what ways do you enjoy Greenfield's recreational opportunities? Please check all that apply:

- Fishing
- Snow shoeing
- Hiking
- Hunting
- Horseback riding
- Swimming
- Mountain biking
- Personal watercraft
- Canoeing/boating
- Snowmobiling
- Nature observation
- Cross-country skiing

Other (please separate responses with a comma)

Greenfield Conservation Priorities

13. During the past year, did you or someone in your household visit any of the following areas?

- Wapack National Wildlife Refuge
- Greenfield State Park
- Sunset Lake
- Zephyr Lake
- George Proctor Recreation Area
- Powder Mill Pond
- Greenfield trails
- Unpaved roads for walking
- Robertson Easement

Other (please separate responses with a comma)

Greenfield Conservation Priorities

14. What topics are of interest to you?

Greenfield Conservation Priorities

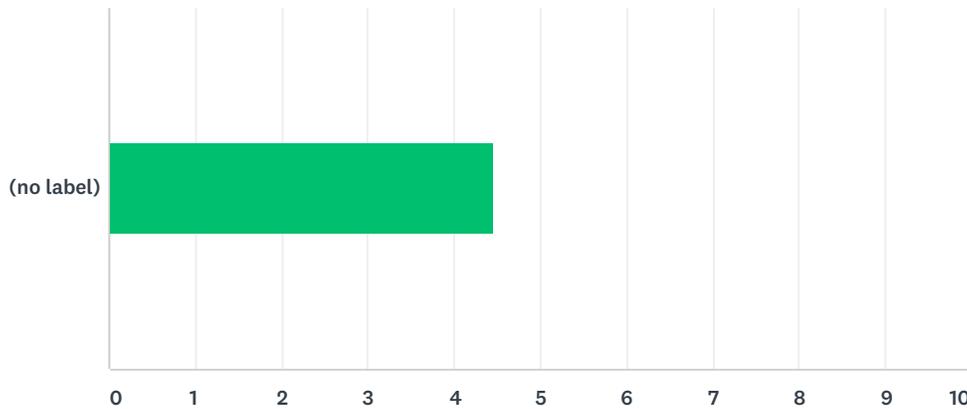
15. Please tell us about other ideas, suggestions, or comments you may have:

Greenfield Conservation Priorities

16. If you would like to receive a electronic copy of the forthcoming Natural Resources Inventory via e-mail, please enter your address below. You will be sent a copy or alerted when it is available on the Conservation Commission webpage.

Q1 Do you feel that areas in Greenfield should be protected for recreation or conservation?

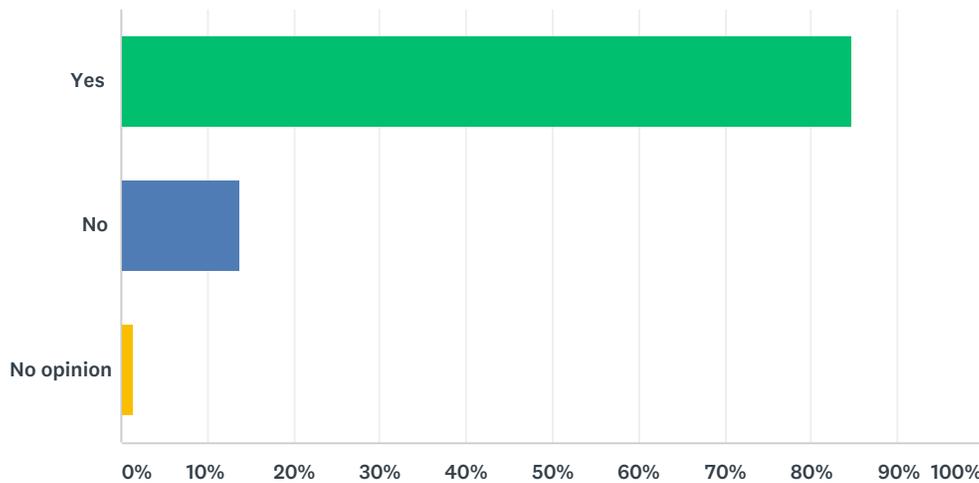
Answered: 73 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
(no label)	5.48% 4	1.37% 1	4.11% 3	20.55% 15	68.49% 50	73	4.45

Q2 Do you support the acquisition of lands for conservation purposes?

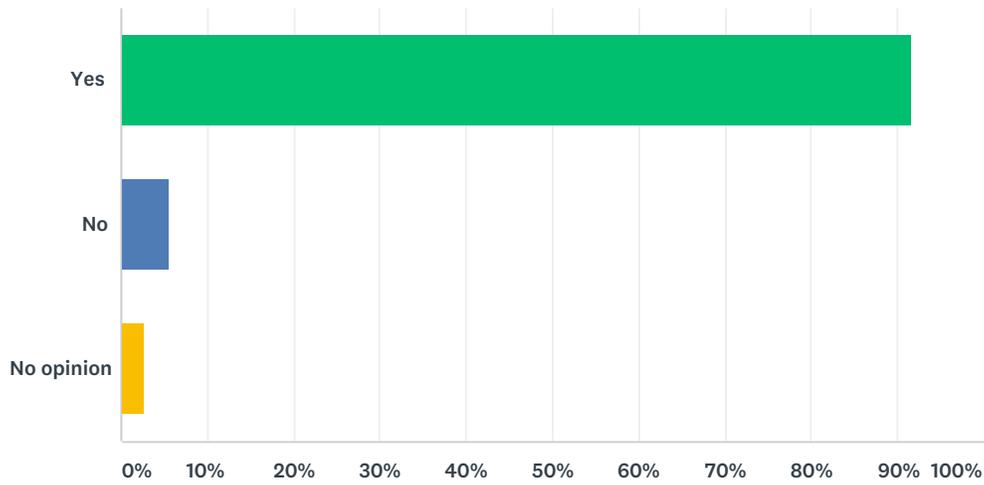
Answered: 72 Skipped: 1



ANSWER CHOICES	RESPONSES
Yes	84.72% 61
No	13.89% 10
No opinion	1.39% 1
TOTAL	72

Q3 Do you believe that historic places (or areas) should be preserved in the Town?

Answered: 71 Skipped: 2



ANSWER CHOICES	RESPONSES	
Yes	91.55%	65
No	5.63%	4
No opinion	2.82%	2
TOTAL		71

Q4 If the Town could acquire one area for permanent protection against development, what or where would it be and why?

Answered: 48 Skipped: 25

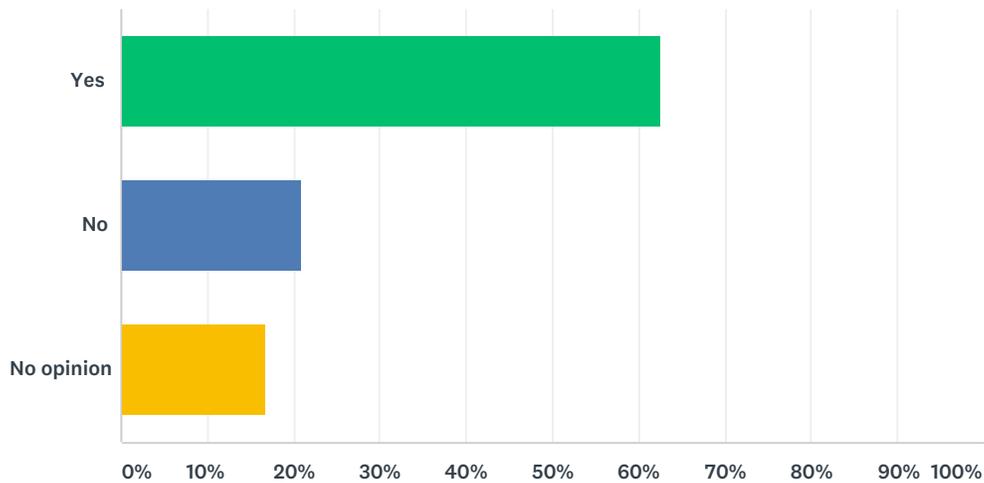
#	RESPONSES	DATE
1	power mill pond	10/26/2017 6:54 PM
2	The bog next to East Road	7/12/2017 12:32 PM
3	I don't think the general residents are aware of these possibilities.	7/12/2017 12:27 PM
4	Land around Lakes to stop more development	7/11/2017 7:43 AM
5	28 acres on Rt. 31 conserve it/ farm it and harvest wood	6/1/2017 1:53 PM
6	Retain the parsonage field (Gipson Trust ?), and the field (B & B ownership) between the Greenfield Inn and the library as open land-	5/29/2017 9:56 AM
7	zephyr lake outlet	5/26/2017 9:40 AM
8	Loconte property & surrounding areas - junction New Boston Rd. & East Rd.	5/22/2017 4:13 PM
9	Cavender Road	5/16/2017 8:47 AM
10	around one of the lake areas; waterways would be better protected.	5/14/2017 3:50 PM
11	Land off Russell Station Road that I believe is owned by Associated Grocers?	5/12/2017 6:51 PM

