

---

# NATURAL RESOURCE INVENTORY

OF

## **HARRISVILLE, NH**

SEPTEMBER 26, 2013



# TABLE OF CONTENTS

- Acknowledgments ..... 3**
- Introduction ..... 5**
  - Harrisville Context ..... 5
  - NRI Purposes ..... 6
- Background ..... 7**
- Findings ..... 10**
  - Community Involvement ..... 10
    - Community Survey Results ..... 10
    - WELLS MEMORIAL SCHOOL NATURAL RESOURCE INVENTORY ..... 21
    - Workshop Activities Results ..... 22
  - Natural Resources Inventory ..... 26
    - Town Context Maps ..... 26
    - 2010 “Leaf-Off” Aerial Photograph ..... 27
    - 2010 Road Map ..... 29
    - Conservation Lands ..... 31
    - Water Resources ..... 33
    - Major Watersheds ..... 33
  - Surface Water – Dams, Lakes, Ponds, Rivers, and Streams ..... 38
    - Surface Water – Wetlands and Hydric Soils ..... 44
    - Surface Water Quality – Steep Slopes ..... 47
    - Surface Water Quality – Highly Erodible Soils ..... 49

Groundwater Resources .....	51
Wells.....	51
Aquifers .....	51
Wildlife Resources.....	56
Unfragmented Lands .....	56
Wildlife Habitat Types.....	58
Wildlife Action Plan Tiers.....	62
South and Southwest Facing Slopes .....	65
Working Landscape and Soils.....	67
Agricultural Soils .....	67
Productive Forest Soils .....	70
Open Lands .....	72
Areas of Important Conservation Value .....	74
<b>Recommendations.....</b>	<b>79</b>
Goal .....	79
Action Plan Recommendations .....	80
Public Outreach and Education.....	80
Landowner Outreach and Education.....	81
Incorporating the NRI into Town Decision Making Process.....	82
Future Planning Efforts.....	83
<b>In Conclusion .....</b>	<b>84</b>
APPENDIX A: Survey - sample survey, data tabulations, verbatim comments	
APPENDIX B: Species list	
APPENDIX C: Children's NRI	
APPENDIX D: VLAP Reports for Major Ponds	
APPENDIX E: Conservation Lands	

## ACKNOWLEDGMENTS

Gratitude is extended to all who helped in this process through providing their time, knowledge, and love for the Town of Harrisville. From the people who identified their favorite places and told us their fondest memories at Old Home Day, to those who responded to the Natural Resource Inventory Survey, and those who tackled the hard questions of what that information means during the process of drafting this document.

Special thanks go to the members of the Natural Resource Inventory Committee for their dedication to the community and a desire to see the features that make it special remain for future generations. Those individuals are:

Laurie Appel (Secretary)

Kim Bylancik (Vice Chair)

John J. Colony III

Eleanor Drury

Elizabeth Lord

Jean Rosenthal

Don Scott

Winston Sims (Chair)

Harry Wolhandler

Additional appreciation is expressed for the reviews of the maps by Jimmie Patton and Thomas Havell.

Special appreciation is extended for the work of the 5<sup>th</sup> and 6<sup>th</sup> grades at Wells Memorial School for having undertaken their own natural resources inventory. This has provided an excellent opportunity for the beginning of direct youth involvement in the analysis of community issues.

This project is supported in part by town funds as well as funds from the sale of the Conservation License Plate (Moose Plate) through the NH State Conservation Committee Conservation Grant Program. Additional support was made through a grant award from the Wildlife Conservation Society through its Wildlife Action Opportunity Fund which was established by the Doris Duke Charitable Foundation.



# INTRODUCTION

## HARRISVILLE CONTEXT

Harrisville is a small town of 20.2 square miles with approximately 961 year round residents (Source: US 2010 Census) and an equal number of summer residents. It is located on the eastern border of Cheshire County in southwestern New Hampshire. Found just north of NH Route 101, Harrisville is defined by a strong sense of community rooted in history and united to its natural resources. Harrisville Village was developed around its water resources which supported the textile mill industry powered by dams on Nubanusit Brook in the early- to mid-1800's. The community was linked to the other villages and Monadnock Region towns through the Manchester & Keene Railroad.

The links between the historical land uses and natural resources remain today and support the vitality of the community in different ways. The railroad ceased operation in 1935 yet the right-of-way remains and is actively used by the community as a recreational resource year-round. The Cheshire Mills closed in 1970 but immediately thereafter efforts were taken to preserve the structures and history that serves as the backbone of the community. In 1977 the National Park Service designated Harrisville Village a National Historic Landmark District and in 1987 multiple districts were added to the National Register of Historic Places. Sixteen dams remain in varying states of ownership and condition, half of which create the 8 major lakes and ponds in town. The historic structures, lakes and ponds, farms and forested hills combine to form the rural character of this unique Monadnock Region town.

## NRI PURPOSES

Pursuant to NH RSA 36-A:2, the Harrisville Conservation Commission engaged in the process to create the Natural Resource Inventory (NRI) in an effort to "... keep an index of all open space and natural, aesthetic or ecological areas". As such, this document will serve the Conservation Commission and other town boards as the basis for the "proper utilization and protection of the natural resources and for the protection of the watershed resources." Additionally this document will help:

- Document current conditions for comparison over time;
- Identify community perceptions of the value and importance of our natural and cultural resources
- Educate local officials and the public about valued natural resources
- Update the natural resources section of the Master Plan
- Provide a basis for land use planning efforts
- Support water and land protection efforts
- Landowners identify resources on or around their property

This document contains maps depicting the location of natural resources, detailed information about the quantity of those resources, and descriptive information about the importance of those resources. While an NRI provides the basis for decision and direction at the town wide scale, it is not accurate to the property scale. As such the NRI should help inform what types of resources could be on site and guide what conditions should be assessed prior to development or conservation action.

## BACKGROUND

The latest update to the Harrisville Master Plan was adopted in the year 2000 by the Planning Board. That plan was greatly informed and influenced by the 1997 Future Search community engagement activity. These activities were designed to identify the priorities of Harrisville residents. Based on these activities, the Master Plan of 2000 identified as its *Land Use Policy* “to preserve, protect, and improve, where appropriate, the historic, scenic, cultural and natural resources of the Town.” In addition, the goals and objectives of that section include:

### **Goals:**

- ◆ Preserve the individual identity and development patterns of Harrisville Village, Chesham, and Eastview.
- ◆ Balance new development with protection of the Town's sensitive and significant resources.
- ◆ Agricultural, forest and water resources must be recognized as vital to the proper development of land in Harrisville and should be wisely managed.
- ◆ Identify areas in Town where development could be considered premature, based on transportation systems, distance from emergency services, etc.

### **Objectives:**

- ◆ Use the land use regulations to guide development away from the main roads that separate the three village areas.
- ◆ Determine whether the existing overlay district provisions need to include provisions that would completely restrict development in certain areas of Town.
- ◆ Determine whether new overlay districts are needed to protect agricultural lands, forests, and water resources.
- ◆ Maintain the geographic and spatial information created and illustrated on maps to guide the planning process.

In September of 2010, townsfolk gathered for the Harrisville 2020 Community Forum. At this event attendees were asked to brainstorm and identified all the aspects of Harrisville that need to be retained and the ways in which the town could improve between 2010 and the year 2020. As a result, the town created 8 action groups to work towards the identified goals including affordable housing, agriculture, community, education, energy and resources, shared regional services, small business, sustainability, and web presence. The information gathered at Harrisville 2020 and the objectives of the action groups will feed into a master plan update in the near future.

#### APPROACH AND PROCESS

In the 2012 Town Meeting, residents approved the Harrisville Conservation Commission request for budget for an NRI. Subsequently, the Conservation Commission contracted to work with Monadnock Conservancy's Monadnock Community Conservation Partnership to support developing a Natural Resource Inventory for the town. The committee sought community involvement as part of the process.

The Natural Resource Inventory Committee was formed of nine members who surveyed community values and perceptions of its cultural heritage, looked at maps of different resources in town, and discussed why those resources were important to the community.

At the Harrisville Old Home Day on July 7<sup>th</sup>, 2012 members of the NRI Committee sponsored a booth where they asked residents (year round and seasonal) to identify places that were special to them on a map. In addition to identifying the location, the participants also stated why that place was important. One hundred twenty people identified approximately 90 special places that were special to them over the course of the event. Committee members displayed maps showing the location of natural resources in Harrisville. This was the first event where the NRI Committee informed and involved the public in the process of creating the NRI report.

Additionally the NRI Committee held three workshops the first on water resources and water quality (7/21/12), the next on wildlife and habitat (9/10/12), and the last on agricultural and working lands (10/15/12). Resource professionals from the region and around the state were brought in to speak with the public about the different

types of natural resources in town, their importance, and ways that the town or landowners can manage these resources. After hearing from presenters, workshop attendees were invited to correct and supplement mapped resource information.

After Old Home Day, surveys were sent out to all mail recipients in Harrisville. The premise of the survey was to collect information on what types of resources were important to people, what specific places were important, and basic demographics. This information is important in shaping the focus of this report and future activities including master planning. There were 89 responses to the survey and all data compiled in the fall. The data that was compiled and collected throughout the process will be presented in the FINDINGS section of this report. A complete compilation of survey tabulations and verbatim comments is included as an appendix.

Questions regarding the information contained in this report should be directed to the Harrisville Conservation Commission or the Monadnock Conservancy.

## FINDINGS

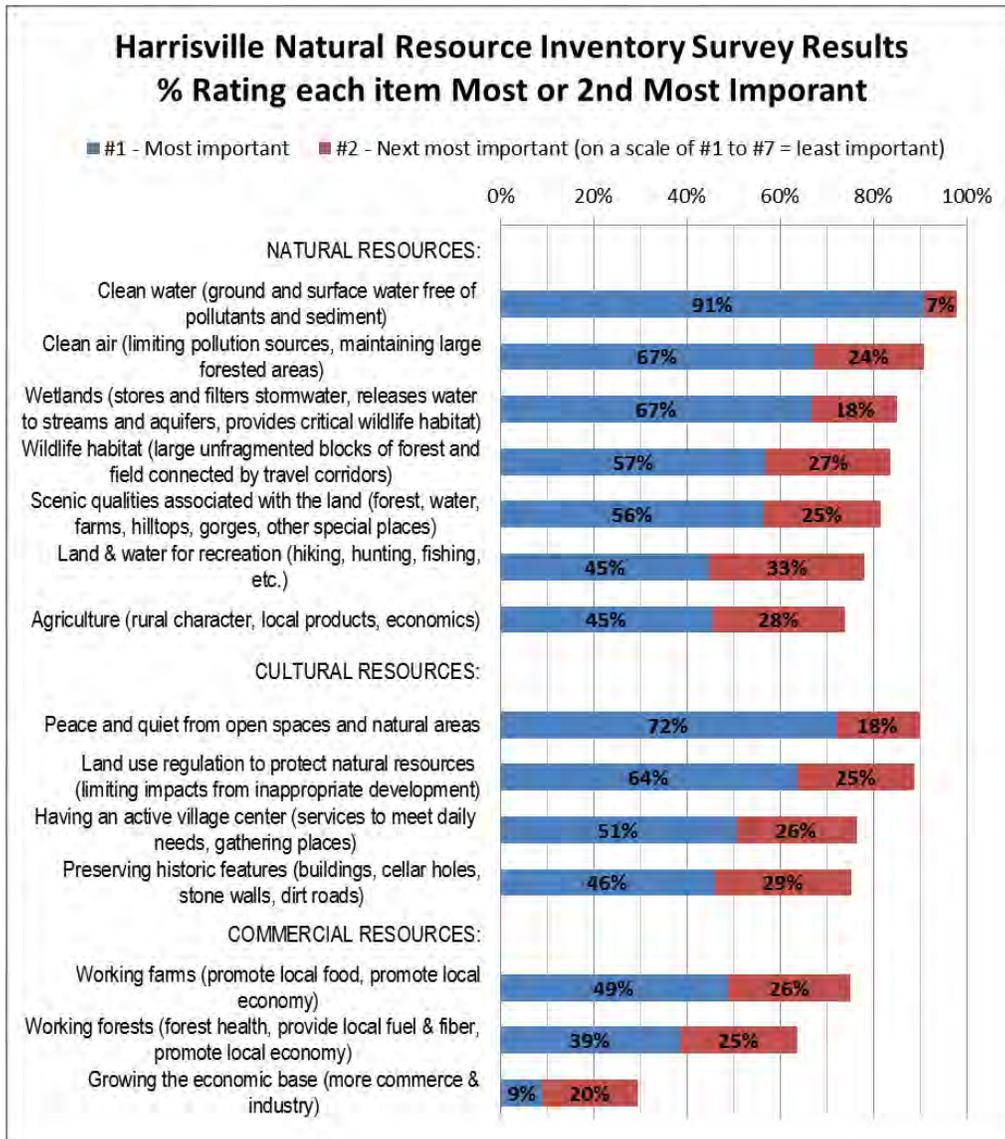
### COMMUNITY INVOLVEMENT

#### COMMUNITY SURVEY RESULTS

The Harrisville Natural Resource Inventory working group conducted a town-wide survey of resident attitudes toward various aspects of our natural resource heritage. Between July, 2012 and October 2012 surveys were gathered at Old Home Days, during three workshops on various aspects of the natural community, at two distribution locations (Harrisville General Store, Harrisville Town Hall) and by direct mail to every household with a Harrisville mailing address (nearly 500 homes). In total, 89 residents participated in the research.

#### COMMUNITY SURVEY – IMPORTANCE OF KEY RESOURCES

The 4-page survey began with opinion ratings for the importance of 14 aspects of our resource heritage. Ratings were provided for various aspects of our natural resource base (water, land and air quality, wildlife habitat, recreational and agricultural resources). To put natural resource ratings in context, ratings were also gathered for several cultural and commercial resources. *(See chart of rating results on next page)*



Based on survey response, there is overwhelming support for maintaining the high quality of Harrisville's water, land and air quality resources and retaining the pastoral, scenic qualities that emerge from the peace and quiet of open spaces and natural areas. In a town with over 20 bodies of water there is near-universal agreement that **Clean water** (ground and surface water free of pollutants and sediment) is important to the town (98% rate it either #1 or #2 on a 7-point scale).

Following closely behind clean water are ratings given to preserving **Clean air** (limiting pollution sources, maintaining large forested areas), which receives top ratings (is rated as #1 or #2) by nine in ten respondents (91%), and to **Wetlands** (stores and filters stormwater, releases water to streams and aquifers, provides critical wildlife habitat) (85%).

All other natural resource attributes are also important to the large majority of respondents, including **Wildlife habitat** (large unfragmented blocks of forest and field connected by travel corridors), **Scenic qualities associated with the land** (forest, water, farms, hilltops, gorges, other special places), **Land & water for recreation** (hiking, hunting, fishing, etc.), and **Agriculture** (rural character, local products, economics) - each received top ratings from 74% to 84% of respondents.

Harrisville's cultural environment is similarly highly valued by residents. Nearly all (nine in ten) provide top ratings for two cultural resources closely related to our natural resource base: **Peace and quiet from open spaces and natural areas** (90%), and **Land use regulation to protect natural resources** (limiting impacts from inappropriate development) (89%).

Slightly lower but still strong cultural ratings were given to Harrisville's historic character. **Having an active village center** (services to meet daily needs, gathering places) and **Preserving historic features** (buildings, cellar holes, stone walls, and dirt roads) both received top ratings by three-fourths of respondents.

Two of three commercial resource ratings are also highly valued by the community: three-fourths gave top ratings to **Working farms** (promote local food, promote local economy) and two-thirds to **Working forests** (forest health, provide local fuel & fiber, and promote local economy).

The only attribute that did not garner a majority of top ratings among Harrisville residents is **Growing the economic base** (more commerce & industry) - fewer than one in three (30%) gave top ratings to this item. It may be conjectured that for most residents Harrisville is their pastoral retreat from economic life, and that residents turn outside the community for economic resources.

## COMMUNITY SURVEY RESULTS – MAP OF FAVORITE PLACES IN TOWN

Two pages of the survey were devoted to a town map, and respondents were asked to identify up to five of their most valued locations in town and their reasons for citing them. Many of the identified places are located around our community's lakes and ponds; others are specific unique places (e.g., Eliza Adams Gorge, scenic wooded hilltops, and the town beach). The following table shows the different places identified and the number of people that identified them. An additional 139 places identified at the 2012 Old Home Day booth are included in the table. Some people identified a general resource type without a specific place which was then recorded in the last (Generic category).

The locations of places identified in the survey have been plotted on a map of town titled “The Places in Harrisville That Matter Most to You” (see map at end of this section). Information in the table on the next page was gleaned from comments offered as people marked their favorite places on the map, and contributes deeper understanding of the reasons why a particular place is a favorite. This table further emphasizes the importance of our water resources to people in Harrisville.

Analysis of the mentions for a specific location or the reasons for citing a particular type of resource is summarized in lines with bold font, while plain text lines are specific mentions.

Water resources were identified more frequently than any other resources. Specifically Harrisville Pond and Silver Lake rose to the top. Harrisville Village was also identified as important to the town’s character and quality of life.

The table below summarizes values people associate with the different places they identified. Some places were identified for multiple reasons, leading to a higher number of reasons than number of places identified. Scenic, recreation, and wildlife habitat were the three most common reasons for people to identify a favorite place on the map.

Values mentioned	Total
Scenic	210
Recreation	188
Wildlife	137
Water Quality	68
Community	68
History	42
Agriculture	23
Development	8

	Top level summary	Category summary	Item summary	Detailed mention
<b>Water Features</b>	335			
<b>Lakes and Ponds</b>		173		
<b>Harrisville Pond</b>			65	
Dion Grove				5
Sunset Beach (Town Beach)				13
<b>Silver Lake</b>			49	
Derby Hill				2
<b>Lake Skatutakee</b>			32	
Town Spring				6
North Pond				2
<b>Seaver Reservoir</b>			10	
<b>Chesham Pond</b>			9	
<b>Russell Reservoir</b>			8	
<b>Wetlands</b>		40		
Great Meadow				26
Child’s Bog				14
<b>Villages, Historic Places, and Roads</b>	158			
<b>Harrisville Center</b>		102		
Village				68
General Store				8
Cemetary				4
Garden				4
Peanut Row				3
Churches				2
Library				1
Mill Pond				1
<b>Chesham</b>		15		
Wells Memorial School				5
<b>Eastview</b>		6		
<b>Roads</b>		35		
Mason				8
Macveagh				6
Sargent Camp Rd				5
Meadow				4
<b>Trails</b>		67		
Eliza Adams Gorge				26
Rail Trail				21
Rosemary Trail				12
<b>Farms</b>		24		
Jacobs				6
Wellscroft				6
Seaver				4
<b>Hills</b>		14		
Beech Hill				5
Cobb Hill				3
Blood Hill				2
Mt. Skatutakee				2
Prospect Hill				2
<b>Generic Resource Types</b>		27		
Conserved Lands				11
Wetlands				6
Aquifer				5
Wildlife				5

When specifically asked, people want clean water, but when they think of their favorite places they value them because they enjoy looking at them and recreating around them. Overall, high water quality should be maintained so that the surface waters are still perceived as scenic, good places to recreate, and valuable wildlife habitat.

On the map on the next page, the larger and closer to green the dot is, the more votes it received (the number within each dot). The smaller and redder the dot is, the fewer votes it received. All mapped locations received at least two votes. Harrisville Village, Harrisville Pond and Silver Lake received the most votes.

MAP: PLACES IN HARRISVILLE THAT MATTER MOST TO YOU (NEXT PAGE)

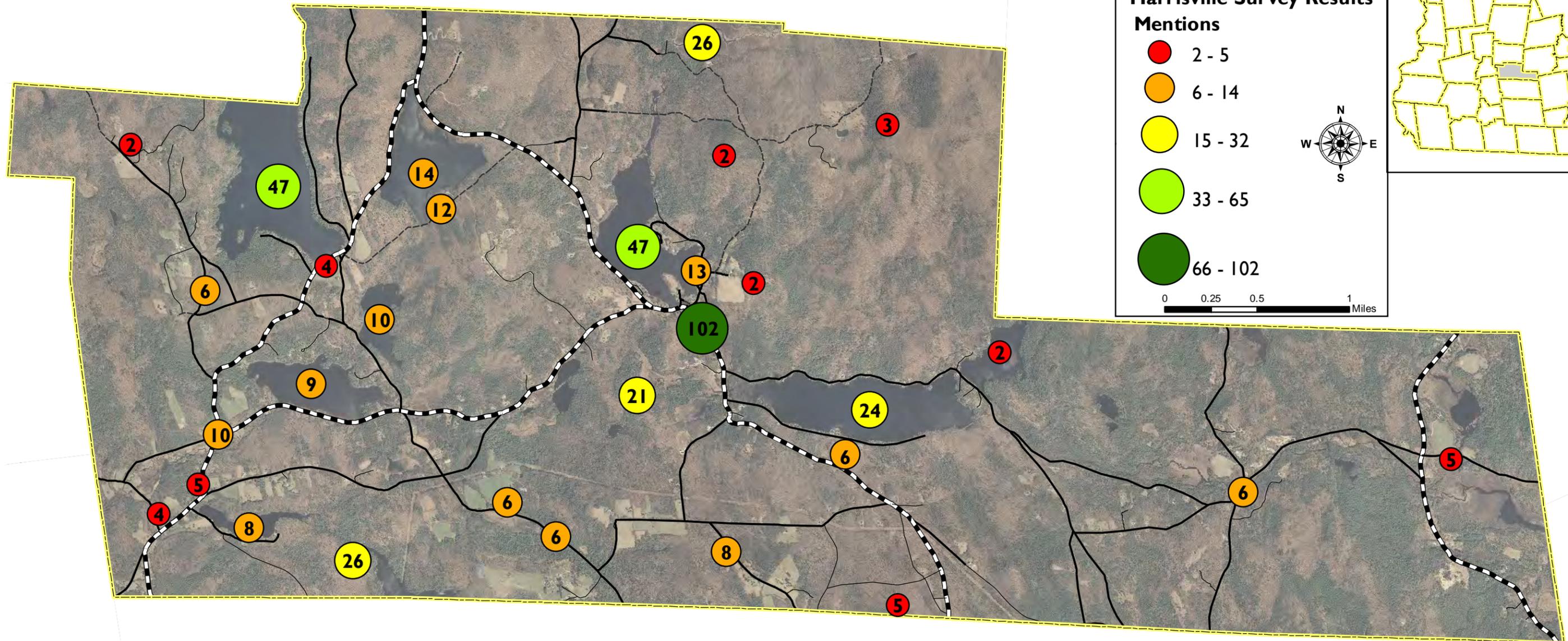


# Harrisville NRI: The Places in Harrisville That Matter Most to You

Harrisville residents helped the Harrisville Natural Resource Inventory Committee identify special places in Town. The input you provided will help shape the Master Plan update.

- 1) Residents received surveys from the NRI Committee and were asked to identify what resources and places made Harrisville unique
  - 2) They located 5 places in town that are important to them and their quality of life
  - 3) The Committee compiled the places and the number of votes each place received
  - 4) Below are the places that received more than one vote. For a full list of places and why they were identified please contact the Harrisville NRI Committee
- Thank You!

Harrisville  
Natural Resource Inventory  
Committee



## COMMUNITY SURVEY RESULTS – HIGHLIGHT OF VERBATIM COMMENTS

The survey asked respondents to explain, “*What makes Harrisville life special? How do our natural resources – waters, soils, open spaces, historic sites – contribute to our quality of life? What should be done to protect these valued assets?*” Below are summaries of major responses received.

**CLEAN, CLEAR, WATER (56 mentions):** The most frequently mentioned issues related to clean, clear surface and ground waters and the importance of protecting them.

Respondents cite the beauty of the surface waters, the variety of bodies of water in town including lakes, ponds, streams, and wetlands and their surroundings.

Mention was also made of the need for clean water protection, including the importance of landowner vigilance and use of weed-watchers and Lake Hosts.

References to ground water included clean, clear water for drinking and the protection of wetlands, aquifers and springs.

**SENSE OF COMMUNITY AND COMMUNITY ENGAGEMENT (48):** Harrisville derives great strength from its social capital: the people and their social structures, active citizen engagement, the commitment of residents, and the dedication of town officials and volunteers, their strong sense of community, their loving and caring for their town. The people make it special.

Events & places in town that connect residents include: Sunset beach; the General Store, Wells Memorial School; Fireman's Barbeque; Town dinners & dances; Community Garden; Old Home Days; Library; churches, local music events, etc.

**HISTORIC TOWN, VILLAGE, BUILDINGS AND HISTORIC HARRISVILLE (46)** Harrisville's rich historic cultural heritage is frequently mentioned as a source of pride, beauty and character.

CONSERVATION/PROTECTION (20): Protection of land and natural resources calls for better ordinances, land use regulations, community values, community education, involvement of youth, planning, working for the future and working with land trusts to place more land in conservation to preserve open land, and the value of balance between economic and agricultural activities.

QUIET (20): It was repeatedly pointed out that Harrisville's quiet, tranquility, loveliness and friendliness with no commercial traffic or snow mobile noise help to promote a feeling of serenity and escape from the stress of big city life.

RECREATION (17): Harrisville provides wonderful recreation and relaxing in summer and winter for swimming, boating, skiing, walking, Rail Trails, snow-shoeing. Harrisville's ten lakes and hiking trails especially around Harrisville Pond, the Cemetery Trail, Beech Hill trails, the Monadnock Sunapee Greenway, Cobb Hill, the Gorge, etc

BEAUTY (15): Harrisville's scenic beauty derives in large measure from its natural resources and vistas.

DEVELOPMENT AND CHANGE (13): Development and change are recognized as essential for the improvement of the social fabric we have and fostering economic diversity. Commercial development and industry should be limited, no box stores, and should blend into the environment and not take away for "our uniqueness". Development and change should keep Harrisville's special features and not change the character and history of the town, and preserve natural resources.

Comments include requests for more flexibility in home building with emphasis on using land wisely, enabling a mix of incomes and affordable housing, and attention to infrastructure whether technological, communications, or roads.

AGRICULTURE (12): Support of local agriculture, silvaculture and open spaces are vital aspects of community life, as is the Community Garden and the Harrisville Farmer's Market. All enable buying fresh, healthy, local foods and the opportunity to contact, meet and work with farmers and neighbors.

TRAILS (10): Rail trails and other paths throughout Harrisville offer many opportunities for hiking, walking, biking. Some seek better marking and organized hikes or walks.

WILDLIFE (9): Watching abundant wildlife around the community depends on tracts of well-managed wildlife habitat, including land, berries and herbs.

NATURAL RESOURCES (9): There is a strong commitment to protecting and preservation of natural resources; this has kept the town a beautiful place to live. The combinations of all the natural resources (lakes, forests, open land, protected spaces, wetland areas natural habitat, clean soil and clean air) should be kept that way.

RURAL (8): Harrisville's rural qualities are embraced; its rural atmosphere and surroundings are restful & bucolic with its small village and rural character.

FAMILY (4): Long-term family association; Many homes have been important to families for generations; I have been here every year since I was a baby; Harrisville is very special to our family; an ideal place for children and their families;

SCHOOL (4): The Wells Memorial School is described as a great school. There is also an excellent pre-school (Harrisville Children's Center).

## OTHER COMMUNITY SURVEY RESULTS – BACKGROUND & DEMOGRAPHICS

**LOCATION OF HOME:** Two in five Harrisville respondents are lakeshore property owners. Roughly half of the remaining three in five (32% of all residents) live in the Chesham area of town, while one in six live in Harrisville's town center, one in eight live in Eastview, and just under one in ten live in other areas of the community.

**ACRES OF LAND OWNED BY RESPONDENT AND FAMILY:** Virtually all respondents are landowners. Three in five own 2+ acres of land, while two in five own less. One in four respondents owns 10 acres or more of land in town.

**HAS LAND IN CURRENT USE OR CONSERVATION LAND:** Nearly two in five respondents report land in either current use or conservation land. In general, these respondents are large land-owners – three in five have over 10 acres of land, and current use / conservation landowners own 42.5 acres of land each, on average.

**AMOUNT OF ANNUAL PROPERTY TAXES PAID TO TOWN OF HARRISVILLE:** Most Harrisville residents pay between \$3,000 and \$7,500 in annual property taxes. The typical Harrisville household pays approximately \$4,650 in taxes each year.

**RESIDENCY - YEAR-ROUND, SUMMER / SEASONAL, OR SHORT-TERM VISITOR:** Harrisville's survey was taken by both year-round residents (three-fourths of the sample) and Summer/seasonal residents. Two short-term visitors were not included in final tabulations.

**RESPONDENT AGE:** Respondents to this survey tend to be older, which reflects the Harrisville demographic. One in five were between 36 and 55 years old, two in five were 55 to 65 years old, one in four were 66 to 75, and one in six were older than 75. (Survey respondents skew slightly older than US 2010 Census figures for Harrisville adults: 20-34 = 11%; 35-54 = 35%; 55-64 = 30%; 65-74 = 14%; 75+ = 8%).

**AGE OF ALL RESIDENTS IN RESPONDENT HOME:** Harrisville has an older population according to the US Census, and respondent ages in this study reflect that skew. Five in six respondent households have residents over the age of 55, while one in five have residents aged 36 to 55, one in six respondent households have children under the age of 18, and one in eight have young adults between the ages of 18 and 35.

## WELLS MEMORIAL SCHOOL NATURAL RESOURCE INVENTORY

The natural resources inventory prepared by the 5th and 6th grades of the Wells Memorial School added important youth perspectives as well as the prospect of future youth involvement in the town's civic affairs.

The students liked: town (47%), water (44%), roads and trails (8%) and land (4%).

More precisely, they ranked their preferences: sunset beach (25%), wells memorial school (17%), Harrisville general store (16%), the center of town (16%), the mills (9%), Russell reservoir (8%), lake Skatutakee (4%), Crowe Eagle Trail at WMS (4%), silver lake (4%), Harrisville Children's Center (3%), library (3%), Harrisville Pond (3%) and others.

## WORKSHOP ACTIVITIES RESULTS

In the summer and fall of 2012 a series of three public workshops were held at the Wells Memorial School. Residents of Harrisville were invited to listen to natural resource professionals speak to the importance of different resources in town. Attendees were asked to provide local knowledge about where important resources were located in town as well as identify threats and ways to protect the resources. The first workshop was held on July 21<sup>st</sup> and focused on water quality and storm water runoff with Jillian McCarthey from the NH Department of Environmental Services as the speaker. The wildlife and habitat workshop was held next on September 10<sup>th</sup> with Amanda Stone and Steve Roberge from UNH Cooperative Extension as speakers. The agriculture and working lands workshop was held on October 15<sup>th</sup> featuring Pete Throop from the Cheshire County Conservation District, Mary Ellen Cannon from the Natural Resource Conservation Service, and Carl Majewski from UNH Cooperative Extension.

The next three maps show the places identified by workshop participants as places containing some of the best water, wildlife habitat, and agricultural resources in town. On the water maps people were asked to identify the water bodies with the highest water quality, water bodies with poor water quality (none identified), and threats to water quality in Harrisville. On the wildlife maps attendees were asked to identify areas that they perceive as good wildlife habitat as well as corridors between these good habitats. Often corridors were identified as places people frequently saw wildlife crossing town roads. Attendees identified working farms and forests as well as areas of productive soils on the agriculture and working lands maps. It was noted that the some of the oldest homes are associated with the current working farms and most fertile soils, indicating that the soils determined which farms were most successful and longest lasting in town.

MAP: WATER WORKSHOP (NEXT PAGE)

MAP: WILDLIFE WORKSHOP (SEE PAGE AFTER NEXT)

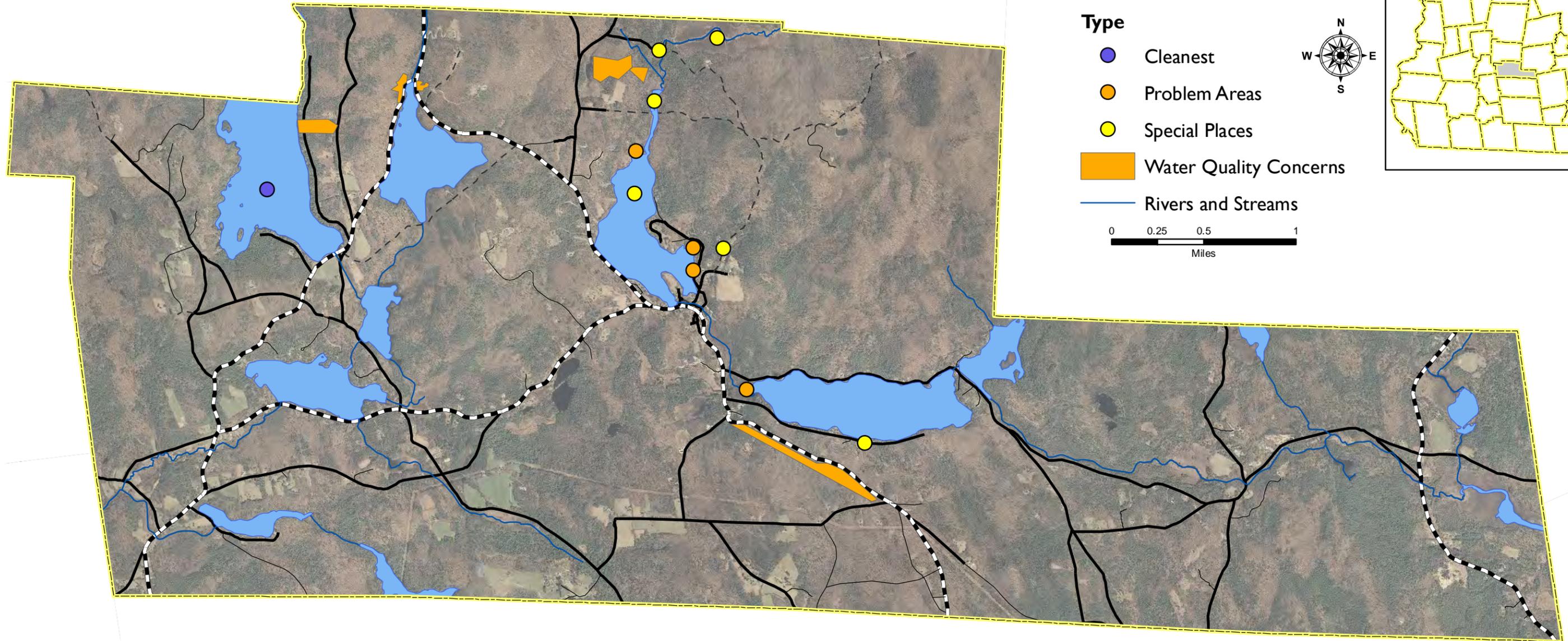
MAP: AGRICULTURAL AND WORKING LANDS (SEE SECOND PAGE AFTER NEXT)



# Harrisville NRI: Water Workshop Data Collection Results

This map shows the results of data collected at a public meeting focused around Harrisville's water resources. After hearing from a speaker from DES, participants were asked to identify places on a map that were considered either a high quality water resource or an impaired water resource. These residents were also asked to identify the locations of threats to water quality in town.

Harrisville  
Natural Resource Inventory  
Committee

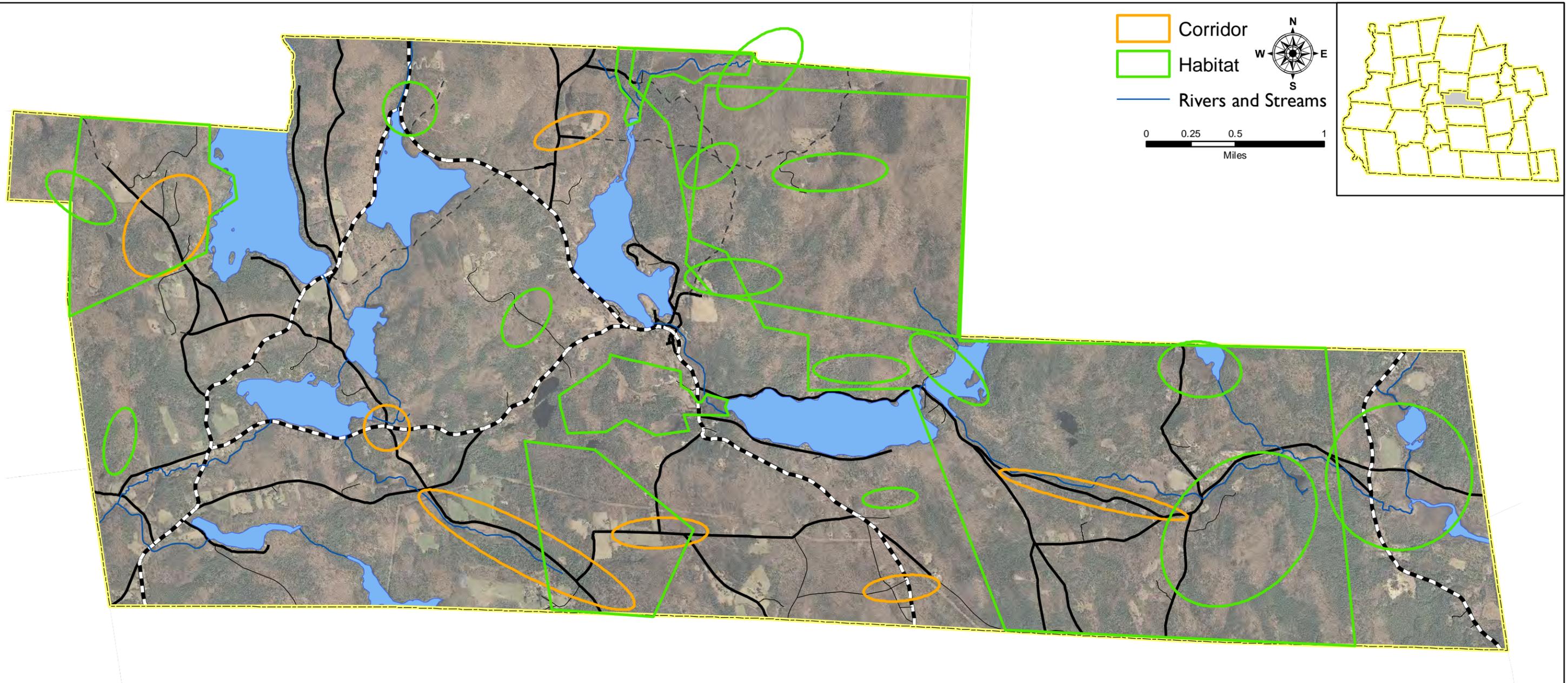




# Harrisville NRI: Wildlife Workshop Data Collection Results

This map shows the results of data collected at a public meeting focused around Harrisville's wildlife and habitat. After hearing from three speakers, residents were asked to provide the locations of wildlife sightings and habitat areas. Particular attention was spent on unfragmented blocks of land, conserved parcels, and corridors. People identified corridors as places where they frequently witnessed wildlife crossing roads in town.

Harrisville  
Natural Resource Inventory  
Committee

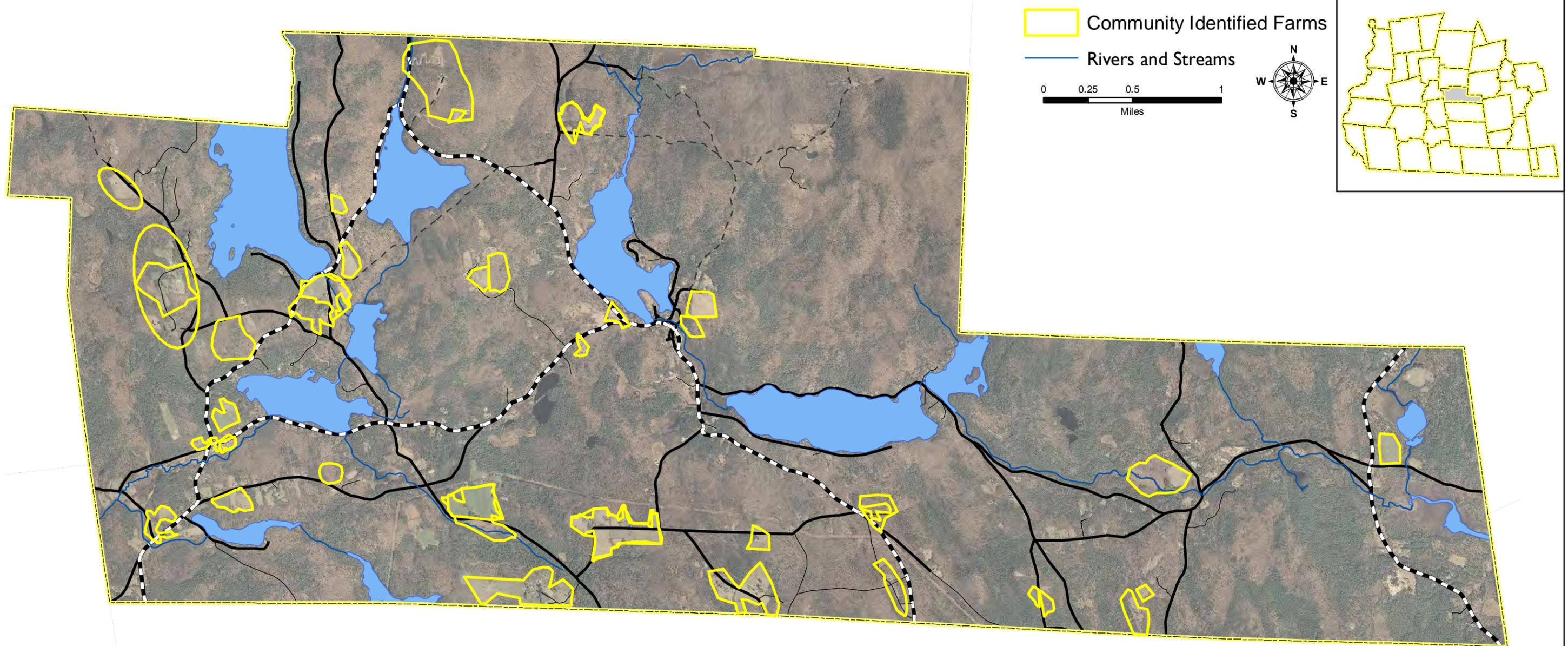




# Harrisville NRI: Agriculture Workshop Data Collection Results

This map shows the results of data collected at a public meeting focused around Harrisville's agricultural and working lands. After hearing from three speakers, residents were asked to provide the locations of working farms and productive soils. Particular attention was spent on active farms, open fields, and ag soils. People identified farms where a tangible product was grown and supplied to other farmers or the public.

Harrisville  
Natural Resource Inventory  
Committee



## NATURAL RESOURCES INVENTORY

The following section summarizes natural resource data publicly available through the UNH Cooperative Extension's GRANIT database of geographic information. Each of the following five sections will describe a suite of related natural resources. The descriptions include:

- Defining the resource,
- where it is currently located in Harrisville,
- how much of the resource currently exists in Harrisville,
- why the resource is important to the community, and
- what can be done to protect the resource where appropriate.

All numbers in this section are approximate and come from calculations of modeled or remotely sensed data. The maps are not survey accurate or accurate at the parcel scale but provide an indication of what resources are likely to be found there.

## TOWN CONTEXT MAPS

These maps are designed to help orient the readers of this document to looking at their town from a bird's-eye view through displaying the locations of places that most people are familiar with. The maps in this and the subsequent sections will maintain the same orientation and template for consistency and clarity. The maps are oriented with north at the top of the map and thus south at the bottom, east to the right, and west to the left. One mile scale bars are provided for measurement between resources on each map. A small map of where Harrisville lies in relation to other towns of the Monadnock region also accompanies each map. Finally, summary information is included at the top of each map below the title.

## 2010 "LEAF-OFF" AERIAL PHOTOGRAPH

The aerial photographs compiled to create this map were taken in the spring of 2010 by contractors working for the NH Dept. of Transportation through an USGS grant. The images were taken with camera equipped with a Global Positioning System (GPS) mounted to an airplane flying at 10,000 feet. Photographs were taken on days that the sky was free of clouds and the ground was clear of cloud shadows, smoke, fog, haze, snow, ice, foliage, and flooding. Due to the GPS equipped camera, these photographs are the most accurate representation of the State's resources having been mathematically corrected to 1 foot of accuracy with a 1 foot resolution.

At the scale this map has been produced the reader can see the water bodies, roads, power lines, rail road bed, farms, and development. It is also possible to see the conifer and hardwood forests as the hardwoods have lost their leaves and appear brown whereas the conifers retain their needles year round and appear green. Additionally, one can see the management of the landscape in terms of agriculture and forestry in that the pattern of mowing, tilling, or harvesting can be seen at this scale. This snapshot in time can be compared to future aerial photographs to identify changes in the forest make up or development patterns. Such high quality aerial photographs have become the bases for many NRI's.