12	Not sure	5/11/2017 7:39 PM
13	the area around Zephyr Lake. Its a nice beach area	5/10/2017 12:17 PM
14	I'm not sure that can be answered. We MUST support the ConCOM and thrust those serving to protect areas as best they can, as they become available.	5/10/2017 7:07 AM
15	not sure what lands are public/private	5/10/2017 5:20 AM
16	No opinion	5/9/2017 7:14 PM
17	Center of town to preserve the small town look .	5/9/2017 5:49 PM
18	Crotched mountain slopes.	5/9/2017 5:33 PM
19	There already is places that are permanently protected; swamps or wetlands. And aren't there other places that are already covenanted or protected?	5/9/2017 5:20 PM
20	The largest available section of undeveloped land to prevent large scale development. Greenfield is a small town and the people who are here seem to like it that way. I am one of the young families here and I don't want any large scale development of any kind. Anything you could need is a short drive away.	5/9/2017 5:03 PM
21	Yankee Farmer/Yankee siege area It is a nice open area that could be used as a public space	5/9/2017 4:39 PM
22	Town Center area	5/8/2017 8:41 AM
23	Oak park. The town needs a place to be a gathering place. It may already be protected.	5/3/2017 3:57 PM
24	Veryfine and backside of Gould Hill. Most likely to be developed but it could make great hiking trails, which may be the best chance for Greenfield Econ Dev.	5/3/2017 9:21 AM
25	along mountain rd because of the scenic north pack mtn and woodlands that are great to hike	4/22/2017 10:03 AM
26	The rest of the Robertson farm, that is, the big field that is open with a view of the mountain.	4/21/2017 7:26 PM
27	Land immediately surrounding the State Park. Preserve rural character.	4/21/2017 9:33 AM
28	open spaces would be nice	4/19/2017 12:30 PM
29	Property near and around Sunset Lake. To preserve the small town swimming area feel.	4/18/2017 10:12 AM
30	Oak Park. Nice central location however needs to be refurbished, currently run down and shabby. Nice basketball court, tennis court, pavilion/gazebo uplift, nice children's playground area and equipment. then all should be better maintained.	4/18/2017 8:07 AM
31	Swamp area on Route 136 near Pine Ridge Road - home to lots of different bird, duck and geese species as well as larger wildlife	4/17/2017 7:28 PM
32	None	4/14/2017 5:37 PM
33	The private property along Otter Lake. To preserve the quality of the lake and perhaps let the state expand the State Park.	4/14/2017 1:43 PM
34	The 3 lots around the pond at the end of New Boston Road, facing the junction with East Road. This is excellent habitat for waterfowl and a nice, peaceful location.	4/14/2017 12:22 PM
35	Diamond swamp as a watershed	4/14/2017 9:20 AM
36	Land around Crotched Mountain Rehabilitation Center and Sunset Lake It is the heart of Greenfield	4/14/2017 8:43 AM
37	Any available area around North Pack.	4/14/2017 7:58 AM
38	I would like to see a conservation easement on most of the land owned by the Crotched Mountain Rehabilitation Center.	4/13/2017 6:33 PM
39	not a clue...	4/13/2017 6:23 PM
40	Any land along water	4/13/2017 5:34 PM
41	wetlands	4/13/2017 5:33 PM
42	Powdermill Pond	4/13/2017 5:32 PM
43	Not sure	4/13/2017 5:29 PM

44	Old Ryhmes gas station property... Possible downtown park..	4/13/2017 1:33 PM
45	Exact site unknown...but somewhere with trails and fields for walking/hiking/biking.	4/4/2017 8:48 PM
46	The dirt part of slip road. It know many people who use this area for peaceful runs and walks and it is home to many animals. I would hate to see it get developed in	4/3/2017 12:07 PM
47	New to area, want to protect all of Greenfield that we could.	3/31/2017 1:24 PM
48	We already have enough protected lands, too much if the focus is solely on lands that have been removed from the tax rolls.	3/31/2017 9:54 AM

Q5 A fee incurred by taking land out of current use is a variable but important way for the Conservation Commission to invest in land protection. Currently, only the first \$5,000 of proceeds from the land use change tax are directed to the Commission for this purpose. Would you support raising the maximum amount allocated to the Conservation Commission for land protection?

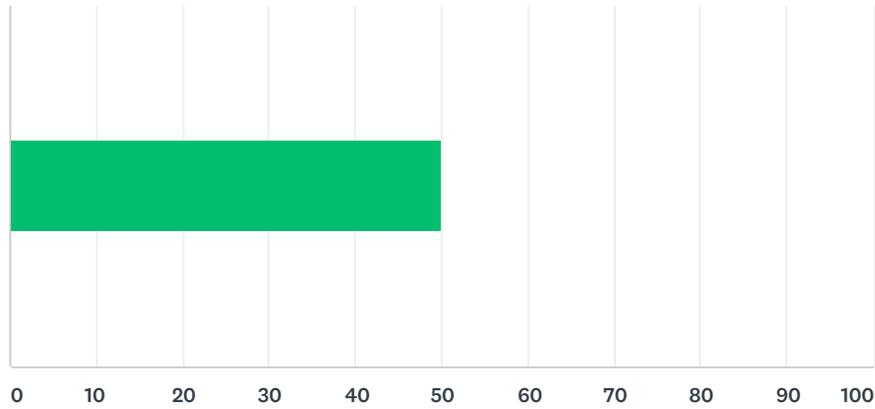
Answered: 72 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	62.50%	45
No	20.83%	15
No opinion	16.67%	12
TOTAL		72

Q6 Beyond \$5,000, what percent of proceeds from the land use change tax should be allocated to land protection?

Answered: 41 Skipped: 32



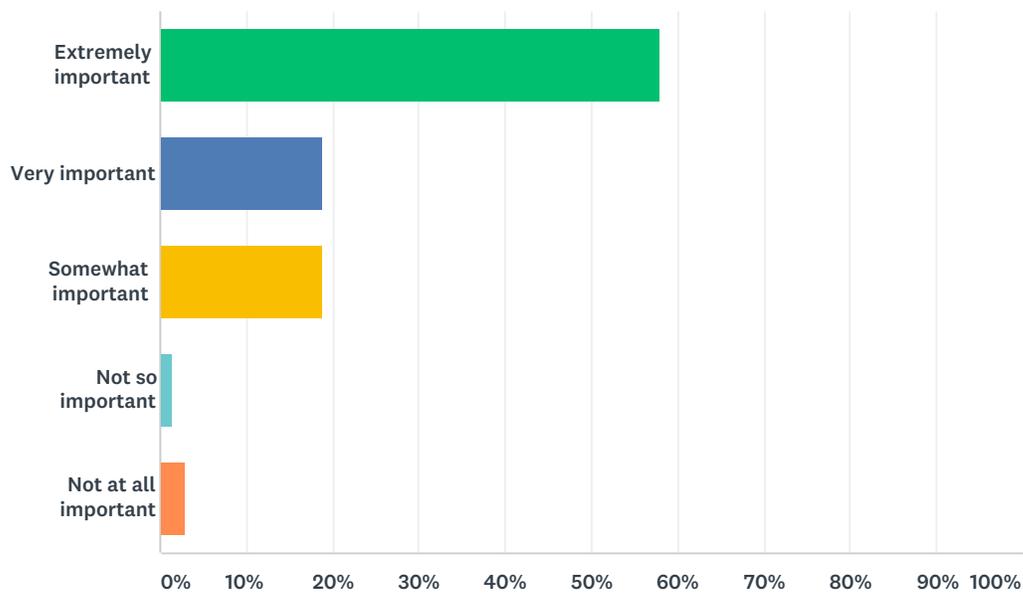
ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
	50	2,051	41
Total Respondents: 41			

#		DATE
1	10	10/26/2017 6:55 PM
2	50	7/12/2017 12:27 PM
3	33	6/1/2017 1:54 PM
4	100	5/26/2017 9:40 AM
5	100	5/22/2017 4:14 PM
6	10	5/22/2017 12:22 PM
7	10	5/22/2017 10:33 AM
8	100	5/16/2017 8:48 AM
9	25	5/14/2017 3:50 PM
10	10	5/13/2017 12:08 PM
11	50	5/10/2017 7:08 AM
12	50	5/10/2017 5:20 AM
13	50	5/9/2017 7:16 PM
14	2	5/8/2017 8:51 AM
15	100	5/3/2017 9:22 AM
16	51	4/22/2017 10:04 AM
17	100	4/21/2017 7:26 PM
18	50	4/21/2017 9:34 AM
19	10	4/18/2017 8:07 AM
20	60	4/17/2017 7:28 PM
21	100	4/17/2017 7:27 PM
22	50	4/16/2017 9:09 PM
23	20	4/14/2017 3:30 PM
24	15	4/14/2017 1:44 PM
25	50	4/14/2017 12:23 PM
26	15	4/14/2017 8:46 AM