Having the one foot resolution or pixel size allows one to zoom into these images to the point where the viewer can observe buildings, stonewalls, and small wetlands. Some towns have used these images to identify potential vernal pools which are small habitats used by a very specific suite of wildlife adapted to breed only in these wetlands that dry up annually. Some towns use these images to map trails and stone walls within their boundaries. Other towns use images to track the creation of and addition to structures.

Looking at the Harrisville aerial photograph, the dark black water bodies display as dominant features. The next feature that catches the eye is the development in the town center, Chesham, and Eastview as well as along the lakeshores. The expanse of wooded hillsides around the water bodies and developed areas may not stand out, but speaks to the unfragmented nature of the landscape. These large stretches of land in a forested state support the water quality, scenic vistas, wildlife habitat, and recreation in town which all lead to residents' quality of life. Monitoring how development encroaches on unfragmented forests is important if the town wishes to continue to enjoy the benefits of open spaces in the distant future.

MAP: ARIAL PHOTOGRAPH (NEXT PAGE)



# Harrisville NRI: 2010 "Leaf-Off" Aerial Photograph

This map shows the result of a 2010 fly-over of the state by a private contractor at a 1 foot resolution with 4-band imagery.

- 1) This imagery displays the highest level of detail for the current forest, infrastructure, and housing conditions in town
- 2) By comparing this imagery to past and future aerial images residents can identify development trends
- 3) Similar comparisons can identify changes in habitat types and forest management over time
- 4) This map can help residents locate places in town by the way they look and where location may be difficult to determine on the resource maps

Harrisville  
Natural Resource Inventory  
Committee



## 2010 ROAD MAP

This map is a corrected display of the location, type, and name of Harrisville's road network. This data was collected by the Southwest Region Planning Commission for the NH Dept. of Transportation through in the field data collection with vehicle mounted GPS. There are approximately 13 miles of roads maintained by the State of New Hampshire including NH Route 137, Chesham Road, Breed Road, Nelson Road, and Dublin Road. There is an additional 30 miles of town maintained or Class V roads for a total of 43 actively maintained and traveled roads in Harrisville. Another 6 miles of non-maintained or Class VI roads exist in town. These roads are still public rights of way that were abandoned as through roads due to lack of maintenance, lack of use, natural disaster, or new road construction. These roads are highly valuable as public recreational trails, forestry access to back lots, or as potentially available for future development with improvement when appropriate. There are also approximately 10 miles of private roads maintained by individual landowners or by associations. These roads serve at least two houses. Driveways serving one house were not mapped.

Roads, particularly those in close proximity to surface water bodies, have high potential to impact water quality through storm water runoff. If not managed appropriately, storm water can carry sediment and other roadway pollutants such as vehicular fluids to the lakes, ponds, rivers and streams decreasing the water quality and their suitability for fish and other wildlife as well as for drinking and recreation. Making sure that the town installs appropriately designed and sized storm water control structures when maintaining roads is important for maintaining water quality.

Roads also impact wildlife and their ability to travel between habitats. The wider and more heavily traveled a road is, the more likely it is for wildlife to be killed in vehicular collisions. People and their vehicles can also be damaged in these collisions resulting in a public safety issue. The locations where wildlife are frequently seen crossing the road or hit crossing roads should be tracked to identify site specific ways of reducing collisions such as underpasses, overpasses, signage, or fencing. Additionally, the town could look at the habitats on either side of the road to identify why that particular location is an active crossing.

MAP: 2010 ROAD MAP (NEXT PAGE)

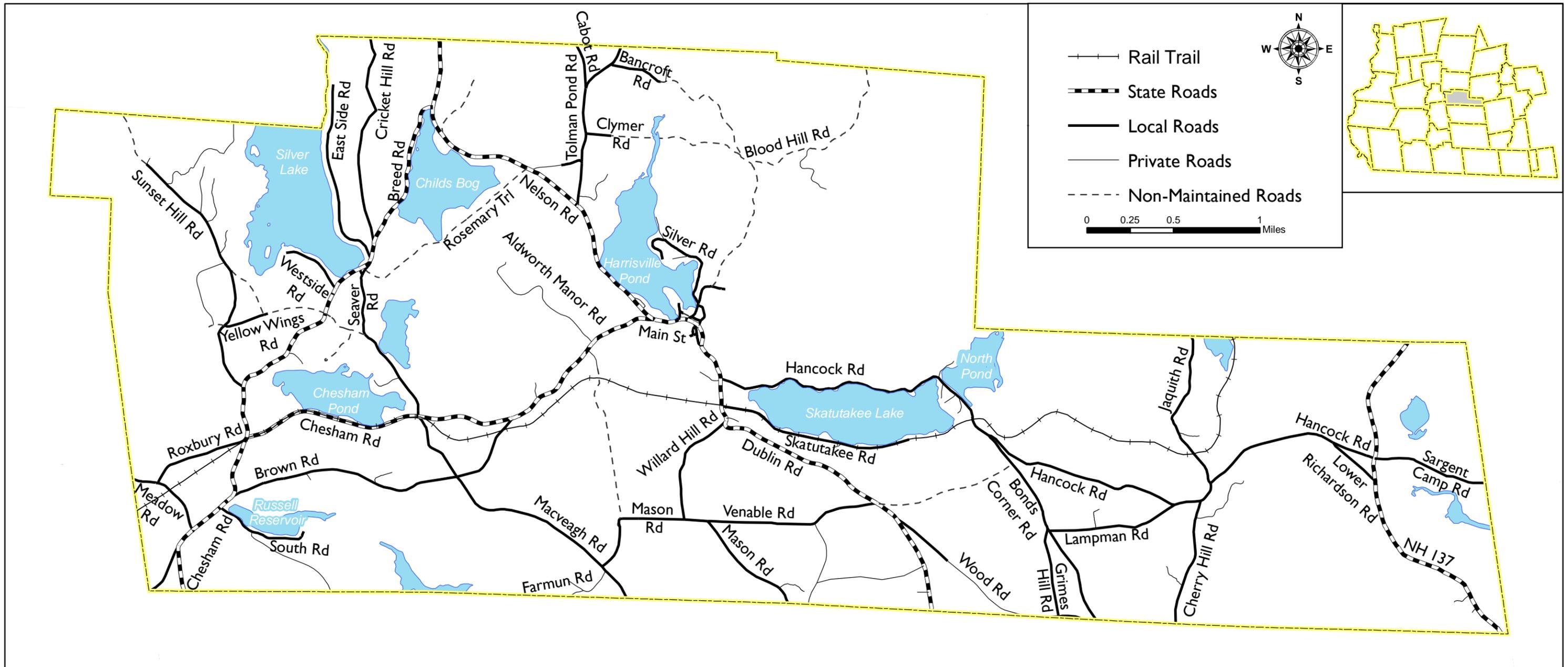


# Harrisville NRI: 2010 Roads

This map shows the result of a 2010 survey of all roads in each town by the Southwest Region Planning Commission and NHDOT.

- 1) This map displays the maintenance status of all roads in Harrisville as of 2010
- 2) State roads are maintained by the State of NH Dept. of Transportation of which there are approximately 13 miles
- 3) Local roads are maintained by the Town of Harrisville of which there are approximately 30 miles
- 4) Private roads are maintained by the residents on those roads of which there are approximately 10 miles
- 5) Non-Maintained roads are those that are still public rights-of-way but are no longer maintained by the town of which there are approximately 5 miles

Harrisville  
Natural Resource Inventory  
Committee



## CONSERVATION LANDS

This map shows the different parcels that have been conserved in green and as such will not likely be developed. Conservation of a parcel can occur through multiple avenues which vary in many ways which affect the permanence and level of protection. There are some parcels that are owned by a government or conservation organization, some parcels have deed restrictions, and other have conservation easements. When a government entity owns a property it is considered a public land and will only get developed if there is a greater public benefit served by its development (e.g. a school, fire station, police station, etc) or sold to a private individual for revenue. Deed restrictions are placed on the deed for the property with an enforcing agent declared. Monitoring of deed restriction may not occur regularly and if the parties agree, can be dissolved or bought back. Conservation easements are a permanent transfer of rights from a landowner to a conservation organization or governmental agency. These easements follow the deed and are transferred to future landowners. The entity that holds the easement is required to perform annual monitoring visits to ensure the terms of the easement are being followed and as such is the most permanent form of conservation of a property.

There are approximately 2,750 acres of conserved lands in Harrisville which is approximately 23% of the town's land area. Approximately 2,496 of those acres are under conservation easement with one of the following municipalities, organizations and agencies: City of Keene (for watershed protection), Harris Center for Conservation Education, Historic Harrisville, Monadnock Conservancy, State of New Hampshire, Society for the Protection of New Hampshire Forests, Town of Harrisville, and the United States Army Corps of Engineers.

Future conservation efforts in town should aim to build on and connect the existing conserved parcels. This technique would help preserve the landscape's potential to provide the ecosystem services that contribute to the town's rural character and quality of life including preserving water quality and quantity, scenic vistas, wildlife populations, and local agriculture and forestry. Conservation may be aided by formal adoption of this NRI as an official town document. Resources identified in an official town document increase the potential for landowners to obtain federal income tax reductions for the donated value of conservation easements.

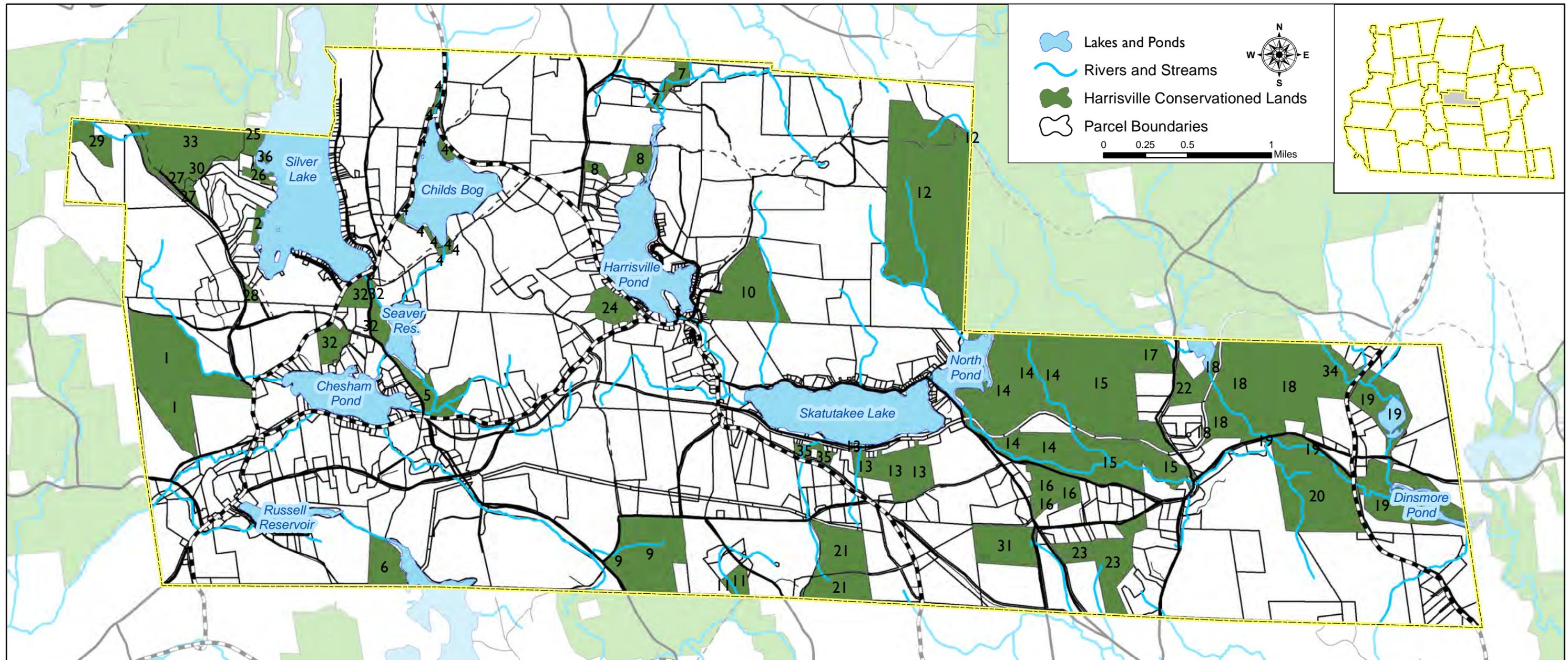
MAP: CONSERVATION LANDS (NEXT PAGE)



# Harrisville NRI: Conservation Lands

This map shows the conserved parcels in the town of Harrisville. This map shows parcels that are protected through conservation easements, deed restrictions, and through being owned by conservation organization or public entities such as the town, state, or federal governments and their agencies. Often, towns will look to build and connect existing conservation lands by seeking to protect abutting parcels. There are approximately 2,750 acres of conservation lands in Harrisville (23% of the land area).

Harrisville  
Natural Resource Inventory  
Committee



## WATER RESOURCES

The following seven maps are related to the water resources in Harrisville including watersheds, surface water bodies, resources that influence water quality, and the location of groundwater sources and certain extraction points.

### MAJOR WATERSHEDS

A watershed is the area over which or through which water will flow to ponds, lakes, streams, wetlands, aquifers and, from there, downstream. The Major Watersheds map displays the boundary between the two major watersheds that are within Harrisville at a small scale to provide more context as to how Harrisville relates to the watershed divide. Harrisville is located at the top of the divide between two significant watersheds, the Connecticut River and the Merrimack River watersheds. Water that falls in the western part of town flows through the Minnewawa Brook to the Ashuelot River on to the Connecticut River where it empties into Long Island Sound after traveling from NH through Massachusetts and Connecticut. Silver Lake, Childs Bog, Seaver Reservoir, Chesham Pond, Russell Reservoir, and Howe Reservoir all flow in this direction. Precipitation falling on the eastern part of town flows into Nubanusit Brook to the Contoocook River on to the Merrimack River where it empties into the Gulf of Maine. Harrisville Pond, Lake Skatutakee, and Dinsmore Pond flow in this direction.

Due to the location of Harrisville at the top of the watershed divide, the Town and its residents have a high level of control over the quality of its water bodies. Actions affecting the water quality in Harrisville not only affect Harrisville, but also impact the water quality of communities as far away as Connecticut.

The best way to preserve the water quality of a watershed is to preserve large blocks of unfragmented lands in the headwaters or top of the watershed to prevent those lands from development and increased disturbance. Secondary watershed protection comes from conserving land along the frontage of water bodies that act as buffers to the water bodies. These buffers filter out many pollutants from storm water runoff and prevent such things from entering the system.

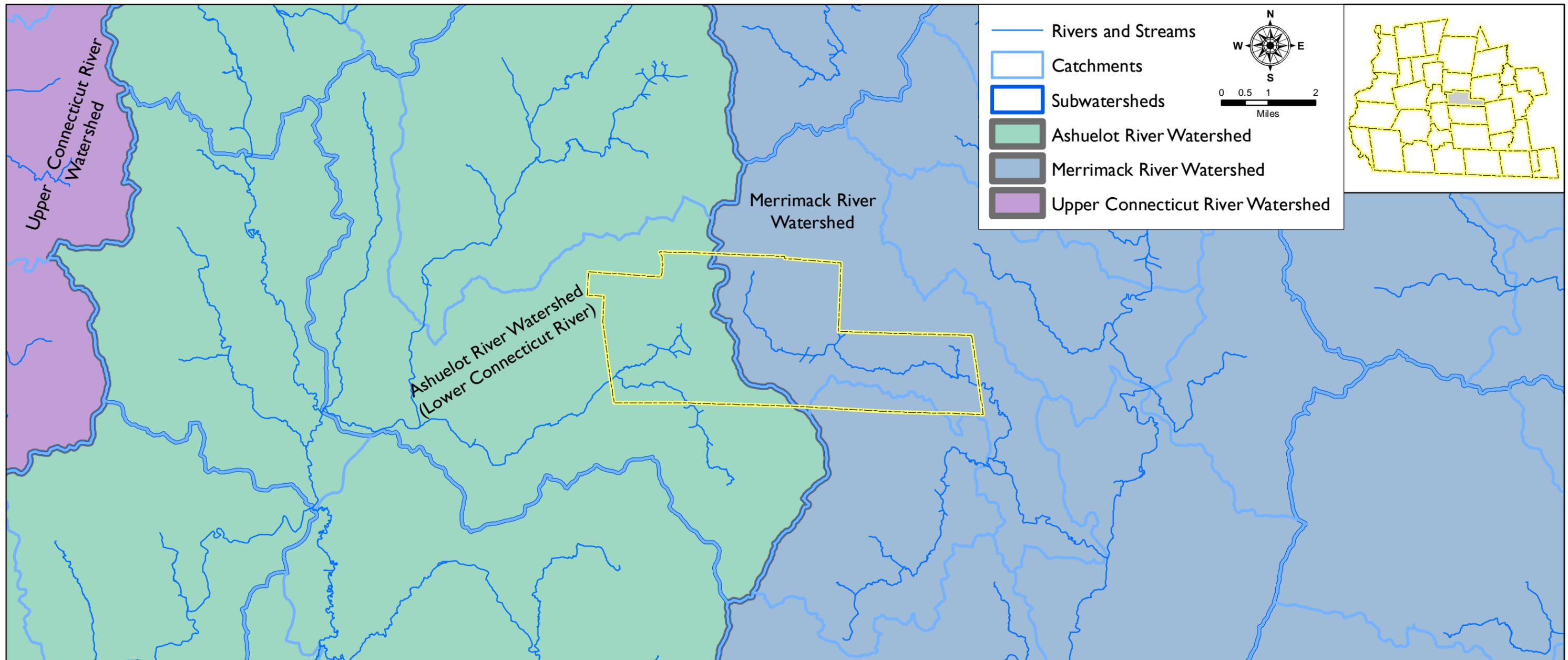


# Harrisville NRI: Major Watersheds

This map shows the different levels of watershed delineations drawn by the NH Dept. of Environmental Services based on topographic maps and digital elevation models.

- 1) This map displays the boundary of the two major watersheds in Harrisville
- 2) Water that falls on the western half of Harrisville drains west to the Ashuelot River then on to the Connecticut and finally Long Island Sound
- 3) Water in the eastern half of Harrisville drains into the Merrimack River and the Gulf of Maine
- 4) The divide between these two drainages runs right through the center of Harrisville
- 5) Harrisville is able to protect many of its own water resources from its location but also affects the water quantity and quality of communities downstream

Harrisville  
Natural Resource Inventory  
Committee



## EASTERN WATERSHEDS

Harrisville receives surface water from the town of Nelson via Lake Nubanusit through the Great Meadow (Mosquito Bush) to Harrisville Pond and down to Skatutakee Lake. This watershed is an important source water protection area.

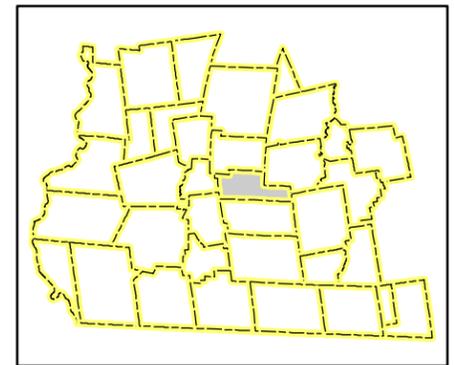
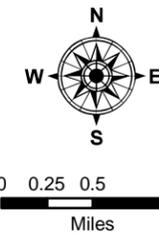
MAP: EASTERN WATERSHEDS (NEXT PAGE)



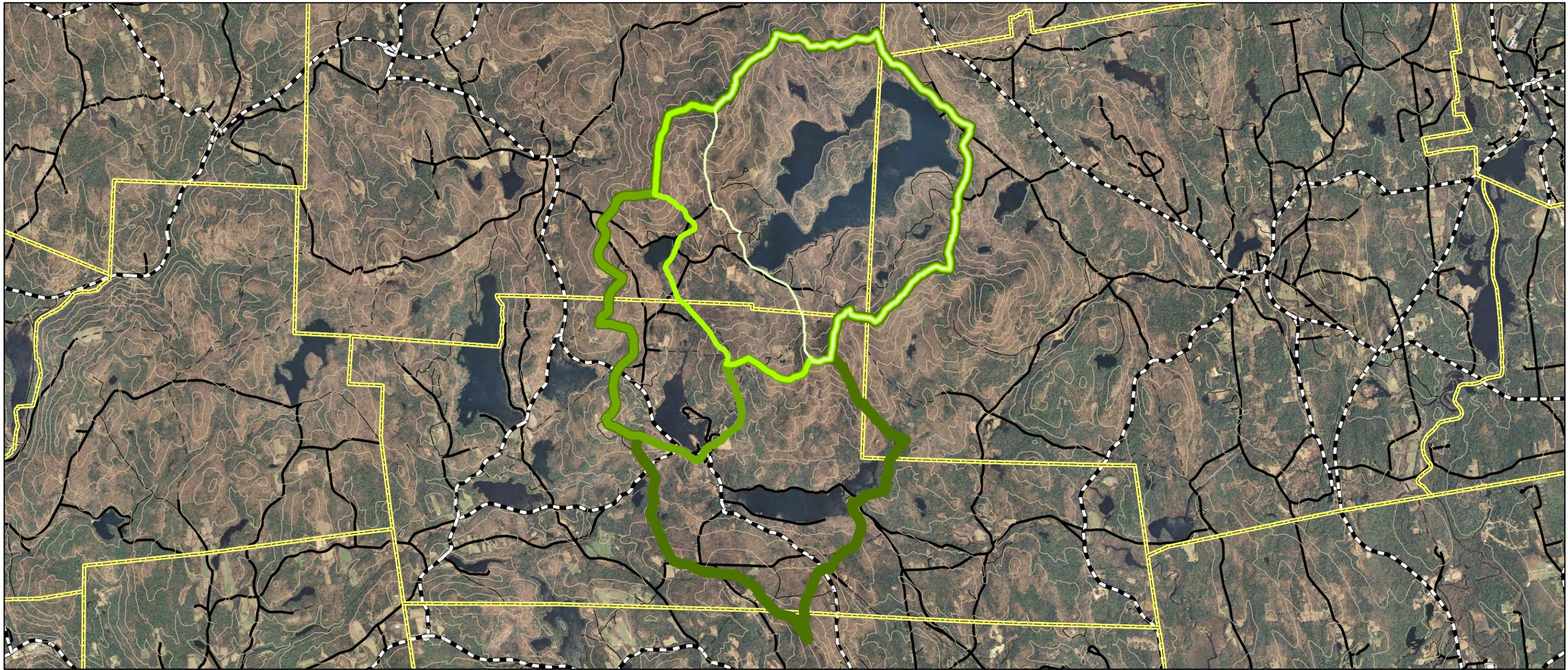
# Harrisville NRI: Watersheds of the Nubanusit Brook Waterbodies

This map shows the results of watershed delineations performed by Monadnock Conservancy staff from the National Elevation Dataset in 2012.

-  Nubanusit Lake Watershed
-  Great Meadow Watershed
-  Harrisville Pond Watershed
-  Lake Skatutakee Watershed
-  100ft Contours
-  State Roads
-  Local Roads
-  Private Roads
-  Non-Maintained Roads



Harrisville  
Natural Resource Inventory  
Committee

## WESTERN WATERSHEDS

Water also comes from Nelson from diverse streams into Silver Lake – Seaver Reservoir – Chesham Pond. A third watershed, also from Nelson, serves Child’s Bog, Seaver Reservoir and Chesham Pond.

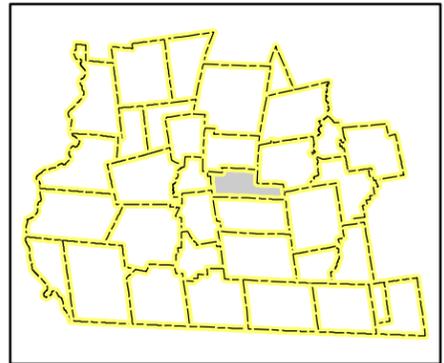
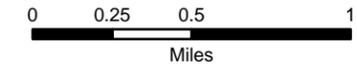
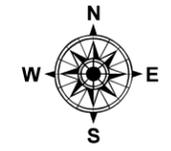
MAP: WESTERN WATERSHEDS (NEXT PAGE)



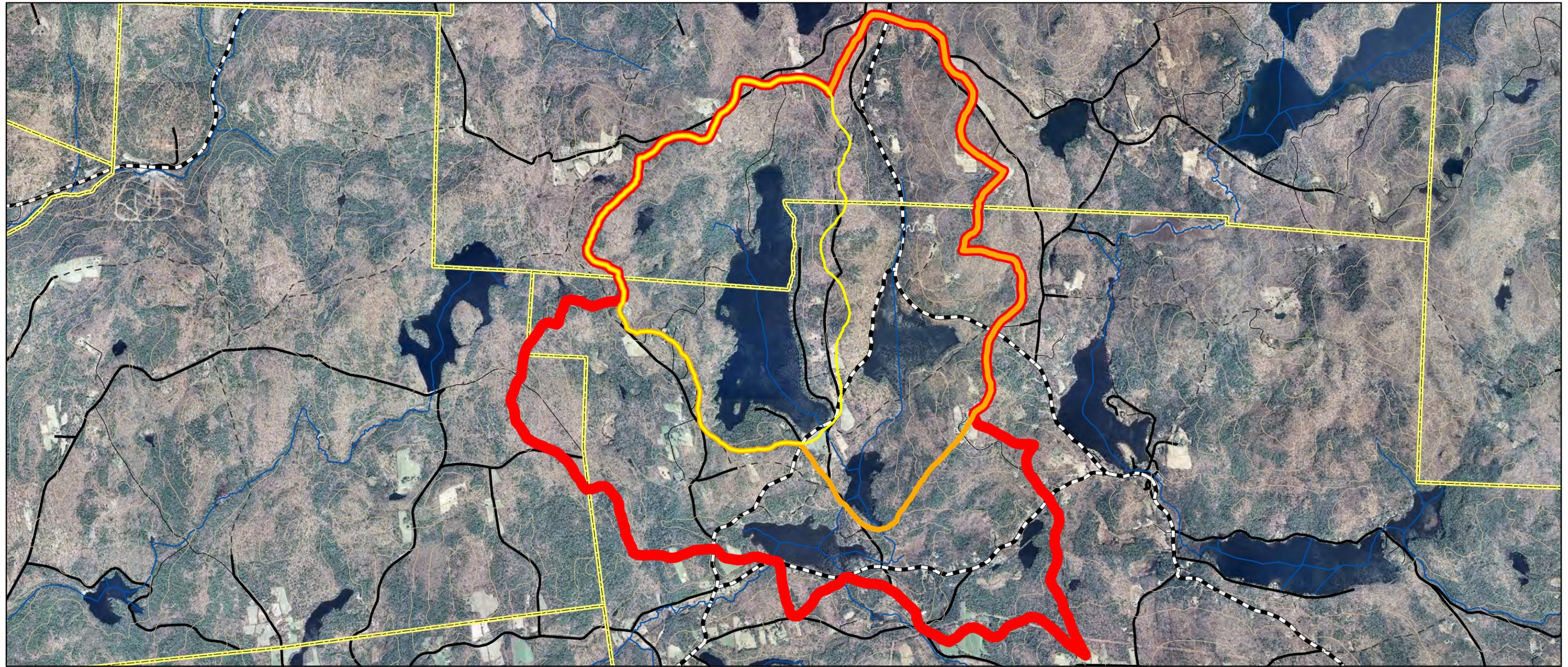
# Harrisville NRI: Chesham Pond Watershed and Associated Subwatersheds

This map shows the results of watershed delineations performed by Monadnock Conservancy staff from the National Elevation Dataset in 2012.

- Silver Lake Watershed
- Seaver Reservoir Watershed
- Chesham Pond Watershed
- 100ft Contours
- State Roads
- Local Roads
- Private Roads
- Non-Maintained Roads
- Rivers and streams



Harrisville  
Natural Resource Inventory  
Committee

## SURFACE WATER – DAMS, LAKES, PONDS, RIVERS, AND STREAMS

This map illustrates the major surface water systems and flows of water through town including intermittent streams, perennial streams, brooks, rivers, lakes and ponds. Most lakes and ponds in Harrisville are formed as the result of placing dams on rivers and streams. Analysis of the natural resources in Harrisville and the survey of its residents indicate that the surface waters greatly contribute to and may even define the character of the community.

Public water bodies are those lakes and ponds over 10 acres in size or rivers and streams navigable by boat. There are 13 public lakes and ponds in Harrisville, 10 of the 12 are over 25 acres in size. Silver Lake is the largest water body in town at 346.5 acres of which 228.5 are in Harrisville while the other 118 are in Nelson. Below is a chart of the ten named public water bodies, their acreage, and the ownership status of the dam. There are also two open water wetlands over 10 acres in size in the eastern part of town north of Dinsmore Pond that qualify as public water bodies but are unnamed. Dinsmore Pond is also a large open water wetland and is most likely created naturally through beaver activity. Three of the lakes are influenced by dams under private control including Harrisville Pond, Skatutakee Lake, and North Pond. One lake, Russell Reservoir, is controlled by the town. The other five are controlled by the State of NH.

Lake or Pond	Size (Acres)	Other Town	Dam Ownership
Dinsmore Pond	15		Natural
Russell Reservoir	26		Private
Seaver Reservoir	33		State
North Pond	45		Private
Chesham Pond	91		State
Childs Bog	115		State
Harrisville Pond	138		Private
Howe Reservoir	168	Dublin	State
Skatutakee Lake	236		Private
Silver Lake	346	Nelson	State

In addition to the lakes and ponds there are 52 miles of rivers and streams in Harrisville. Intermittent, also known as seasonal, streams account for 39 of those miles. Below is a chart of the six named brooks in Harrisville and their length within Harrisville. Consistent with the subwatersheds, Nubanusit and Minnewawa Brooks are the trunk rivers in town that concentrate most of the water falling in town and carry it downstream beyond the town boundaries.

Stream	Length
Brickyard Brook	1.1 miles
Brush Brook	522 feet
Jaquith Brook	1.8 miles
Minnewawa Brook	1.4 miles
Nubanusit Brook	7.1 miles
Willard Brook	1.5 miles
Intermittent and Unnamed	39 miles

Beyond the eight dams discussed above in the lakes and ponds section, there are eight more on the brooks in town. Eight of the sixteen total dams in Harrisville are on the Nubanusit Brook or its tributaries. All the dams on Nubanusit Brook are privately owned. Five of the dams in town are in ruins or no longer impound water but are still listed in the NH Department of Environmental Services database that served as the source of data from which this map was created. These include the Nubanusit Brook Dam north of Harrisville Pond (historic ruins), Nubanusit Brook Dam south of Harrisville Pond, Smith Pond Dam west of Harrisville Pond (unclear if it was ever built), Eastman Dam on the Minnewawa Brook south of Chesham Pond (historic ruins), and the Box Shop Dam on Pratt Brook west of Russell Reservoir (historic ruins). Below is a table of the dams, ownership, and state of management.

Also in the table is the type of dam including concrete, earth, earth/concrete, stone/concrete, and timber crib. Concrete dams are those constructed mainly of cast in place concrete. Earth or earthfill dams are embankment dams constructed with a minimum of 50% of its material being soil, the weight of which holds back water. Earth/concrete dams combine poured concrete walls or cores with the earthen embankments as added weight.

Stone/Concrete dams combine poured concrete structures with stone armoring where the concrete and weight of the stone hold back the water and the stone protects the concrete from erosion. Timber crib dams are constructed of timbers that create a frame that then holds earth fill to impound water. In addition to creating the lakes so beloved by Harrisville residents, the active dams also provide wildlife habitat upstream, opportunity for power, and flood water storage and control. Dams also fragment aquatic habitat by creating barriers beyond which aquatic organisms cannot travel upstream or down. The NH Department of Environmental Services Dam Bureau monitors the status and condition of all dams in the state to ensure that they are operating without presenting likely threat to life and property downstream.

Name	River	Ownersh	Status	Type
Childs Bog Dam	Tributary of the Minnewawa	State	Active	Concrete
Silver Lake Dam	Minnewawa Brook	State	Active	Earth/Concrete
Harrisville Pond Dam	Nubanusit Brook	Private	Active	Earth
Cheshire Mills Forebay Dam	Nubanusit Brook	Private	Active	Stone/Concrete
Nubanusit Brook Dam	Nubanusit Brook	Private	Active	Earth
Seaver Reservoir Dam	Minnewawa Brook	State	Active	Earth
Nubanusit Brook	Nubanusit Brook	Private	Active	?
Skatutakeee Lake Dam	Nubanusit Brook	Private	Active	Stone/Concrete
Chesham Pond Dam	Minnewawa Brook	State	Active	Concrete
Russel Reservoir Dam	Tributary of the Minnewawa	Town	Active	Earth
Howe Reservoir Dam	Tributary of the Minnewawa	State	Active	Concrete
Nubanusit Brook Dam	Nubanusit Brook	Private	Exempt	Concrete
Nubanusit Brook Dam	Nubanusit Brook	Private	Not Built	Timbercomb
Smith Pond Dam	Smith Pond Brook	Private	Not Built	Earth
Eastman Dam	Minnewawa Brook	Private	Ruins	Timbercomb
Box Shop Dam	Pratt Brook	Private	Ruins	Timbercomb

Also on this surface water map are the areas delineated by the Federal Emergency Management Agency (FEMA) as 100 year floodplains. These are places that are prone to flood during intense storms of which there should only be a one percent chance of occurrence in a given year. There are many other areas in town which are prone to flood during less intense storm events but the duration and risk of damage should be less than in the 100 year floodplain during a 100 year storm. Harrisville benefits in the number of wetlands and flood control dams which are capable of mitigating the effects of flood events when functioning properly.

Methods to protect surface water quality and quantity include land protection, storm water management, buffering surface water bodies, and avoiding development within flood prone areas. The most successful way of protecting surface water is through protecting the

lands surrounding them from development and conversion. The most common tool for this is the conservation easement which keeps the land in private ownership but minimizes the development potential and requires the use of best management practices for intensive uses such as forestry and agriculture. Undeveloped shoreline, properties with steep slopes and highly erodible soils, as well as properties at the top of watersheds should be considered as priorities for land conservation.

Storm water management includes both the management of water runoff from public infrastructure such as roads, buildings, and parking areas as well as runoff from privately owned properties and infrastructure. Public infrastructure should be designed to handle the volume of water generated by intense storm events in that the infrastructure can pass the water while also minimizing the flow of sediment and pollutants into surface water bodies. Properly sized and designed infrastructure may be more costly up front but should not fail in storm events and will protect the quality of life of residents. Equally as important is the application of best management practices related to storm water management on the private lands in Harrisville. These practices are designed to slow runoff so that it is not able to erode and carry sediments and pollutants into the surface waters. Some examples are vegetated buffers of the surface waters to slow and absorb runoff, rain gardens to act as retention basins, rain barrels to collect storm water from buildings, as well as practices related to forestry and agriculture which minimize the erosion and flow of soil into water bodies.

Beyond the voluntary measures taken by the town and landowners mentioned above, there are also regulatory options such as buffers of surface waters, and overlay districts such as steep slopes and shoreland protection. These zoning options allow the planning board to limit the type and extent of uses that can occur within certain resources such as wetlands. Common ordinances are wetlands protection overlay districts, surface water protection overlay districts, and floodplain overlay districts. Additionally, these resources can be buffered by a certain distance to provide further protection to the surface waters of Harrisville.

Harrisville should analyze its current overlay and buffer district to ensure they are consistent with current best management practices and the goals of the community. A floodplain overlay district is both a matter of surface water protection and protection of public health and property. Development within the 100 year floodplain should be avoided on two counts: first, structures or materials placed within the floodplain are at risk of damage; second, water displaced by floodplain development will flow downstream more quickly and can elevate the footprint of the 100 year flood plain, adversely impacting downstream properties.

The town may want to embark on projects delineating the wetland and floodplain boundaries to a more accurate level than mapped in this NRI.

It should be stressed that the basis for the character and quality of life in Harrisville is the quantity and quality of water resources in Harrisville. As such everyone has a vested interest in the maintenance of these resources. All residents should be engaged in a process that educates folks on the importance of such resources and methods for protecting them. This process would then develop a culture of caring where residents voluntarily avoid land management decisions that could damage these and other resources.

MAP: SURFACE WATER – DAMS, LAKES, PONDS, AND STREAMS (NEXT PAGE)

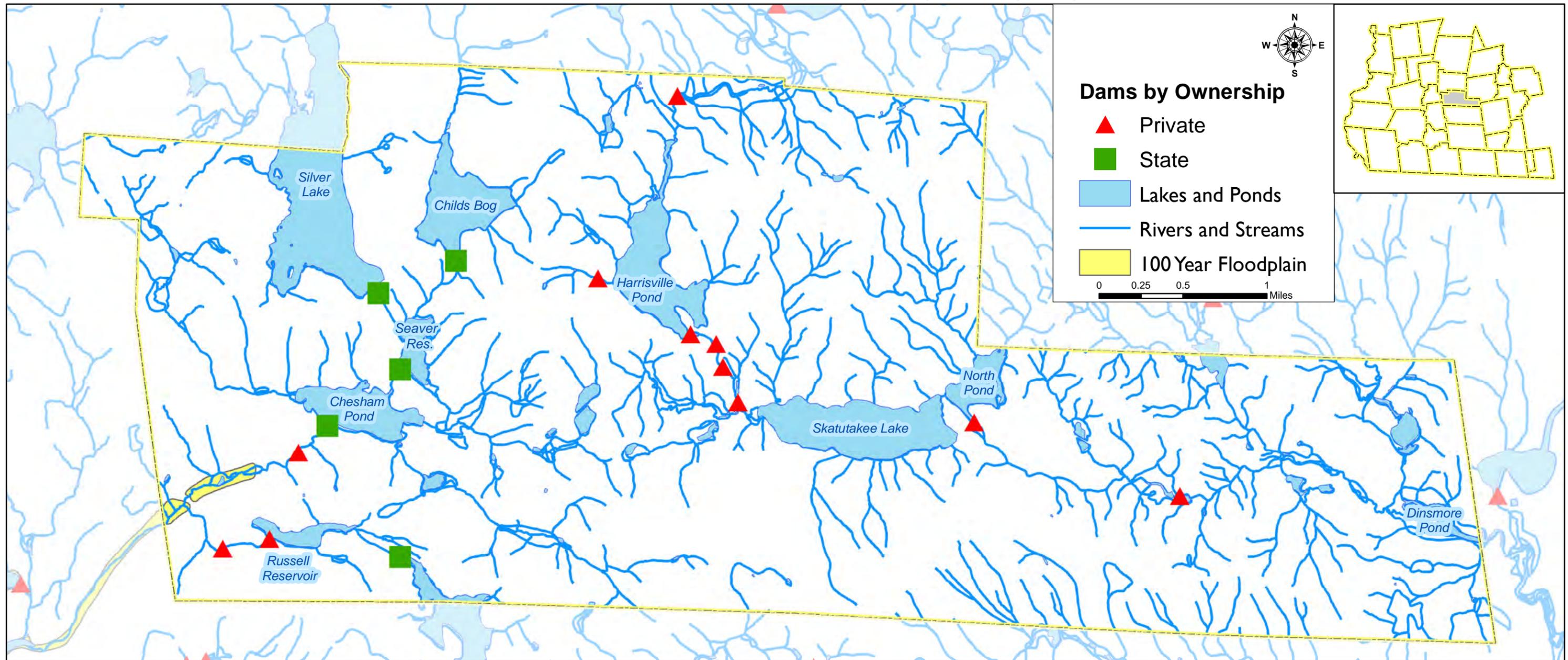


# Harrisville NRI: Surface Water - Dams, Lakes, Ponds, Rivers and Streams

This map shows the dams, lakes, ponds, rivers and streams and their floodplains in Harrisville.

- 1) There are 12 open water lakes or ponds over 10 acres in size; 10 are over 25 acres
- 2) Silver Lake is the largest water body in Harrisville at 346.5 acres, although 118 acres of the lake are in Nelson
- 3) Harrisville has approximately 927 acres of open water within its boundaries
- 4) There are approximately 276,431 linear feet (52 miles) of rivers and streams in Harrisville in three subwatersheds
- 5) Many areas prone to flooding in Harrisville have been impounded by flood control dams, others are extensive wetlands; FEMA has identified 33 acres along Minniwawa Brook to be 100 year floodplain; other areas in town are also within the 100 year floodplain but have not been mapped by FEMA
- 6) There are 16 dams in Harrisville in different states of ownership and repair; 11 are privately owned and 5 are state owned

Harrisville  
Natural Resource Inventory  
Committee



## SURFACE WATER – WETLANDS AND HYDRIC SOILS

New Hampshire has adopted the same definition of wetlands as the US Environmental Protection Agency and the US Army Corps of Engineers which states that wetlands are:

“those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal conditions do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” (U.S. ARMY CORPS OF ENGINEERS TECHNICAL REPORT Y-87-1: WETLANDS DELINEATION MANUAL, DEFINITION OF WETLANDS) (ALSO RSA 482-A)

The 12 primary wetland functions are ecological integrity, wetland-dependent wildlife habitat, fish and aquatic life habitat, scenic quality, educational potential, wetland-based recreation, flood storage, groundwater recharge, sediment trapping, nutrient trapping/retention/transformation, shoreline anchoring, and noteworthiness.( RSA 482-a)

Mapping wetlands requires a site specific assessment of vegetation composition for an accurate picture. Wetlands scientists are capable of performing this assessment and are certified by the state based on a combination of education and experience.

Due to the lack of a town-wide assessment of the wetlands in Harrisville, the NRI includes a map of wetlands referred to as the National Wetlands Inventory performed by the US Geologic Survey and US Department of Fisheries and Wildlife. This analysis included all wetlands mapped on the USGS topographic maps and those that could be identified from analysis of aerial photographs. The last update to the National Wetlands Inventory was in 2009 and performed at a scale of 1:24,000 (one inch on the map represents 24,000 inches, or 2,000 feet on earth). Due to this large scale, many small, forested wetlands such as vernal pools are not mapped. In order to capture more of these wetlands the NRI also includes hydric soils on this map.

Hydric soils are classified by the Cheshire County Soil Survey maintained by the Natural Resource Conservation Service as “those soils that are sufficiently wet in the upper part to develop anaerobic conditions during the growing season.” These conditions are the result of inundation of water from a seasonally high water table and tend to support wetland vegetation and thus tend to fit the definition of a wetland in NH. Soil delineations in the Soil

Survey tend to be classes of many similar soils and as such some areas may be slightly drier or wetter depending on site conditions. As such, the wetlands and hydric soils mapped should be an indication of what should be on site but should not replace site specific assessment or delineation of wetlands.

Wetlands are widely distributed throughout the town of Harrisville due to the quantity of water in town. Often wetlands occur in association with other water bodies, especially rivers and streams where the flowing water enters into depressions or wide, flat valleys. Wetlands can also occur in depressions at the top of watersheds where they tend to form the source for intermittent and perennial streams. There are approximately 734 acres of wetlands mapped by the NWI and 555 acres of hydric soils in Harrisville. It is clear from the map that some areas are classified as both NWI wetlands and hydric soils.

Wetlands are an important part of the natural landscape beyond supporting a particular suite of plant species. These areas provide important wildlife habitat and when combined with the plant species support a significant portion of the town's species diversity. Wetlands also provide a buffer to many of the town's surface water bodies that is capable of slowing storm water runoff and filtering out sediment and absorbing pollutants carried by that runoff. As such protecting wetlands from development, conversion, and degradation is of great importance to the water quality of Harrisville's surface water bodies. The protection of wetlands falls within the jurisdiction of the federal government and is administered by the Army Corps of Engineers. New Hampshire has a Wetlands Bureau within the NH Dept. of Environmental Service which manages the permit process for approval and conditions of disturbing the soils in a jurisdictional wetland. Communities can adopt greater levels of protection of wetland areas through creating ordinances that provide additional oversight for proposed activities in wetlands. Some ordinances include buffers to the wetlands to better preserve their storm water management functions.

In order to protect wetlands, a town needs to know specifically where they are located so the first step would be to perform a town-wide wetlands delineation. After the town knows where its wetlands are located the planning board can assess the appropriateness of the current level of local wetland protection. Town infrastructure should be designed to minimize and mitigate impacts on wetlands in acknowledgement of wetlands ability to function as the most efficient storm water management infrastructure. Conservation easements on properties with significant wetland resources are an effective tool for protecting wetland functions into the future.