27	50	4/14/2017 7:59 AM
28	15	4/14/2017 6:52 AM
29	75	4/13/2017 10:04 PM
30	75	4/13/2017 7:01 PM
31	100	4/13/2017 6:34 PM
32	25	4/13/2017 6:16 PM
33	50	4/13/2017 5:35 PM
34	50	4/13/2017 5:34 PM
35	15	4/13/2017 5:30 PM
36	50	4/13/2017 5:25 PM
37	100	4/13/2017 1:34 PM
38	50	4/6/2017 3:08 PM
39	25	4/4/2017 8:48 PM
40	100	4/3/2017 12:10 PM
41	50	3/31/2017 1:24 PM

Q7 Please indicate how important the preservation of open space in Greenfield is to you:

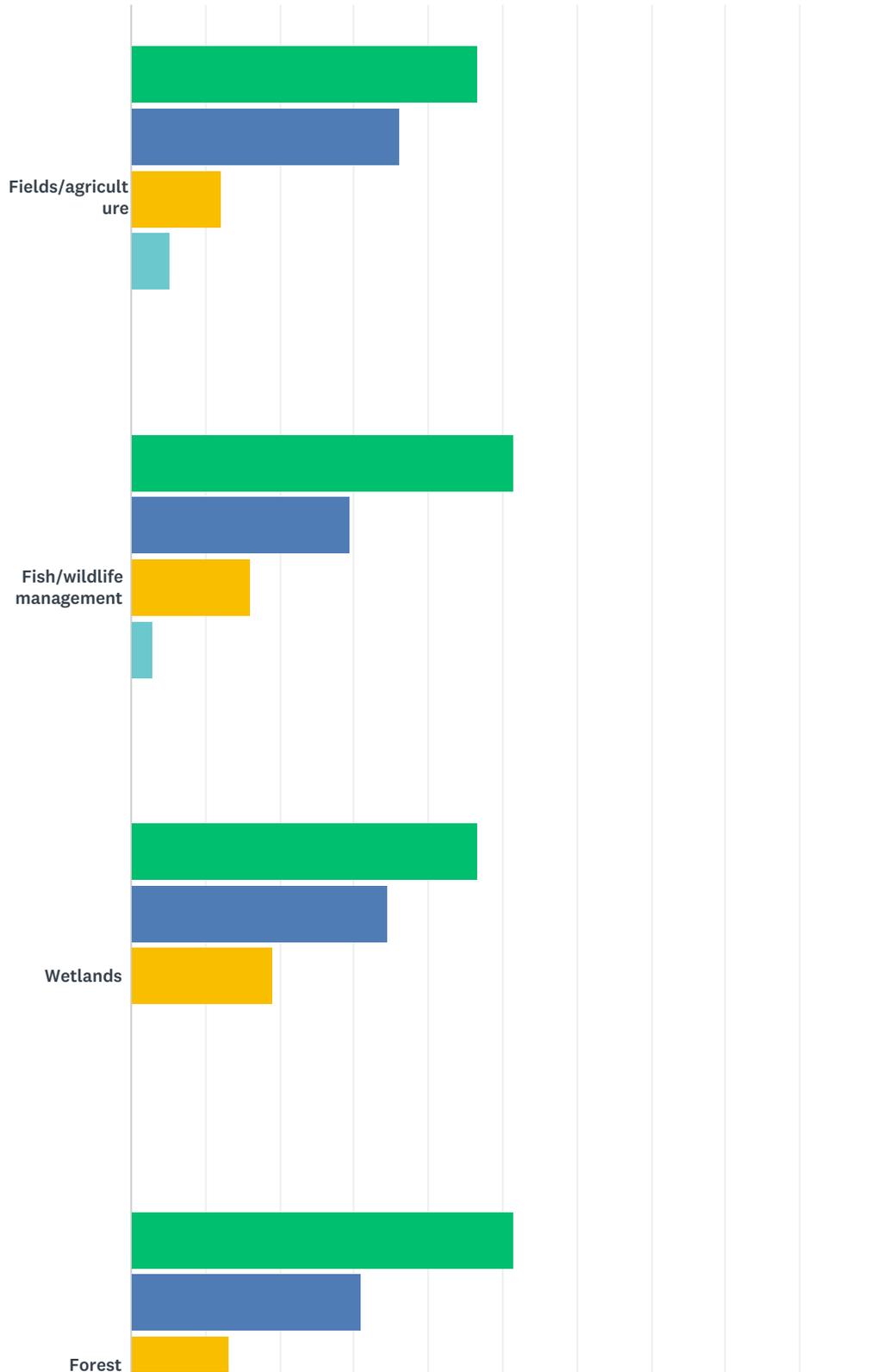
Answered: 69 Skipped: 4

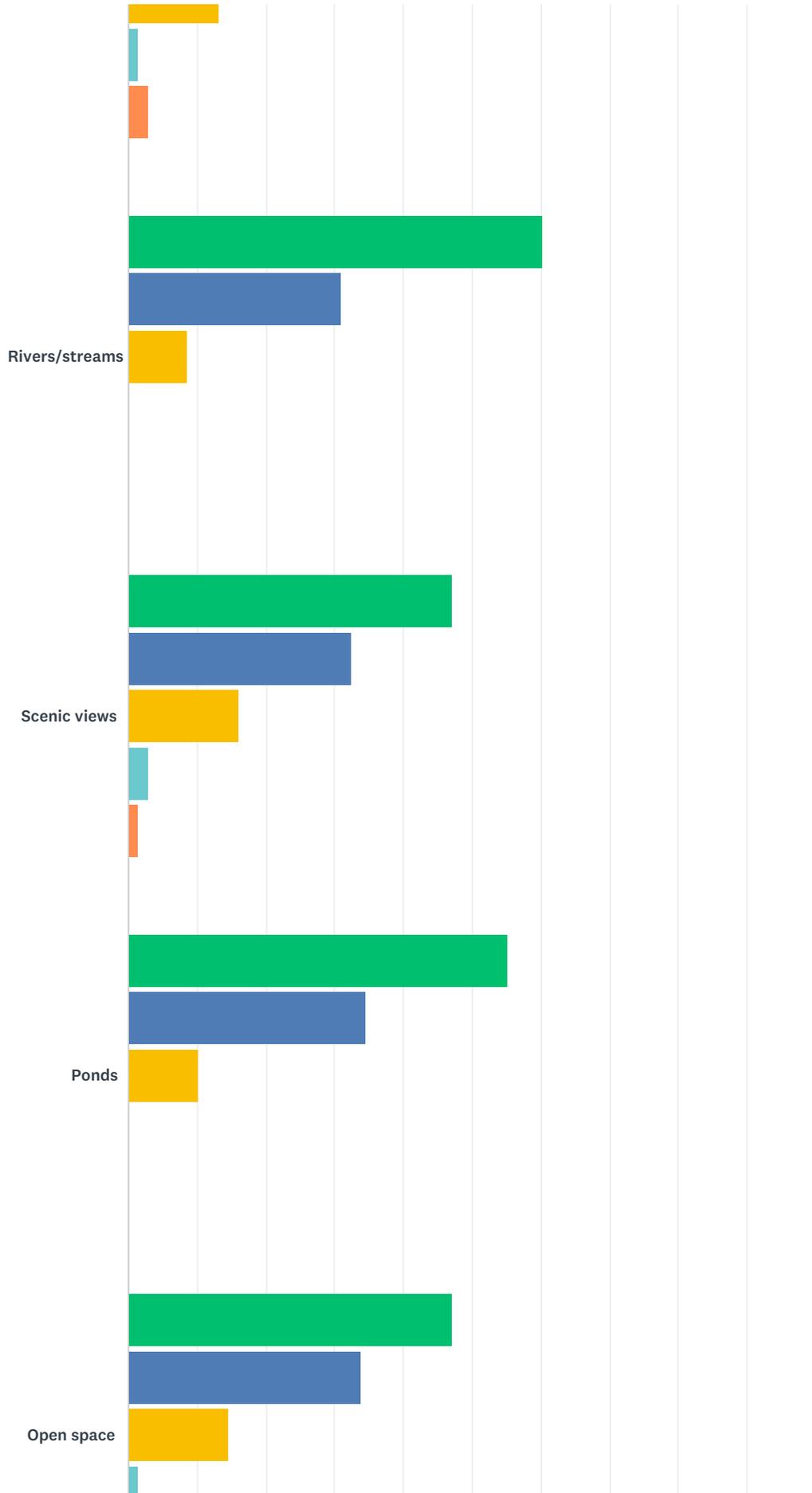


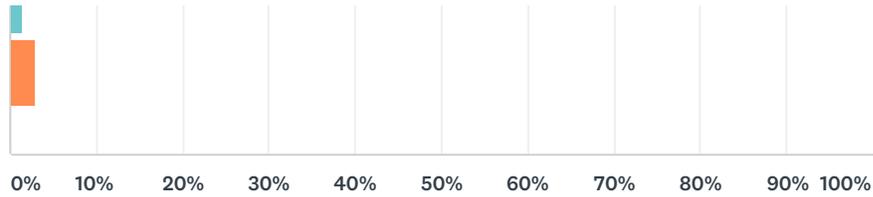
ANSWER CHOICES	RESPONSES	
Extremely important	57.97%	40
Very important	18.84%	13
Somewhat important	18.84%	13
Not so important	1.45%	1
Not at all important	2.90%	2