MAP: SURFACE WATER – WETLANDS AND HYDRIC SOILS (NEXT PAGE)

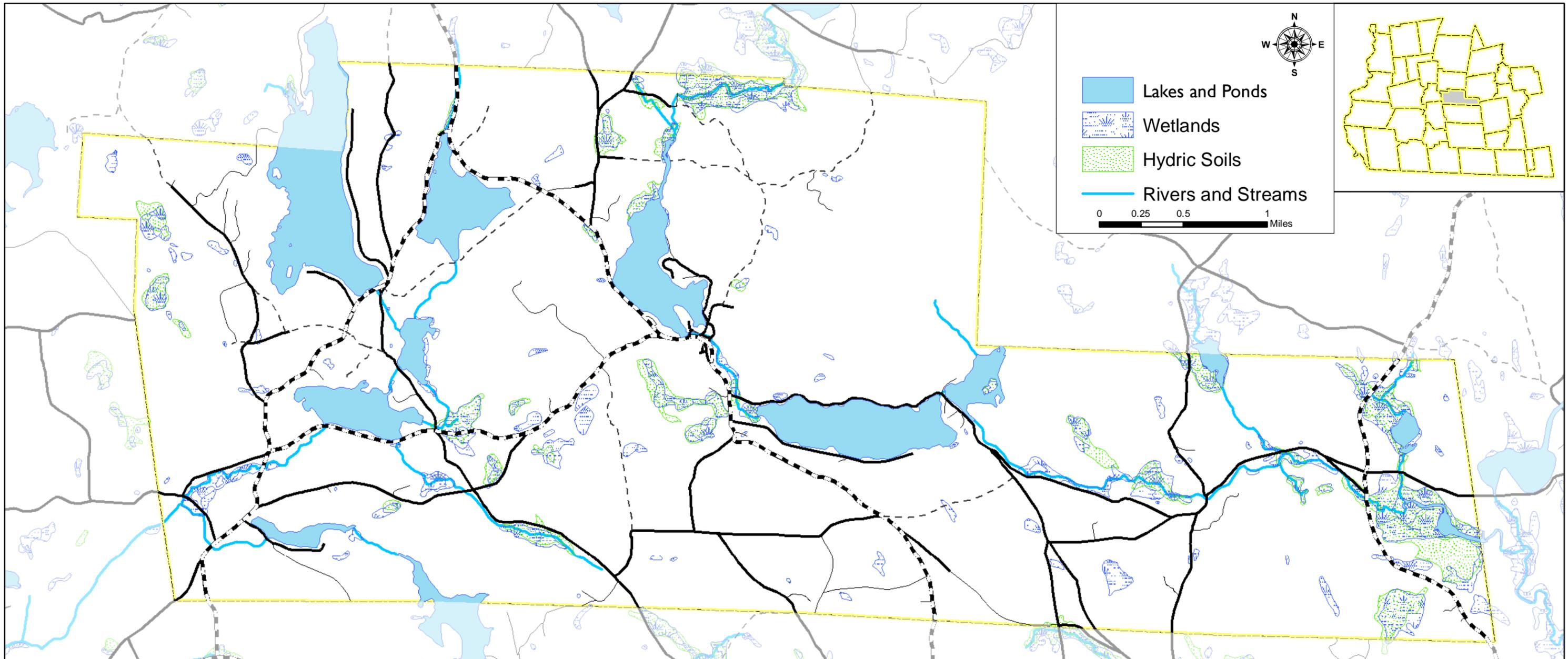


# Harrisville NRI: Surface Water - Wetlands and Hydric Soils

This map shows the wetlands in Harrisville as mapped by the US Geologic Survey in the National Wetlands Inventory program. It also shows the soils classified by the Natural Resource Conservation Service as being "hydric" or water saturated soils in the Cheshire County Soil Survey.

- 1) The USGS NWI wetlands are those that can be identified by analyzing aerial photographs; wetlands that are either too small or are located beneath a thick canopy are often missed in this inventory
- 2) Hydric soils are completely saturated with water for the majority of the year; however, standing water may not be visible at the surface
- 3) Combined, these two sources of data display the majority of the larger wetlands but do not substitute site specific inventories of wetlands
- 4) There are approximately 734 acres of NWI wetlands and 555 acres of hydric soils in Harrisville with some overlap

Harrisville  
Natural Resource Inventory  
Committee



## SURFACE WATER QUALITY – STEEP SLOPES

This section provides information on where steep slopes exist within Harrisville. This information is valuable when considering potential development, since soils on steep slopes may be sensitive to development. When disturbed, steep slope soils are vulnerable to erosion during heavy rains, resulting in surface water contamination.

Steep slopes are those areas in town where the topography exceeds the rise in topography divided by the horizontal distance travelled equals 15% or 1.5 foot drop over 10 feet of horizontal distance. The associated map shows a model of areas that exceed 15% as well as areas that exceed 25% slope. This model was generated in ArcGIS from the National Elevation dataset developed by the US Geological Survey from satellite imagery and other sources at a resolution of 30 meters. Steep slopes are widely distributed throughout town but are focused around the hills in the northern half of town. There are approximately 3000 acres of 15-25% slopes and an additional 1150 acres of slopes greater than 25% in Harrisville. It is important to understand where there are steep slopes as they have a great effect on storm water runoff.

Water that falls on steep slopes has little chance to infiltrate the soils and thus runs off the surface. Where water travels down steep slopes it accumulates more volume and speed. Increases in volume and speed to runoff increase the ability of the water to erode the soil. In addition to damaging the soil and property, the runoff carries that material until it is slowed. When runoff is slowed it is no longer able to move the sediment and deposits it, generally at the base of the slope. The base of slopes usually corresponds with wetlands, rivers, or lakes and ponds. Adding soil to these surface waters reduces the water quality by reducing their clarity and increasing their temperature. Soil can also carry nitrogen, phosphorous and other nutrients and pollutants that effect water quality.

The best way to prevent soil erosion on steep slopes is to protect the slopes from conversion from a naturally vegetated state. The vegetation not only holds the soil in place but also slows the water falling on the ground. Water that falls on a canopy of trees to a vegetated understory is greatly slowed in comparison to water that falls uninterrupted and water that moves more slowly has a greater chance to soak into the soil instead of flowing over the surface as runoff. As such applying best management practices to forestry and agriculture on steep slopes is important. Steep slope ordinances can be implemented to limit development and land conversion on steep slopes. (Note: Harrisville Zoning Ordinances refer to 15% slopes, or a drop of 1½' over a 10' distance.)

MAP: SURFACE WATER – WETLANDS AND HYDRIC SOILS (NEXT PAGE)

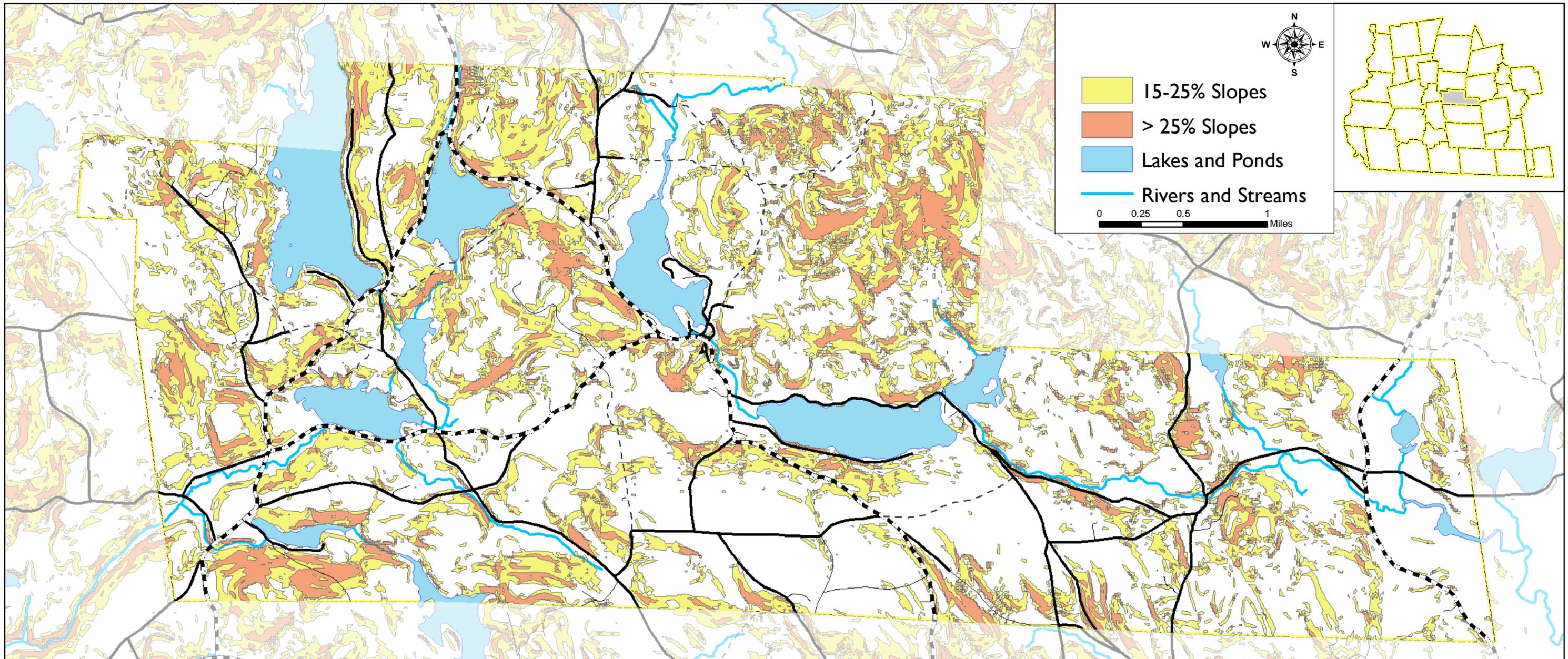


# Harrisville NRI: Surface Water Quality - Steep Slopes

This map shows the areas in Harrisville that have steeply sloping topography as generated from national digital elevation models.

- 1) Areas with steeply sloping topography can have a great impact on water quality; particularly where those slopes are disturbed from a natural state
- 2) The closer the steep slopes are to surface water bodies such as lakes, rivers, and wetlands, the greater the potential for negative affects to the water quality of those water bodies
- 3) When paired with highly erodible soils, disturbance of steep slopes can result in polluting water bodies with both natural and man-made pollutants as rain and snowmelt flows across the surface carrying the soil and other materials with it
- 4) There are approximately 3000 acres of 15-25% slopes and 1150 acres of land with slopes greater than 25%

Harrisville  
Natural Resource Inventory  
Committee



## SURFACE WATER QUALITY – HIGHLY ERODIBLE SOILS

Highly erodible soils are soils classified by the Cheshire County Soils Survey maintained by the Natural Resource Conservation Service as soils that have the potential to be eroded at least eight times faster than their ability to regenerate from the underlying parent material. These soils either fall on steep slopes and are easily carried by water, take a long time to develop, or have characteristics that limit the ability of the soil to hold together such as grain size, saturation, and fertility. Fertility is important because the best defense against highly erodible soils from being eroded is the soil being held together by the root systems of plants. Highly erodible soils are widely distributed throughout Harrisville stretching from Chesham Pond and Russell Reservoir and east to Cherry Hill Road. There are approximately 4,864 acres of highly erodible soils in Harrisville.

Highly erodible soils are an important landscape characteristic to look at for a town concerned about its water quality because these are the soils most likely to be moved by storm water runoff and deposited in surface water bodies. When in water bodies soils decrease water quality by decreasing water clarity, increasing water temperature, and carrying nitrogen, phosphorous, and other substances with it to the water body. The best way to prevent highly erodible soils from moving and thus protecting water quality is by keeping them vegetated. This does not mean these soils cannot be timbered or farmed. Care should be taken to revegetate these soils as soon as possible after harvest or disturbance so that roots can take hold quickly and hold the soil in place. Particular care should be taken where these soils are located on steep slopes.

MAP: SURFACE WATER QUALITY – HIGHLY ERODIBLE SOILS (NEXT PAGE)

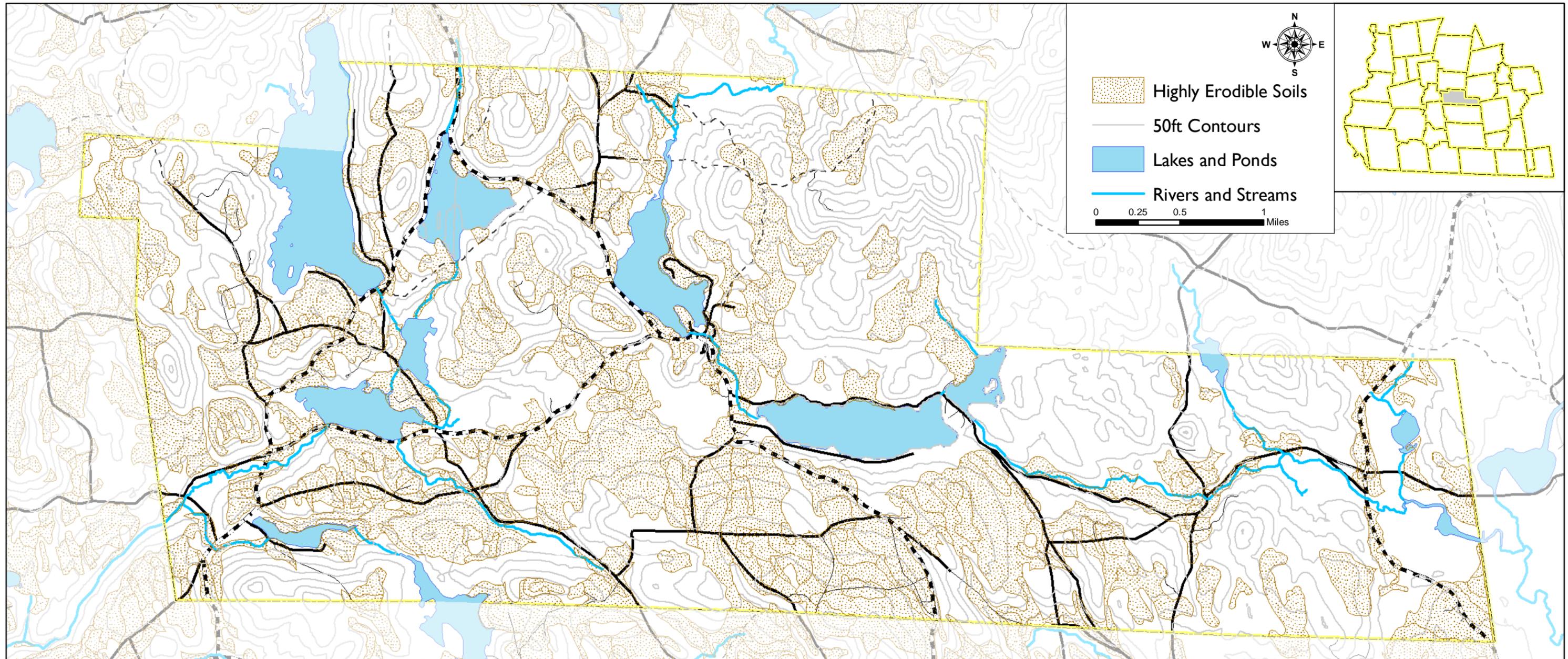


# Harrisville NRI: Surface Water Quality - Highly Erodible Soils

This map shows the areas in Harrisville that have highly erodible soils as classified by the Cheshire County Soil Survey.

- 1) Areas with highly erodible soils can have a great impact on water quality; particularly where the vegetative cover and roots are disturbed
- 2) The closer these soils are to surface water bodies such as lakes, rivers, and wetlands, the greater the potential for negative affects to the water quality of those water bodies
- 3) When paired with steep slopes, disturbance of highly erodible soils can result in polluting water bodies with both natural and man-made pollutants as rain and snowmelt flow across the surface carrying the soil and other materials with it
- 4) There are approximately 4,864 acres of highly erodible soils in Harrisville

Harrisville  
Natural Resource Inventory  
Committee



## GROUNDWATER RESOURCES

Groundwater consists of water tables, wells, springs and aquifers. The groundwater resources map is a complex map that displays stratified drift aquifers, soils that are potential sources of sand and gravel, the town spring overburden aquifer, public water supplies, wellhead protection areas, and source water protection areas. All of these resources are linked as potential sources for drinking water in town.

### WELLS

Many people in Harrisville as in the rest of NH have private wells. There are a few different types of private wells such as bedrock or artesian wells that access water stored in cracks in the bedrock, dug wells that access water in the water table, and wells that draw directly from surface water bodies such as lakes, ponds, and streams. The quantity and quality of water in private wells is poorly understood and can vary greatly across the landscape. Often these wells are only tested when homes are being sold as part of the home inspection process. DES recommends testing wells periodically to guard against consumption of arsenic, radon, lead and other harmful materials. Private wells receive little public protection and generally only through preventing new homes and septic systems from being installed within certain distances of the well. There are also eight public water supply wells that supply 25 or more people for 60 or more days per year - two currently have Wellhead Protection Areas – Wells Memorial School and the well at the Historic Harrisville mill building.

### AQUIFERS

Stratified drift aquifers are thick sections of sand and gravel below ground level that are saturated with water that has the ability to flow between the grains of sand and gravel. These aquifers are generally protected by a layer of silt and clay that has limited permeability reducing the chance that the aquifer can be contaminated by polluting substances deposited on top of the aquifer. Stratified means the sediment has been sorted by water into layers. Drift is a term used to mean glacial till. Therefore a stratified drift aquifer is a body of glacial soils sorted into layers by glacial melt water where water can be stored and flow between grains of large sediment where it is trapped between impermeable layers such as clay and/or bedrock. The capping of aquifers by an impermeable layer creates pressure beneath that layer as water is added from recharge zones. The pressure created allows for the water to be accessed from

the surface through wells. The sand and gravel grains act as a filter through bonding with chemical contaminants.

Due to the filtering nature of the sediment and the protective cap, stratified drift aquifers tend to have some of the highest quality water available. Stratified drift aquifers flow and thus gain and lose water over time. Gravity causes the water to flow constantly towards lower elevations. Depending on the shape and setting of the aquifer, water can remain in the aquifer for thousands of years. Water flows into the aquifer through recharge areas. Recharge areas can be from bedrock fissures that feed water into the aquifer from artesian aquifers in the bedrock or from surface water flowing into sand and gravel deposits at the surface connected to the aquifer with little or no impermeable layer as a barrier.

There are approximately 838 acres of stratified drift aquifers in Harrisville. These are focused in two parts of town. The largest stratified drift aquifer is located along the Nubanuset Brook east of North Pond and south of Eastview. This Aquifer continues beyond the town boundary into Peterborough and MacDowell Reservoir. The other limited aquifer is located at the west end of Chesham Pond. In order to protect the quality and quantity of the water in these stratified drift aquifers it is important to prevent activities that could contaminate the aquifer from occurring on recharge areas as they are unprotected by an impermeable cap.

The number of wells drilled through the impermeable layer and the activities around those wells should be minimized to ensure contaminants are not allowed to infiltrate the aquifer at those points of intrusion. Some towns have instituted a stratified drift aquifer overlay protection district as a zoning ordinance allowing the town control over the uses permitted on aquifer areas. In order to do this successfully it is important to delineate the aquifer, the recharge areas, and the condition and extent of the impermeable layer protecting the aquifer.

Potential sand and gravel sources on this map are soil units classified by the Cheshire County Soil Survey as soils comprised predominantly by sand and gravel grains that could be economically accessed for significant quantities of sand or gravel. These areas are mapped as they may indicate recharge areas where surface water can infiltrate the soil and flow into the stratified drift aquifer. Where potential sources of sand and gravel overlay stratified drift aquifers there is a potential that this area is not protected by an impermeable layer and is the recharge area. It may also indicate that there is a sand or gravel deposit on top of the

impermeable layer which is common. Where potential sources of sand and gravel about aquifer areas these are prime indicators of recharge areas and should be studied further to see if they function as recharge areas. Recharge areas should be protected from contaminating land uses.

The 105 acre town spring overburden aquifer is also delineated on this map and stretches from the peak of Beech Hill north to the south shore of Lake Skatutakee. This delineation is based on a study of the town spring performed for the town prior to the production of the NRI by an outside contractor. An overburden aquifer is a zone of soils that is able to store water and allow the water to flow between the grains of sediment. Often these soils are comprised of larger sand and gravel grains but are not sorted or stratified like the above aquifers. This means that an overburden aquifer is not protected by an impermeable layer and thus much more susceptible to contamination by land uses above it. In order to protect the water quality of the town spring, its overburden aquifer should be protected from land uses that may contaminate it. This includes minimizing the number of septic systems placed on it, creating a no or low salt zone for roads that cross through the aquifer, limiting the use of chemical pesticides, herbicides, and fertilizers on the aquifer, and preventing business uses that deal in hazardous materials such as junk yards, auto repair shops, and gas stations.

The town spring is identified on this map as a public water supply well even though the spring itself is not a drilled or dug well but a naturally flowing body of water. The public water supply locations are maintained by the NH Dept. of Environmental Services and are defined as wells that support 25 or more people for a minimum of 60 days. Including the town spring there are 8 public water supplies in Harrisville. Other public water supplies include the well at the Harrisville General Store and another at the Historic Harrisville Mill, two at Aldworth Manor, one at the Wells Memorial School, and two at a summer campground in the northwest part of town. Two of the wells have wellhead protection areas which are 1,300 foot buffers of the well in which land uses within the buffer are monitored by NH Dept. of Environmental Services for potential sources of contamination so plans can be made to mitigate and minimize any contamination. The two wells with wellhead protection areas are the Wells Memorial School and the well at Historic Harrisville mill building.

The final data set for this section are the source water protection areas. These are the watersheds that collect water for reservoirs used as drinking water supplies for public consumption. There is a small portion of source water protection area in the northwest part of town that indicates the watershed used by the City of Keene as its drinking water supply most of which is in Roxbury. The eastern half of Harrisville is also identified as source water

protection area as the Nubanusit flows into the Contoocook River which is drawn from as drinking water for Concord and Nashua, NH. Source water protection is usually a partnership endeavor where many communities, organizations, and governmental organizations combine efforts to protect land within the source water protection areas. Above and beyond land protection efforts, these partnerships work to educate the public on the importance of source water protection as the higher quality the source water is the less treatment and thus expense is necessary before it is supplied to the public for consumption. Protecting the water quality within source water protection areas includes land protection, best management practices of storm water management, and proper disposal of waste, contaminants, and pollutants

MAP: GROUNDWATER RESOURCES (NEXT PAGE)

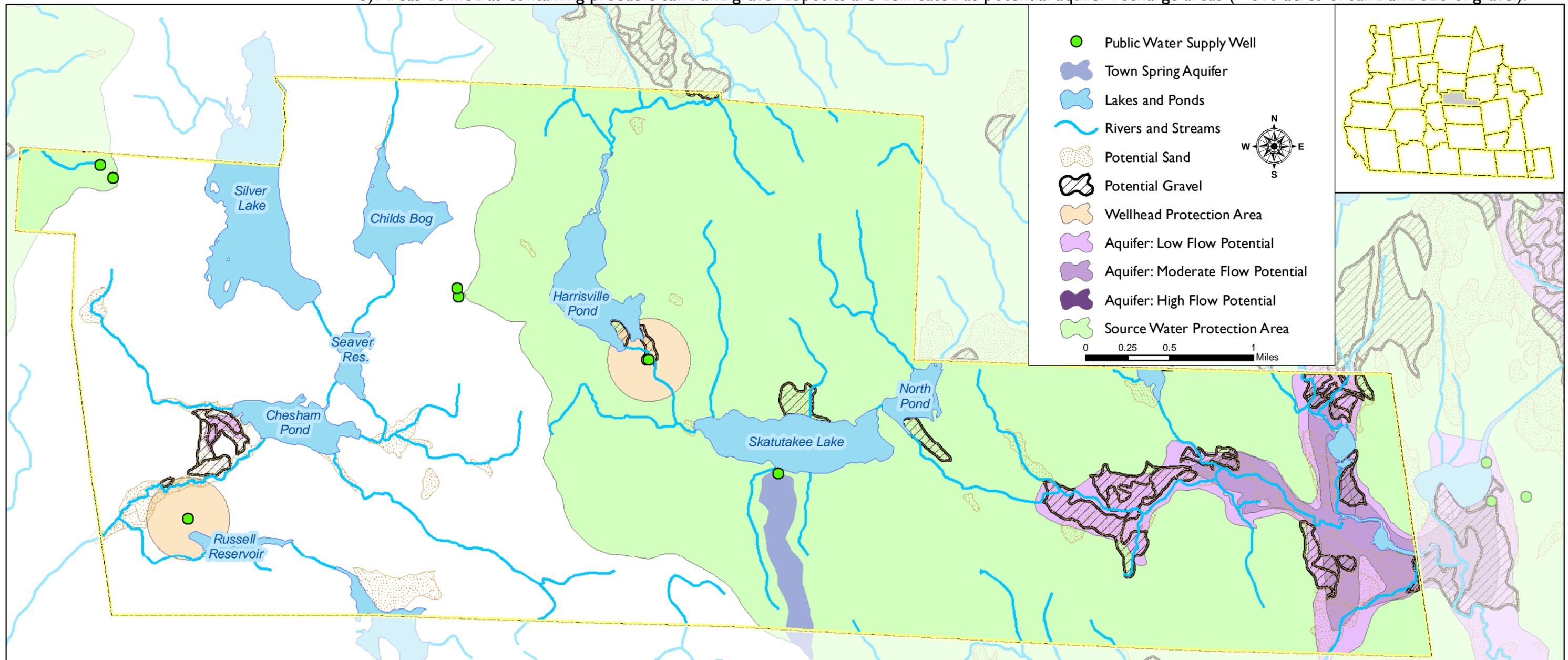
# Harrisville NRI: Groundwater Resources

This map shows the stratified drift aquifers, the town spring overburden aquifer, soils with potential for sand and gravel, public water supply wells, wellhead protection areas and source water protection areas in Harrisville.

- 1) There are 8 public water supply wells in Harrisville which supply 25 or more people for at least 60 days a year
- 2) Two of those public water supply wells have a Wellhead Protection Area, which is a 1,300ft buffer of the well in which landuse decisions are monitored for activities that may impact the water quality; additionally the town spring on the south side of Skatutakee Lake is fed by a 105 acre overburden aquifer and should be similarly monitored
- 3) Harrisville is also within the Source Water Protection Areas (aka watershed) for two reservoirs that are used as public drinking water by the City of Keene and Nashua and its surrounding communities
- 4) There are approximately 838 acres of stratified drift aquifers which are bodies of sediment composed of mostly sand and gravel in which water can be stored and accessed
- 5) Areas defined as containing probable sand and gravel deposits are delineated as potential aquifer recharge areas (~810 acres of sand and 328 of gravel).



Harrisville  
Natural Resource Inventory  
Committee



## WILDLIFE RESOURCES

The following section discusses the different aspects of the Harrisville landscape that effect wildlife and wildlife habitat. Habitats are the areas supplying the resources a given species requires to complete the different stages of its life cycle. Generally this means food, water, cover, and space. Food and water are self-explanatory. Cover refers to denning sites, roosting perches, or any other structural element required to protect itself from the elements and predatory species. Space refers to the idea that individuals require a certain amount of land area to collect food, water, cover and mate(s) without expending too much energy fleeing or being killed by predators and competing with other individuals of its species. In addition to these mapped resources an appendix is included with this document of lists of species identified by local residents to act as a baseline list of plants and wildlife in town. These lists are not complete and should be filled in over time. Ideally the list will be developed with the location of the siting, the date, and a photograph.

## UNFRAGMENTED LANDS

Unfragmented lands, or blocks, are stretches of land that are not crossed by a road or human development. These lands can be managed, have many types of habitats, and include water bodies such as lakes, ponds, rivers, streams, and wetlands. Generally, the larger an unfragmented block the more habitat requirements it can meet for more species. When habitat is fragmented by many roads wildlife need to cross these roads to get between habitats to survive and risk being killed in vehicular collisions. Preserving the unfragmented nature of a town allows the lands to support more wildlife. Analyzing corridors or paths between these unfragmented blocks is important to reduce or prevent collisions between wildlife and vehicles. Permanent land conservation within these unfragmented blocks will protect wildlife habitat as well as the scenic, rural character of the community. The traditional New England settlement pattern developed around a village center with less dense development on the outskirts. The map shows that this is still the case in Harrisville with the three village centers being surrounded by greater and greater sized blocks the farther from town.

MAP: UNFRAGMENTED LANDS (NEXT PAGE)

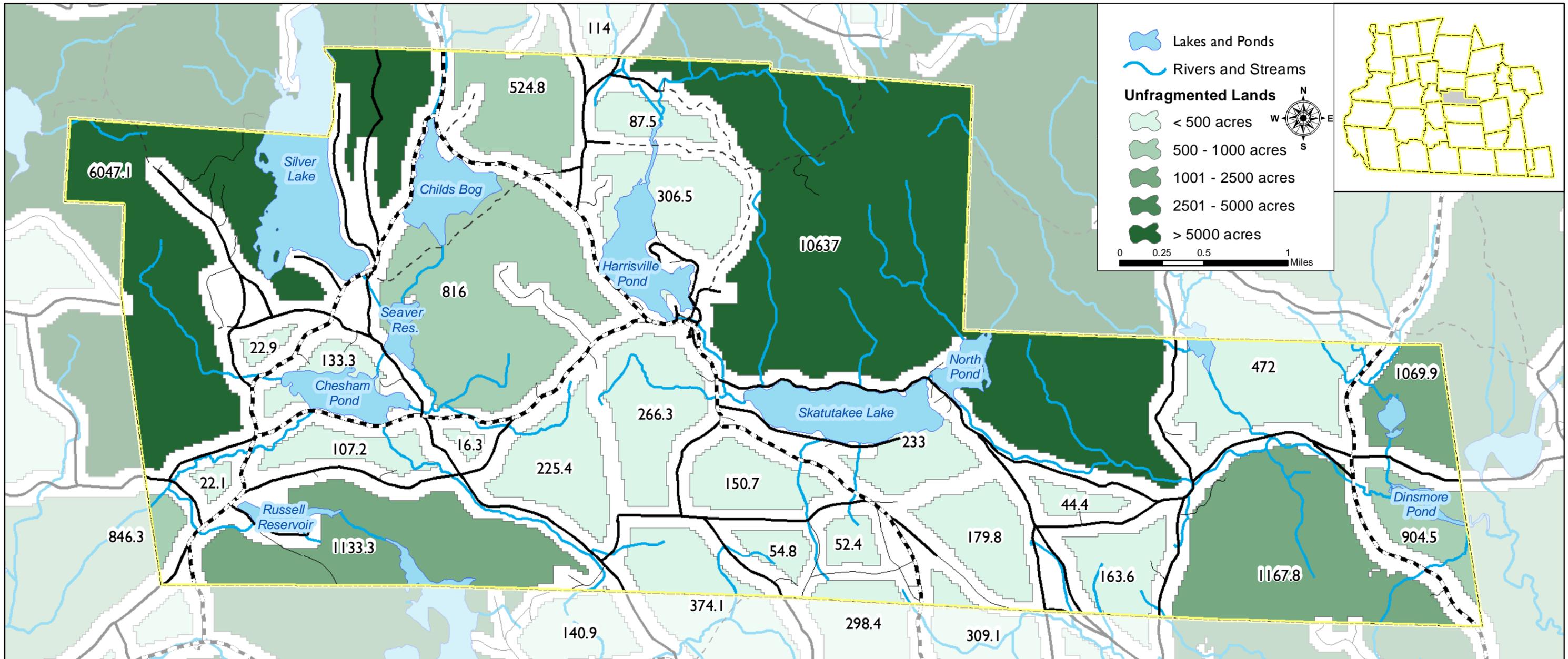


# Harrisville NRI: Unfragmented Lands

This map shows the different sizes of the unfragmented blocks of Land in Harrisville. Unfragmented lands are those that are not divided by roads. Thus the boundaries of these blocks are determined by the network of frequently traveled, maintained roads. The wider the road and higher the traffic volume the less likely wildlife are to cross.

- 1) The larger the unfragmented block the larger population of wildlife it could support
- 2) Large unfragmented blocks also preserve the rural character of communities and provide ample opportunity for outdoor recreation
- 3) Protecting linkages or corridors between these blocks is important in order to allow wildlife to move between these blocks and maintain healthy populations.
- 4) It is then important to alert motorists to where these corridors are to prevent motor vehicle collisions with wildlife

Harrisville  
Natural Resource Inventory  
Committee



## WILDLIFE HABITAT TYPES

The NH Fish and Game Dept. developed a Wildlife Action Plan in 2007 which included mapping predicted or modeled habitat types across the entire state. The following map is the result of that habitat modeling for Harrisville. There are six different habitat types found in Harrisville including peatlands, scrub-shrub and wet meadows, grasslands, lowland spruce-fir forests, northern hardwood-conifer forests, and hemlock-hardwood-pine forests.

Peatlands have water with low nutrient content and higher acidity which allow for the accumulation of peat. These habitats tend to be small and isolated. Due to the relatively extreme nature of the conditions in these habitats they tend to support less common plant and wildlife species. Peatlands tend to have small watershed and limited groundwater input which makes them extremely susceptible to pollution and storm water runoff. There are 88 acres of peatland habitat in Harrisville or 0.6% of the town's land area. Examples of species using this habitat include pitcher plants, sundew, ribbon snakes, and spotted turtles.

Scrub-shrub and wet meadow habitats are wetland systems that are heavily influenced by flooding caused by the cyclic nature of beaver activity. These systems include wet meadows, emergent marshes, and scrub-shrub wetlands all of which provide habitat requirements to many species resulting in high biological diversity in small areas. Being wetlands, these areas also filter pollutants from surface water and store flood water above and beyond being valuable wildlife habitat. Wildlife utilizing this habitat type includes American bittern, American woodcock, great blue heron, osprey, and spotted turtles.

Grassland habitats are areas greater than 25 acres that are dominated by herbaceous plants such as grasses, wildflowers, and sedges with little to no shrub or tree cover. In NH, grasslands often correspond with active farms as the landscape will naturally return to a forested state if not actively mowed or otherwise managed. Grasslands are important habitats for many wildlife species including birds, rodents, and reptiles. Harrisville has 669 acres of grasslands (5% of its land area) which is less than the state at 8% grasslands. This habitat is in decline as farms are converted to development or through conversion to forests. Many of the species that rely on

grasslands are also in decline in the state. Wildlife utilizing this habitat includes bobolink, purple martin, smooth green snake, wild turkey, whip-poor-will, white-tailed deer, and wood turtles.

Lowland spruce-fir forests often occur at higher elevations or wetlands in the Monadnock Region. This pattern is reflected in Harrisville with its presence at the top of the hills to the north of town or in valleys along the brooks in the southwest. These forests are dominated by red spruce and balsam fir trees along with yellow and paper birches. Harrisville is located near the southern edge of the lowland spruce-fir range resulting in relative rarity of this habitat type in town. There are approximately 1000 acres of lowland spruce fir habitat in Harrisville (approximately 8% of the land area) restricted to high elevations and poor soils resulting in poor rates of growth and relatively low numbers of mature trees. Wildlife using this habitat includes black bear, Cooper's hawk, moose, white-tailed deer, and wood turtles.

Northern hardwood-conifer forests are habitats found at elevations between 1000 and 2500 feet on well-drained, fertile hillsides. These forests are dominated by sugar maples, American beech, and yellow birch trees with some hemlocks, spruce or fir in lower elevations or wetter locations. These forests tend to be in high elevation with slopes that were difficult to develop and as such remain as some of the larger unfragmented forests in the region and in Harrisville. This makes them prime habitat for wide ranging species such as bobcat, black bear, and moose. This habitat type is found in the northern half of Harrisville along the Nelson Town line as well as a large batch south of Lake Skatutakee. Other types of wildlife that require this habitat are Cooper's hawk, northern goshawk, purple finch, ruffed grouse, veery, and wood turtle.

Hemlock-hardwood-pine forests are a transitional forest between the Northern hardwood-conifer and Appalachian oak-pine forests. Harrisville and most of southern NH lay at the heart of this transition zone resulting in hemlock hardwood-pine forests being the most common forest type in town. These forests are highly variable but eastern hemlock and eastern white pine tend to be common species. Associated hardwood species include red oak, red maple, American beech, sugar maple, and white ash. The variety of tree species, age and structure result in a very diverse habitat supporting many species. Wildlife that depend on hemlock-hardwood-pine forests include American woodcock, black bear, barred owl, bobcat, eastern towhee, fisher,

moose, northern goshawk, red-shouldered hawk, ruffed grouse, white-tailed deer, wild turkey, and wood turtles among many others.

Each of the above habitat types is comprised of many smaller specific stands that vary in their vegetative composition depending on soil conditions, aspect, and elevation. Due to this variability protection and management methods are also variable. The town should direct landowners wishing to manage or develop high value wildlife habitat should be directed to resource management professionals such as foresters, soils scientists, ecologists. The NH Fish and Game Dept and UNH Cooperative Extension employees are also great resources for supplying landowners with resource management information. The next map discusses the NH Fish and Game Dept. priority habitats for conservation. In that section this report discusses ways to protect habitats. The main goal should be to protect plant and wildlife diversity through protecting high value, unimpaired habitat areas of different types and allowing wildlife to travel between these habitats. Residents should be asked to collect lists of species that they observe including the location, date, and a photo if possible. These lists can be compared to future lists to track species diversity over time. Residents should also be aware of ways to handle wildlife interaction when living in rural areas surrounded by high value habitat to prevent unnecessary conflict.

MAP: WILDLIFE HABITAT TYPES (NEXT PAGE)

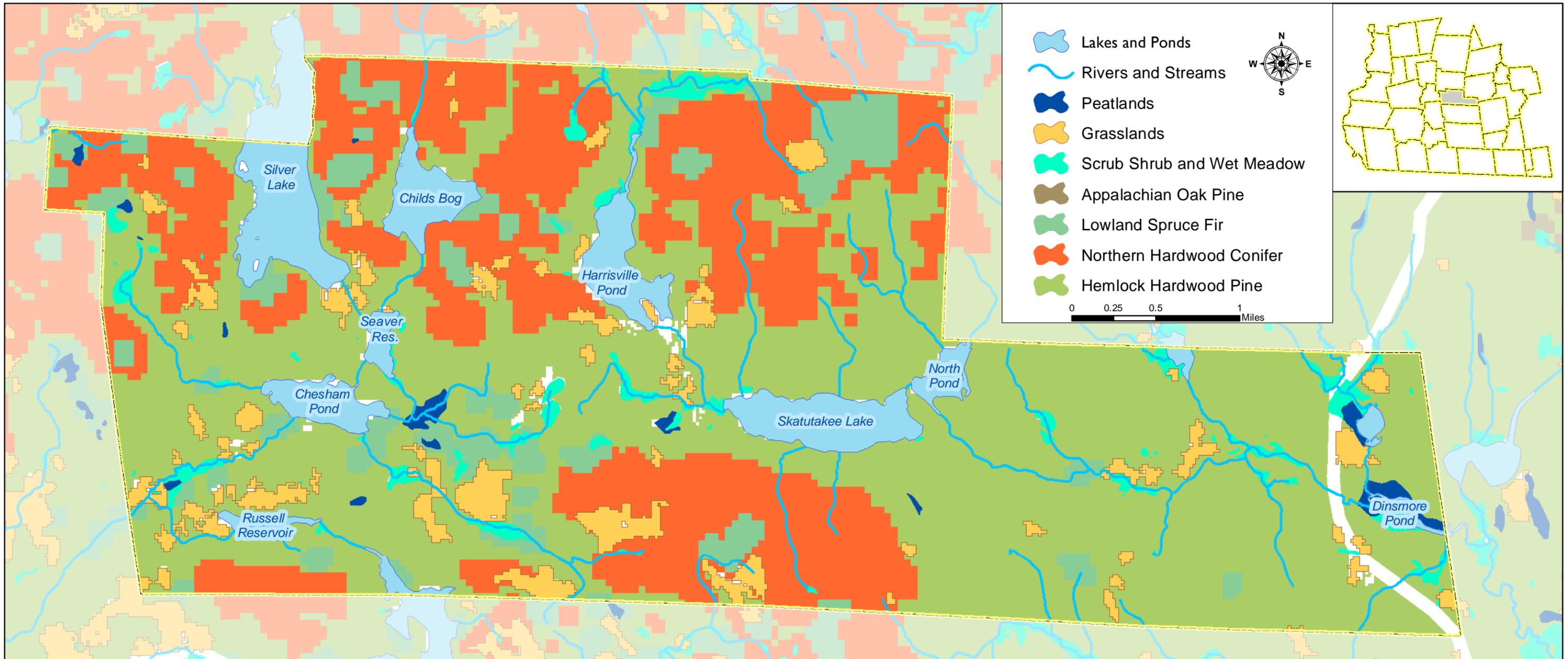


# Harrisville NRI: Wildlife Habitat Types

This map shows the different wildlife habitat types as modelled by the NH Fish and Game Dept in their Wildlife Action Plan in 2007 and updated in 2010.

- 1) There are approximately 88 acres of Peatlands and 466 acres of Scrub Shrub and Wet Meadow habitats in Harrisville which represent wetland habitats
- 2) There are approximately 669 acres of Grassland habitat in Harrisville; this is a priority habitat for NHF&G as it is in decline as are the species that require it
- 3) There are approximately 1,000 acres of Lowland Spruce Fir habitat, 3,335 acres of Northern Hardwood Conifer, and 7,382 acres of Hemlock Hardwood Pine habitat

Harrisville  
Natural Resource Inventory  
Committee



## WILDLIFE ACTION PLAN TIERS

The New Hampshire Dept. of Fish and Game developed the Wildlife Action Plan in 2007 as a compilation of wildlife habitat related data, a model of habitat types and where they occur in the state, and a prioritization for protection of those habitats. The Wildlife Action Plan Tiers represent the priority areas of Fish and Game. The Tiers were developed through applying numeric values to the patches of modeled habitat types discussed above. The values were determined by assessment of the patch's ecological condition which included the size of the habitat, its proximity to other patches of that same habitat, the percentage of the block conserved, road density around the habitat, dams, recreational use, rare plant and animal species, and overall biodiversity. There are three Tiers including Tier 1: Highest ranked habitat in NH, Tier 2: Highest ranked habitat in biological region, and Tier 3: Supporting landscapes.

Tier 1 or highest ranked habitats in NH are the top 10 -15 % of patches of each habitat type based on ecological condition value. Tier 1 habitats are those likely to maintain biological diversity long term due to their size and limited potential for degradation. Tier 2 habitats are the top 10-15% of each habitat type as compared to other patches within the same biological region based on either watershed delineations or the Nature Conservancy's ecoregions. Most of Harrisville falls within the Sunapee Uplands while Eastview is located in the Hillsborough Inland Hills and Plains ecoregion. Due to the level of habitat and landscape diversity in the state and the level of development and fragmentation in the southern parts of NH, the ecoregion analysis allows for more quality habitats to be identified as priority than if only the statewide analysis was used. Tier 3 habitats or supporting landscapes are areas that are important to maintain the quality of the higher ranking habitats. These places act as buffers from development of high quality habitat, the watersheds of streams, different habitats within a large unfragmented block.

Wildlife Action Plan priority habitats are the Fish and Game's priority and often enable conservation projects with these priorities to apply for grant funds for easement or fee purchase. These habitats should be protected from development and managed so as to perpetuate the habitat over time. The priorities were created from models of known data. There are gaps in the data and NH Fish and Game acknowledges these gaps. They request that field data collected concerning habitat delineations and wildlife

presence be submitted to them for inclusion in future updates of the Wildlife Action Plan and its priorities.

Harrisville should keep lists of the types of plants, wildlife, and habitats that are currently within its bounds. Lists form a baseline for future comparison to determine changes in species diversity. As a start some residents have submitted species lists to this NRI and are included as an appendix. Other residents may be collecting similar information. Lists and observations should be collected and maintained, preferably with dates, photographs, and locations. This way changes over time can be assessed as this NRI is updated. Habitats of rare and endangered species in Harrisville should be a focus of town conservation efforts including land conservation as well as protection of the resources required for suitable habitat. Protection of the surface water quality is important for fish, waterfowl, and other birds that require clean water such as loons. Protection of vernal pools is important to the species that require those wetlands for reproduction. Preserving a matrix of forests, farms, wetlands, lakes, and streams accessible to wildlife is the best way to maintain species diversity over time.

The town can help landowners who own important wildlife habitat manage or develop their parcels in ways that minimize the effects to wildlife populations. Each species has different habitat needs and thus different forest management strategies can help some while negatively impacting others so landowners must choose a species they would like to help when designing their management. Development should be directed away from the core areas of a habitat to prevent fragmentation. Analyzing where wildlife frequently cross roads or are hit by vehicles can provide insight to places that act as corridors wildlife use to travel between habitats. Signage, fencing, and crossing structures can be utilized to minimize the effect of crossing road on wildlife populations.