Q8 Please rank Greenfield's features below of importance to you:

Answered: 68 Skipped: 5





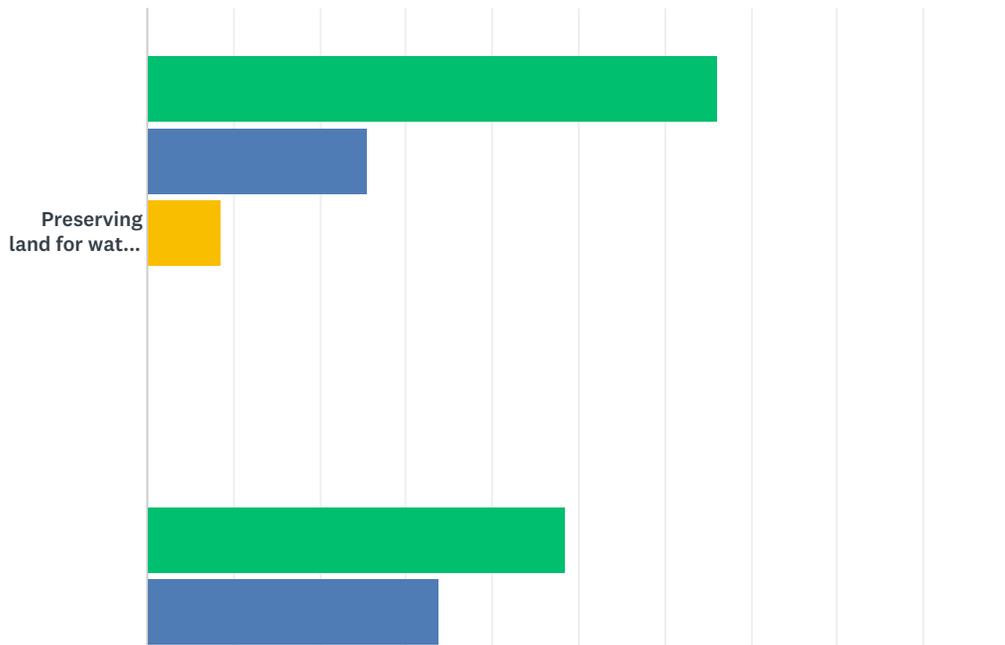


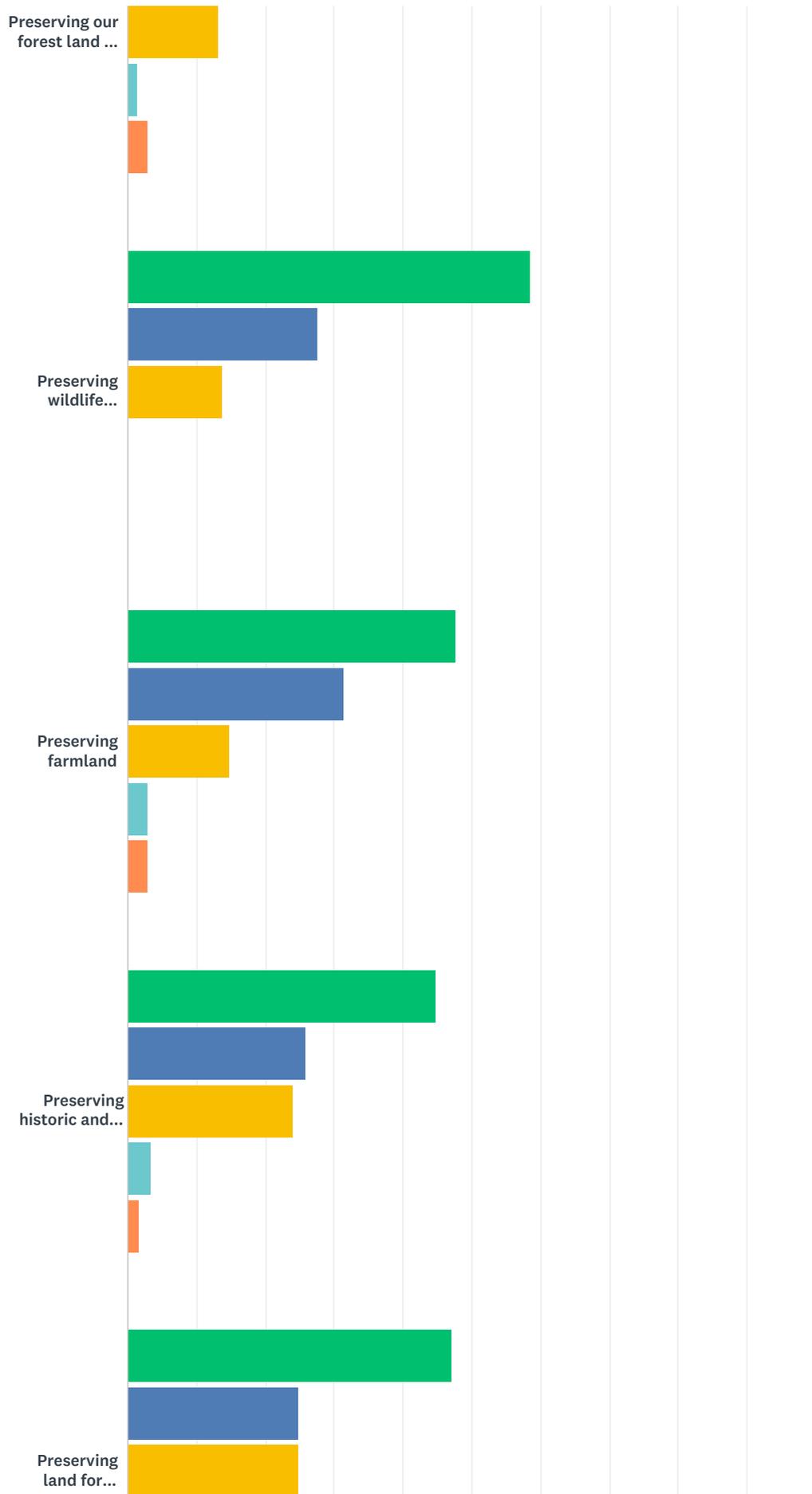
■ Extremely important
 ■ Very important
 ■ Somewhat important
■ Not so important
 ■ Not at all important