MAP: WILDLIFE ACTION PLAN TIERS (NEXT PAGE)

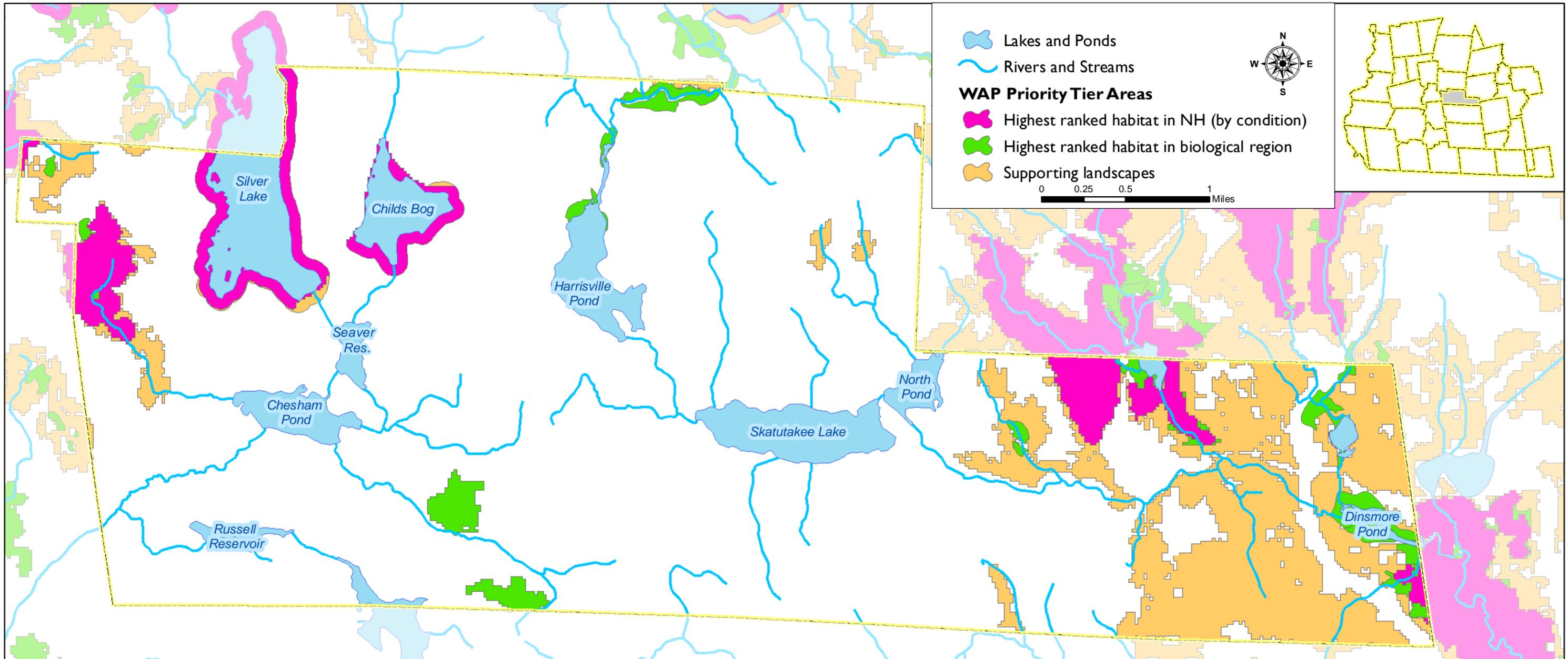


# Harrisville NRI: Wildlife Action Plan Tiers

This map shows the different levels of priority for the New Hampshire Fish and Game Dept's Wildlife Action Plan developed in 2010.

- 1) There are approximately 1,176 acres of Tier 1 or the highest ranked habitat in NH in Harrisville; ranked according to the condition of the habitat compared to other areas of the same habitat
- 2) There are approximately 333 acres of Tier 2 or the highest ranked habitat in the biological region also ranked according to condition
- 3) There are approximately 1,466 acres of Tier 3 or supporting landscape habitat; these are the areas around Tier 1 and 2 lands that require an undeveloped buffer to maintain the habitat quality

Harrisville  
Natural Resource Inventory  
Committee



## SOUTH AND SOUTHWEST FACING SLOPES

Harrisville has a rolling landscape of hills and valleys. This type of landscape allows for different places having different orientations to the sun or aspect. Sloped areas that face south or southwest have greater exposure to the sun throughout the day and year. These slopes then have higher average daily temperatures, longer annual growing seasons, earlier snow melt, and drier soils than lands that are oriented in other directions. As such, south and southwest facing slopes are valuable habitat and working lands.

South and southwest facing slopes are important winter habitats for many wildlife species including white-tailed deer, bobcat, porcupine, and wild turkey among others. Hemlock dominated forest stands on south or southwest facing slopes are often used by white-tailed deer as their wintering yards as these locations have less snow on the ground and warmer temperatures. Hardwood stands on these slopes are winter feeding areas, particularly where there are hard mast trees such as red oak and American beech, as the snow layer is thinner and it is easier for deer and turkey to find the nuts on the ground. Harrisville is near the northern end of bobcats' range as they are better adapted to warm climates. As such, bobcats in this part of their range seek rocky, south facing slopes for winter dens so they can benefit from warmer temperatures and sun themselves on the rocks.

Farms and managed forests with south and southwest aspect will benefit from the longer daily and annual access to sunlight. These traits result in longer growing seasons. Farms with this orientation can plant sooner and harvest later. This allows some farms to plant different types of crops that usually require more southerly climates or growing zones. Trees growing on south and southwest facing slopes grow faster than trees on slopes with other orientations given equal soil conditions.

South and southwest facing slopes are not usually sought out for protection as a resource on their own, but add value to land conservation projects in the potential for protecting high value wildlife habitat and farmland where those resources also exist. South and southwest facing slopes are evenly distributed throughout Harrisville with an expansive zone running east to west through the middle of the town.

MAP: SOUTH AND SOUTHWESTERN SLOPES (NEXT PAGE)

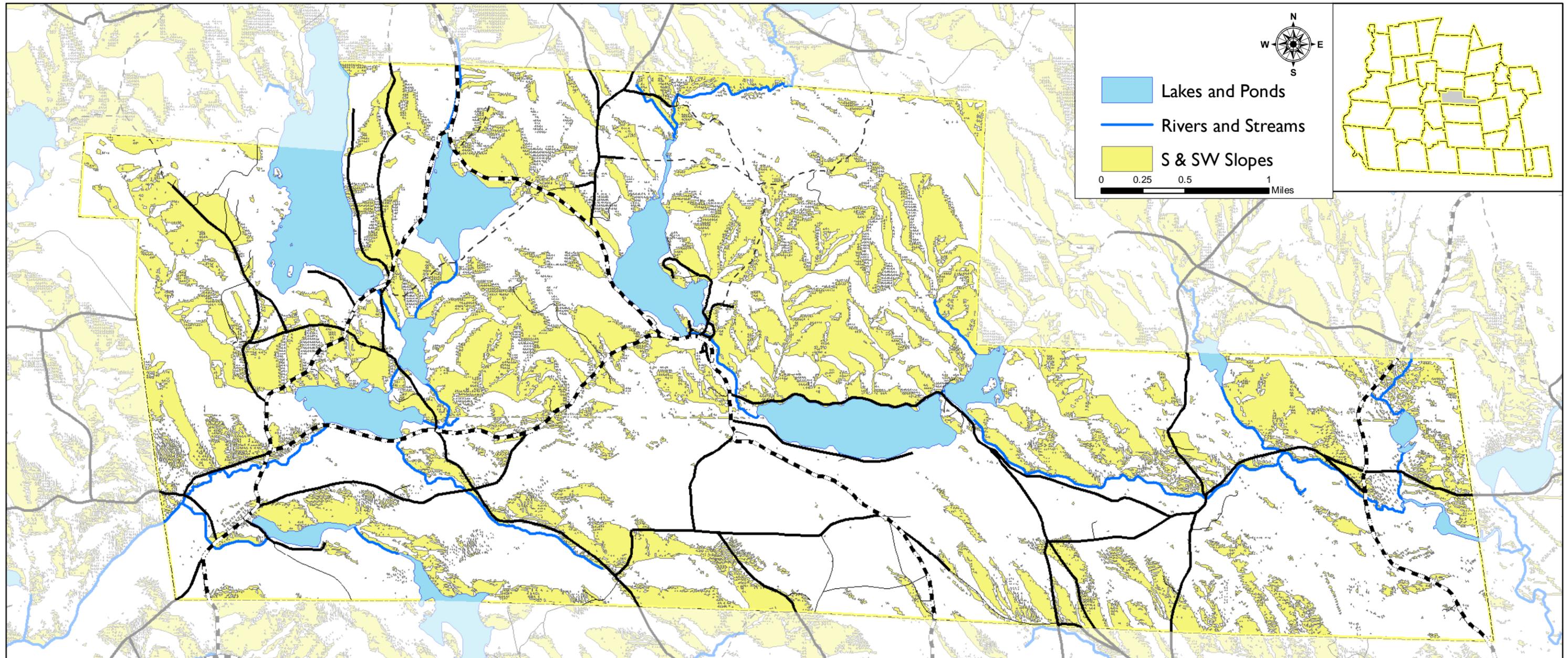


# Harrisville NRI: South and Southwest Facing Slopes

This map shows the south and southwest facing slopes in Harrisville which tend to have higher average daily temperatures and longer growing seasons due to longer exposure to the Sun's rays.

- 1) Areas with south and southwest facing slopes and agricultural soils may be planted earlier and tend to have longer growing seasons
- 2) These slopes can also support faster tree growth in managed forests
- 3) When paired with dense coniferous forest these slopes tend to support important winter deer habitat called "yards;" rocky outcrops facing south tend to support bobcats and other denning animals
- 4) There are approximately 3,485 acres of south and southwest facing slopes.

Harrisville  
Natural Resource Inventory  
Committee



## WORKING LANDSCAPE AND SOILS

This section of the report presents natural resources that support the working landscape of Harrisville. The working landscape is defined as properties that are farmed for agricultural products such as livestock feed, fiber, vegetables, meat, eggs, and milk products as well as properties managed for timber products including firewood, lumber, and maple sugar. The focus of this section are the soils that are well suited to support agricultural land use.

### AGRICULTURAL SOILS

These soils have been identified in the Cheshire County Soil Survey as capable of producing agricultural products with a focus on pasture and row crops. The Survey was performed by the Soil Conservation Service in 1949 and is now maintained by the Natural Resource Conservation Service, an agency within the US Dept. of Agriculture. All of the different soils in the county have been designated as one of four classes of agricultural soil. The first classification is Prime Farmland which includes the most fertile soils capable of repeated planting and growth of the most demanding crop species including row crops necessary for commercial agriculture. These soils have little to no impediments to agricultural management as in they are not too wet, too steep, or too rocky. There are 329 acres of these soils in Harrisville which is approximately 2.5% of the land area in town.

The second agricultural soil classification is Farmland of Statewide Importance. This group includes soils that are less fertile than Prime soils but are still capable of supporting high yield agricultural practices. Some of these sites may require the application of best management practices (BMP's) to control potential soil or water issues. BMP's are innovative management techniques that help preserve soil, water, and wildlife quality and quantity. In agriculture, BMP's can include, among many things, planting wind rows to prevent soil loss due to wind erosion, leaving naturally vegetated buffers to water bodies to prevent soil and other contaminants reaching surface water bodies when carried by storm water off farm fields. There are 375 acres of soils classified as Farmland of Statewide Importance in Harrisville which represents 2.9% of the land area.

The third classification of agricultural soils is Farmland of Local Importance. These soils require fairly extensive improvement to be managed for row crops. Improvement includes adding fertilizer, lime, and organic matter to the soils, removing stones from fields, and/or drainage control to manage the water table. Many of these soils are used as pastureland and hay fields as these crops do not require tilling or high soil fertility. There are 3863 acres of soils classified as Farmland of Local Importance in Harrisville which is approximately 30% of the land area.

The fourth category of soils under this classification system is Not Prime Farmland. These soils may be suitable for timber production or may be too steep, wet, or rocky to manage at all. As can be seen on the map, soils in the Farmland of Local Importance can be found in many areas throughout town. The more fertile, manageable farm soils are focused in the south and southwest parts of Harrisville. Chesham north to Silver Lake has the greatest concentration of Prime Farmland and Farmland of Statewide Importance, particularly along Chesham Road and Brown Road. A second area of productive agricultural soils is found between MacVeagh Road and Dublin Road along Mason and Venable Roads.

The goal in protecting agricultural soils is to ensure the potential to grow food, livestock, timber and other crops locally in the future. There are many benefits to local food production including reduced transportation costs and fuel use, direct relationships between consumers and producers, and enjoying the scenic nature of farms and fields. Obtaining conservation easements on properties with agricultural soils is a permanent way of protecting this resource into the future. Other ways to protect these soils include: guiding development projects away from the best agricultural soils; proposing that houses, including agricultural dwellings, be moved to the edges and away from the center of the soil area; increasing lot sizes in an agricultural soil overlay district; or providing property tax abatements to active farms on a sliding scale based on income and taxable value.

MAP: AGRICULTURAL SOILS (NEXT PAGE)

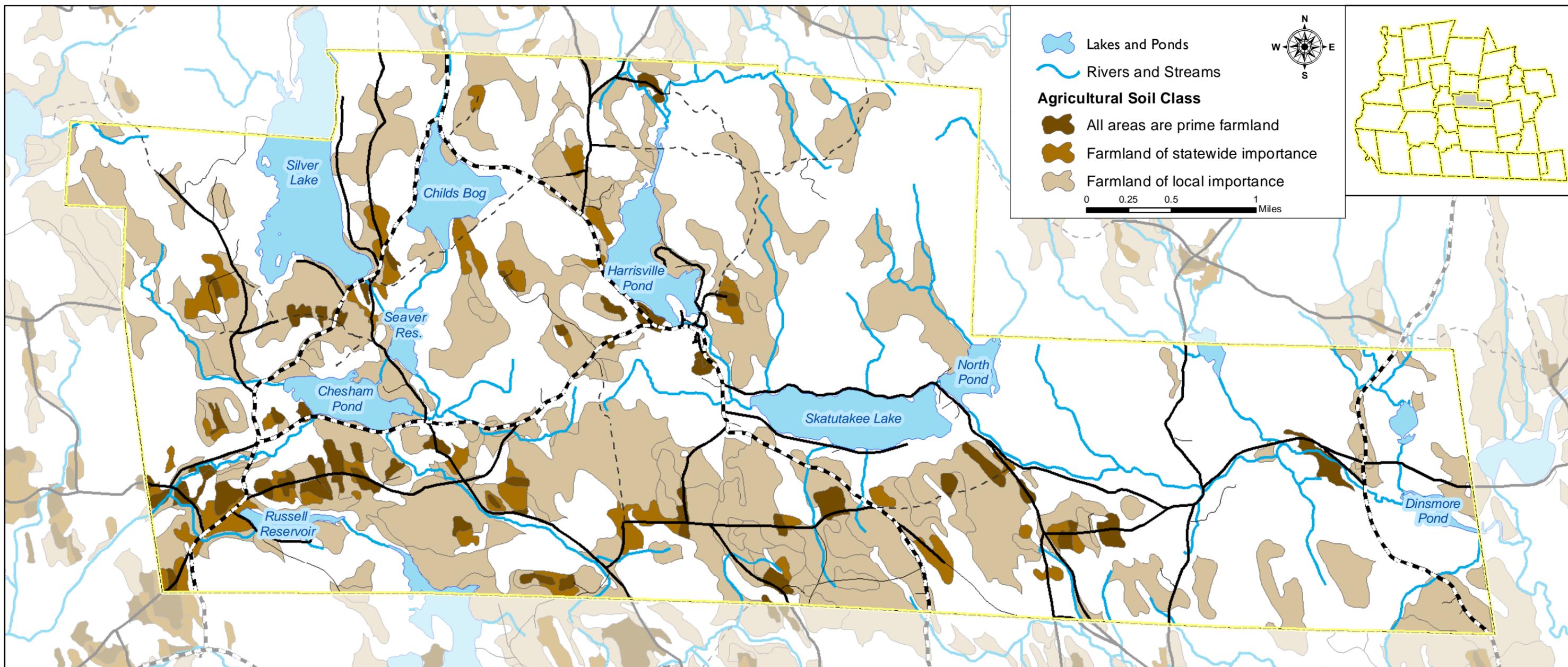


# Harrisville NRI: Agricultural Soils

This map shows the different types and locations of productive forest soils in Harrisville as classified by the Cheshire County Soil Survey performed by the Soil Conservation Service now maintained by the Natural Resource Conservation Service.

- 1) There are approximately 329 acres of prime agricultural soils which are highly fertile and have few impediments to active agricultural management
- 2) There are approximately 375 acres of agricultural soils of statewide importance which, although not as fertile as prime soils, can still support high yield agricultural practices but may require certain best management practices to control potential water or soil problems
- 3) There are approximately 3,863 acres of agricultural soils of local importance which require fairly extensive improvement (such as removal of stones or control of drainage and the water table) to grow row crops, but are fertile enough for growing other crops (e.g. pasture or hayfields)

Harrisville  
Natural Resource Inventory  
Committee



## PRODUCTIVE FOREST SOILS

Productive forest soils (Group I forest soils) are a class of soils that have been determined by the Cheshire County Soils Survey as suitable for rapid growth of commercially important trees with minimal impediments to normal forest management. The Soil Survey was performed by the Soil Conservation Service and is now maintained by the Natural Resource Conservation Service as an agency under the US Dept. of Agriculture. This classification contains many types of different soils all of which share the common trait of supporting forest growth and timber management.

There are subgroups within the Group I forest soil classification which indicates the types of tree species that prefer that type of soil. Some sites are better for white pine trees where others are better for red oak and others support sugar maples and so on. Landowners wishing to manage their forest should seek to understand the soils on their property and the way those soils will influence the regeneration of new trees after a harvest. These soils are widespread across Harrisville and are only limited in areas that are wet, steep, and/or have thin or no soil over the bedrock. There are 11,425 acres of Group I forest soils in Harrisville which equals 88% of the land area.

Best management practices are management techniques that can be used during timber harvests and other land use activities to protect natural resources from being diminished in quality or quantity. Best management practices (BMP's) should be advertised and advocated to improve landowner awareness and utilization. When landowners choose to use BMP's to protect the forest soils they are ensuring that these soils will continue to support productive forests for future generations.

Certified foresters are educated in forestry techniques, BMP's, and natural resources. Foresters can be hired by landowners to develop a management plan for their forest in order to harvest their timber and protecting other resources such as the soil, wetlands, and wildlife habitat. Foresters will also monitor timber harvests to ensure that loggers are following BMP's and implementing the management plan correctly. Most modern conservation easements require the use of a licensed forester and a forest management plan for forest management. As such conservation easements are a good method for protecting forest soils and the properties that contain them.

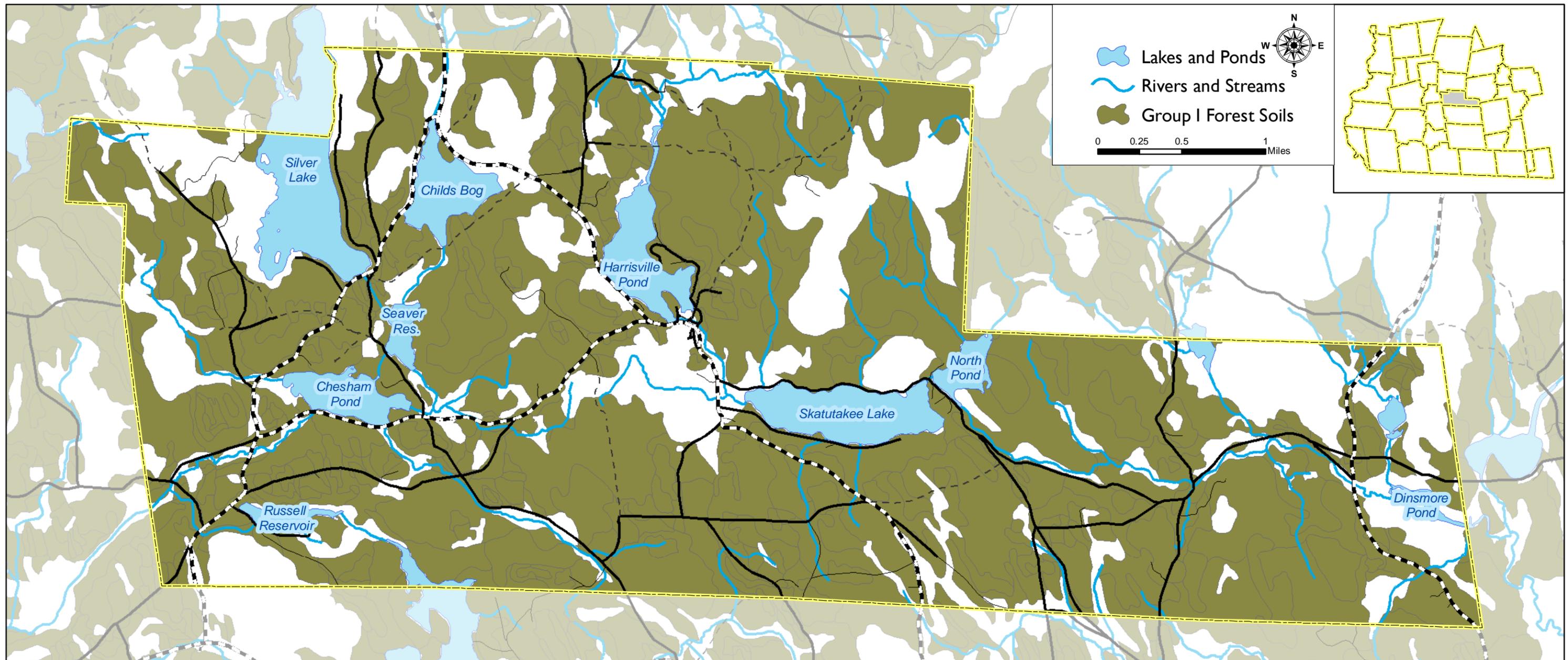
MAP: PRODUCTIVE FOREST SOILS



# Harrisville NRI: Productive Forest Soils

This map shows the different locations of productive forest soils in Harrisville as classified by the Cheshire County Soil Survey performed by the Soil Conservation Service now maintained by the Natural Resource Conservation Service. These soils are fertile enough to support rapid growth of commercially important trees with minimal impediments to normal forest management. There are approximately 11,425 acres of productive forest soils in Harrisville.