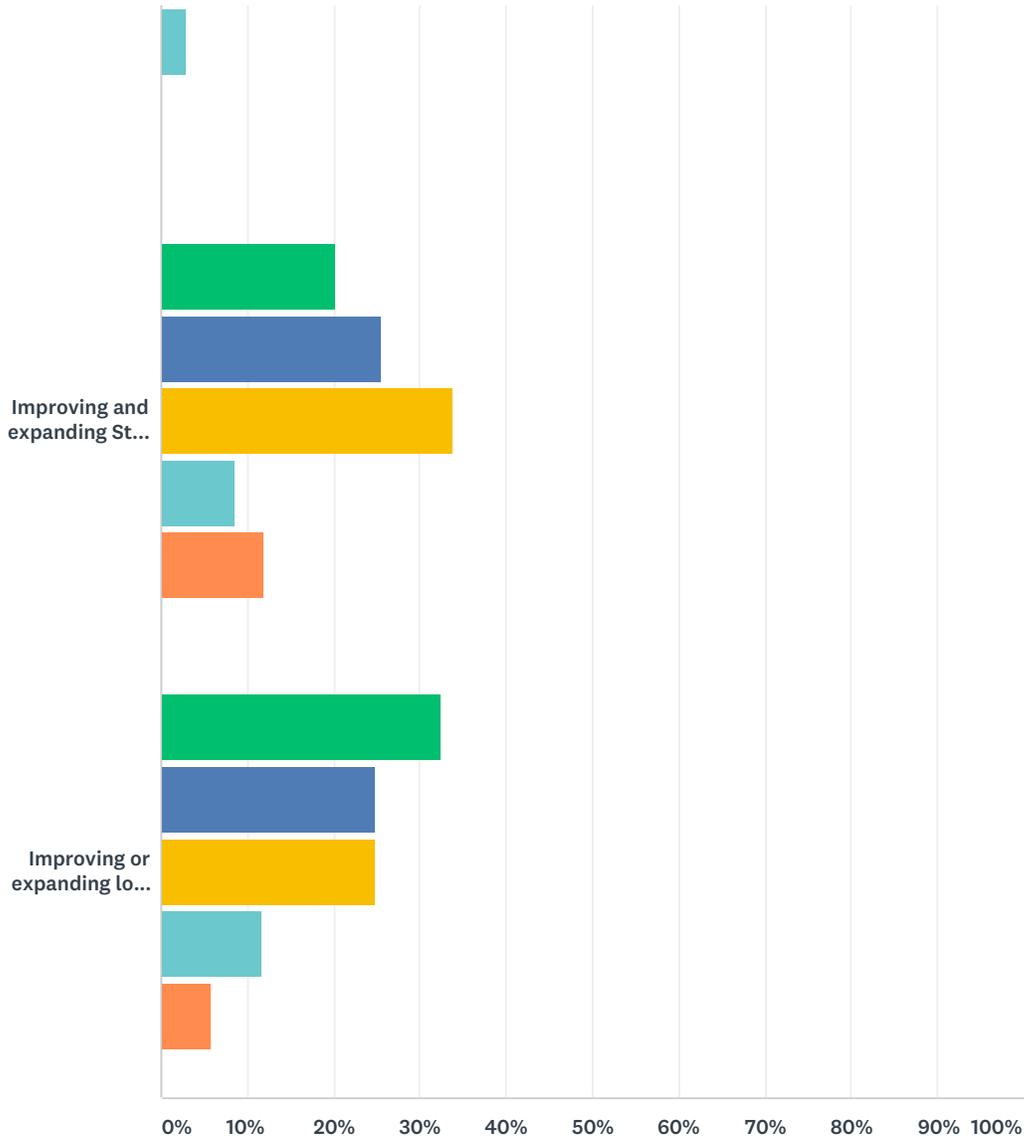
	EXTREMELY IMPORTANT	VERY IMPORTANT	SOMEWHAT IMPORTANT	NOT SO IMPORTANT	NOT AT ALL IMPORTANT	TOTAL
Fields/agriculture	46.55% 27	36.21% 21	12.07% 7	5.17% 3	0.00% 0	58
Fish/wildlife management	51.47% 35	29.41% 20	16.18% 11	2.94% 2	0.00% 0	68
Wetlands	46.55% 27	34.48% 20	18.97% 11	0.00% 0	0.00% 0	58
Forest	51.47% 35	30.88% 21	13.24% 9	1.47% 1	2.94% 2	68
Rivers/streams	60.34% 35	31.03% 18	8.62% 5	0.00% 0	0.00% 0	58
Scenic views	47.06% 32	32.35% 22	16.18% 11	2.94% 2	1.47% 1	68
Ponds	55.17% 32	34.48% 20	10.34% 6	0.00% 0	0.00% 0	58
Open space	47.06% 32	33.82% 23	14.71% 10	1.47% 1	2.94% 2	68

Q9 Rank the following categories:

Answered: 69 Skipped: 4







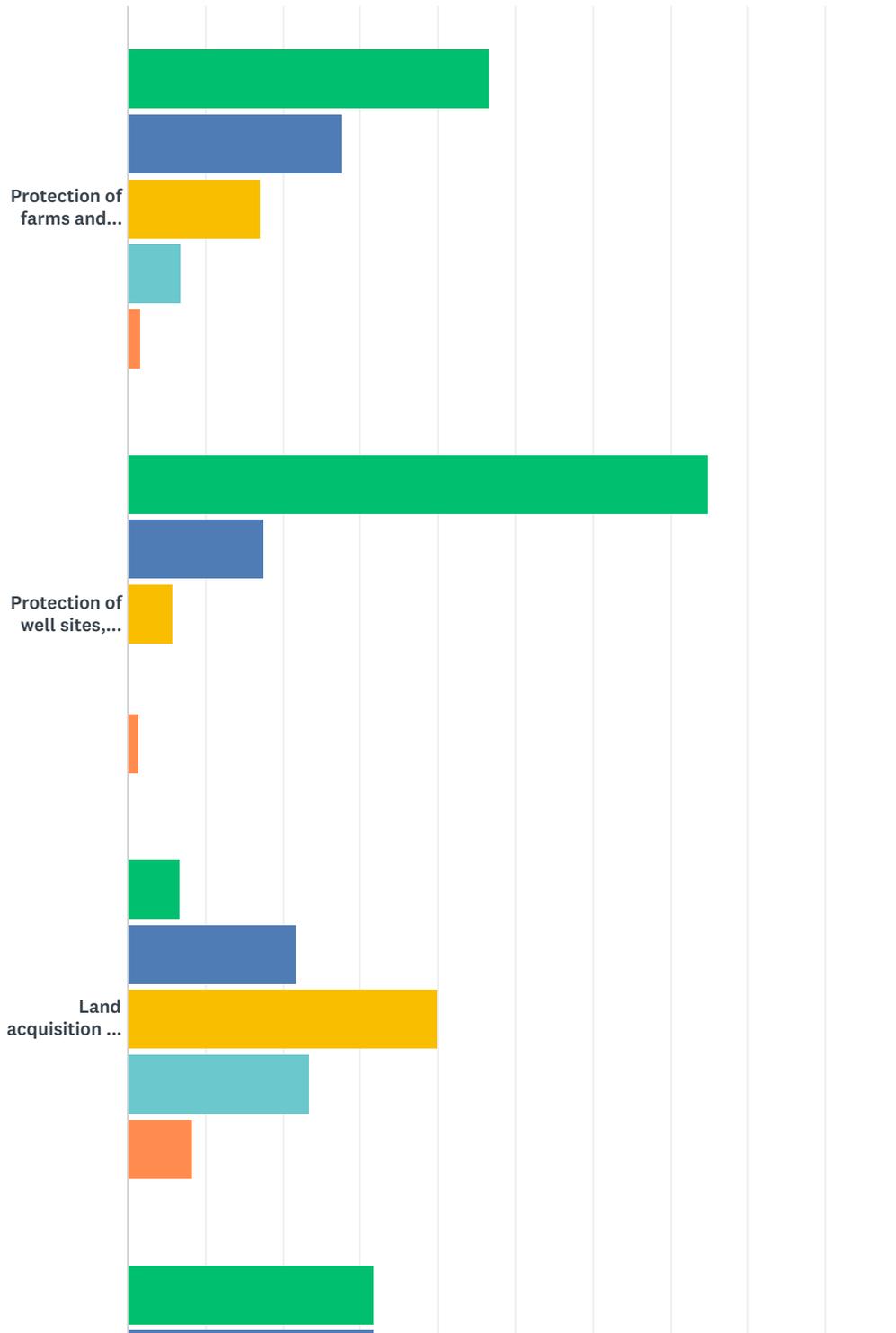
■ Extremely important
 ■ Very important
 ■ Somewhat important
■ Not so important
 ■ Not at all important