Harrisville  
Natural Resource Inventory  
Committee



## OPEN LANDS

The Open Lands map displays the results of delineating all undeveloped open areas over two acres in size within the town boundaries from the 2010 leaf-off aerial photograph. This analysis included agricultural fields, large lawns (minus the dwelling and other structures), wet meadows, and forest openings due to either disturbance or forest management. These openings represent the working landscape as the majority of them are created through human management of the landscape. Natural openings were mapped in order to record their locations as important areas for habitat and wildlife diversity.

Through keeping track of these openings it is possible to monitor the different percentages of active farmland, active forestry operations, wet meadow wetlands, and wildlife habitat diversity. This map is a baseline that can be compared to future aerial photographs as the land use patterns in Harrisville change. These areas are important to track for multiple reasons. Open lands supporting agriculture supply the local community with agricultural products such as forage for livestock, fiber, vegetables, and meat. Clearing openings in the forest not only results in forest products for the economy but also increases the age and species diversity of a forest allowing the forest to be more resilient to natural disasters. Wet meadows are wetland areas that are too wet to support tree growth but not open water ponds and are therefore dominated by grasses, sedges, rushes, ferns, and shrubs which are capable of filtering pollutants from storm water runoff, storing flood waters, and potentially tell a history of being dammed by people or beavers.

All of these openings are valuable wildlife habitat. Many species rely on openings of different sizes and management types for all or part of their lifecycles. These openings also provide vantages from where scenic vistas can be viewed along with often being scenic features of the landscape. If the number and amount of openings in the landscape decreases over time it may be appropriate to encourage landowners to maintain those that still exist and encourage others to create new openings through forestry and agricultural management.

MAP: OPEN LANDS

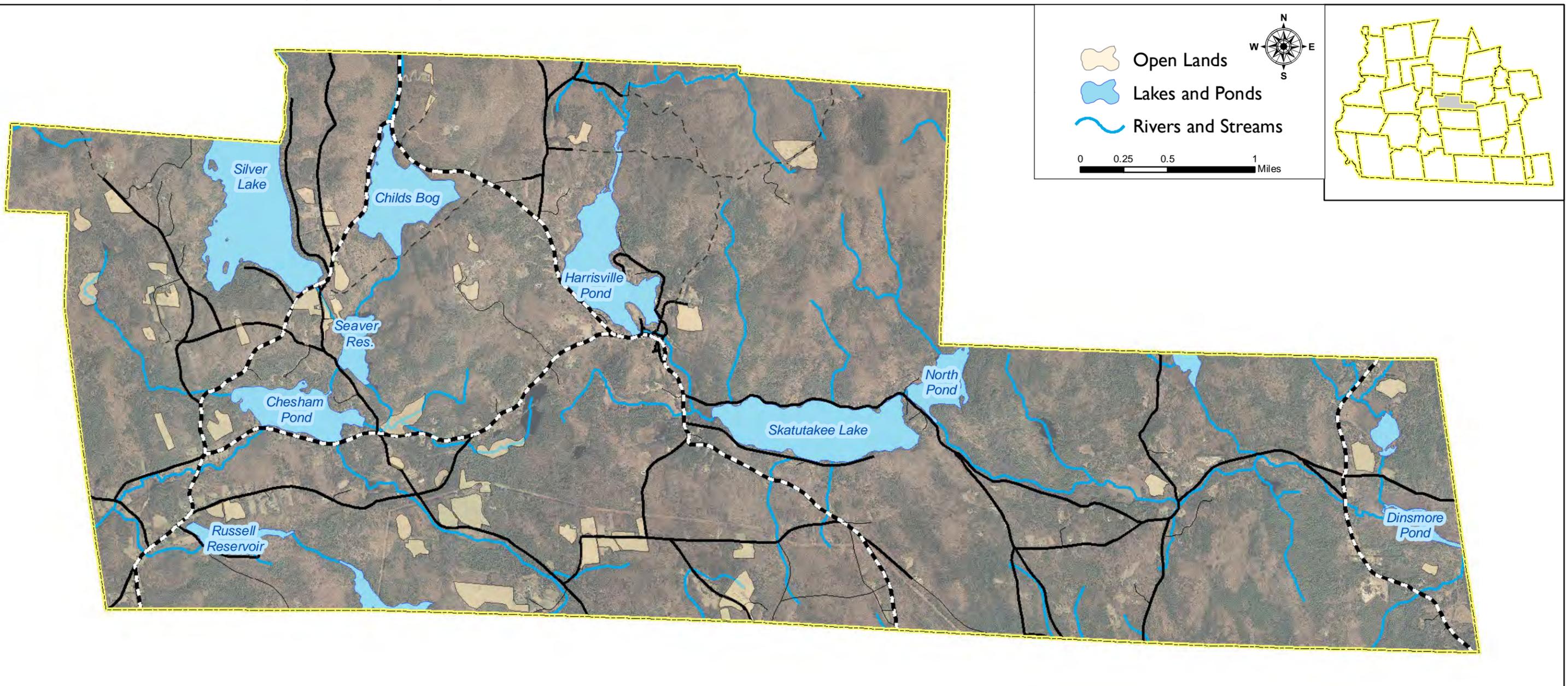


# Harrisville NRI: Open Lands

This map shows the different sizes and locations of open lands in the Town of Harrisville. Open lands include agricultural fields, recent timber harvests that leave a distinct opening, or even large maintained lawns. These areas not only provide important benefits to people, but also provide important wildlife habitat that if not maintained as open would be lost and convert to forest. Depicted below are the open lands that are over two acres as visible in 2010 aerial photography

- 1) Different sized open lands support different groups of species that require open lands for all or part of their life cycles
- 2) Open field used for agricultural purposes supply people and livestock with necessary food
- 3) Openings as a result of timber harvests not only provide habitat but also add age diversity to the forest stands
- 4) Open lands also provide scenic benefits to people by supporting the rural character of the town and providing vantage points for looking out at the forested hillsides

Harrisville  
Natural Resource Inventory  
Committee



## AREAS OF IMPORTANT CONSERVATION VALUE

This map shows the results of a combined analysis of where important natural resources are located in town and the places people identified as important to the community's character. Most of these places support many natural resources and were identified in the community survey. Areas highlighted on this map should be viewed as places to focus conservation efforts to protect the quantity and quality of natural resources as well as the community's character and quality of life. Permanent land conservation may not be appropriate in all instances, but that is not the only tool available for protection of natural resources. Educating the public and landowners on resource sensitive land use decisions may be more appropriate in some cases.

There are two Watershed Focus Areas shown on the map, Silver Lake and Harrisville Pond. Both of these watersheds extend north beyond the town boundaries into Nelson. Both of these lakes were identified 49 times in the community survey and have significant stretches of undeveloped shorefront. Most development in these watersheds is focused along portions of the waterfront leaving much of the watershed undeveloped allowing opportunities for land conservation and resource protection. Silver Lake has been identified as having the highest water quality in Harrisville. This is likely due to the high percentage of its watershed being conserved and an active land trust and lake association that educate the landowners around the lake in how to protect the lake's water quality. Harrisville Pond provides a scenic and recreational backdrop to the Harrisville center. In addition to the lakefront development the road networks around these lakes can also negatively impact water quality if storm water runoff is not managed properly. Nelson Road and Main Street are specific examples of high volume paved roads that can have a significant impact on Harrisville Pond.

Methods to protect these lakes and their watersheds include conserving large parcels within the watersheds, conserving undeveloped lake frontage, and working with landowners, town and state government to mitigate storm water runoff issues. Conserving large parcels within the watershed will prevent major subdivisions, development, and soil disturbance which can have a cumulative negative impact on water quality. Conserving undeveloped lake frontage prevents the development and soil disturbance of the lake front. Lakefront properties are the last line of defense or

buffer of the lake. These properties are capable of filtering out many of the pollutants and slow storm water runoff. Working with landowners to implement storm water runoff mitigation techniques will help manage the amount of storm water and pollutants that reach the lakes over time. All of these methods will protect water quality, recreational potential and the scenic nature of these lakes.

The Surface Water Focus Areas are 300 foot buffers of the major lakes, ponds, and rivers. This focus area is to indicate the importance of the buffer along these water bodies and the role these lands play as the last line of defense in the management of storm water runoff. Depending on the steepness and permeability of the land within 300 feet of the water body it should be able to filter out many of the pollutants and provide ample opportunity for the storm water to infiltrate the soil and water table. Maintaining as much of this buffer area in a natural, vegetated state will help preserve the water quality of the town's water bodies. Conserving undeveloped shoreline and protecting it from development and soil disturbance is the most effective way of protecting water quality. Additionally, working with landowners of developed parcels within these areas to install storm water management structures and plant vegetated buffers will help protect the water bodies. A continuous 300 foot vegetated buffer of water bodies will also allow many wildlife species to use the water course as a corridor between other habitats including moose and bear.

The map also shows the Town Spring Aquifer delineation on the south side of Lake Skatutakee. The Town Spring is an important community resource that is used by many town residents as their drinking water as well as being available as drinking water at the Harrisville General Store. The spring is fed by an overburden aquifer and as such does not have a protective impermeable cap of fine grained material to protect it from contaminants. As such it is important to protect the land over the aquifer from uses that could contaminate it as well as any areas that drain towards the aquifer area. Many of the parcels in the area of the town spring aquifer are relatively small and may not be appropriate for conservation easements. The town may want to acquire some of these parcels to permanently protect the spring. Other methods to protect the spring would include a "No Salt Zone" on the section of Dublin Road that runs through the Aquifer or an aquifer protection overlay district that restricts the types of land uses that can occur on properties that contain the aquifer.

In addition to the Town Spring Aquifer, there is also a general Aquifer Focus Area that includes all of the delineated aquifer areas. These include a large aquifer in Eastview that stretches from Hancock Road along Nubanusit Brook to the Dublin and Peterborough town lines into the US Army Corps of Engineers MacDowell Lake properties. Much of this Eastview aquifer is already conserved and the conservation lands cover the aquifer area. Therefore a purple line marks the edge of the aquifer delineation over the conservation lands and other map layers. Land conservation of the large parcels containing the aquifer is a viable option. Another option to protect this resource is through an overlay protection district that prevents land uses that can reduce the aquifer's water quality from occurring on top of the aquifer. There is another area of stratified drift aquifer underlying the great meadow north of Harrisville Pond at the Nelson town line.

The next areas of important conservation value are the unfragmented forested uplands. These are the areas of town that have few roads, few homes and are in a relatively natural state. These are the places where protection of a town's water resources begins. If the forested uplands are protected from large scale disturbance, development, and land conversion storm water runoff is slowed by vegetation and infiltrates the soil to enter the water table as opposed to flowing overland and directly to the surface water bodies carrying sediment and contaminants with it. In addition to managing storm water and water quality, these areas also support healthy wildlife habitats and populations, and are the scenic vistas that are seen from the roads, villages, and water bodies. These lands are also the larger parcels that are good for managing for forest products. These lands can also be protected through land conservation methods as well as working with landowners who wish to manage or develop their lands to do so in resource sensitive ways. Informing landowners about foresters and silvaculture can be one way to ensure that forest management is performed in harmony with water quality, habitat, and soil protection. Encouraging landowners to pursue conservation subdivisions that focus development in smaller areas away from important natural resources can also help protect the values in these parcels.

The next extensive focus area is the Agricultural Focus Area. This area is delineated to include many of the active farms, open fields, and agricultural soils. Agricultural soils are a limited resource in this region and need to be protected from development in order to ensure local agriculture can continue into the future.

Agricultural soils in the Monadnock Region are some of the most developable sites as they are relatively flat and have soils that support septic systems. As such these soils are under threat during periods of fast development and high land values. Farmers are often unable to afford the taxes on large parcels and will sell house lots to support the farm and their families. Methods for protecting these soils include permanent land conservation, an agricultural zoning district with a larger lot size, agricultural soil overlay district, and agricultural tax abatements. Managing fertilizer, manure, soil erosion and other agricultural activities or byproducts on water quality should be monitored over time to prevent one priority impacting the other.

Another area of important conservation value is the corridor between the Silver Lake Watershed and Harrisville Pond Watershed focus areas. This corridor will provide a connection between two diverse habitat areas. This corridor crosses Nelson Road which is a paved, state maintained road. As such there is a high potential for wildlife collisions with vehicles. Conserving properties between these two watersheds and along the frontage of Nelson road will ensure the habitats will be connected for healthy wildlife populations. Signage should be posted to alert drivers to the possibility for wildlife crossing the road. Underpasses, overpasses, and fencing might be good methods for directing wildlife crossing the road in this area. This area is also the top of the Childs Bog watershed which flows into Seaver Reservoir and Chesham Pond. Land protection in this area will help preserve the water quality of these water bodies.

The final focus area identified on this map is the historic railroad bed. This is a valuable, year round recreational resource in Town. This rail road bed stretches from west to east from the Roxbury town line to Hancock town line almost completely across Harrisville. Protection of this recreational corridor can include permanent land conservation of the parcels along the corridor to preserve the scenic nature of the trail, working with landowners and partners to obtain or protect public access to the rail right of way to maintain it as a public resource.

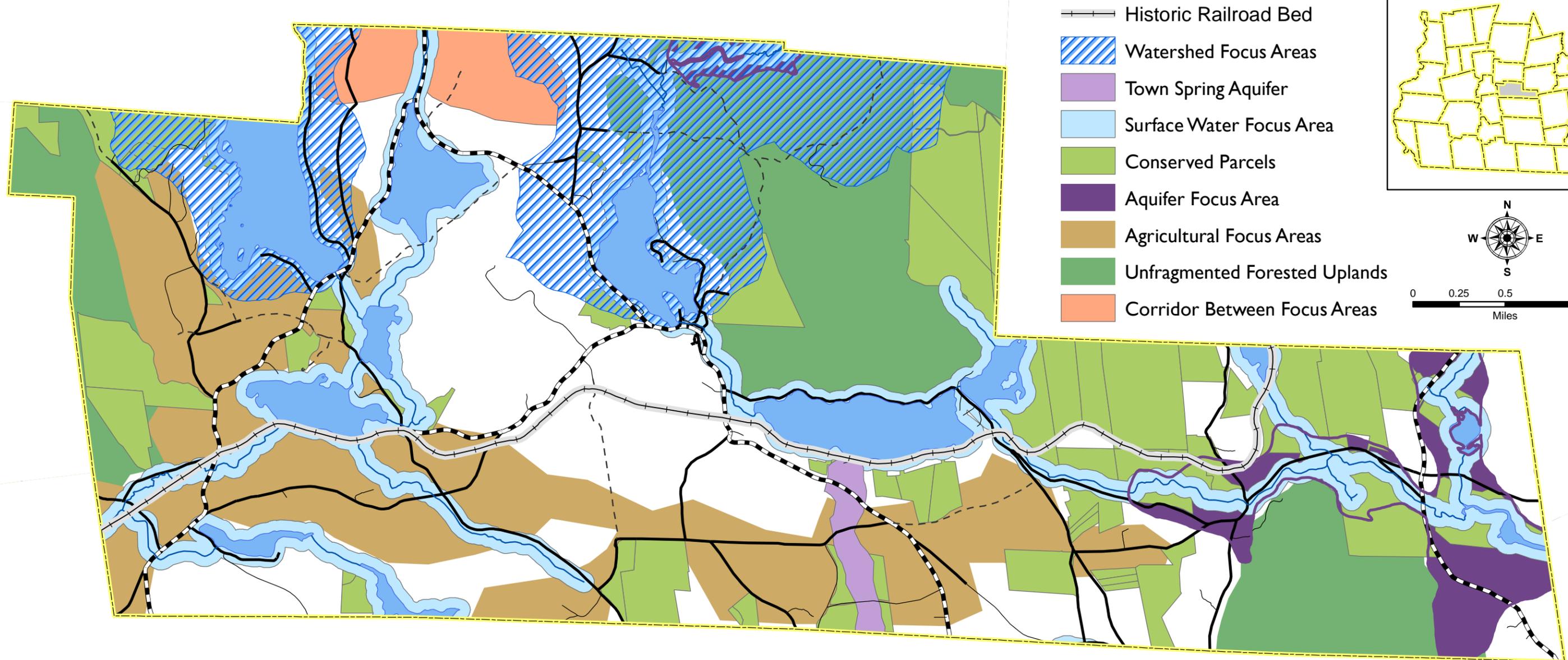
MAP: IMPORTANT CONSERVATION VALUES (NEXT PAGE)



# Harrisville NRI: Areas of Important Conservation Value

This map shows the results of a combined analysis of where important natural resources are located in town and the places people identified as important to the community's character. Most of these places support many natural resources and were identified in the community survey. Areas highlighted on this map should be viewed as places to focus conservation efforts to protect the quantity and quality of natural resources as well as the community's character and quality of life. Permanent land conservation may not be appropriate in all instances but is not the only tool available for protection of natural resources. Educating the public and land owners on resource sensitive land use decisions may be more appropriate in some cases. For detailed descriptions of each area refer to the Harrisville Natural Resource Inventory.

Harrisville  
Natural Resource Inventory  
Committee



## RECOMMENDATIONS

### GOAL

The primary goal of developing the NRI was to provide the town of Harrisville and its officials with information about what resources were located in town, where they were located, how much of the resources there are and how to maintain or protect those resources. To support that goal the NRI Committee also surveyed the public to determine what resources and places were most important to the residents. Through analyzing the community survey and natural resource information it is the recommendation of the NRI Committee that the town of Harrisville pursue the protection of its water and other natural resources in these ways:

1. Develop an outreach and education program to help inform the general public on how their land use decisions can impact the quantity and quality of different natural resources in town and how that will then impact the community character and quality of life.
2. Develop a framework for reaching out to and working directly with landowners within areas identified in the “Areas of Important Conservation Values” map on ways to protect natural resources on their property such as storm water management or permanent land protection where appropriate.
3. Provide information about valued natural resources for land use boards and town officials to use during pre-permitting and permitting processes when working with developers of subdivisions and building projects that may impact those resources.
4. Request town boards and commissions to review and/or develop new land use ordinances to ensure optimal protection of the town's natural resources and to ensure desired community development.
5. Guide prudent use of conservation funds to acquire conservation easements or properties identified as vital to the future of the town.

## ACTION PLAN RECOMMENDATIONS

### PUBLIC OUTREACH AND EDUCATION

- Identify or create a committee or board to organize, advertise and facilitate public education workshops, talks, activities
- Organize, advertise, and facilitate public education workshops, talks, and activities and seek opportunities to present at other community events
- Partner with other organizations, associations, and special interest groups to provide more targeted education such as lake associations, snowmobile clubs, etc.
- Collect and develop handouts, posters, and other educational materials that can answer questions the public may have related to natural resources and management decisions
- Maintain a column or article in the town newsletter to educate the public on natural resource issues and promote public workshops, talks, and activities
- Collect contact information from people attending any public outreach and education activities so that they can be invited directly to future events to develop relationships

## LANDOWNER OUTREACH AND EDUCATION

- Identify or create a committee or board to reach out to landowners and help them make resource sensitive land use decisions
- Collect and develop materials to hand out to interested landowners related to conservation and land and water management options
- Be prepared to assist landowners in conservation decisions including assessing conservation easement projects for town support such as contributing to conservation easement purchases
- Work with landowners who have granted conservation easements or made resource sensitive land use decisions to host neighborhood gatherings and/or present information about why they made their decision and how it has affected them
- Reach out to owners of land within the “Areas of Important Conservation Values” with a strategy for working towards a resource protection end
- Maintain records and files for each landowner interaction to pass onto the next volunteer or conservation organization if appropriate
- Advertise that the board or committee exist to help landowners in making resource sensitive land use decisions through the town newsletter or other publicly broadcasting opportunities

## INCORPORATING THE NRI INTO TOWN DECISION MAKING PROCESS

- Provide hard and electronic copies of the NRI to all land use boards
- Request the Planning Board review the NRI at a public hearing in order to adopt it as an official public document.
- Ask the Conservation Commission to explain the key findings of the NRI with new incoming land use board members
- Produce posters to explain sensitive areas for town focus
- Produce poster-sized maps and overlays to help guide decision making processes for land use boards
- Develop standard protocol for the use of NRI information in land use board decisions
- Provide NRI materials to major development applicants and invite them to speak with land use boards before site plans are developed

## FUTURE PLANNING EFFORTS

- Update NRI in 5-7 years with an eye to changes in development patterns, newly conserved parcels, and changes in public opinions and perceptions
- Look to each natural resource section and map to develop new land use ordinances if/when/where appropriate
- Assess opportunities to collect more town specific natural resource information such as wetland delineation, vernal pool mapping, town spring studies, static well-water levels, further aquifer mapping, comprehensive species lists, etc.

## IN CONCLUSION

The Harrisville NRI process has been very informative in identifying the places and resources that people care about, where those resources are located, and methods for protecting these resources to preserve the town's rural character and quality of life for future generations. The village on the banks of Harrisville Pond was the most frequently identified special place due to the sense of community it supports and its scenic and historic character. Harrisville Pond plays a large role in both aspects of the village in that it is a gathering place for recreation at the town beach and for paddling and fishing. It is a scenic asset to the village and powered the mills around which the village and its history were developed.

This connection between community and water resources was reiterated throughout the town and developed into a unifying bond in town. As such, it is important to maintain the quality of water in the surface waters to maintain this sense of community built on the lakes and ponds. For if the water quality is impacted the sense of pride, community, and quality of life may be diminished. The water quality of the surface and ground water can be maintained through protecting large parcels at the top of the watershed from development and managing storm water runoff in close proximity to the lakes, ponds, rivers, streams, and wetlands. This work will also protect other resources that contribute to the rural character and quality of life in Harrisville such as recreational opportunities, wildlife habitat, agriculture, and forestry.

Protection of these resources and places can occur through individual landowners choosing to make resource sensitive land use decisions in managing their land, landowners deciding to conserve their land, or through regulation. All options require public education and outreach that can be supported by the Conservation Commission and other town boards. Maintaining the Conservation Fund to help educate the public and help landowners with conserving their lands is one major way the town can help protect its natural resources, rural character, and residents' quality of life.

## APPENDICES

APPENDIX A: SURVEY - SAMPLE SURVEY, DATA TABULATIONS, VERBATIM  
COMMENTS

APPENDIX B: SPECIES LIST

APPENDIX C: CHILDREN'S NRI

APPENDIX D: VLAP REPORTS FOR MAJOR PONDS