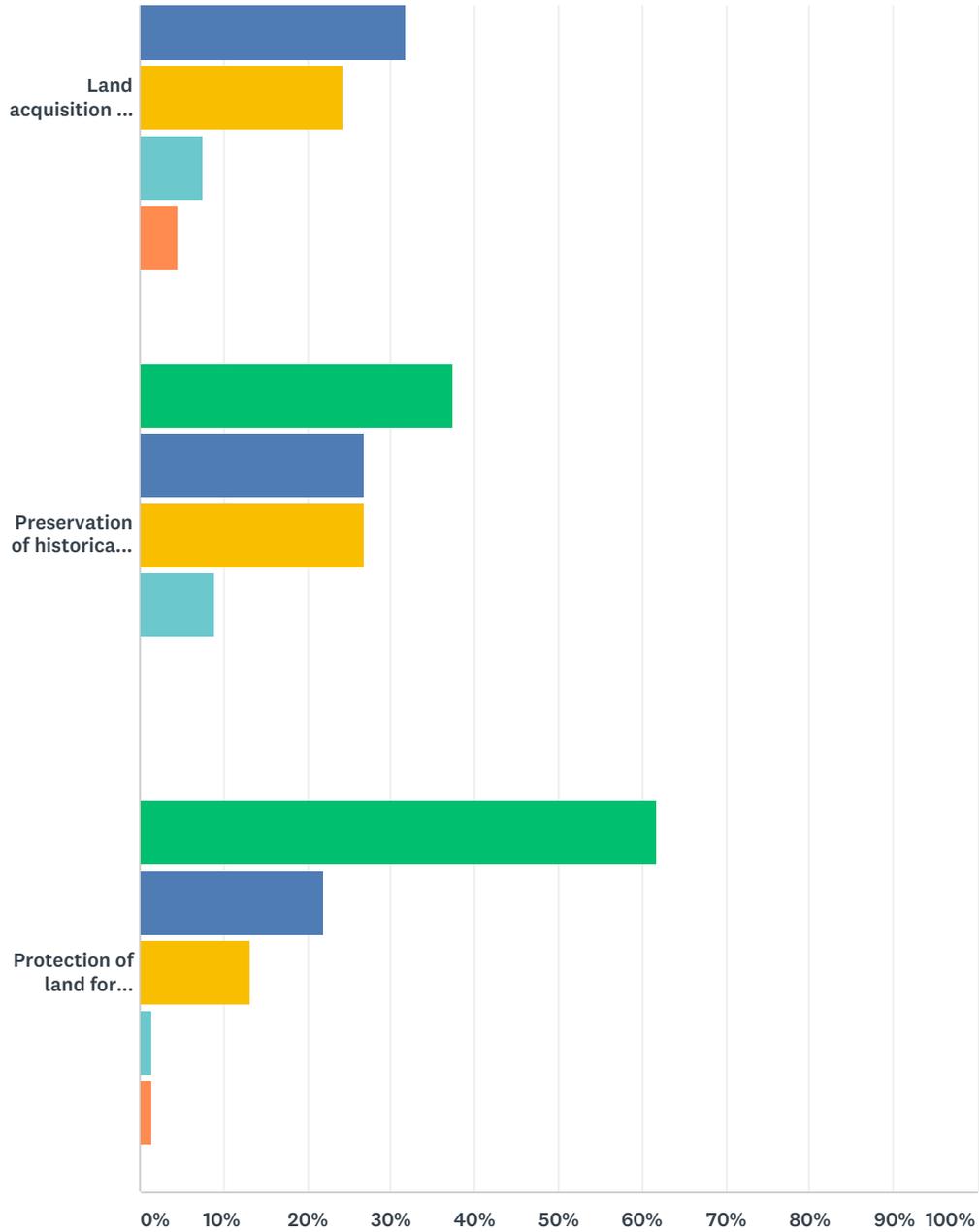
	EXTREMELY IMPORTANT	VERY IMPORTANT	SOMEWHAT IMPORTANT	NOT SO IMPORTANT	NOT AT ALL IMPORTANT	TOTAL
Preserving land for water quality protection	66.10% 39	25.42% 15	8.47% 5	0.00% 0	0.00% 0	59
Preserving our forest land and working forests	48.53% 33	33.82% 23	13.24% 9	1.47% 1	2.94% 2	68
Preserving wildlife habitat	58.62% 34	27.59% 16	13.79% 8	0.00% 0	0.00% 0	58
Preserving farmland	47.76% 32	31.34% 21	14.93% 10	2.99% 2	2.99% 2	67
Preserving historic and cultural sites	44.83% 26	25.86% 15	24.14% 14	3.45% 2	1.72% 1	58
Preserving land for recreation, such as for hiking, snowmobiling, fishing, and hunting	47.06% 32	25.00% 17	25.00% 17	2.94% 2	0.00% 0	68

Improving and expanding State parks	20.34% 12	25.42% 15	33.90% 20	8.47% 5	11.86% 7	59
Improving or expanding local parks	32.35% 22	25.00% 17	25.00% 17	11.76% 8	5.88% 4	68

Q10 Please rank the importance of the following priorities. Think about the short term (the next 5 years).

Answered: 68 Skipped: 5





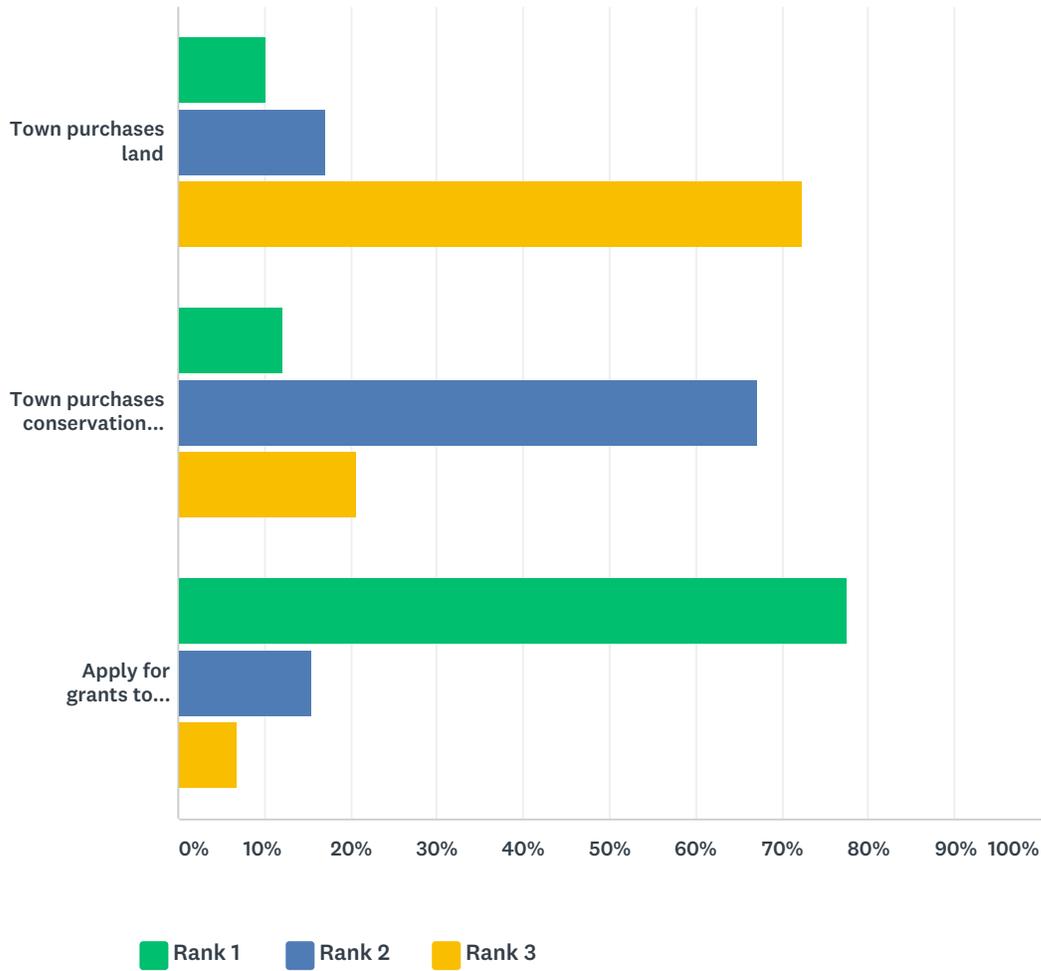
■ Extremely important
 ■ Very important
 ■ Somewhat important
■ Not so important
 ■ Not at all important

	EXTREMELY IMPORTANT	VERY IMPORTANT	SOMEWHAT IMPORTANT	NOT SO IMPORTANT	NOT AT ALL IMPORTANT	TOTAL
Protection of farms and agricultural land	46.55% 27	27.59% 16	17.24% 10	6.90% 4	1.72% 1	58
Protection of well sites, aquifers, water bodies, etc.	75.00% 51	17.65% 12	5.88% 4	0.00% 0	1.47% 1	68
Land acquisition for organized recreation (i.e. ball fields, soccer fields, playgrounds, etc.)	6.67% 4	21.67% 13	40.00% 24	23.33% 14	8.33% 5	60
Land acquisition for conservation (i.e. trails, education, hunting)	31.82% 21	31.82% 21	24.24% 16	7.58% 5	4.55% 3	66

Preservation of historical sites and buildings	37.50% 21	26.79% 15	26.79% 15	8.93% 5	0.00% 0	56
Protection of land for wildlife habitat	61.76% 42	22.06% 15	13.24% 9	1.47% 1	1.47% 1	68

Q11 Please rank the following methods of acquiring or restoring land:

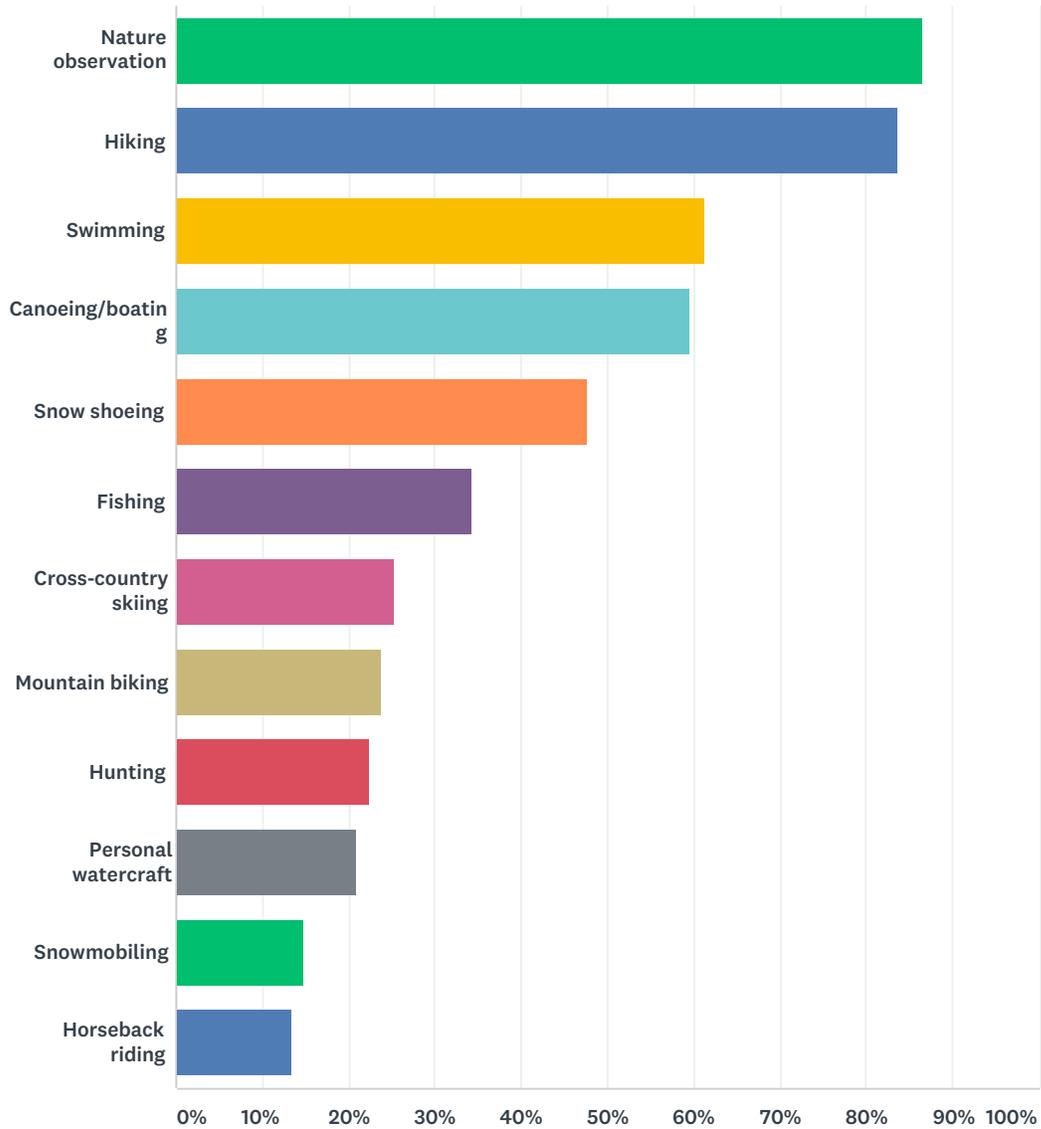
Answered: 58 Skipped: 15



	RANK 1	RANK 2	RANK 3	TOTAL
Town purchases land	10.34% 6	17.24% 10	72.41% 42	58
Town purchases conservation easement	12.07% 7	67.24% 39	20.69% 12	58
Apply for grants to purchase land or conservation easement	77.59% 45	15.52% 9	6.90% 4	58

Q12 In what ways do you enjoy Greenfield's recreational opportunities? Please check all that apply:

Answered: 67 Skipped: 6



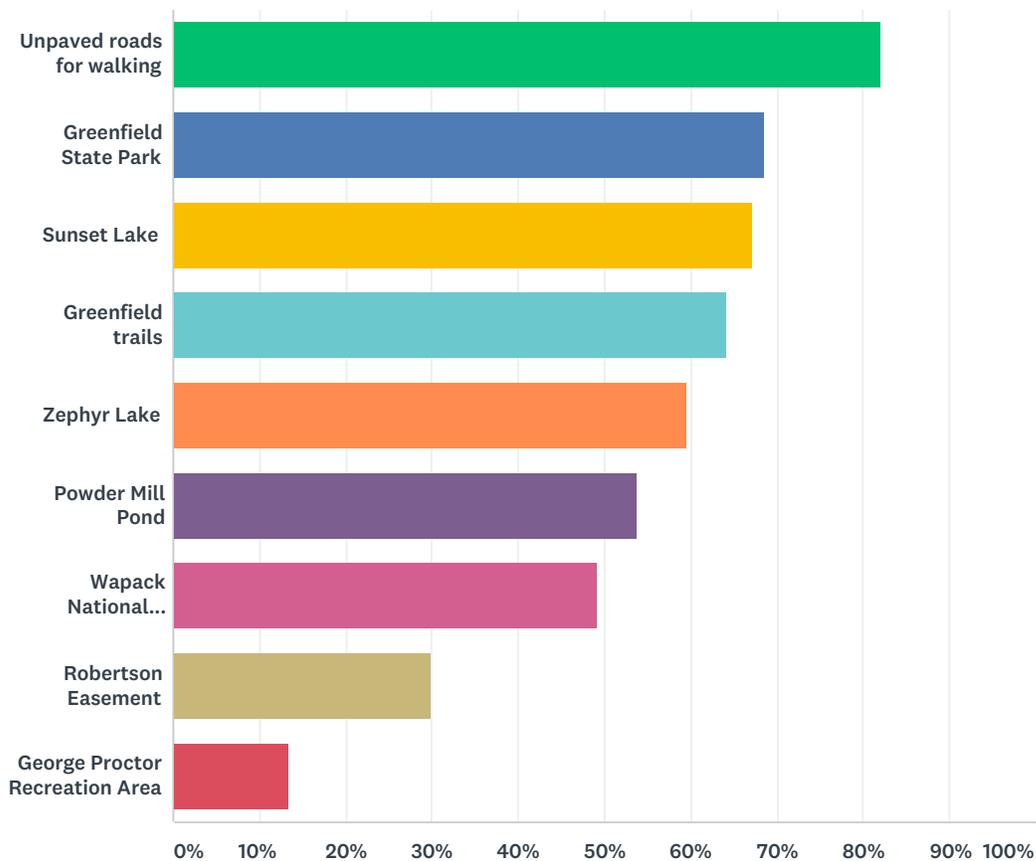
ANSWER CHOICES	RESPONSES	
Nature observation	86.57%	58
Hiking	83.58%	56
Swimming	61.19%	41
Canoeing/boating	59.70%	40
Snow shoeing	47.76%	32
Fishing	34.33%	23
Cross-country skiing	25.37%	17
Mountain biking	23.88%	16
Hunting	22.39%	15
Personal watercraft	20.90%	14
Snowmobiling	14.93%	10
Horseback riding	13.43%	9

Total Respondents: 67

#	OTHER (PLEASE SEPARATE RESPONSES WITH A COMMA)	DATE
1	Biking	7/12/2017 12:29 PM
2	Quiet	5/13/2017 12:10 PM
3	Walking	5/9/2017 5:53 PM
4	Quiet reflection	5/9/2017 4:43 PM
5	trail riding on class 6 roads (motorcycle), cruising scenic back roads by motorcycle	5/8/2017 8:52 AM
6	Dog walking	5/8/2017 8:35 AM
7	Birding	4/21/2017 7:30 PM
8	camping	4/17/2017 7:29 PM
9	jogging, running, golfing (practice), archery.	4/14/2017 5:42 PM
10	activities at Oak Park,	4/14/2017 1:50 PM
11	Enjoying natural silence and sunsets for meditation.	4/13/2017 7:06 PM
12	Stand Up Paddleboard	4/13/2017 6:19 PM
13	privacy with a small town	3/31/2017 1:28 PM

Q13 During the past year, did you or someone in your household visit any of the following areas?

Answered: 67 Skipped: 6



ANSWER CHOICES	RESPONSES	
Unpaved roads for walking	82.09%	55
Greenfield State Park	68.66%	46
Sunset Lake	67.16%	45
Greenfield trails	64.18%	43
Zephyr Lake	59.70%	40
Powder Mill Pond	53.73%	36
Wapack National Wildlife Refuge	49.25%	33
Robertson Easement	29.85%	20
George Proctor Recreation Area	13.43%	9
Total Respondents: 67		

#	OTHER (PLEASE SEPARATE RESPONSES WITH A COMMA)	DATE
1	The Robertson easement is such a treasure !	5/29/2017 10:00 AM
2	walking old roads and woods for photographic opportunities	5/8/2017 8:53 AM
3	Oak Park, Bennington Road Trail	5/8/2017 8:33 AM
4	Swamp area on Route 136 near Pine Ridge Road	4/17/2017 7:29 PM
5	Oak Park	4/14/2017 5:42 PM
6	Oak Park	4/14/2017 3:33 PM
7	Oak Park	4/14/2017 8:02 AM
8	Cilley property on Powder Mill Pond	4/13/2017 11:15 PM
9	Crotchet Mountain Trails	4/13/2017 1:41 PM
10	Gulf Rd at Slip Rd	4/4/2017 8:58 PM
11	oak park	3/31/2017 1:29 PM

Q14 What topics are of interest to you?

Answered: 39 Skipped: 34

#	RESPONSES	DATE
1	keeping nature as it is, protecting our forests, and allowing residents the first opportunity to purchase land for conservation and keeping apts. business out of greenfield	10/26/2017 7:01 PM
2	Historical preservation of lands for education and recreation purposes i.e. Proctor, Robertson, other areas not yet mentioned i.e. old tanneries	7/12/2017 12:30 PM
3	open land/farming preservation village district building exterior codes	6/1/2017 1:59 PM
4	Controlling the spread of invasives - Continued education about bears, ticks & moose	5/29/2017 10:03 AM
5	Open space, wildlife habitat	5/22/2017 4:18 PM
6	hiking, swimming, town programs	5/14/2017 3:54 PM
7	flora and fauna	5/12/2017 6:55 PM
8	Recreation land- specifically updating oak park	5/11/2017 7:43 PM
9	in general?	5/10/2017 12:20 PM

10	I believe that it is VERY important to do everything possible to maintain the rural character of the Town. We must be able to separate and understand the difference between "downtown" and the Rural Ag. districts.	5/10/2017 7:13 AM
11	forestry and historic preservation after the DESECRATION of old stone walls and trees on Holden Road. Where are town priorities and regulations in practice?	5/10/2017 5:24 AM
12	Farming and growing food.	5/9/2017 7:23 PM
13	Enforcement of zoning	5/9/2017 5:54 PM
14	Not punishing people who already own land for any of the goals mentioned in this survey.	5/9/2017 5:25 PM
15	Keeping greenfield the way it is...	5/9/2017 5:10 PM
16	Public gardens for quiet reflection Dog walk/park	5/9/2017 4:44 PM
17	Identifying tree species in woods, fishing, hunting, shooting, photography, motorcycles, ATVs, reading	5/8/2017 8:53 AM
18	Protection of wildlife	5/8/2017 8:43 AM
19	Greenfield Trail Association	5/8/2017 8:38 AM
20	too many homes being built! Keep our trees.	5/8/2017 8:33 AM
21	Trails	5/3/2017 9:26 AM
22	Clean water, air, and soil. Wildlife, and open space.	4/21/2017 7:32 PM
23	Protecting water and clean air from pollution.	4/21/2017 9:38 AM
24	Keeping our taxes.under control.	4/18/2017 10:19 AM
25	Keeping the rural integrity of Greenfield and the continued protections for both horses and riders.	4/18/2017 8:16 AM
26	Mapping recreation areas (eg trails) History of preserved areas (eg former industry) Conversations about pros and cons of dams	4/17/2017 7:32 PM
27	Protecting the amazing wildlife and clean water in town. Keeping the town's historic downtown in good shape.	4/17/2017 7:31 PM
28	Finding ways to leverage existing acreage that is already off the town tax rolls to drive more revenue for the townsfolk, improve property values, and contribute through means like this to reducing the property tax burdens on the town's property owners.	4/14/2017 5:45 PM
29	gardening, planning use of home property for wildlife, planning and installing connecting hiking trails	4/14/2017 1:53 PM
30	land use policy, municipal law, recreational areas, ecology, technology, history	4/14/2017 12:31 PM
31	Solitude,small government,individual liberty	4/14/2017 9:25 AM
32	Historic preservation and wildlife management	4/14/2017 9:01 AM
33	Private ownership of recreation and camping sites.	4/13/2017 11:16 PM
34	Protecting Sunset Lake.	4/13/2017 6:39 PM
35	unstructured outdoor recreation	4/13/2017 5:37 PM
36	Wildlife	4/13/2017 5:32 PM
37	Preserving and maintaining our town's historic buildings and other historic sites..	4/13/2017 1:52 PM
38	Hiking, biking, snowshoeing	4/4/2017 8:58 PM
39	Finding ways to take the scenic and recreational features of Greenfield and monetize them to the benefit of town taxpayers. Examples: more events like the mountain biking series or similar (for instance new events like a hosted Spartan Race, Hiking Rendezvous, Canoeing Rendezvous, or similar with fees assessed to users and advertisers), maintained (and possibly lighted) trails for cross-country skiing / snowshoeing for which a small fee could be charged for use, and so forth.	3/31/2017 10:05 AM

Q15 Please tell us about other ideas, suggestions, or comments you may have:

Answered: 25 Skipped: 48

#	RESPONSES	DATE
1	It is strongly felt that the expenses incurred relating to the roadside pickup could be better utilized toward other projects	7/12/2017 12:31 PM
2	Not to schedule the roadside cleanup day the same day as the fire department road race	7/11/2017 7:46 AM
3	use the conservation commission as the conservation easement owner and collect fees for grantors	6/1/2017 2:01 PM
4	Regarding the distribution of bags for the Roadside Round-up: have them available at key locations throughout the town- DeLay's, library, town offices, P.O., etc. instead of mailing them .	5/29/2017 10:03 AM
5	Whatever land the town owns should be designated as town forest, if it is not already.	5/22/2017 4:19 PM
6	continue to have programs sponsored by the Library; program interaction with State agencies	5/14/2017 3:55 PM
7	Updating oak park!	5/11/2017 7:43 PM
8	Too many people have forgotten the reason that they moved to out Town. Once they arrive and have been here for a "short" while they want to make it look like what they left behind.	5/10/2017 7:15 AM
9	town needs to enforce rules to clean up dump sites right off Rt 31 and stop allowing destruction of historic walls and other valuable landmarks	5/10/2017 5:26 AM
10	Encourage home owners to clean up their property . No ongoing yard sales in front yards . Discuss light pollution and restrict bright lights that interfere with night sky in residential areas .	5/9/2017 5:58 PM
11	The biggest improvement that me and most of the families that I talk to is getting better/faster internet. Fairpoint is ok but there is much better all around us.	5/9/2017 5:13 PM
12	Don't know the status, but old steel bridge on town line at cavender road (Hancock-Greenfield) could be used by recreational users, (bikes, horses, trail bikes registered (dual sport) for scenic rides	5/8/2017 8:55 AM
13	Should the Town address the Deer Tick Problem? The old Rymes Property need to be dressed up. Such as Tree's or Lg Flower Pots.	5/8/2017 8:44 AM
14	Creating more non-motorized trails on public and private land	5/8/2017 8:38 AM
15	why do we have to pay for police to monitor State Park in summers and also man hours for CMRC - we are paying a lot of \$ for 3 plus officers in a very small town! Why does it come out of our budget - State + CMRC should reimburse 3 full time officers in a town of 1600 people - come on!	5/8/2017 8:35 AM
16	I think Greenfield should take a serious look at creating a brand of easy-to-moderate public trails for tourism.	5/3/2017 9:28 AM
17	Change the bulbs in the light posts....too LED! Find something more incandescent looking. The bulbs don't fit the historic look of the town	4/18/2017 10:23 AM
18	Regular talks about all kinds of conservation topics, from renewable energy to local history to farming, and workshops in related topics	4/17/2017 7:33 PM
19	We seriously need new laws regarding shooting at all hours of the day. People in several areas shoot off automatic weapons; it scares the wildlife and ruins the atmosphere when trying to enjoy the otherwise peaceful outdoors. A while back we were trying to sell our home and lost the deal when a neighbor was shooting automatic weapons all day long. Also keep the town parts for residents - Zephyr is always trashed by people with MA license plates.	4/17/2017 7:33 PM

20	Support organizations or individuals seeking leverage town acreage that are non-tax generating in their efforts to leverage these resources to produce town revenue or improve property values for town taxation purposes. Examples include more town sponsored events on these properties like hiking rendezvous or fishing derbies; lighted trails for night time cross-county skiing, snowshoeing, and walking; festivals (music, arts, etc) and similar.	4/14/2017 5:49 PM
21	like to see play area at Oak Park expanded, up grading of walking track at Oak Park	4/14/2017 1:54 PM
22	Disapproval of government overreach, taking of land for "common good " is aggressive and illegal practice against citizens liberties	4/14/2017 9:29 AM
23	Is there a town wide trail map available?	4/14/2017 9:07 AM
24	no ideas, but thank you for the work you do on behalf of all of us	4/13/2017 5:38 PM
25	Consider interviewing potential new town forester candidates. Someone LOCAL..Someone available to offer guidance to landowners considering timber stand improvements, timber harvests, etc.,organize couple of seminars or educational events per year.	4/13/2017 2:02 PM
